

CONSERVANCY VIEWS

SPRING 2022

In this issue:

Board and volunteer recognized by ILMS

The Science behind WINS

Education events going strong



Sandhill cranes captured at our Between the Lakes Preserve by photographer and nature-lover, Larry Baumgardt

Message from the Chairman

Welcome to spring! A time of year when children excitedly jump at the chance to enjoy playing outside in the yards, the fields, swimming, boating and other lake activities. It is also the time when adults, some not so excitedly, tend to their own outdoor activities of grooming the lawns and gardens and revitalizing the water toys, for use by the young and not so young. We all want to experience our warm weather time in the best environment possible. We can all help protect our watershed by limiting our use of phosphorous, using filtering setbacks for runoff, good boating practices and other tips that can be found on our website.



John Bearss
WACF Chairman

As the weather turns warmer, WACF continues with environmental projects, activities and events for all ages. We have seen many successes so far this year. Two of which I would like to highlight. First, our watershed has been awarded a National Water Quality Initiative (NWQI) Readiness grant. This designation, a contributing result of WINS, could bring many more opportunities for projects to preserve and enhance our watershed.

Second (and a third) is the recognition we have received from the Indiana Lakes Management Society, as The Outstanding Lake Association of 2022. This is a direct reflection on the hard work of our staff and volunteers, one of which was named the ILMS Volunteer of the Year, Diana Castell.

Preserving our environment, our watershed and our lakes, is accomplished by the effort and commitment of the WACF staff, volunteers and all of you through your efforts and generous support.

Thank You!



Left to right: Beth Morris, Diana Castell, Heather Harwood, Rob DeBeck, and Pam Schumm.

Memorials & Honorariums

Memorial and honorarium gifts have a lasting impact, like the lives and achievements they recognize. All memorial and honorarium gifts are directed to the WACF Endowment Fund establishing a layer of stability under the Conservancy and ensuring it's strong and lasting future. Interest income from the WACF Endowment fund is used for ongoing Conservancy expenses, operating costs and programs.

2021 Through mid-May 2022 WACF Memorials & Honorariums

In Memory of:

Helen Alderfer
Gayla Angert
Gayle Atkins
John Augsburg
Dawn Baker
Bob Baugher
Paul Beck
Marianne Beesley
Mary Lou Brewer
Jo and Doyle Butler
Dick Campbell
Angelo J. Carnaghi
Mary Agnes Gingrich Carter
David Cates
Kim Conrad
Jennifer Copeland Lilly
Dottie and Bob Dickinson
Patricia Poole Dorsett
Dr. Mark Doyle
Howard and Lynn East
Ven Endsley
Gail Ernst
Larry Farver
Alvin Fiechter
Edgar Filby
William 'Reno' Freihofer
Nan and George Freyn
Mary Beth Gadus
Annie Gallaban
William Cy Gehl
Neanne Gerber
Ronald J. Gerling
Ronnie Giles
Edward William Gingrich

Grace Gingrich
Benjamin Gingrich
Agnes Clyde Gingrich
Dorothy Gitlin
Richard Green
Jason Grumbacher
Andrew and Annie Laurie
Hardie
Lorna Hentze
Richard Hetler
Lynne Hirschman
Dr. Robert Hirschman
Jerry Holland
Kyle Hollon
Don Hooley
Tom and Judy Hughes
Bill Hurst
Needham Hurst
Don Impey
Dr. Jane Irmscher
Wanda Quinn Isenbarger
James H. Jordan
Phil Keim
Susann and George Kellogg
Kathleen Kiley
Mike and Carol Kiley
Carolyn and Lou Kincannon
Jim and Sara Kroh
Jon R. Lassus, Jr.
Katie Leeuw
Eric Longenecker
Clara 'Nanny' Lopez
Vance Lopp
Maurice and Lucille Lung
Debbie Macomber

Robert Martin
Tom and Marilyn Michael's
parents
Jackie Morrival
Don 'Moto' Morris
Deceased Morrison Island
Members
Robert and Nancy Myers
E.S. and Virginia Needler
Pete Nicholas
Mark Nill
Patty Norman
PADOROMA
Dr. Wm. And Mary Patterson
Chris Peterson
Kathleen Kiley Phillips
John and Rolene Popp
Tom Prickett
Brenda Rinehart
Quinn Robison
William N. Salin and Sophia
C. Salin
Douglas A. Schmahl
Bob Seger
Dr. Alan E. (Bud) Sheline
Mary Kay Stanley
Shirley Myers
Pat Siri
Joan Buletty Slocum
John and Barbara Smith
Joanne Spurgeon
Mark Stinson
Michael Surso
Linda Swank
Peter Tenhula

