

DEPARTMENT OF AGRICULTURE, TRADE AND CONSUMER PROTECTION

Protecting Wisconsin's groundwater is a priority for the Department of Agriculture, Trade and Consumer Protection (DATCP). DATCP's major activities in this area include management of pesticides and nutrients, research, and funding of local soil and water resource management projects.

In compliance with Chapter 160, Wisconsin Statutes, DATCP manages pesticides and pesticide practices to ensure that established groundwater standards for contaminants are not exceeded. This may include prohibition of certain activities, including pesticide use. DATCP regulates storage, handling, use, and disposal of pesticides, as well as the storage and handling of bulk quantities of fertilizer. DATCP has authority to develop a statewide nutrient management program through section 92.05 Wis. Stats. The program includes compliance, outreach and incentives.

Enforcement standards have been established in Wisconsin for many known and potential groundwater contaminants, including over 30 pesticides. DATCP helps landowners comply with these standards and the Groundwater Law.

FY 2023 Highlights

- Performed annual groundwater sampling of private wells in agricultural areas using a targeted sampling approach and annual sampling of field-edge monitoring wells located on or near agricultural fields.
- Analyzed about 223 groundwater and 150 surface water samples for more than 100 pesticide compounds and nitrate plus nitrite as nitrogen in 2022.
- Created a Commercial Nitrogen Optimization Pilot Program (NOPP) designed to encourage agricultural producers to develop innovative approaches to optimize the application of commercial nitrogen for a duration of at least two growing seasons, helping to protect vital soil and water resources. Awards totaled \$1.6 million and were granted to 20 producers who will collaborate with a University of Wisconsin (UW) System institution conduct commercial nitrogen optimization field studies.
- Provided cost-sharing for the installation and implementation of 1,016 conservation practices in 2021. These practices provided soil erosion control and helped manage manure and nutrients.
- Continued the ATCP 50 rule revision to incorporate DATCP 01 Technical Standard Verification of Depth to Bedrock into rule. The technical standard outlines the process for verifying and documenting land features, particularly the depth to bedrock of cropland, specifically for the purposes of applying manure as a crop nutrient to reduce the risk of pathogen contamination in areas with Silurian dolomite in eastern Wisconsin.
- In partnership with Wisconsin Geological and Natural History Survey, began using the 2022 airborne electromagnetic (AEM) survey of karst bedrock features to

develop updated maps that identify the 5 foot and 20 foot depth to bedrock in the Silurian dolomite area of northeast Wisconsin.

- Awarded grants to 43 producer-led groups for FY 2023, totaling \$1,000,000.
- Continued a project to track estimated water quality outcomes and analyze benefits of conservation adoption in 13 of the 33 Producer-Led groups.
- Awarded \$200,690 to 19 participants in the Nutrient Management Farmer Education grants for 2022. These grants go to counties and technical colleges which provide nutrient management training to producers and plan writers for development of nutrient management plan in compliance with state standards.

Details of Ongoing Activities

Nonpoint Source Activities

Pesticides

DATCP's primary effort related to nonpoint contamination of groundwater from pesticides includes regular sampling of private wells and monitoring wells across the state for herbicides, insecticides, fungicides, and nitrate. The agency uses statistically random and targeted sampling designs to compare and contrast pesticide and nitrate occurrence in private wells statewide to that found in predominantly agricultural areas. DATCP shares sample data for pesticides with well owners, EPA, counties, DNR and others to improve knowledge and awareness of pesticide contaminants in drinking water, and uses the data to inform decisions involving new policy or regulations.

