

# FROM THE WATERSHED streamings

Oconomowoc Watershed Protection Program Newsletter



## 2023 UPCOMING EVENTS

SAT / JUNE 24

### 12th Annual Lake Country Clean Water Festival

A wide variety of fun family activities at Lakefront Park in Pewaukee.

[cleanwaterfestival.com](http://cleanwaterfestival.com)

SAT / JULY 8

### Annual Paddle Event

Fun for the whole family! Join us for a scenic trip along our beautiful shores of North Lake and its tributaries. See back page for more details. Bring your own canoe, kayak, paddleboard or contact us for rental information.

[oconomowocwatershed.com](http://oconomowocwatershed.com)

SAT / AUGUST 12

### 15th Annual Ride to the Barns

A fundraising bicycling event to benefit land conservation.

[tallpinesconservancy.org](http://tallpinesconservancy.org)

FRI / SEPTEMBER 15

### Annual Lake Country Clean Waters Healthy Lakes Conference

Open to all who care about our local water resources. Guest speakers will cover a broad spectrum of topics such as: Aquatic Invasive Species, Research and Management, and more.

[lakecountrycleanwaters.org](http://lakecountrycleanwaters.org)

## ARE WE GETTING ANY RESULTS?

The Oconomowoc Watershed Protection Program has completed its seventh year, and fairly regularly, we are asked the question, "are we getting any results?" The answer we give is very similar to the overall takeaway from a recent statewide phosphorous conference where Darrell Smith, the Watershed Program Manager, and farmer John Koepke, took part in a panel discussion. Check out the conference reports here: <https://pconference.wordpress.com/> "Phosphorous: Lessons from 10+ years of Numeric Standards for Wisconsin's Waters"

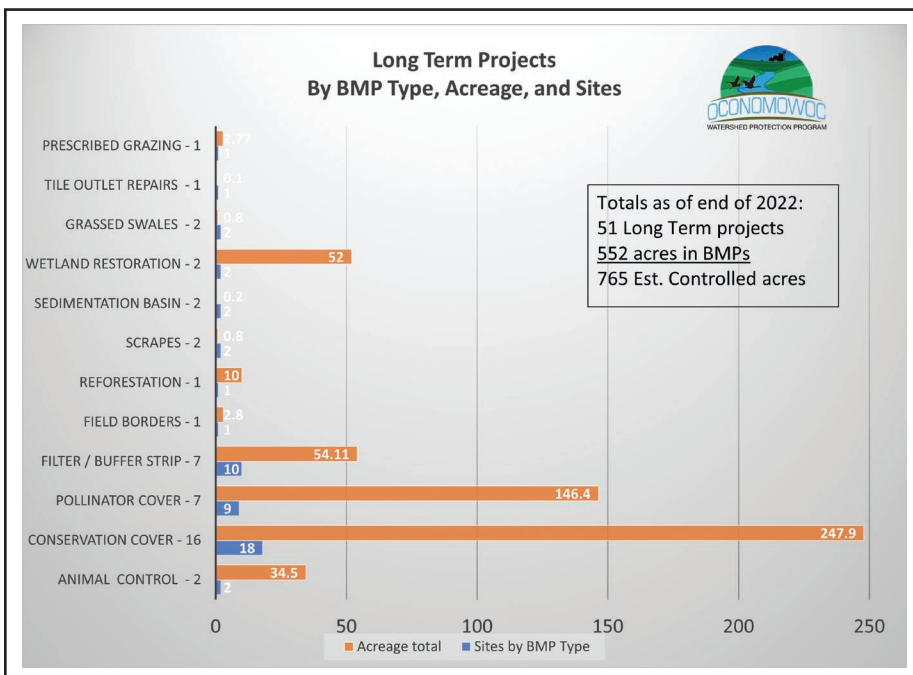


The message from that conference that is also reflected in our watershed: Yes, we've made a lot of progress and there's still a lot to be done!

