



MANITOWOC COUNTY

SWCD
SOIL AND WATER CONSERVATION DEPARTMENT

Soil & Water Conservation Department



2021 ANNUAL UPDATE



Our Mission:

“Protecting our environment to enhance the quality of life for all County Citizens. The responsibilities of the Soil & Water Conservation Department include erosion, runoff and sedimentation control and the conservation of soil, water, and related resources in Manitowoc County.”

Manitowoc County 10-Year Land and Water Resource Management Plan: January 1, 2016 - December 31, 2025

The 10-Year Land and Water Resource Management Plan guides the work of the Manitowoc County Soil & Water Conservation Department. It was created by a local and technical advisory committee that included a broad spectrum of public interest and perspectives with the intent to develop a vision and pragmatic approach to protecting and enhancing Manitowoc County's Natural Resources.

Recommendations from the local and technical advisory committees, resource assessments, and public input identified nine priorities for the Soil & Water Conservation Department to focus on in 2016-2025. These priorities include:

- A. Local Conservation Ordinances*
- B. State Agricultural Performance Standards and Prohibitions*
- C. Working Lands Initiative*
- D. Groundwater Protection*
- E. Surface water Protection*
- F. Soil Health Programming*
- G. Implementation of Best Management Practices*
- H. Education Programming for Conservation*
- I. Office Administration and Professional Development*

With the help of our community partners, stakeholders, and landowners who often voluntarily install conservation practices on their land, here's what we accomplished in 2021.

We wish to thank you for all you do to protect and enhance the natural resources in Manitowoc County.

57% OF MANITOWOC COUNTY RESIDENTS
Depend on groundwater for their
drinking supply

Priority D:

GROUNDWATER PROTECTION

According to the WI Department of Natural Resources Groundwater Retrieval Network, Manitowoc County has an **estimated total of 5,401 active wells. Nine of the public water systems are supplied from groundwater through community wells.** SWCD has a 4-prong approach to improving groundwater quality. 1. Identify conduits to groundwater and update hazards maps 2. Conduct one-on-one meetings with landowners with land vulnerable to groundwater contamination 3. Install Best Management Practices 4. Monitor groundwater



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Landowners in areas susceptible to groundwater contamination received site-specific hazards maps, well water testing information, and an overview of the updated Northeast WI Silurian Bedrock Groundwater Protection Standards during 1-1 groundwater education farm visits. **These visits brought the number of landowners receiving targeted groundwater information to 109 since 2017.**

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Producers learned to write their own Nutrient Management Plans using SnapPlus Software during our Nutrient Management Farmer Education class.

