

Wisconsin Department of Natural Resources
Natural Resources Board Agenda Item

SUBJECT: Request that the Board adopt Board Order DG-02-25, for proposed rules affecting ch. NR 140, related to setting numeric standards to minimize the concentration of polluting substances for certain Per- and Polyfluoroalkyl Substances (PFAS) in groundwater based on the 2025 DHS recommendations.

FOR: October 2026 Board meeting

TO BE PRESENTED BY: Carla Romano, Groundwater Section Manager

SUMMARY:

The proposed rule will add public health groundwater standards for six PFAS, using Department of Health Services' (DHS) January 2025 recommendations. The six PFAS include the contaminant compounds perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), perfluorohexane sulfonic acid (PFHxS), perfluorononanoic acid (PFNA), perfluorobutane sulfonic acid (PFBS), and hexafluoropropylene oxide dimer acid (HFPO-DA, commonly known as GenX Chemicals).

The objective of the proposed rule is to protect public health, given that groundwater is the primary source of drinking water throughout the state. PFAS breaks down very slowly and can accumulate in people. PFAS may cause reproductive health effects such as decreased fertility and pregnancy-induced hypertension, developmental effects or delays in children including birth defects and low birth weight, increased risk of some cancers including prostate, kidney, and testicular cancers, decreased antibody response to vaccines, and increased cholesterol.

More information about the rule is provided in the attached Board Order analysis.

The department has completed the external review process, which includes holding a public hearing and review by the Legislative Council Rules Clearinghouse. Comments received have been considered in the final rule language.

A summary of the public comments received and the department's response to those comments is provided in the attached Summary of Comments and DNR Responses document.

An analysis of the economic impacts is provided in the attached Fiscal Estimate and Economic Impact Analysis document.

If the final rule language of DG-02-25 is approved, the rule will be submitted to the Governor and to the legislature. The 30-month time frame for submission of a final rule to the legislature expires on August 10, 2027.

RECOMMENDATION: That the Board adopt Board Order DG-02-25.

APPROVAL: This agenda item and supporting documentation have been approved by Steven Little, Deputy Secretary.

LIST OF ATTACHED MATERIALS:

1. Comment Summary and DNR Responses
2. Fiscal Estimate and Economic Impact Analysis
3. Board Order

Summary of Comments and DNR Responses

Natural Resources Board Order DG-02-25

Ch. NR 140 – Amendments to ch. NR 140 to set numeric standards to minimize the concentration of polluting substances for certain Per- and Polyfluoroalkyl Substances (PFAS) in groundwater based on the 2025 DHS recommendations

9/28/2026

This document presents a summary of public comments received on proposed rules affecting ch. NR 140, related to numeric standards to minimize the concentration of polluting substances for certain Per- and Polyfluoroalkyl Substances (PFAS) in groundwater.

OVERVIEW

The general objective of this proposed rule is to amend ch. NR 140 to establish numeric groundwater quality standards for six PFAS compounds: perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), perfluorohexane sulfonic acid (PFHxS), perfluorononanoic acid (PFNA), perfluorobutane sulfonic acid (PFBS), and hexafluoropropylene oxide dimer acid (HFPO-DA, commonly known as GenX Chemicals). The proposed standards align with recommendations issued by the Wisconsin Department of Health Services (DHS) in January 2025. The department is required to propose rules establishing the DHS recommendations as groundwater standards under ch. 160, Stats. The department held the following public input opportunities:

- 03/06/2025 – Public hearing on the proposed rule scope statement. Thirty-nine participants joined the hearing and the department received 11 comments.
- 04/09/2025 – The department presented the draft scope statement to the NRB for approval.
- 04/07/2026 – Public comment period for the draft economic impact analysis. The department received 14 comments.
- 06/29/2026– Public comment period for the draft board order. The department received a total of 16 written comments, which are summarized below.
- 07/23/2026 – Public hearing on the proposed rule. Twenty-four people attended. Four oral comments were received.

ECONOMIC IMPACT ANALYSIS

A public comment period on the draft economic impact analysis (EIA) occurred from April 8, 2026, to May 7, 2026. The department received 14 comments on the draft EIA during this period. Overall, six comments stated general agreement with the draft EIA, while three comments expressed disagreement. The EIA was updated based on comments received during the public comment period. In particular, one comment (see comment 11 of the *Economic*

Impact Analysis section of this document) noted that the estimated cost of blank samples should be updated from \$300 to \$450. In response, the department consulted further with relevant department programs and the Wisconsin State Lab of Hygiene, and updated the cost of equipment blanks and estimated frequency of equipment blank collection. These revisions resulted in changes to the estimated sampling costs for both industrial and municipal facilities discharging through land treatment or land application systems, as well as for landfills. As a result of these updates, the total estimated amount was updated from \$9,893,388 to \$9,917,838.

The comments were as follows:

Health care costs

1. **Comment:** Two individuals and six organizations (Midwest Environmental Advocates, Milwaukee River Keeper, Oneida County Clean Waters Action, Save Our Water, Sierra Club Wisconsin, Wisconsin Conservation Voters) commented that the EIA does not account for the costs of inaction, including continued health-related costs. Midwest Environmental Advocates suggested that implementation of groundwater standards could result in net annual economic benefits of approximately \$18 million. Wisconsin Conservation Voters further estimated that failing to address groundwater standards could result in up to \$1.13 billion annually in health-related costs in Wisconsin.

Response: The department acknowledges, in Section 15 of the draft EIA, the benefits of implementing the rule as required under s. 227.137(3)(c), Stats. However, under s. 227.137(3)(b), Stats., the department is required to identify the costs of implementation and compliance that are reasonably expected to be incurred by or passed along to businesses, local governmental units, and individuals affected by the proposed rule. Benefits are considered separately and cannot offset compliance or implementation costs. In response to these comments, the department expanded the discussion of health care costs in Section 15 of the EIA.

Costs associated with remediation and clean-up sites

2. **Comment:** Save Our Water supported excluding remediation costs for contaminated sites from the analysis. In contrast, one comment submitted by an industry coalition consisting of Wisconsin Manufacturers & Commerce, Wisconsin Paper Council, Midwest Food Productions Association, and American Chemistry Council stated that costs associated with remediation and redevelopment of contaminated sites should be included in the Environmental Impact Analysis.

Response: Exclusive of this rulemaking, the department has authority under the Spills Law to require responsible parties to investigate and remediate PFAS contamination, as PFAS are regulated as hazardous substances. As a result, cleanup obligations already exist independent of the establishment of groundwater standards. Therefore, the department does not attribute any additional compliance costs associated with remediation under the proposed groundwater standards, as these costs are already being incurred under existing regulatory requirements.

Settlements from PFAS-related litigation

3. **Comment:** Wisconsin's Green Fire and Milwaukee River Keeper noted that the EIA does not account for potential cost reductions associated with settlements from PFAS-related litigation.

Response: The department acknowledges that PFAS litigation settlements are already occurring independent of groundwater standards, as PFAS are regulated as hazardous substances under Wisconsin's Spills Law.

2025 Wisconsin Acts 200 and 201 impact

4. **Comment:** River Alliance of Wisconsin and Midwest Environmental Advocates noted that significant changes have occurred since the previous PFAS rulemaking and suggested that compliance costs may be lower when considering the effects of 2025 Wisconsin Acts 200 and 201. Midwest Environmental Advocates recommended incorporating these potential cost reductions into the final EIA.

Response: The department acknowledge on pages 1, 4, and 18 of the EIA that 2025 Wisconsin Act 200 provides funding for several PFAS-related activities in the state, which may support implementation efforts. However, at this time, the department does not have sufficient data to quantify the extent to which these funding mechanisms may reduce the overall economic impact, as related to grant programs still in development. For example, 2025 Wisconsin Act 201 promulgated s. 292.74(2)(g), Stats., which provides financial assistance to municipalities for sampling for PFAS in leachate, groundwater, or private wells that are part of a monitoring plan at a municipally owned or operated solid waste landfill. These funds could reduce a portion of the approximately \$2.3 million in groundwater monitoring costs for landfills that was included in the EIA.

Delaying compliance

5. **Comment:** One individual stated that economic impact should not delay the establishment of groundwater standards and suggested a delayed compliance to offset the initial cost.

Response: Section 227.137(3)(b), Stats., provides that the required cost analysis reflects impacts over any two-year period following implementation, not solely the initial implementation period. Therefore, delaying implementation would not materially change the overall economic impact analysis of the rule.

Costs associated with land application of sewage sludge

6. **Comment:** Midwest Environmental Advocates supported the current draft EIA approach regarding landspreading activities. In contrast, Madison Metropolitan Sewerage District, the Municipal Environmental Group – Wastewater Division, and an industry coalition consisting of Wisconsin Manufacturers & Commerce, Wisconsin Paper Council, Midwest Food Productions Association, and American Chemistry Council stated that the draft EIA underestimates costs associated with discharges of biosolids and industrial sludge. Madison Metropolitan Sewerage District estimated that their facility could incur

approximately \$10 million in costs over a two-year period for biosolids management options such as incineration or landfilling. The Municipal Environmental Group – Wastewater Division estimated that PFAS treatment for biosolids could require capital costs ranging from \$40 million to \$110 million per facility, with annual operation and maintenance costs ranging from \$470,000 to \$1.2 million per facility. Both the Municipal Environmental Group – Wastewater Division and the industry coalition noted that the establishment of groundwater standards would introduce additional regulatory thresholds that could expand compliance obligations beyond those permit-based requirements created by 2025 Wisconsin Act 201.

Response: The department believes that excluding costs associated with the land application of biosolids and industrial sludge from the EIA is appropriate. Wisconsin 2025 Act 201 promulgated s. 283.82(4)(a), Stats., which requires the department to include limitations or conditions for PFAS in permits for the land application of sewage sludge. Permit limitations or conditions are not limited solely to numeric thresholds in sludge but may also include additional requirements necessary to ensure compliance and to protect public health and the environment. This is consistent with the department's authority under applicable statutes and rules governing sludge management. Additionally, Wisconsin 2025 Act 201, pursuant to s. 283.82(4)(b), Stats., requires the department to issue a General Permit (GP) to all valid Wisconsin Pollutant Discharge Elimination System (WPDES) permittees that do not have limitations or conditions addressing PFAS. The GP requires monitoring conditions for sewage sludge and is valid until all individual permits are in compliance with s. 283.82(4)(a), Stats.

The department does not anticipate that the establishment of new groundwater standards would, by itself, require changes to existing land application restrictions. Rather, permit conditions will continue to be evaluated and adjusted as necessary based on evolving scientific understanding and site-specific information to ensure protection of public health and the environment. For example, if the department determines that existing application thresholds are not sufficiently protective against PFAS leaching to the subsurface and groundwater, additional or more restrictive permit conditions could be implemented regardless of whether new groundwater standards are adopted.

Costs associated with pit/trench dewatering activities

7. **Comment:** Madison Metropolitan Sewerage District, the Municipal Environmental Group – Wastewater Division, and an industry coalition consisting of Wisconsin Manufacturers & Commerce, Wisconsin Paper Council, Midwest Food Productions Association, and American Chemistry Council expressed concerns regarding the cost impacts of PFAS groundwater standards on pit/trench dewatering activities. Madison Metropolitan Sewerage District raised concerns that they may stop accepting PFAS-impacted groundwater altogether through their Industrial Pretreatment Program, forcing businesses and municipalities to pretreat groundwater or pursue alternative disposal methods. They estimated treatment costs at approximately \$9 per gallon, resulting in potential project costs ranging from roughly \$180,000 to over \$7 million per project, with additional impacts to utility capital projects and customer rates. Madison Metropolitan Sewerage District also stated in their comment that the proposed standards could significantly increase costs for the utility's own dewatering and construction projects, estimating that treatment

requirements could add approximately \$3 million per project and more than \$9 million annually for multiple projects, potentially resulting in increased customer rates. The Municipal Environmental Group – Wastewater Division noted that wastewater utilities commonly accept groundwater from dewatering projects for discharge to surface water and warned that PFAS groundwater standards could increase PFAS loading to wastewater systems and biosolids. The commenter stated that utilities may require pretreatment before accepting dewatering discharges, creating substantial additional costs for construction projects and wastewater utilities. The industry coalition stated that establishing enforceable numerical PFAS groundwater standards would create new compliance obligations and costs for dewatering projects, including sampling, discharge management planning, treatment, and potential remediation. Their comment also cited awareness of at least one construction project where PFAS management costs exceeded \$1 million, and suggested the EIA includes costs for at least one dewatering project per year that would incur PFAS management expenses.

Response: The department believes that the draft EIA appropriately accounts for costs associated with pit/trench dewatering projects. In response to comments from the Municipal Environmental Group – Wastewater Division, the department notes that dewatering discharges to surface water are already subject to applicable regulatory requirements, and associated compliance costs were considered separately in prior rulemaking efforts. To the extent that groundwater from dewatering operations is discharged to a wastewater utility, PFAS contributions to biosolids are already addressed through existing source reduction and management authorities under s. 283.82(4)(a), Stats., which are intended to protect public health and the environment. In response to comments from the Madison Metropolitan Sewerage District regarding costs associated with accepting PFAS-impacted groundwater, the department notes that PFAS management measures related to biosolids and wastewater treatment are being implemented independently of the establishment of groundwater standards. With respect to the District's own construction and dewatering projects, activities involving PFAS-contaminated groundwater are already regulated under the remedial response authorities established under Wisconsin's Spill Law. These regulatory requirements apply independently of whether groundwater standards are promulgated because PFAS are already regulated as hazardous substances. This also addresses comments submitted by the industry coalition. Existing practices for managing PFAS encountered during pit/trench dewatering operations are not expected to materially change as a result of establishing groundwater standards. In fact, the industry coalition's example of a project incurring approximately \$1 million in PFAS management costs demonstrates that such costs are already being incurred under the current regulatory framework, even in the absence of promulgated groundwater standards.

Compliance with Preventive Action Limits

8. **Comment:** Madison Metropolitan Sewerage District and the Municipal Environmental Group – Wastewater Division expressed concern regarding the Preventive Action Limits (PALs) proposed in this rule. The Municipal Environmental Group – Wastewater Division raised concerns in the context of land application, while the Madison Metropolitan Sewerage District's comment focused on implications for its Industrial Pretreatment Program, particularly the potential need to pre-treat discharges to meet PALs for lightly

contaminated groundwater. The district noted that PFAS data from Madison Water Utility, which serves its service area, indicate background concentrations of approximately 1.4 ng/L for PFOA and PFOS, which exceed the proposed PALs for those substances.

Response: The department notes that the proposed PALs are established pursuant to the requirements of ch.160, Stats. Under s. 160.15(1)(c), Stats., substances that have carcinogenic, mutagenic, or teratogenic properties or interactive effects, must have PALs set at 10% of the Enforcement Standard (ES). In addition, s. 160.15(2), Stats., authorizes the department to establish more stringent PALs than those calculated under s. 160.15(1) under certain circumstances; the statute does not provide discretion in how the PALs are calculated. The department also recognizes that there may be circumstances in which background concentrations are at or above a PAL or an ES. In such cases, implementation is addressed through the broader regulatory framework in NR 140, Wis. Adm. Code. NR 140.24(4), Wis. Adm. Code, provides a range of responses for exceedances of a PAL, including no action. In addition, exemptions may be granted under s. NR 140.28, Wis. Adm. Code, when background levels exceed the PAL or the ES. With respect to the concerns raised, both comments arise in the context of land application of sewage sludge. In the case of the Madison Metropolitan Sewerage District, waters received through the Industrial Pretreatment Program would still be conveyed to the treatment system and ultimately incorporated into biosolids. In this context, management practices would continue to apply regardless of the establishment of groundwater standards, as stated in the response to EIA comment 6. Additionally, a regulatory agency is required to promulgate rules which define design and management practice criteria for facilities, activities and practices affecting groundwater which are designed, to the extent technically and economically feasible, to minimize the level of substances in groundwater and to maintain compliance by these facilities, under s. 160.19(2)(a), Stats. Accordingly, while PALs provide a regulatory benchmark, implementation occurs through existing program-specific frameworks that already account for site conditions and feasibility considerations, including situations where background concentrations are elevated.

Costs for landfills

9. **Comment:** An industry coalition consisting of Wisconsin Manufacturers & Commerce, Wisconsin Paper Council, Midwest Food Productions Association, and American Chemistry Council argued that the department is underestimating the number of landfills that will require additional investigation. While the department assumes that 10% of targeted landfills will require further investigation, commenters cite Michigan data showing that nearly 70% of landfill sites exceeded PFAS groundwater criteria, suggesting many more Wisconsin landfills could require investigation and remediation. The comments also note that the department failed to account for landfill remediation costs, and the likelihood that landfills will begin requiring PFAS screening before accepting waste, potentially resulting in hundreds of thousands of dollars in annual sampling costs for some companies and possible rejection of certain wastes. In addition, the comment states that the department overlooked likely increases in leachate management costs. Because landfill leachate is commonly sent to publicly owned treatment works (POTWs), commenters expect POTWs to require additional PFAS sampling or treatment as part of source reduction efforts. According to an engineering firm cited in the comments, developing a PFAS leachate

treatment system could cost approximately \$500,000 for engineering and permitting, with construction costs ranging from \$6.5 million to \$15.5 million, excluding ongoing operation and maintenance expenses.

Response: The department believes that the draft EIA appropriately accounts for costs associated with landfills. The department's estimate is based on an initial amount of 138 active and closed landfills that have exceeded Volatile Organic Compounds (VOCs) groundwater standards. VOCs exceedances may indicate potential landfill leachate impacts and can, in some cases, be associated with PFAS because both may originate from similar waste streams or landfill releases. However, VOCs exceedances are not necessarily predictive of PFAS contamination, and the relationship between VOCs and PFAS are indirect rather than causative. For this reason, the department estimated that only a subset of these landfills, approximately 10%, would ultimately require additional PFAS investigation. The commenter's reliance on Michigan data may overstate likely impacts in Wisconsin because the Michigan sampling program reflects a targeted investigation of landfills with known PFAS release. As a result, the approximately 70% exceedance rate reported in Michigan is not representative of a broader screening population such as Wisconsin's initial universe of landfills identified through VOCs exceedances. In addition, Michigan has a substantially larger number of operational landfills and amount of waste produced than Wisconsin. Because of these differences in sampling design and population definition, direct comparison of exceedance rates is not appropriate and may inflate the expected number of affected sites in Wisconsin.

