Yahara WINS

Working for our waters

YAHARA WINS 2019 ANNUAL REPORT

INSIDE

WHY YAHARA WINS

Martin Griffin

As we cope with and recover from the COVID-19 pandemic, costs are going to be at the forefront of people's minds. Communities will be facing hard economic choices as municipal budgets tighten in the wake of the pandemic.

In the face of these hard choices, it's important to remember that the Yahara WINS project is an approach that is fundamentally about minimizing the cost of clean lakes, rivers and streams to our communities. All municipalities included in the project's intergovernmental agreement are required to reduce phosphorus one way or another. We can either go it alone, taking the costs and burden of phosphorus reduction on ourselves, or we can work together in the Yahara WINS partnership to accomplish more for a lower overall cost than that of individual solutions.

For Madison Metropolitan Sewerage District, Yahara WINS is the clear choice. On our own, we would be pursuing a $140 million treatment upgrade to remove phosphorus from wastewater. The cost of this upgrade would be reflected in higher sewer bills for residents upstream of the treatment plant, who would be paying more while seeing no improvement in the quality of the lakes — that is, nothing in exchange for their payment. Through Yahara WINS, the District alone is paying $12 million into projects that will benefit water bodies throughout the watershed, not just those downstream of the plant. These savings are passed along to all our ratepayers.

We're grateful to see so many Yahara WINS partners show the same dedication to improving water quality. The stories and support shared by partners below reinforce why Yahara WINS is our best path to a future of clean water in the Yahara watershed.

Martin Griffin, Yahara WINS president

"As a community, we are all responsible for managing, improving and enhancing our natural resources. The partnership between Dane County and Yahara WINS provides the opportunity to build unique relationships to aid in pooling resources, developing consistent messaging and educational goals, as well as exploring shared ideas for our lakes. Being a Yahara WINS partner allows us to help develop creative solutions. Dane County worked hard in 2019 to restore and protect land, remove legacy sediment and reduce flooding in the Yahara Watershed, including over $1 million in payments to farmers to implement conservation practices."

—Dane County Executive Joe Parisi

"At the headwaters of the Yahara River, the Village of DeForest is committed to stewardship of the Yahara River. We also realize that we can make our work go further through our Yahara WINS partnership. Yahara WINS operates on a philosophy of watershed health, which helps to ensure water quality not just for downstream but also for us at the headwaters."

—Kelli Bialkowski
Director of Public Services,
Village of DeForest

"Rock County Land Conservation Department is a partner with Yahara WINS in adaptive management because we are breaking down barriers that historically prevented the installation of best management practices on agricultural lands to reduce phosphorus runoff."

—Chris Murphy
Rock County Land Conservationist

"The Town of Westport is proud to be part of the Yahara WINS partnership. Westport has a long legacy of water protection, including likely the earliest, most stringent stormwater runoff standard in the state … our infamous "zero runoff in a 100-year storm" standard. The Town is located along the entire northern shore of Lake Mendota, and through Westport winds Six Mile Creek, Dorn Creek and the Yahara River. With an urban center and much of the northern portion farms, Yahara WINS remains the lowest-cost, most thorough approach to achieve cleaner water in our watershed and also stable water levels. Recreation is a mainstay of our economy with restaurants, bars and marinas all along the Yahara River Channel, so clean water and relatively level water is a must for us to maintain the good life for our residents and visitors. We are proud to be voluntary contributors to this great program."