One example of how DATCP uses groundwater data to ensure compliance with Chapter 160, Wisconsin Statutes, involves the herbicide atrazine. Atrazine is a corn herbicide that has been found to cause nonpoint groundwater contamination. Several revisions to Ch. 30, Wisconsin Adm. Code have been made in response to detections of atrazine in groundwater, with the latest revision being put into effect in April 2011. [Maps](#) for 101 prohibition areas are available from the Agricultural Chemical Management Bureau covering about 1.2 million acres that have been incorporated into the rule. The maps were updated with new base mapping software in 2012 to 1) update roadway names and other manmade features that have changed over the years, and 2) provide a consistent look for maps that had been created using different map software since the early 1990s. **Pesticide use surveys indicate that atrazine use has declined from peak levels in the late 1980's but remains one of the top corn herbicides used.** Its decline in use may be in-part a result of the atrazine management rule and concerns about groundwater contamination. Prohibition areas total about 1.2 million acres, but DATCP estimates the actual area effected by use prohibitions is less than 300,000 acres per year when non-cropland (woodland, developed land, roads, water, etc.) and cropland not used for growing corn is removed from the 1.2 million-acre land total.

Nutrients

Through its Land and Water Resources **Bureau's** programs, DATCP assists in the protection of water resources through nutrient management and related conservation **practice implementation. The DNR's NR 151 rule on runoff management establishes**

agricultural performance standards intended to protect both groundwater and surface water. DATCP identifies the practices and procedures to implement and enforce compliance with these standards, including nutrient management. The nutrient management rules apply to all Wisconsin farmers who engage in agriculture and mechanically apply nitrogen, phosphorus, or potassium (N-P-K) nutrients from manures or commercial fertilizers to cropped fields or pastures. Under Wisconsin Statutes, cost-share funds must be made available to producers to compel compliance. However, as many as half of Wisconsin farms may comply with nutrient management standards and other performance standards without cost-sharing because they fall into one of the following categories:

- Concentrated Animal Feeding Operations (operations with 1,000 animal units or greater);
- Farms regulated by local manure storage or livestock siting ordinances; or
- **Participants in Wisconsin’s Farmland Preservation Program.**

A Wisconsin nutrient management (NM) plan is an annually updated record that follows **NRCS’s 590 Nutrient** Management Standard. A NM plan manages nutrient applications to ensure that crops receive the right amount of nutrients at the right time while minimizing degradation of both surface water and groundwater. A NM plan accounts for all N-P-K applied, and planned to be applied, to each field over the crop rotation, and identifies all crop management practices for each field.

The objective of the 590 NM Standard is to decrease the opportunity for nutrient losses to occur, decrease the total residual amount of nutrients in the soil and to keep those residual nutrients within the soil-crop system by limiting the processes (leaching, runoff, erosion and gaseous losses) that carry nutrients out of the system. The 590 NM Standard contains criteria for surface and groundwater protection that manages the amount and timing of all nutrient sources.

To learn more about DATCP’s nutrient management program, visit:

https://datcp.wi.gov/Pages/Programs_Services/NutrientManagement.aspx. For a summary of the water quality protection features of the 590 standard, visit: <https://datcp.wi.gov/Documents/NM590Standard2015.pdf>.

2022 NMP Numbers	
NM Plans Reported	7,599
NM Acres Reported	3.45 million
Percent of WI Cropland Covered by NMP	37%
Farmer-Written Plans	1,708

The DATCP allocated its annual appropriation of funds to counties through its annual **allocation process. This process provides “for cost-sharing grants and contracts under the soil and water resource management program under s 92.14.”** In 2022, the allocation provided nearly \$6 million to counties for landowner cost-sharing. This cost-sharing includes bond funds and SEG funds and supports the implementation of diverse conservation practices from manure management systems, to erosion control and nutrient

management planning. The allocation also supported several projects through the innovation grant program. This funding provides small amounts of financial assistance to support a new concept within a county. The allocation also provided \$200,690 in grants for farmer training (Nutrient Management Farmer Education grant program), and just over \$880,000 to support partners, including the University of Wisconsin System institutions, to enhance the statewide infrastructure fundamental to implementing state conservation activities, with an emphasis on development of the SnapPlus nutrient management planning software.

