



Minnesota River – Mankato 1W1P

Steering Committee Meeting

Wednesday, August 28, 2024 • 9:30 – 11:30 AM

Meeting Location

Nicollet County Courthouse
EOC Conference Center Room
St. Peter, MN 56082

Agenda Items	Action	Time
1. Welcome and General Updates • Style guide and logo	--	10 min
2. Public Kickoff Meeting • Summary of results • Resource station feedback • Other	Discuss	15 min
3. Land and Water Resources Narrative • Overview of draft section • Process for comments and revisions and sending to Policy Committee for approval	Discuss	30 min
4. Draft Plan Issues • Issues from data aggregation • Group brainstorm for missing issues • Process for finalizing issues and sending to Policy Committee for approval • Overview of next step: Prioritizing issues and plan section	Discuss	45 min
5. Advisory Committee • Decide roster and frequency for input	Decide	15 min
6. Action Items and Next Steps • Policy Committee: September 9	--	5 min



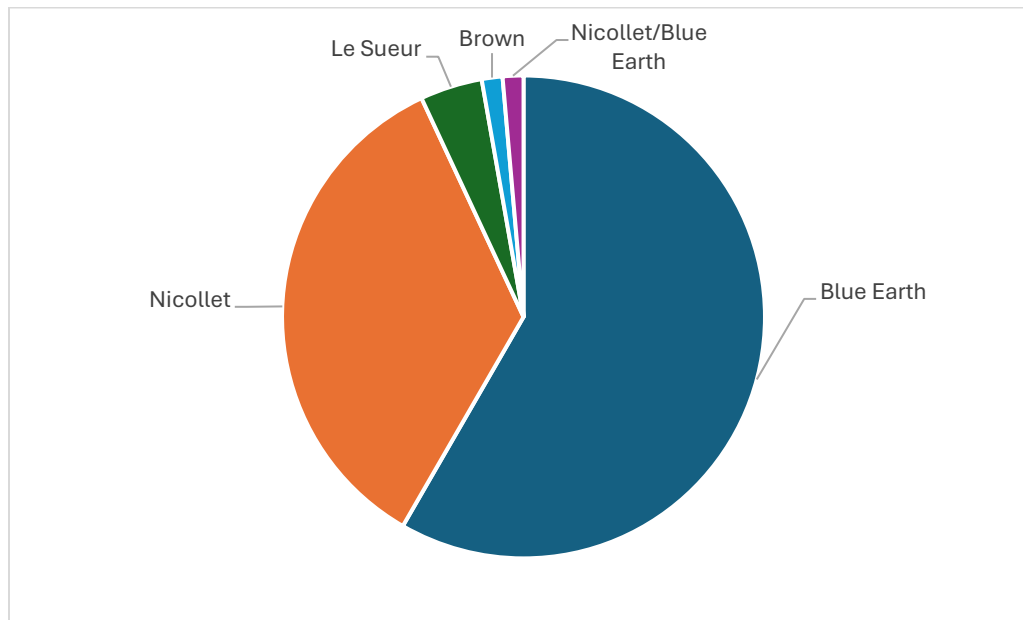
Public Kickoff Summary

Survey

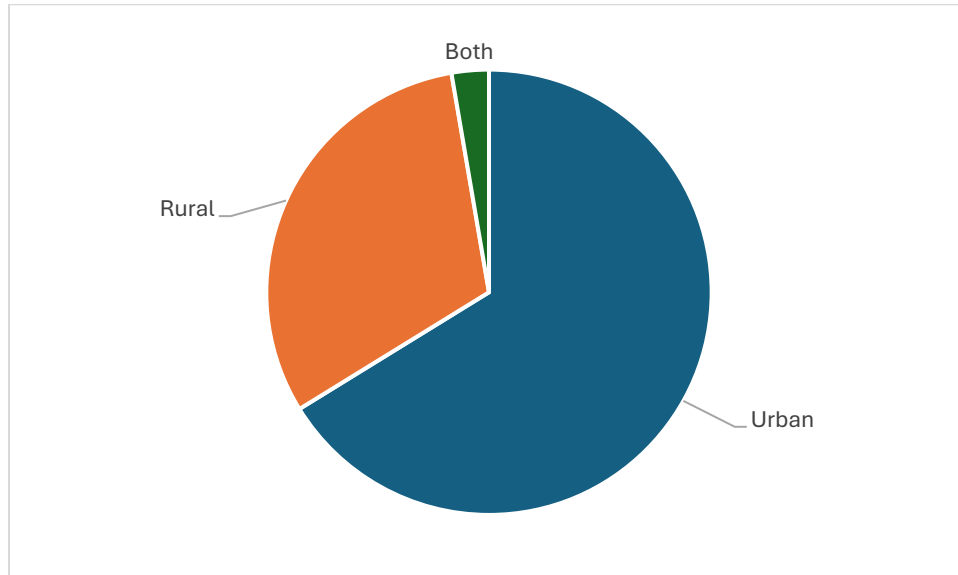
On July 23rd and July 30th, 2024, approximately 40 people attended public kickoff events held in Nicollet and St. Peter respectively. The kickoff events were intended to bring the community into the One Watershed, One Plan (1W1P) planning process, educate community members on the purpose of a watershed plan, and provide opportunities to identify issues and resources most important to them.

At the meetings, community members discussed issues facing their watershed at Resource Stations (see Page 6). There was also a public survey available for people to take in person and online. Between paper surveys available during the kickoff events and online participation, there were 75 responses to the public survey. Results of that survey are summarized here.

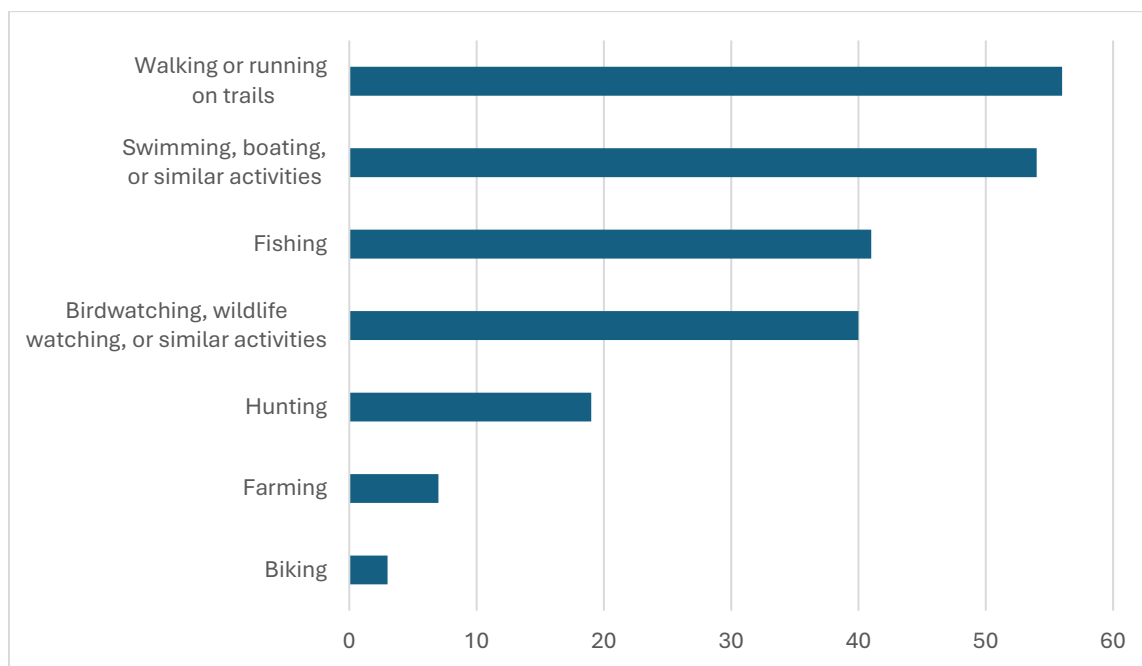
What county do you live in?



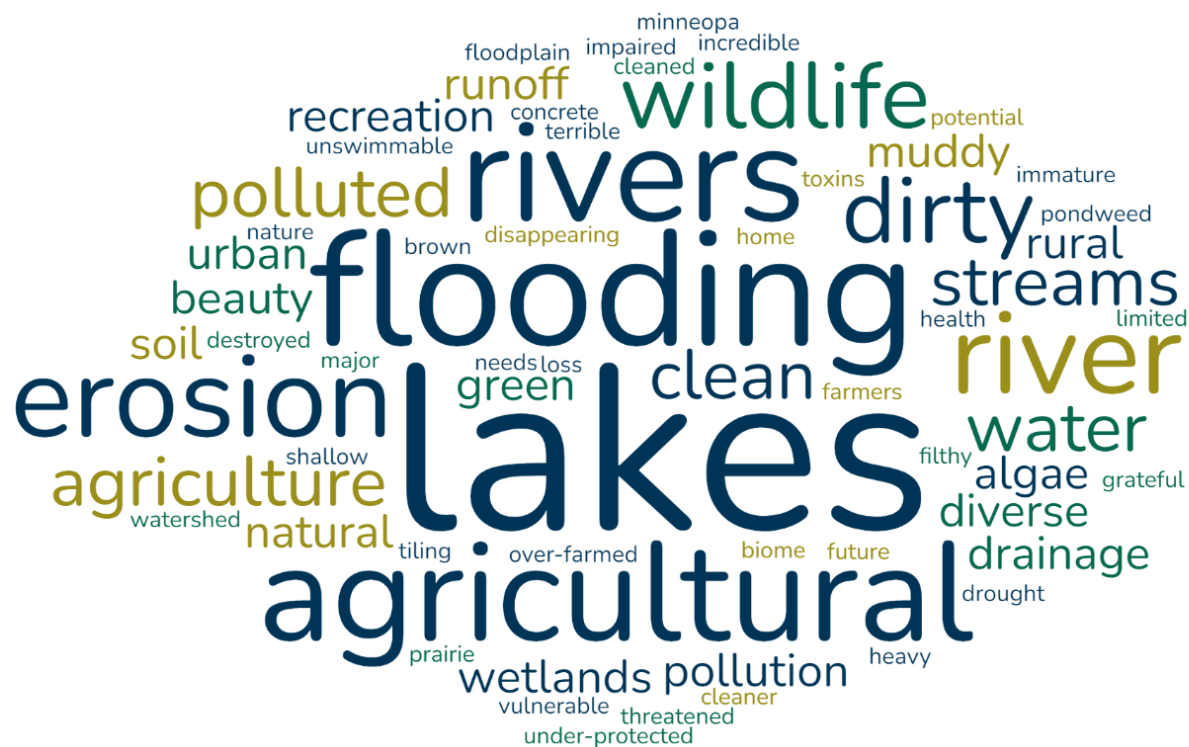
Do you live in an urban or rural setting?