—Tom Wilson
Town of Westport
Attorney/Administrator/Clerk

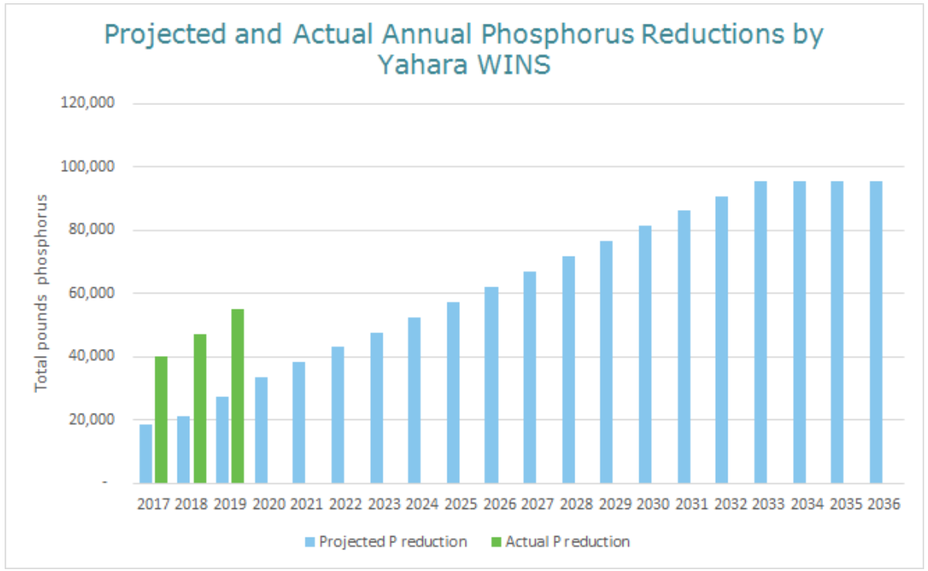
2019 PHOSPHORUS REDUCTIONS

Yahara WINS partners make investments in practices that keep phosphorus on the land throughout the watershed, preventing it from running off into lakes and streams. Each year, partners who work with farmers in the watershed to implement these practices report on the total pounds of phosphorus runoff they have prevented in the past year.

Yahara WINS partners kept over 50,000 pounds of phosphorus on the land in 2019, nearly doubling the projected reduction for the year in the adaptive management plan. Practices that led to this reduction included cover crops, grassed waterways, low-disturbance manure injection, and novel approaches like manure composting and grazing initiatives.

While it's encouraging to see actual reductions significantly higher than projected reductions, conditions in 2019 demonstrate the need for continued innovation and adaptation in how we prevent runoff. Intense storms, which are becoming more frequent with climate change, can deliver a high amount of phosphorus to water bodies in just one event. It's possible that the types of practices implemented in the future will shift toward those that are more resilient against heavy storms. For example, Yahara Pride is seeing promising results and greater phosphorus reductions when a combination of practices is implemented on the same field, rather than just one practice.

It will also likely become more difficult to find new phosphorus reductions in the future, as much of the reductions achieved in the early years of the project represent low-hanging fruit. That's one reason why the project tracks carryover pounds and annual pounds when accounting for reductions. Carryover pounds represent practices that persist from year to year, building longevity and a relative degree of certainty into the project's progress to its goal.

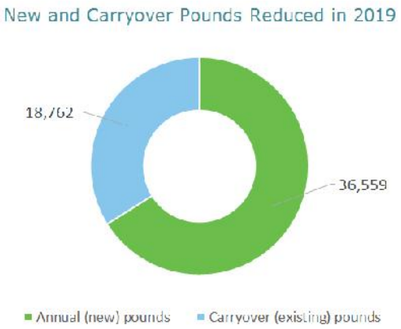


Full partner reports available on Yahara WINS website at www.madsewer.org/Programs-Initiatives/Yahara-WINs/Resources.

PARTNER PHOSPHORUS REDUCTIONS

Phosphorus reductions accomplished in this project are made possible through the work of Yahara WINS partners who promote, support and document the implementation of runoff-reducing conservation practices. These partners work with landowners and farmers in the watershed to implement practices on their land with support of funding from Yahara WINS.