Moreover, as noted previously, monitoring costs at landfills may also be partially offset through available grants (*see s. 292.74(2)(g), Stats.*), which would reduce the portion of the approximately \$2.3 million in groundwater monitoring costs for landfills included in the EIA.

The department also notes that the NR 500 series includes provisions requiring solid waste facilities to comply with applicable environmental performance standards through operational controls and permit conditions. These provisions do not imply or require rejection of waste streams.

The department agrees that landfill leachate is commonly conveyed to POTWs, as reflected in the current EIA. POTWs are subject to source reduction requirements under their permitting framework. Accordingly, POTWs may require additional monitoring, pretreatment, or source reduction measures from contributing sources, including landfills, as part of their permit obligations. In response, landfills may need to implement appropriate operational controls, including enhanced monitoring or leachate treatment where necessary. These actions would be undertaken as part of existing regulatory compliance obligations rather than as a direct consequence of groundwater standard establishment.

Impacts on property values

10. **Comment:** An industry coalition consisting of Wisconsin Manufacturers & Commerce, Wisconsin Paper Council, Midwest Food Productions Association, and American Chemistry Council suggested that contamination could affect home sales by requiring sellers to address PFAS exceedances or reduce property prices, and therefore these potential costs or market impacts should be accounted for in the analysis.

Response: The department notes that property sales are not a regulated activity, and do not comply with groundwater standards. As such, potential impacts associated with real estate transactions are not included in the EIA's cost analysis. In addition, private well owners may have access to well compensation grants established under the recent 2025 Wisconsin Act 201 to address contamination issues, independent of the promulgation of groundwater standards.

Equipment blanks costs

11. **Comment:** An industry coalition consisting of Wisconsin Manufacturers & Commerce, Wisconsin Paper Council, Midwest Food Productions Association, and American Chemistry Council suggested to increase the cost of the field blank from \$300 to \$450.

Response: The department consulted with the Wisconsin State Laboratory of Hygiene and relevant DNR programs regarding quality assurance sampling requirements. Based on those consultations, the department determined that the sample previously identified as a "field blank" is more accurately described as an "equipment blank", and that the equipment blank cost is approximately \$450 as suggested by the public comment received. Equipment blanks are required only for certain sampling activities to verify that sampling equipment is not a source of PFAS contamination. The frequency of equipment blank collection varies depending on the type of sampling conducted. For example, at wastewater treatment facilities discharging through land treatment or land application systems, equipment blanks for groundwater monitoring are generally collected only at the beginning of a sampling project. Equipment blanks are typically not required for grab samples, which are used by most facilities sampling liquid effluent discharges because sampling equipment is generally not used. For landfills, sampling procedures follow the Groundwater Sampling Desk Reference, PUBL-DG-037-96, which recommends collecting one equipment blank for every 10 or fewer samples collected. Given the new information regarding both the frequency of equipment blank collection and the associated costs, the EIA has been updated accordingly.

Costs associated with wastewater facilities discharging through land treatment/application systems

12. **Comment:** An industry coalition consisting of Wisconsin Manufacturers & Commerce, Wisconsin Paper Council, Midwest Food Productions Association, and American Chemistry Council stated that DNR underestimated the costs and number of wastewater facilities discharging through land treatment/application systems impacted by this rulemaking. The industry coalition cited a Minnesota report estimating that, using the department's assumed flow rate of 20 gallons per minute, PFAS treatment could require approximately \$715,000 in capital costs and \$585,000 in annual operation and maintenance costs. The same report was also cited by the Municipal Environmental Group – Wastewater Division, which noted that PFAS removal and destruction costs at wastewater treatment facilities were estimated to range from \$2.7 million to \$18 million per pound of PFAS removed.

Response: The department used available facility information to identify wastewater treatment facilities potentially affected by the rulemaking, including consideration of waste types and industries contributing to those systems. The facilities evaluated primarily

discharge to infiltration ponds at relatively low flow rates. Based on this information, the department determined that the assumed treatment flow rate of 20 gallons per minute is reasonable for estimating potential compliance costs for affected industrial facilities discharging to POTWs which then discharge their effluent to land treatment systems. The department's cost estimates were based on the rental of granular activated carbon (GAC) treatment equipment rather than permanent installation of treatment systems. The department believes this is a reasonable assumption as it's anticipated that facilities will be renting the equipment to minimize their own costs and go the route of having lower initial capital costs while they work to identify legacy sources within the facility, because many of the PFAS compounds included in this rulemaking have already been phased out and are no longer widely used by industries. The department provided additional clarification on this matter in Section 14 of the EIA.

Other comments received

13. Two comments were received during the EIA solicitation period that were not pertinent to the EIA but were relevant to the draft rule language. Those comments were included in the *Public Comments on Draft Rule* section below, items 1, 3, and 4.
14. One comment was received during the EIA solicitation period but was not pertinent to this rulemaking. The comment was addressed as a general public request for information.

LEGISLATIVE COUNCIL RULES CLEARINGHOUSE

The Legislative Council Rules Clearinghouse submitted comments on statutory authority; form, style, and placement; adequacy of references; and clarity, grammar, punctuation, and plain language. Changes to the proposed rule were made to address all of these recommendations.

PUBLIC COMMENTS ON DRAFT RULE

The department accepted public comments on the draft rule from June 29, 2026 to July 29, 2026. The public hearing was held on July 23, 2026. Twenty-four members of the public attended the hearing. Four organizations delivered oral comments at the hearings. The department received 18 public comments. Specifically, the department received 16 written comments, including two submitted during the EIA solicitation period that addressed the proposed rule language, and two oral comments. A summary of the comments received and the department's response is below:

Health impacts

1. **Comment:** Two individuals and five entities (Clean Wisconsin, Friends of Starkweather Creek, Midwest Environmental Advocates, Sierra Club Water Team Wisconsin, and Wisconsin Conservation Voters) emphasized the adverse health effects associated with PFAS exposure. Commenters noted that PFAS exposure has been linked to reproductive and developmental effects, endocrine disruption, immune system suppression, liver damage, ulcerative colitis, and kidney and testicular cancers. Several comments highlighted that pregnant women, developing fetuses, infants, and young children may be particularly susceptible to PFAS exposure. Clean Wisconsin cited epidemiological and toxicological studies linking PFAS exposure to adverse health outcomes and estimated that

PFAS contamination in drinking water could contribute to approximately 80 to 118 cancer cases annually in Wisconsin. Midwest Environmental Advocates also summarized studies linking PFAS exposure to a range of chronic diseases. Friends of Starkweather Creek stated that residents of Wisconsin are getting exposed to PFAS through groundwater and by consuming contaminated fish.

Response: The department recognizes the significant health concerns associated with PFAS exposure. The public health basis for the proposed rule is summarized in Section 5, of the Board Order and further discussed in Section 15 of the EIA. By reducing PFAS contamination in groundwater, the proposed rule will help reduce exposure to these contaminants, particularly for individuals who rely on groundwater as their drinking water source. Separately from this rulemaking, the department continues to work with the Department of Health Services (DHS) to issue consumption advisories for fish species. Additional information about consumption advisories and PFAS is available at [Consumption Advisories and PFAS \(https://dnr.wisconsin.gov/topic/PFAS/Advisories.html\)](https://dnr.wisconsin.gov/topic/PFAS/Advisories.html).

Health care costs

2. **Comment:** Midwest Environmental Advocates, Sierra Club Water Team Wisconsin, and Wisconsin Conservation Voters discussed the economic costs associated with PFAS-related health impacts. Midwest Environmental Advocates referenced a Clean Wisconsin report estimating approximately \$100 million in annual health care costs in Wisconsin attributable to PFAS exposure. Sierra Club Water Team Wisconsin stated that the long-term costs associated with health care costs outweigh the costs of preventing and remediating PFAS contamination. Wisconsin Conservation Voters cited estimates that Americans spend up to \$62.6 billion annually on health costs attributable to PFOA and PFOS exposure and estimated this could equate to approximately \$1.13 billion annually in Wisconsin if impacts are proportionally distributed.

Response: The department acknowledges that preventing and remediating PFAS contamination provides significant public health and societal benefits, including reducing potential health-related costs. During development of the EIA, the department received several comments requesting additional discussion of the costs of inaction, including continued health care costs (see comment 1 of the *Economic Impact Analysis* section of this document). In response, the department expanded the discussion of these estimates in Section 15 of the EIA.

Scientific basis for PFAS toxicity

3. **Comment:** One individual questioned whether studies demonstrate adverse health effects at environmentally relevant PFAS exposure levels and requested information on studies identifying exposure levels associated with measurable health effects.

Response: As described in Section 9 of the Board Order, DHS developed the proposed groundwater standards using the process established under ss. 160.07–160.17, Stats. As part of this process, DHS evaluated federal health assessments, state drinking water standards, acceptable daily intake values developed by the U.S. Environmental Protection Agency (EPA), peer-reviewed scientific literature, epidemiological studies, and toxicological

studies. DHS reviewed more than 100 scientific studies in developing the recommended groundwater standards. The supporting scientific information is documented in *Scientific Support Documents for Public Health Recommended Groundwater Standards – Cycle 12* (February 2025), available on the DHS website at [Scientific Support Document \(https://www.dhs.wisconsin.gov/publications/p03694.pdf\)](https://www.dhs.wisconsin.gov/publications/p03694.pdf). Key epidemiological studies considered during the literature review are summarized in Supplemental Table S1 (pages 93–104) of that document.

Groundwater protection

4. **Comment:** Five individuals and eight organizations (Clean Wisconsin, Friends of Starkweather Creek, Green Fire, Midwest Environmental Advocates, Save Our Water, Sierra Club Water Team Wisconsin, the Town of Wheaton in Chippewa County, and Wisconsin Conservation Voters) expressed support for the proposed rule and emphasized the importance of protecting Wisconsin's groundwater from PFAS contamination. Save Our Water noted that standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA would support remediation efforts and consistent regulatory action. Midwest Environmental Advocates commented that, although federal drinking water standards address public water systems, they do not independently address PFAS contamination in groundwater, and that state groundwater standards provide greater regulatory certainty. Green Fire noted that development of groundwater standards is consistent with recommendations contained in its 2023 report. One individual suggested that the acceptable level of PFAS should be zero, while another recommended that PFAS production be phased out nationally.

Response: The department appreciates the support for the proposed rule. Under ch. 160, Stats., the department is responsible for initiating rulemaking to establish groundwater quality standards that minimize concentrations of polluting substances in groundwater. The proposed groundwater standards are based on recommendations developed DHS pursuant to ss. 160.13 and 160.15, Stats. These recommendations are developed using the scientific and statutory procedures established under ch. 160, Stats. Accordingly, the proposed standards reflect DHS recommendations rather than a zero-concentration standard. The department also recognizes the importance of reducing PFAS releases at their source. As discussed in Section 14 of the EIA, source reduction efforts are already occurring through federal and state initiatives. For example, PFOA and PFOS are no longer manufactured in the United States, industry has begun transitioning to alternatives for certain PFAS, and the department has incorporated PFAS-related conditions and limitations into permits for the land application of sewage sludge. The department also has authority under existing statutes, including ch. 292, Stats. (the "Spill Law"), and s. 283.82(4), Stats., to address PFAS contamination. Establishing groundwater quality standards provides a consistent regulatory benchmark that supports implementation of these authorities and improves regulatory certainty. Recent developments related to department's authority to address PFAS contamination are discussed in the Board Order and the EIA.

Benefits to Private Well Owners

5. **Comment:** Clean Wisconsin, Midwest Environmental Advocate, Save Our Water, and Wisconsin Conservation Voters supported the proposed groundwater standards, stating that they would provide important benefits to private well owners. Clean Wisconsin noted

that more than 30% of Wisconsin residents rely on private wells and that the PFAS drinking water standards established under the Safe Drinking Water Act apply only to public water systems. Clean Wisconsin and Save Our Water stated that this creates a disparity in health protections for private well users and that residents relying on private wells deserve the same level of protection as those served by public water systems. Midwest Environmental Advocates and Wisconsin Conservation Voters cited a DNR study indicating that PFAS was detected in 71% of private wells sampled, demonstrating the widespread occurrence of PFAS in Wisconsin groundwater. Midwest Environmental Advocates also stated that establishing groundwater standards would streamline eligibility for the Well Compensation Grant Program by allowing eligibility to be based on numeric groundwater standards rather than health advisory levels. Midwest Environmental Advocates further cited national and state (Michigan and California) studies indicating that low-income communities and communities of color are more likely to be located near PFAS-contaminated sites. Wisconsin Conservation Voters also cited a June 2024 Marquette Law School Poll indicating that 68% of registered Wisconsin voters are "very" or "somewhat" concerned about PFAS contaminating their drinking water.

Response: The department acknowledges that the proposed groundwater standards would provide important benefits to private well owners. Because private well owners are not required to take regulatory actions when groundwater standards are exceeded, compliance and implementation costs associated with private wells were not included in the EIA. Additional discussion of this approach is provided in Section 14 of the EIA. As discussed in Section 15 of the EIA, establishing groundwater standards will streamline administration of programs benefiting private well owners, including the Well Compensation Grant Program and bottled water eligibility. On July 1, 2026, NR 809 state drinking water standards for certain PFAS became effective for public water systems. Those standards apply only to public drinking water systems. Groundwater quality standards serve a different purpose by regulating sources of groundwater contamination, thereby helping protect groundwater resources relied upon by both private well owners and public water systems.

Economic Impact Analysis Costs

6. **Comment:** Madison Metropolitan Sewerage District, the Municipal Environmental Group – Wastewater Division, and an industry coalition consisting of Wisconsin Manufacturers & Commerce, Wisconsin Paper Council, Midwest Food Products Association, and the American Chemistry Council expressed disagreement with the department's estimate of implementation and compliance costs in EIA. Commenters stated that the EIA costs should exceed \$10 million over two years and that legislative review would therefore be required for continuation of the rule. Commenters also stated that the department did not adequately address comments previously submitted on the EIA. The industry coalition further commented that the EIA appeared to be structured to avoid exceeding the \$10 million threshold.

Response: The department continues to conclude that the EIA appropriately estimates the implementation and compliance costs attributable to this rulemaking and that it was prepared consistent with the requirements of s. 227.137, Stats. The EIA includes costs that are reasonably expected to result from establishing the proposed groundwater standards

and does not include costs associated with existing department authorities that may be exercised independently of the adoption of groundwater standards. The department also recognizes that certain activities identified in the EIA may be eligible for funding provided through 2025 Wisconsin Acts 200 and 201. The department does not agree that the EIA was developed with the purpose of avoiding a statutory threshold. Rather, the EIA reflects the department's conservative analysis of costs directly attributable to the proposed rule. Detailed responses to comments submitted by the three organizations during the solicitation of comments on the EIA are provided in the responses to EIA comments 6 through 12 in this document.

Biosolids

7. **Comment:** Madison Metropolitan Sewerage District and the Municipal Environmental Group – Wastewater Division commented that land application is the primary method of municipal biosolids management and that alternatives such as incineration and landfilling are not currently feasible options. Madison Metropolitan Sewerage District stated that if a private well near a biosolids land application site exceeded a proposed groundwater standard and the contamination was determined to be associated with land application activities, restrictions on future land application could result. Madison Metropolitan Sewerage District expressed support for the department's use of fate-and-transport models and information from other states, including Michigan, but stated that additional research is needed to better understand the potential impacts of biosolids land application on Wisconsin groundwater resources. The Municipal Environmental Group – Wastewater Division commented that department guidance and the requirements of 2025 Wisconsin Act 201 establish recommendations for biosolids land application based on PFAS concentrations in biosolids rather than PFAS concentrations measured in groundwater near land application sites. The Municipal Environmental Group – Wastewater Division also provided estimated costs for alternative biosolids management approaches, including approximately \$2.5 million annually for landfilling biosolids from one facility and approximately \$4 million annually for incineration. The Municipal Environmental Group – Wastewater Division also referenced a Minnesota Pollution Control Agency report estimating capital and operational costs associated with PFAS treatment technologies for biosolids management.

Response: The department recognizes the importance of land application as a beneficial use practice for municipal biosolids and acknowledges the challenges associated with alternative disposal methods. However, costs associated with changes to biosolids management practices were not included in the final EIA because those costs are not expected to result directly from the establishment of groundwater standards. The department already has authority under s. 283.82(4), Stats., to establish PFAS-related monitoring requirements, limitations, and conditions in applicable WPDES permits for biosolids land application. Additional discussion of this issue is provided in Section 15 of the EIA, and in the response to the EIA comment 6. If PFAS contamination is identified in groundwater and a connection to a biosolids land application site is established, the department may evaluate appropriate actions under existing authorities, including authorities under ch. 292, Stats., where applicable. These authorities exist independently of the establishment of groundwater standards. The department appreciates stakeholder

recognition that PFAS-related land application requirements are being developed using available scientific information, including fate-and-transport evaluations and information from other states. The department agrees that additional research is needed to further understand PFAS behavior in Wisconsin's groundwater systems. As additional scientific information becomes available, the department will continue to evaluate and update permit requirements as appropriate, through its existing regulatory authorities, regardless of whether groundwater standards are established.

Pit/trench dewatering activities

8. **Comment:** Madison Metropolitan Sewerage District and the Municipal Environmental Group – Wastewater Division expressed concerns regarding how the proposed NR 140 groundwater standards may affect wastewater utilities that accept groundwater from dewatering activities, or dewatering projects at the districts itself. Both organizations noted that that groundwater from dewatering projects is commonly sent to wastewater utilities for treatment and discharge under WPDES permits. While acknowledging that WPDES permit holders that do not discharge directly to groundwater are not the direct subject of the proposed rule, Madison Metropolitan Sewerage District expressed concern that the proposed PFOA and PFOS groundwater standards could affect utility waste acceptance decisions. Specifically, Madison Metropolitan Sewerage District noted that the proposed PFOS groundwater standard is lower than the applicable surface water criterion, which could create situations where groundwater exceeds the NR 140 standard but could still meet surface water discharge requirements. Madison Metropolitan Sewerage District and the Municipal Environmental Group – Wastewater Division also expressed concern that utilities may receive additional requests to accept PFAS-containing groundwater and that treatment requirements could increase costs for construction dewatering projects. Madison Metropolitan Sewerage District estimated that treating PFAS-contaminated dewatering water associated with its own utility infrastructure improvement projects could cost approximately \$3 million per project. Based on an estimated average of three projects per year, Madison Metropolitan Sewerage District estimated these costs could total approximately \$9 million annually and more than \$10 million over a two-year period.