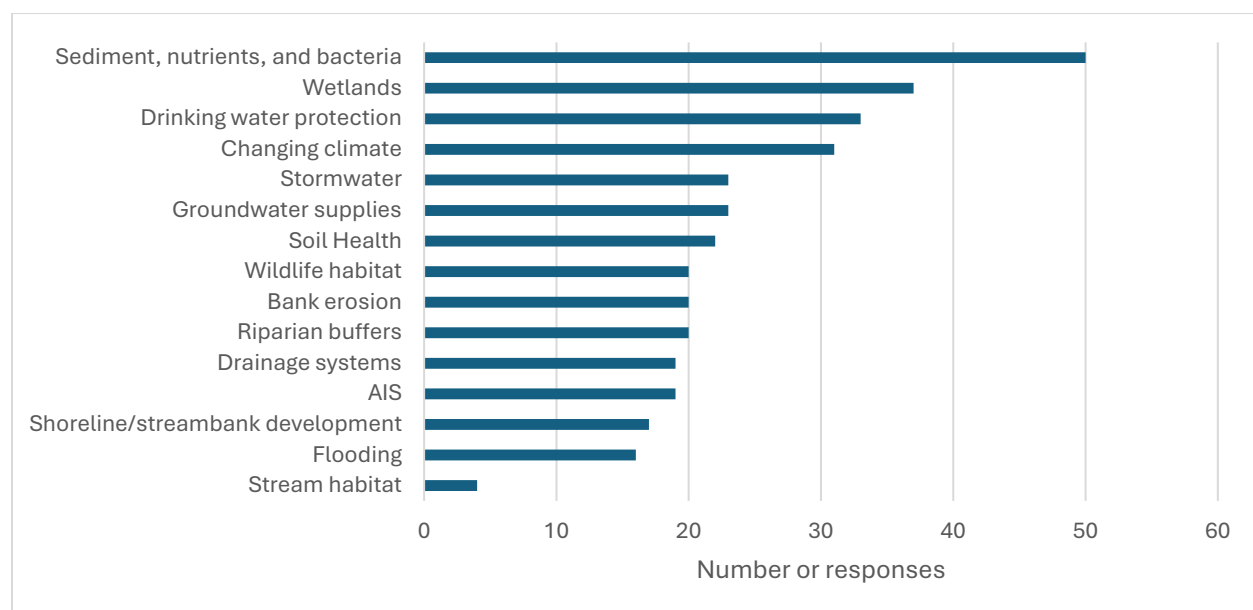
What activities do you enjoy in the watershed?



Using 4-5 words, what comes to mind when thinking of the MRMW?



Choosing up to 5, what are the top issues in the watershed?





Are there any specific waterbodies, stream reaches, or natural areas you are most concerned about?

- Minnesota River, 15 responses
- All, 7 responses
- Duck Lake, 6 responses
- Minneopa Creek, 5 responses
- Lake Washington, 4 responses
- Loon Lake, 4 responses
- 7 Mile Creek, 3 responses
- Crystal Lake, 3 responses
- Le Sueur River, 2 responses
- Swan Lake, 2 responses

One response: Coldwater Streams, Farmland, Hallets Pond, High Quality Habitat, Lake Ballantyne, Lake Crystal, Lake Emily, Lake Hallett, Lake Scotch, Near Unimin, No, Recreation Lakes, Robards Creek, Shanaska Creek, Watonwan River, Wetlands

Are there any topics, resources, problems, or opportunities we didn't cover in this survey you'd like to comment on?

- Citizen shoreline stewardship in particular regarding buffer zones.
- Farm field tiling
- Farm runoff is not very well regulated. Cities are over regulated.
- Flood mitigation planning for municipalities and counties (with Red River project plan as a major resource starting point)
- Have garbage disposals in areas getting off of lakes
- How can people get help fixing bank erosion? Is anyone addressing this?





- I agree that invasive aquatic species are of great concern, but we should also be concerned about invasive trees and plants in our watershed - make sure that our cities and counties are not allowing them to be planted and cause more harm.
- It would be nice to see efforts made to support aquatic natives, not just AIS. The Ag watershed discussion is a mixed bag. When individuals bring up green lakes and surrounding farm runoff, it's like we are not supposed to bring it up because of how important farming is. Farming is important AND it does distress lakes. In turn, individuals discount things they could do because of farming. It's circuitous conversation that's been going on for years and it seems like in the end, nothing gets improved.
- More habitat, easements and public land, wetlands and food prevention
- More natural sloughs to act filters for water entering out lakes
- No enough DNR people to enforce the laws
- No, well done
- Not at this time
- One of your meetings should have been located somewhere South of the river. Get projects on the ground. Don't try to prioritize certain areas so much that you end up not funding good projects in the watershed. People don't like hearing their area is not a priority.
- Polluting farming practices
- Prairie restoration and native plants, grasses, trees, are what we need to support
- Progress? Urban/rural division on issues
- Slalom course to be removed on duck lake.
- Soil erosion on farmland
- The drainage systems and tributaries that feed into the MN River affect the sediment load. Also, selecting only 5 areas of concern does not reflect the magnitude of the impacts to the MN River.
- The impact of climate change and polluting farming practices.
- The lack of protection for Lake Hallett in St. Peter has been and continues to be abysmal. To go from over 20 feet visibility to 2 since the early 2000s is criminal.





- Try to get the green out of the lakes
- Volunteer conservation is great, but if it can't be implementing on a large scale, nothing will improve.
- Water storage
- We drain the wetlands and tile every inch then wonder why our water bodies are unsuitable
- Yes





Resource Stations

At the public kickoff, attendees were directed to resource stations where they discussed issues and geographic areas of concern. A summary of these discussions is included here.

Surface Water Quality Station – St. Peter and Nicollet

- Concerns with ongoing run off into Lake Washington, particularly from nearby agriculture.
- Would there be benefit in making some sort of short appealing “script” or liaison point person to better appeal to landowners to impairment BMPs
- Feels wetlands as they are do not get enough public awareness on their importance. How can public education with the importance of wetlands be done?
- Lake Hallett was supposed to have a fish contamination study done, it fell through the cracks (fish collected but lost data), they would like that process to be carried out.
- Lake Hallett is a high value resource waterbody to those in the St. Peter area, this is a high priority from their mayor’s point of view.
- Cyanobacteria is suspected to also make its way to Lake Hallett, a lot of concerns and questions around the trends of HABs (Harmful Algal Blooms).
- 7-Mile Creek, in addition to other cold-water streams would like to ensure habitat is protected and water quality improves.
- Questions and interest from the public and local officials on learning about stream restoration in ditches. Lots of interest in two stage ditches and hoping to see them in more areas in this region. Could they help with downstream stability? Nutrients upspring? Bring back some biology in impaired areas?
- A lot of concerns around nitrates into groundwater – seepage rates?
- Questions and surprise about how bacteria is entering waterways. One member knew a lot about manure application but thought that as it is injected would stay bound to soil and not be able to come out in tile water. Discussion around E. coli fingerprinting study was briefly had and referenced where to find whole report.





- Lake Crystal: Nutrient impairments
- Lake Washington: Nutrient impairments
- Cold water streams
 - People don't know that and it is important
 - Maintain them and protect them
 - Temperature evaluation
- Nitrates big issue within Watershed and there were a variety of questions on what we can do to limit the sources
- Outlet from Swan Lake
 - "Clean" water source compared to other resources within the area
- Water Storage and Using Floodplain is key to reducing sediment and erosion
- Education and Outreach Efforts are really important in telling the story of the watershed and showing results
 - Visuals to show improvements within the watershed (ex: field trips to different sites)
- Important to highlight things that are great about the watershed as well, not just all of the impairments

Land Use and Habitat Station - Nicollet

- Focus efforts on the waterbodies that have substantial recreational value
- Protection for high use lakes- Washington, Duck, Ballantyne
- Find cost effective practices to get best bang for the buck
- Expand water storage opportunities of the existing shallow lakes in the watershed
- Find opportunities to increase the size of existing natural land areas and waterbodies
- Efforts should focus on the Minnesota River Flood Plain and Tributaries



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- Wildlife and biodiversity have increased with restored natural areas in the watershed
 - Encourage advertising for recreation in people's own local areas (many folks in past traveled long distances far from home to recreate and haven't realized the value of local recreation gems in the area)
 - Establish more cover crops
 - Focus on EAB and invasives in North Mankato/ St Peter Areas
 - Balance the needs of cropland agriculture with conservation practices (need the cropping economy to continue in the area)
 - Provide more resources for education and enforcement of lake shore ordinances (seems like a lot of variances have been approved to get around ordinances)
 - Focus efforts on building protection areas and easements around cold-water streams
 - Focus efforts for better drainage improvements and water storage opportunities that include habitat improvement considerations