Partner	Reported pounds of phosphorus reduced in 2019	
	Annual	*Carryover*
Dane County Land and Water Conservation Department	7,194	16,043
Rock County Land and Water Conservation Department		586
Yahara Pride	29,365	
Yahara WINS Innovation Grants		2,316
Total	36,559	18,762

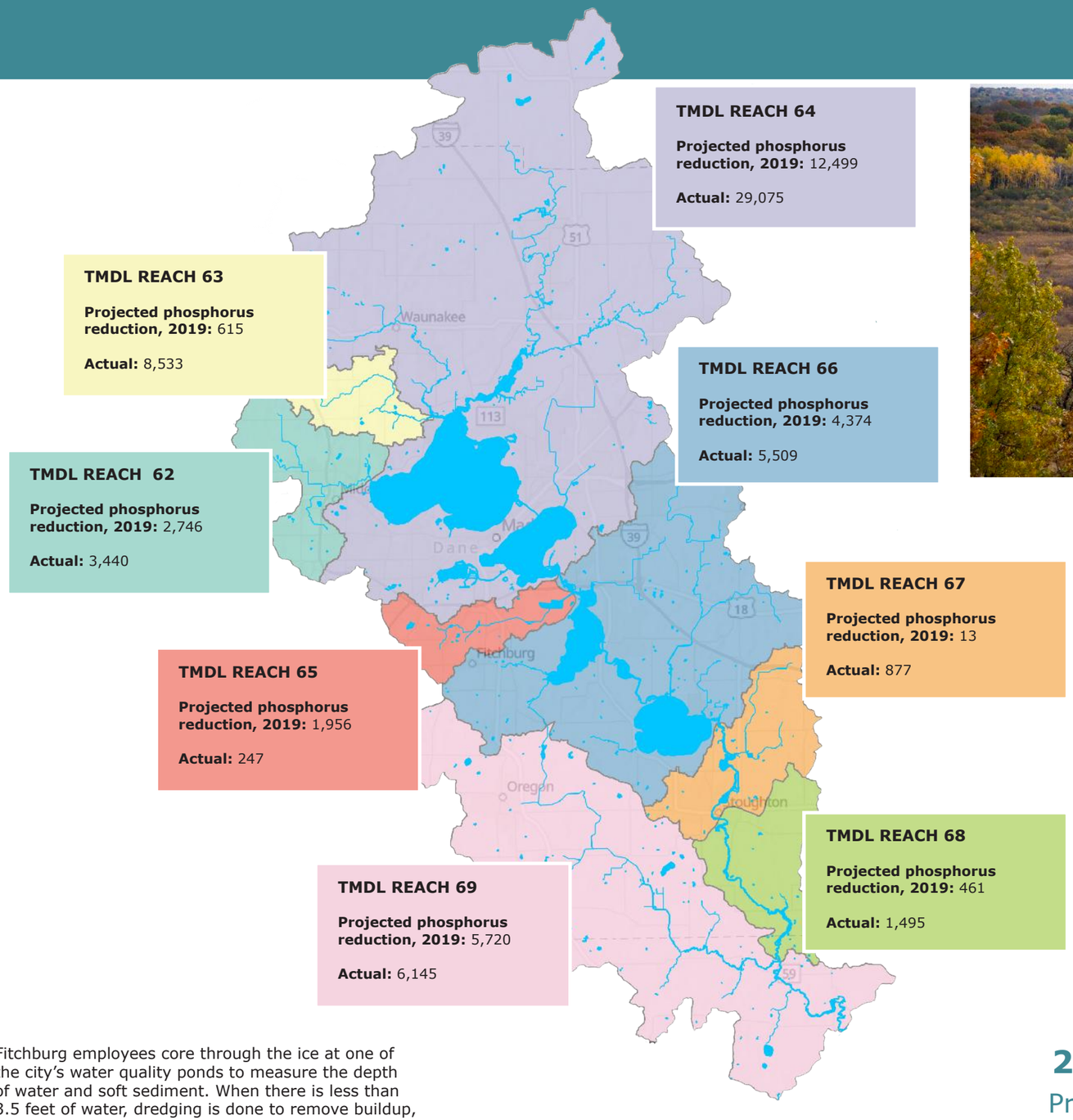


Dane County's managed grazing initiative

PHOTO: CLEAN LAKES ALLIANCE

ACROSS THE WATERSHED

Here's where Yahara WINS investments went in 2019 and what they accomplished. Some TMDL stream reaches have higher-than-projected phosphorus reductions, while other have lower, which is to be expected. The Yahara WINS project is designed to be flexible to seize opportunities and continue momentum where they arise, meaning areas where practices are implemented will vary from year to year.