Groundwater Monitoring

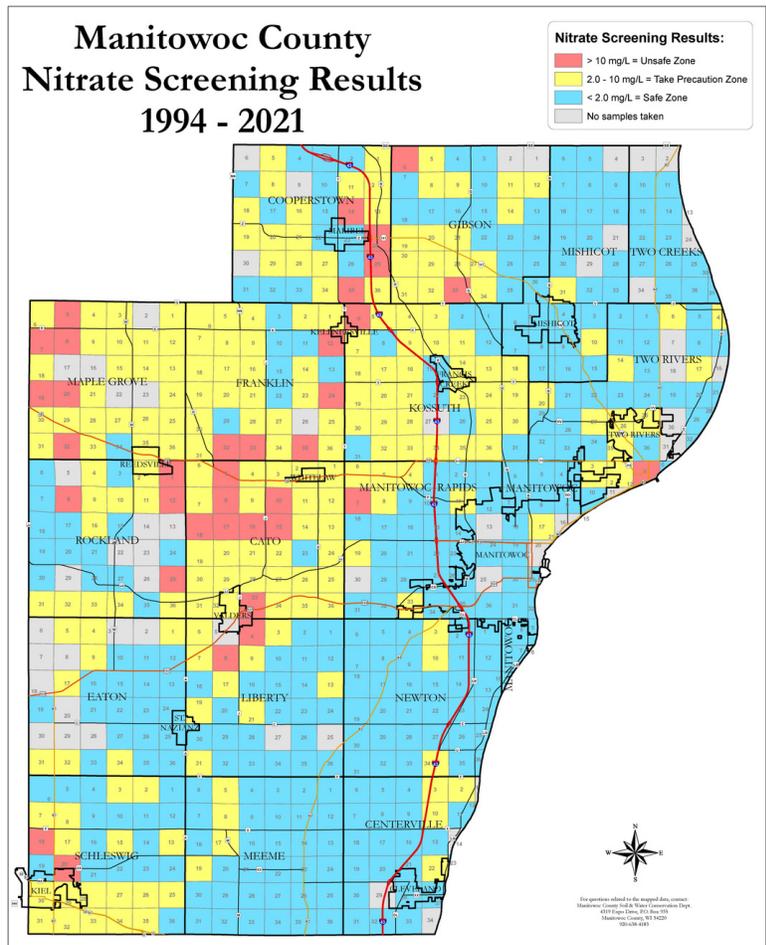
SWCD completed its sixth year of well water monitoring. Twenty volunteers from towns vulnerable to groundwater contamination participated in three screenings throughout 2021. Nitrate levels remain relatively constant year-to-year with 50% program participants consistently screening above the drinking water standard of 10 mg/L. Several participants drilled new wells this year, resulting in much improved nitrate concentrations in their drinking water. Monitoring began in 2016 as a way to track groundwater nitrate level changes as landowners implement new conservation practices. The program will be particularly helpful to gauge impacts of new NRCS 590 groundwater standard criteria (Approved in 2015) and DNR 151 targeted performance standards for manure application on cropland with 20' of soil depth or less over bedrock (Approved in 2018.)

Priority D: GROUNDWATER PROTECTION

A total of 284 samples were screened for Nitrate during the 2021 Manitowoc County Fair and Community Nitrate Screening Week. Over half (65%) of the screened samples contained less than or equal to 2.0 mg/L. These levels are far below the drinking water standard of 10 mg/L. Higher nitrate levels continue to occur in areas vulnerable to groundwater contamination. These areas have shallow soils over bedrock and karst features, such as sink holes, which allow rainwater and melting snow to easily percolate into the underlying aquifer.

Nitrates are one of the most common contaminants in drinking water, and are also a leading indicator of other possible contaminants. Common sources of nitrate include nitrogen fertilizers, manure, septic systems and sewage treatment practices.

The recent addition of our week-long community nitrate screening added a convenient way for county residents to learn about their drinking water quality and for SWCD staff to engage with the public about its conservation work, answer questions, and promote the importance of annual well water testing.



Manitowoc County Totals

Total Samples = 273

<=2.0 mg/L = 177 (65%)

2.0—10 mg/L = 72 (26%)

>= 10.0 mg/L = 24 (9%)

* Data includes only samples from Manitowoc County that were not treated with a nitrate reduction system.