James Thompson
Dick and Linda Tillman
Joyce E. Truitt
Tom Tuttle Sr.
Fran Van Lue
Charlie Walker
John M. Wallace
Kristine West
John Williams
Joyce Williams
George Witwer
Thomas Wolfrum
Patricia and Ken and
Barbara Woodruff
Matt Wuebker
Leonard Ziskie

In Honor of:

John and Julia Bearss
John Dalton
Bob Fanning
David and Kathlene
Johnston's Grandchildren
The Kroh Family
Jon and Becky Marler
Bridget McBride's 18th
birthday
Jeff Nelson Family
Northshore Neighbors
Pete Nicholas' 80th birthday
Marianne Salaymeh
Pam Schumm

Thoughts from the Executive Director



Heather Harwood
WACF Executive Director

What has Wawasee Inlet Nutrient Study (WINS) done to help our lakes?

WINS helps guide us, like a map, defining where to go next. It explains breakdowns of external nutrient and sediment loads from the upper watershed and gives us data on where to focus limited resources.

This year, we focus on Dillon Creek Branch, and thank our partners that are helping to make it happen: Dillon Creek Branch land owners, and the IDNR Lake and River Enhancement (LARE). Working together on this project (as defined by the Hot Spot Study) we can save 180 pounds of Phosphorus and 58 tons of sediment from entering the lake annually.

The WACF mission has a major goal: to protect the water quality of our lakes and streams by working in the watershed doing erosion control and stabilization projects and protecting important pristine wetlands. The volume of sediment moving downstream, especially from Dillon Creek, is evident by sediment plumes into Wawasee. The most severe bank erosion and soil loss areas have been identified, and are targeted to be protected. The work will reduce the stream flow velocity to protect the eroding embankments and open soil areas.

WINS data has also brought our attention to the accumulation of nutrients in Wawasee. Total Phosphorus loads exceeded target values significantly in all three years of the study (WINS Study, ECI, 2022). Phosphorus in the lake can be resuspended by deep draft boats or boats not planed out in shallow water. Be aware of shallow areas!

Don't stir the bottom of the lake. Wawasee is a **shallow lake**. The majority of boating, including wake boarding, skiing and cruising takes place in our shallower areas and just outside the buoy line.

We are grateful to receive grants this year from:

- The US Fish and Wildlife Service for native plant renovation at WACF's lakefront
- IDNR LARE for streambank stabilization on Dillon Creek Branch
- IDNR LARE for an aquatic weed plan update and treatment of starry stonewort and eurasian watermilfoil
- The Harkless Foundation and the Kosciusko County Community Foundation for the Bayshore ponds restoration

WACF is also excited to welcome three new board members to WACF: Cindy Peterson, who will also take over as Education Chair, Tom Cottrell, and Becky Levinson. We look forward to having their leadership and wide-ranging expertise on our board.



Lake Wawasee depths of 10' and less

Canoe Trips

We hope you will join us on our Friday morning canoe trips this summer down the 10-lake chain through Turkey Creek. Our canoe team will lead you on a trip sharing some history and ecology along the way from upstream in Knapp Lake at the Continental Divide in Noble County downstream to Village Lake at SR5. This creek is important because it provides 43% of the surface water supply to Wawasee and Syracuse Lakes. If you are interested in joining us this summer, email our canoe logistics manager, Al Campbell, at aldotcam@gmail.com or our office at info@wacf.com.



Cottrell Turkey Creek Inlet

Forward Thinking - Forward Moving:



By Beth Morris
Ecology Committee Chair

Similar to our bodies, lakes age over time. They can get clogged with **sediment** and overgrown with algae and weeds from excessive nutrients like **nitrogen** and **phosphorous**. The health of our lake depends on the amount of those three that come in and stay in the lake, accumulating

over time. Nutrients and sediment affect recreation, water safety and property values. How do nutrients and sediment get into the lake? Adjacent to the lake and channels, water runs off our roofs, hardscapes and lawns and carries them into the water. They also enter through ditches and streams that feed into our lake.