TMDL REACH 63

Projected phosphorus reduction, 2019: 615

Actual: 8,533

TMDL REACH 64

Projected phosphorus reduction, 2019: 12,499

Actual: 29,075

TMDL REACH 66

Projected phosphorus reduction, 2019: 4,374

Actual: 5,509

TMDL REACH 62

Projected phosphorus reduction, 2019: 2,746

Actual: 3,440

TMDL REACH 67

Projected phosphorus reduction, 2019: 13

Actual: 877

TMDL REACH 65

Projected phosphorus reduction, 2019: 1,956

Actual: 247

TMDL REACH 68

Projected phosphorus reduction, 2019: 461

Actual: 1,495

TMDL REACH 69

Projected phosphorus reduction, 2019: 5,720

Actual: 6,145

In 2019, Dane County purchased 160 acres of farmland adjacent to Pheasant Branch Conservancy (shown above), near Middleton, with the intent of converting the land to prairie vegetation.

PHOTO: CLEAN LAKES ALLIANCE

Fitchburg employees core through the ice at one of the city's water quality ponds to measure the depth of water and soft sediment. When there is less than 3.5 feet of water, dredging is done to remove buildup, which helps ensure the ponds can effectively clean water by allowing suspended solids (including attached phosphorous) to settle out.

2019 REDUCTIONS

Projected: 27,483 pounds

Actual reported: 55,321 pounds

INNOVATIVE PRACTICES

One hallmark of Yahara WINS is challenging the status quo. The project's structure of watershed adaptive management allows for creativity and flexibility in how we approach water quality challenges, which are becoming increasingly vital in the face of a changing climate. Lessons from these projects are expanding the options we can use to protect our rivers and streams.

YAHARA PRIDE FARMS MANURE COMPOSTING STUDY

A two-year manure composting study project was completed in 2019. This project, funded jointly by Yahara WINS, Dane County, Clean Lakes Alliance and Yahara Pride Farms, had a goal of making both manure storage and transportation more feasible for farmers.

Raw manure is high in water, which means manure storage pits fill quickly and that it's heavy to transport. If manure pits fill up during the winter, the farmer has to remove manure and spread it on snow or frozen ground, which can lead to phosphorus runoff in the spring. Timing is everything when it comes to keeping phosphorus on the ground, so finding a way to increase manure storage is a necessary part of the solution.

Composting manure, which reduces manure volume and frees up storage space, is one possible answer to this problem.

In this project, farmers were able to test out manure composting to see how it could work on their farms year-round. Project funding allowed several local farmers to test out the equipment necessary for composting. This practice proved popular among local farmers and increased signups for Yahara Pride's cost-share program. The outcome of this project is promising not only because it showed that composting manure works, but that there is a high demand among farmers to increase implementation across the watershed.

PHOTO: CLEAN LAKES ALLIANCE

STORMWATER BASIN TREATMENT TO REDUCE ALGAE

DURING TREAMENT

AFTER

A project funded with a Yahara WINS grant tested out a method for mitigating phosphorus in urban stormwater retention basins. Many practices in Yahara WINS are focused on preventing phosphorus from entering water bodies, but once phosphorus has already made it into a waterway, it can keep fueling algae growth unless removed or transformed.