Areas" that were identified in our Adaptive Management Plan approved in 2016. These are areas we have been focusing on to reduce phosphorous runoff. The chart below shows key metrics from those projects. In addition to long term projects with

[continued on page 5]

**PROJECTS:** OWPP has been able to install long term projects (we call them Best Management Practices, or BMP's) on 27 of the original 79 "Critical Source



## FARMERS GOING GREEN

Farmers in the watershed are taking conservation to another level by implementing a relatively new practice called “Planting Green”. Planting green means allowing a spring cover crop, usually cereal rye or winter wheat, to grow right up until the time of planting of the cash crop – typically corn or soybeans. The goal is to maximize the top growth of the winter cover crop, to improve soil health and reduce water runoff early in the growing season when the cash crop has not yet canopied out.



**Farmer Dennis Stuetgen plants his corn green into a standing rye cover crop.**

In Wisconsin, the most vulnerable times of the year for erosion on agricultural land are in May and June, before corn and soybean plants grow tall enough to protect the soil from erosive impact of falling rain. We generally see higher phosphorous concentrations showing up in our waterways during these months. As July rolls around, cash crops have grown tall and leafed out enough to provide a nice protective canopy. So what can be done about those early weeks of the cropping season?

Planting green provides the perfect answer. After terminating with a chemical application or crimping, the cover crop lays over and dries out, releasing nutrients to the growing cash crop, protecting the soil surface, and moderating soil temperatures during early summer heat. Underground, the roots of the dying cover crop are decomposing, feeding soil biology, adding organic matter to the soil and opening up pathways for air and water infiltration. This is truly a win/win/win for the cropping system, long term soil health and water quality.

### So What’s the Catch? Why Isn’t Everyone Doing This?

For one, it’s a new strategy that feels risky to many farmers who are accustomed to planting into a “clean” field. Soybeans can handle early season competition from the prior cover crop, but corn does not like competition overall, so the timing of termination is crucial. Also, in cases of very high cover crop top growth, there can be some concern about “pinning”, where the residue is pushed into the seed furrow by the planter, interfering with proper seed-to-soil contact needed for germination. There’s a balance to the timing of each step, so that the cash crop isn’t set back.

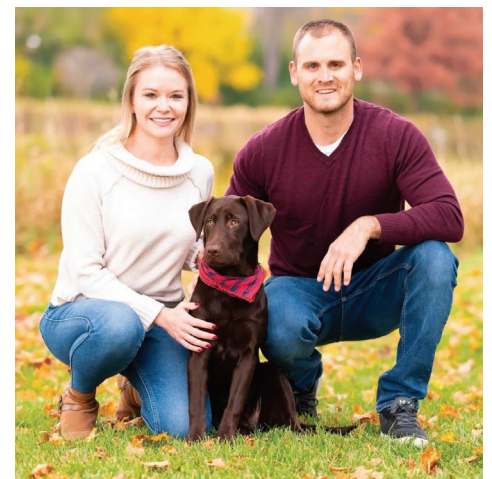
One member of Farmers for Lake Country, Dennis Stuetgen, has fine-tuned that balance, allowing beautiful stands of cereal rye to cover his fields in May, before planting corn into the residue. *“I feel the key to planting green is early season fertility, when that residue is breaking down,”* Dennis says. *“I split my nitrogen applications into three smaller doses to help the corn until July, when it will start getting nitrogen from the cover crop breaking down. I believe in keeping the green cover growing as long as possible, giving the soil and microbes a healthier environment.”*

Not everyone has pursued planting green to the degree Stuetgen has, but over 240 acres were planted green in the watershed in 2022 and supported with a cost-share incentive from OWPP. If you see a lush green field in mid-May that later becomes a tall stand of corn or soybeans, that means the farmer took this additional step to allow soil-building cover crops to be a significant part of their cropping rotation. 🌱

## NEW WATERSHED PROGRAM MANAGER AT OWPP

We are saying good-bye to Darrell Smith, who has been serving as the Watershed Manager at the City of Oconomowoc and helped lead the OWPP for the last seven years. He’ll be moving to Colorado, and we wish him well in his new work as the Water Resource Manager in Snowmass Village.