Land Use and Habitat Station – St. Peter

- Important lakes to focus work efforts: Lake Washington, Lake Crystal, Swan Lake, Emily, Duck, Ballanytne
 - Consider doing work that will eventually impact Gulf of Mexico and Lake Pepin.
 - Focus habitat work on Hallett Pond and Seven Mile Creek
 - Loon Lake and Lake Crystal need to be emphasized
 - Need to consider how much bigger the natural areas and complexes need to be before we start seeing improvements
 - Seems like there hasn't been good planning in the past. Need focused efforts
 - Need to focus on the Minnesota River Corridor
 - Focus work and improvements to mitigate issues caused by Unimin Mines around the Ottawa area
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- Address Pesticide Issues where it is needed
- Deal with the rural stormwater and drainage on the SW side of St Peter
- Minnesota River is not a reliable recreational river
- Could use more prairie restoration projects
- More emphasis on education and outreach
- Sandy soils in the Lake Crystal area and drainage projects need to be scrutinized
- Look for opportunities for more CREP and farmer incentives
- Make enrollment easier for CREP and focus on upland areas for work.
- Include aquatic habitat in consideration with habitat projects
- Need good “sales people” that are good at communicating with farmers to get projects to take off
- Need to get more word out about wetland credit programs
- Focus on relationship building with farmers
- Focus on Hallett stormwater issues
- Rain gardens and prairie planting projects are wanted in the urban
- Focus on work on SW side of St. Peter rural area
- Wetland Protection
- More habitat
- Concerns of suburban development and impacts
- “Buy in by Producers”
- Expand wetland complexes, for water quality and wildlife
- Expand Prairies
- Concerns over bank erosion on main rivers and ditch systems
- More Conservation Easements (used the term CREP, but I believe they wanted RIM by their statements)



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- Tap into USDA Farm programs for incentives (partnership with future projects with the plan?)
 - Soil Health Benefits
 - Specifically in the Lake Crystal area
 - Rain Gardens in urban areas
 - Concerns over altered hydrology
 - Pattern tiling
 - Increased surface water

Drinking Water and Groundwater Station – Nicollet

- Nitrates were the main concern raised by the public for both public and private wells.
- Residents of St. Peter mentioned the cost associated with nitrate removal and the impacts to their utility bill.
- Regenerative agriculture was mentioned as a focus of the plan to help reduce nitrates.
- Financial assistance for farmers to implement practices to reduce nitrate pollution was important to success.
- In discussing natural occurring contaminants such as arsenic, residents agreed that sampling and education should be in plan.
- Outreach and education for shared wells that don't qualify as a public water supply well.
- Citizens asked what contaminants and how frequently should private wells be sampled.

Drinking Water and Groundwater Station – St. Peter

- St. Peter
 - Blending drinking water from three different aquifers.
 - Vulnerable groundwater supply due to the Jordan Sandstone aquifer and
- 



- rapid groundwater recharge/sandy soils.
- Reverse osmosis treatment for iron/manganese removal and nitrate removal.
- Comments were made about the about how good St. Peter's water is. It was a recent winner of best tasting water in Minnesota. The good taste was attributed to the mixing of water from multiple aquifers and the reverse osmosis treatment system.
- Mankato
 - Two sources of water:
 - Ranney wells – Shallow groundwater wells directly influenced by surface water.
 - Mt. Simon Aquifer
 - Water from Ranney wells is mixed with water from deep wells from the Mt. Simon aquifer. Approximately 70 percent of Mankato's drinking water is from the Ranney Wells.
 - Concerns were raised about groundwater use for the increased development in Mankato.
- Lake Crystal
 - Water is from a deep well with low vulnerability.
- Nitrates
 - Comments/concerns were raised about elevated nitrates and the cost of treatment.
 - With Mankato and St. Peter blending water from deeper aquifers, there was concern expressed about water use from less sustainable deeper aquifers.
 - The value of projects that reduce nitrate runoff on the landscape prior to reaching the vulnerable wells was discussed to help reduce treatment costs and reduce the amount of water that is mixed from deeper wells.
- Recharge
 - Mt. Simon aquifer recharge rate and water appropriations regarding the shallower aquifers.
- Groundwater – Surface Water Interactions
 - Contaminated stormwater runoff affecting surface waterbodies (water quality and quantity) and their interaction with shallow groundwater
- Private Wells
 - The recommendation for regular testing for bacteria and nitrates was discussed.
 - The naturally occurring arsenic in the groundwater in the watershed was discussed and testing was encouraged as wells testing over the safe drinking water standard are not uncommon. It was noted that new wells have only been required to be tested for arsenic since 2008 and there are likely a lot of wells that have never been tested for arsenic.





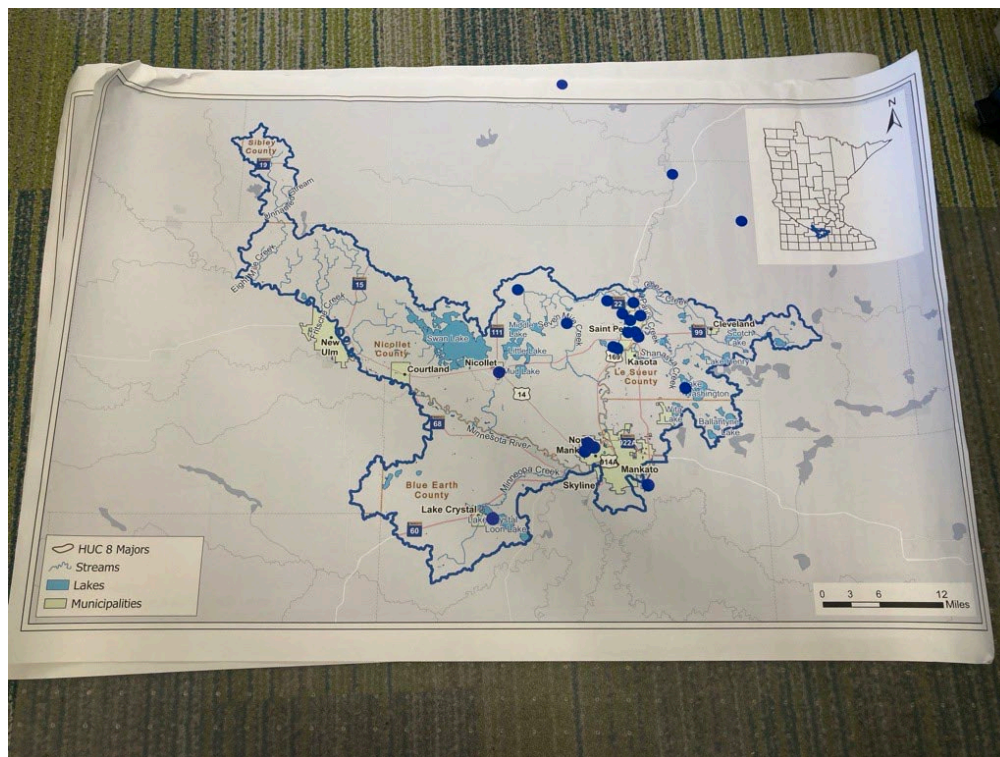
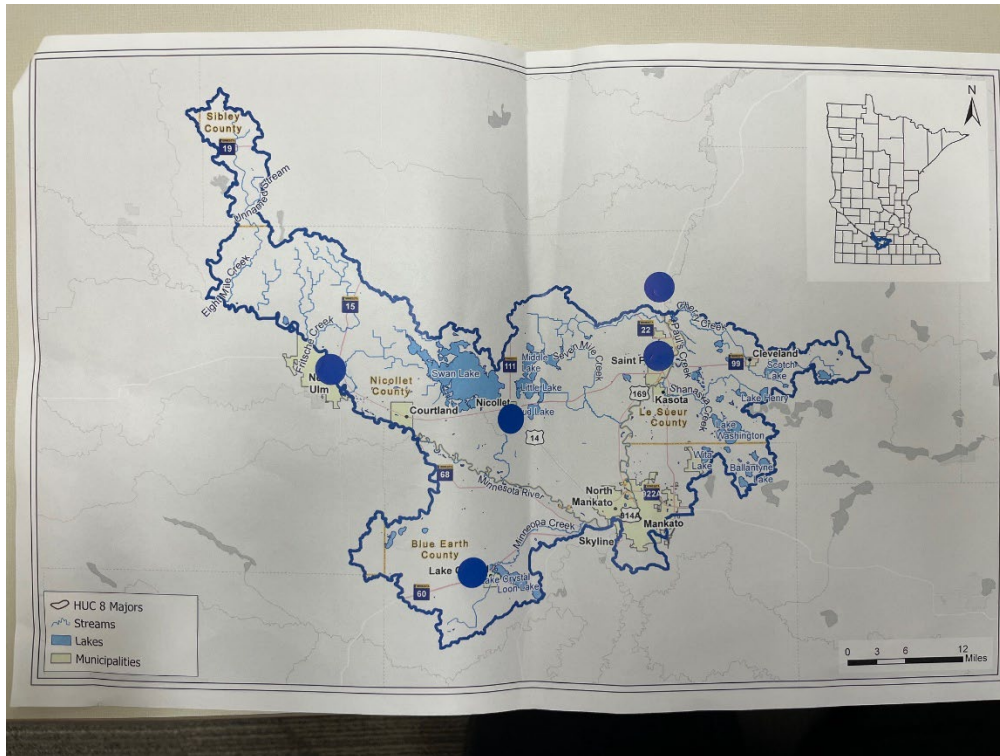
Flood Damage Reduction and Hydrology Station

- There should be more consistency between counties in the evaluation of drainage projects and in the review of the goals for a drainage project.
- There seems to be barriers for obtaining grants for water storage and conservation practices with drainage ditch improvement projects.
- There are a number of cold water/trout streams in the watershed and there should be consistency with how drainage projects are reviewed in those watersheds.
- To help reduce the cost of conservation projects associated with drainage projects, the contractor who is installing the drainage improvement project should also be the contractor doing storage or conservation projects. The set-up costs for the contractor could be leveraged, and the overall cost could be reduced.
- Regarding tile drainage, it should be acknowledged that that water flows faster through plastic pipes than soil.
- Wetland restoration, water storage practices, and soil health are all important practices to help reduce peak flows in streams and the Minnesota River.
- Implementing water storage practices should be the focus of this plan.
- The water storage aspects of soil health should also be a priority and should be promoted as healthy soil can store significant volume of water.
- The public could be better engaged in importance of water storage and with successes in the Minnesota River Basin.
- Conservation practices like CREP and other water storage practices in the upper reaches of the Minnesota River Basin likely played a role in reducing the flood peaks on the Minnesota River in 2024. It would be interesting to model that potential impact to how that flood event may have been worse had those practices not been in place.
- Storage of water through a variety of structural and non-structural means in the upper reaches of the watershed is important to reduce peak flows.
- Agricultural drainage and outlets to public waters should be treated like municipal storm sewers as they are a point source for pollution and increased water flow.