The DATCP also provided an annual appropriation of \$3.7 in GPR funds and \$7.3 in SEG funds **“for support of local land conservation personnel under the soil and water resource management program.”** DATCP’s 2022 final allocation plan under the Soil and Water Resource Management Grant Program is summarized in Table 1 below. In most cases, the available appropriations are not able to meet the total requests of the counties for cost-sharing and staffing support.

Table 1. Summary of Requests and Allocations for Grant Year 2022.

Funding Category	Total Requests	Unmet Requests	Final Allocations
County Staff/Support	\$18,286,738	\$7,256,738	\$11,030,000
County LWRM Cost-Share (Bond)	\$7,374,500	\$3,934,726	\$3,439,774
Bond Cost-Share Reserve (Bond)	\$300,000	\$0	\$300,000
LWRM Cost-Share (SEG)	\$2,846,439	\$656,000	\$2,190,439
Project Contracts (SEG)	\$1,137,055	\$251,716	\$885,339
NMFE Training Grants (SEG)	\$206,340	\$0	\$206,340
Innovation Grants (SEG)	\$494,282	\$226,400	\$267,882
Total	\$30,645,354	\$12,325,580	\$18,319,774

DATCP nutrient management program staff train farmers, consultants and local agencies on the principles of sound nutrient management, how to comply with performance standards and how to use available tools to create and evaluate an ATCP 50-compliant nutrient management plan. DATCP also maintains a Manure Management Advisory System (MMAS), which helps farmers develop a clear understanding of field-specific soils and their ability to accept nutrients and manure for optimal crop production while protecting water quality. The system includes web-accessible tools, including: WI "590" Nutrient and Manure Application Restriction Maps, a map service for geographic information system (GIS) users, and the Runoff Risk Advisory Forecast (RRAF) model.

The RRAF provides Wisconsin’s farmers with an innovative decision support tool which communicates the threat of undesirable conditions for manure and nutrient spreading for up to 10 days in advance. The system uses data outputs from the National Weather Service including snow accumulation and melt, soil moisture content and temperature and

forecast precipitation to create and display maps that provide the runoff risk for a 72-hour period. The 590 Restriction maps are available statewide to assist farmers in making sound decisions about how and where to apply nutrients on their cropland. The mapped data used to create the restriction maps are also available for GIS-users to download into their own mapping applications. All of these tools can be accessed at <http://www.manureadvisorysystem.wi.gov>.

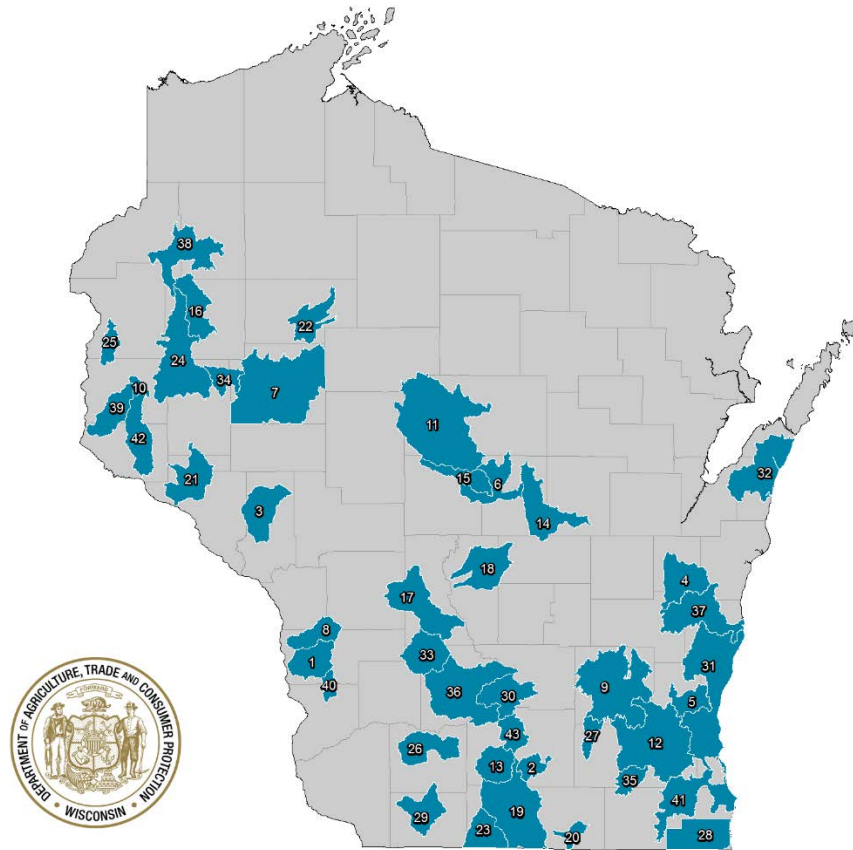
In 2018, DNR adopted a new targeted performance standard to reduce the risk of pathogen contamination to groundwater (NR 151.075). This new standard restricts manure application in designated areas where the bedrock consists of Silurian dolomite with a depth to bedrock of 20 feet or less. DATCP is responsible for the implementation of performance standards in NR 151 and in July 2021 adopted a technical standard to support the implementation of the performance standard called the Wisconsin DATCP Technical Standard 01 Verification of Depth to Bedrock. ATCP 50 is currently under revision to adopt the technical standard into administrative code so that it can be used.