We are excited to announce that Erik Joost is coming on board as the new Watershed Manager for OWPP. Erik will help guide the City’s Adaptive Management program which targets Phosphorus reduction within the Oconomowoc River watershed. Erik is from Waukesha County where he currently resides with his fiancé Abbigail. He has been an avid user of the waters within Lake Country for much of his life. He attended the University of Wisconsin Stevens Point



**Erik, Abbigail, and their chocolate lab, Nova.**

earning a degree in Soils and Land Use Management. Over the past several years, he has obtained his Wisconsin and Illinois Certified Crop Advisor certifications. In his prior profession, he has been an agricultural consultant writing Nutrient Management Plans and soil sampling across Southern Wisconsin and Northwest Illinois. Erik’s background and passion for water quality in our local water system will greatly aid our program’s work to reach quality goals through farmland, stream and lake projects in the Oconomowoc River basin. 🌱

# MASON CREEK RE-MEANDERING PROJECT COMPLETED IN NW WAUKESHA COUNTY

Tall Pines Conservancy, the Oconomowoc Watershed Protection Program and North Lake Management District are excited to announce the successful completion of the Mason Creek Re-meander Project last fall. Several years of planning and fundraising went into the project, which created a 1600-foot section of meandered creek bed to improve water quality and natural habitat for the Class 1 trout stream that flows into North Lake.

Mason Creek is one of three streams in the Oconomowoc River Watershed that is impaired for phosphorous, and a study completed by the Southeast Wisconsin Regional Planning Commission identified this channelized stretch of stream as a priority area to reduce surface runoff and nutrient loading. Three months of construction last fall created a naturalized stream course that reduces erosion, provides natural filtration of nutrients and allows for better connectivity to the riparian floodplain during periods of high flow.

Wondra Construction, Inc, the lead contractor on the project, had first-hand experience with higher flows during the project. A six-inch rain event occurred mid-September (estimated to be a 25- to 50-year rain event), and numerous springs




**Mason Creek after re-meander completed, November 2022. Re-meandered with tapered banks integrated into floodplain.**

were uncovered during digging of the new channel. One spring in a lower section of the creek generated 100,000 gallons of water per day based on the pump capacity needed to remove it and keep the area “dry” for construction. Wondra used a network of road plate barriers and diversion channels to route the main channel water away from disturbed areas during construction.

Stream restoration was completed late November, as the new channel was tied into the inflow from upstream. Stantec Engineering designed the project with input from project partners and community members. Stantec also provided significant assistance securing state grants to assist with project costs, including a DNR Targeted Runoff Management (TRM) Grant and a DNR Surface Water Grant.



**Mason Creek pre-re-meander as a straight channelized stream.**

The re-meandering project will prevent approximately 100 lbs of phosphorous annually from entering North Lake, where algal blooms and lake weeds have been a concern for residents and other stakeholders in the Oconomowoc River watershed. Darrell Smith, Watershed Manager for the Oconomowoc Watershed Protection Program explains, “The project epitomizes partnerships – bringing together state and local funding, public and private entities to accomplish something that any one partner could not have done alone. It’s a win for water quality and the overall ecology of Mason Creek. And – because Tall Pines Conservancy has protected the property, the stream work and adjacent native plantings will benefit the area in perpetuity.” 

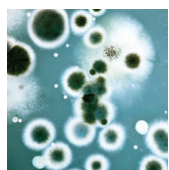
# SCIENCE CORNER



## UNDER THE MICROSCOPE — BIOLOGY TAKES CENTER STAGE!

As human beings learn more about the living environment, we are finding that microscopic organisms play key roles in our farming systems. In the old days, we used to think of fertilizing soils simply with N-P-K, ie nitrogen, phosphorous, and potassium, the three main nutrients we commonly see on the side of a fertilizer bag. Nitrogen, a key ingredient used by plants to create proteins, is 78% of the earth's atmosphere, but plants can't absorb nitrogen directly from the air. So we dutifully apply fertilizer to our vegetable or flower gardens to help our desired plants grow. But who fertilizes the trees that grow hundreds of feet tall in the forest? What helps a prairie plant grow 8 feet tall with roots literally miles long when lined up end to end?

The answer is the microbial community in the soil, which are more diverse and more important than we understood years ago. In fact, within a handful of soil are more microbes than people on the planet. Soil microbes provide so many services to plants:

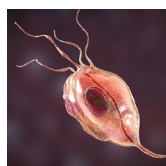


**Bacteria** (1 billion per teaspoon of soil!) trap nitrogen out of the atmosphere and trade it with plant roots in exchange for sugars that the plant produces. Bacteria also decompose dead plant material, releasing those nutrients to the soil.