Map Feedback from Public Kickoff

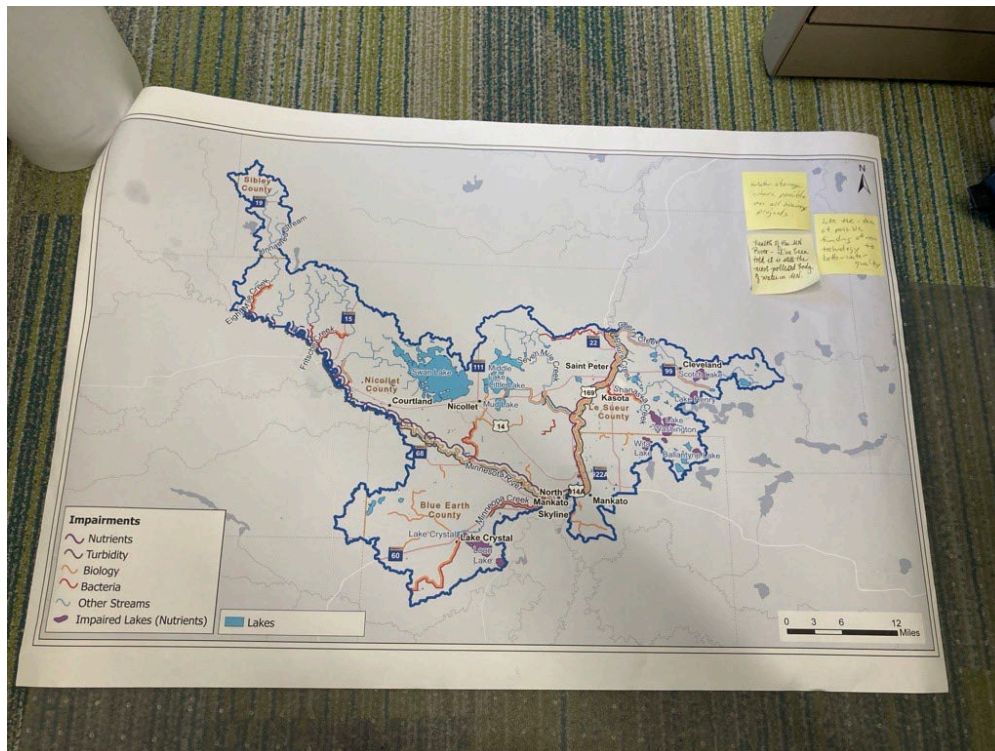
Where do you live? Responses from Nicollet (top) and St. Peter (bottom).





Comments on Surface Water Quality map:

- Water storage where possible on all drainage projects
- Health of the MN River – I've been told it is still the most polluted body of water in MN
- Like the idea of possible funding of new technology to better water quality



2. Land and Water Resources Narrative

The Minnesota River - Mankato Watershed (MRMW), located in south-central Minnesota, is defined by the veering path of the Minnesota River and its many tributaries. The segment of the Minnesota River within the watershed flows southeast along the border towards New Ulm, continues to Mankato, and veers north and passes through St. Peter to the watershed outlet near Ottawa. The MRMW is largely in Blue Earth, Le Sueur, and Nicollet Counties, with the Minnesota River oftentimes serving as county border lines. The northern segment of the watershed is in Sibley County, with smaller amounts of land in Brown, Watonwan, and Renville Counties. Major towns in the watershed include Mankato, St. Peter, Lake Crystal, Courtland, and Nicollet.

At 370,960 acres, the MRMW Comprehensive Watershed Management Plan (CWMP) planning area is less than half the size of the major (HUC-8) hydrologic watershed (Figure 2-1). Land in the western side of the major watershed including the Little Cottonwood River subwatershed has been incorporated into the neighboring Redwood, Yellow Medicine, and Cottonwood River CWMPs. The water quality of the MRMW is not only important for local aquatic life and recreational opportunities but is also regionally significant as the downstream watershed drains into the Mississippi River.

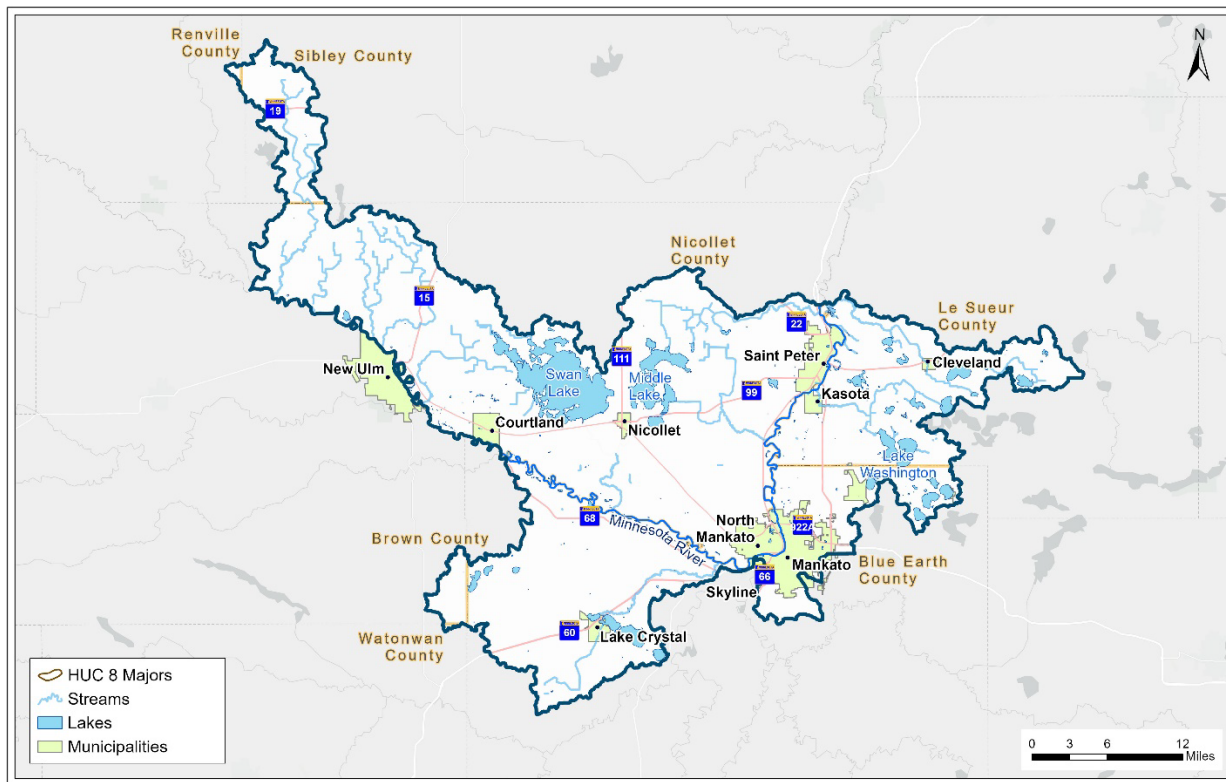


Figure 2-1. Map of the MRMW.



History

People have lived in the Minnesota River Valley for thousands of years, where the valley provided for hunting, fishing, and growing crops. Historically, Dakota inhabitants relied on the shallow water of the Minnesota River near what is now St. Peter to cross the river, calling it the Oiyuwege (place of crossing) (Minnesota River Basin Data Center, 2011).



Photo: Minnesota River Valley National Scenic Byway

Europeans first settled in the area in the 1700s. The Treaty of Traverse de Sioux was signed in the mid-1800s. Following the treaty, counties in the Minnesota River Valley were established and development accelerated soon after with the construction of the railroad in the late 1800s. Agriculture became a common way of life, leading to the widespread conversion of prairie and wetlands. Early crops included hay, alfalfa, barley, oats, and corn (DNR, 2016).

Geology

During the last glacial period about 16,000 years ago, what is now the MRMW was covered by the Des Moines ice lobe. Its retreat left loess and glacial till deposits over sandstone, carbonate, and shale bedrock with some karst geology to the east and gneiss, limestone, and quartzite bedrock in the rest of the watershed (MPCA, 2019a; DNR, 2016). The receding glacier also impounded meltwater in lakes, with the largest being Lake Agassiz. Glacial River Warren formed as an outlet to the lake and this river incised what is now the Minnesota River Valley.

Topography

The land has gently rolling plains and is largely flat in the central valley of the watershed, with steep slopes around the Minnesota River in the north and far east. The geology of the region influences water quality. The deep Minnesota River Valley resulted in steep bluffs and sharp changes in elevation of tributaries and streams, which are highly erosive as they cut through steep banks to reach the river. Additionally, some durable bedrock is less easily





eroded, resulting in the formation of waterfalls such as Minneopa Falls that can act as fish barriers.



Photo: Minneopa State Park, DNR

Soils

The soils in the MRMW are some of the youngest in the county (DNR, 2016). Historically, soils were poorly drained from the prairie and wetland land cover, but were rich in organic matter. The organic matter made agriculture valuable for growing crops, but the wet soils made agriculture challenging. This drove early farmers to drain the land to dry out the soil, making them more suitable for agricultural production. Later in the 20th century, farmers increased the drainage potential and therefore the agricultural productivity of fields by installing drain tiles. Today, the soil has less organic matter than historic conditions due to changing land cover, agricultural practices, and a lack of residue on fields (DNR, 2016).

Land Use

Present-day land use in the watershed is largely agricultural, with 70% of the land used for row crops and pasture. Following agriculture, the next largest land use is developed land and wetlands (each 9%), followed by forest (6%), open water (4%), and grasslands and barren land (2%) (USGS, 2021). Developed land covers a larger area of the MRMW than most Minnesota watersheds. The population of Nicollet, Blue Earth, and Le Sueur Counties is expected to grow in the upcoming decade, however this growth is projected to be slower than the projected overall grow rate of Minnesota (DEET, 2024).



