Land and Water Conservation Department
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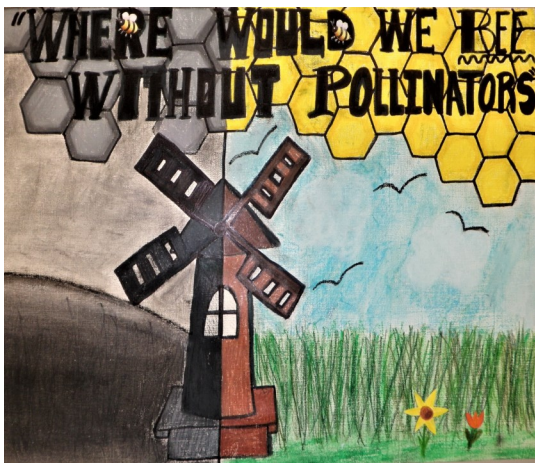
# WINNEBAGO COUNTY
# 2021—2030

# LAND & WATER RESOURCE MANAGEMENT PLAN




# Winnebago County
# 2021-2030
# Land and Water Resource Management Plan

**June, 2020**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# ACKNOWLEDGEMENTS

The following individuals are recognized for giving of their time and effort toward development of this Plan. Their contributions are greatly appreciated.

**WINNEBAGO COUNTY LAND AND WATER RESOURCE MANAGEMENT PLAN**
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# ACKNOWLEDGEMENTS

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**WINNEBAGO COUNTY LAND AND WATER RESOURCE MANAGEMENT PLAN**
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# County Setting, Natural Resources, and Trends

### General Characteristics

Winnebago County was established in 1840 and is situated in east central Wisconsin. It is bordered on the east and includes part of Lake Winnebago (Appendix C, Map 1). Winnebago County covers about 579 square miles with 143 square miles of water and 436 square miles of land area. There are over 91,000 acres of surface water which is the largest area of inland surface water of any county in Wisconsin. The majority of population and industry is located along the eastern side of the county with a large urban and industrial corridor running north to south along the west shore of Lake Winnebago. According to 2018 US Census estimates the population of Winnebago County is 171,020. Based on projections from UW-Madison Applied Population Laboratory the population will expand to 181,753 by 2030 and to 193,130 by 2040. This is an increase of about 13% over the next 20 years. The population is concentrated in the cities of Menasha, Neenah, Omro, Oshkosh (county seat), the villages of Winneconne and Fox Crossing, and the urban township of Algoma. The county has 16 civil townships and most of them have predominantly rural/agricultural characteristics. Cash grain and dairy farming are the main agricultural activities while paper and both commercial and military vehicle manufacturing is the principal industrial activity of the county.

## Natural Resources

To fully understand the importance of natural resources to Winnebago County and the surrounding region, it is essential to recognize that in addition to the countless environmental benefits they provide the resources generate millions of dollars in revenue to local communities throughout the county each year. That revenue comes primarily from industry, along with the vast array of recreational users of the resources. While it is difficult to place a specific dollar value on these resources, common sense tells us that we absolutely cannot afford to waste them and must do all we can to protect them for present and future generations.

### Geology & Topography

The entire landscape of Winnebago County reflects the influences of glacial activity. The most recent glacier to cover the county occurred about 10,000 years ago. It covered all but the southwestern part of the county and deposited the reddish clayey till present today. Southwestern Winnebago County was covered by older glacial activity that deposited brownish, loamy till.

The topography is nearly level or gently rolling with slopes of 6% or less over 90% of the terrain (Appendix C, Map 2). Two escarpments run northeasterly across the county ranging from 750 to about 950 ft. above sea level, providing land relief on the order of about 200 feet. The most prominent features are the broad expanses of lakes and adjacent marshes. Topographic features are controlled by the subsurface geology which is mainly sandstone and limestone positioned equally throughout the western and eastern parts of the county. A varying thickness of glacial till overlies the irregular surface of these rock formations. The glacial material over the limestone formation is much thinner than the material over the sandstone.

#### Surface Water Resources

The county is entirely within the Fox-Wolf River Basin and contains a network of lakes, rivers, and streams that make up the major portion of what is known as the 'Winnebago System'. The System includes the Lakes of Winnebago, Butte des Morts, Winneconne, and Poygan which are known as the "Pool Lakes". The main tributary waters are the Upper Fox and Wolf Rivers.

The Fox River enters Winnebago County near Eureka, flows northeasterly through Lake Butte des Morts and Lake Winnebago, flows over the dams at Neenah and Menasha, and continues through Little Lake Butte des Morts meandering downstream for 39 miles with a vertical drop of 168 feet and outlets into Green Bay. Lake Winnebago divides the Fox River into the Upper and Lower Fox (Appendix C, Map 3).

The Wolf River enters the county in the northwestern corner, flows southeasterly through Lakes Poygan and Winneconne, and then converges with the Fox River at the west end of Lake Butte des Morts. The Wolf River accounts for approximately 60% of the combined inflow to the Winnebago Pool Lakes.

Two lakes in the County that are not located in the Pool are Rush Lake and Little Lake Butte des Morts. Rush Lake is a natural and unique prairie pothole about 3,000 acres in size and is situated in the southwest corner of the county. It contains large bog areas and lake adjacent wetlands and receives direct runoff from much of the surrounding agricultural watershed through streams and man-made drainage ditches. It flows out to the Fox River by way of Rush/Waukau Creek and it is used for hunting, fishing, trapping, and canoeing. Little Lake Butte des Morts is about 1,300 acres in size and is situated in the northeast part of the county immediately downstream from the dams at Neenah and Menasha. The 15,000-acre Neenah Slough Watershed also outlets into the south end of the lake downstream from the dam at Neenah. Little Lake Butte des Morts receives additional runoff from a mixed agricultural and urban watershed to the west. Primary uses of the lake include boating, fishing, and hunting. It is impacted by point and nonpoint source pollution and it contains beds of PCB contaminated sediments that are currently being remediated through targeted efforts between industries, the WDNR, and the USEPA.

The Winnebago System is one of Wisconsin's most significant water resources, representing 17% of the State's total surface water acreage. It is located within 75 miles of over 2 million people and receives heavy recreational use for fishing, boating, swimming, hunting, and trapping. In addition, Lake Winnebago alone provides drinking water to over 200,000 people in the communities of Oshkosh, Neenah, Menasha, Appleton, Sherwood, and Waverly.

Before the dams at Neenah and Menasha were constructed, the system supported massive areas of emergent and submergent rooted aquatic plants. Lake Winnebago contained great numbers of bays and marshes. Lakes Butte des Morts, Winneconne, and Poygan were characterized as river marshes. Through the decades, high water levels combined with erosive action from wind, wave, and ice have led to the destruction of tens of thousands of acres of wetland habitat within the Pool. This has resulted in the loss of natural filtration capabilities that once served to trap sediments and nutrients. Shoreline and streambank erosion are a continuing problem in most areas of the system where wetlands once flourished and helped to filter runoff and buffer erosive forces. Left unprotected, these problems will only worsen.

Given the natural characteristics of the Winnebago System, it is likely that lake conditions have supported algae growth in some years; however, the lakes are now exhibiting highly eutrophic conditions more frequently and accordingly, are included by the Wisconsin DNR on the state's 303(d) list of impaired waters. This is the direct result of nonpoint pollution. Excessive nutrient and sediment delivery into the system from agricultural and urban sources contribute towards algae blooms that occur with proper conditions. The algae and sediments increase turbidity, hinder growth of beneficial aquatic plants, and deplete important fish spawning areas.

## Fishery Resources

Despite the losses of aquatic habitat within the Winnebago System, it continues to be known throughout the Midwest for its excellent walleye, northern pike and white bass populations, as well as its world class population of lake sturgeon.

The lower 125 miles of the Wolf River and 37 miles of the upper Fox River contain the spawning and nursery grounds for the Winnebago Pool sturgeon and walleye populations. In addition to lake sturgeon, walleye, northern pike, and white bass, the major species of the Winnebago Pool fisheries community include freshwater drum, sauger, yellow perch, largemouth and smallmouth bass, panfish, trout perch, and emerald shiner. The recreational fishing opportunities supported by this diverse fishery provides over one million angler hours and $234 million to the local economy annually based on a 2007 Winnebago County UWEX study entitled: **"The Lake Winnebago System sustains a recreational fishery that annually contributes $234**

**million to the local economy of its five surrounding counties".** Current estimates put the annual economic contribution closer to $280 million.

## Groundwater Resources

Groundwater resources in Winnebago County are, for the most part, of very good quality and in plentiful supply. There are three aquifers that supply potable groundwater; the *Sandstone, the Platteville-Decorah-Galena, and the Water Table aquifer.* The *Sandstone aquifer* is the most extensive and the only one of the three that can sustain high capacity pumping wells for municipal and industrial uses. The *Platteville-Decorah-Galena aquifer* is composed primarily of dolomite which is present in the eastern third of the County and provides adequate private water sources. Local problems in this aquifer include high sulfate, iron and arsenic concentrations along with hardness that results from the geochemistry of the dolomite formation. The *Water Table Aquifer* is composed of varying thicknesses of glacial sediments, primarily sand and gravel, whose seams transmit adequate amounts of water for private wells.

All of the groundwater in the county originates from local precipitation that infiltrates through the soil into recharge areas of the aquifers. Contamination risks from land use practices are the greatest threat to groundwater resources. The potential sources of contaminants are from; old unregulated landfills, old and operating quarries, underground storage tanks, on-site waste disposal systems, livestock waste handling, application and storage, commercial fertilizer application to cropland, and septic disposal. All of these sources are presently regulated or are being addressed through ordinances, state rules and/or technical assistance services provided by various county and state agencies (Appendix C, Map 4 This map displays a Groundwater Contamination Susceptibility Analysis for Winnebago County. It may be used by LWCD staff to identify priority/target farms or acres for promoting NMP and other BMPs to protect groundwater quality).

Future availability of potable water is also a concern that is receiving attention. At the present time, based on the demand from agricultural, industrial, and residential uses, concerns center on the Fox Cities, from northeastern Winnebago County, downstream to Green Bay. A **U.S.G.S Fox Cities Water Study** indicates that existing potable water supplies will be adequate to meet projected demand through 2050. However, water treatment costs may be higher for communities that depend on groundwater due to a significant lowering of the prime use aquifer. Other conservation and protection options that are being considered include regulatory mechanisms and development of a groundwater withdrawal management program.

In order to better advise the general public regarding groundwater, a county wide groundwater flow, volume and aquifer location model needs to be completed. This will be a separate large scale, long term goal of this plan targeted for completion by 2025. It is anticipated that we will be partnering with the U.S.G.S. and possibly an environmental engineering firm to assist with the project, which would necessitate securing additional funding.

## Wetland Resources

DNR wetland data as of 2019 has identified 53,271 acres of wetland in Winnebago County. Most of the wetlands are located in the western and northern parts of the county. The largest areas are associated with Lake Poygan, Rush Lake, Rush/Waukau Creek, and the Fox, Rat, and Wolf Rivers (Appendix C, Map 5).

There are three wetland habitat types found in Winnebago County, the Emergent Wetland, the Scrub-shrub Wetland, and the Forested Wetland. Each of these represents a unique ecosystem based on hydrologic conditions, vegetation, and location in relationship to other wetlands, drier upland areas, or adjacent water bodies.

In addition to providing habitat for fish, waterfowl, and other wildlife species, wetlands are important for the recharge of aquifers and the protection of groundwater quality. They are extremely efficient at trapping and filtering out nutrients and sediments contained in runoff and they provide highly effective flood storage areas. It

is critical that the remaining wetland resources in Winnebago County be protected from further destruction. Existing county, state, and federal regulatory protection mechanisms need to be enforced. In addition, for the protection of wetlands adjacent to lakes and rivers, technical and financial resources for streambank and shoreline erosion, and off shore control measures need to be expanded.

### Wildlife Resources

Pre-Euro-American settlement wildlife included wild turkey, passenger pigeon, bison, elk, wolves, prairie chickens and sharp-tailed grouse. As settlement in the county began in the 1840's, prairies were turned over, forests were cut and cleared and wetlands were drained. These actions, in combination with unregulated harvest of most game and non-game animals, caused the county's wildlife species to decline or disappear. Thus, began the dramatic transformation of the native plant communities to agriculture and town developments. Hunters and early conservationists began noticing the exploitation of Wisconsin's natural resources around the 1870's. They slowly began working toward regulating the use of natural resources as they enacted laws to protect wildlife populations and woodlands. Wildlife management was considered necessary in the changing landscape due to increased wildlife and human conflicts. In the 1900's, efforts began to restore some of the extirpated wildlife populations through reintroductions. Some successful attempts included wild turkey, fisher and American (pine) marten.

Today, wildlife such as deer, pheasant, rabbits, turkey and furbearers provide significant hunting and trapping opportunities in the county. The lakes, marshes, rivers, and adjacent uplands in Winnebago County have provided prime waterfowl habitat for centuries. Sharp declines in waterfowl populations during the 1970's and 80's coincided with the loss of important aquatic food sources, such as wild rice and celery. In recent years, DNR, LWCD and local sporting clubs have been working cooperatively to restore these plants in Lake Poygan and Rush Lake. Waterfowl hunting, as always, remains an important recreational activity in the county. There are numerous state and federal funding programs, such as the WI Waterfowl Stamp, and Wetland Reserve Program available to producers and recreational landowners to restore drained wetlands and enhance degraded wetlands for wetland dependent wildlife species in the county.

Because Winnebago County is located in what was formerly one of the best regions of the state for duck and pheasant production, the Department of Natural Resources initiated the Glacial Habitat Restoration Area (GHRA) project in the southwestern part of the county. This project is designed to restore wetlands and grasslands on private and public lands to benefit waterfowl, pheasants, and grassland songbirds. Winnebago County also has the State Acres For wildlife Enhancement (SAFE) program in designated townships within the GHRA that allows landowners to enroll blocks of cropland in a USDA, CRP contract to provide grassland habitat.

There are numerous threatened and endangered species in Winnebago County. The Wisconsin Wildlife Action Plan, is a result of a statewide effort to identify which of our native Wisconsin species are of greatest conservation need. The Action Plan presents priority conservation actions to protect the species and their habitats. Winnebago County is located in the Southeast Glacial Plan ecological landscape. A complete list of wildlife species identified with the greatest conservation need can be found on the WDNR website. The plan identifies specific threats and issues and conservation actions for each wildlife species.

### Woodland Resources

According to the 2016 WDNR data from the Wiscland database, Winnebago County has approximately 11,600 acres of forested land which is about 4 percent of all of the land in Winnebago County. Oak and Central Hardwoods comprise about 9,000 acres, with Pine, Northern Hardwoods and Fir/Spruce making up the remaining acreage (Appendix C, Map 6). Nearly all of this land is held by private landowners and is widely distributed across the county.

Programs such as the Wisconsin Forest Landowner Grant Program, Conservation Reserve Program (CRP), Environmental Quality Incentives Program (EQIP) and the Managed Forest Law (MFL) program provide cost

sharing on tree plantings and tax breaks for landowners to manage their land for timber products and wildlife habitat. Currently 1,746 acres are enrolled in the MFL program in Winnebago County.

Forest lands continue to be impacted by increased parcelization, which makes forest management difficult because of the small size of each unit. Clear cutting for conversion to agricultural production, large deer populations hindering desirable re-growth and issues with invasive species such as buckthorn, continue to plague remaining woodlots.

In Wisconsin the Emerald Ash Borer (EAB) infestation continues to spread. The presence of EAB was confirmed in Winnebago County in August, 2013. This insect has the potential to devastate the ash stands in Winnebago County.

Continuation of forest assistance and incentive programs to encourage the planting of new trees and proper management of existing woodlands are critical to sustaining or increasing our forested lands.

**Mineral Resources**

The geologic and glacial history of the county is reflected in its mineral resources that provide a substantial volume of the total aggregate material used in construction activities throughout the county and surrounding region. Estimated acreage of those mineral resources that occur within 5 feet of the surface is: limestone - 5,500 acres; sand and gravel - 6,000 acres; and mason sand - 3,000 acres. These mineral resources are distributed quite equally around the county. Currently there are 45 active permitted extraction sites on 1,006 acres with 1,260 acres in reserve.

Winnebago County has high quality limestone. This material is used extensively for rip rap on shoreline and streambank protection projects throughout the Winnebago System. It should be noted that a number of old inactive pits and quarries have filled with water and provide unique fish and wildlife habitat. Unfortunately, they also provide a conduit for surface water to enter groundwater unchecked, which has created contaminated groundwater issues.

It is important from an economical and environmental standpoint that these mineral and groundwater resources be protected through the development and implementation of sound reclamation plans.