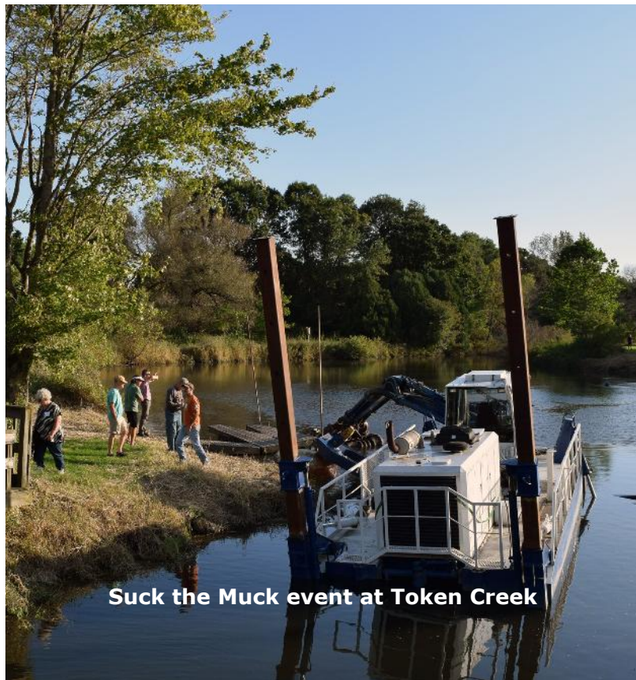
In this project, a team of water management experts treated a stormwater retention pond at the Verona Technology Park to remove dissolved phosphorus from the water, spurred by a desire of nearby businesses to make the waterbody more usable and pleasant to be around. The team added aluminum chlorohydrate, a chemical that binds with phosphorus so it settles out of the water column and can no longer feed algae overgrowth. The treatment reduced an estimated 287 pounds of phosphorus from the pond, and higher water clarity was observed after the treatment.

This project occurred outside the Yahara Watershed, but Yahara WINS saw value in funding the project as an opportunity to demonstrate how this treatment could work in the watershed.

DANE COUNTY INNOVATIVE PRACTICES

Dane County has been a leader in runoff control practices, both as a Yahara WINS partner and through county-led initiatives. In 2019, Dane County continued its "Suck the Muck " initiative, which involves removal of phosphorus-rich sediment from stream bottoms to stop the continued release of phosphorus into the stream. Following a successful first phase, the county hydraulically removed 20,000 pounds of sediment from Token Creek in the northeast portion of the watershed. This effort will enhance the Yahara WINS project by preventing legacy sediment from counteracting progress made to keep phosphorus out of water bodies.

Another conservation initiative that Dane County completed in 2019 was the purchase of 160 acres of farmland adjacent to Pheasant Branch Conservancy, near Middleton, with the intention of converting the land to prairie vegetation. Not only will this land use conversion prevent an estimated 550 pounds of phosphorus from entering Pheasant Branch and other regional waterbodies each year, but it is also anticipated to help mitigate future flooding in the area by absorbing stormwater.



Suck the Muck event at Token Creek

WATER QUALITY

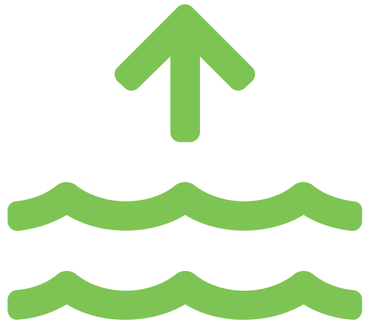
The measure of success of adaptive management is meeting the state water quality standards for concentrations of phosphorus in water bodies. Water quality monitoring is critical to track progress and to understand how weather impacts projections and progress. A variety of partners sample water bodies throughout the watershed to measure their phosphorus levels over time. Our goal is to see phosphorus levels start trending down as the project progresses.

ADAPTING TO CLIMATE CHANGE

Yahara WINS receives data regarding in-stream phosphorus concentrations from multiple partners throughout the year. This data helps measure progress from the baseline to our goal and could help inform management decisions down the line.

It's important that we assess these data points as part of a longer story, not as a moment in time. The fluctuations in weather from year to year cause corresponding variability in phosphorus contributions to the lakes and their tributary streams. Compared to previous years, 2019 saw higher phosphorus loads to these regional waterbodies.

But that doesn't mean that the project is unsuccessful. The success of Yahara WINS will be measured as a trend. Some years will have higher phosphorus contributions; some will have lower. The important measure of Yahara WINS will be a downward trend in phosphorus concentrations and associated water quality issues over the 20-year course of the project.