Drinking water standard is 10 mg/L

Priority E: SURFACE WATER PROTECTION

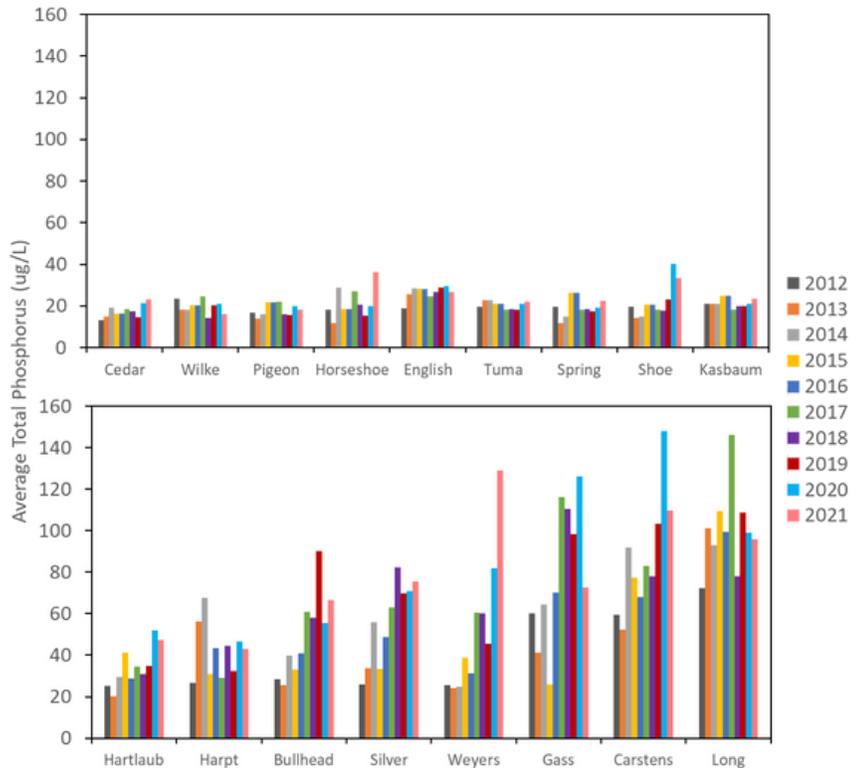
What's Being Done to Improve Surface Water Quality in our County?

Conservation programs offered by Manitowoc County are a blend of education, voluntary programming, financial cost-share administration, and enforcing state rules and local ordinances. These efforts help to minimize soil loss from cropland and reduce delivery of sediment, nutrients, animal waste, and other pollutants to surface and groundwater.

Two major efforts are happening in the Pine Creek and CalMan Lakes watersheds. These watersheds contain Long, Carstens, Gass, Weyers, Hartlaub, and Kasbaum Lakes, and are under Nine Key Element Plans.

Assistance and education from resource conservationists, along with cost-share funding, is helping landowners and operators install conservation practices such as grassed waterways and cover crops, which reduce the amount of nutrients entering surface water from runoff.

The County is also part of the Northeast Lakeshore (NEL) Total Maximum Daily Load (TMDL) planning which focuses on addressing surface water quality impairments from phosphorus and total suspended solids. The NEL TMDL study area spans a portion of the Lake Michigan watershed from just south of Sturgeon Bay to Port Washington, and reaches west towards Lake Winnebago. The plan will be submitted to the United States Environmental Protection Agency late summer/early fall 2022 and will likely generate additional funding to address both point and nonpoint source pollution.



The graph above shows changes in the average phosphorus levels in 17 Manitowoc County inland lakes during the past 10 years. On average, 9 of the 17 lakes meet water quality standards for Phosphorus levels and 8 are above water quality standards. Our surface water priority goals include maintaining phosphorus levels at or below current levels for lakes between 0-24 ppb and decreasing phosphorus levels by 10% in all inland lakes with average phosphorus levels above 24 ppb.



Gass Lake Diversion

Gass Lake is a 6 ½ acre, spring-fed lake located south of Manitowoc in the Township of Newton. Lake monitoring indicated significant increases in phosphorus levels over the last several years. Phosphorus is an essential nutrient needed for plant growth, but too much of it in streams, rivers, and lakes can cause overgrowth of aquatic plants, increased harmful algal blooms, decreased light penetration and decreased levels of dissolved oxygen. Each of these conditions make it difficult for fish to live and people to swim, and negatively impacts property values, recreation, and public health.

The Gass Lake project diverted 450 acres of watershed runoff from entering the lake, redirecting it to where the lake naturally outlets into 150 acres of woodland. Although more monitoring is needed, early results are promising, showing a decrease in Gass Lake's phosphorus levels in 2021.

Priority E:

SURFACE WATER PROTECTION



PINE CREEK WATERSHED

Resource Conservationists worked with landowners to install 1 WASCB, 5 grassed waterways, and promote cover crop and reduced tillage practices within the Pine Creek Watershed.

The Pine Creek Watershed is located in Manitowoc County, just south of the city of Manitowoc. Pine and Calvin Creeks and an unnamed intermittent stream transport water from approximately 21 square miles, or 13,409 acres of land into Lake Michigan. The watershed is also home to eight inland lakes: Carstens, Gass, Glomski, Grossheaus, Hartlaub, Kasbaum, Waack, and Weyers. These lakes support a variety of fish & wildlife and offer recreation space for local sportsmen, outdoor enthusiasts, and families, alike.