### Soils

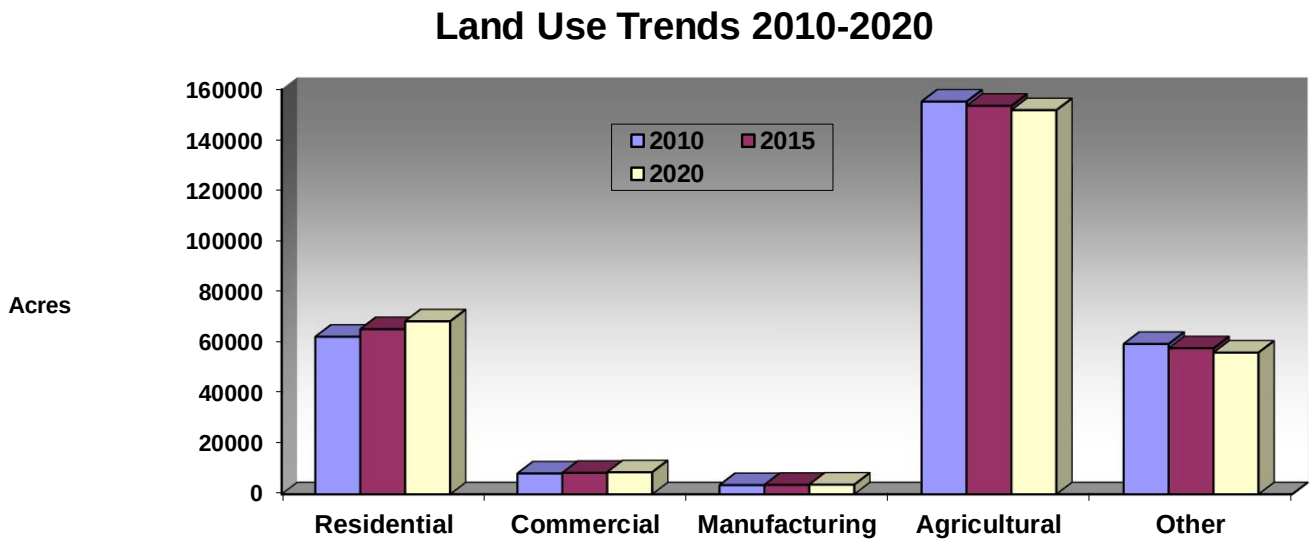
Individual soil types, with specific and unique characteristics, directly influence land uses. There are 74 different soil types found throughout Winnebago County as listed in the NRCS Soil Survey. These are grouped into seven major soil associations that have distinctive soil patterns, relief, and drainage features (Appendix C, Map 7). The Winnebago County Soil Survey contains detailed descriptions for each soil type, including information on suitability and limitations for various types of land use and land management. The Winnebago County Land & Water Conservation Department uses the soils information and related data extensively in determining soil erosion estimates and corresponding phosphorus and sediment load calculations shown within nutrient management plans. Under most cropping situations with the proper cultural practices soil erosion rates are easily maintained below the tolerable soil loss (T) and will help those farms/fields meet the NR151 sheet, rill and wind erosion performance standard.

## Land Use Trends

Agriculture remains the dominant land use in Winnebago County (Appendix C, Map 9) and is expected to maintain that role well into the 21st century while urban development in the form of residential, commercial, industrial, and highway expansion is expected to put continuous pressure on the county's natural resource base (Appendix C, Map 8). The Fox River Valley is one of the fastest urbanizing areas in Wisconsin. Based on the Wisconsin Agricultural Statistics, 400 acres of farmland have been converted to some other use in the

last six years. These changes often result in an increased impairment of natural resources due to the impacts associated with construction site erosion, increased volume of runoff, and polluted runoff.

On January 1, 2010, the "Working Lands Initiative", a new state law went into effect requiring local zoning authorities to impose a conversion fee on farmland taking out of farmland preservation zoning. This fee was adopted in the 2009-2011 state budget as part of a comprehensive package of new regulations designed to better protect farmland from development. Winnebago County experienced a huge negative response from the Farmland Preservation Program (FPP) participants and the Towns that lead to several years of meetings and steering committee meetings and recommendations. Even after the conversion fee was removed there was no desire by most landowners to keep their land in the FPP. The decision was made by county zoning to allow voluntary participation by landowners which is not allowed by state rule and the Winnebago County Farmland Preservation Plan was not certified by DATCP. To date only the Town of Nepeuskun has submitted and received DATCP certification of their own Farmland Preservation Plan and can continue in FPP. Two other towns have approved extensions that end after tax year 2020 (Appendix C, Map 10).

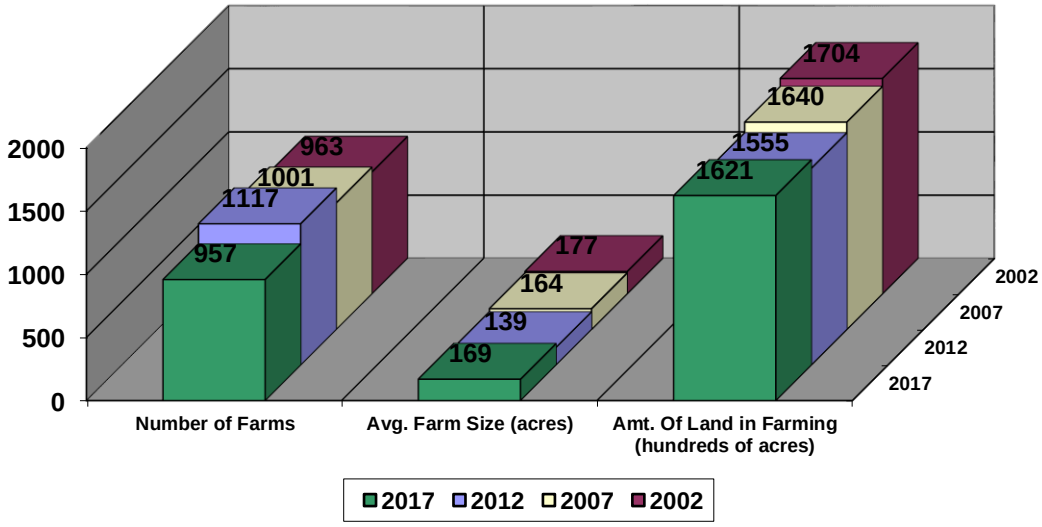



Data: East Central Wisconsin Regional Planning Commission-Land Use Goals, Strategies and a Plan for Action (April 2008)

### Agricultural Trends

Since 2002 agriculture in Winnebago County has transitioned from predominantly cash grain to cash grain and dairy feed production (Appendix C, Map 9 and Appendix D, Chart 1). Many producers are providing feed and receiving manure for larger dairies in the area. In recent years the farm size has increased while the number of farms has declined. The total acres in farming has increased due to CRP and other idle land being put back into production. The number of dairy cows in the County has been on a steady decline since 2009, losing 1300 head over the last 10 years, and overall cattle numbers are down 3000 head in the same timeframe.

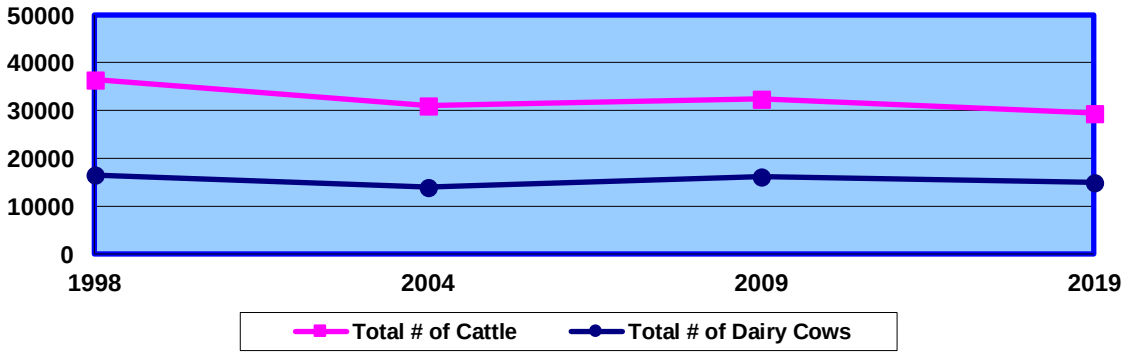
## Agricultural Trends 1997 - 2017




Data: USDA, National Agricultural Statistics Service (NASS), based on the last four Census of Agriculture, 2002, 2007, 2012 & 2017 – Winnebago County Data

Economic, political, and social factors will continue to impact farmland and related rural areas. We realize that "production agricultural farms" within the County are growing in size and decreasing in number and that animal numbers are being concentrated on fewer and larger operations. If the dairy industry continues to struggle we could see the current trend on cow numbers continue to decline.

## Cattle Number Trends in Winnebago County 1998-2019




Data: Wisconsin Agricultural Statistics, 1998, 2004, 2009 & 2019

# Inventories and Assessments

Section 303(d) of the Clean Water Act requires the state to prepare a list of water bodies that are impaired and will remain so even after the application of technology-based standards which is typically applied to point sources of pollution. The state is to identify the pollutants causing the problem, identify the sources of that pollutant and develop a Total Maximum Daily Load (TMDL) of that pollution that a water body can receive and still meet water quality standards. The state is then required to set priorities for implementing strategies to meet the TMDL.

The majority of Winnebago County's main water bodies are included on the 303(d) (Appendix C, Map 11 and Appendix D, Table 1). The reasons for impairment are sediments, nutrients, dissolved oxygen, polychlorinated biphenyl (PCB), toxic levels of contaminants in the water column, and mercury related fish consumption advisories. These are caused by a blend of nonpoint sources, municipal wastewater treatment plant discharges and previously loaded industrial waste.

During the last ten years the Wisconsin Department of Natural Resources (WDNR) has completed the TMDL analysis, reduction goals and the implementation strategy for the Lower Fox River Basin (https://dnr.wi.gov/topic/TMDLs/LowerFox/). WDNR is working with County Land and Water Conservation Departments and other interested organizations to install BMPs that can help meet the TMDL goals (Appendix C, Map 20). WDNR has also recently completed the TMDL analysis and reduction goals for the Upper Fox - Wolf Basin see: APPENDIX J. AGRICULTURAL PHOSPHORUS AND SEDIMENT TARGETS for the Upper Fox-Wolf Basin TMDL (https://dnr.wi.gov/topic/TMDLs/documents/UFW/DraftAppendixJ.pdf) and has begun pulling together the stakeholders to create an implementation strategy. These documents, EVAAL maps described below and TMDL information (Appendix D, Table 2), encompass the majority of Winnebago County and will be used to identify and prioritize high P loading watersheds, farms and cropland acres that need additional soil and water conservation practices to improve water quality conditions, over time (Appendix C, Map 11).

In the last three years Winnebago County along with Calumet and Fond du Lac Counties has contracted with the Fox-Wolf Watershed Alliance to complete the **"Winnebago Waterways Lake Management Plan"** and the **"Healthy Land, Healthy Water" Nine-Key Element Watershed Plan** for the Winnebago Waterways Watershed. These plans are due for completion in 2020-2021. The plans will incorporate numerous inventories described within this plan, TMDL information and vast public and agency input into common strategy for the restoration and environmentally sound use of the Winnebago System.

During the summer of 2014 Winnebago County LWCD completed a comprehensive GIS enabled photographic shoreline inventory of the Winnebago System. Over 150 miles of shoreline was inventoried and documented using GIS location and over 3,000 photographs. Approximately 11.7 miles of eroded shoreline was identified and the erosion at each site was recorded as "Severe" (.7 miles), "Moderate" (4.5 miles) and "Low" (6.5 miles). Also documented were 144 existing vegetated buffers or vegetated shoreline sites. All of this data is available for viewing and use by the LWCD, the public, partnering agencies and our conservation organizations on the Winnebago County Land and Water Conservation website entitled: *Web map of 2014 Winnebago Shoreline Inventory combined with Historic Imagery* http://bit.ly/2xM2yuw.

Over the past several years the Erosion Vulnerability Assessment for Agricultural Lands (EVAAL) analysis has been completed for every HUC 12 in Winnebago County. The EVAAL analysis will be used with TMDL or other information to implement our priority/target farm strategy and for making progress towards meeting the Lower Fox or Upper Fox-Wolf TMDL reduction goals within HUC 12 watersheds (Appendix C, Maps 12-16, & 20 and Appendix D, Table 2).

Winnebago County LWCD is also involved with “Rush Lake Watershed Restoration, Inc.”, an organization that is working to address upland loading and the invasive species degrading Rush Lake. This organization is doing monitoring that will help determine future efforts.

All of the above inventories and analysis will be relied upon to identify target farms as we advance the implementation of this plan. To identify target farms, prioritize staff resources and meet this plans Objective re: *Ag Perf Stds implementation with targeted landowners*, we will initially use the HUC 12 high TP ranked watersheds (Appendix D, Table 2) and EVAAL HUC 12 data shown in Appendix C, along with other existing inventory information (e.g. FPP compliance inspections). As new or additional watershed or farm inventory information is completed within nine element plans, this will also be used to identify target farms.

# Plan Development Process

## Stakeholder Participation

Winnebago County, through its Land & Water Conservation Department, under jurisdiction of the Land Conservation Committee is directly responsible for resource conservation planning and program development. Direct citizen participation has always been a critical part of that process. The members of the County Land Conservation Committee and the staff of the Land and Water Conservation Department place a very high value on the guidance and insight received from citizens, organizations, other agencies and local units of government.

### Related Resource Management Plans

In developing this Land and Water Resource Management Plan, issues, concerns, needs, goals and objectives from many existing natural resource management plan documents were reviewed. Things learned during the implementation of these documents have influenced the goals and objectives of this Plan.

These include:

- Winnebago County Land and Water Resource Management Plan (2011)
- Winnebago Comprehensive Management Plan (1989)
- Arrowhead River/Rat River/Daggets Creek Priority Watershed Plan (1991)
- Fond du Lac River/Winnebago West Priority Watershed Plan (1997)
- Pine River/Willow Creek/Lake Poygan South Priority Watershed Plan (1997)
- The State of the Wolf Basin 2001
- The State of the Upper Fox River Basin 2001

It is important to recognize that these documents were developed with a great deal of public participation. Many of the concerns, ideas, and recommendations voiced by those people are incorporated in this document.

### 2021-2030 LWRMP Agency Committee (AC)

On July 23, 2019 a LWRMP Agency Committee convened to identify and prioritize the resource concerns that might impact our county in the next ten years. The committee included representatives from; WDNR, UWEX, US-FWS, USDA-NRCS & FSA and Winnebago County LWCD. The 16-member Agency Committee met and identified issues and concerns in the following three categories: Identify and Prioritize Resource Concerns; Identify Funding Sources for Plan Implementation and Identify Other Items to Consider or Revise within the Plan.

### 2021-2030 LWRMP Citizen’s Advisory Committee (CAC)

On September 18, 2019 a 13-member LWRMP Citizen’s Advisory Committee (CAC) representing ag-producers and their local organizations such as Farm Bureau and Holstein Breeders, ag-lenders, ag-business,

agricultural consultants, conservation organizations, private business and non-profit conservation organizations was brought together to identify and prioritize resource concerns, funding sources, cost-sharing options, and to discuss the following topics related to complying with the Ag-Performance Standards and the cost of conservation:

*What can Winnebago County Land and Water Conservation Department (LWCD) do or provide landowners to help improve implementation of conservation practices that will help improve overall resource (surface water, groundwater, soil and habitat) quality and quantity?*

> *What can the urban, rural and agricultural sectors do or change to create positive change in overall resource quality?*

*What is it going to take to get full buy-in and commitment from these different sectors?*

*What type of financial assistance is needed to help support implementation of conservation on the land? Historically 70% cost-sharing has been provided, is this sufficient?*

*What is stopping landowners from implementing more conservation-based practices or management changes on their land? What are the hurdles or road blocks?*

> *Do we need more education, funding, mentoring, demonstration fields/farms or farmer led groups?*

*Is more or less regulation needed to get landowner compliance with the state resource protection goals?*

> *Minnesota has a very successful buffer law for perennial, intermittent and ditch water courses. Is this something that should be pursued via a County ordinance or State rule?*

*Discuss the current financial outlook for agriculture and how it might affect investment by producers into conservation practices.*

> *What do lenders require of landowners regarding state or local compliance?*
> *Thoughts on the economic impacts of rule compliance on producers.*

*What do you think is needed to reduce phosphorus and sediment loading into the Winnebago System to address the major algae blooms and improve water quality?*

*What are your observations regarding shoreline or streambank erosion or degradation in your area? Thoughts for improvement?*

*Wetland loss observations? Increased flooding observations in cropland and other locations within your area and the county.*

*Are you aware of any contaminated drinking water wells in the county? Causes? Long- and short-term fix?*

*Do you have other concerns, observations, topics not listed or comments regarding the discussion?*

### 2021-2030 LWRMP Town Chairmen Advisory Committee (TCAC)

In September 2019, the TCAC consisting of 15 Town Chairmen and 1 village official representing County jurisdiction were asked to review the list of resource concerns identified by the AC and CAC, add any resource concerns or issues they thought were missing and then rank the entire list from 1(being the most important) to the last number being the least important. This was all done by postage paid mail for participant convenience and to allow time for them to visit with constituents in their district. The questionnaire response was 44% and

provided a variety of answers and resource concern rankings. Some concerns or issues had the same ranking.