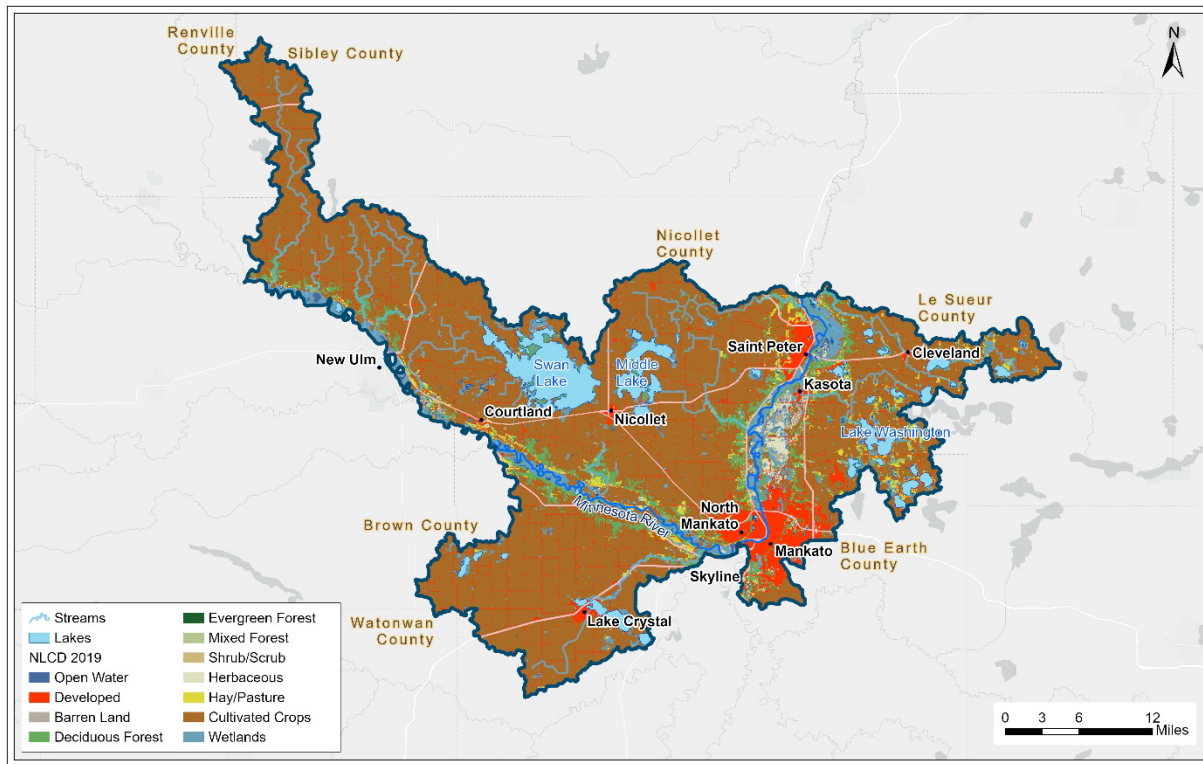


Figure 2-2. Current land use in the MRMW.

The pre-European land use is known through Marschner vegetation maps, which show the watershed was historically covered by prairie with occasional prairie potholes. Forested land was mostly Big Woods in east of Mankato, with other forest along the Minnesota River including river bottom and aspen-oak forests (DNR, 2016).

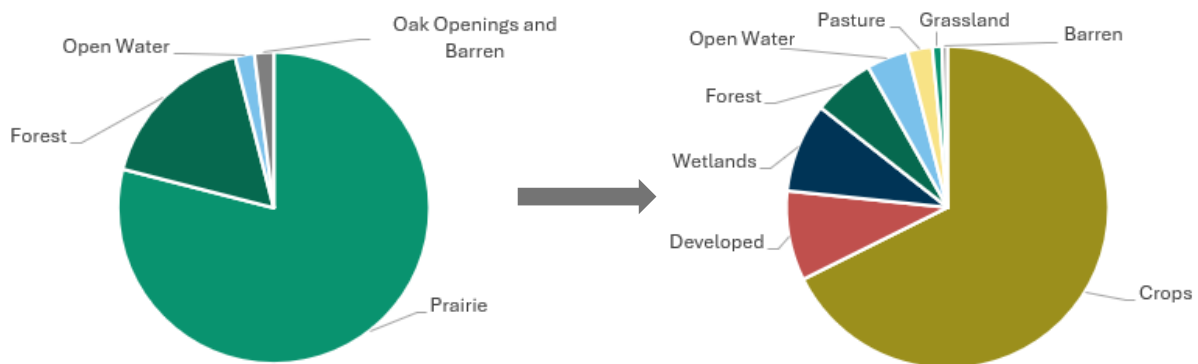


Figure 2-3. Historical land use (left, DNR 2016) and current land use (right, USGS 2021).





As shown in Figure 2-3, the land has been heavily altered in the past 200 years, with prairies largely converted to row crops and urban land, wet prairies drained, and streams ditched or straightened. This land alteration has also impacted the hydrology of the watershed, or how water flows over the landscape. Altered hydrology has increased and hastened the delivery of water downstream. Rather than the slow infiltration and/or evapotranspiration of water that fell in the landscape, water that lands in a field or city is quickly moved to a drainage system and delivered downstream.

Agriculture

The 2022 census found the average MRMW farm size (averaged between Nicollet, Le Sueur, and Blue Earth Counties) is 280 acres (USDA-NASS, 2022). Most of the row crops are soybeans and corn, with a small number of acres used for sugarbeets, cultivated perennials, or small grains (MPCA, 2017). Productive land is not only used for row crops. Many producers in the watershed are also raising livestock. There are 383 active feedlots and 40 concentrated animal feeding operations (CAFOs) in the MRMW (MPCA, 2024a).

Natural Land

The MRMW lies within the Prairie Parkland and Eastern Broadleaf Ecological Provinces and in the Big Woods and Minnesota River Prairie subsections. Much of the natural prairie has been converted to other land uses, but 15% of the watershed is still covered today by wetlands and forests that provide ecosystem benefits such as storing water, removing pollutants, providing habitat, and more. As can be seen in Figure 2-2 and Figure 2-4, much of the remaining natural lands are along the Minnesota River. There are two Scientific and Natural areas over about 50 acres, 38 WMAs in nearly 6,000 acres, and over 20,000 acres of Minneopa State Park.



Ecological Provinces, U of M

The watershed has four sites of outstanding biodiversity significance, seven calcareous fens, and numerous fragments of native plant communities, particularly red oak/basswood/sugar maple forest, southern dry prairie, and silver maple floodplain forest. These pockets of historical forest and prairie are essential to supporting the wildlife and ecosystem of southern Minnesota. Endangered and threatened species can be found in the



MRMW, including the northern-long eared and tricolored bats, the monarch butterfly, and the rusty patched bumble bee (Center for Biological Diversity, n.d.).

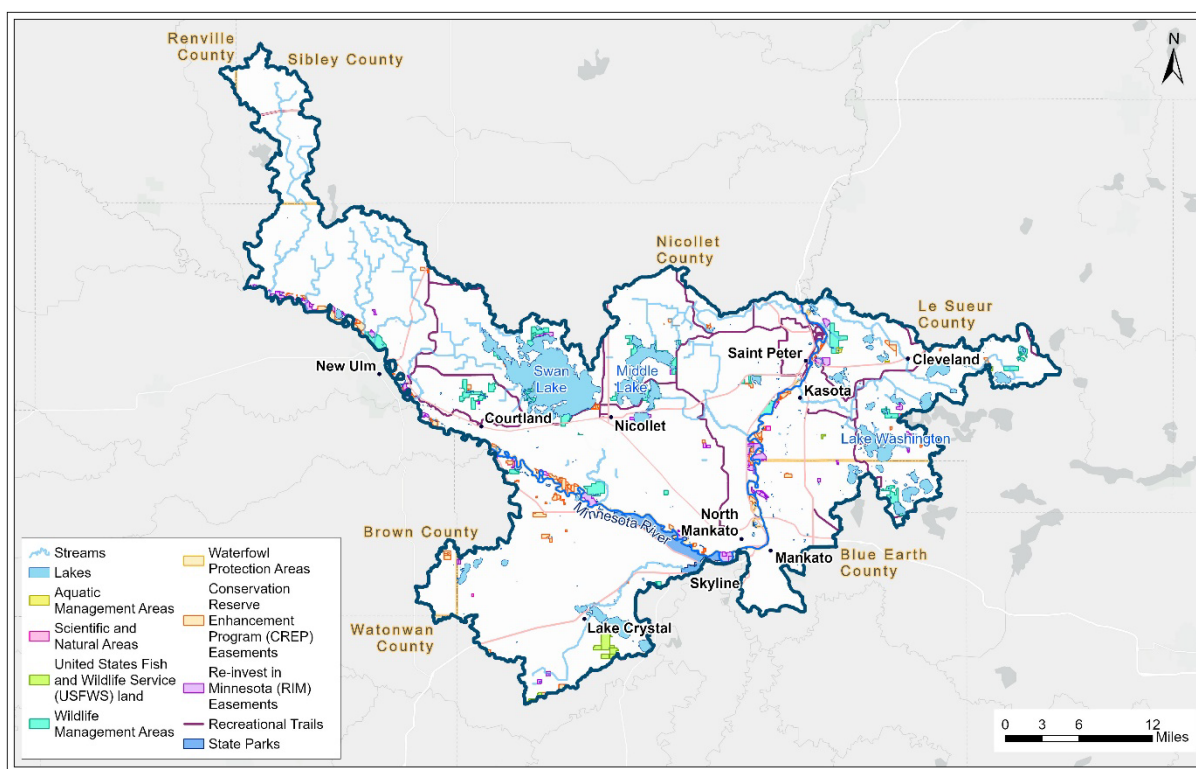


Figure 2-4. Public and protected land.