WACF initiated the Wawasee Inlets Nutrient Study (WINS) in 2019. This ground-breaking 3-year intensive study has helped us understand the health of our lakes, their health trajectory, and establish a baseline for measuring our progress in maintaining their health. It provides us with an accurate measure of the amount of phosphorus, nitrogen, and sediment that come into our lakes. **This is important because for the first time since WACF was founded, we now understand the year-to-year variability and can set targets for reducing nutrient and sediment inflow in the future. And we can prioritize our work in the most important areas.**

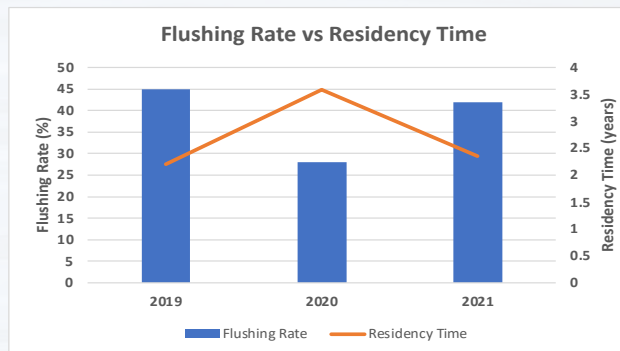
Data from over 50,000 tests has helped us understand in detail how much nutrients and sediment are coming in, going out, and staying in the lake. And because we sampled each inlet stream, we also know the contribution each tributary makes to the load. Intensive sampling (from April through June, weekly July-March, and during key rain events the rest of the year) is critical to defining what is happening in big rain events. This strategy showed us that in 2020, 90% of the sediment and nutrients entered the lake from a single big rain event. A picture of samples taken every 4 hours from a major rain event in October 2021 on page 5 illustrates this point clearly.

| Cumulative Rainfall: Comparing Dry and Wet Years | |
|---|-------------|
| 2019 (wet year) | 40.5 inches |
| 2020 (dry year) | 30.7 inches |
| 2021 | 36.4 inches |

Over the last three years, nature blessed us with a great experimental design! A wet year, a dry year, and one in between. It allowed us to see how dramatically the timing, intensity and amount of rain affects the lake.

Residency Time and Flushing Rate

When more water comes into the lake, much of the nutrients and sediment flush through. Conversely, when less water comes in, more nutrients and sediment stay in the lake. Over time, they accumulate and can gradually reduce water quality. The difference in rainfall in the three years drove big swings in annual nutrient and sediment loads. 2020 was a dry year with an increased **Residency Time** (amount of time that a drop of water stays in the lake) and reduced **Flushing Rate** (how much water in the lake flushes out annually) compared to 2019 and 2021. This drove a significant accumulation of phosphorus and sediment in 2020 when compared to 2019 and 2021.

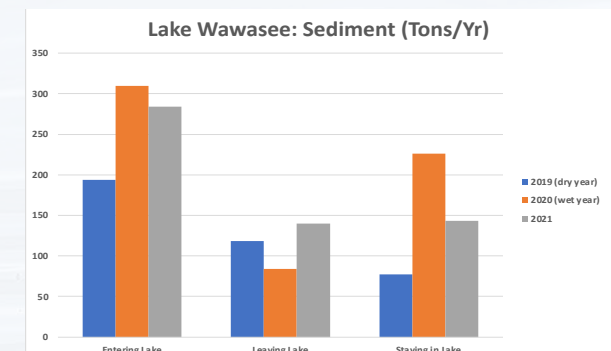


Over the 3 years, 788 tons of sediment came into the lake, and **446 tons stayed in the lake** (that's roughly equal to the weight of 223 elephants!).

Turkey Creek and Dillon Creek had similar average annual inflow volumes and accounted for 53% of the total inflow to the lake. Turkey Creek and Dillon Creek accounted for 65% of the sediment and 59% of the phosphorous over the 3 years. And in 2021, Turkey Creek accounted for 57% of the sediment and 43% of the phosphorous.

The data prompted us to look deeper at both Dillon Creek and Turkey Creek to address important questions. Which Turkey Creek branch is contributing the most nutrients and sediment? Are the WACF-owned wetlands functioning properly as filters? To answer these questions and pinpoint areas of opportunity for remediation efforts, WACF is excited to continue WINS for a fourth year. In 2022, the gages were moved further upstream in Turkey Creek to gather data designed to answer those questions. Additionally, we want to tease out contributions of the branches of Dillon Creek.