2019 was a heavy year for phosphorus loading, due to more water volume flowing to the lakes from snow melt and rain

PHOTO: WISCONSIN DNR

BIOLOGICAL MONITORING

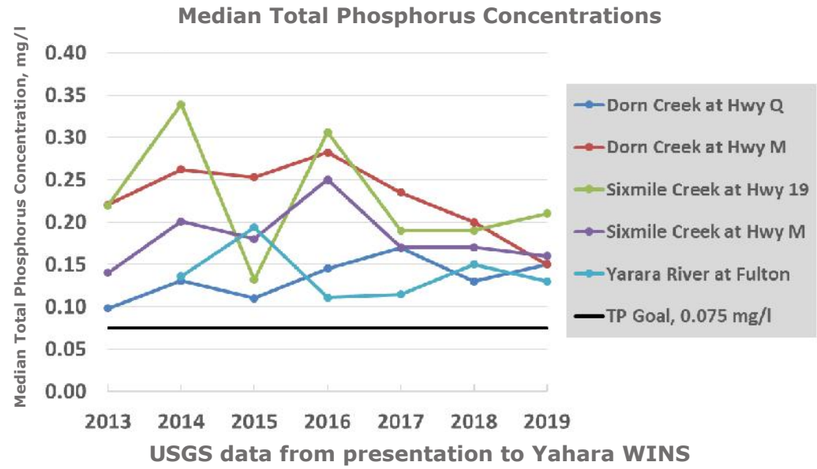
The story of water quality isn't told just in numbers. In addition to the water quality concentration data being collected, the Wisconsin Department of Natural Resources (WDNR) observes the biological health of water bodies in the watershed to assess how well water quality is supporting aquatic wildlife. Staff from the District also monitor fish and macroinvertebrate populations to assess stream health throughout the watershed. Not only does biological monitoring provide direct insight into the health of the water body, but it also helps tell a longer-term story, since ecosystems and wildlife are slower to show a change than a water sample.

So far, the WDNR has monitored 14 sites over three years. In general, their monitoring has indicated that streams are generally healthy based on the habitat condition and the fish species present, though the sampled sites vary in quality. Area streams tend to be more hospitable to fish than to macroinvertebrates (small water creatures like insects and worms), which is expected. Future monitoring will indicate what impacts the Yahara WINS project may have on fish and other aquatic life.

USGS STREAM MONITORING

The U.S. Geological Survey (USGS) collects stream samples throughout the watershed and brings them to the District lab to measure in-stream phosphorus concentrations. USGS data analysis for water year 2019 (October 2018 through September 2019) indicated that 2019 was a heavy year for phosphorus loading, corresponding to a heavy year for the overall volume of water flowing to the lakes. The largest phosphorus-loading event, by far, was a heavy snowmelt in March 2019 that led to 60,000 pounds of phosphorus flowing into Lake Mendota in just one week.

In-stream phosphorus concentrations at monitoring locations are above the endpoint goal of 0.075 milligrams per liter of phosphorus, which is expected as this reduction will take time. An encouraging observation is that in-stream phosphorus concentrations at the monitoring location on Dorn Creek at Highway M have dropped since 2016. This location is immediately downstream of the stretch of the creek where the Suck the Muck project took place, beginning in fall 2017. If this trend continues, it could indicate that legacy sediment removal is accelerating progress toward phosphorus reduction.



*The target for the Yahara River is 0.10 mg/l

ROCK RIVER COALITION MONITORING

Another source of water quality data for the project is the Rock River Coalition, whose volunteers collect stream samples throughout the watershed and bring them to the District lab for analysis. In 2019, Rock River Coalition stream monitors collected nutrient samples at over 60 stream sites. The coalition provides this data to the WDNR for inclusion in its surface water quality database, which helps inform regional water management decisions. Additionally, the coalition is working on a data visualization tool to help viewers access and interpret water quality results across the watershed.

Rock River Coalition collected nutrient samples from 60+ stream sites

FINANCIALS

Yahara WINS is funded by governmental and nongovernmental partners. For partners with municipal stormwater or wastewater treatment plant discharge permits, contributions to the project are allocated based on their proportional share of required phosphorus reduction. The pooled funds translate to practices implemented on the ground.