Climate

The MRMW experiences a typical climate for southern Minnesota: cold, snowy winters with hot summers. The watershed receives an average of about 30 inches of precipitation each year (MPCA, 2017). However, Minnesota has been experiencing changing climate patterns, including increasing frequency of heavy rains, longer periods of drought, and shorter winters. In the MRMW, precipitation has been more variable in recent decades, specifically less precipitation in May and June and more precipitation in the fall (MPCA, 2019a). Changes in rainfall patterns are of special concern to this region due to the prevalence of agriculture that relies on a stable climate. Intense rainfall is also a concern for the communities in the watershed as extreme rainfall combined with land use changes that reduce natural water storage can result in damaging floods.



Surface Water

Previous to land use conversion and drainage, the watershed was covered in wet prairie. It is estimated that the watershed has lost between 30 and 65% of historical wetlands, which is a loss of natural water storage. The restorable wetland inventory estimates that about 15% of the watershed could be restored for water storage (DNR, 2016). The surface water quality is impacted by numerous lake and stream impairments, of which the main stressors have been evaluated to be altered hydrology, connectivity, habitat, and nitrate (MPCA, 2019a).

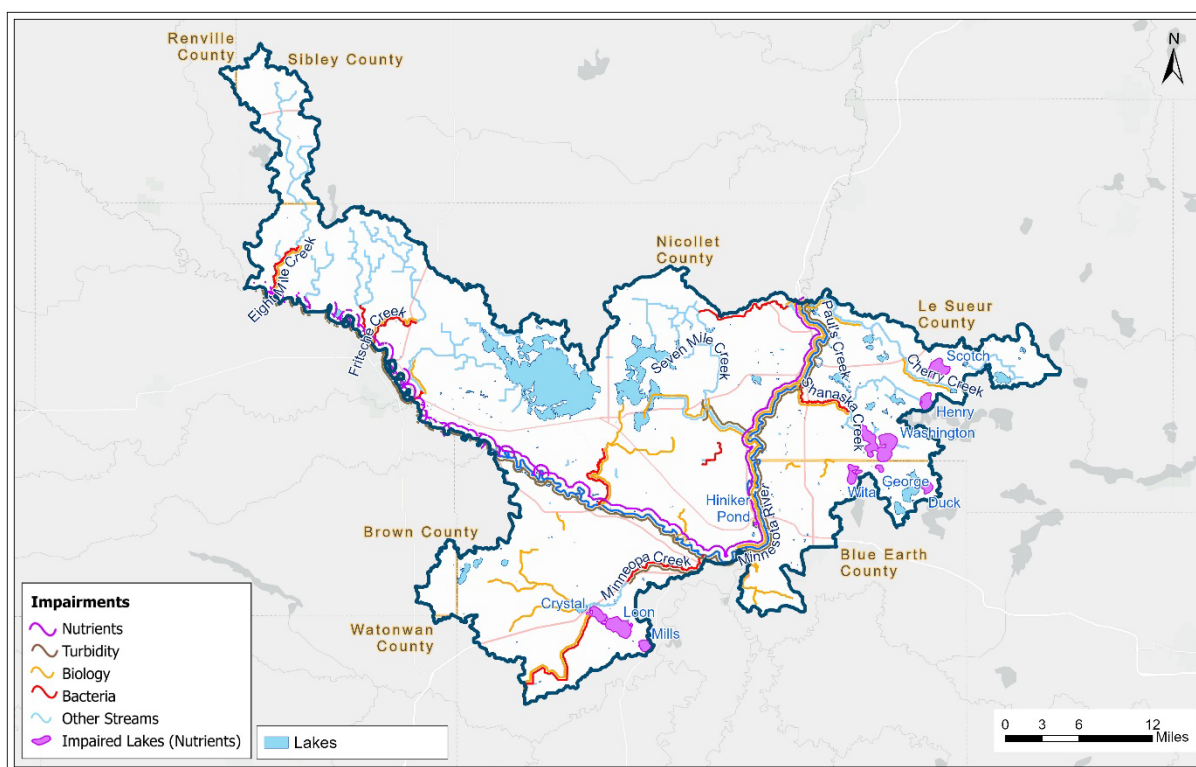


Figure 2-5. Impaired waters (MPCA, 2024b).

Lake Water Quality

Lakes are a treasured resource for watershed residents for boating, swimming, fishing, and social enjoyment. There are 33 public access sites in MRMW lakes, 25 of which accommodate boat trailers (MPCA, 2019b). Of the 45 public water basins, notable lakes include Lake Washington, Lake Crystal, and Swan Lake. At 9,600 acres, Swan Lake is the largest prairie pothole lake in North America.





The federal Clean Water Act requires each state to adopt water quality standards to protect waters from pollution. Minnesota water quality standards protect lakes, rivers, streams, and wetlands by defining how much of a pollutant can be in the water before it is no longer drinkable, swimmable, fishable, or useable in other, designated ways. A body of water is designated “impaired” if it fails to meet one or more water quality standards (MPCA, 2024).



Photo: Lake Washington Improvement Association

As of 2024, nine lakes in the watershed are impaired due to nutrients, six lakes due to mercury in fish tissue, and three lakes due to the index of biological integrity for fish. Aquatic invasive species (AIS) are not classified as impairments but have adverse effects on lake ecosystems as well. Invasive species found in and around the MRMW include Eurasian watermilfoil, flowering rush, zebra mussels, and bighead and grass carp.

Table 2-1. 2024 lake impairments

Lake	Impairment(s)
Crystal	Fish (Bio); Nutrients
Duck	Mercury in fish tissue; Nutrients
George	Mercury in fish tissue; Nutrients
Henry	Nutrients
Hiniker Pond	Mercury in fish tissue
Loon	Mercury in fish tissue; Nutrients
Mills	Nutrients
Scotch	Nutrients
Washington	Fish (Bio); Mercury in fish tissue; Nutrients
Wita	Nutrients
Crystal	Fish (Bio); Nutrients
Duck	Mercury in fish tissue; Nutrients

Stream Water Quality

The MRMW is unique in that it hosts several trout streams, which are a draw for people that fish. Designated trout streams include Seven Mile Creek and its tributaries, Paul’s Creek and four unnamed streams around it, and several unnamed streams just south of the Minnesota River near Judson (DNR, 2020).





There are 41 impaired stream reaches in the watershed, as summarized in Table 2-2. Main stressors to aquatic life include altered hydrology, degraded habitat, nitrate, and a lack of connectivity (MPCA, 2019a).

Table 2-2. Stream impairments.

Impairment	Number of Reaches
Macroinvertebrates (bio)	22
Fish (bio)	17
Fecal Coliform	13
<i>E. coli</i>	12
Turbidity	10
Mercury in fish tissue	6
PCBs in fish tissue	4
Mercury in water	4
Nutrients	4
PCBs in water	2
Nitrate	2
TSS	1



Photo: Minnesota River in MRMW, DNR

Hydrology

The Evaluation of Hydrologic Change (EHC) is a DNR report that looks at how hydrology in Minnesota watersheds has changed. In the MRMW, the report identified 1983 as the point of hydrologic change, where the hydrology pre-1983 is significantly different than the hydrology after. The watershed has experienced a 12% increase in precipitation when comparing post 1983 to pre-1983. This is small in comparison to other changes: annual discharge, bankfull flows, flood duration, and the rate of flood rise have more than doubled. Flow has increased during all stages, and the minimal increase in precipitation indicates it is not a main driver of these changes. Rather, the EHC report estimates that land use changes, a lack of storage, drainage systems, and loss of perennial cover are more likely to explain the increase in flow metrics (DNR, 2023). Within the MRMW, 32% of streams have natural channels, 48% have been altered, 2% are impounded, and 18% have no definable channel (MPCA, 2017).

Groundwater

Most of the MRMW obtains drinking water from groundwater, although Kasota, St. Peter, and Mankato have vulnerable drinking water supplies because they are under the influence



of surface water. Of the 22 DWSMAs in the watershed, part of Kasota has very high vulnerability to contaminants, and St. Peter, part of Kasota, Lakes and Links Homeowners Association, and Valley Mobile Home Park have high vulnerability. Two have moderate vulnerability and 13 have low vulnerability (Figure 2-6).

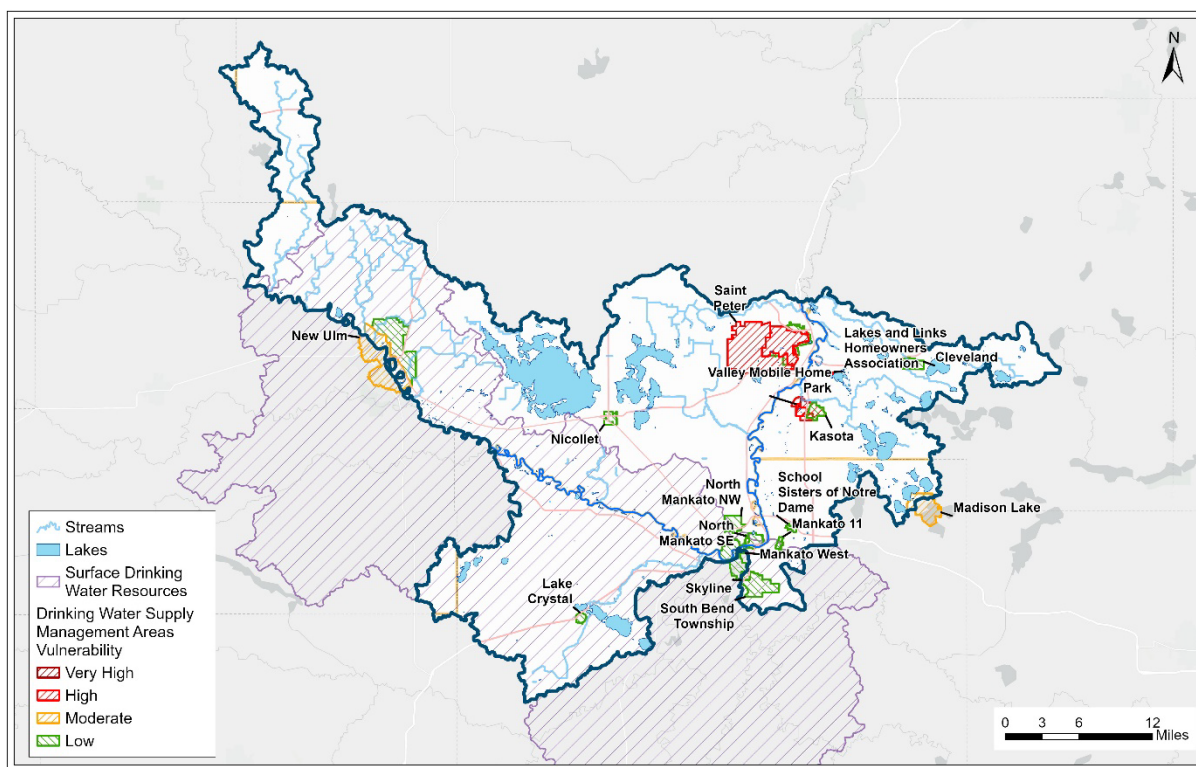


Figure 2-6. DWSMA vulnerability in the MRMW.