## Resource Concerns or Issues

Top Ten Resource Concerns or Issues Identified by the Three Committees Combined

1 Surface water contamination – soil erosion, sediment and nutrient loading, algae concerns
2 Soil health improvement - agricultural practices - grazing
2 Farm waste management - Nutrient management plans, tile contamination, biosolid applications
3 Groundwater – septic tanks with shallow bedrock, manure applications with shallow bedrock
4 Excessive chemical applications: fertilizer, pesticide, herbicide applications (rural & urban)
4 Urban runoff-developed sites shedding fertilizer and chemicals or sediment
5 Internal loading – legacy phosphorus (phosphorus already in the lakes being remixed and sent downstream)
6 Shoreline/streambank erosion
7 Increased contaminants from municipal treatments (i.e., medications, microbeads, PFAS)
8 Preservation of farmland
8 Need for Farmer education – Demonstration farms and producer-led groups
8 Construction site runoff
9 Social and economic impacts of poor-quality surface and groundwater
10 Wetland loss

## Other Committee Discussion Items or Comments to Consider when Revising the Plan

The following is a list of items or comments that were provided by members of the different committees to consider, keep in mind or incorporate into the revisions of the plan.

Promote producer led groups and demonstration farms where farmers are teaching farmers.

More communication with the public by LWCD, more staff at related functions and at demo farm events. Post positive information on websites and Facebook with installed practices and farmer pictures. Promote the good work being done by producers as part of the Ag-Performance Standards implementation. Increase one on one farm calls to review conservation needs with producers.

Current funding levels for cost-sharing conservation practices are not adequate to get full participation or “buy-in” by producers. Cost-share funds need to be spent wisely. LWCD should consider making new equipment available for producers to try. Partner with local Ag Suppliers where possible to get conservation on the land.

Most local Ag-Lenders are not requiring compliance with the Ag-Performance Standards to be eligible for a loan.

Bigger and heavier equipment has an impact on the amount of compaction occurring. Climate Change in the form of rain events that have increased in size and frequency resulting in a higher water table is making fields stay wetter longer. Ag-Stormwater retention is a possibility, however with the high demand/need for cropland many farmers would invest in tiling for more production versus a wetland restoration for water quality.

Better land management and soil health efforts are needed to preserve wildlife habitat, pollinator habitat and farmland in general. Good soil health can also increase infiltration of contaminants into the groundwater.

Stormwater treatment facilities need to be larger to provide more water holding capacity and settling out of contaminants and greater infiltration. Contaminants from municipal treatment discharges or landfills such as medications, microbeads and polyfluoroalkyl substances (PFAS) need to be reduced or eliminated.

Groundwater contamination caused by septic systems or manure applications near shallow bedrock along with manure quantities exceeding the available spreadable acres need to be addressed.

Over use or misuse of pesticides leading to resistant weeds and insects along with poor weed control or mowing of road ditches are increasing weed pressure and the numbers of invasive species.

Over applications of road salt may be causing issues in surface water. Further information needs to be gained regarding this concern.

## Grants, Programs and Funding Sources

Grants, Programs and Funding Sources used by LWCD.

- Soil and Water Resource Management Grant (SWRM)
- Targeted Runoff Management Grant (TRM)
- Winnebago County Water Quality Improvement Program
- Conservation Reserve Program (CRP)
- Conservation Reserve Enhancement Program (CREP)
- Environmental Quality Incentives Program (EQIP)
- Wetland Reserve Program (WRP)
- Stewardship Incentive Program (SIP)
- Managed Forest Law (MFL)
- Lake Management Planning Grant Program
- Lake Protection Grant Program
- State Acres for Wildlife Enhancement (SAFE)
- Wildlife Habitat Incentives Program (WHIP)
- Gypsy Moth Suppression Program/Grant
- Conservation Stewardship Program (CSP)
- Farmer Nutrient Management Training Grant
- Stormwater Planning and Construction Grants
- US Fish and Wildlife Service Grant (USFWS)
- Partnership with UWO
  (Utilize student labor, data collection, labs & internal grants)
- Wisconsin State Statute Ch. 29.0953 (new)
  (Land Acquisition Grants for Counties for Educational use)
- Emerald Ash Borer Control Grants
- Great Lakes Restoration Initiative Grants (GLRI)
- WDNR NOD-NOI Funds / Grants
- Ducks Unlimited Grants

Additional Grants, Programs and Funding Sources Identified by the Committees

- "Crowd Sourced" Funding Requests
- EPA Grants (Nine Key Element Plan Funding)
- "In-lieu" funding (Wetland Mitigation)
- Knowles-Nelson Stewardship Fund
- Multi-Discharger Variance Funds (MDV)
- North American Wetland Conservation Act Grant (NAWCA)

Natural Resource Damage Assessment Grant (NRDA)
National Fish and Wildlife Federation Grant (NFWF)
National Wildlife Foundation
Sand County Foundation
Source Water Protection Grant

## Rules, Laws and Programs that may have an impact on the LWRMP

The following is a list of rules, laws, programs and documents that may affect the structure and delivery of the goals and objectives of this plan.

Winnebago County Livestock Waste Management Ordinance (LWMO) – Issue Permits, Enforcement and Ordinance Review Program

Winnebago County Storm Water and Erosion Control Ordinance – Permits, Site Visits and Inspections

NR 151 & ATCP 50 - Soil and Water Resource Management and Run off Management (Agricultural Performance Standards (APS))

Working Lands Initiative/Farmland Preservation Program – Landowner Compliance with APS, Landowner Compliance Field Monitoring

NR 216, Storm Water Discharge Rule – MS4-Administer and Implement all aspects of County Compliance Requirements for all impacted Departments.

ATCP 51, Livestock Facilities Siting Rule – Deliver Rule guidelines to all townships considering adoption and provide technical assistance with local implementation.

EPA - Clean Water Act – WDNR TMDLs-Phosphorus and Sediment Reduction Goals

Memorandum of Understanding with WDNR for compliance enforcement of the APS (https://www.co.winnebago.wi.us/sites/default/files/uploaded-files/mou_for_the_enforcement_of_nr151_0.pdf)

NR 40, Invasive Species Identification, Classification and Control

NR 115, Wisconsin's Shoreland Protection Program- Minimum Zoning Standards for Shorelands and Shoreland Wetlands

NR 243 Revisions regarding permits for operations with 300-1000 animal units

283.16 Statewide Variance for Phosphorus – Multi-Discharger Variance (MDV)

## Land Conservation Committee (LCC)

The Winnebago County LCC fully supports the Plan Development Process, the Objectives, Goals and Actions, and the message carried throughout the Plan that the Land and Water Conservation Department will work with landowners and producers to voluntarily achieve compliance with state and local rules and to improve the overall environmental health of their land and natural resources of Winnebago County.

## Public Hearing Comments

A Public Hearing regarding the 2021-2030 Winnebago County Land and Water Resource Management Plan was held at 9:00 a.m. on Thursday, May 7, 2020. No one from the public attended and thus no comments were recorded.

## Summary

In summary, the contributions made by all the committee members, staff and the LCC are extremely valuable, and along with the new and ongoing state and local rules and requirements will be utilized in setting the direction of our LWRMP.

# OBJECTIVES, GOALS AND ACTIONS

## OBJECTIVES AND GOALS

Sediments and other pollutants contained in runoff from the urban/rural and agricultural landscapes along with the mismanagement of land resources continue to be the most significant items impacting the soil and water resources of Winnebago County. This is reinforced by the resource concerns identified by the contributing committees and supported by the TMDL data, EVAAL data, Shoreline Inventory and the "Winnebago Waterways Lake Management Plan" and the "Healthy Land, Healthy Water" Nine Key Element Plan.

State policy in the form of NR151, ATCP 50 and the Working Lands Initiative, will set the main direction for this plan and define the majority of our workload. Available cost-share funding combined with a targeted watershed approach based on the inventory and assessment data described in this plan will help determine the priority areas and landowners. LWCD staff will be working with these landowners to achieve compliance with NR 151 performance standards and prohibitions and the Winnebago County Livestock Waste Management Ordinance.

The balance of our efforts will be spent addressing other resource concerns on the Winnebago Lakes, on the tributaries to the Lakes, on upland water quality improvement practices and groundwater issues along with I & E efforts.

Based on State requirements, WDNR TMDL information, UWEX support documents and related Reports and Management Plans, along with the prioritized resource concerns identified by our Committees, we consider the following Objectives and Goals to be the main drivers of our LWRMP:

Objective: Ag Perf Stds implementation with targeted landowners to help them achieve full compliance.
Goals: Utilizing the TMDL, EVAAL and other inventory data, identify priority farms and watersheds and complete a minimum of 15 farm reviews each year.
Get 10 farms in full compliance with the Ag-Perf Stds each year as staff time and funding allows.
Utilize innovative cost-sharing that may exceed the normal 70% to get compliance achieved.
Work with WDNR when necessary.

Objective: Improve the overall soil health of cropland through farmer education.
Goals: Promote no-till and cover crops and the County Soil Health Challenge Program
Promote grazing and diversified crop rotations
Participate in Demonstration Farm Networks
Promote Producer-Led Groups and programs
Utilize Large-Scale TRM grants to promote soil health practices

Objective: Reduce agricultural pollutant loading to surface water and ground water / private wells
Goals: Reduce livestock waste and other surface runoff impacts
Complete 5 – 7 active livestock waste storage facility inspections annually
Increase proper well abandonments
Create awareness of water quality issues through well water testing
React quickly to pollutant runoff complaints or issues with our DNR partners

Objective: Reduce pollutant loading to surface waters from "Developed Sites"
Goals: Increase filtration and infiltration of on-site stormwater
Create awareness of BMPs to reduce loading

Reduce usage of fertilizer and pesticides

Objective: Reduce pollutant loading from construction sites
Goals: Create awareness of the impacts of construction site erosion on resources
Enforce local efforts/ordinances to control construction site erosion and failing septic systems
Conduct a minimum of two inspections for each Erosion Control or Stormwater permit issued.

Objective: Reduce shoreland, streambank, wetland and emergent habitat loss, inland and on the Winnebago System
Goals: Increase shoreland and wetland restoration projects
Support stabilizing water levels to increase lake and wetland aquatic and plant habitat resiliency
Support the adoption of ecologically responsible seasonal water level management on the Winnebago System
Create awareness of the benefits of these plant communities to the resource

Objective: Increase the management of land for the sake/betterment of the land
Goals: Increase woodlot production
Create a greater awareness of the benefits of improved soil health
Create a greater awareness of the impacts of biosolids & industrial wastes on the land
Consider land base demands vs. land base availability in decision making process
Identify and protect high resource value lands
Support efforts to preserve farmland and natural green space
Promote CRP, CREP and pollinator crops

Objective: Reduce invasive species impacting county resources
Goals: Support local efforts to contain and control Invasive Species
Create awareness of invasive species impacts on resources
Integrate resources with partner groups and agencies to address the issue
Utilize grant resources to administer a county program or partner with and integrate the resources of sister agencies, UWs and conservation organizations to address AIS

Objective: Adjust programs and conservation practices to address climate change impacts
Goals: Support long range planning that acknowledges climate change/hydrologic cycle disruption
Support efforts to address drought related irrigation needs and impacts
Support efforts to address flood/rainfall event amounts and frequency

## ACTIONS AND PLAN IMPLEMENTATION STRATEGY

The mission of this plan is to achieve reasonable, tangible and measurable goals, using all available tools and resources to meet the priorities shown on pages 17-18. In this section we will discuss the tools and resources, and provide the tangible and measurable things we will do to achieve our goals. Winnebago County will use existing state codes and ordinances, mentioned in this section to assist in the implementation of NR 151, the LWMO and the achievement of other plan goals. The extent to which these goals are accomplished depends on several factors including the degree to which landowners voluntarily implement the necessary conservation practices, and the level of funding and staff time that is available to complete the steps associated with implementation. Some of the conservation practices will require cost-sharing for installation, while others will require basic management changes directly related to tillage practices, soil health efforts, livestock waste, application of commercial fertilizers, and land use activities adjacent to streams, rivers, and lakes.

## Water Quality Improvement Program (WQIP)

In 1998, the Winnebago County Board approved $100,000 for a Water Quality Improvement Program (WQIP) to be administered by the Land & Water Conservation Department. The purpose of this program was to provide landowners an alternative funding source for conservation practices that were outside the scope of other existing programs or funding sources. This program has been extremely successful and has allowed the Land and Water Conservation Department to leverage funds from other sources and complete large projects that otherwise would not have been possible. It is currently budgeted annually from $85,000 to $90,000 depending on levy limitations.

The Winnebago County Water Quality Improvement Program funding is primarily used to cost-share conservation practices that protect natural resources and groundwater, that typically are not fully cost-shared by State SWRM funds. However, many times these funds do support practices and demonstration projects that aid landowners in learning about conservation, soil health and in achieving compliance with the Agricultural Performance Standards and the water quality goals established in this plan. The eligibility criterion uses a different approach to determine priority sites. Based on experience gained through the watershed program as well as from recommendations of the Citizens Advisory Committee, the following specific eligibility criteria were established to determine priority sites for streambank and shoreline erosion, upland erosion, and nutrient loading from animal manure.

### Eligibility Criteria

#### Streambank/Lakeshore Erosion

Any individual with a site experiencing soil loss greater than 2,000 pounds per year with adjacent wetland or aquatic vegetation or with a site experiencing soil loss greater than 6,000 pounds per year may receive financial assistance**.**

#### Shoreline Habitat Restoration for Developed Areas

Any landowner with a site that: exhibits poor soil stability adjacent to their shoreline; has the potential to deliver nutrients/pollutants to a waterbody(ies); has depleted wildlife habitat or benefit (little or no native vegetation) along their shoreline, and where the landowner agrees NOT to use fertilizers containing phosphorus.

#### Nutrient Loading from Animal Manure

Any site that contributes 50 pounds or more of phosphorus per year may receive financial assistance for all barnyard runoff control practices necessary to reduce the phosphorus rating by 50%. Any site that contributes 20 – 49 pounds of phosphorus per year may apply for financial assistance for clean water Best Management Practices such as roof gutters, diversions, underground outlets or grass buffer areas. All landowners required by the County Livestock Waste Management Ordinance to do nutrient management planning (NMP) may apply for financial assistance. The maximum they can receive is 70% of the actual billed amount up to $10.00/acre per year for four years. Any landowner voluntarily wanting to do NMP may apply for financial assistance. Those landowners receiving the FPP tax credit are not eligible for NMP cost sharing.

#### Soil Erosion (Sheet, Rill, Gully)

Any landowner with a field experiencing gully erosion, as determined by LWCD staff, may apply for financial assistance for a grassed waterway or other needed BMPS. (Priority will be given to Ag Perf Std compliance requirements)

#### Groundwater Contamination

Any landowner with a dug or drilled well removed from service, posing a threat to groundwater quality and/or public safety as determined by LWCD staff, may apply for financial assistance. Any landowner with a naturally occurring sink hole and/or direct conduit to groundwater, posing a threat to groundwater quality and/or public safety as determined by LWCD staff, may apply for financial assistance.

## Agriculture Performance Standards

Certain land use and land management activities are known to impair surface and groundwater resources. Concern over this issue resulted in a call for minimum performance standards relating to land use activities. The State Legislature directed the Department of Natural Resources (DNR) and the Department of Agriculture, Trade and Consumer Protection (DATCP) to develop performance standards and technical standards or BMPs to address agricultural and non-agricultural nonpoint sources of pollution. The DNR rule, NR 151, sets minimum performance standards for farms to prevent contamination of surface and ground water (https://docs.legis.wisconsin.gov/code/admin_code/nr/100/151). Appendix B identifies the performance standards for agricultural and non-agricultural non-point sources of pollution. The DATCP rule, ATCP 50, identifies the conservation practices that farmers can implement to meet DNR standards ( https://docs.legis.wisconsin.gov/code/admin_code/atcp/020/50). Appendix A identifies the Conservation Practices that will be used to implement the Agriculture Performance Standards to help achieve the goals of this plan.

## Implementation Strategy for Performance Standards

### Information and Education

Every effort will be made to inform Winnebago County landowners about the required agriculture performance standards and prohibitions. Land & Water Conservation department staff will provide landowners with an overview of the regulatory requirements when working with them on programs administered by the department. Educational materials will be provided to each landowner. The primary goal will focus on establishing a voluntary approach to meeting compliance.

### Records Review

All landowners in Winnebago County will be reviewed to determine if they are in compliance with the NR151. Initially, the main focus for review will be based on using this plans inventory and assessment information, including Appendix C, to check targeted farm files for compliance with NMP and other portions of NR 151. Results of all compliance work will be tracked on the GIS system.

### Onsite Evaluations

The Winnebago County Land & Water Conservation Department will perform onsite evaluations based on the following criteria:

1. Evaluation at the request of the landowners.
2. Landowners believed to be out of compliance based on records inventory and inventory and assessment data.
3. Formal complaints received by the Winnebago County Land and Water Conservation Department.

Compliance will be determined by LWCD staff and documented within the GIS system. Any landowners found to be out of compliance will be contacted and given the following information in writing:

- A statement explaining the compliance issues. (Notice of Noncompliance)
- The corrective measures needed to achieve compliance.
- A timeline for achieving compliance. (Schedule of Compliance)
- The status of eligibility for cost-share assistance.
- The funding sources available and technical assistance to be received.
- An explanation of technical standards and maintenance requirements.
- A signature page attached to findings report indicating whether the landowner agrees or disagrees with the report.
- A copy of performance standards and prohibitions and any applicable technical standards.
- A notice of process and procedure for appeals stating: Any person aggrieved by a decision of the Land and Water Conservation Department may file a written appeal of the decision with the Winnebago

County Land and Water Conservation Department within 30 days of the Departments decision. A hearing upon the appeal shall be commenced within 60 days of the date of the appeal.