The accompanying tables show Yahara WINS expenditures in 2019 and the adopted budget for 2020. As it is with practices, the project is designed to be flexible year-to-year with expenditures to allow for seizing opportunities as they arise.

As we look to the future of the project, Yahara WINS is continuing to explore additional ways to generate revenue to support phosphorus reduction projects. To truly advance clean water goals in the watershed, we will need to strive for innovative, lasting changes.

To that end, Yahara WINS may benefit from adopting new funding sources that could include opt-in programs for donations and bonding. This approach is not new to the project — a variety of different funds have supported the project in the past, such as funding from the Mississippi River Basin Initiative and the Regional Conservation Partnership Program. IGA participants are responsible for half of project costs, so remaining project costs will need to be covered by non-partner sources, such as grants or innovative financing.

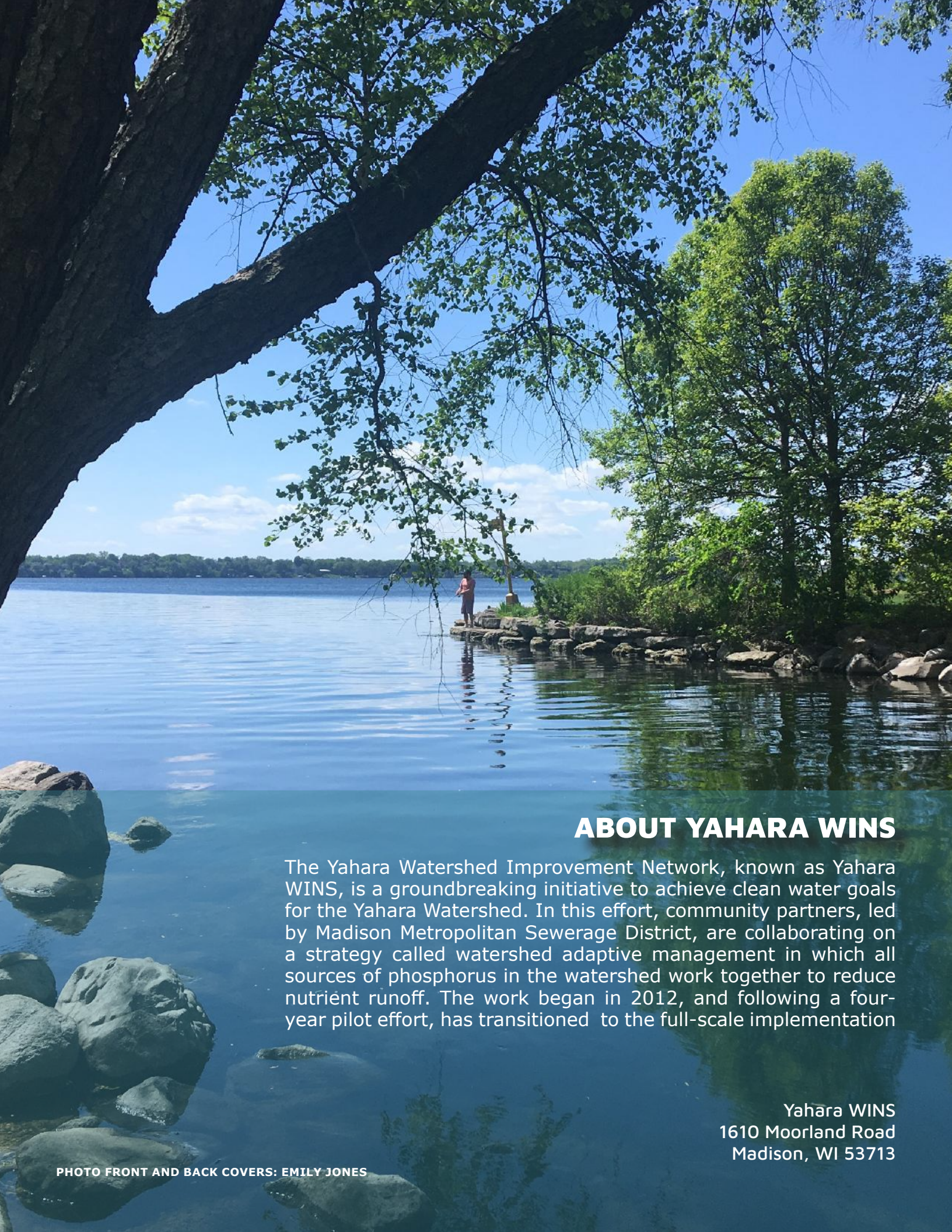
Just as Yahara WINS is a partnership between urban and rural interests, creative financing vehicles that directly invest in phosphorus-reducing practices could allow an opportunity for conservation organizations, businesses and individuals to contribute directly to the environmental and water quality outcomes they want to see. Diversifying funding sources in addition to partner contributions will be a point of discussion for the Yahara WINS steering committee over the near future.