Response: Similar concerns were expressed by the two organizations during the comment period. The department believes that the draft EIA appropriately accounts for costs associated with dewatering activities, as addressed in the response to EIA comment 7. The proposed NR 140 groundwater standards do not establish requirements for wastewater utilities to accept or reject groundwater. Rather, utilities must continue to comply with their existing WPDES permit conditions, including applicable requirements for effluent discharges and biosolids management. PFAS-containing groundwater generated from construction projects may also be subject to existing Spill Law and remedial response requirements. These regulatory requirements apply independently of the establishment of groundwater standards under NR 140.

Preventive Action Limits

9. **Comment:** Madison Metropolitan Sewerage District and the Municipal Environmental Group – Wastewater Division expressed concerns regarding the proposed Preventive Action Limits (PALs). The Municipal Environmental Group – Wastewater Division noted that

several of the proposed PALs are below current PFAS detection levels reported by wastewater utilities. Madison Metropolitan Sewerage District similarly expressed concerns that some proposed PALs are at current detection levels and could create challenges for wastewater utilities. The Municipal Environmental Group – Wastewater Division expressed concerns that the restrictive PALs could allow the department to take regulatory action, including actions related to biosolids land application, if the department determines that groundwater impacts exceeding these standards are occurring. Madison Metropolitan Sewerage District raised concerns regarding both groundwater acceptance criteria and biosolids management, noting that the proposed PALs may create challenges for utilities that beneficially reuse biosolids. Madison Metropolitan Sewerage District also provided groundwater data from the Madison Water Utility service area indicating background concentrations of PFOA and PFOS at approximately 1.4 ng/L, which exceed the proposed PALs for those compounds.

Response: Similar comments were submitted by the Madison Metropolitan Sewerage District and the Municipal Environmental Group – Wastewater Division during the EIA solicitation period, and are addressed in the response to EIA comment 8.

Discharge through Land Treatment/Application Systems

10. **Comment:** The Municipal Environmental Group – Wastewater Division indicated that utilities conducting PFAS studies have found that some of the PFAS sources entering wastewater systems may be domestic sources. The Municipal Environmental Group – Wastewater Division noted that source reduction measures may not be available for these sources, leaving treatment as the primary compliance option. The Municipal Environmental Group – Wastewater Division referenced a Minnesota study that estimated costs to remove and destroy PFAS at wastewater utilities could range from \$2.7 million to \$18 million per pound of PFAS.

Response: In section 14 of the EIA, when accounting for costs associated with publicly owned treatment works (POTWs) that discharge liquid wastewater through a land treatment/application system, the department noted that POTWs may need to either install treatment to reduce PFAS at the facility or require contributing sources to implement pretreatment prior to discharge to the POTW. The location where PFAS treatment is implemented does not change the overall cost associated with meeting the required reduction. Therefore, the department continues to believe that the cost estimates presented in the EIA are appropriate. Additional discussion regarding these cost assumptions is provided in the response to EIA comment 12.

Recent proposed changes to federal drinking water standards

11. **Comment:** An industry coalition consisting of Wisconsin Manufacturers & Commerce, the Wisconsin Paper Council, the Midwest Food Products Association, and the American Chemistry Council noted that EPA has proposed two actions related to federal PFAS drinking water standards. The first proposed rule would rescind maximum contaminant levels (MCLs) for PFHxS, PFNA, HFPO-DA (GenX chemicals), and the Hazard Index standard for mixtures of PFHxS, PFNA, HFPO-DA, and PFBS, while retaining the standards for PFOA and PFOS. The second proposed rule would extend the compliance

deadline for public water systems by two years, from 2029 to 2031. The coalition stated that Wisconsin law generally directs state drinking water standards to align with federal standards and that state groundwater standards should be based on those drinking water standards. The coalition asserted that the proposed groundwater standards should be aligned with, and no more stringent than, corresponding federal requirements.

Response: In Section 17 of the EIA and Section 6 of the Board Order, the department acknowledged that EPA has proposed regulatory actions that would rescind the MCLs for PFHxS, PFNA, and HFPO-DA (GenX chemicals), as well as the Hazard Index standard applicable to mixtures containing PFHxS, PFNA, HFPO-DA, and PFBS. EPA indicated that these proposed actions are based, in part, on concerns regarding procedural requirements under the Safe Drinking Water Act. However, as of the date of this document, the federal drinking water standards remain in effect. Wisconsin law provides the department with authority to establish groundwater standards independent of federal drinking water standards. Section 160.07(4), Stats., establishes the framework for developing Enforcement Standards and requires consideration of factors including federal numbers, state drinking water standards, and recommendations developed by the DHS. The statute does not require groundwater standards to be established only when a corresponding federal drinking water standard exists. DHS continues to have authority to develop health-based recommendations for substances in drinking water and groundwater. DHS's recommendations for PFAS are supported by its evaluation of available toxicological information, including more than 100 key studies identified as relevant to its assessment. These recommendations remain available to inform groundwater standard development regardless of future changes to federal drinking water regulations. The department expanded its discussion of the statutory requirements in s. 160.07(4), Stats., in Section 17 of the EIA, and Section 6 of the Board Order.

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

1. Type of Estimate and Analysis ☐ Original ☒ Updated ☐ Corrected	2. Date 8/31/2026								
3. Administrative Rule Chapter, Title and Number (and Clearinghouse Number if applicable) Ch. NR 140 – Groundwater Quality (CR 26-035)									
4. Subject Numeric standards to minimize the concentration of polluting substances for certain Per- and Polyfluoroalkyl Substances (PFAS) in groundwater based on the 2025 DHS recommendations. DG-02-25									
5. Fund Sources Affected ☒ GPR ☐ FED ☐ PRO ☐ PRS ☐ SEG ☐ SEG-S	6. Chapter 20, Stats. Appropriations Affected 20.370(4)(ma) and 20.370(4)(mq)								
7. Fiscal Effect of Implementing the Rule <table style="width: 100%;"><tr><td>☐ No Fiscal Effect</td><td>☐ Increase Existing Revenues</td><td>☐ Increase Costs</td><td>☐ Decrease Costs</td></tr><tr><td>☐ Indeterminate</td><td>☐ Decrease Existing Revenues</td><td>☒ Could Absorb Within Agency's Budget</td><td></td></tr></table>		☐ No Fiscal Effect	☐ Increase Existing Revenues	☐ Increase Costs	☐ Decrease Costs	☐ Indeterminate	☐ Decrease Existing Revenues	☒ Could Absorb Within Agency's Budget	
☐ No Fiscal Effect	☐ Increase Existing Revenues	☐ Increase Costs	☐ Decrease Costs						
☐ Indeterminate	☐ Decrease Existing Revenues	☒ Could Absorb Within Agency's Budget							
8. The Rule Will Impact the Following (Check All That Apply) <table style="width: 100%;"><tr><td>☐ State's Economy</td><td>☒ Specific Businesses/Sectors</td></tr><tr><td>☒ Local Government Units</td><td>☐ Public Utility Rate Payers</td></tr><tr><td></td><td>☐ Small Businesses (if checked, complete Attachment A)</td></tr></table>		☐ State's Economy	☒ Specific Businesses/Sectors	☒ Local Government Units	☐ Public Utility Rate Payers		☐ Small Businesses (if checked, complete Attachment A)		
☐ State's Economy	☒ Specific Businesses/Sectors								
☒ Local Government Units	☐ Public Utility Rate Payers								
	☐ Small Businesses (if checked, complete Attachment A)								
9. Estimate of Implementation and Compliance to Businesses, Local Governmental Units and Individuals, per s. 227.137(3)(b)(1). The Department of Natural Resources (department) anticipates that the highest two-year cost will be \$9,917,838 as a result of the establishment of groundwater standards for perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), perfluorohexane sulfonic acid (PFHxS), perfluorononanoic acid (PFNA), perfluorobutane sulfonic acid (PFBS), and hexafluoropropylene oxide dimer acid (HFPO-DA, commonly known as "GenX Chemicals"). The estimated costs include all relevant cost components and conservatively identify facilities that will require additional action. In addition, 2025 Wisconsin Acts 200 and 201 were signed on April 6, 2026. 2025 Wisconsin Acts 200 and 201 authorize funding for several activities aimed at addressing PFAS contamination in the state, including certain activities accounted for in this EIA, such as sampling of liquid waste, and sampling of leachate and groundwater at certain landfills. While the specific allocation and implementation details of this funding have not yet been finalized, its availability will reduce the overall costs associated with implementing this rule. As a result, the estimated cost is assumed to be the upper bound and therefore reasonable implementation and compliance costs will be less than what is estimated in this document.									
10. Would Implementation and Compliance Costs to Businesses, Local Governmental Units and Individuals Be \$10 Million or more Over Any 2-year Period, per s. 227.137(3)(b)(2)? ☐ Yes ☒ No									
11. Policy Problem Addressed by the Rule The objective of the proposed rule is to set numeric groundwater quality standards for six PFAS – PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA – to minimize the concentrations of such substances in groundwater [ss. 160.001 and 160.07(5), Stats.], and to establish clear numerical thresholds that determine when regulatory action is required. Proposed groundwater quality standards are based on recommendations developed by the Wisconsin Department of Health Services (DHS), which also reflect federal numbers and most state drinking water standards.									

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

The groundwater quality standards in ch. NR 140, Wis. Adm. Code, include Enforcement Standards (ES) and Preventive Action Limits (PAL). The rule proposes the ES and PAL standards shown in Table 1:

Table 1. Proposed NR 140 groundwater quality standards.

Substance	Enforcement Standard (in ng/L or ppt)	Preventive Action Limit (in ng/L or ppt)
PFOA	4	0.4
PFOS	4	0.4
PFHxS	10	1
PFNA	10	1
PFBS	2,000	200
HFPO-DA	10	1

The objective of the proposed standards is to protect public health, given that groundwater is the primary source of drinking water throughout Wisconsin. PFAS break down very slowly and can bioaccumulate in people. PFAS may cause reproductive effects such as decreased fertility and pregnancy-induced hypertension; developmental effects or delays in children (including birth defects and low birth weight); increased risk of some cancers, including prostate, kidney, and testicular cancers; decreased antibody response to vaccines; and increased cholesterol. Specific health effects for PFAS are described in more detail below and are included in the DHS recommendations for groundwater standards, available here: <https://www.dhs.wisconsin.gov/publications/p03694.pdf> and <https://www.dhs.wisconsin.gov/water/gws.htm>.

12. Summary of the Businesses, Business Sectors, Associations Representing Business, Local Governmental Units, and Individuals that may be Affected by the Proposed Rule that were Contacted for Comments.

In 2021 and 2023, the department initiated rulemaking for new groundwater standards for several PFAS, including PFOA, PFOS, PFBS, and HFPO-DA (proposed rules SS 090-19 (DG-15-19) and SS 075-22 (DG-17-22)). At those times, the department solicited and received comments on draft EIAs prepared for both proposed rulemakings during the public comment periods and stakeholder meetings. Feedback was received from several organizations and individuals, including Citizens for Safe Water Around Badger, Clean Wisconsin, League of Wisconsin Municipalities, League of Women Voters of Wisconsin, Madison Metropolitan Sewerage District, Municipal Environmental Group – Wastewater Division, Midwest Food Products Association, Save Our Water, Wisconsin Conservation Voters, Wisconsin's Greenfire, Wisconsin Manufacturers and Commerce, Wisconsin Paper Council, and Wisconsin Solid Waste PFAS Coalition.

The current rulemaking includes a larger set of PFAS and incorporates updated numeric groundwater standards that differ from those proposed in prior rulemaking. However, in Wisconsin, the majority of known exceedances of the currently proposed standards are associated with PFOA and PFOS, both of which were included in previous efforts. Moreover, the department's statutory requirements have offset some of the implementation and compliance costs of PFAS groundwater standards since the department last pursued rule changes and developed an EIA in 2023. As a result of 2025 Wisconsin Act 201, the department is now required by statute to impose limitations or conditions for PFAS in every permit for landspreading of sewage sludge. Hence, when preparing the draft EIA for this rulemaking, the department considered the comments received on prior EIAs related to the cost of implementing PFAS groundwater standards, while also accounting for subsequent legal, regulatory, and policy developments that affect implementation costs.

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

As part of this rulemaking, the department also solicited comments and information relevant to the potential economic impacts of the proposed rule. Notification of the comment period was emailed to the subscribers of the following department distribution lists: Drinking Water and Groundwater Study Group, Landfill, NR 140 Rule Changes, PFAS Contamination in Wisconsin, Remediation and Redevelopment Newsletter, and Solid Waste News.

The department received comments on the draft EIA from several individuals and organizations, including Madison Metropolitan Sewerage District, Midwest Environmental Advocates, Milwaukee River Keeper, Municipal Environmental Group – Wastewater Division, Oneida County Clean Waters Action, River Alliance of Wisconsin, Save Our Water, Sierra Club Wisconsin, Wisconsin Conservation Voters, Wisconsin Green Fire and an industry coalition consisting of Wisconsin Manufacturers & Commerce, Wisconsin Paper Council, Midwest Food Productions Association, and American Chemistry Council.

The department considered these comments when finalizing the EIA.

13. Identify the Local Governmental Units that Participated in the Development of this EIA.

In 2023, as part of the prior rulemaking for SS 075-22 (DG-17-22), many local government units were included in a virtual stakeholder meeting. The department provided these local governments an opportunity to submit comments and information relevant to the potential economic impacts of the proposed rule during that meeting. At that time, the department received written comments from the League of Wisconsin Municipalities, an association with 607 member cities and villages, the Municipal Environmental Group – Wastewater Division, an organization of over 100 municipalities statewide that own and operate wastewater treatment plants, and the Madison Metropolitan Sewerage District.

While the recommended groundwater standards proposed in this rulemaking differ from those in prior efforts and include a larger number of PFAS, there are commonalities in general concerns and in cost-related issues associated with implementation. However, as stated above, certain factors have changed since the prior EIA, including enactment of new laws and other regulatory and policy developments. In preparing the draft EIA for this rulemaking, the department considered the comments related to the economic impacts and costs of implementing PFAS groundwater standards that were received during the previous draft EIA processes and stakeholder engagement activities from the aforementioned local government units.

Local government units were included in the notifications to solicit comments and information relevant to the potential economic impacts of this proposed rule. Two comments were received from the Municipal Environmental Group – Wastewater Division and the Madison Metropolitan Sewerage District. The department considered these comments when finalizing the EIA.

14. Summary of Rule's Economic and Fiscal Impact on Specific Businesses, Business Sectors, Public Utility Rate Payers, Local Governmental Units and the State's Economy as a Whole (Include Implementation and Compliance Costs Expected to be Incurred)

The department acknowledges that addressing PFAS contamination is an expensive problem facing Wisconsin. The costs of dealing with PFAS through the various regulatory and voluntary actions happening across the state are substantial. The department also recognizes that there is a significant benefit derived from preventing and remediating

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

PFAS contamination, including benefits to human health and wellbeing, economic productivity (avoided costs), and ecosystem integrity.

Many of the costs associated with addressing PFAS contamination in Wisconsin are not directly related to the implementation of this proposed rule – which focuses on the establishment of numeric groundwater standards in ch. NR 140, Wis. Adm. Code, for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA. Some of the costs of addressing PFAS contamination in Wisconsin relate to compliance with promulgated surface water and state drinking water standards. Other costs relate to voluntary actions that private individuals and facilities may choose to take but are not required by law to do so. For example, industry has begun transitioning to alternatives for certain PFAS, and PFOA and PFOS are no longer manufactured in the United States. Some other costs are currently incurred under the department's existing authority to require such actions. For example, remedial actions are required by existing laws for addressing discharges of hazardous substances, which include certain PFAS. Likewise, under recent legislation, 2025 Wisconsin Act 201, the department is required to impose limitations or conditions related to PFAS in all permits for the land application of sewage sludge. These other actions are necessary to effectively address the public health and environmental risks of PFAS in Wisconsin and have a separate cumulative cost. However, those costs are not the result of groundwater standards for PFAS or this proposed rule, and the costs will be incurred regardless of whether this proposed rule is adopted.

In accordance with s. 227.137, Stats., the department focused this EIA on the economic impact of setting numeric groundwater standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA. This analysis evaluates the implementation and compliance costs that are reasonably expected to be incurred by or passed along to businesses, local governmental units, and individuals. These estimates reflect the department's current administrative and statutory authority, including the regulatory programs and rules that reference standards in ch. NR 140, Wis. Adm. Code.

The department expects that both the technology and the regulatory requirements for addressing PFAS will be the subject of continued attention and development. All state regulatory agencies, including the Department of Natural Resources, Department of Transportation, Department of Agriculture, Trade, and Consumer Protection, and Department of Safety and Professional Services, are required under ss. 160.19 to 160.25, Stats., to review any new groundwater standards and, if necessary, commence promulgation or amendment of their administrative rules for their regulatory programs that use NR 140 groundwater standards. The implementation and compliance costs of this rule could be affected – either increased or decreased – by changes in the regulatory authority or requirements of the programs that use the standards. Future rule changes cannot be defined here and would be assessed as part of the preparation of separate EIAs to evaluate the economic impacts of possible future proposed rules.

In addition, 2025 Wisconsin Acts 200 and 201 provides funding for several activities aimed at addressing PFAS contamination in the state. While the department anticipates that some of this funding could lower the costs of certain activities associated with this rulemaking, the specific allocation and implementation details are not yet finalized. Therefore, the cost estimates included in this EIA do not reflect potential cost reductions from this funding and should be considered conservative.