Most of the surface materials have a moderate vulnerability to contamination, but there is high sensitivity to pollution around the Minnesota River and in the southern edge of the watershed (Figure 2-7). St. Peter obtains drinking water from an aquifer which receives crop runoff infiltrating through sandy soils. Nitrate in the drinking water has been increasing, which drove St. Peter to install an expensive reverse osmosis water treatment plant (MPCA, 2020). Mankato receives about 70% of its drinking water from two Ranney wells drawn from a shallow aquifer influenced by the Minnesota and Blue Earth Rivers. Mankato also has deeper groundwater wells from the Mt. Simon aquifer. Concern over drinking water influenced by surface water is due to the potential presence of pesticides, microbes, nitrate, and volatile and synthetic organic compounds (MPCA, 2020).

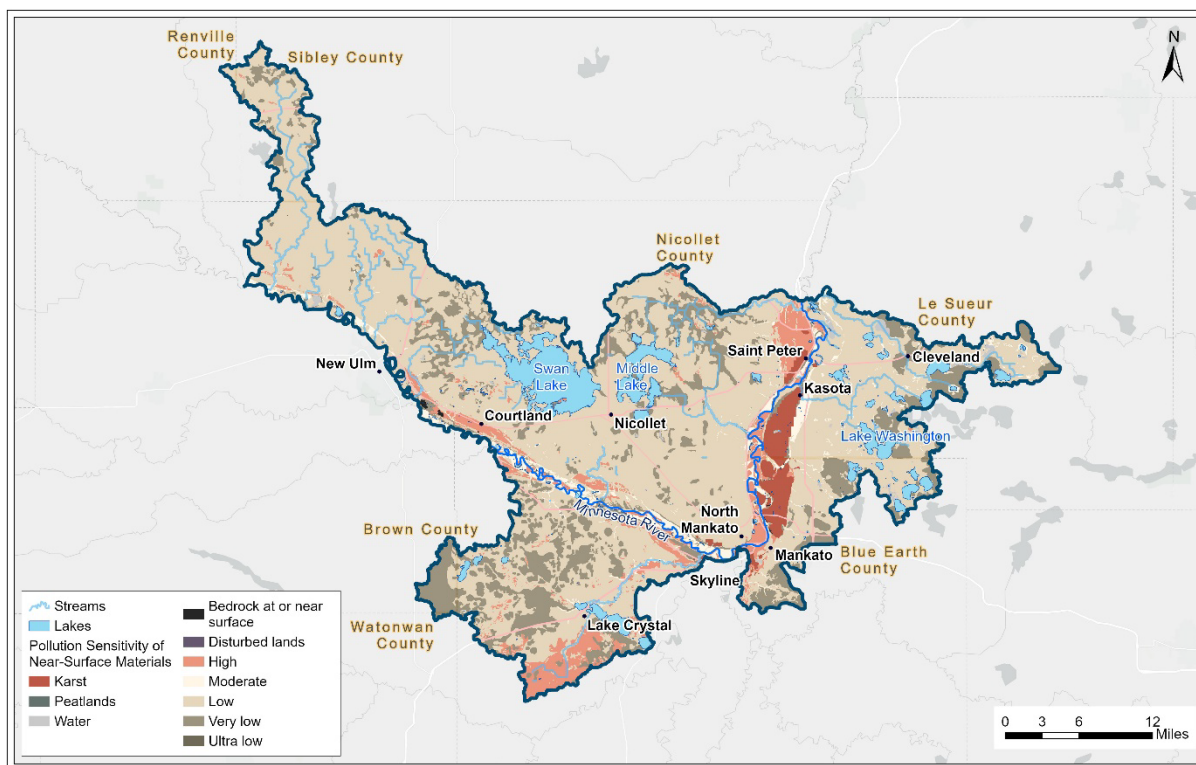


Figure 2-7. Pollution sensitivity in the MRMW.

Stormwater

The MRMW has many urban areas, which generally have more impervious surfaces, such as pavement. When rain falls on pavement or roofs, instead of infiltrating into the ground it flows over the pavement, into the storm sewer, and eventually into surface waters. Stormwater is a water quality concern because of the pollutants that stormwater picks up on its way to the storm sewer system, including trash, nutrients, chloride, sediment, and bacteria. Mankato and St. Peter are the two MS4s in the watershed. MS4s, or municipal separate storm sewer systems, are the network of infrastructure that conveys stormwater through and out of urban areas. They are required to have a stormwater management plan and reduce pollutants through best management practices (BMPs) and outreach efforts.



Photo: City of St. Peter





Minnesota River – Mankato Watershed 1W1P

Draft Issue Statements

Below is a table summarizing the draft list of issues impacting resources in the Minnesota River-Mankato Watershed (MRMW). Issue statements are also provided to describe each issue. This list of issues was developed after review and consideration of the following:

- Agency reports: WRAPS, DNR Characterization, Stressor Identification
- Total Maximum Daily Loads: Minnesota River/Blue Earth River TSS TMDL, MRMW TMDL
- County Plans: Blue Earth, Le Sueur, Nicollet, and Sibley Water Management Plans
- 60-Day Letters: MPCA, DNR, BWSR, MDH

If an issue is discussed as an issue in the above sources, there is an “x” in the corresponding column of sources. The issues are organized by resource but are presented in no order of priority.

Resource	Issue	Issue Statement	Agency Reports	TMDLs	County Plans	Agency Letters
Surface Water Quality	Nutrient Loading	Nutrient loading (phosphorus and nitrogen) has led to numerous impairments and an increase in algae blooms.	X	X	X	X
	Bacteria	Bacteria from livestock, human, and wildlife waste contribute to <i>E. coli</i> and fecal coliform impairments.	X	X	X	X
	Invasive Species	The presence of aquatic and terrestrial invasive species degrades habitat quality and recreation opportunities.	X		X	X
Drinking Water and Groundwater	Groundwater Quality	Groundwater that is used for drinking water can be contaminated with pollutants such as nitrate and arsenic, making it a public health problem.			X	X
	Surface Water / Groundwater Interaction	Much of the watershed obtains drinking water from groundwater that is influenced by surface water, which makes contamination (especially with nitrate) more likely.	X		X	X





Resource	Issue	Issue Statement	Agency Reports	TMDLs	County Plans	Agency Letters
	Groundwater Quantity	Protection of groundwater supplies through increasing recharge and wise water use is important to ensure the future drinking water supply as well as adequate base flow supply to streams.	X			X
Flood Damage Reduction and Hydrology	Flooding	Altered hydrology combined with an increase in annual and heavy rain events has increased the likelihood of flooding, which is costly to infrastructure or farmland in impacted areas.	X		X	X
	Loss of Water Storage	Land use change has led to a loss of water storage in the landscape, which contributes to excess flow and pollutants in streams.	X	X	X	X
	Near-Channel Erosion	Near-channel erosion from the streambank, bluffs, and ravines is a large source of sediment in streams.	X	X	X	X
	Stream Connectivity	Natural and built barriers such as perched or improperly sized culverts limit stream connectivity, impeding fish passage.	X			X
	Drainage Systems	Much of the watershed is drained through tile or surface ditches, some of which are in need of repair or updating to reduce peak flows downstream.			X	X
	Stormwater	Stormwater from developed areas contains salt, sediment, nutrients, fertilizer, and more that pollutes receiving waters.		X	X	X
	Precipitation	An increase in annual precipitation and changes to historic weather patterns impacts agricultural productivity and increases peak stream flows.	X			X
Land Use and Habitat	Wildlife Habitat	Historic wetlands, forest, and prairie have been lost, reducing available habitat and associated ecosystem benefits.			X	X
	Soil Health and Erosion	Degraded soil health on productive land can lead to more erosive soils.	X	X	X	X
	Riparian and Shoreline Vegetation	Insufficient vegetation in riparian and shoreland areas decreases riparian and shoreline stability, increases water temperatures, and degrades aquatic habitat.	X			