Bacteria thrive in a compost pile that can turn your vegetable scraps back into rich earthy material.



**Fungi** (600+ feet per teaspoon!) break down minerals in the rock portion of soils and deliver them to plants, along with water, in exchange for sugars. Fungi also create substances that glue tiny soil particles together to form aggregates, which opens up pathways for air and water to permeate the soil surface. This is key for reducing sheet runoff and protecting soils against erosion.



**Protozoa** (100 per teaspoon) are single celled organisms that are voracious predators in the soil! They consume other micro-organisms and release microscopic "manure" in a form of nitrogen called ammonium, a more stable form of nitrogen than nitrate N, which can leach more easily in rain events.



**Nematodes** are (10 to 50 per teaspoon) round worms that are higher order predators that consume other organisms lower in the food chain and similarly release nutrients back into the soil. Nematodes are much larger than the other soil microorganisms, but would appear the size of a speck of dust on a microscope slide.

Plants are sugar factories – they take in carbon dioxide from the air and break apart water molecules to make carbohydrates (or sugars) that they release to the microbial community in the soil. Estimates are that plants release 20% of their photosynthetic production from their leaves back into the soil immediately surrounding their roots. The process attracts exactly the kind of microbial communities they are wanting to relate to, which vary by plant type. It's a grand and mutually beneficial partnership, and as a result, a plant grows from a simple seed to a complex multi-celled organism that can be harvested for food, fiber or building materials, or simply enjoyed on a peaceful walk through a forest.

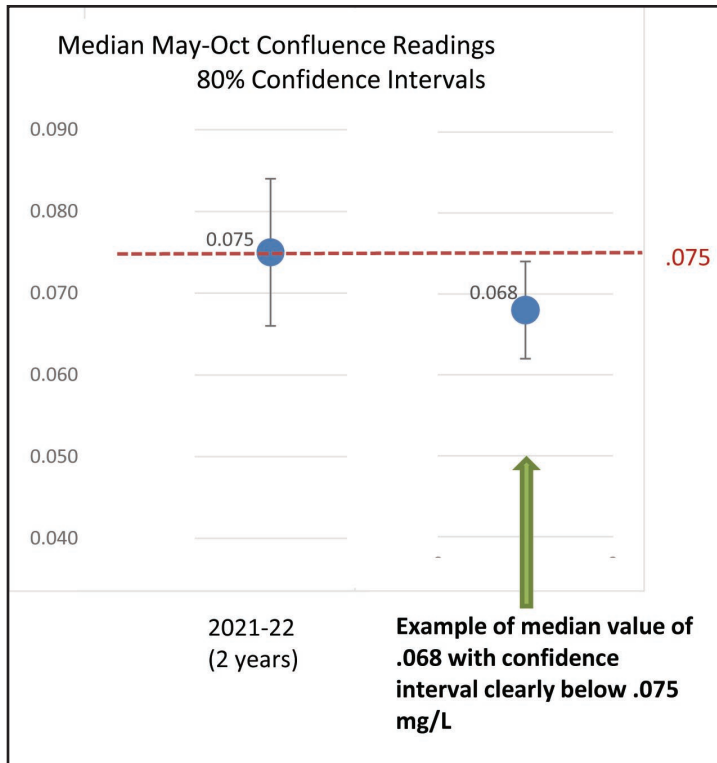
In farming, we have seen an increasing awareness of the importance of supporting the microbial community, by reducing tillage, feeding the soil with organic matter from crop residues, manure or compost, and limiting chemical applications that can degrade microbial populations. We are not yet giving up on fertilizers entirely – they have their place – but we know that much can be provided by natural systems when properly tended.

We can thank our lucky stars – or the crafty micro-organisms which in fact are more numerous on this earth than the stars in the universe (true... as far as we know...) that our soils are such a rich biome for our productive planet. 🌍

## ARE WE GETTING ANY RESULTS?...

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10+ year contracts, we support annual practices like cover crops and planting green on over 2400 acres of agricultural land in the watershed. These practices are known to reduce sheet runoff, absorb excess soil nutrients, and support better soil functions in terms of microbial health and water infiltration/retention (see Science Corner on page 4 for more on this!).