Implementation and compliance costs that are reasonably expected to be incurred by setting numeric groundwater standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA, as proposed in this rule, are summarized and explained in subsequent sections of this document.

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

SUMMARY OF COSTS

The department's reasonable estimate of implementation and compliance costs from all regulatory programs impacted by the proposed rule for groundwater standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA are summarized in Table 2. The cost assessment is based on identifying the highest costs incurred during any two-year period following implementation. Because wastewater treatment facilities operate under five-year permit cycles, the department assumes that these facilities will renew permits on a staggered basis over the five-year period. As a result, cumulative costs for these facilities are evaluated across the full five-year cycle, and the two years with the highest combined costs are selected for the analysis. Cost assumptions are based on prevailing market rates and professional judgment informed by recent PFAS testing contracts and laboratory fee schedules.

Table 2. Summary of costs associated with this rulemaking.

Category	Activity	Total Cost (\$)	Total Cost per category (\$)
Publicly owned treatment works that discharge treated wastewater through a land treatment/application system	PFAS sampling of groundwater	94,050	4,441,572
	PFAS sampling of liquid discharge	29,150	
	Source reduction measures	4,318,372	
Industrial wastewater treatment facilities that discharge liquid wastewater through a land treatment system	PFAS sampling of groundwater	65,850	3,195,866
	PFAS sampling of liquid discharge	21,200	
	Treatment of liquid effluent discharge	3,108,816	
Landfills	PFAS groundwater monitoring and well installation	2,280,400	2,280,400
TOTAL			9,917,838

ACTIVITIES FOR WHICH COSTS ARE NOT INCURRED

The department estimates that no cost will be incurred for the following categories: current and future remediation and redevelopment sites, private wells, public water systems, pit trench dewatering operations, and Wisconsin Pollutant Discharge Elimination System (WPDES)-permitted discharges for biosolids and industrial sludge. The rationale behind the estimate for each category is outlined below.

Current and Future Remediation and Redevelopment Sites with PFAS Contamination

Wisconsin's remediation and redevelopment program requires responsible parties to take actions necessary to restore the environment from a discharge of a hazardous substance under ch. 292, Stats. (the "Spills Law"). The definition of hazardous substance is a narrative standard defined in s. 292.01(5), Stats., and PFAS are regulated as hazardous substances under the Spills Law. In June 2025, this authority was confirmed by the Supreme Court of Wisconsin in *Wisconsin Manufacturers and Commerce, Inc. and Leather Rich, Inc. v. Wisconsin Natural Resources Board, et al.*, 2025 WI 26, ¶ 62, 416 Wis. 2d 561, 593, 21 N.W.3d 718, 733-734.

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

The department already has the ability to require responsible parties to test for several PFAS including PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA. To date, there are over 140 open remediation and redevelopment sites with identified PFAS contamination. These sites are at various stages of site investigation and remediation. The department recognizes that the costs for PFAS site investigations and remedial actions can be substantial. In the prior rulemaking effort, the department received comments estimating costs of over \$10 million in a two-year period for site investigation and remediation. While these costs are significant, the costs will not substantially change as a result of this rulemaking. These costs are for responsible parties to investigate and conduct remedial actions for discharges of PFAS – costs that are already occurring today because PFAS are regulated as a hazardous substance under the Spills Law.

When remediating for hazardous substances in groundwater that do not have a standard under ch. NR 140, Wis. Adm. Code, department rules authorize the development of a site-specific standard, which is usually based on the DHS health advisory levels, to protect public health, safety or welfare, or to prevent a significant damaging effect on groundwater or surface water quality for present or future consumptive or non-consumptive uses (*see* s. NR 722.09(2)(b)2., Wis. Adm. Code). Once statewide standards are promulgated, the cleanup goal established in s. NR 722.09(2)(b)1., Wis. Adm. Code, will be the Preventive Action Limit when economically and technically feasible. Responsible parties would be required to use promulgated Enforcement Standards rather than site-specific standards for remedial action. The site-specific standards currently in use and the groundwater standards recommended in this rulemaking for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA are consistent, because they are both based on DHS health advisory levels. Therefore, responsible parties would not see a change in their cleanup responsibilities as a result of the establishment of groundwater standards.

Whether the remedial goal is site-specific or based on a promulgated standard, the Spills Law requires responsible parties to take actions to minimize the harmful effect and restore the environment to the extent practicable (s. 292.11(3), Stats.). Selection of remedial actions that are practicable, taking into consideration what is technically and economically feasible, will be the same regardless of whether there are promulgated or site-specific standards. While remediation costs can be significant, those costs will not change as a result of the promulgation of standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA.

Private Wells

Private wells are regulated under ch. NR 812, Wis. Adm. Code. Based on the department's research, approximately 4% of private wells have PFAS detections exceeding the proposed PFAS Enforcement Standards. Wisconsin has approximately 800,000 private wells, meaning that an estimated 32,000 private wells may exceed the proposed PFAS Enforcement Standards. Individual private well owners may choose to install treatment or drill a new well to address PFAS pollutants in their well water. In some cases, where contamination is the result of a release or unauthorized discharge of PFAS to groundwater, responsible parties under the Spills Law may be required to provide an alternative source of drinking water to a private well owner. For individual private well owners, there are no regulatory implementation or compliance costs associated with the proposed PFAS groundwater standards that apply to private wells.

Public Water Systems

Effective July 1, 2026, Wisconsin promulgated revisions to ch. NR 809, Wis. Adm. Code. The revisions updated state drinking water standards for PFOA and PFOS and established state drinking water standards for PFHxS, PFNA, PFBS, and HFPO-DA, which public water supply systems are required to comply with.

During previous rulemaking efforts that included groundwater standards for PFOA and PFOS, the department received comments regarding the cost of water treatment for public water supply systems. Public water supply systems are

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

regulated under ch. NR 809, Wis. Adm. Code, and are not subject to groundwater standards. Therefore, there are no implementation or compliance costs for public water supply systems as a result of the proposed groundwater standards.

Pit Trench Dewatering

The vast majority of dewatering project discharges are directed to surface water, as the primary purpose of construction dewatering is to remove groundwater from trenches or excavation pits to allow construction activities to proceed. Contractors typically strive to avoid a discharge back to groundwater because that makes it more difficult to establish and maintain a cone of depression needed to lower the water table for construction activities.

Pit trench dewatering discharges are typically regulated under a WPDES general permit, and these discharges are temporary rather than ongoing. During dewatering of a construction site pit/trench, contaminated groundwater may be encountered or intercepted from a nearby or unidentified contamination site. In such cases, discharges of contaminated groundwater to waters of the state, which includes surface waters and groundwater, is regulated under the general permit for *Contaminated Groundwater from Remedial Action Operations* (WI-0046566-07-0). In addition to applying for coverage under this general permit, applicants must also contact and notify the department's Remediation and Redevelopment Program about the site.

Although the current general permit does not explicitly require PFAS sampling, the department is currently requiring initial PFAS screening of groundwater discharges at sites located near known PFAS contamination. PFAS-contaminated groundwater may be encountered during pit trench dewatering operations. Infiltration of this PFAS-contaminated groundwater back to the same aquifer it was pumped from is allowed, but is not anticipated to occur often. The department is aware of only three cases where a general permit has been issued to allow discharges back to an aquifer in the past five years.

As current department policy now allows discharges of PFAS-contaminated groundwater under a general permit, and as the Remediation and Redevelopment Program currently has the authority to require necessary remedial actions to protect public health and groundwater and surface water quality, the department does not anticipate that establishing groundwater standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA would incur any additional costs at sites where PFAS-contaminated groundwater is encountered during pit trench dewatering operations. Therefore, costs associated with pit or trench dewatering are not included in the economic impact estimates for this rule.

WPDES-Permitted Discharges for Biosolids and Industrial Sludge

The department regulates the discharge of industrial and municipal/domestic wastewater by-product solids, biosolids, and sludges through land treatment/disposal systems under chs. NR 204 and NR 214, Wis. Adm. Code. Land treatment/disposal systems include both systems located on "dedicated sites," such as absorption/seepage pond systems, and systems where waste is land applied/land spread on multiple agricultural fields for beneficial use as a fertilizer or soil conditioner. Because wastes are discharged on a relatively continuous basis, groundwater monitoring systems are often installed at land treatment/disposal systems located on dedicated sites. Wastes that are land spread are generally applied on a rotational basis to multiple agricultural fields, with different fields being used in different years. Because waste is not applied to a single field on a continuous basis, groundwater monitoring systems are not installed at land spreading sites.

Industrial and municipal/domestic waste may contain PFAS. Recognizing this possibility, the department has, since October 1, 2022, included PFOA/PFOS monitoring of discharges to surface water in WPDES permits (in accordance with the requirements of Subchapter VIII of ch. NR 106, Wis. Adm. Code). 2025 Wisconsin Act 201 added s. 283.82(4)(b), Stats., which requires the department to issue a general permit that requires PFAS monitoring (including

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

those addressed in this rulemaking) for sludge and allows for modifications based on sampling results. Because the department already uses existing authority to require monitoring and sampling of biosolids and industrial sludges containing PFAS, monitoring costs associated with such facilities are excluded from this EIA.

2025 Wisconsin Act 201 also added s. 283.82(4)(a), Stats., which requires the department to include limitations or conditions related to PFAS in all permits for the land application of sewage sludge. As a result, actions associated with PFAS-related limitations on the land application of biosolids will occur independently of the enactment of PFAS groundwater standards, and no additional costs are expected to be associated with these activities.

ACTIVITIES INCLUDED IN THE EIA

WPDES-Permitted Discharges for Liquid Waste

Facilities that discharge under a WPDES permit are required to comply with state groundwater quality standards in ch. NR 140, Wis. Adm. Code. Under ss. 283.31(3) and (4), Stats., WPDES permits must include terms and conditions that prevent exceedances of groundwater standards. Some WPDES-permitted Wastewater Treatment Facilities (WWTFs) discharge municipal, domestic, or industrial liquid waste through a land treatment or disposal system, such as an absorption pond or seepage cell. Such facilities will be affected by the proposed groundwater standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA. Since these permits are reissued every five years, PFAS-related sampling and reduction requirements would typically be incorporated at the next permit reissuance and in subsequent cycles. Consequently, the department anticipates that approximately 20% of permitted facilities will be affected each year during the first five years following implementation of the proposed groundwater standards.

1. Publicly Owned Treatment Works That Discharge Liquid Wastewater Through a Land Treatment/Application System

The department identified 87 Publicly Owned Treatment Works (POTWs) that discharge effluent to groundwater, with six of these having significant industrial users discharging to them. Should this rule be promulgated, these six facilities will be required to conduct quarterly monitoring of liquid discharges, and groundwater monitoring as outlined in s. NR 206.10, Wis. Adm. Code.

Permits are issued on a five-year cycle. In year one, two POTWs would become subject to the new monitoring requirements. In each subsequent year, one additional facility would be required to perform PFAS sampling. This schedule represents approximately 20% of facilities per year over a five-year cycle. However, because there are six facilities in total, two facilities would be included in the first year to align with the five-year schedule. The estimated cost per sample is \$550 [*\$450 for PFAS laboratory analysis and \$100 for sample handling and logistics*]. A comment received during the solicitation of comments on the draft EIA noted that the estimated cost per blank sample should be \$450 rather than the \$300 previously identified in the draft EIA. In response, the department consulted with the State Laboratory of Hygiene and relevant department program staff and determined that field blanks are required only for drinking water samples. For other sample types, equipment blanks are collected to verify that sampling equipment is not a source of PFAS contamination. For groundwater sampling, equipment blanks are generally collected only at the beginning of a sampling project, and equipment blanks are optional for grab samples because sampling equipment is not used. For purposes of this analysis, the department conservatively assumes that each facility discharging liquid wastewater through a land treatment or land application system would collect one equipment blank at the beginning of each sampling year for both groundwater and liquid discharge sampling. The cost of the equipment blank is \$450, consistent with the public comment received. Given this new information, the department revised the estimated equipment blank costs accordingly.

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

Groundwater sampling

According to s. NR 206.10(4), Wis. Adm. Code, PFAS groundwater sampling may be required every six to seven weeks until eight samples have been collected, after which sampling will occur quarterly. This results in a total of nine sampling events in year one and four samples in year two. The department assumes that two facilities will be up for permit renewal in year one, and one additional facility would be up for permit renewal for each subsequent year (for a total of six facilities over a five-year period).

- In year one, two facilities would be in their first year of monitoring and would each collect nine samples, for a total of 18 samples [*nine sampling events × two facilities*]. Assuming that monitoring wells are already installed, and that each facility has three wells, the cost of PFAS sampling would be \$1,650 per facility per sampling event [*\$550 for PFAS sampling × three wells*]. In addition, the department assumes that each facility would collect one equipment blank at the beginning of the sampling year at a cost of \$450 per facility. Accordingly, the total estimated PFAS groundwater monitoring cost for year one would be \$30,600 [*\$1,650 per sampling event × 18 total sampling events plus \$900 in equipment blanks*].
- In year two, one additional facility would enter its first year of monitoring and collect nine samples, while the two facilities permitted in year one would transition to quarterly sampling. The first-year facility would incur a cost of \$15,300 [*\$1,650 cost per sampling event × nine sampling events plus \$450 for equipment blank*] and the two existing facilities would incur a combined cost of \$14,100 [*\$1,650 cost per sampling event × four sampling events × two facilities plus \$900 for equipment blanks*] resulting in a total cost of \$29,400 for year two.
- In year three, one new facility would enter its first year of monitoring, while three facilities would conduct quarterly sampling. The first-year facility would incur a cost of \$15,300 [*\$1,650 cost per sampling event × nine sampling events plus \$450 for equipment blank*], and the three facilities conducting quarterly sampling would incur a combined cost of \$21,150 [*\$1,650 cost per sampling event × four sampling events × three facilities plus \$1,350 for equipment blanks*], for a total annual cost of \$36,450.
- In year four, one additional facility would enter its first year of monitoring, and four facilities would conduct quarterly sampling. The cost for the first-year facility would be \$15,300 [*\$1,650 cost per sampling event × nine sampling events plus \$450 for equipment blank*], and the combined cost for the four facilities conducting quarterly sampling would be \$28,200 [*\$1,650 cost per sampling event × four sampling events × four facilities plus \$1,800 for equipment blanks*], resulting in a total PFAS groundwater monitoring cost of \$43,500.
- In year five, the final facility would enter its first year of monitoring, while the remaining five facilities would conduct quarterly sampling. The first-year facility would incur a cost of \$15,300 [*\$1,650 cost per sampling event × nine sampling events plus \$450 for equipment blank*], and the five facilities conducting quarterly sampling would incur a combined cost of \$35,250 [*\$1,650 cost per sampling event × four sampling events × five facilities plus \$2,250 for equipment blanks*] resulting in a total annual cost of \$50,550.

The highest cumulative cost for PFAS sampling of groundwater in any two-year period would be incurred in years four and five, for a total cost of \$94,050 [*\$43,500 total cost for PFAS sampling of groundwater in year*

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

four plus \$50,550 total cost for PFAS sampling of groundwater in year five]. Table 3 summarizes annual costs for groundwater PFAS monitoring for POTWs discharging to groundwater.

Table 3. Annual cost of PFAS sampling of groundwater.

Year	Permit Renewals (P)	Monitoring events	Cost (\$)
First year	P1 & P2	2x9 = 18	30,600
Second year	P3	9 plus 2x4=17	29,400
Third year	P4	9 plus 3x4=21	36,450
Fourth year	P5	9 plus 4x4=25	43,500
Fifth year	P6	9 plus 5x4=29	50,550

Note: P1 refers to the permit renewal of facility one; P2 refers to the permit renewal of facility two, etc. The annual cost is estimated assuming \$1,650 per sampling event, and an equipment blank for each facility collected in each year at a cost of \$450.

Liquid effluent discharge sampling

Assuming two facilities will be up for permit renewal in year one, and one additional facility would be up for permit renewal for each subsequent year, PFAS liquid effluent discharge monitoring costs would increase as additional facilities are permitted. All facilities are assumed to conduct quarterly sampling only, resulting in four samples per facility per year at approximately \$550 per facility per sampling event. The department assumes that each facility collects one equipment blank per year at a cost of \$450.

- In year one, two facilities would each collect four samples, for a total annual cost of \$5,300 [*\$550 cost per sampling event × four sampling events × two facilities plus \$900 for equipment blanks*].
- In year two, three facilities would conduct quarterly sampling, resulting in a total cost of \$7,950 [*\$550 cost per sampling event × four sampling events × three facilities plus \$1,350 for equipment blanks*].
- In year three, four facilities would be monitored, with a total annual cost of \$10,600 [*\$550 cost per sampling event × four sampling events × four facilities plus \$1,800 for equipment blanks*].
- In year four, five facilities would conduct quarterly sampling, resulting in a total cost of \$13,250 [*\$850 cost per sampling event × four sampling events × five facilities plus \$2,250 for equipment blanks*].
- In year five, all six facilities would be subject to quarterly PFAS liquid effluent discharge monitoring, resulting in the highest annual cost of \$15,900 [*\$550 cost per sampling event × four sampling events × six facilities plus \$2,700 for equipment blanks*].

The highest cumulative cost for PFAS sampling of liquid discharge in any two-year period would be incurred in years four and five, for a total cost of \$29,150 [*\$13,250 total cost for PFAS sampling of liquid discharge in year four plus \$15,900 total cost for PFAS sampling of liquid discharge in year five*]. Table 4 summarizes annual costs for PFAS monitoring of liquid discharge for POTWs discharging to groundwater.

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

Table 4. Annual cost for PFAS sampling of municipal liquid effluent discharges.

Year	Permit Renewals (P)	Monitoring events	Cost (\$)
First year	P1 & P2	2x4=8	5,300
Second year	P3	3x4=12	7,950
Third year	P4	4x4=16	10,600
Fourth year	P5	5x4=20	13,250
Fifth year	P6	6x4=24	15,900

Note: P1 refers to the permit renewal of facility one; P2 refers to the permit renewal of facility two, etc. The cost was estimated assuming \$550 per sampling event and an equipment blank for each facility collected in each year at a cost of \$450.