In 2020, DATCP contracted with the U.S. Geological Survey (USGS) to update depth to bedrock maps of the Silurian/Karst bedrock region of northeastern Wisconsin. Current depth to bedrock maps are based on limited data and professional judgement, often from over 40 years ago. This project collected airborne geophysical data that encompasses selected areas of interest in Northeastern Wisconsin and focuses on the 5 and 20ft depths identified in the targeted Silurian bedrock performance standard. The data was collected using airborne electromagnetics, or AEM, which is a geophysical technology originally developed for use in the mining industry to locate and map ore bodies but more recently used to map groundwater resources. This work provided accurate, belowground properties that are otherwise difficult to assess and made public vital information for local water users and managers, farmers, conservation staff and agronomic professionals to better understand their groundwater resources and aquifer systems. The Wisconsin Geologic and Natural History Survey is using the data collected as part of the AEM Survey to update existing maps in 2023.

Program to Address Agricultural Nonpoint Contributions (ATCP 52)

Producer-Led Watershed Protection Grants are awarded by the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) to help farmers address the unique soil and water quality challenges of their local landscapes with innovative and collaborative approaches.

Producer-Led groups focus on nonpoint source abatement activities which benefit both surface and groundwater quality. The program-wide 2022 Cover Crop and No-Till Analysis shows that farmers in the program planted 112,936 acres using no-till technology, a 35% increase from 2021, and 127,324 acres of cover crops, a 27% increase from 2021. Combined, these practices resulted in an estimated reduction of 218,480 tons of soil loss from occurring, 154,367 pounds of phosphorus from leaving farm fields, and 61,214 tons of carbon dioxide equivalents of soil greenhouse gas emissions. More information about this project can be viewed at our website: [DATCP Home Producer-Led Tracking Project \(wi.gov\)](http://www.datcp.wisconsin.gov/producer-led-tracking-project).



Point Source Activities

Previous work by DATCP identified pesticide and fertilizer operations as possible point sources of groundwater contamination. Past problems included improper disposal of unwanted agricultural chemicals, lack of containment for spills, outdated product handling methods, and poor understanding by workers in the industry of how small actions, when continued over time, lead to large problems. DATCP has worked to address these problems through point source prevention. In cases where environmental degradation has already occurred, DATCP oversees environmental cleanup of contaminated soil and groundwater.

Beginning in 1990, the Agricultural Clean Sweep grant program helped farmers dispose of unwanted pesticides, farm chemicals and empty pesticide containers. In 2003, DATCP also began **operating and managing the state's household hazardous waste grant program** and Agricultural Clean Sweep became Wisconsin Clean Sweep. In fall 2007, prescription drug collection was added to the grant and the annual program budget expanded to \$1 million. In 2009 the program budget was reduced to \$750,000 annually and program management reduced to 75 percent FTE.