Together with recent upgrades at the treatment plant and restoration efforts along streambank and lake shorelines, we estimate conservatively that our program has prevented over 4000

lbs of phosphorous from entering surface water annually. To give an idea of what 4,000 lbs of Phosphorous means, it's enough nutrient to grow 2 million pounds of algae! Criminy, that's A LOT of algae!

**PROGRESS:** When you look at water quality numerically, we are beginning to see improvements in Phosphorous concentrations at the confluence of the Oconomowoc River and Rock River, which is the point of compliance for the City of Oconomowoc to reach its Adaptive Management goals.

Anyone who does ongoing analysis of water quality knows that there can be wide variations within a given year and between years. If we have a wet year or a year with large intense rain events on exposed soil, the result can show up dramatically with high Phosphorous readings at the confluence. On the other hand, dryer years can result in less nutrient runoff and better water quality numbers.

The City of Oconomowoc takes a phosphorous concentration reading at Northside Dr in Ixonia every 2 weeks from May to October and analyzes the data to find the median value (this is the middle of the range of values reported). The data analysis gets quite technical, but the good news is that our median value for the last 2 years was right at the target of .075 mg/L (celebrating!). On the other hand, with the high level of variability in our readings, the goal is to get our median value to be lower still, likely in the .068 to .070 range by the time we get to the end of our initial 15-year program. Needless to say, we are encouraged by the steady progress.

**COMMUNITY:** OWPP is not just about numbers. Our outreach and educational programs reach several hundred people each year, and we spread the word that everyone can play a part – whether holding off on fertilizing a lawn that drains to a creek, or sweeping leaves away from storm drains in fall, or starting backyard composting. Every pound, every ounce counts. And we all get to enjoy the fruits of our efforts... 🌱

## THE FOOD CHAIN DOWN UNDER

Have you ever wondered if fish in our watersheds eat during winter months while our waterways are covered with ice? Well the answers is yes, and no.

Fish generally go into a relaxed state during the winter months. They will congregate near the bottom of our lakes where the water is warmer from groundwater springs. Their metabolism slows and their heart rates drop and they go into kind of a resting period. Some species will even find a nesting site and

rest there in one place, like in suspended animation. Most species continue to eat but at varied rates depending on the food supply and water temperature. An example is the Northern Pike which will stir up the mud and sediment in the hunt for hibernating frogs. Other fish like pan fish will depend on insects and zooplankton as these food sources are available. Musky are generally not as active as Northern Pike but are occasionally caught through the ice, even though their legal fishing season is closed by the end of the year in southern Wisconsin. In an extreme case, a species not native to our area but present in backyard ponds, the Koi, can

go completely dormant and not consume anything of substance all winter.

During the winter months, don't look for fish in the rivers and streams of our watershed. Most fish head to the lakes in fall to find deeper water that isn't going to freeze them out. In spring many will return to the rivers to spawn and then spend the summer where the water is warmer and the food is plentiful.

If you're a fan of fishing through the ice, you know that winter fishing takes patience and perseverance. Mainly because fish and other forms of life slow way down to wait the winter out. 🐟

# OWPP PADDLE SAT / JULY 8 / 2023

The Paddle Event this year will focus on the north shore of North Lake and its main tributaries, followed by lunch and optional afternoon hike in the nearby Oconomowoc River Conservancy Park. We have arranged for a naturalist to join us from the Schlitz Audubon to enhance our discussion on how lakes work internally and how they function to help protect our watershed overall. We'll be accessing the selected lake from the shores of North Lake Yacht Club and following with tradition, we will furnish lunch sponsored by the City and Tall Pines Conservancy. Watch for more details on this as we finalize our plans. We hope you can join us!

[oconomowocwatershed.com](http://oconomowocwatershed.com)



## WHO'S WHO

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[oconomowocwatershed.com](http://oconomowocwatershed.com) [tallpinesconservancy.org](http://tallpinesconservancy.org) [farmersforlakecountry.org](http://farmersforlakecountry.org) [lakecountrycleanwaters.org](http://lakecountrycleanwaters.org)

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