Source reduction measures

Currently, no substantial data exist on PFAS concentrations in POTW discharges to groundwater, making it difficult to determine what proportion of facilities may exceed proposed groundwater standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA. Based on effluent sampling data collected by the department, the department conservatively estimates that six facilities in total may require action, with two facilities in year one and one additional facility in each subsequent year.

POTWs determined to be receiving influent from an identified PFAS source will be required to either install treatment to reduce PFAS in the facility's effluent discharge or require the contributing industrial source to implement pretreatment before discharging liquid waste to the POTW. For the purposes of this EIA, the department assumes that source reduction measures will be implemented, with the industrial contributor installing treatment, as this is the most cost-effective approach. This will likely necessitate that the industrial contributors to these facilities install appropriate treatment systems prior to discharging their liquid waste to the POTW. Because POTWs that discharge liquid waste are typically small and because the department can identify contributing industries to each POTW through significant industrial user codes, the department anticipates that for each POTW with elevated PFAS levels, there will generally be a single primary industrial contributor responsible for the high PFAS concentrations. Facilities found to be accepting influent from an identified PFAS source will likely require that PFAS source industry to install treatment before accepting the waste. The department assumes that wastewater effluent from each identified PFAS source industrial facility has an average flow rate of 20 gallons per minute, based on available data for potential industrial sources discharging to POTWs. At the assumed flow rate, granular activated carbon (GAC) treatment costs consist of a one-time installation cost of \$70,000 for each newly impacted facility and an annual operation and maintenance costs of \$379,852 per facility. The department's cost estimates are based on the rental of the GAC treatment equipment rather than permanent installation of treatment systems. The department anticipates that facilities will rent the equipment to minimize their initial capital costs while they work to identify legacy sources within the facility, given that many types of PFAS have been phased out and are no longer widely used by industries.

- In year one, the department anticipates two facilities to be impacted. Each facility would incur both the installation cost and annual operational costs, resulting in a total first-year cost of \$899,704 [*per facility: \$70,000 for one-time treatment system installation and \$379,852 for annual operation of the installed treatment*].
- In year two, one additional facility would require treatment system installation, while the two facilities permitted in year one would continue to incur annual operational costs. The total treatment cost for year

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

two would be \$1,209,556 [*\$379,852 operational costs × three facilities, plus \$70,000 for treatment system installation of the facility permitted in year two*].

- In year three, a fourth facility would require installation, while the three facilities permitted in prior years would incur annual operational costs. The total treatment cost for year three would be \$1,589,408 [*\$379,852 operational costs × four facilities, plus \$70,000 for treatment system installation of the facility permitted in year three*].
- In year four, a fifth facility would require installation, while the four facilities permitted in prior years would incur annual operational costs. The total treatment cost for year four would be \$1,969,260 [*\$379,852 operational costs × five facilities, plus \$70,000 for treatment system installation of the facility permitted in year four*].
- In year five, a sixth facility would require installation, while the five facilities permitted in prior years would incur annual operational costs. The total treatment cost for year five would be \$2,349,112 [*\$379,852 operational costs × six facilities, plus \$70,000 for treatment system installation of the facility permitted in year five*].

The highest cumulative cost for source reduction measures in any two-year period would be incurred in years four and five, for a total cost of \$4,318,372 [*\$1,969,260 total cost for treatment of liquid discharge in year four plus \$2,349,112 total cost for treatment of liquid discharge in year five*]. Table 5 summarizes treatment costs for POTWs discharging treated wastewater effluent to groundwater.

Table 5. Annual cost for treating liquid discharges.

Year	Permit Renewals (P)	Installation cost (\$)	Operational costs (\$)	Total Cost (\$)
First year	P1 & P2	140,000	759,704	899,704
Second year	P3	70,000	1,139,556	1,209,556
Third year	P4	70,000	1,519,408	1,589,408
Fourth year	P5	70,000	1,899,260	1,969,260
Fifth year	P6	70,000	2,279,112	2,349,112

Note: P1 refers to the permit renewal of facility one; P2 refers to the permit renewal of facility two, etc.

The total economic impact for this category of facilities over a two-year period is \$4,441,572 [*\$94,050 for PFAS groundwater monitoring, plus \$29,150 for PFAS monitoring of liquid discharges, plus \$4,318,372 for source reduction measures*].

2. Industrial Wastewater Treatment Facilities That Discharge Liquid Wastewater Through a Land Treatment/Application System

The department identified 86 industrial WWTFs that discharge liquid wastewater to groundwater. Should groundwater standards be promulgated for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA, these facilities will be required to conduct quarterly monitoring of liquid discharges, and groundwater monitoring prior to and during operations.

The department used data outlined in the Michigan Dept. of Environment, Great Lakes and Energy's (EGLE's) comprehensive study of industrial sources of PFOS in Michigan to identify potential sources of PFOS in Wisconsin. After reviewing EGLE's Standard Industrial Classification (SIC) codes for industries with elevated PFOS levels, the department cross-referenced those industry types with its database of industrial facilities

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

holding individual or general WPDES permits. While the SIC codes specifically target PFOS, the department assumes these industries may also contribute other PFAS compounds, as manufacturers have likely shifted to alternative PFAS chemicals. Through this analysis, four facilities were identified as potentially being associated with PFAS-containing waste based on their SIC codes and expected waste characteristics.

The department assumes that approximately 20% of industrial WWTFs discharging to groundwater undergo permit renewal each year. Therefore, in the first year, one facility would become subject to the new monitoring requirements, followed by one additional facility in each subsequent year (one facility per year will cover all four facilities over a five-year period). The estimated cost per sample is \$550 [*\$450 for PFAS laboratory analysis and \$100 for sample handling and logistics*]. As noted in the section addressing costs of POTWs that discharge liquid wastewater through a land treatment/application system, the department revised the estimated cost of blank samples in response to a comment stating that the cost should be increased from \$300 to \$450. Following additional consultation and review, the department now assumes an equipment blank cost of \$450 per sample, and that one equipment blank would be collected annually at each impacted facility.

Groundwater sampling

According to s. NR 214.21, Wis. Adm. Code, PFAS groundwater sampling may be required but the frequency of sampling is not specified. Assuming the same sample frequency as for POTWs discharging to groundwater, groundwater sampling at these facilities will occur every six to seven weeks until eight samples have been collected, after which sampling will occur quarterly. This results in a total of nine sampling events in the first year and four sampling events in the second year for each facility. Assuming that monitoring wells are already installed, and that each facility has three wells, the cost of PFAS sampling would be \$1,650 per facility per sampling event [*\$550 for PFAS sampling × three wells*].

- In year one, one facility would enter its first year of monitoring and collect nine samples. At a cost of \$1,650 per facility per sampling event, and a cost of \$450 for equipment blank, the resulting total PFAS groundwater monitoring cost would be \$15,300 for year one [*\$1,650 cost per sampling event × nine sampling events plus \$450 for equipment blank*].
- In year two, one additional facility would enter its first year of monitoring and collect nine samples, while the facility permitted in year one would transition to quarterly sampling. The first-year facility would incur a cost of \$15,300 [*\$1,650 cost per sampling event × nine sampling events plus \$450 for equipment blank*], and the existing facility would incur a cost of \$7,050 [*\$1,650 cost per sampling event × four sampling events × one facility plus \$450 for equipment blank*] resulting in a total cost of \$22,350 for year two.
- In year three, one new facility would enter its first year of monitoring, while two facilities would conduct quarterly sampling. The first-year facility would incur a cost of \$15,300 [*\$1,650 cost per sampling event × nine sampling events plus \$450 for equipment blank*], and the two facilities conducting quarterly sampling would incur a combined cost of \$14,100 [*\$1,650 cost per sampling event × four sampling events × two facilities plus \$900 for equipment blanks*], for a total annual cost of \$29,400.
- In year four, one additional facility would enter its first year of monitoring, and three facilities would conduct quarterly sampling. The cost for the first-year facility would be \$15,300 [*\$1,650 cost per sampling event × nine sampling events plus \$450 for equipment blank*], and the combined cost for the three facilities conducting quarterly sampling would be \$21,150 [*\$1,650 cost per sampling event × four*

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

sampling events × three facilities plus \$1,350 for equipment blanks], resulting in a total PFAS groundwater monitoring cost of \$36,450.

- In year five, all four facilities would conduct quarterly sampling for a total cost of \$28,200 [*\$1,650 cost per sampling event × four sampling events × four facilities plus \$1,800 for equipment blanks*].

The highest cumulative cost for PFAS sampling of groundwater in any two-year period would be incurred in years three and four, for a total cost of \$65,850 [*\$29,400 total cost for PFAS sampling of groundwater in year three plus \$36,450 total cost for PFAS sampling of groundwater in year four*]. Table 6 summarizes annual costs for groundwater PFAS monitoring for industrial wastewater facilities discharging to groundwater.

Table 6. Annual cost of PFAS sampling of groundwater.

Year	Permit Renewals (P)	Monitoring events	Cost (\$)
First year	P1	9	15,300
Second year	P2	9 plus 4=13	22,350
Third year	P3	9 plus 2x4=17	29,400
Fourth year	P4	9 plus 3x4=21	36,450
Fifth year	--	4x4=16	28,200

Note: P1 refers to the permit renewal of facility one; P2 refers to the permit renewal of facility two, etc. The cost is estimated assuming \$1,650 per sampling event and an equipment blank for each facility collected in each year at a cost of \$450.

Liquid effluent discharge sampling

Assuming one facility is permitted in year one and one additional facility is permitted in each subsequent year, PFAS liquid effluent discharge monitoring costs would increase as additional facilities will be up for permit renewal. All facilities are assumed to conduct quarterly sampling only, resulting in four samples per facility per year at approximately \$550 per facility per sampling event [*\$450 for PFAS laboratory analysis and \$100 for sample handling and logistics*].

- In year one, one facility would collect four samples, for a total annual cost of \$2,650 [*\$550 cost per sampling event × four sampling events × one facility plus \$450 for equipment blank*].
- In year two, two facilities would conduct quarterly sampling, resulting in a total cost of \$5,300 [*\$550 cost per sampling event × four sampling events × two facilities plus \$900 for equipment blanks*].
- In year three, three facilities would be monitored, with a total annual cost of \$7,950 [*\$550 cost per sampling event × four sampling events × three facilities plus \$1,350 for equipment blanks*].
- In year four, all four facilities would conduct quarterly sampling, resulting in a total cost of \$10,600 [*\$550 cost per sampling event × four sampling events × four facilities plus \$1,800 for equipment blanks*].
- In year five, all four facilities would continue to be subject to quarterly PFAS liquid discharge monitoring, resulting in the highest annual cost of \$10,600 [*\$550 cost per sampling event × four sampling events × four facilities plus \$1,800 for equipment blanks*].

The highest cumulative cost for PFAS sampling of liquid discharge in any two-year period would be incurred in years four and five, for a total cost of \$21,200 [*\$10,600 total cost for PFAS sampling of liquid discharge in year four plus \$10,600 total cost for PFAS sampling of liquid discharge in year five*]. Table 7 summarizes annual

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

costs for PFAS monitoring of liquid effluent discharges for industrial wastewater facilities discharging to groundwater.

Table 7. Annual cost of PFAS sampling of liquid discharges.

Year	Permit Renewals (P)	Monitoring events	Cost (\$)
First year	P1	4	2,650
Second year	P2	2x4=8	5,300
Third year	P3	3x4=12	7,950
Fourth year	P4	4x4=16	10,600
Fifth year	--	4x4=16	10,600

Note: P1 refers to the permit renewal of facility one; P2 refers to the permit renewal of facility two, etc. The cost is estimated assuming \$550 per sampling event, and an equipment blank for each facility collected in each year at a cost of \$450.

Treatment of liquid effluent discharge

Currently, no substantial data exist on PFAS concentrations in industrial liquid discharges to groundwater, making it difficult to determine what proportion of facilities may exceed proposed groundwater standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA. Hence, the department conservatively assumes that the four facilities subject to monitoring would also be required to treat their liquid waste to reduce PFAS levels prior to discharging to groundwater. Assuming a flow rate of 20 gallons per minute, the department estimates that renting a granular activated carbon system for PFAS treatment would include a one-time installation cost of \$70,000 and an annual operation and maintenance cost of \$379,852.

- In year one, the department anticipates one facility to be impacted and incur both the installation cost and annual operational costs, resulting in a total first-year cost of \$449,852 [*\$70,000 for one-time treatment system installation and \$379,852 for annual operation of the installed treatment*].
- In year two, one additional facility would require treatment system installation, while the facility permitted in year one would continue to incur annual operational costs. The total treatment cost for year two would be \$829,704 [*\$379,852 operational costs × two facilities, plus \$70,000 for treatment system installation of the facility permitted in year two*].
- In year three, a third facility would require installation, while the two facilities permitted in prior years would incur annual operational costs. The total treatment cost for year three would be \$1,209,556 [*\$379,852 operational costs × three facilities, plus \$70,000 for treatment system installation of the facility permitted in year three*].
- In year four, a fourth facility would require installation, while the three facilities permitted in prior years would incur annual operational costs. The total treatment cost for year four would be \$1,589,408 [*\$379,852 operational costs × four facilities, plus \$70,000 for treatment system installation of the facility permitted in year four*].
- In year five, all four facilities permitted in prior years would incur annual operational costs. The total treatment cost for year five would be \$1,519,408 [*\$379,852 operational costs × four facilities*].

The highest cumulative cost for treatment of liquid discharge in any two-year period would be incurred in years four and five, for a total cost of \$3,108,816 [*\$1,589,408 total cost for treatment of liquid discharge in year four*]

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

plus \$1,519,408 total cost for treatment of liquid discharge in year five]. Table 8 summarizes treatment costs for industrial wastewater treatment facilities discharging to groundwater.

Table 8. Annual cost for treating liquid discharges.

Year	Permit Renewals (P)	Installation cost (\$)	Operational costs (\$)	Total Cost (\$)
First year	P1	70,000	379,852	449,852
Second year	P2	70,000	759,704	829,704
Third year	P3	70,000	1,139,556	1,209,556
Fourth year	P4	70,000	1,519,408	1,589,408
Fifth year	--	--	1,519,408	1,519,408

Note: P1 refers to the permit renewal of facility one; P2 refers to the permit renewal of facility two, etc.

The total economic impact for this category of facilities over a two-year period is \$3,195,866 [*\$65,850 for PFAS groundwater monitoring, plus \$21,200 PFAS monitoring of liquid discharges, plus \$3,108,816 for treatment of liquid discharges*].

Landfills

The department requires landfills to follow groundwater sampling and reporting requirements in ch. NR 507, Wis. Adm. Code, including for the parameters, and at the frequencies, in Appendices I–IV. These appendices do not currently require PFAS sampling. However, under s. NR 507.15, Wis. Adm. Code, the department may require PFAS monitoring on a case-by-case basis depending on the waste characteristics. To date, the department has requested PFAS sampling at three papermill sludge landfills due to evidence suggesting possible PFAS presence or groundwater impacts. PFAS sampling may also be warranted at other papermill or municipal solid waste landfills where groundwater results show exceedances of other ch. NR 140 Enforcement Standards. Some landfill owners are voluntarily sampling for PFAS in groundwater or leachate. If the department becomes aware of data showing PFAS impacts, it may require further sampling, investigation, and remediation.

The department currently has the authority to require PFAS sampling at landfills when there is evidence of a potential PFAS release. Once NR 140 groundwater standards for PFAS are finalized, the department may exercise its authority to require PFAS sampling at more landfills. The initial focus would likely be on landfills with existing exceedances of other substances under ch. NR 140, Wis. Adm. Code, or papermill sludge landfills that may have accepted PFAS-contaminated waste. For municipal solid waste landfills, the department would likely focus on those landfills with reported Enforcement Standard exceedances of Volatile Organic Compounds (VOCs). VOC exceedances may indicate potential landfill leachate impacts and can be associated with PFAS because both may originate from similar waste streams or landfill releases. In general, these landfills are either closed or are closed units at large active landfills.

There are approximately 169 landfills in Wisconsin that are either a papermill sludge landfill or that have a reported NR 140 Enforcement Standard exceedance of one or more VOCs since 2016. Some of these are already in investigation or remediation, and others have only singular or sporadic exceedances that were not confirmed in subsequent sampling. Of those 169, there are approximately 138 landfills with more than four reported VOCs Enforcement Standard exceedances since 2016. Assuming the department requires each of the 138 landfills to collect at least two samples for PFAS in each of their groundwater monitoring wells in one year, and assuming each site has 10 monitoring wells, the PFAS monitoring cost would be \$1,242,000 [*\$450 sample cost × 10 wells × two times per year × 138 landfills*]. Landfills follow the sampling procedures contained in the *Groundwater Sampling Desk Reference*, PUBL-DG-037-96, which recommends collecting one equipment blank for every 10 or fewer samples collected. Therefore, one equipment blank

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

would be collected at each site during each sampling event. The total cost of equipment blanks for all 138 landfills would be \$124,200 [*\$450 equipment blank cost × two times per year × 138 landfills*]. Sampling mobilization costs are not included because those costs would already be incurred as part of each landfill's routine detection-monitoring sampling. The department estimates the total cost for monitoring in year one to be \$1,366,200 [*\$1,242,000 for PFAS monitoring plus \$124,200 for equipment blanks*].

The department estimates that after initial PFAS sampling, about 10% of the 138 landfills evaluated—roughly 14 sites—may need additional investigation in the second year. These landfills would conduct further sampling of on-site wells to determine whether significant PFAS discharges are present and whether remedial action is needed. To assess the extent of PFAS impacts, additional monitoring wells or piezometers would likely need to be installed around these sites. The department assumes that five additional monitoring wells would need to be installed at each site, and that the cost per well would be around \$10,000. Hence, the cost associated with installing new wells would be \$700,000 [*\$10,000 × five wells × 14 sites*]. Sampling at these five wells, plus the 10 already at the site, will occur in year two. The year two PFAS monitoring cost would be \$189,000 [*\$450 sample cost × 15 wells × two times per year × 14 landfills*]. Since more than 10 samples will be collected at each site, two equipment blanks (at a cost of \$450 each, and \$900 total) would be required at each site for each sampling event. The equipment blanks costs would therefore be \$25,200 [*\$900 equipment blanks × two times per year × 14 landfills*]. Sampling mobilization costs are not included because those costs would already be incurred as part of each landfill's routine detection-monitoring sampling. The department estimates the total cost for monitoring in year two to be \$914,200 [*\$700,000 for well installation, plus \$189,000 for PFAS monitoring, plus \$25,200 for field blanks*].