### Administer Funding and Technical Assistance

The Winnebago County Land and Water Conservation Department utilizes all available sources of cost-sharing. Annual allocations of cost-share implementation dollars from the DATCP will be primarily earmarked for any conservation practices required for landowners to achieve compliance with the Ag Performance Standards. County Water Quality Improvement Program funding will continue to be utilized for practices that are necessary to achieve the objectives described in this plan and assist landowners in achieving compliance with the Ag Performance Standards. Due to the requirement of cost-sharing, MDV and other grant funds received will be used to cost-share Ag Perf Stds implementation and in some cases, will determine the sub-watersheds that will be targeted. The percent of cost-sharing provided to landowners will be reviewed and innovative multi-source cost-sharing will be utilized where appropriate to get conservation on the land and to achieve compliance with the Agricultural Performance Standards.

### Enforcement Process

A landowner that is out of compliance with state performance standards and prohibitions and refuses technical and financial assistance from the Winnebago County Land & Water Conservation Department will be notified by mail that they are subject to enforcement actions. They will receive a multi-agency communication from the Land & Water Conservation Department and Department of Natural Resources. A copy of the enforcement letter will be sent to the Department of Agriculture, Trade and Consumer Protection. Landowners who are in violation of NR151 and refuse to take corrective action will be referred to the Department of Natural Resources – Northeast Region. A fully executed Memorandum of Understanding between the DNR and Winnebago County for enforcement of the Ag Perf Stds is on file at the Winnebago County Land and Water Conservation Department. (https://www.co.winnebago.wi.us/sites/default/files/uploaded-files/mou_for_the_enforcement_of_nr151_0.pdf)

Landowners who are in violation of the Winnebago County Livestock Waste Management Ordinance will be dealt with in accordance with County enforcement policy.

## Livestock Waste Management Ordinance

Winnebago County has had a Livestock Waste Management Ordinance since 1985. The original ordinance addressed all existing or planned livestock waste storage facilities, including all aspects relating to design, construction, and management. In 1992, the Livestock Waste Management Ordinance was revised to include guidance regarding livestock waste storage facility abandonment. With the trend of expanding dairy operations and livestock facilities, the Land & Water Conservation Department initiated a comprehensive revision of the ordinance in 1999 and 2016. Since that time the ordinance has had a few minor revisions to keep it in-line with current state codes and technical standard. The ordinance continues to be a reasonable, environmentally effective, and enforceable ordinance. The complete Livestock Waste Management Ordinance can be viewed at: **https://www.co.winnebago.wi.us/sites/default/files/uploaded-files/chapter13_1.pdf**

**The Winnebago County Livestock Waste Management Ordinance:**

- Regulates the on-site location, design, construction, alteration, operation, and maintenance of all livestock waste storage facilities and transfer systems, including abandonment of storage facilities. It also regulates the on-site location of livestock facilities with regard to set-backs from surface and groundwater resources.

- Regulates the land application of all livestock waste in Winnebago County, based on NRCS Technical Standard 590 with specific requirements for livestock facilities and livestock waste storage facilities. (Appendix C, Maps 18 and 19)

- Provides specific regulations for agricultural lands within Water Quality Management Areas.

- Incorporates the four prohibitions.

**Livestock Waste Management Ordinance Review Program**
When a Livestock Waste Management Permit is issued for a new livestock facility or livestock waste storage facility, an ordinance review is conducted. These newly permitted sites are recorded and the information can then be added to our GIS system. The GIS data base allows us to generate contact lists at any time, based on multiple parameters, to exchange information with our livestock owners.

## Stormwater Management & Plan Reviews

The performance standards governing storm water management are found in the Winnebago County Zoning Ordinance. These are applicable to commercial, industrial and residential development on lands in the unincorporated areas of the County. The standard requires that stormwater runoff after development shall not be at a greater peak rate than the rate of flow under predeveloped conditions. The 2, 10, and 100-year storm is the standard used in the process to determine both pre-and post development rates of runoff. USDA - Technical Release 55, Urban Hydrology for Small Watersheds is the methodology used in determining the rates of runoff. Where post-developed runoff exceeds pre-developed conditions, the standards require addressing the additional stormwater to achieve 80% TSS removal for new sites and 40% removal for redevelopment.

All proposed development projects require submittal of a stormwater management plan, subject to review by the County Zoning Department. Construction site erosion control is an important component of that plan submittal and review process. In addition, an Erosion Control permit is required for all single- and two-family homes, buildings exceeding 1,000 square feet and other land disturbing activities identified within the county ordinance. The County Land and Water Conservation Department is currently responsible for issuing Erosion Control (EC) Permits as part of the County's Livestock Waste Management Permit where applicable. All EC permits issued by zoning for construction projects require a minimum of two inspections that are done as construction begins and are closed as the construction/landscaping and the site is stable ends.

Winnebago County Zoning Department is also responsible for the enforcement of Shoreland Zoning.

## Municipal Separate Stormwater Sewer System (MS4)

Winnebago County will comply with the State MS4 Permit requirements and recognize any installed BMPs for their pollutant load reductions. We will also recognize the efforts of those towns required to meet MS4 permit guidelines as quantifiable pollutant load reductions. In 2018 Winnebago County completed a complete remodeling of its MS4 and is currently working on meeting the reduction requirements established in the permit. The WinSLAMM model indicates that the existing controls for MS4s in the Lower Fox River Main Stem sub-basin do not meet current TMDL requirements. Further action should occur to remove an additional 12.63 tons of suspended solids and 0.005 tons of phosphorus per year from the Lower Fox River Main Stem watershed. Objectively, the model does also show an additional TSS removal need of 19 pounds per year in the Neenah Slough sub-basin; however, this equates to less than a tenth of a percent of the required TSS removal. Upon implementation of the Upper Fox River Basin TMDL, further action may also be necessary to meet regulatory compliance status. As subsequent versions of WinSLAMM are released, the control efficiencies of the various control devices may change, and the overall TSS and TP removal efficiency may increase or decrease because of changes to the model. Finally, as highways are reconstructed, they will likely incorporate various degrees of stormwater management in the design. Winnebago County will be able to include these stormwater BMPs in the Existing Controls model, which should increase the overall TSS and TP removal efficiency. https://www.co.winnebago.wi.us/lwcd/programs/tmdls/ms4

## Farmland Preservation Program

Under the new Working Lands Initiative, Farmland Preservation Program (FPP), tax credits may be claimed by agricultural landowners fulfilling certain eligibility requirements. To be eligible, all cropland and facilities associated with the farm must be in compliance with NR 151 and meet certain zoning requirements. Currently all the acres enrolled in FPP are certified compliant with NR 151. Winnebago County has had a mass exodus of cropland taken out of the FPP with only one township choosing to remain eligible for the program. Since 2010, 14,498 acres of cropland have been removed from FPP zoning. The County Land and Water Conservation Department is responsible for administering the landowner compliance portion of the program. Currently there are 3,623 acres of cropland in FPP. Each year 25% of the participating acreage is monitored for compliance with NR 151 and other program requirements. Compliance is also recorded on the LWCD tracking system (Appendix C, Map 10).

## Plan Implementation Funding

The funds received by the Land & Water Conservation Department as a result of this plan will be used to supplement staff costs and provide cost sharing for those landowners and/or operators needing to be compliant with the Ag Perf Stds or that have other eligible projects. It is expected that due to limited staff and funds and the requirement for cost sharing, compliance with the Ag Perf Stds will be minimal for landowners not participating in FPP. We anticipate using the County Water Quality Improvement Program funds and other available grants to assist with our efforts. The amount of cost share dollars required will hinge on several unknowns. First is the amount of staff time available for design and implementation of the required practices. Second is the type and cost of the practices themselves.

Financial assistance is available to landowners and local units of government with priority sites to help offset the costs of installing BMPs. Funding is distributed to landowners by the Land and Water Conservation Department after practices have been installed or completed according to standards. To qualify for financial assistance, landowners must meet eligibility criteria defined by the program and agency from which they are receiving funds.

Currently Winnebago County uses multiple funding sources to install BMPs. We will continue to use every available funding source to get Conservation Practices and the Ag-Performance Standards Implemented in our County (See: Grants, Programs and Funding Sources).
Winnebago County is fortunate to have a county funded water quality improvement program providing up to $100,000 of cost-share dollars for landowners. There is a project funding cap of $20,000. With these funds we've been able to leverage additional grant dollars to install large or expensive projects. On average, the taxpayers of Winnebago County are getting $3 to $4 of conservation practices installed, for every $1 invested from the levy. Serious discussions regarding increased cost-share rates utilizing multiple funding sources to get conservation on the land will be had in the next few years as compliance with the TMDLs requires additional practices and more investment.

To receive financial assistance, eligible landowners must enter into a cost-share agreement with the Land and Water Conservation Department or providing agency. Cost-share agreements are binding documents, which secure funds for an individual practice. Structural practices have the Agreement attached to the deed of the property. Non-structural practices such as Residue Management and Nutrient Management are not recorded with the deed.

Practices included on cost-share agreements must be installed within the schedule agreed to on the agreement. Practices must be maintained for a minimum of ten years from the date of installing the final practice listed within the cost-share agreement with the exception of conservation tillage, which has no term specified.

Local, state, or federal permits may be needed prior to the installation of some practices. Areas in which a permit is generally required include zoned wetlands and the shoreline areas of lakes and streams. These permits are needed whether the activity is a part of the County program or not. The cost-share recipient is responsible for acquiring the needed permits prior to the installation of practices. With the new regulations in place, these permits will be needed on 90% or more of these projects. The Land and Water Conservation Department is responsible for enforcing compliance of cost share agreements. The LWCD will insure that practices installed through the program are maintained in accordance with their operation and maintenance plan for the appropriate length of time. Installed practices are logged in several places, including on the GIS. We are able to generate review lists based on multiple parameters to monitor previously installed practices for compliance with the agreement. Winnebago County has a formal site review plan.

## Cost Containment Procedures

The cost containment procedure used by Winnebago County to control the costs of installing BMPs are identified in this plan. The Request for Proposal (RFP) procedure, average cost and flat rate lists can be obtained from the Winnebago County Land and Water Conservation Department.

**RFPs**: Competitive RFPs will be required for all structural BMPs with estimated total costs, as determined by the project technician, exceeding $5,000. The process requires a minimum of three RFPs from qualified contractors in itemized RFP format. In cases where only one RFP is received, the Land and Water Conservation Department will determine if the RFP constitutes an appropriate cost for the project. If no RFPs are received or if the lone RFP is not deemed appropriate, the project may be placed back out for RFPs or the County may limit cost sharing based on average costs. The Land and Water Conservation Department and landowners reserve the right to refuse any RFPs that are not deemed appropriate for the practice.

**Average Costs:** Average costs can be used for structural BMPs with an estimated cost of less than $5,000, unless the cost share recipient decides, and the county agrees, to RFP the installation of the BMPs. If the financial assistance recipient or the county decides to RFP a structural BMP under $5,000, the RFP procedure will apply.

Payments for “in kind” contributions will be based on the County’s guidelines. Landowners who receive financial assistance who wish to install a BMP using their own labor, material, and equipment must submit a quote plus one quote from a qualified contractor for the practice installation.

Financial assistance payments will be based on actual installation costs. If actual installation costs exceed the amount of financial assistance determined by cost estimates, then the amount paid the grantee may be increased with the approval of the County Land Conservation Committee. Appropriate documentation regarding the need for changes will be submitted to the Land and Water Conservation Department.

# Plan of Action

The plan of action for this document is to identify, implement and install the proper practices and procedures to achieve the goals required to meet our previously indentified objectives. This will be accomplished using existing staff, volunteers, conservation groups, lake associations, and all applicable programs, rules, laws, ordinances and available financial resources.

### Program Integration

- **Conservation Reserve Enhancement Program (CREP)**
  The Conservation Reserve Enhancement Program is a joint, state-federal land retirement conservation program targeted to address State and nationally significant agriculture-related environmental effects. This voluntary program uses financial incentives to encourage farmers and ranchers to enroll in contracts of 10

to 15 years in duration to remove lands from agricultural production. It is authorized pursuant to the 1996 Federal Agriculture Improvement and Reform Act.

- **Conservation Reserve Program (CRP)**
  The Conservation Reserve Program was developed to assist landowners in voluntarily converting highly erodible and environmentally sensitive cropland from the production of annual crops to less intensive uses such as permanent grass, legumes, forbs, wildlife cover or trees. Regular sign-up, in most cases, involves offers of entire fields.

  Continuous CRP sign-up is primarily for partial fields and small plots. The sign-up is ongoing and covers priority practices such as filter strips, riparian buffers, shelter belts, field windbreaks, grassed waterways and shallow water areas for wildlife.

- **Conservation Stewardship Program (CSP)**
  CSP encourages land stewards to improve their conservation performance by installing and adopting additional activities, and improving, maintaining, and managing existing activities on agricultural land and nonindustrial private forest land. The NRCS has made CSP available nationwide on a continuous application basis.

- **Environmental Quality Incentives Program (EQIP)**
  The intent of the EQIP program is to provide a voluntary conservation program for farmers who face serious threats to soil, water and related natural resources. The program provides technical, financial and educational assistance primarily in designated priority areas.

- **Great Lakes Restoration Initiative Grant Program (GLRI)**
  GLRI funding is added to the regular funding that NRCS gets each year, for its Farm Bill conservation programs, in order to accelerate Great Lakes protection and restoration. Through Farm Bill conservation programs, NRCS provides technical and financial assistance to landowners, enabling them to make conservation improvements to their land. This assistance helps them plan and implement a variety of conservation practices, such as planting cover crops, adopting no-till, removing invasive plants and restoring wetlands.

- **Lake Management Planning Grant Program**
  The Wisconsin Lake Management Planning Grant Program was developed to provide financial assistance to qualified lake organizations or local governments to collect and analyze data concerning the physical, chemical and biological health of their lakes. Grant money can also be used to investigate watershed conditions, review ordinances and conduct social surveys to gauge local concerns and perceptions as they relate to lake use and water quality. The end product of most lake management planning grants is a comprehensive lake management plan which addresses local concerns and analyzes alternatives for lake and watershed management.

- **Lake Protection Grant Program**
  Through the Lake Protection Grant Program qualified lake organizations can apply for funds to carry out a variety of lake protection projects. The state-share is 75% of eligible. Projects include the purchase of lands critical to a lake ecosystem, restoration of important wetlands and the development of regulations and ordinances designed to protect and enhance water quality.

- **Managed Forest Law (MFL)**
  The goal of the Managed Forest Law (MFL) program is to encourage long-term sound forest management. MFL is a tax incentive program for industrial and non-industrial private woodland owners who manage their woodlands for forest products while also managing for water quality protection, wildlife habitat and public recreation. In return for following an approved management plan, property taxes are set at a lower rate than normal.

- **Multi-Discharger Variance Program (MDV)**
  Multi-Discharger Variance Funds paid to Winnebago County from participating WPDES Permit Holders will be used to assist landowners within targeted HUC 12 watersheds in the TMDL areas. These funds will be used to cost-share BMPs that will bring landowners into compliance with the State Agricultural Performance Standards.

- **Natural Resource Damage Assessment Grant (NRDA)**
  The funding for these projects comes from annual appropriations and from reimbursed costs recovered from responsible parties in other settled cases. In addition to the appropriated funding for damage assessment, the Program utilizes an average of $2.0 million annually in recovered funds to initiate new and supplement ongoing assessment needs. Co-Trustees (other federal agencies, states, Indian tribes or foreign governments), potentially responsible parties and the National Pollution Funds Center can also provide funding.

- **North American Wetland Conservation Act Grant (NAWCA)**
  The NAWCA program provides matching grants to wetlands conservation projects. There is a Standard and a Small Grants Program. Both are competitive grants programs and require that grant requests be matched by partner contributions at no less than a 1-to-1 ratio.

- **River Planning Grant Program**
  This grant program is designed for the collection, assessment and dissemination of information on riverine ecosystems, to assist in developing organizations to help manage rivers, to assist the public in understanding riverine ecosystems, and to create management plans for the long-term protection and improvement of riverine ecosystems.

- **River Protection Grant Program**
  The purpose of the River Protection Grant Program is to assist local organizations and local units of government in protecting or improving rivers and natural river ecosystems. Cost sharing grant assistance is available for activities that will help to provide information on riverine ecosystems, improve river system assessment and planning, increase local understanding of the causes of river problems, and assist in implementing management activities that protect or restore river ecosystems.

- **State Acres for Wildlife Enhancement (SAFE)**
  In an effort to meet the Glacial Habitat Restoration Area habitat goals, WDNR has partnered with the FSA and NRCS to enroll additional acres into CRPs practice CP-38 (SAFE). The SAFE program will act to fill the void created by the lack of a current CRP general signup, provide thousands of acres of critically needed grassland and wetland wildlife habitat, and provide an attractive annual per acre payment to the participants.

- **Targeted Runoff Management Grants Program (TRM)**
  The Targeted Runoff Management (TRM) Grant Program offers competitive grants for local governments for the control of pollution that comes from diffuse sources, also called “nonpoint source (NPS)” pollution. Grants from the TRM Program reimburse costs for agricultural or urban runoff management practices in targeted, critical geographic areas with surface water or groundwater quality concerns.