In 2022, 82 grants were issued: 28 for agricultural waste, 41 for household hazardous waste and 20 for the collection of unwanted prescription drugs. Farmer and agricultural participation in collection events brought in just under 75,000 pounds of agricultural waste

in total. Farm participation can vary greatly depending on the weather or the frequency of collections within a county. Some counties hold a farm collection every other year or every few years. Farm participation for 2022 appears to be lower than the long-term average agricultural waste collected, which has historically ranged between 100,000 and 150,000 pounds collected annually. Many counties report declining collections as more farmers are using custom application and pesticides are becoming more concentrated. Much of the old stockpiled pesticides were collected during the early years of the program. However, Clean Sweeps still see old, banned or cancelled pesticides, disposing of nearly 2600 pounds of chemicals like DDT and chlordane. The canceled events due to safety concerns from COVID-19 during 2021 contributed to the slight increase in the amount of waste counties took in, as residents had to stock pile their waste for an extended period of time.

The amount of household hazardous waste collected in 2022 was about 3.2 million pounds, compared to 2 million pounds collected in 2021. This increase in the amount of household hazardous waste is likely attributed to the canceled events stretching back to 2020 leading residents to stockpile waste until their next Clean Sweep event. **The "Safer From Home" initiative implemented due to COVID-19** in 2020 gave residents the opportunity to remove hazardous waste from their homes and already disposed of the hazardous waste via 2020 Clean Sweep, resulting in less waste product to be collected in 2021. Latex paints remain the most common waste collected from households, followed by solvents/thinners, lead/oil paint, and pesticides/poisons as the fourth most collected waste brought in for disposal.

Wisconsin residents also turned over unwanted prescription drugs at various collection events or through permanent drug drop boxes located in law enforcement offices throughout the state. Drug collections netted just under 23,000 pounds of unwanted pharmaceuticals, a decrease of about 12,000 pounds from the previous year. Again, the increase may be due to cancelled collection events or limited disposal opportunities as a result of health and safety concerns with COVID-19. Drug collections supported by clean sweep grants are only a portion of the drug drop boxes and take back events in the state. The Wisconsin Department of Justice also coordinates and pays for the collection and disposal of unwanted drugs. The pharmaceuticals collected through Clean Sweep projects are included in this program.

Fourteen local DATCP specialists perform compliance inspections and work with facilities across the state to help keep them in compliance with the ATCP rules designed to protect the environment. Agency staff also educates facility managers and employees about how routine practices may affect the environment.

Since 1993, the Agricultural Chemical Cleanup Program (ACCP) addresses point sources of contamination and reimburses responsible parties for a portion of cleanup costs related to pesticide and fertilizer contamination. To date, 790 cases involving soil and/or groundwater remediation related to improper storage and handling of pesticides and fertilizers have been initiated at storage facilities. Over this same time period DATCP assisted cleanups at more than 1,700 acute agrichemical spill locations. The ACCP has

received 1,702 reimbursement applications totaling over \$50.3 million in reimbursement payments.

Groundwater Sampling Surveys

DATCP manages a number of sampling programs to investigate the occurrence of pesticides in groundwater resulting from nonpoint sources. Three programs commonly used to assess drinking water quality are the annual targeted and exceedance sampling programs, and the less frequent statewide random sampling survey. DATCP also works with growers to assess water quality beneath agricultural fields by testing a network of field-edge monitoring wells at several locations across the state.