In all three years, the amount of phosphorous, the biggest driver of excess algae and weed growth, entering and staying in the lake was higher than desired for maintaining a healthy lake. **Taking action to change this trajectory is at the heart of WACF's mission and is a major focus for the next phase of WINS.**



WINS 2.0: Leveraging WINS data

Three Years of WINS

to drive action in our watershed

We must use the WINS data and reports as living documents to drive action. Dr. Sweeten and his colleagues at EcoSystems Connections Institute have helped us understand how our WINS data can be used **to build bridges and create conservation partnerships** with the local agricultural community. With their guidance, we applied to the Indiana Natural Resources Conservation Services (NRCS), a division of the Dept. of Agriculture, for designation as a National Water Quality Initiative (NWQI). **The Wawasee Area Watershed is the first lake watershed in Indiana to receive this designation.** It is one of 283 small watersheds selected nationally out of roughly 100,000 watersheds to participate in this program. The selection of the Wawasee-area watershed was driven by the WINS data showing how much nutrients and soil are being lost from farmland and ending up in local streams and lakes.

The NWQI Readiness Report is nearing completion



Dillon Creek inflow into Enchanted Hills after a large October 2021 rain.

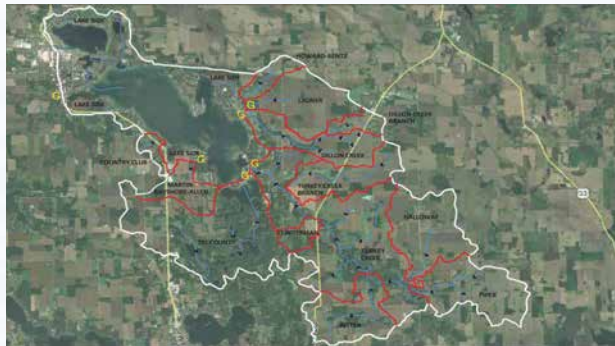
and has leveraged the WINS data and expertise of local Soil and Water Conservation District (SWCD) and NRCS staff to develop an assessment that identifies the opportunities for conservation practices, resources needs, develops goals and establishes metrics to track progress. It also includes development of outreach and education strategies within the watershed.

The NWQI designation for the Wawasee Area

Watershed will make it a priority watershed for significant federal cost-share funds for local farmers. This premier USDA program focuses on partnerships between federal, state, local and private resources to accelerate voluntary on-farm conservation investments that benefit soil health and water quality by reducing erosion and nutrient runoff. The funding will support projects solely within our watershed such as:

- Cover crops and no-till farming
- Restoring and protecting wetlands adjacent to lakes, rivers or streams
- Other practices that help reduce soil erosion, improve water quality and reduce pollution

In this way, our WINS data is being used to **create**



Wawasee Area Watershed and sample gage locations (G) 2019-2021

a win-win for our local farmers and for the lake community. We all want the same things: healthy soil that supports profitable farming and clean water. NWQI funding can help create new relationships for all of us in the watershed.

We believe that partnerships with all stakeholders in our watershed - landowners on our channels, lakes, and upstream tributaries and our partners at NRCS, SWCD, the Department of Natural Resources, U.S. Fish and Wildlife Service and others - is the key to keeping our water clean and healthy for the future. This is the "long game" and it will take time to build relationships and influence the need for changes.

At WACF, we are dedicated to preserving the water quality in our lakes by **taking action within our watershed.** We are the **only** local organization doing this kind of work within our watershed, having completed 39 projects over the last 27 years.

What YOU can do

In addition to what comes in from the streams, there is run-off into the lake from our roofs, yards, patios and decks. You can help by:

- Making sure any lawn chemicals used on your property does NOT contain phosphorous.
- Planting native plants as a buffer between your property and the lake to soak up run-off before it gets to the lake.
- **Don't stir up the lake bottom.** If you see a sediment plume behind your boat, alter your speed to plane it out and move into deeper water.

If each of us does a small part, we can make a big difference! And of course, you can donate to WACF to support all we do to preserve and protect our watershed for generations to come.