- **Total Maximum Daily Load (TMDL)**
  To the extent possible, regarding specific opportunities within Winnebago County, pollutant load reductions will be pursued through the Total Maximum Daily Load (TMDL) requirements. In accordance with Sec, 303(d) of the Clean Water Act and U.S. EPA regulations, states are required to develop TMDLs for waters not attaining quality standards after pollution control requirements have been implemented. Simply stated, TMDLs provide a means, within a watershed or basin, for very targeted point source and nonpoint source

pollution abatement as part of a regulated and quantifiable method to meet a particular water quality standard.

- **Urban NPS and Stormwater Management Planning and Construction Grants**
  These grants are used by eligible municipalities to complete the modeling needed determine the amount of phosphorus loading currently occurring and install the practices needed to meet State MS4 requirements.

- **Wetland Reserve Easement (WRE)**
  Land eligible for **wetland reserve easements** includes farmed or converted **wetland** that can be successfully and cost-effectively restored. NRCS will prioritize applications based the **easement's** potential for protecting and enhancing habitat for migratory birds and other wildlife.

- **Winnebago County Water Quality Improvement Program**
  The Winnebago County Water Quality Improvement program allocating $85,000 to $90,000 per year for the installation of conservation practices within the county. This funding is utilized on projects not normally funded by other sources or to supplement cost-sharing at a high enough rate to get landowner participation. The funds are also used as cash match or contributions to leverage additional resources from available grants.

- **Wisconsin Lakes Management Program**
  The Wisconsin Lakes Management Program is a cooperative program between the Wisconsin DNR, UW-Extension, the Wisconsin Association of Lakes (WAL), and lake organizations to assist management and protection of their lakes. The Wisconsin Lakes Management Program provides technical assistance, information and education to lake groups and lake residents, and planning, protection, and implementation grants to qualified lake organizations and local units of government.

## Information & Education Strategy

This section will explain the information and education strategy that will be used to help the county achieve its goals. Implementation of this strategy is intended to build awareness about local resource concerns and encourage residents to adopt the Best Management Practices (BMP's) needed to preserve, protect and restore the resource.

Successfully encouraging people to adopt BMPs is not easy. Experience shows that individuals often lack the motivation to install a BMP because they don't believe a problem exists on their property or they may have other concerns they feel need to be addressed. Before people adopt a new BMP, they must be willing to recognize the need to change their current management practices, feel that the risks imposed by the BMP are manageable, and feel that the rewards it offers are beneficial. The adoption process can be very slow (it can take many years) and is not guaranteed. Farmers are especially wary of assuming more risk since they already operate in a volatile market place.

To address knowledge barriers the I & E Strategy contains activities designed to disseminate information throughout the county. Examples include websites, newsletters, direct mail, social media and media coverage, or informational meetings. In order to address skill and attitude barriers, field days, demonstrations, Upper Fox/Wolf Demonstration Farm Network events, WC Soil Health Challenge events and one-on-one instruction are planned. New ideas presented by farmers to farmers has proven to be the best delivery method thus far.

This strategy lists the I & E objectives that need to be accomplished. Each objective aims to provide information to support or teach a BMP to a particular audience. Each objective is accompanied with a list of activities to fulfill this function.

Accomplishing the goals in the I&E Strategy will require a collaborative effort between the Winnebago County Land & Water Conservation Department, UW-Extension, Department of Natural Resources, USDA – FSA and Natural Resources Conservation Service, and many other State agencies and local conservation organizations and lake associations.

**Information & Education Goals**

**Objective:** Communicate the requirements of the Agricultural Performance Standards to landowners and the impacts of Agricultural pollutant loading in Winnebago County.

**I & E Strategy:**

- Targeted HUC 12 Communications
- Website/Facebook/Text-provide real-time demonstration information
- Informational meetings/Presentations
- One on one visits with landowners/operators
- Soil Health demonstrations/presentations
- Promote NMP and conduct NMP Farmer Certification Training
- Provide manure management info to small livestock operators
- Provide Groundwater Protection information
- Promote drinking well testing
- Provide TMDL target, compliance and cost-share information
- Communicate the social and economic impacts of poor-quality surface and groundwater

**Objective:** Raise awareness of the impacts of excessive pesticide and fertilizer use in rural and urban settings.

**I & E Strategy:**

- Communicate the cause of algae blooms
- Website/Facebook/Text-provide real-time information on environmentally sound alternatives
- Promote Low and No Phosphorus Lawn Fertilizers
- Communicate at public events- County Fair-WPS Farm Show
- One on one landowner visits
- Demonstration Plots
- Communicate the social and economic impacts of poor-quality surface and groundwater

**Objective:** Communicate the impacts of wetland loss, shoreland and streambank erosion along with the ongoing internal loading on the Winnebago System.

**I & E Strategy:**

- Demonstrate and Promote Shoreline Buffers
- Website/Facebook/Text-provide real-time information on environmentally sound solutions
- Communicate the impacts of phosphorus and sediment loading
- Communicate the cause of algae blooms
- One on one landowner visits
- Shoreland and streambank demonstration projects/tours
- Communicate at public events- County Fair-WPS Farm Show
- Promote stabilizing water levels through responsible seasonal lake level management
- Participate in the Winnebago Water Level Management Team
- Promote the benefit of the plant communities to the resource

- Communicate the social and economic impacts of poor-quality surface and groundwater

**Objective:** Raise awareness of municipal and industrial pollutants in surface and groundwater resources.

**I & E Strategy:**
- Website/Facebook/Text-provide real-time information on issues associated with medications, microbeads and perfluoroalkyl and polyfluoroalkyl substances (PFAS).
- Communicate at public events- County Fair-WPS Farm Show
- Distribute informational pamphlets or white papers regarding the issue.

**Objective:** Communicate the importance of farmers, farming, and the preservation of farmland.

**I & E Strategy:**
- Utilize demonstration farms and farmer led groups to communicate with the urban sector
- Website/Facebook/Text-provide real-time information to the masses regarding the positive things happening in agriculture
- Increase LWCD presence at public functions to promote the positive things happening in agriculture
- Increase LWCD presence on farms working one on one with producers to help them achieve compliance with state reduction goals

## Evaluation

As part of the annual accomplishment report, the county will prepare a summary of its information and education efforts over the year. The report will address how the I & E strategy was implemented, how residents participated, and a measure of behavior changes.

**Evaluating the I & E Strategy**
The staff will summarize the I & E activities they accomplished during the year. If the strategy was used to select and plan activities, it will be seen as an indication that the strategy is working. Whether the activities actually reached their intended audiences and whether they caused participants to successfully change their behavior can be measured by evaluating participation rates and BMP adoption.

**Evaluating Participation**
Since the strategy depends on activities to get people aware and involved, participation at activities can help evaluate the success of I & E efforts. Participation means more than just attendance at field days and volunteer events, but also includes website contacts, requests for information, and signed cost-share agreements. If residents are attending planned I & E events and signing cost-share agreements, I & E activities are probably having their desired impact. If residents never call the LWCD office to learn more about the project or attendance at field days and demonstrations are consistently low, this would probably indicate that new activities are needed.

Evaluating I & E's success based primarily on participation can be misleading since participation is not an indicator of successful BMP adoption. For example, just because someone attended a demonstration does not mean that they learned what the staff wanted them to and just because a farmer installs a BMP does not mean that they are using it successfully. To determine if the I & E Strategy is persuading residents to successfully adopt BMPs involves monitoring the performance of the participants.

**Evaluating BMP Adoption and Behavior Modification**
Evaluating the adoption process involves monitoring the successes and failures that participants have using and maintaining their new BMPs, along with the performance of the BMP. This means that staff will continue working with participants after a BMP is installed to ensure that the practice has been adopted successfully. Landowners are very good communicators of their displeasure so we will know immediately if the newly installed BMP is not performing as designed or anticipated. Success means that the BMP benefits both the participants operation (profitability included) and water quality.

The techniques used to evaluate I & E activities include informal discussions with participants posing questions such as: "Did you find the information in the brochure or on the website or Facebook helpful?" "Did you learn from the demonstration? and "How can we improve future I & E activities?". Some other techniques include surveys that ask similar questions but do it confidentially or staff observations that can be completed by asking colleagues how they thought an activity went through the use of polls. The staff will use the information gathered from these evaluations to improve each activity the next time it is offered.

More formal ways to evaluate both activities and objectives are surveys, focus groups, and examining performance records. These methods are most useful when baseline data is available for comparisons. Nutrient management and tillage surveys are used to provide baseline data for later performance record evaluations of those two practices.

## Progress Measurement & Evaluation

If this Land & Water Resource Management Plan is to be successful, it is imperative to annually measure and evaluate the extent to which the goals are being achieved. It is through this process that necessary adjustments and revisions in the plan goals and objectives can be made.

At this time, the evaluation process includes the following components:

**Annual "Action Plan" Review**
Annually the I and E Activities, Programs and BMPs that are conducted, implemented and installed will be summarized and compared to the goals identified in their respective sections of the Action Plan and Work Plan. This review will allow us to make the needed adjustments either in focusing our efforts or in the Plan itself.

**Administrative Reporting**
Annually the Land & Water Conservation Department will summarize financial data for funds appropriated for the implementation of the Land and Water Resource Management Plan and other funds under LWCD administration used to implement the Plan. That information, along with the accomplishment's summary will be used to complete an annual report for the LCC, County Board Supervisors, partnering Agencies and the general public. This information will also be used to complete the required progress reporting to DATCP.

# APPENDICES

# APPENDIX A: ATCP 50 Conservation Practices

ATCP 50.62 Manure storage systems.
ATCP 50.63 Manure storage system closure.
ATCP 50.64 Barnyard runoff control systems.
ATCP 50.65 Access road.
ATCP 50.66 Trails and walkways.
ATCP 50.67 Contour farming.
ATCP 50.68 Cover crop.
ATCP 50.69 Critical area stabilization.
ATCP 50.70 Diversions.
ATCP 50.705 Feed storage runoff control systems.
ATCP 50.71 Field windbreaks.
ATCP 50.72 Filter strips.
ATCP 50.73 Grade stabilization structures.
ATCP 50.75 Livestock fencing.
ATCP 50.76 Livestock watering facilities.
ATCP 50.77 Milking center waste control systems.
ATCP 50.78 Nutrient management.
ATCP 50.79 Pesticide management.
ATCP 50.80 Prescribed grazing.
ATCP 50.81 Relocating or abandoning animal feeding operations.
ATCP 50.82 Residue management.
ATCP 50.83 Riparian buffers.
ATCP 50.84 Roofs.
ATCP 50.85 Roof runoff systems.
ATCP 50.86 Sediment basins.
ATCP 50.87 Sinkhole treatment.
ATCP 50.88 Streambank or shoreline protection.
ATCP 50.885 Stream Crossing.
ATCP 50.89 Stripcropping.
ATCP 50.90 Subsurface drains.
ATCP 50.91 Terrace systems.
ATCP 50.92 Underground outlets.
ATCP 50.93 Waste transfer systems.
ATCP 50.94 Wastewater treatment strips.
ATCP 50.95 Water and sediment control basins.
ATCP 50.96 Waterway systems.
ATCP 50.97 Well decommissioning.
ATCP 50.98 Wetland development or restoration.

Note: Definitions are provided in the section of ATCP listed with each Conservation Practice

# APPENDIX B: NR151 Agricultural and Non-Agricultural Performance Standards

**Subchapter II — Agricultural Performance Standards and Prohibitions**

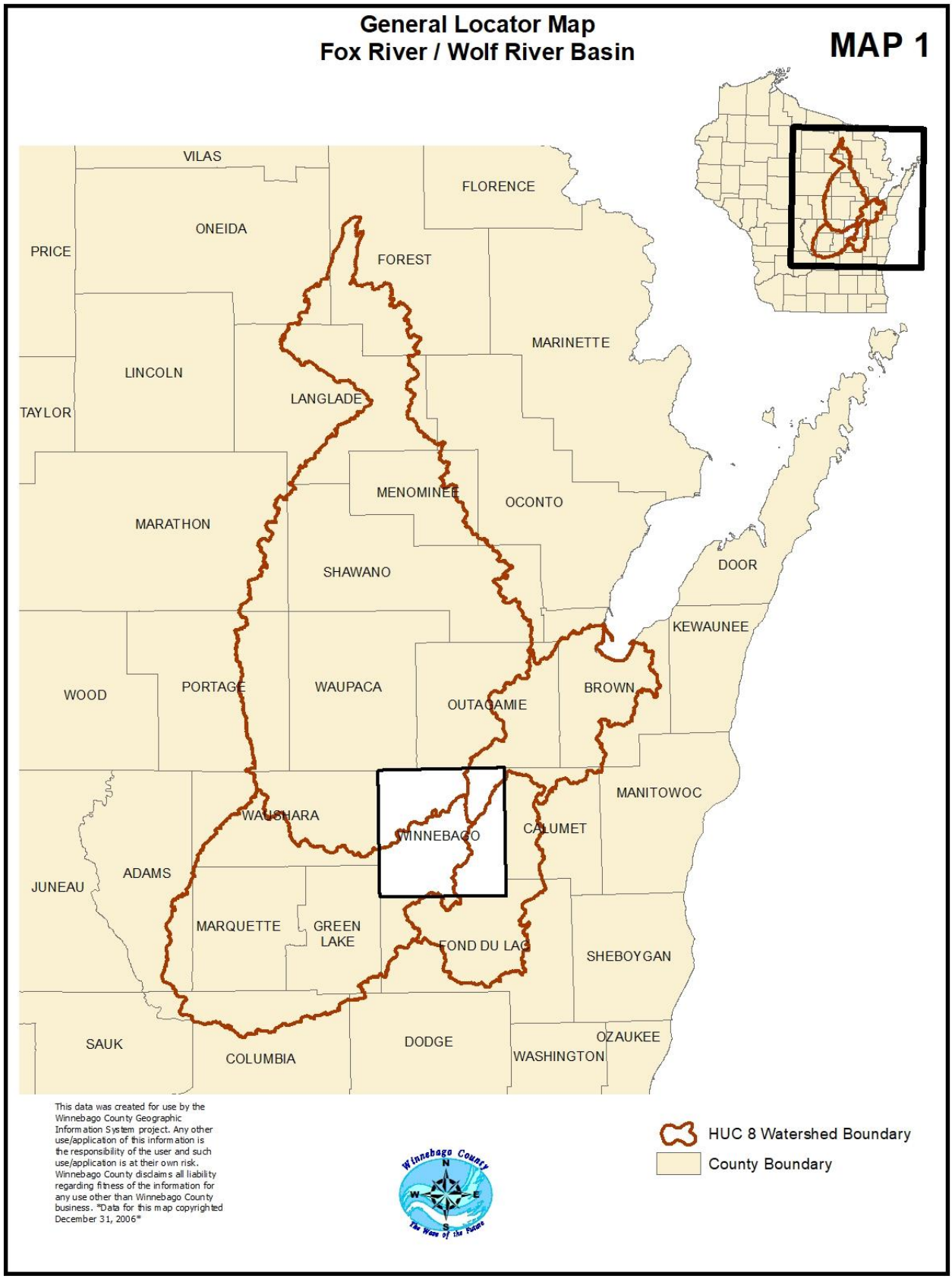


**Subchapter III — Non-Agricultural Performance Standards**



**Subchapter V — Technical Standards Development Process for Non-Agricultural Performance Standards**

# APPENDIX C: MAPS


General Locator Map
Fox River / Wolf River Basin
MAP 1
VILAS
FLORENCE
ONEIDA
PRICE
FOREST
MARINETTE
LINCOLN
TAYLOR
LANGLADE
MENOMINEE
OCONTO
MARATHON
SHAWANO
DOOR
KEWAUNEE
WOOD
PORTAGE
WAUPACA
OUTAGAMIE
BROWN
MANITOWOC
WAUSHARA
WINNEBAGO
CALUMET
ADAMS
JUNEAU
MARQUETTE
GREEN LAKE
FOND DU LAC
SHEBOYGAN
SAUK
COLUMBIA
DODGE
WASHINGTON
OZAUKEE
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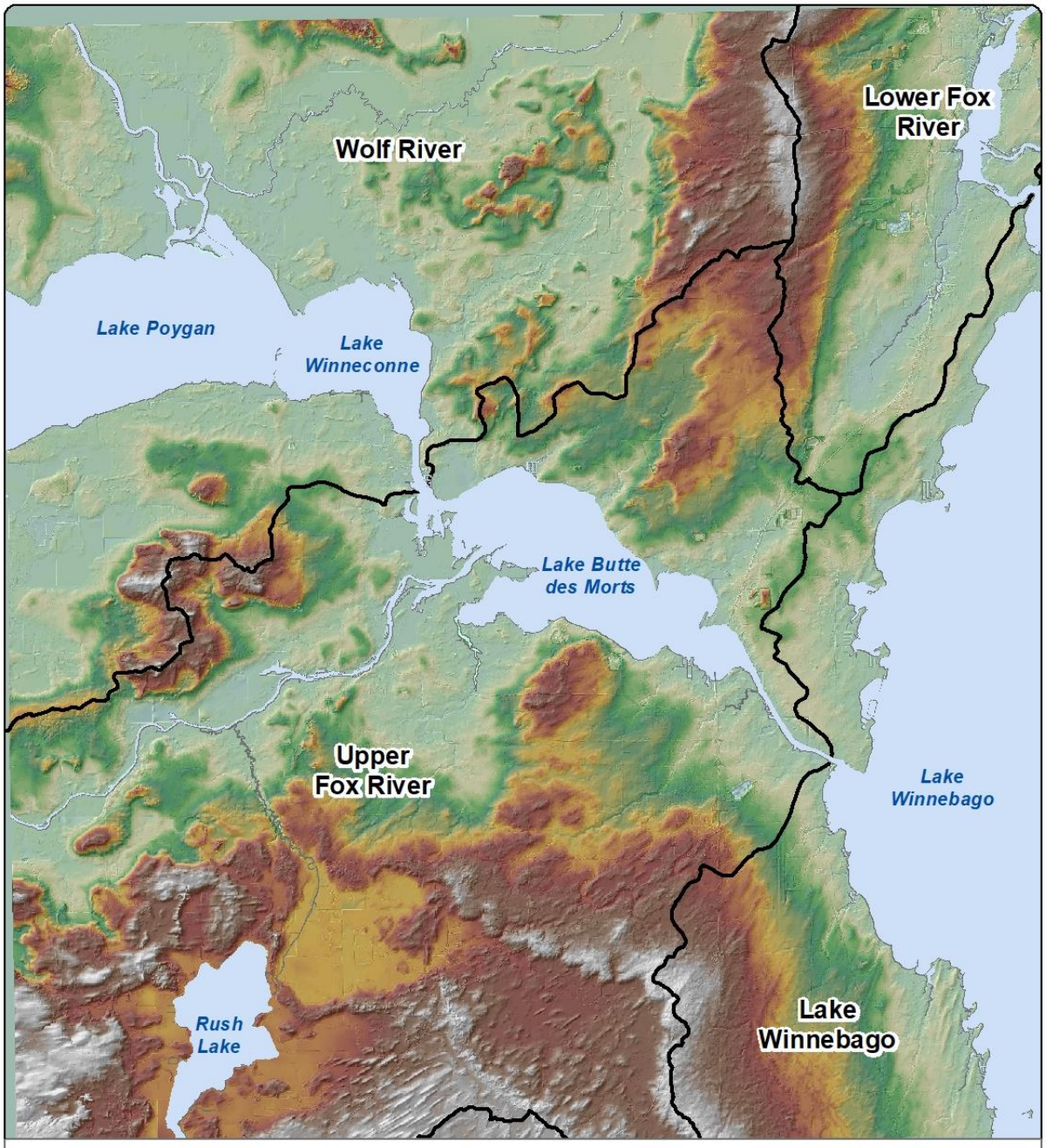
Winnebago County
The Wave of the Future
HUC 8 Watershed Boundary
County Boundary