The department anticipates PFAS groundwater monitoring cost at identified landfills to be \$2,280,400 over the two-year period.

Active and closed landfills generally dispose of leachate by sending it to a POTW. Since landfill leachate can contain PFAS, it has the potential to introduce PFAS into the biosolids at the POTWs. Most POTWs in the state apply their treated biosolids to land. The department is required to impose limitations or conditions for PFAS in permits for the land application of sewage sludges under s. 283.82(4), Stats. POTWs may undertake source reduction activities or alternative disposal options to comply with ch. 283, Stats., regardless of whether NR 140 groundwater standards for PFAS are established. Accordingly, the department assumes that no additional costs associated with management of landfill leachate will be incurred a result of the promulgation of groundwater standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA.

Specific Businesses and Business Sectors (Private Businesses)

The department anticipates the following specific businesses will be impacted: facilities that discharge industrial liquid waste through an absorption/seepage pond land treatment system; businesses that contribute wastewater to POTWs whose liquid waste is discharged to groundwater; and privately owned landfills that may be subject to groundwater monitoring because of their potential for PFAS contamination.

Impacts on Public Utility Ratepayers

The department does not anticipate this rule to significantly impact public utility ratepayers.

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

Impacts on Local Governmental Units

The department assumes that municipally owned utilities will incur some cost that is primarily related to POTWs and publicly owned landfills, and classifies these as costs to local government. These are detailed under Section 14, subsection *Publicly Owned Treatment Works That Discharge Liquid Wastewater Through a Land Treatment/Application System* and subsection *Landfills*.

Fiscal Impact and Impact on State Economy

The department does not anticipate that this rule will impact the state's economy adversely. Additional costs to the department in terms of staff time would be absorbed in the agency's current budget and the additional positions included in 2025 Wisconsin Act 201. In addition, 2025 Wisconsin Act 200 provides funding for several activities aimed at addressing PFAS contamination in the state, which may further support implementation efforts. The department also recognizes that there is a substantial benefit derived from preventing and remediating PFAS contamination, including benefits to human health, safety, and wellbeing, economic productivity (avoided costs), and ecosystem integrity.

15. Benefits of Implementing the Rule and Alternative(s) to Implementing the Rule

Benefits of Implementing the Rule

The benefits of establishing new and revised groundwater quality standards in ch. NR 140, Wis. Adm. Code, include:

1. Providing human health protection, as the standards protect groundwater from substances that pose a hazard to human health. For instance, the substance may increase the risk of illness, disease, or death, or may increase the risk or severity of a long-term disease.
2. Allowing state regulatory agencies to establish rules that define specific design and management criteria to reduce concentrations of a substance in groundwater, if concentrations are found to exceed established groundwater standards.
3. Providing clarity and consistency to regulated entities on how to address these compounds if they are detected at sites or facilities.
4. Providing standards for bottled water providers.
5. Allowing homeowners to apply for grants under the well compensation program where samples indicate the water in a private well exceeds established standards in ch. NR 140, Wis. Adm. Code, for these PFAS.

As noted in multiple comments received, reducing the occurrence of PFAS by establishing groundwater standards can help prevent a wide range of human health impacts, particularly for individuals exposed to PFAS through contaminated drinking water. Multiple studies indicated that the six PFAS included in this rulemaking – PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA – may cause adverse health effects, including: liver damage, development and metabolic endocrine disruption, immune suppression, thyroid hormone disruption, reproductive and developmental effects, increased cholesterol, altered lipid metabolism, and kidney damage. The EPA classifies PFOA, PFOS, and HFPO-DA as likely carcinogenic to humans. Additionally, several studies suggest that all six PFAS included in this rulemaking may contribute to cancer risk. All of these substances are also associated with mutagenic effects (potential to alter or damage DNA), teratogenic effects (potential to cause birth defects or abnormalities in a developing fetus) and interactive effects (enhanced toxicity due to the combined exposure to multiple PFAS). These human health impacts are described in detail in the DHS scientific support documents, available at DHS's website: [Scientific Support Document \(https://www.dhs.wisconsin.gov/publications/p03694.pdf\)](https://www.dhs.wisconsin.gov/publications/p03694.pdf).

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

Some comments received during the solicitation of comments on the draft EIA noted that the estimated health-related cost savings associated with the establishment of groundwater standards in Wisconsin ranged from approximately \$18 million to \$1.13 billion annually. While the department acknowledges the quantifiable benefits of implementing the rule as required under s. 227.137(3)(c), Stats., these estimated benefits cannot be used to offset the compliance and implementation costs associated with the proposed rule, as calculated under s. 227.137(b), Stats.

Alternative(s) to Implementing the Rule

Chapter 160, Stats., mandates the department to propose rules establishing new groundwater quality standards based on recommendations developed by the DHS. No alternatives are included in ch. 160, Stats.

16. Long Range Implications of Implementing the Rule

Establishing groundwater quality standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA will help protect human health by reducing PFAS concentrations in groundwater. Most Wisconsin residents rely on groundwater as a source of drinking water, making this protection particularly important. The adoption of groundwater standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA will allow regulatory programs to prioritize measures to prevent and reduce PFAS releases to the environment. While some actions are already underway under the department's existing authority and would occur regardless of the establishment of the standards, other actions would be triggered by the adoption of the standards, and still others would require separate rulemaking. Over time, these actions are expected to limit PFAS sources and result in declining PFAS concentrations in groundwater. These benefits are especially important for individuals who rely on private wells for drinking water, which are not otherwise regulated.

17. Compare With Approaches Being Used by Federal Government

The EPA establishes health-based drinking water Maximum Contaminant Levels (MCLs), cancer risk levels, and Health Advisories (HAs) that are used to assess the quality of groundwater drinking water supplies. Federal drinking water MCLs are established based on scientific risk assessments and, in some cases, economic and technological considerations. Cancer risk levels are established as the concentration of a chemical in drinking water that corresponds to a specific excess estimated lifetime cancer risk. Federal Lifetime Health Advisories (LHAs) are developed based on an established health risk Acceptable Daily Intake (ADI) level or Reference Dose (RfD). An ADI or RfD is the daily oral exposure to a chemical that is likely to be without an appreciable risk over a lifetime.

In April 2024, the EPA issued new federal drinking water MCLs for PFOA, PFOS, PFHxS, PFNA, PFBS and HFPO-DA. EPA established legally enforceable individual MCLs for five PFAS in drinking water, PFOA, PFOS, PFHxS, PFNA, and HFPO-DA, and a Hazard Index MCL for PFAS mixtures containing at least two or more of: PFHxS, PFNA, HFPO-DA, and PFBS. This Hazard Index MCL was established to account for the combined and co-occurring levels of these PFAS in drinking water.

The federal individual MCLs for PFOA and PFOS are 4.0 ng/L. The individual MCLs for PFHxS, PFNA and HFPO-DA are 10 ng/L. The federal Hazard Index MCL standard was established to regulate mixtures of PFHxS, PFNA, PFBS and HFPO-DA. The measured concentration of these PFAS in drinking water divided by their respective Health-Based Water Concentration (HBWC) results in a Hazard Quotient (HQ) for each PFAS. The individual PFAS HQs are then summed to yield a mixture Hazard Index (HI). The federal MCL for a mixture of two or more of PFHxS, PFNA, PFBS and HFPO-DA, is an HI of 1.0 (unitless). The federal HBWCs are: 10 ng/L for PFHxS, 10 ng/L for PFNA, 2,000 ng/L for PFBS, and 10 ng/L for HFPO-DA.

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

The proposed Enforcement Standards included in this rulemaking are based on the DHS recommendations and are consistent with the individual federal numbers for PFOA, PFOS, PFHxS, PFNA, PFBS and HFPO-DA. The proposed Enforcement Standards are also consistent with the state drinking water standards under ch. NR 809, with the exception of PFBS. Table 3 lists the proposed Enforcement Standards based on the DHS recommendations and compares them to the EPA federal numbers and state drinking water standards.

Table 9. Proposed Enforcement Standards and comparison to EPA federal numbers and state drinking water standards.

PFAS compound	Proposed groundwater Enforcement Standards (in ng/L or ppt)	EPA federal numbers (in ng/L or ppt)	State drinking water standards (in ng/L or ppt)
PFOA	4	4	4
PFOS	4	4	4
PFHxS	10	10	10
PFNA	10	10	10
PFBS	2,000	2,000	Hazard Index standard of 1 (unitless) for mixtures of PFHxS, PFNA, PFBS and HFPO-DA.
HFPO-DA	10	10	10

On May 18, 2026, EPA announced proposed regulatory actions to rescind the MCLs for PFHxS, PFNA, and HFPO-DA (GenX chemicals), as well as the Hazard Index standard applicable to mixtures containing PFHxS, PFNA, HFPO-DA, and PFBS, citing concerns that portions of the prior rulemaking did not comply with procedural requirements under the Safe Drinking Water Act. However, as of the date of this revised EIA the federal law remains unchanged and federal law requires compliance with all six PFAS MCLs. In addition, s. 160.07, Stats., provides multiple pathways for establishing groundwater Enforcement Standards beyond reliance solely on federal numbers.

18. Compare With Approaches Being Used by Neighboring States (Illinois, Iowa, Michigan and Minnesota)

Minnesota, Michigan, Illinois, and Iowa use groundwater protection values/levels/standards in their regulation of practices and activities that might impact the quality of groundwater. Minnesota, Michigan, and Illinois have promulgated individual state groundwater protection standards. Iowa uses established federal standards (federal drinking water MCLs, LHAs and established cancer risk levels) as its state groundwater protection standards.

Groundwater protection values/levels/standards are usually developed based on health risk assessments. States are often required to follow state-specific health risk assessment methodology when establishing groundwater protection quality standards. States may use state-specific health risk assessments, factors, and methodologies in calculating and developing their groundwater protection standards. This use of different health risk assessment factors and methodologies has led to the establishment of different state groundwater protection values/levels/standards for the same substance. The proposed Enforcement Standards in Wisconsin for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA are the same as the groundwater protection thresholds in Illinois and in Iowa, with the exception of PFBS in Iowa, which Iowa addresses through a hazard index approach for mixtures of PFHxS, PFNA, PFBS, and HFPO-DA. Compared to Michigan, the proposed Enforcement Standards in Wisconsin are more stringent for PFOA, PFOS, PFHxS, and HFPO-

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

DA, and less stringent for PFNA and PFBS. Compared to Minnesota, the proposed Enforcement Standards in Wisconsin are more stringent for PFHxS, and less stringent for PFOA, PFOS and PFBS. Table 10 presents the groundwater protection thresholds for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA in Wisconsin and adjacent states, followed by state-specific details.

Table 10. Proposed Wisconsin Enforcement Standards and comparison to thresholds in adjacent states.

PFAS compound	Wisconsin proposed Enforcement Standards (in ng/L or ppt)	Minnesota thresholds (in ng/L or ppt)	Michigan thresholds (in ng/L or ppt)	Illinois thresholds (in ng/L or ppt)	Iowa thresholds (in ng/L or ppt)
PFOA	4	0.24	8	4	4
PFOS	4	2.3	16	4	4
PFHxS	10	47	51	10	10
PFNA	10	NA	6	10	10
PFBS	2,000	100	420	2,000	Hazard Index MCL standard of 1 (unitless) for mixtures of PFHxS, PFNA, PFBS and HFPO-DA.
HFPO-DA	10	NA	370	10	10

Minnesota: The State of Minnesota has established state groundwater protection "Health Risk Limits" (HRLs) under Minnesota Statutes Section 103H.201. In 2025, the state of Minnesota established an HRL for PFOA at 0.24 ng/L and an HRL for PFOS at 2.3 ng/L. In 2023, Minnesota established an HRL for PFHxS at 47 ng/L and an HRL for PFBS at 100 ng/L.

Michigan: The State of Michigan has established state groundwater protection quality standards. Michigan "Drinking Water Criteria and Risk Based Screening Levels" (RBSLs) are Michigan state groundwater protection standards authorized in accordance with Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451 (NREPA). As established under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, and as amended [MCL 324.20120a(5)], Michigan state drinking water standards become the PFOA and PFOS generic cleanup criteria for groundwater used as drinking water. Michigan has established RBSLs for PFOA at 8 ng/L, for PFOS at 16 ng/L, for PFHxS at 51 ng/L, for PFNA at 6 ng/L, for PFBS at 420 ng/L, and for HFPO-DA at 370 ng/L.

Illinois: Illinois groundwater quality standards are enforceable standards used for the beneficial use and protection of groundwater in the state. 35 Illinois Administrative Code (IAC) Part 690 establishes regulations for groundwater quality, including standards for the quality of groundwater. In April 2025, updates to 35 IAC Part 690 Groundwater Quality were published in the Illinois Register that included state groundwater quality standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA. Those Part 690 PFAS groundwater standards for "Class I Potable Resource" groundwater are: PFOA = 4 ng/L, PFOS = 4 ng/L, PFHxS = 10 ng/L, PFNA = 10 ng/L, PFBS = 2,000 ng/L and for HFPO-DA = 10 ng/L.

ADMINISTRATIVE RULES

Fiscal Estimate & Economic Impact Analysis

Iowa: The State of Iowa has not established specific state groundwater protection standards. In accordance with Iowa Environmental Protection Regulations 567 IAC Chapter 133, Iowa uses established federal EPA lifetime health advisory levels, “Negligible Risk Levels” (NRLs) for carcinogens (estimate of one additional cancer case per million people over a lifetime of exposure) and federal drinking water MCLs as “Action Levels” in their regulation of practices and activities that may adversely impact groundwater quality. Current federal MCLs for PFAS are: PFOA = 4.0 ng/L, PFOS = 4.0 ng/L, PFHxS = 10 ng/L, PFNA = 10 ng/L, and HFPO-DA = 10 ng/L. A Hazard Index MCL standard of 1 (unitless) has been established to regulate mixtures of one or more of PFHxS, PFNA, PFBS, and HFPO-DA. As stated above, EPA has proposed regulatory action to rescind the MCLs for PFHxS, PFNA, and HFPO-DA (GenX chemicals), as well as the Hazard Index standard applicable to mixtures containing PFHxS, PFNA, HFPO-DA, and PFBS. As of the date of this final EIA, the federal law remains unchanged and still requires compliance with all six PFAS MCLs.

19. Contact Name

Carla Romano, Groundwater Section Manager

20. Contact Phone Number

608-910-3458

This document can be made available in alternate formats to individuals with disabilities upon request.

8/31/2026

The statement of scope for this rule, SS 008-25, was approved by the Governor on February 4, 2025, published in Register No. 831A1 on March 3, 2025, and approved by the Natural Resources Board on April 9, 2025. This rule was approved by the Governor on [insert date].

ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD AMENDING RULES

The Wisconsin Natural Resources Board adopts an order to **amend** NR 140.10 Table 1 and 140 Appendix I to Table 1, relating to setting numeric standards to minimize the concentration of polluting substances for certain Per- and Polyfluoroalkyl Substances (PFAS) in groundwater based on the 2025 DHS recommendations.

DG-02-25 Numeric Groundwater Standards for PFAS

Analysis Prepared by the Department of Natural Resources

1. Statute Interpreted:

Chapter 160, Stats., including ss. 160.07, 160.07(5), 160.11, 160.15, 160.15(1)(c), 160.19, and 281.15, and 281.19(1), Stats., authorize the department to modify and create rules relating to the development of numeric groundwater quality standards.

2. Statutory Authority:

Sections 160.07, 160.07(5), 160.11, 160.15, 160.15 (1)(c), 160.19, 281.15, and 281.19(1), Stats.

3. Explanation of Agency Authority:

Chapter 160, Stats., establishes an administrative process for developing numeric state groundwater quality standards to be used as criteria for the protection of public health and welfare by all state groundwater regulatory programs. Chapter 160, Stats., directs the department to use this administrative process to establish numeric groundwater quality standards for substances of public health or welfare concern, found in, or having a reasonable probability of being detected in, the groundwater resources of the state.

The department is required to engage in rulemaking for all substances of public health concern for which the Wisconsin Department of Health Services (DHS) develops Enforcement Standard recommendations (s. 160.07(5), Stats.). The DHS develops recommendations for Enforcement Standards for substances of public health concern in accordance with the provisions of s. 160.07(4), Stats. The department, with the assistance of DHS, is required to prepare a document describing methodologies and conclusions for establishing each numeric Enforcement Standard, as described in s. 160.11, Stats. The department is also required to establish by rule Preventive Action Limits for all substances with Enforcement Standards under s. 160.15, Stats, following methodologies described in s. 160.15, Stats. Section 160.15(1)(c) provides that for any substance that has carcinogenic, mutagenic, or teratogenic properties or interactive effects, the Preventative Action Limit shall be 10 percent of the concentration established as the Enforcement Standard. Section 160.19, Stats., requires regulatory programs

and agencies to review and update their regulations when new groundwater quality standards are adopted to ensure that regulated activities and facilities are designed and managed to prevent exceedances of such standards. Section 281.15, Stats., states that the department shall promulgate rules setting standards of water quality, applicable to the waters of the state. These standards aim to protect the public interest, including the protection of public health and welfare, and the present and prospective future use of such waters for public and private water systems. Section 281.19(1), Stats., grants the department the authority to issue general orders and adopt rules applicable throughout the state for the construction, installation, use, and operation of practicable and available systems, methods and means for preventing and abating pollution of the waters of the state.

4. Related Statutes or Rules:

Chapter NR 809, Wis. Adm. Code, establishes minimum state drinking water standards for the protection of public health, safety, and welfare. This administrative code contains numeric water quality protection standards applicable to public water supply systems in Wisconsin.