Water samples collected at 4-hour intervals from Turkey



Creek inflow between October 25 and October 26, 2021. From left to right samples were collected at midnight-4:00-8:00-12:00-4:00-8:00 on October 25th and midnight-4:00-8:00-12:00-4:00-8:00 on October 26th.

WACF Education Events

By Pam Schumm
Education Officer



Would you like to learn more about how to test water quality? Become a citizen scientist this summer! Join us for **Snapshot Day 2022** at WACF on **June**

14 (time TBD) You will learn how to gather a water sample and test for dissolved oxygen, nitrogen, phosphate, temperature and turbidity. At our Levinson-LaBrosse Education Center, you will test for E. coli and pH. After all the testing sites are complete, the data will be organized into a map highlighting the water quality at the sample sites. You will get all the training you need before heading out into the field. Sign up with a friend! Help us research water quality upstream in smaller tributaries that contribute to our lake. Follow our Facebook events section for more details to come.

Lake Talk and Eats returns for the 2022 season on **June 4** with our Native Plant Sale. A guest speaker will discuss the value of native plants in your landscape design and along your shoreline from 9 – 10 am. After the talk you are welcome to browse our vendors and purchase native plants until 11 am. A light breakfast will be served. On **July 2** we bring back the ever popular Lake Talk & Eats Annual Bug Catch! Adults and children will learn about immature insects that are living in our waters. What will



Catching critters at our annual Bug Fest.

they become when they grow up? Which bugs mean we have good water quality and which ones indicate our water quality is less than good? These questions will be answered as you search for these little critters along our lake shoreline. A light breakfast will be available.

On **August 6** we will be hosting the Lake Talk & Eats Lillypad Tour from 10 a.m. to 12:30 p.m. including brunch on board. Do you have questions about water quality in Lake Wawasee? We look forward to sharing our insights with you. RSVP at info@wacf.com. Tickets are \$20 for the cruise.



Fishing with the DNR,
Wednesday, July 6th, 9am

Do you have guests with children visiting this July? Do your neighbors have children that would enjoy being out in nature? We have the perfect experience at WACF – **Wetland Adventures!**

- We begin with **Fishing with the DNR** on **July 6** at Between the Lakes from 9 to 11 a.m. Fishing poles and bait are provided but if you have a pole, please bring it as we have limited supply. You'll be surprised at the wide variety of fish the kids catch in a two-hour span of time.

- The remaining **Wetland Adventures** take place at the WACF Levinson-LaBrosse Educational Center at 11586 N SR 13. We begin each day with a large group activity or demonstration about our lake or watershed. This sets the stage for three more activities and a canoe scavenger hunt. Children must bring an adult who will go with



Wetland Adventures

them to all activities and in the canoe. All activities are free. Dates for the last three Wetland Adventures are **July 13, 20 and 27**, all starting at **9 a.m.**

The education team at WACF has developed a robust curriculum for the 2022 season, for both adults and children alike! To see all we have to offer, visit our full calendar on our Facebook page.

New Buoy on Lake Wawasee

During the summer of 2022, the Lilly Center for Lakes & Streams research team is adding a buoy to **Lake Wawasee**. This specialized buoy will help the Lilly Center group identify trends and patterns that may correlate to blue-green algae blooms and help decipher their underlying cause.

Please keep an eye out for their buoy. It will be marked with signage, a flag and light for increased visibility. More information (including what happens if a boat hits the buoy and if the sensor is harmful to fish) is available on the Lilly Center website: lakes.grace.edu/lakebuoy.

WINS Data is Driving Action



By Bill McCully
Development Chair

In 2022, WACF is completing the initial phase of the landmark Wawasee Inlets Nutrient Study (WINS,) the most thorough and intensive collection of data affecting water quality in the history of Wawasee. WINS is seen

as the "gold standard" among research projects identifying the levels of nutrients and other "bad actors" that enter lakes in North America. The results are very enlightening and also revealed the need to extend this vital study. We are asking for your help to ensure we are able to fund this important work.

The overall results of WINS are still being analyzed, but there have been some very interesting findings. Perhaps most significant is the level of nutrients that are flowing into Lake Wawasee from the Turkey Creek and Dillon Creek Inlets.