## Shaded Relief Elevation
## Winnebago County, WI

# MAP 2

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Date: 4/17/2020

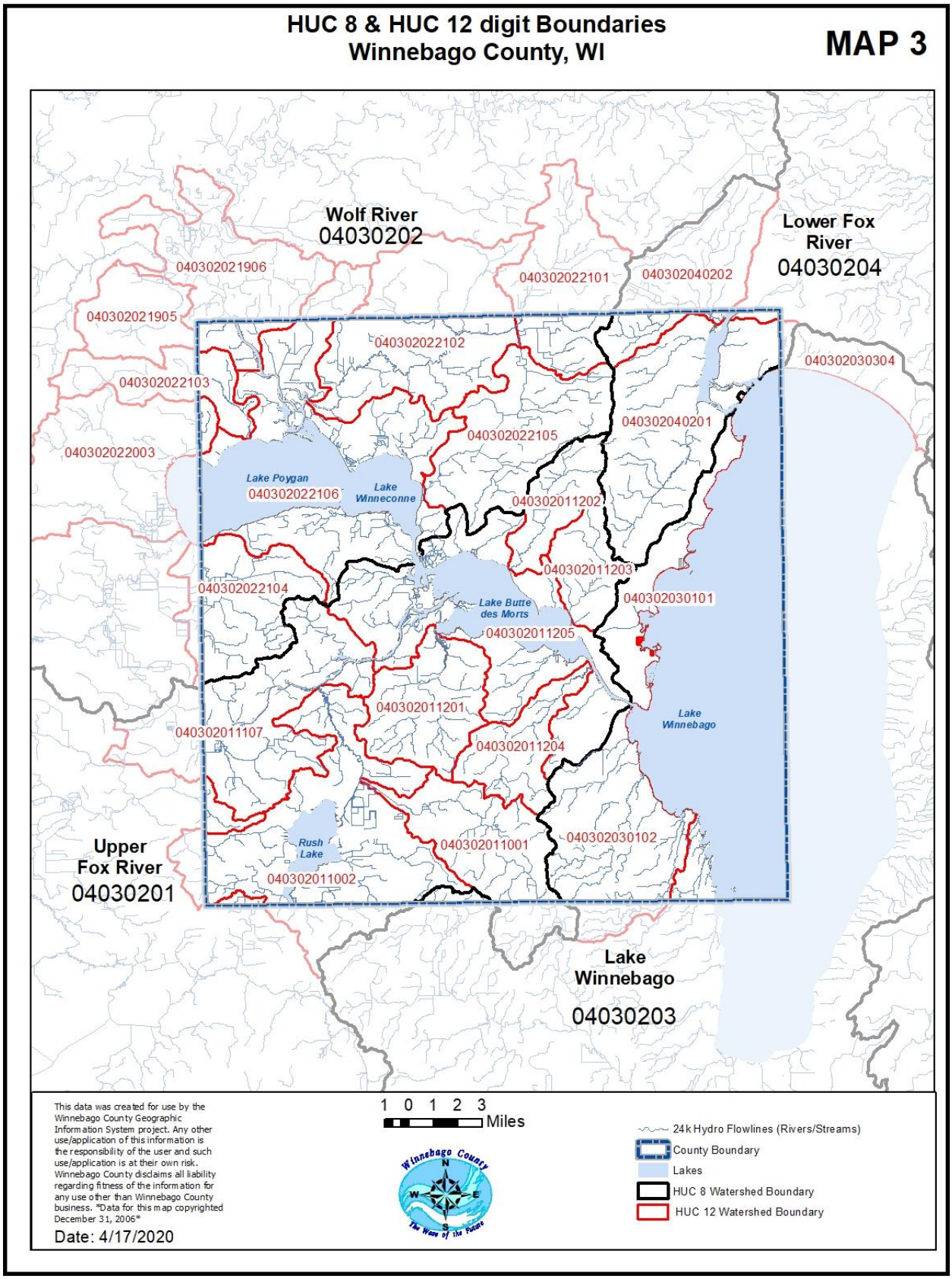
1 0 1 2 3 Miles

**Elevation (feet)**

High : 994

Low : 689

HUC 8 Watershed Boundary


HUC 8 & HUC 12 digit Boundaries
Winnebago County, WI
MAP 3
Wolf River
04030202
Lower Fox River
04030204
Upper Fox River
04030201
Lake Winnebago
04030203
040302021906
040302021905
040302022103
040302022003
040302022102
040302022101
040302040202
040302030304
040302040201
040302022105
040302022106
040302011202
040302011203
040302022104
040302030101
040302011205
040302011201
040302011107
040302011204
040302011001
040302030102
040302011002
Lake Poygan
Lake Winneconne
Lake Butte des Morts
Lake Winnebago
Rush Lake
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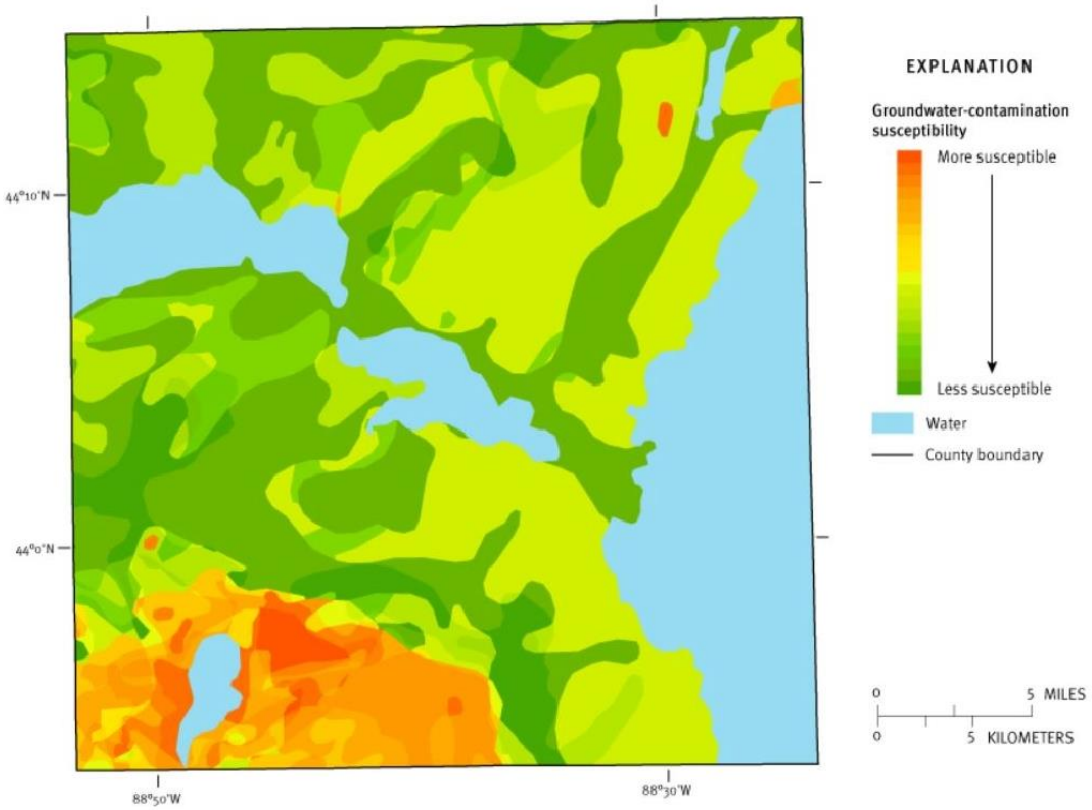
Date: 4/17/2020
1 0 1 2 3
Miles
Winnebago County
The Wave of the Future
24k Hydro Flowlines (Rivers/Streams)
County Boundary
Lakes
HUC 8 Watershed Boundary
HUC 12 Watershed Boundary

# Groundwater Contamination Susceptibility Analysis
# Winnebago County, WI

# MAP 4




**This groundwater-contamination susceptibility map is a composite of five resource characteristic maps, each of which was derived from generalized statewide information at small scales, and cannot be used for any site-specific purposes.**

Map source: Schmidt, R.R., 1987, Groundwater contamination susceptibility map and evaluation: Wisconsin Department of Natural Resources, Wisconsin's Groundwater Management Plan Report 5, PUBL-WR-177-87, 27 p.

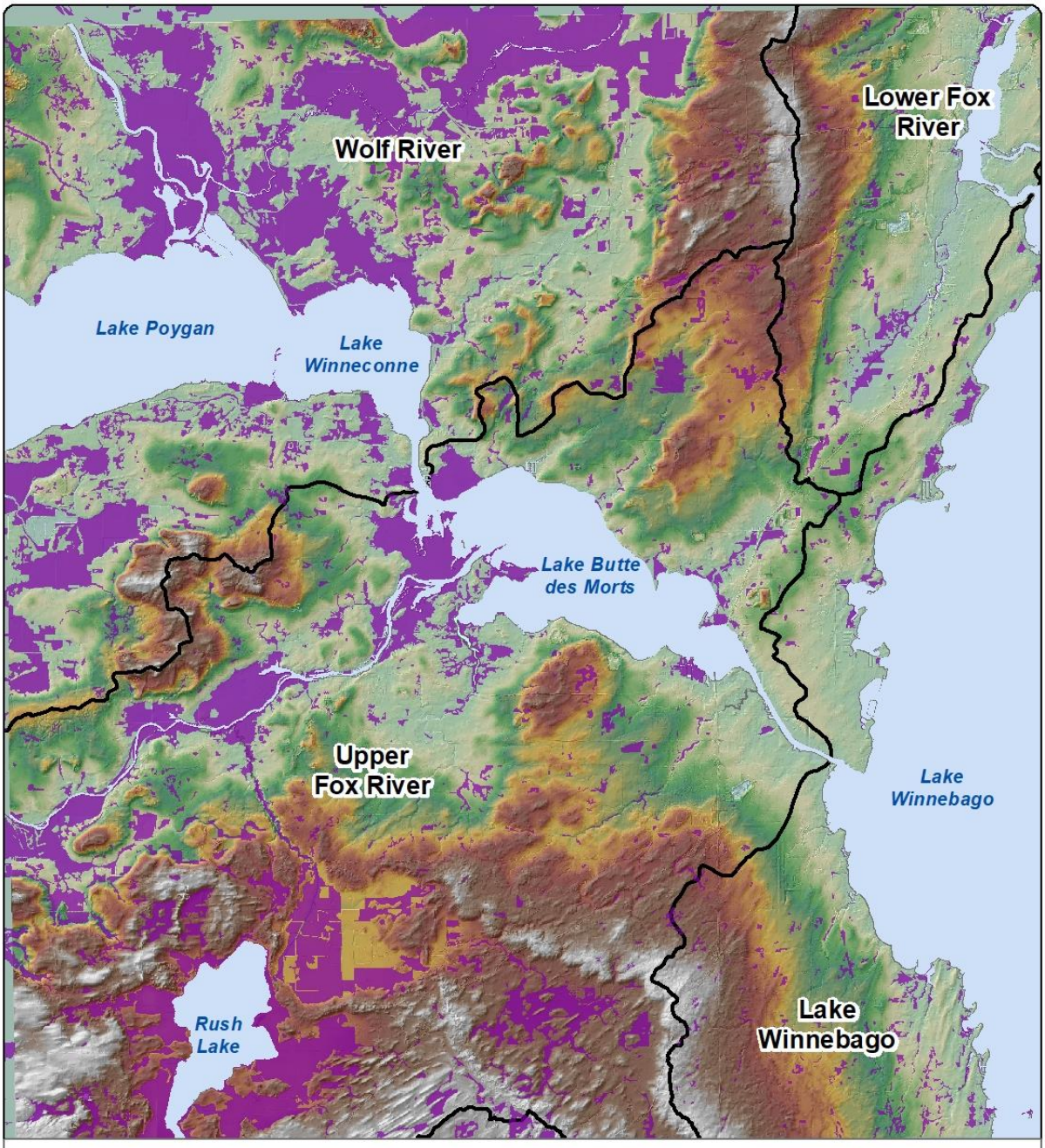
Figure created for the "Protecting Wisconsin's Groundwater Through Comprehensive Planning" web site, 2007, *http://wi.water.usgs.gov/gwcomp/*



Date: 4/17/2020

## Wetland Areas
## Winnebago County, WI

# MAP 5

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Date: 4/17/2020

1 0 1 2 3 Miles

Wetland Areas

HUC 8 Watershed Boundary

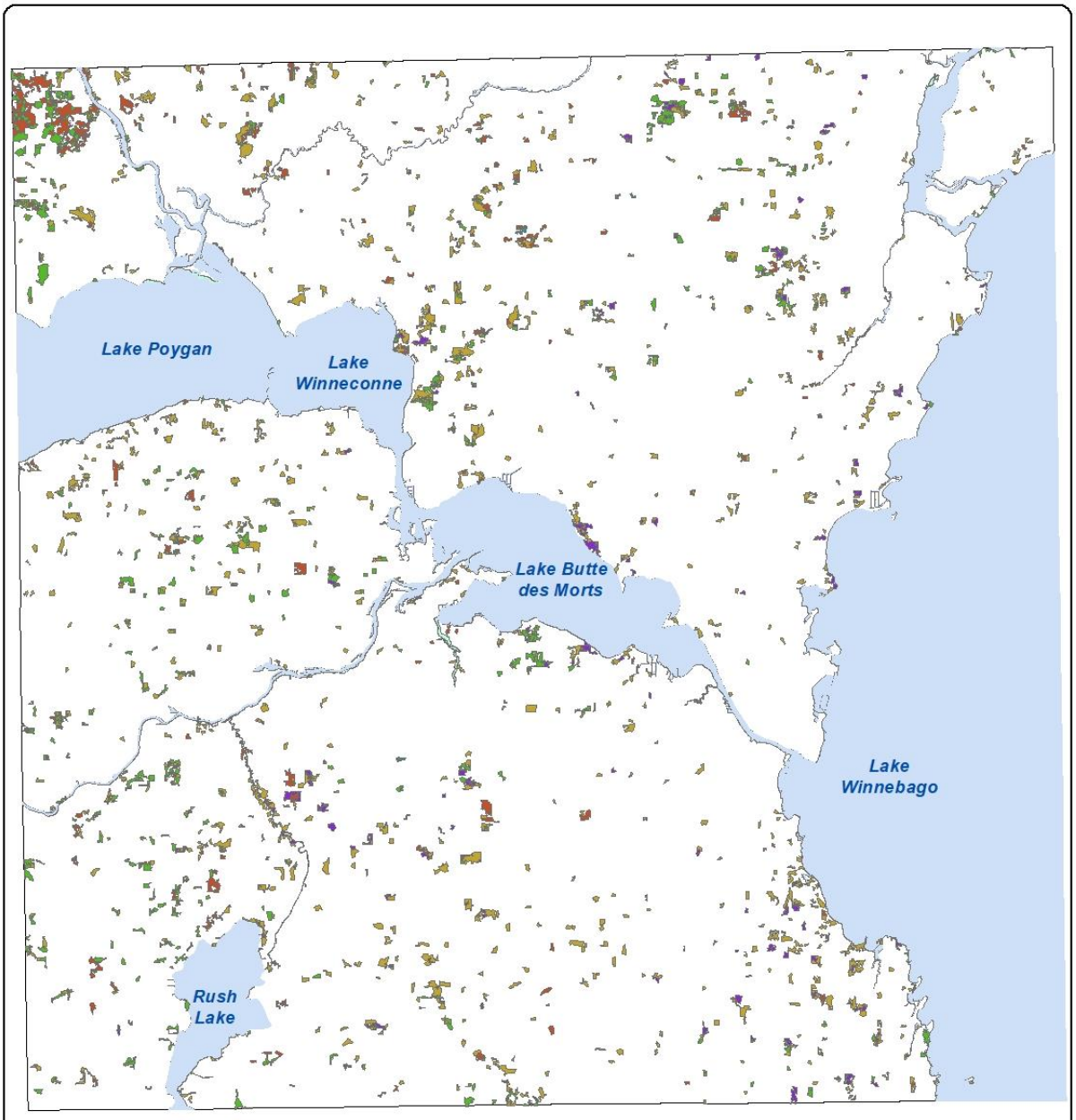
Elevation (feet)