The most recent statistically random sampling survey of private wells statewide occurred in 2016. The results of the survey were published in early 2017, providing a comparison of pesticide and nitrate results to an earlier statewide random survey, published in 2008. Starting in March 2023, DATCP initiated an additional statistically random sampling survey of private wells across the state. This survey is currently in progress and is expected to be completed by September 2023. The results of the survey are anticipated to be published in early 2024. The final report will also provide a comparison of pesticide and nitrate results to the 2016 statewide random survey. Publications of DATCP surveys are available on the web at: https://datcp.wi.gov/Pages/Programs_Services/GroundwaterReports.aspx.

Research Funding

DATCP currently funds groundwater research at about \$150,000 and fertilizer research at approximately \$200,000 per year, respectively. The UW coordinates groundwater research project funding through the [Wisconsin Groundwater Research and Monitoring Program](#). Reports for past DATCP-funded research projects can be found in the [WGRMP Repository](#).

Recently completed research projects funded by DATCP include:

- [Assessment of Pesticide Contamination in Suburban Drinking Water Wells in Southeastern Wisconsin](#)
- [Aerial Thermal Imaging Applied to Wisconsin's Groundwater, Springs, Thin Soils, and Slopes](#)
- [Integrative Monitoring of Neonicotinoid Insecticides in Baseflow-Dominated Streams on the Central Sand](#)
- [Sublethal Effects of Chronic Exposure to Neonicotinoid Pesticides on Aquatic Organisms](#)
- [Advancing the Use of Nitrate Findings to Inform Groundwater Protection and Improvement Strategies](#)
- [Neonicotinoid Contaminants in WI Groundwater: Relationships to Landscape Cropping Systems](#)

Titles of ongoing projects funded by DATCP include:

- Geophysics-informed Transport & Shallow Bedrock Topography in Northeast and Southcentral WI Counties. Report anticipated July 2023.
- Neonicotinoid Groundwater Leaching Potential from Potato and Management Impacts at Field Scale. Report anticipated September 2024.

- On-farm Research and Local Partnership to Reduce Nitrate Loading From Agriculture in Pepin County. Report anticipated February 2025.

In June 2023, DATCP will begin funding one new two year project to further improve our understanding on neonicotinoid and nitrate transport behavior. The project, titled *Understanding the quality and rate of recharge on uncultivated landscapes under natural and enhanced conditions*, will investigate the effects of natural and enhance recharge on the leaching of nitrate and neonicotinoids into groundwater.

Groundwater Data Management

DATCP maintains its groundwater data in a database that is linked to a geographic information system (GIS) web-mapping application. The system allows the user to search the database and plot maps that show data within a user-defined geographic area. The database was placed on-line in 2012. It contains contact and location information, well characteristics, and pesticide and nitrate sample results for private and public drinking water wells and combines that data with monitoring well data collected from hundreds of agricultural chemical cleanup cases. The database includes samples analyzed by DATCP, Wisconsin State Lab of Hygiene (WSLH), as well as other public and private laboratories. DATCP's groundwater database currently contains information for over 69,000 wells and over 1,000,000 pesticide and nitrate-N sample analytical results.

DATCP uses GIS tools to analyze groundwater data and prepare maps for public hearings, DATCP board meetings, presentations and other uses. DATCP prepares and maintains data in GIS of well locations, atrazine concentrations, atrazine prohibition areas and other pesticide and nitrate-N data. This database information is used to generate maps of statewide pesticide and nitrate-N detections in wells, as well as maps for chapter ATCP 30, Wis. Adm. Code (Pesticide Product Restrictions). Other GIS analyses involve identifying groundwater wells that may be impacted by point sources of pesticide and nitrate-N contamination by allowing comparisons of groundwater results with other features in GIS, such as locations of agrichemical dealership sites and spill sites that may affect groundwater quality.

For further information:

Visit <https://datcp.wi.gov>

Contact Robby Personette, Timothy Anderson or Mark McColloch, DATCP

2811 Agriculture Drive, PO Box 8911

Madison, Wisconsin, 53708-8911

Phone: 608-224-4500

E-mail: Robby.Personette@wisconsin.gov

Timothy1.anderson@wisconsin.gov, or Mark.McColloch@wisconsin.gov