ONE WATERSHED, ONE PLAN
Minnesota River - Mankato

ADVISORY COMMITTEE CONTACT LIST							
ORGANIZATION	FULL NAME & TITLE	EMAIL ADDRESS	TELEPHONE	NOTES: Specialties, suggested project(s), etc.	PARNTER	ADDRESS	WEBSITE
AG PARTNERS: Le Center Agronomy & Feed		info@mnpropane.org	(507) 357-6868		LE SUEUR COUNTY & SWCD	1273 W Derrynane St, Le Center, MN 56057	agpartners.net/
AG PARTNERS: Le Sueur Office		info@mnpropane.org	(507) 665-6270		LE SUEUR COUNTY & SWCD	901 N 4th St, Le Sueur, MN 56058	
BRIGHTON TOWNSHIP	Bob Hulke, Supervisor		(507) 276-8554	Township Supervisor with ditch experience	NICOLLET COUNTY & SWCD	3815 American Blvd. East. Bloomington, MN 55425	
BROWN-NICOLLET ENVIRONMENTAL HEALTH CHS	Jesse Harmon, Director	Jesse.Harmon@co.nicollet.mn.us	(507) 934-7089		NICOLLET COUNTY & SWCD		
			(651) 335-6000	Agribusiness cooperative funding requests: stewardship@chsinc.com	LE SUEUR COUNTY & SWCD		
CITY OF CLEVELAND	Lynn Schwarz	acityclerk@mchsi.com	(507) 931-6380		LE SUEUR COUNTY & SWCD	5500 Cenex Dr, Inver Grove Heights, MN 55077	chsinc.com
CLEVELAND TOWNSHIP	Susan Ely		(507) 931-5907		LE SUEUR COUNTY & SWCD		
CONSERVATION TECHNOLOGY INFORMATION CENTER	Dan Coffman, Soil Health Specialist	dan.coffman55@gmail.com	(507) 508-6556	Local farmer	NICOLLET COUNTY & SWCD	41862 271st Ave, Cleveland, MN 56017	
COURTLAND TOWNSHIP	Corey Hulke, Supervisor		(507) 276-6848	Township Supervisor with ditch experience	NICOLLET COUNTY & SWCD		
COVIA			(888) 286-4646		LE SUEUR COUNTY & SWCD		
Lake Crystal Water and Wastewater Treatment Facility	Jeremy Hutchens	lcwater@lakecrystalmn.org	507-995-0301	He is the water/wastewater supervisor and plant operator	CITY OF LAKE CRYSTAL	39770 Ottawa Rd, Le Sueur, MN 56058	
CRYSTAL WATERS PROJECT	Mike Roll	mike@rhenryconstruction.com	507-380-1794	Has worked extensively with BES/water, and other conservation projects. Measuring and monitoring, completing grant applications, lakeshore restoration, pollinator, and rain gardens. plans fishing events for kids	CITY OF LAKE CRYSTAL	39770 Ottawa Rd, Le Sueur, MN 56058	
DEPARTMENT OF PUBLIC WORKS: City of Saint Peter	Amy Kamm, Stormwater Foreman	amyk@saintpetermn.gov	(507) 934-0670		CITY OF SAINT PETER		saintpetermn.gov/289/Water
DUCKS UNLIMITED	Jason Evans & Darrell Ehlers		(507) 402-1531 (507) 327-0945	Southern MN Regional Vice Chairs	CITY OF MANKATO		
EMILY LAKES & RIVERS ASSOCIATION	Brad Hedberg	brhedberg@gmail.com	none	Emily Lakes and Rivers Association	LE SUEUR COUNTY & SWCD		
FARMER: Nicollet County	Joel Dorn			Farmer, currently at Compeer Financial, formerly with Pioneer Seed and Syngentia	NICOLLET COUNTY & SWCD		
FARMER: Nicollet County	Jamie Sietizer		507-381-0052	Farmer, Agronomist	NICOLLET COUNTY & SWCD		
FARMER: Nicollet County	Herman Barsch	hermanbartsch@outlook.com	507-344-3210	Farmer, South Central MN Area Water Quality Certification Area Specialist	NICOLLET COUNTY & SWCD		
FARMER: Nicollet County	Robby Gieseke		507-276-5892	Farmer & Former Nicollet SWCD member	NICOLLET COUNTY & SWCD		
GERMAN/JEFFERSON SPORTSMAN CLUB	Andy Zimprich		(507) 420-3021	facebook.com/GermanJeffersonSportsmensClub/	LE SUEUR COUNTY & SWCD		
GRANBY TOWNSHIP	Seth Krohn, Supervisor		unknown	Township Supervisor with ditch experience	NICOLLET COUNTY & SWCD	PO BOX 682, New Ulm, MN 56073	
GREAT RIVERS GREENING	Ben Penner, Regenerative Ag Specialist	bpenner@greatrivergreening.org	(507) 995-7756	Local farmer	NICOLLET COUNTY & SWCD	23712 Dodd Rd Le Center, MN 56057	
GUSTAVUS ADOLPHUS UNIVERSITY	Scott Moeller, Arboretum Director	smoeller@gustavus.edu	(507) 933-6182		CITY OF SAINT PETER	33857 Skyview Ridge, St. Peter, MN 56082	
IZAAK WALTON LEAGUE	Craig Austinson		(507) 766-1017	New Ulm #79 Chapter conservation group	CITY OF MANKATO		sites.google.com/view/izaa kwalttonnewulm79/
CORDOVA TOWNSHIP	Joel Schmidt		(507) 649-4024		LE SUEUR COUNTY & SWCD		
KASOTA TOWNSHIP	Daren Barfknecht		(507) 267-4554		LE SUEUR COUNTY & SWCD		
LA FAYETTE TOWNSHIP	Jason Enter, Supervisor		(507) 276-7290	Township Supervisor with ditch experience	NICOLLET COUNTY & SWCD		
Lake Crystal Water Treatment Facility	Jeremy Hutchens	lcwater@lakecrystalmn.org			CITY OF LAKE CRYSTAL		
Lake Hallett Association	Trudi Olmanson	trudoo@hickorytech.net			CITY OF SAINT PETER		
Lake Washington Improvement Association	Chuck Brandel	chuck.brandel@isginc.com	(507) 327-8282		LE SUEUR COUNTY & SWCD		
Le Sueur County Parks Department	Tyler Lutheje	tlutheje@co.le-sueur.mn.us	(507) 327-0423		LE SUEUR COUNTY & SWCD		
Local Farmer	Fred Miller, Retired farmer	none	(507) 381-5094	Local farmer	NICOLLET COUNTY & SWCD		
Mankato Water Treatment Plant	Kyle Hinrichs				CITY OF MANKATO		
Minnesota Pheasants					CITY OF MANKATO		
Minnesota River Congress	Scott Sparlin, Executive Director	sesparlin@gmail.com	(507) 276-2280	Can provide staff contacts for specific issues.	CITY OF MANKATO		
MN Farm Bureau		info@fbmn.org	(651) 768-2100		LE SUEUR COUNTY & SWCD		
Mt. Simon Aquifer Monitoring Group					CITY OF MANKATO		
Nicollet Conservation Club	Fred Froehlich	none	(507) 232-3366	Nicollet Conservation Club merged Swan Lake Association	NICOLLET COUNTY & SWCD		
Nicollet County Property Services	Sheila Reem, Sanitarian	Sheila.Reem@co.nicollet.mn.us	(507) 934-7849		NICOLLET COUNTY & SWCD	39132 Exchange St, Le Sueur, MN 56058	
Nicollet County Public Works	Joel Hawbaker, Assistant Director - County Engineer	Joel.Hawbaker@co.nicollet.mn.us	(507) 934-7734		NICOLLET COUNTY & SWCD	600 4th St NW, Montgomery, MN 56069	
NRCS District Conservationist	Steve Breaker	steve.breaker@mn.usda.gov	(507) 357-6858		LE SUEUR COUNTY & SWCD	P.O. Box 3544, Mankato, MN 56001	
Ottawa Township	Debra Paige		(651) 955-2974		LE SUEUR COUNTY & SWCD		
Public Works Department	Chris Voeltz, Water Foreman	chriv@saintpetermn.gov	(507) 934-0670		CITY OF SAINT PETER		
River Country Cooperative			(507) 364-5059		LE SUEUR COUNTY & SWCD		
Save the Kasota Prairie Inc		emetz@hickorytech.net	none		LE SUEUR COUNTY & SWCD		savethekasotaprairie.org
Sibley County Zoning	Geoff Beranek, Planning & Zoning Administrator	Geoffberanek@sibleycounty.gov	(507) 237-4091		SIBLEY COUNTY	316 North Main, Le Sueur, MN 56058	sibleycounty.gov
Sibley Soil & Water Conservation District	Joel Wurscher, District Manager	joel.wurscher@sibleyswcd.org	(507) 702-7077		SIBLEY COUNTY	27996 Maple Ln, Madison Lake, MN 56063	sibleyswcd.org
South Central College	Jason Schroeder, Farm Bus. Mgmt. Instrctr	jason.schroeder@southcentral.edu	(507) 766-3263	Local farmer; Courtland Township Supervisor with ditch experience	NICOLLET COUNTY & SWCD		
UMN Extension	Samantha Schoenbauer, Extension Educator	sschoenb@umn.edu	(507) 934-7828	Agriculture Production Systems	NICOLLET COUNTY & SWCD	PO Box 532, Gaylord, MN 55334	
UMN Extension	Shane Bujega	sbugeja@co.le-sueur.mn.us	(507) 357-8232		LE SUEUR COUNTY & SWCD		
United Farmers Cooperative			(507) 665-6421		LE SUEUR COUNTY & SWCD		
US Fish & Wildlife Service		TwinCities@fws.gov	(952) 858-0793	Bloomington Field Office	LE SUEUR COUNTY & SWCD		fws.gov
Washington Township	Stephanie Hilipire				LE SUEUR COUNTY & SWCD		
Property and Environmental Resou	Craig Austinson - Ditch	craig.austinson@blueearthcountymn.gov	507-304-4253	Drainage Management	BLUE EARTH COUNTY	410 South 5th str, PO Box 3566, Mankato, MN	
Property and Environmental Resou	Tim Grant - Sr Env Specialist	tim.grant@blueearthcountymn.gov	507-304-4383	Wells - Groundwater - Septic Systems - Wetlands	BLUE EARTH COUNTY	410 South 5th str, PO Box 3566, Mankato, MN	
Public Works Department					CITY OF MANKATO	10 Civil Center Plaza, Mankato, MN	
Xcel Energy	Rick Baird - Environmental Sustaina	rbaird@mankatomn.gov	507-387-8543	Stormwater - Regional MS4 coordinator	CITY OF MANKATO	112 5th Street, PO Box 161, Gaylord, MN 55334	

ADVISORY COMMITTEE CONTACT LIST

Suggested Additions:

Local Water Treatment Plants
Township/City Board members with water planning experience
Farm Bureau
Friends of the Minnesota River
Local Mining Companies

Environmental Health Groups
Wells
Sanitarians/Septics
Waste Treatment Centers
Sportsman's groups