High : 994

Low : 689

# Forest Cover
# Winnebago County, WI

## MAP 6

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Date: 4/17/2020

Forest Cover data source:
WI DNR Wiscland 2.0

1 0 1 2 3 Miles

**Forest Cover**

- Fir/Sruce
- Pine
- Aspen/Birch
- Red Maple
- Oak
- Central Hardwoods
- Northern Hardwoods
- Mixed Coniferous/Deciduous

Total Forest Cover: 11,616 ac

| Forest Type | Acres |
|---|---|
| Fir/Spruce | 54 |
| Pine | 1698 |
| Aspen/Birch | 2 |
| Red Maple | 3 |
| Oak | 2900 |
| Central Hardwood | 6127 |
| Northern Hardwood | 830 |
| Mixed Coniferous/Deciduous | 2 |

## Soil Drainage Class
## Winnebago County, WI

# MAP 7


1 0 1 2 3 Miles

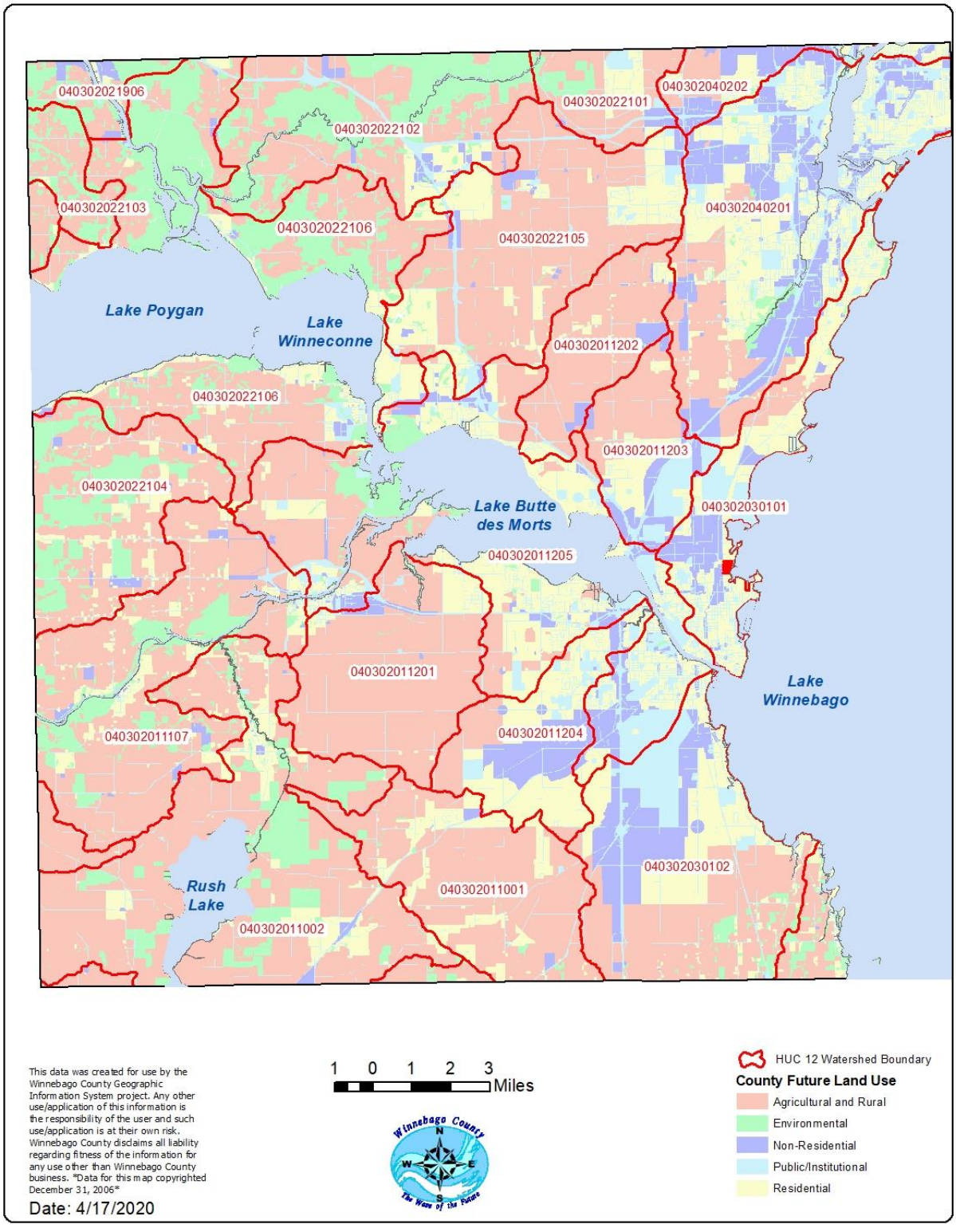
Very poorly drained
Poorly drained
Somewhat poorly drained
Moderately well drained
Well drained
Somewhat excessively drained



Date: 4/17/2020

## Future Land Use
## Winnebago County, WI

# MAP 8

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Date: 4/17/2020

1 0 1 2 3 Miles

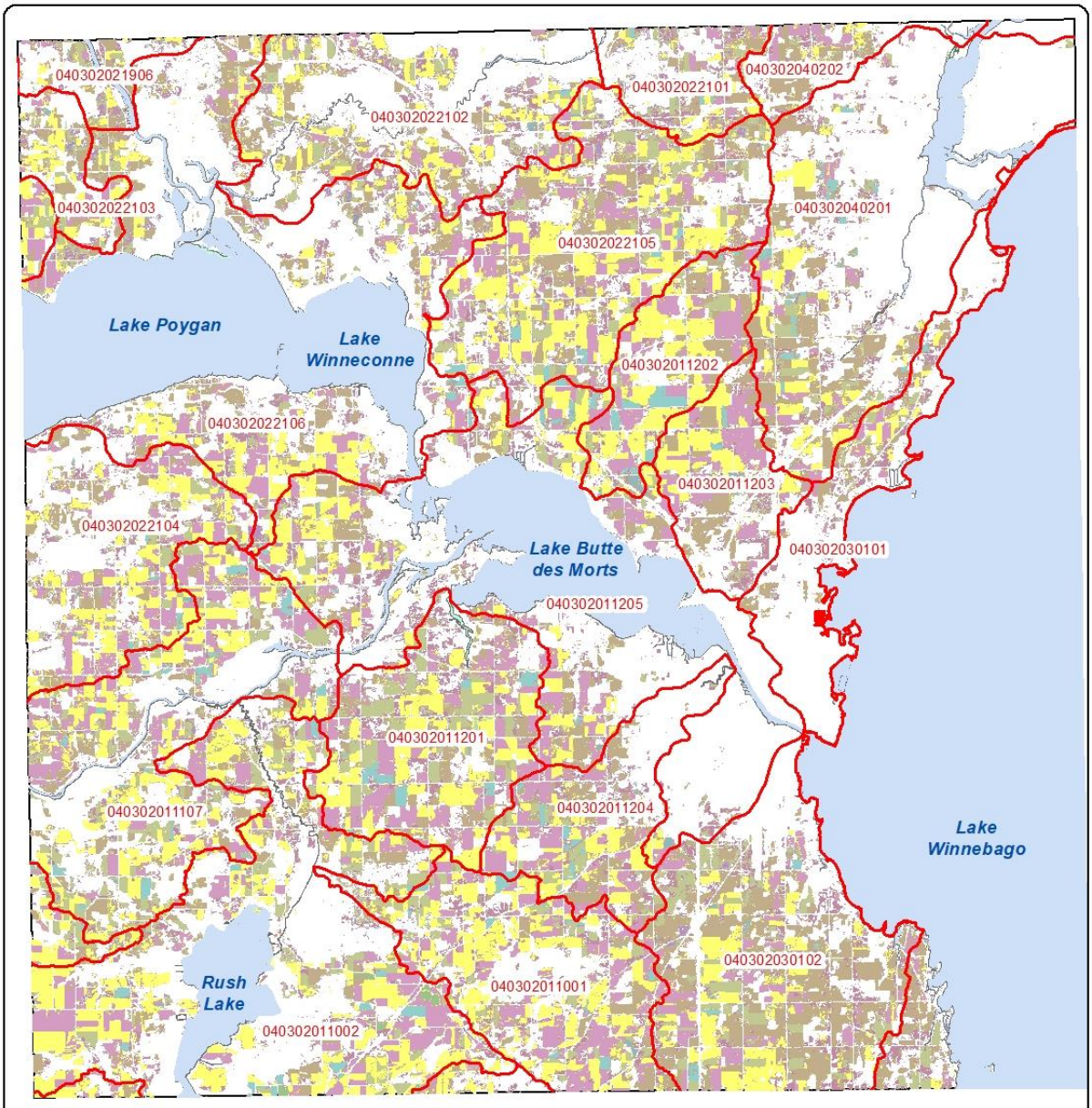
HUC 12 Watershed Boundary

**County Future Land Use**

- Agricultural and Rural
- Environmental
- Non-Residential
- Public/Institutional
- Residential

## 2019 Cropland, USDA Cropscape
## Winnebago County, WI

# MAP 9

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Date: 4/17/2020

1 0 1 2 3 Miles

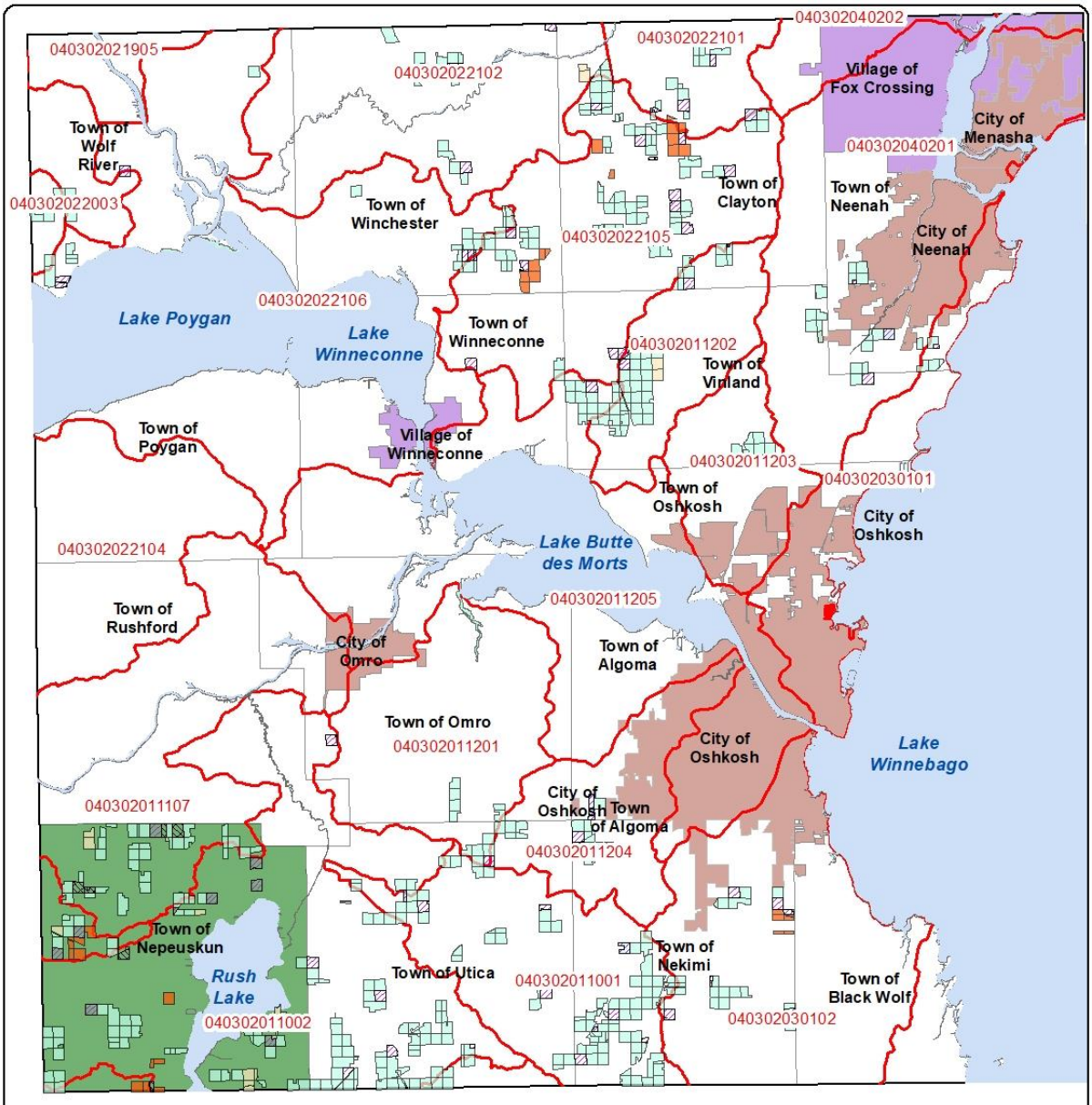
HUC 12 Watershed Boundary

CATEGORY

- Alfalfa
- Corn
- Dbl Crop WinWht/Corn
- Dry Beans
- Fallow/Idle Cropland
- Grass/Pasture
- Millet
- Oats
- Other Hay/Non Alfalfa
- Peas
- Rye
- Sod/Grass Seed
- Sorghum
- Soybeans
- Sweet Corn
- Winter Wheat