Effective July 1, 2026, Wisconsin promulgated revisions to ch. NR 809, Wis. Adm. Code, that updated state drinking water standards for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS), and established state drinking water standards for perfluorohexane sulfonic acid (PFHxS), perfluorononanoic acid (PFNA), perfluorobutane sulfonic acid (PFBS), and hexafluoropropylene oxide dimer acid (HFPO-DA, commonly known as “GenX Chemicals”).

5. Plain Language Analysis:

Per- and Polyfluoroalkyl Substances (PFAS) have been widely used in industrial applications and consumer products worldwide since the 1950s. Scientific studies have linked PFAS exposure to a range of adverse health effects, including cancer, liver damage, immune system suppression, and developmental disorders. People can be exposed to PFAS through several pathways, including ingestion of contaminated groundwater.

Most Wisconsin residents rely on groundwater as their primary source of drinking water. In 2022, the department collected and analyzed water samples from 450 private potable wells across the state to assess PFAS contamination in groundwater. The study found that 71 percent of the sampled wells contained at least one detectable PFAS, indicating that PFAS contamination in groundwater is widespread in Wisconsin.

Under Chapter 160 of the Wisconsin Statutes, when a chemical is detected in groundwater, or has the potential to enter groundwater, and poses a risk to human health, the department is authorized to establish numeric groundwater quality standards to minimize the concentration of that substance. Groundwater quality standards consist of an Enforcement Standard and a Preventive Action Limit. While an Enforcement Standard triggers a regulatory action, a Preventive Action Limit is usually 10 to 20 percent of an Enforcement Standard and represents an early warning threshold. The statute requires the department to update chapter NR 140, Wis. Adm. Code, to set groundwater standards using health-based recommendations issued by the Wisconsin Department of Health Services (DHS).

In May of 2024, the department sent a letter to DHS formally requesting that DHS recommend state groundwater quality standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA. After conducting a review of the six compounds, DHS developed appropriate recommendations for groundwater quality standards based on statutory requirements under s. 160.07(4), Stats.

Details on the health impacts of these substances are provided in the DHS scientific support documents, available at [Scientific Support Document](https://www.dhs.wisconsin.gov/publications/p03694.pdf) (<https://www.dhs.wisconsin.gov/publications/p03694.pdf>).

At the end of January 2025, the department initiated rulemaking to update groundwater quality standards consistent with the DHS recommendations. The proposed rulemaking would amend chapter NR 140, Wis. Adm. Code, and add new groundwater quality standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA. These standards will apply to regulated entities that must comply with chapter NR 140, Wis. Adm. Code, particularly those activities and facilities that may potentially contribute to groundwater contamination, such as landfills and wastewater treatment facilities.

Establishing new groundwater quality standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA will help protect human health by limiting PFAS concentrations in groundwater. The standards establish clear numeric thresholds that determine when regulatory action is required, providing consistency and certainty for both regulatory authorities and the entities they regulate. While some efforts to address PFAS contamination are occurring independently of this rulemaking, the absence of clear standards would make it more difficult for regulatory programs to require or prioritize measures to prevent, reduce, or control PFAS releases from contamination sources. The rule also establishes standards that will be used for bottled water providers and allows private well owners to seek assistance through the Well Compensation Program when PFAS levels exceed groundwater quality standards. By reducing PFAS contamination in groundwater, the rule will help lower the risk of adverse health effects associated with exposure to these substances, particularly for individuals who rely on groundwater for drinking water.

6. Summary of, and Comparison with, Existing or Proposed Federal Statutes and Regulations:

The U.S. Environmental Protection Agency (EPA) establishes health-based drinking water Maximum Contaminant Levels (MCLs), cancer risk levels, and Health Advisories (HAs) that are used to assess the quality of groundwater drinking water supplies. Federal drinking water MCLs are established based on scientific risk assessments and, in some cases, economic and technological considerations. Cancer risk levels are established as the concentration of a chemical in drinking water that corresponds to a specific excess estimated lifetime cancer risk. Federal Lifetime Health Advisories (LHAs) are developed based on an established health risk Acceptable Daily Intake (ADI) level or Reference Dose (RfD). An ADI or RfD is the daily oral exposure to a chemical that is likely to be without an appreciable risk over a lifetime.

In April of 2024, EPA established National Primary Drinking Water Regulation (NPDWR) public drinking water system MCLs for six PFAS: PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA. Five of the six PFAS were assigned individual MCLs: 4 ng/L for PFOA, 4 ng/L for PFOS, and 10 ng/L each for PFHxS, PFNA, and HFPO-DA. PFBS is addressed using a Hazard Index (HI) approach that also includes PFHxS, PFNA, and HFPO-DA. The HI MCL is calculated by dividing the measured concentration of each of these four PFAS in drinking water by its respective Health-Based Water Concentration (HBWC), and then summing the results together. If the total HI exceeds 1.0 (unitless), the mixture MCL is considered exceeded. The HBWCs are 10 ng/L for PFHxS, PFNA, and HFPO-DA, and 2,000 ng/L for PFBS.

The proposed amendments to ch. NR 140, Wis. Adm. Code, would add new state numeric groundwater quality standards for PFOA, PFOS, PFHxS, PFNA, PFBS and HFPO-DA. The

proposed Enforcement Standards are consistent with the individual federal numbers for PFOA, PFOS, PFHxS, PFNA, and HFPO-DA, and PFBS. The proposed Enforcement Standards are also consistent with the state drinking water standards under ch. NR 809, with the exception of PFBS. Table 1 lists the proposed Enforcement Standards and compares them to the EPA federal numbers and state drinking water standards.

Table 1. Proposed Enforcement Standards and comparison to EPA federal numbers and state drinking water standards.

PFAS compound	Proposed groundwater Enforcement Standards (in ng/L or ppt)	EPA federal numbers (in ng/L or ppt)	State drinking water standards (in ng/L or ppt)
PFOA	4	4	4
PFOS	4	4	4
PFHxS	10	10	10
PFNA	10	10	10
PFBS	2,000	2,000	Hazard Index MCL standard of 1 (unitless) for mixtures of PFHxS, PFNA, PFBS and HFPO-DA
HFPO-DA	10	10	10

On May 18, 2026, EPA announced proposed regulatory actions to rescind the MCLs for PFHxS, PFNA, and HFPO-DA, as well as the Hazard Index standard applicable to mixtures containing PFHxS, PFNA, HFPO-DA, and PFBS, citing concerns that portions of the prior rulemaking did not comply with procedural requirements under the Safe Drinking Water Act. However, as of the date of this final Board Order, the federal law remains unchanged and federal law requires compliance with all six PFAS MCLs. In addition, s. 160.07, Stats., provides multiple pathways for establishing groundwater Enforcement Standards beyond reliance solely on federal numbers.

7. If Held, Summary of Comments Received During Preliminary Comment Period and at Public Hearing on the Statement of Scope:

The department held an online preliminary public hearing on the statement of scope on March 6, 2025. Thirty-nine members of the public attended the hearing. The public comment period ended on March 6, 2025. The department received 11 written comments on the proposed statement of scope from individuals and organizations. Ten supplied testimonies in support. One joint statement from the Wisconsin Paper Council, Wisconsin Manufacturers & Commerce, and Midwest Food Products Association made several suggestions, including conducting additional outreach with the regulated community and incorporating economic impact costs into the scope statement.

8. Comparison with Similar Rules in Adjacent States:

Minnesota, Michigan, Illinois, and Iowa use groundwater protection values/levels/standards in their regulation of practices and activities that might impact the quality of groundwater. Minnesota, Michigan, and Illinois have promulgated individual state groundwater protection

standards. Iowa uses established federal standards (federal drinking water MCLs, LHAs and established cancer risk levels) as its state groundwater protection standards.

Groundwater protection values/levels/standards are usually developed based on health risk assessments. States may use state-specific health risk assessments, factors, and methodologies in calculating and developing their groundwater protection standards. This use of different health risk assessment factors and methodologies has led to the establishment of different state groundwater protection values/levels/standards for the same substance. The proposed Enforcement Standards in Wisconsin for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA are the same as those in Illinois, and in Iowa, with the exception of PFBS in Iowa, which Iowa addresses through a hazard index approach for mixtures of PFHxS, PFNA, PFBS, and HFPO-DA. Compared to Michigan, the proposed Enforcement Standards in Wisconsin are more stringent for PFOA, PFOS, PFHxS, and HFPO-DA, and less stringent for PFNA and PFBS. Compared to Minnesota, the proposed Enforcement Standards in Wisconsin are more stringent for PFHxS, and less stringent for PFOA, PFOS and PFBS. Table 2 presents the thresholds for each of the six PFAS in Wisconsin and adjacent states, followed by state-specific details.

Table 2. Proposed Enforcement Standards and comparison to thresholds in adjacent states.

PFAS compound	Wisconsin proposed Enforcement Standards (in ng/L or ppt)	Minnesota thresholds (in ng/L or ppt)	Michigan thresholds (in ng/L or ppt)	Illinois thresholds (in ng/L or ppt)	Iowa thresholds (in ng/L or ppt)
PFOA	4	0.24	8	4	4
PFOS	4	2.3	16	4	4
PFHxS	10	47	51	10	10
PFNA	10	NA	6	10	10
PFBS	2,000	100	420	2,000	Hazard Index MCL standard of 1 (unitless) for mixtures of PFHxS, PFNA, PFBS and HFPO-DA.
HFPO-DA	10	NA	370	10	10

Minnesota: The State of Minnesota has established state groundwater protection "Health Risk Limits" (HRLs) under Minnesota Statutes Section 103H.201. In 2025, the state of Minnesota established an HRL for PFOA at 0.24 ng/L and an HRL for PFOS at 2.3 ng/L. In 2023, Minnesota established an HRL for PFHxS at 47 ng/L and an HRL for PFBS at 100 ng/L.

Michigan: The State of Michigan has established state groundwater protection quality standards. Michigan "Drinking Water Criteria and Risk Based Screening Levels" (RBSLs) are Michigan state groundwater protection standards authorized in accordance with Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451 (NREPA). As established under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, and as amended [MCL 324.20120a(5)], Michigan state drinking water standards become the PFOA and PFOS generic cleanup criteria for groundwater used as

drinking water. Michigan has established RBSLs for PFOA at 8 ng/L, for PFOS at 16 ng/L, for PFHxS at 51 ng/L, for PFNA at 6 ng/L, for PFBS at 420 ng/L, and for HFPO-DA at 370 ng/L.

Illinois: Illinois groundwater quality standards are enforceable standards used for the beneficial use and protection of groundwater in the state. 35 Illinois Administrative Code (IAC) Part 690 establishes regulations for groundwater quality, including standards for the quality of groundwater. In April 2025, updates to 35 IAC Part 690 Groundwater Quality were published in the Illinois Register that included state groundwater quality standards for six PFAS. Those Part 690 PFAS groundwater standards for "Class I Potable Resource" groundwater are: PFOA = 4 ng/L, PFOS = 4 ng/L, PFHxS = 10 ng/L, PFNA = 10 ng/L, PFBS = 2,000 ng/L, and HFPO-DA = 10 ng/L.

Iowa: The State of Iowa has not established specific state groundwater protection standards. In accordance with Iowa Environmental Protection Regulations 567 IAC Chapter 133, Iowa uses established federal EPA lifetime health advisory levels, "Negligible Risk Levels" (NRLs) for carcinogens (estimate of one additional cancer case per million people over a lifetime of exposure) and federal drinking water MCLs as "Action Levels" in their regulation of practices and activities that may adversely impact groundwater quality. Current federal MCLs for PFAS are: PFOA = 4.0 ng/L, PFOS = 4.0 ng/L, PFHxS = 10 ng/L, PFNA = 10 ng/L, and HFPO-DA = 10 ng/L. A Hazard Index MCL standard of 1 (unitless) has been established to regulate mixtures of one or more of PFHxS, PFNA, PFBS, and HFPO-DA. As stated above, EPA has proposed regulatory action to rescind the MCLs for PFHxS, PFNA, and HFPO-DA (GenX chemicals), as well as the Hazard Index standard applicable to mixtures containing PFHxS, PFNA, HFPO-DA, and PFBS. As of the date of this final Board Order, the federal law remains unchanged and still requires compliance with all six PFAS MCLs.

9. Summary of Factual Data and Analytical Methodologies Used and How Any Related Findings Support the Regulatory Approach Chosen:

In accordance with s. 160.07, Stats., the department is required, for substances of public health concern, to propose rules establishing recommendations from DHS as state groundwater quality Enforcement Standards. In accordance with s. 160.15, Stats., the department is required to establish by rule a Preventive Action Limit for each substance for which an Enforcement Standard is established.

To develop proposed groundwater standards, DHS follows the process described in ss. 160.07 to 160.17, Stats. This includes a review of federal numbers, state drinking water standards, acceptable daily intake values from the EPA, research studies, and peer-reviewed scientific research. DHS then develops a scientific support document describing the findings of their review and the basis for the recommended groundwater standards. At the conclusion of its review, DHS provides the department with recommendations for groundwater quality standards for the protection of public health.

DHS recommended new groundwater quality standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA in a document titled *Scientific Support Documents for Public Health Recommended Groundwater Standards - Cycle 12, February 2025*. This document is available at the DHS website: [Scientific Support Document](https://www.dhs.wisconsin.gov/publications/p03694.pdf) (https://www.dhs.wisconsin.gov/publications/p03694.pdf).

10. Analysis and Supporting Documents Used to Determine the Effect on Small Business or in Preparation of an Economic Impact Report:

The department does not anticipate economic impacts to small businesses. The proposed rule does not impose any compliance or reporting requirements on small businesses, nor are any design or operational standards contained in the rule.

Entities that may be affected by the rule include facilities that are regulated under a variety of department programs, and may include facilities such as landfills and wastewater treatment facilities that might discharge liquid wastewater through a land treatment/application system.

The numeric groundwater standards adopted in ch. NR 140, Wis. Adm. Code, are not self-implementing. They are implemented through other statutory provisions and administrative rules that use the groundwater standards in regulatory actions, requirements, responses, and enforcement mechanisms. State regulatory agencies, in exercising their statutory authority and duties that are established elsewhere in statutes and administrative rules, are required to establish regulations that ensure that regulated facilities and activities will not cause state groundwater quality standards to be exceeded.

After the department establishes groundwater standards in ch. NR 140, Wis. Adm. Code, each state regulatory agency is required to review its administrative rules and amend or create rules necessary to ensure that the activities, practices, and facilities regulated by the regulatory agency comply with the new standards (s. 160.19, Stats.). The implementation and compliance costs of this rule could be affected – either increased or decreased – by changes in the regulatory authority or requirements of the programs that use the standards.

In recent years, several actions related to PFAS source reduction have occurred. On a voluntary basis, industry has begun transitioning to alternatives for certain PFAS, and PFOA and PFOS are no longer manufactured in the United States.

In addition, certain activities – such as the cleanup of PFAS-contaminated sites and limitations or conditions for PFAS in every permit for landspreading of sewage sludge – are already being implemented under existing departmental authority and would occur regardless of the establishment of PFAS groundwater standards. Therefore, a cost associated with these activities is not included in the cost estimate of this rulemaking.

The department estimates that costs will be incurred by both industrial and publicly owned wastewater treatment facilities that discharge treated liquid waste to groundwater through a land treatment or disposal system, such as an absorption pond or seepage cell. In total, six municipal facilities and four industrial facilities are anticipated to be impacted after the groundwater standards are established. These costs are associated with monitoring discharged liquid waste for PFAS, monitoring groundwater for PFAS, source reduction measures, and treatment of liquid waste prior to discharge to groundwater. In addition, the department estimates that 138 landfills will be required to conduct PFAS groundwater monitoring in the first year of the rule implementation, with 14 sites requiring additional monitoring in the second year. The department anticipates that the highest two-year cost will be \$9,917,838 as a result of the establishment of groundwater standards for PFOA, PFOS, PFHxS, PFNA, PFBS, and HFPO-DA.

2025 Wisconsin Acts 200 and 201 provide funding for several activities aimed at addressing PFAS contamination in the state. Some of these funded activities may overlap with actions

evaluated in the economic impact analysis for this rule. Because the specific allocation and implementation details of these funds have not yet been finalized, the potential cost reductions associated with this funding are not reflected in the estimates presented in this economic impact analysis. As a result, the cost estimates should be considered conservative and may overestimate the potential economic impact of this rule.

11. Effect on Small Business (initial regulatory flexibility analysis):

The department does not anticipate economic impacts to small businesses. The proposed rule does not impose any compliance or reporting requirements on small businesses, nor are any design or operational standards contained in the rule.

12. Agency Contact Person:

Carla Romano, Groundwater Section Manager

Phone: 608-910-3458

E-mail: Carla.Romano1@wisconsin.gov

13. Place where comments are to be submitted and deadline for submission:

A public comment period on the draft rule occurred from June 29 to July 29, 2026, and a public hearing was held on July 23, 2026.