2019 ADOPTED BUDGET (rounded to the nearest $100)

Unencumbered carryover from 2018	$0
REVENUE	
IGA participants	$1,433,900
Income from grants, other MOUs, etc.	$50,000
MGE Foundation	$5,000
Savings account interest	$2,500
Total Revenue plus unencumbered carryover	*$1,491,400*
EXPENDITURES	
Phosphorus reduction	
Dane County phosphorus reduction services agreement	$540,000
Columbia County phosphorus reduction services agreement	$55,000
Rock County phosphorus reduction services agreement	$250,000
Yahara Pride Farms phosphorus services agreement	$150,000
Yahara Pride Manure Composting Grant	$31,600
Phosphorus Reduction Innovative Grant Program	$24,000
Subtotal	***$1,050,600***
Water Quality Monitoring	
Water quality monitoring analytical services (MMSD)	$55,000
USGS joint funding agreement	$75,000
Rock River Coalition water quality monitoring	$25,000
Subtotal	*$155,000*
Supporting Services	
WINS staffing	$5,000
Financial audit	$7,500
Communications	$5,000
Miscellaneous	$2,300
Legal services agreement	$4,000
Subtotal	*$23,800*
Transfer of funds to designated operating reserve	$262,000
Total Expenditures	**$1,491,400**
Revenue minus expenditures	**$0**

2020 ADOPTED BUDGET (rounded to the nearest $100)

Unencumbered carryover from 2019	$0.00
REVENUE	
IGA participants	$1,426,035
Income from grants, other MOUs, etc.	$0
MGE Foundation	$5,000
Savings account interest	$4,000
Total Revenue plus unencumbered carryover	*$1,435,035*
EXPENDITURES	
Phosphorus reduction	
Dane County phosphorus reduction services agreement	$540,000
Columbia County phosphorus reduction services agreement	$20,000
Rock County phosphorus reduction services agreement	$95,000
Yahara Pride Farms phosphorus services agreement	$150,000
General phosphorus reduction practice funding	$50,000
Phosphorus reduction Innovative Grant Program	$50,000
Subtotal	***$905,000***
Water Quality Monitoring or modeling	
Water quality monitoring analytical services (MMSD)	$55,000
USGS joint funding agreement	$75,000
Rock River Coalition water quality monitoring	$29,000
USGS Gauging Station	$20,000
SWAT model update	$80,000
Subtotal	***$259,000***
Supporting Services	
WINS staffing	$60,000
Financial audit	$9,000
Communications	$5,000
Miscellaneous	$5,000
Legal services agreement	$4,000
Subtotal	***$83,000***
Transfer of funds to designated operating reserve	**$188,000**
Total Expenditures	**$1,435,000**
Revenue minus expenditures (potential unencumbered carryover)	**$35**



ABOUT YAHARA WINS

The Yahara Watershed Improvement Network, known as Yahara WINS, is a groundbreaking initiative to achieve clean water goals for the Yahara Watershed. In this effort, community partners, led by Madison Metropolitan Sewerage District, are collaborating on a strategy called watershed adaptive management in which all sources of phosphorus in the watershed work together to reduce nutrient runoff. The work began in 2012, and following a four-year pilot effort, has transitioned to the full-scale implementation

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PHOTO FRONT AND BACK COVERS: EMILY JONES