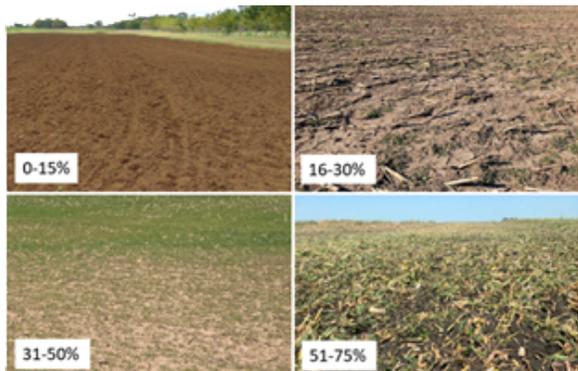


BEFORE



2021 GRASSED WATERWAY CONSTRUCTION

AFTER



Transect survey results indicate an increase in cover crops planted after corn, soybean and wheat from 16.% in 2020 to 20% in 2021. Fields also averaged 44% residue cover in spring and 42% coverage in fall. These practices reduce erosion from rain and wind and keep nutrients in the soil rather than running into nearby lakes and streams.



Thank you to the farmers who are making a difference & helping protect our environment.

Healthy soil gives us clean air and water, bountiful crops, thriving forests, productive grazing lands, diverse wildlife, and beautiful landscapes.

Some of the best management practices SWCD promotes to manage soil in a way that improves soil function include: reducing tillage to minimize soil disturbance, growing cover crops to keep the soil covered and maximize biodiversity, and incorporating perennial crops like alfalfa into crop rotations to maximize the presence of living roots.

Despite several of our annual large-audience activities being canceled due to the pandemic, the Soil & Water Department found creative solutions to continue promoting the best management practices being done by local farmers across our county to improve soil health. One of these promotions was an interactive cover crop map tour which featured 26 Manitowoc County Farm Operators sharing information about growing cover crops and lessons they've learned.

Visit our 2021 Cover Crop Map Tour!

<https://storymaps.arcgis.com/stories/9effd499cef84c9c952b2da7749acc44>

Priority F: PROMOTING BEST MANAGEMENT PRACTICES TO IMPROVE SOIL HEALTH

Cover Crop MAP TOUR



Between the Lakes Demonstration Farm Network

Conservation Agriculture for Clean Water & Healthy Soils



Between the Lakes Demonstration Farm Network is a network of farmers testing and demonstrating the best conservation practices to reduce phosphorus, nitrates, and sediment entering the Great Lakes Basin. Manitowoc County Soil & Water is a proud partner of this effort which also includes USDA Natural Resource Conservation Service, University of WI -Extension, Great Lakes Restoration, and Fond Du Lac, Sheboygan, and Calumet counties. Between the Lakes is one of five demonstration farm networks in Wisconsin.

Top Photo: Greg Gries, Owner/Operator of Libertyland Farms, Manitowoc County's Demonstration Farm, describes cover crop trials and frost seeding winter rye into corn stubble residue.

Bottom Photo: Isaac Lemmenes of R Braun Inc talks about low-disturbance manure application and cover crop options.

Both photos were taken during a well-attended "New Ways for New Challenges" field day at Libertyland Farms in August 2021.



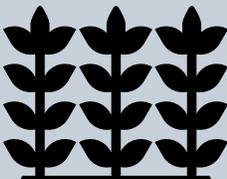
Photo Credit: Maranda Miller, University of Wisconsin Extension



SWRM

Manitowoc County uses DATCP Soil & Water Resource Management grant funds to install a variety of conservation practices throughout the county. The practices control and reduce delivery of sediment, nutrients, manure, wastewater, and other pollutants to surface and groundwater from agricultural cropland and production sites. SWRM dollars are used to offset about 70% of the total cost of installation for most practices. The other 30% is covered by the landowner or grant recipient. Here's what we accomplished with SWRM Bond and Segregated Dollars in 2021:

1,209 new acres with a Nutrient Management Plan



1,034 Acres Planted with Cover Crops

Bonded

Segregated

Priority G: IMPLEMENT BEST MANAGEMENT PRACTICES

1 well abandoned

7 Acres (12200 linear ft.)
Grassed Water Ways
Installed



2 Acres with a
Water & Sediment
Control Basin



CREP

16,610 ft. new CREP
Stream Buffers

The Conservation Reserve Enhancement Program is part of the Conservation Reserve Program (CRP), a voluntary conservation program for landowners to establish permanent vegetative cover on eligible farmland. In exchange for removing environmentally sensitive land from production, farmers are paid an annual rental rate with other federal and non-federal incentives. This has many environmental benefits including reducing soil erosion, improving water quality, establishing wildlife habitat, and enhancing forest and wetland resources. In 2021 we helped implement 16,610 ft. of new CREP stream buffers. Our county has a total of 1,056.30 acres in CREP which includes grass, trees, and wetlands.

INNOVATION IN OUR COUNTY

Soil & Water received DATCP Innovative Grant funding for three different projects in 2021: planting harvestable buffers along streams or wetlands, experimenting with interseeding alfalfa into corn silage, and fixing tile blowouts in the landscape.

HARVESTABLE BUFFERS



4 Acres Installed

INTERSEEDING TRAILS



33 Trial Acres

TILE BLOWOUT REPAIRS



15 Repairs Completed

Priority G: IMPLEMENT BEST MANAGEMENT PRACTICES

These win-win solutions reduce soil and nutrient loss from cropland while keeping land in production!

Harvestable buffers protect surface water while keeping land in production. They add forage options, filter and capture sediment and nutrients, and allow for nesting periods.

In this system the corn & alfalfa are planted at about the same time. The alfalfa acts as a cover crop during establishment in the corn silage and is brought to full forage production the following year. This practice can reduce soil and nutrient loss from cropland and increase overall forage yields.

Drain tiles have helped local farmers increase production, reduce runoff, and dry out fields, for decades. These aging clay and concrete tile systems however, are susceptible to erosion and breakage. Repairing breaks, reduces the amount of nutrients and sediment that flows directly to surface water.

EDUCATION & OUTREACH ACTIVITIES

Priority H: Implement Educational Programming



Photo Credit: Maranda Miller, University of Wisconsin Extension

"Education is at the core of all SWCD activities and used as an effective strategy to achieve the priorities outlined in our Ten Year Land and Water Resource Management Plan. "

In 2021 we reached thousands of individuals through a variety of educational programs. Some events, like our participation in Breakfast on the Farm, fostered awareness around our community's soil and water resource needs to the general public. Other activities, like the "New Ways for New Challenges" field day shared innovative techniques and practical strategies with groups of local producers. Still others, like the one-on-one farm visits, provided on-going, targeted information and technical assistance directly to those people making farm-management decisions for their operations.

"NEW WAYS FOR NEW CHALLENGES" FIELD DAY

USDA Research Agronomist, Dr. John Grabber, discusses interseeding alfalfa into corn silage at a field day out at Libertyland Farm.



BREAKFAST ON THE FARM

4,700+ attended

Met with roughly 200 families

Hands-On Activity "How does soil move?"

& erosion in a bottle

SOCIAL MEDIA REACH

40%
INCREASE

SOCIAL MEDIA FOLLOWERS IN 2021



Friday Features of local organizations, farms, and conservation practices helped increase social media engagement in 2021 by 40% and spread the conservation work accomplished throughout our community.



A FEW STAFF UPDATES:



Congratulations on your retirement, Tony Smith! Tony retired in October after serving Manitowoc County as a Resource Conservationist for 33 years.

Welcome Angie, Ulness Manitowoc County's Extension Manitowoc County Agriculture Educator. Her office is located in the Soil & Water Department to better serve our community as a "one-stop-shop."



Thank you

To our partners and landowners for all you do to protect and restore our county's land and water resources!