RULE TEXT

SECTION 1. NR 140.10 Table 1 is amended to read:

NR 140.10 Table 1

Table 1 Public Health Groundwater Quality Standards		
Substance ¹	Enforcement Standard (micrograms per liter – except as noted)	Preventive Action Limit (micrograms per liter – except as noted)
Acetochlor	7	0.7
Acetochlor ethane sulfonic acid + oxanilic acid (Acetochlor – ESA + OXA)	230	46
Acetone	9 milligrams/liter (mg/l)	1.8 mg/l
Alachlor	2	0.2
Alachlor ethane sulfonic acid (Alachlor – ESA)	20	4
Aldicarb	10	2
Aluminum	200	40
Ammonia (as N)	9.7 mg/l	0.97 mg/l
Anthracene	3000	600
Antimony	6	1.2
Arsenic	10	1
Asbestos	7 million fibers per liter (MFL)	0.7 MFL
Atrazine, total chlorinated residues	3 ²	0.3 ²
Bacteria, <i>E. coli</i>	0	0
Barium	2 mg/l	0.4 mg/l
Bentazon	300	60
Benzene	5	0.5
Benzo(b)fluoranthene	0.2	0.02
Benzo(a)pyrene	0.2	0.02
Beryllium	4	0.4
Boron	1000	200
Bromodichloromethane	0.6	0.06
Bromoform	4.4	0.44
Bromomethane	10	1
Butylate	400	80
Cadmium	5	0.5
Carbaryl	40	4
Carbofuran	40	8
Carbon disulfide	1000	200
Carbon tetrachloride	5	0.5
Chloramben	150	30
Chlordane	2	0.2
Chlorodifluoromethane	7 mg/l	0.7 mg/l
Chloroethane	400	80

Chloroform	6	0.6
Chlorpyrifos	2	0.4
Chloromethane	30	3
Chromium (total)	100	10
Chrysene	0.2	0.02
Cobalt	40	8
Copper	1300	130
Cyanazine	1	0.1
Cyanide, free ³	200	40
Dacthal	70	14
1,2-Dibromoethane (EDB)	0.05	0.005
Dibromochloromethane	60	6
1,2-Dibromo-3-chloropropane (DBCP)	0.2	0.02
Dibutyl phthalate	1000	100
Dicamba	300	60
1,2-Dichlorobenzene	600	60
1,3-Dichlorobenzene	600	120
1,4-Dichlorobenzene	75	15
Dichlorodifluoromethane	1000	200
1,1-Dichloroethane	850	85
1,2-Dichloroethane	5	0.5
1,1-Dichloroethylene	7	0.7
1,2-Dichloroethylene (cis)	70	7
1,2-Dichloroethylene (trans)	100	20
2,4-Dichlorophenoxyacetic Acid (2,4-D)	70	7
1,2-Dichloropropane	5	0.5
1,3-Dichloropropene (cis/trans)	0.4	0.04
Di (2-ethylhexyl) phthalate	6	0.6
Dimethenamid/Dimethenamid-P	50	5
Dimethoate	2	0.4
2,4-Dinitrotoluene	0.05	0.005
2,6-Dinitrotoluene	0.05	0.005
Dinitrotoluene, Total Residues ⁴	0.05	0.005
Dinoseb	7	1.4
1,4-Dioxane	3	0.3
Dioxin (2, 3, 7, 8-TCDD)	0.00003	0.000003
Endrin	2	0.4
EPTC	250	50
Ethylbenzene	700	140
Ethyl ether	1000	100
Ethylene glycol	14 mg/l	2.8 mg/l
Fluoranthene	400	80
Fluorene	400	80
Fluoride	4 mg/l	0.8 mg/l
Fluorotrichloromethane	3490	698
Formaldehyde	1000	100
Heptachlor	0.4	0.04
Heptachlor epoxide	0.2	0.02

Hexachlorobenzene	1	0.1
Hexafluoropropylene oxide dimer acid (HFPO-DA)	10 nanograms/liter (ng/l)	1 ng/l
N-Hexane	600	120
Hydrogen sulfide	30	6
Lead	15	1.5
Lindane	0.2	0.02
Manganese	300	60
Mercury	2	0.2
Methanol	5000	1000
Methoxychlor	40	4
Methylene chloride	5	0.5
Methyl ethyl ketone (MEK)	4 mg/l	0.8 mg/l
Methyl isobutyl ketone (MIBK)	500	50
Methyl tert-butyl ether (MTBE)	60	12
Metolachlor/s-Metolachlor	100	10
Metolachlor ethane sulfonic acid + oxanilic acid (Metolachlor – ESA + OXA)	1.3 mg/l	0.26 mg/l
Metribuzin	70	14
Molybdenum	40	8
Monochlorobenzene	100	20
Naphthalene	100	10
Nickel	100	20
Nitrate (as N)	10 mg/l	2 mg/l
Nitrate + Nitrite (as N)	10 mg/l	2 mg/l
Nitrite (as N)	1 mg/l	0.2 mg/l
N-Nitrosodiphenylamine	7	0.7
Pentachlorophenol (PCP)	1	0.1
Perchlorate	1	0.1
Perfluorobutanesulfonic acid (PFBS)	2000 ng/l	200 ng/l
Perfluorohexanesulfonic acid (PFHxS)	10 ng/l	1 ng/l
Perfluorononanoic acid (PFNA)	10 ng/l	1 ng/l
Perfluorooctanesulfonic acid (PFOS)	4 ng/l	0.4 ng/l
Perfluorooctanoic acid (PFOA)	4 ng/l	0.4 ng/l
Phenol	2 mg/l	0.4 mg/l
Picloram	500	100
Polychlorinated biphenyls (PCBs)	0.03	0.003
Prometon	100	20
Propazine	10	2
Pyrene	250	50
Pyridine	10	2
Selenium	50	10
Silver	50	10
Simazine	4	0.4
Styrene	100	10
Tertiary Butyl Alcohol (TBA)	12	1.2
1,1,1,2-Tetrachloroethane	70	7
1,1,2,2-Tetrachloroethane	0.2	0.02
Tetrachloroethylene	5	0.5

Tetrahydrofuran	50	10
Thallium	2	0.4
Toluene	800	160
Toxaphene	3	0.3
1,2,4-Trichlorobenzene	70	14
1,1,1-Trichloroethane	200	40
1,1,2-Trichloroethane	5	0.5
Trichloroethylene (TCE)	5	0.5
2,4,5-Trichlorophenoxy-propionic acid (2,4,5-TP)	50	5
1,2,3-Trichloropropane	60	12
Trifluralin	7.5	0.75
Trimethylbenzenes (1,2,4- and 1,3,5- combined)	480	96
Vanadium	30	6
Vinyl chloride	0.2	0.02
Xylene ⁵	2 mg/l	0.4 mg/l

¹ Appendix I contains Chemical Abstract Service (CAS) registry numbers, common synonyms and trade names for most substances listed in Table 1.

² Total chlorinated atrazine residues includes parent compound and the following metabolites of health concern: 2-chloro-4-amino-6-isopropylamino-s-triazine (formerly deethylatrazine), 2-chloro-4-amino-6-ethylamino-s-triazine (formerly deisopropylatrazine) and 2-chloro-4,6-diamino-s-triazine (formerly diaminoatrazine).

³ "Cyanide, free" refers to the simple cyanides (HCN, CN⁻) and /or readily dissofoaciable metal-cyanide complexes. Free cyanide is regulatorily equivalent to cyanide quantified by approved analytical methods for "amenable cyanide" or "available cyanide".

⁴ Dinitrotoluene, Total Residues includes the dinitrotoluene (DNT) isomers: 2,3-DNT, 2,4-DNT, 2,5-DNT, 2,6-DNT, 3,4-DNT and 3,5-DNT.

⁵ Xylene includes meta-, ortho-, and para-xylene combined.

Note: Consistent with the Department of Health Services' recommendation for the NR 140 ammonia standard, the department will use total ammonia, which is the sum of ionized ammonia and un-ionized ammonia in groundwater, in applying groundwater ammonia standards.

Note: Acronyms in common use for oxanilic acid (for the pesticide metabolites acetochlor oxanilic acid and metolachlor oxanilic acid in Table 1 above) include both "OA" and "OXA".

SECTION 2. NR 140 Appendix I to Table 1 is amended to read:

NR 140 Appendix I to Table 1

CHAPTER NR 140 APPENDIX I TO TABLE 1

PUBLIC HEALTH GROUNDWATER QUALITY STANDARDS

Substance	CAS RN ¹	Common synonyms ²
Acetochlor	34256-82-1	
Acetochlor ethane sulfonic acid + oxanilic acid	187022-11-3 (ESA)	Acetochlor – ESA + OXA

	184992-44-4 (OXA)	
Acetone	67-64-1	<i>Propanone</i>
Alachlor	15972-60-8	
Alachlor ethane sulfonic acid	142363-53-9	Alachlor-ESA, Alachlor Ethane Sulfonate, MON 5775
Aldicarb	116-06-3	
Aluminum	7429-90-5	
Ammonia	7664-41-7	
Anthracene	120-12-7	Para-naphthalene
Asbestos	1332-21-4	
Bentazon	25057-89-0	
Benzene	71-43-2	
Benzo(b)fluoranthene	205-99-2	B(b)F, 3,4-Benzofluoranthene
Benzo(a)pyrene	50-32-8	BaP, B(a)P
Boron	7440-42-8	
Bromodichloromethane	75-27-4	Dichlorobromomethane, BDCM
Bromoform	75-25-2	Tribromomethane
Bromomethane	74-83-9	Methyl bromide
Butylate	2008-41-5	S-ethyl di-isobutylthiocarbamate
Carbaryl	63-25-2	
Carbofuran	1563-66-2	
Carbon disulfide	75-15-0	Carbon bisulfide
Carbon tetrachloride	56-23-5	Tetrachloromethane, Perchloroethane
Chloramben	133-90-4	
Chlordane	57-74-9	
Chlorodifluoromethane	75-45-6	HCFC-22, Freon 22
Chloroethane	75-00-3	Ethyl chloride, Monochloroethane
Chloroform	67-66-3	Trichloromethane
Chlorpyrifos	2921-88-2	
Chloromethane	74-87-3	Methyl chloride
Chromium (total)	7440-47-3	
Chrysene	218-01-9	1,2-Benzphenanthrene
Cobalt	7440-48-4	
Cyanazine	21725-46-2	2-chloro-4-ethylamino-6- nitriloisopropylamino-s-triazine
Cyanide, free	57-12-5	
Dacthal	1861-32-1	DPCA, Chlorothal, 1,4-benzene- dicarboxylic acid
Dibromochloromethane	124-48-1	Chlorodibromomethane, DBCM
1,2-Dibromo-3-chloropropane	96-12-8	DBCP, Dibromochloropropane
1,2-Dibromoethane	106-93-4	EDB, Ethylene dibromide, Dibromoethane

Dibutyl phthalate	84-74-2	DP, Di- <i>n</i> -butyl phthalate, <i>n</i> -Butyl phthalate
Dicamba	1918-00-9	
1,2-Dichlorobenzene	95-50-1	o-Dichlorobenzene, o-DCB
1,3-Dichlorobenzene	541-73-1	m-Dichlorobenzene, m-DCB
1,4-Dichlorobenzene	106-46-7	p-Dichlorobenzene, p-DCB
Dichlorodifluoromethane	75-71-8	<i>Freon 12</i>
1,1,-Dichloroethane	75-34-3	Ethylidene chloride
1,2-Dichloroethane	107-06-2	1,2-DCA, Ethylene dichloride
1,1-Dichloroethylene	75-35-4	1,1-DCE, 1,1-Dichloroethene, Vinylidene chloride
1,2-Dichloroethylene (cis)	156-59-2	cis-Dichloroethylene, 1,2-Dichloroethene (cis)
1,2-Dichloroethylene (trans)	156-60-5	trans-1,2-Dichloroethylene
2,4-Dichlorophenoxyacetic acid	94-75-7	2,4-D
1,2-Dichloropropane	78-87-5	Propylene dichloride
1,3-Dichloropropene (cis/trans) ³	542-75-6	DCP, Dichloropropylene
Di(2-ethylhexyl) phthalate	117-81-7	DEHP, Bis(2-ethylhexyl) phthalate, 1,2-Benzenedicarboxylic acid, Bis (2-ethyl- hexyl)ester
Dimethenamid/Dimethinamid-P	87674-68-8 163515-14-8 (-P)	
Dimethoate	60-51-5	
2,4-Dinitrotoluene	121-14-2	2,4-DNT, 1-methyl-2,4-dinitrobenzene
2,6-Dinitrotoluene	606-20-2	2,6-DNT, 2-methyl-1,3-dinitrobenzene
Dinitrotoluene, Total Residues	25321-14-6	Dinitrotoluene, DNT
Dinoseb	88-85-7	2-(1-methylpropyl)-4,6-dinitrophenol
1,4-Dioxane	123-91-1	<i>p</i> -Dioxane
Dioxin	1746-01-6	2,3,7,8-TCDD, 2,3,7,8-Tetrachlorodibenzo- <i>p</i> -dioxin
Endrin	72-20-8	
EPTC	759-94-4	
Ethylbenzene	100-41-4	Phenylethane, EB
Ethyl ether	60-29-7	Diethyl Ether
Ethylene glycol	107-21-1	
Fluoranthene	206-44-0	Benzo(jk)fluorene
Fluorene	86-73-7	2,3-Benzidine, Diphenylenemethane
Fluoride	7681-49-4	
Fluorotrichloromethane	75-69-4	<i>Freon 11</i> , Trichlorofluoromethane
Formaldehyde	50-00-0	
Heptachlor	76-44-8	
Heptachlor epoxide	1024-57-3	
Hexachlorobenzene	118-74-1	Perchlorobenzene

Hexafluoropropylene oxide dimer acid (HFPO-DA)	13252-13-6	HFPO-DA, GenX
N-Hexane	110-54-3	Hexane, Skellysolve B
Hydrogen sulfide	7783-06-4	Dihydrogen sulfide
Lindane	58-89-9	
Manganese	7439-96-5	
Mercury	7439-97-6	
Methanol	67-56-1	Methyl alcohol, Wood alcohol
Methoxychlor	72-43-5	
Methylene chloride	75-09-2	Dichloromethane, Methylene dichloride
Methyl ethyl ketone	78-93-3	MEK, 2-Butanone
Methyl isobutyl ketone	108-10-1	MIBK, 4-Methyl-2-pentanone, Isopropylacetone, <i>Hexone</i>
Methyl tert-butyl ether	1634-04-4	MTBE, 2-Methoxy-2-methyl-propane, tert-Butyl methyl ether
Metolachlor/s-Metolachlor	51218-45-2 87392-12-9 (s-)	
Metolachlor ethane sulfonic acid + oxanilic acid	171118-09-5 (ESA) 152019-73-3 (OXA)	Metolachlor – ESA + OXA
Metribuzin	21087-64-9	
Molybdenum	7439-98-7	
Monochlorobenzene	108-90-7	Chlorobenzene
Naphthalene	91-20-3	
N-Nitrosodiphenylamine	86-30-6	NDPA
Pentachlorophenol	87-86-5	PCP, Pentachlorohydroxybenzene
Perchlorate	14797-73-0	Perchlorate and perchlorate salts, Perchlo-rate ion
Perfluorobutanesulfonic acid (PFBS)	375-73-5	PFBS
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFHxS
Perfluorononanoic acid (PFNA)	375-95-1	PFNA
Perfluorooctanoic acid (PFOA)	335-67-1	PFOA
Perfluorooctane sulfonate (PFOS)	1763-23-1	PFOS
Phenol	108-95-2	
Picloram	1918-02-1	4-amino-3,5,6-trichloropicolinic acid
Polychlorinated biphenyls ⁴		PCBs
Prometon	1610-18-0	
Pyrene	129-00-0	Benzo(def)phenanthrene
Pyridine	110-86-1	Azabenzene
Simazine	122-34-9	2-chloro-4,6-diethylamino- s-tri- azine

Styrene	100-42-5	Ethenylbenzene, Vinylbenzene
Tertiary Butyl Alcohol	75-65-0	TBA
1,1,1,2-Tetrachlorethane	630-20-6	1,1,1,2-TCA, 1,1,1,2-PCA
1,1,2,2-Tetrachloroethane	79-34-5	1,1,2,2-TCA, 1,1,2,2-PCA
Tetrachloroethylene	127-18-4	Perchloroethylene, PERC, Tetrachloroethene
Tetrahydrofuran	109-99-9	THF
Toluene	108-88-3	Methylbenzene
Toxaphene	8001-35-2	
1,2,4-Trichlorobenzene	120-82-1	
1,1,1-Trichloroethane	71-55-6	Methyl chloroform, 1,1,1-TCA
1,1,2-Trichloroethane	79-00-5	1,1,2-TCA, Vinyl trichloride
Trichloroethylene	79-01-6	TCE, Chloroethene
2,4,5-Trichlorophenoxy- propionic acid	93-72-1	2,4,5-TP
1,2,3-Trichloropropane	96-18-4	1,2,3-TCP, Glycerol trichlorohydrin
Trifluralin	1582-09-8	
1,2,4-Trimethylbenzene	95-63-6	
1,3,5-Trimethylbenzene	108-67-8	
Vanadium	7440-62-2	
Vinyl chloride	75-01-4	VC, Chloroethene
Xylene ⁵		

¹Chemical Abstracts Service (CAS) registry numbers are unique numbers assigned to a chemical substance. The CAS registry numbers were published by the U.S. Environmental Protection Agency in 40 CFR Part 264, Appendix IV

²Common synonyms include those widely used in government regulations, scientific publications, commerce and the general public. A trade name, also known as the proprietary name, is the specific, registered name given by a manufacturer to a product. Trade names are listed in *italics*. Common synonyms and trade names should be cross-referenced with CAS registry number to ensure the correct substance is identified.

³This is a combined chemical substance which includes *cis* 1,3-Dichloropropene (CAS RN 10061-01-5) and *trans* 1,3-Dichloropropene (CAS RN 10061-02-6).

⁴Polychlorinated biphenyls (CAS RN 1336-36-3); this category contains congener chemicals (same molecular composition, different molecular structure and formula), including constituents of Aroclor-1016 (CAS RN 12674-11-2), Aroclor-1221 (CAS RN 11104-28-2), Aroclor-1232 (CAS RN 11141-16-5), Aroclor-1242 (CAS RN 53469-21-9), Aroclor-1248 (CAS RN 12672-29-6), Aroclor-1254 (CAS RN 11097-69-1), and Aroclor-1260 (CAS RN 11096-82-5).

⁵Xylene (CAS RN 1330-20-7) refers to a mixture of three isomers, *meta*-xylene (CAS RN 108-38-3), *ortho*-xylene (CAS RN 95-47-6), and *para*-xylene (CAS RN 106-42-3)

SECTION 3. EFFECTIVE DATE. This rule takes effect on the first day of the month following publication in the Wisconsin Administrative Register as provided in s. 227.22 (2) (intro.), Stats.

SECTION 4. BOARD ADOPTION. This rule was approved and adopted by the State of Wisconsin Natural Resources Board on [DATE].

Dated at Madison, Wisconsin _____

State of Wisconsin
Department of Natural Resources

BY _____
Steven Little, Deputy Secretary
For Karen Hyun, Ph.D., Secretary