The study showed that the lake is constantly changing and water quality is driven by how much water comes in and what's happening on the land when it rains. We've recently experienced a wet year, a dry year, and one in between. This allowed us to see how dramatically the timing, intensity and amount of rain impacts the lake. Here are some quick facts:

- From 2019-2021, 788 tons of sediment entered the lake and 446 tons (57%) stayed in the lake.
- In 2021, Turkey Creek accounted for 30% of the incoming water yet 57% of the sediment and 52% of the phosphorous entering the lake. This compared with a three year average of 28% incoming water, 35% sediment and 32% of phosphorous.
- In all 3 years, the amount of phosphorous entering and staying in the lake exceeded the targets for a healthy lake. **Taking action to change this trajectory is the key focus for the next phase of WINS.**

WINS Phase Two: Using WINS data to take action

Questions raised by the data led us to extend the study another two years, moving gages further upstream in Turkey Creek to understand which branch is contributing the most nutrients and sediment and whether the WACF-owned wetlands are functioning as filters. Additionally, we want to understand more about the various branches of Dillon Creek. Combined, these two tributaries account for 53% of the water entering the lake, 59% of the phosphorous, and 65% of the sediment over the 3 years.

WINS is providing the roadmap to build partnerships and influence change

Action is urgently needed to "turn off the tap." Armed with in-depth data, we are engaging with local property owners and those who enjoy the lakes to encourage practices that will improve water quality including awareness of proper boating practices, limiting impervious surfaces and responsible use of the proper fertilizers. We are also seeking to establish partnerships with local farmers to encourage use of best management farming practices.

The National Water Quality Initiative Readiness Report will be submitted to Indiana Natural Resources Conservation Services (NRCS) in May. It brings opportunity for funding to support the local county NRCS to disperse to farmers for implementation of "best management practices" including cover crops and grassed waterways to reduce nutrient and sediment runoff **within our watershed.**

For more details regarding our WINS study and how NWQI will benefit our watershed, please make sure to read the article in this newsletter by Beth Morris, Ecology Chair.

To take action we are asking for your help! Please consider a donation of \$100 or more today to allow us to continue with this vital research and ensure the best water quality possible in our beloved Wawasee Watershed.

Choosing WACF

By Shannon McNett-Silcox,
PR Chair



Dr. Bill Couch is a retired orthopedic surgeon, former multi-sport athlete at Indiana University, Air Force veteran and a longtime resident of Lake Wawasee. While his list of accolades is long, WACF is most pleased that he shared his time and talents with us for six years as a past Board Member. And even after his board term ended, Dr. Couch has shown ongoing support for our organization as a Founder in the Eli Lilly Lifetime Founders Society. We recently asked him to share his story as to why he continues to **choose WACF.**

He commented, "I am a scientist and trying to understand our water and the pollutants that cause harm is a scientific problem." Dr. Couch recognizes that our lakes may seem like they haven't changed much since he first arrived 40 years ago, yet he knows this isn't the case. After joining the WACF Board and learning more about how we are taking action to protect our watershed, he became even more intrigued. He believes the best way to fulfill our mission and maintain the beautiful lake quality we have been so fortunate to enjoy is through a scientific approach - and we couldn't agree more.

Dr. Couch was excited to hear about our robust Wawasee Inlets Nutrient Study (WINS) and was impressed with the depth and detailed approach of Dr. Jerry Sweeten and the team at EcoSystems Connections Institute. He noted, "The way you solve issues is to systematically find the problem, determine the cause and then develop evidence-based programs to create a solution. You work backwards to address the issue." By monitoring our water consistently across multiple gage locations over a three year period, WACF has been able to identify areas where pollutants are coming in and pinpoint ways to reduce their impact.

According to Dr. Couch, "It makes sense to go deeper into the scientific process to address the issue of water quality. The more data we have, the more strategic decisions can be made to protect our watershed. As long as WINS or similar data-driven efforts are being made, that is where my support will go."

Thank you, Dr. Couch. We are grateful that you continue to choose WACF!



Dr. Bill Couch and his wife, Barbara



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Heather Harwood
Executive Director

Donn Baird
Treasurer

Priscilla Brown
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Jeff Herdrich
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Pam Schumm
Education Officer

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Terry Clapacs

Tom Cottrell

Robert Fanning

Bill Herdrich

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Tom Kelley

Dan Kiley

Becky Levinson

Bill McCully

Beth Morris

Shannon McNett-Silcox

Cindy Peterson

Chris Roberts

Joan Szynal

Thomas Yoder



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