# Farmland Preservation Program Compliance
# Winnebago County, WI

## MAP 10




3,623 acres of FPP in Nepeuskun

1 0 1 2 3 Miles

**Inspected Facilities**
- Compliant
- Non-Compliant

**Inspected Cropland**
- Non-Compliant
- Compliant
- Compliant-Inactive

HUC 12 Watershed Boundary

**Municipal Type**
- City
- Town
- Village

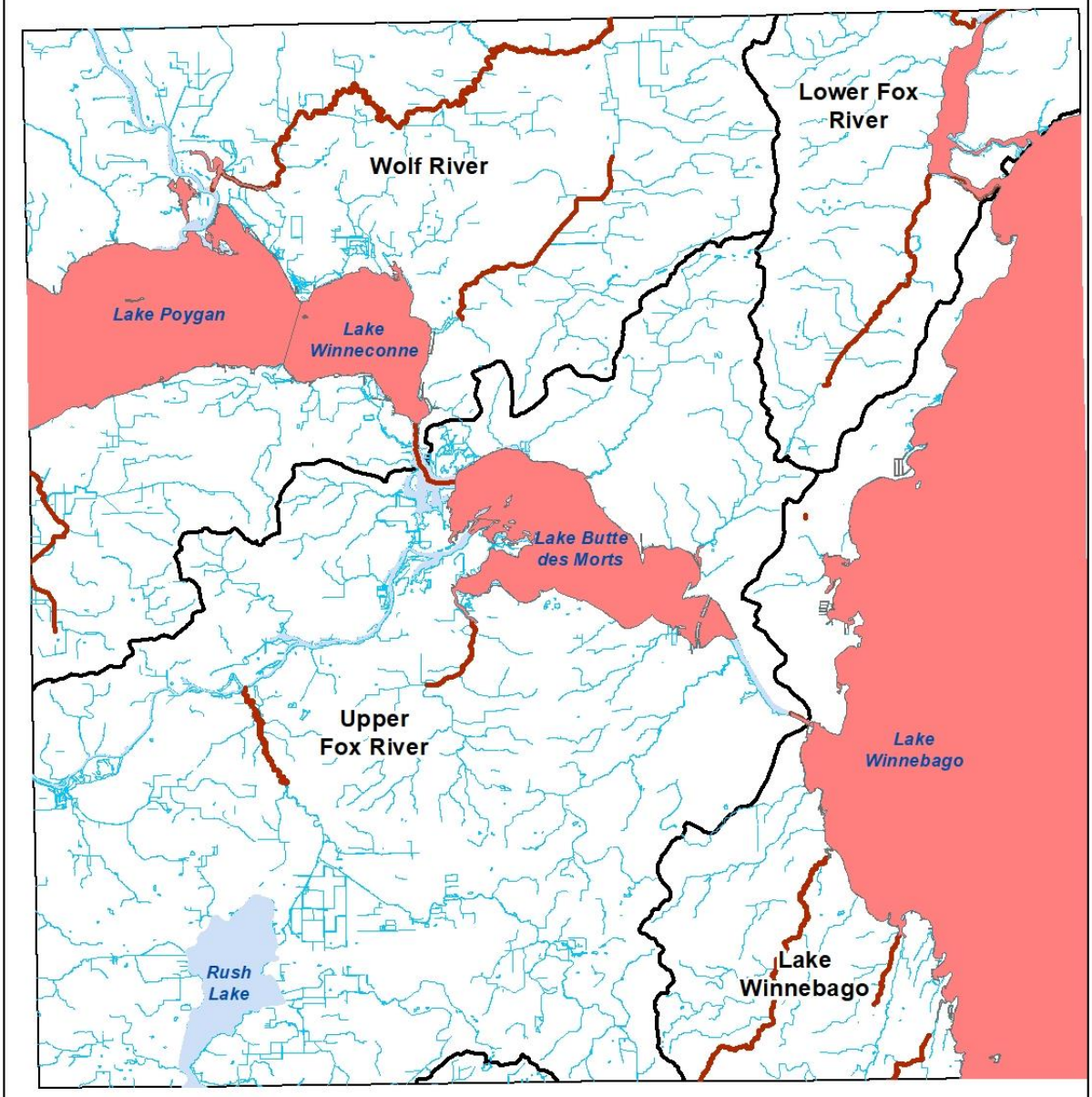
FPP Zoning 2021



Date: 4/16/2020

## 303d Impaired Waters
## Winnebago County, WI

# MAP 11

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Date: 4/17/2020

1 0 1 2 3 Miles

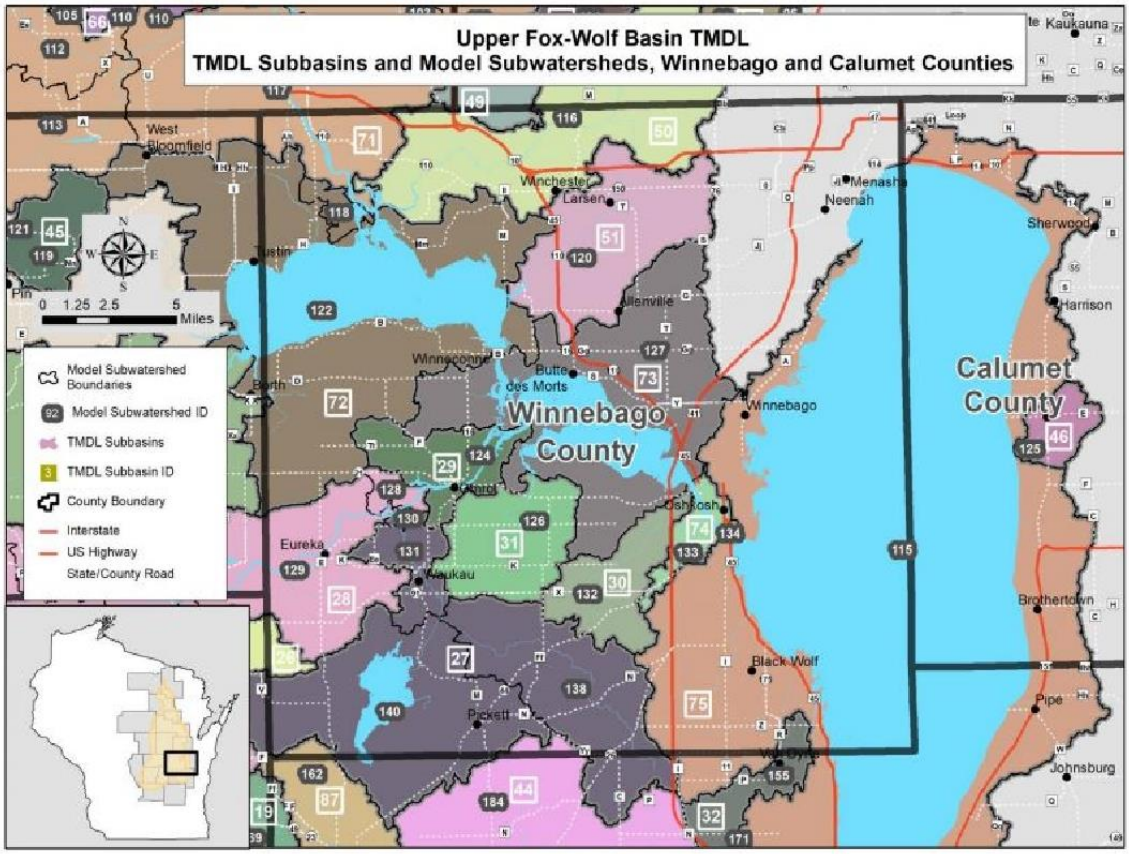
Winnebago County The Wave of the Future

**Legend**

- 303d Impaired Lakes
- 303d Impaired Rivers and Streams
- HUC 8 Watershed Boundary

## Upper Fox Wolf RiverTMDL

# MAP 12



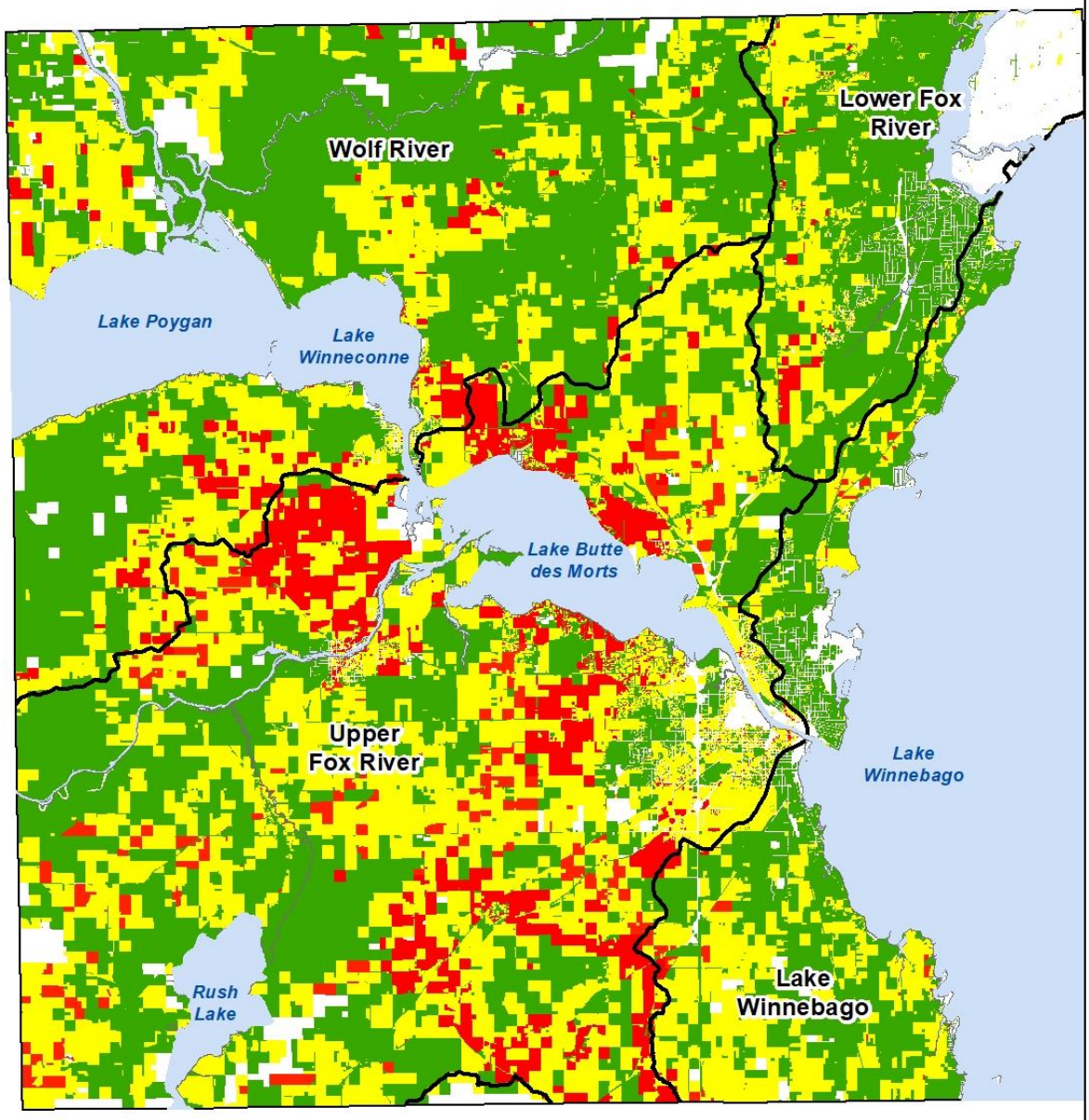

**Map excerpt from DNR Draft Appendix J, Upper Fox Wolf TMDLs**



Date: 4/17/2020

EVAAL (Erosion Vulnerability Assessment for Agricultural Lands) Model
Winnebago County, WI

**MAP 13**






Date: 4/17/2020

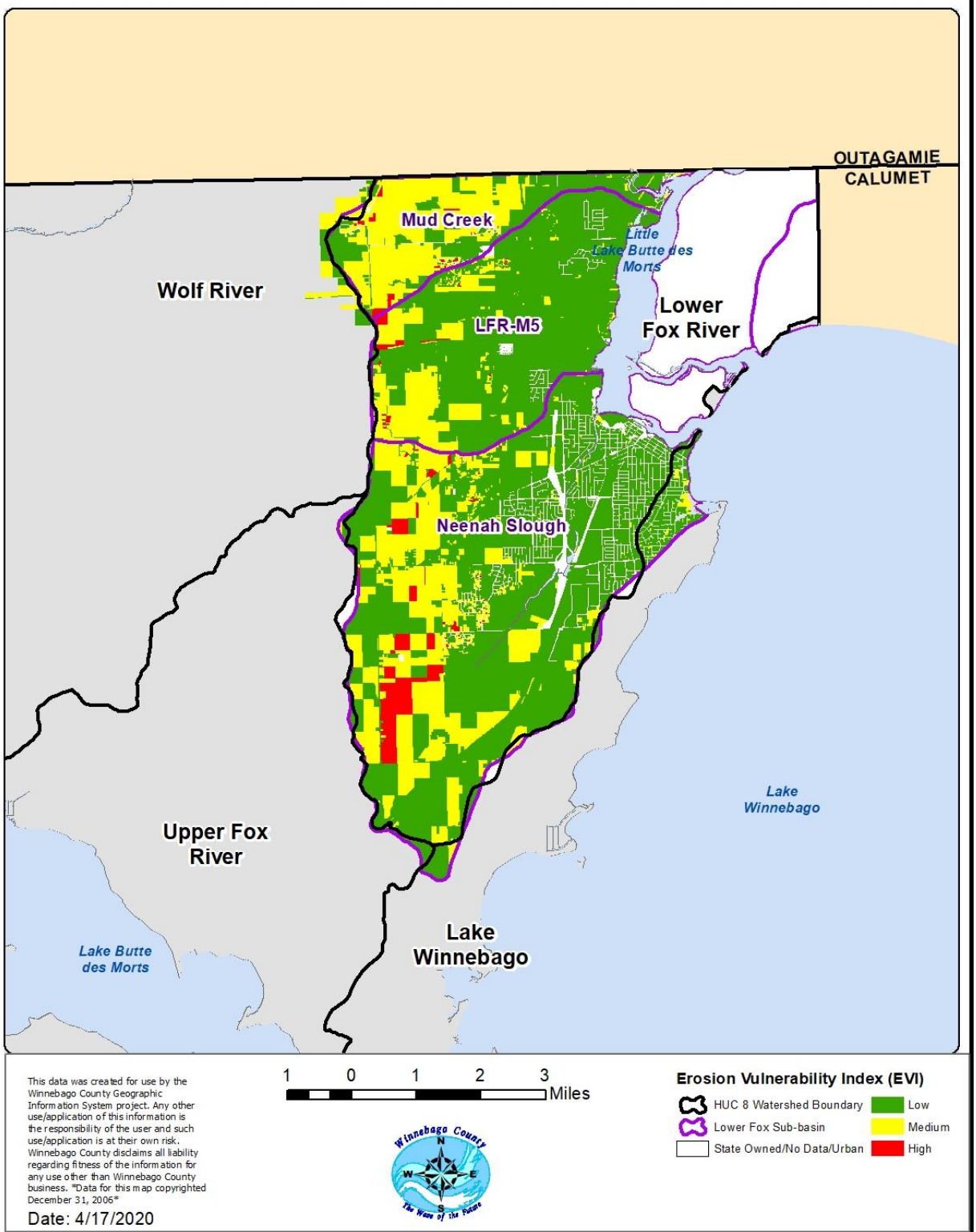
1 0 1 2 3 Miles

**Erosion Vulnerability Index (EVI)**

- Low
- Medium
- High
- State Owned/No Data/Urban
- HUC 8 Watershed Boundary

EVAAL (Erosion Vulnerability Assessment for Agricultural Lands)
Lower Fox Winnebago County, WI

# MAP 14

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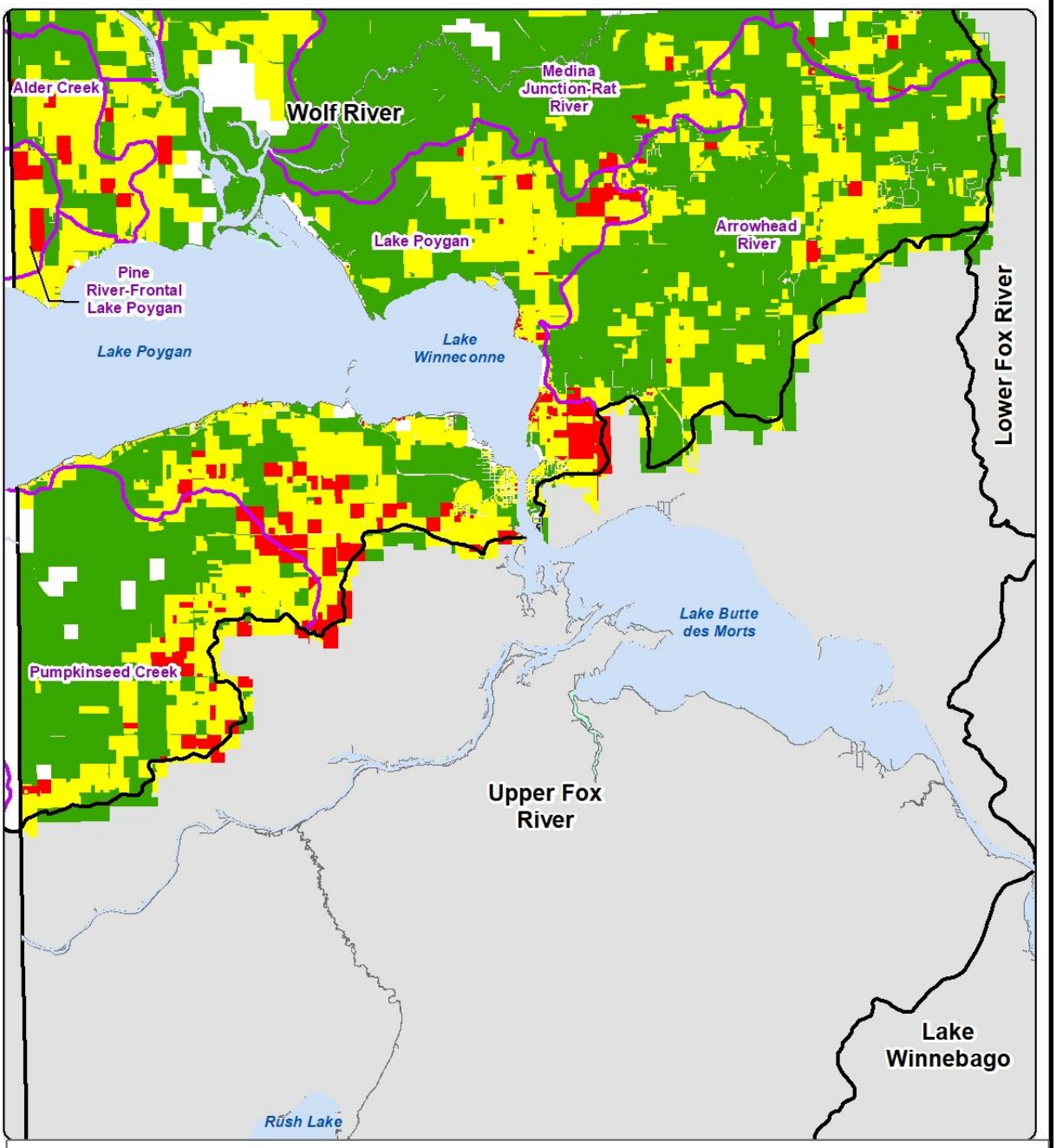
Date: 4/17/2020

**EVAAL (Erosion Vulnerability Assessment for Agricultural Lands)**
**Wolf River Winnebago County, WI**

# MAP 15






Date: 4/17/2020

1 0 1 2 3 Miles

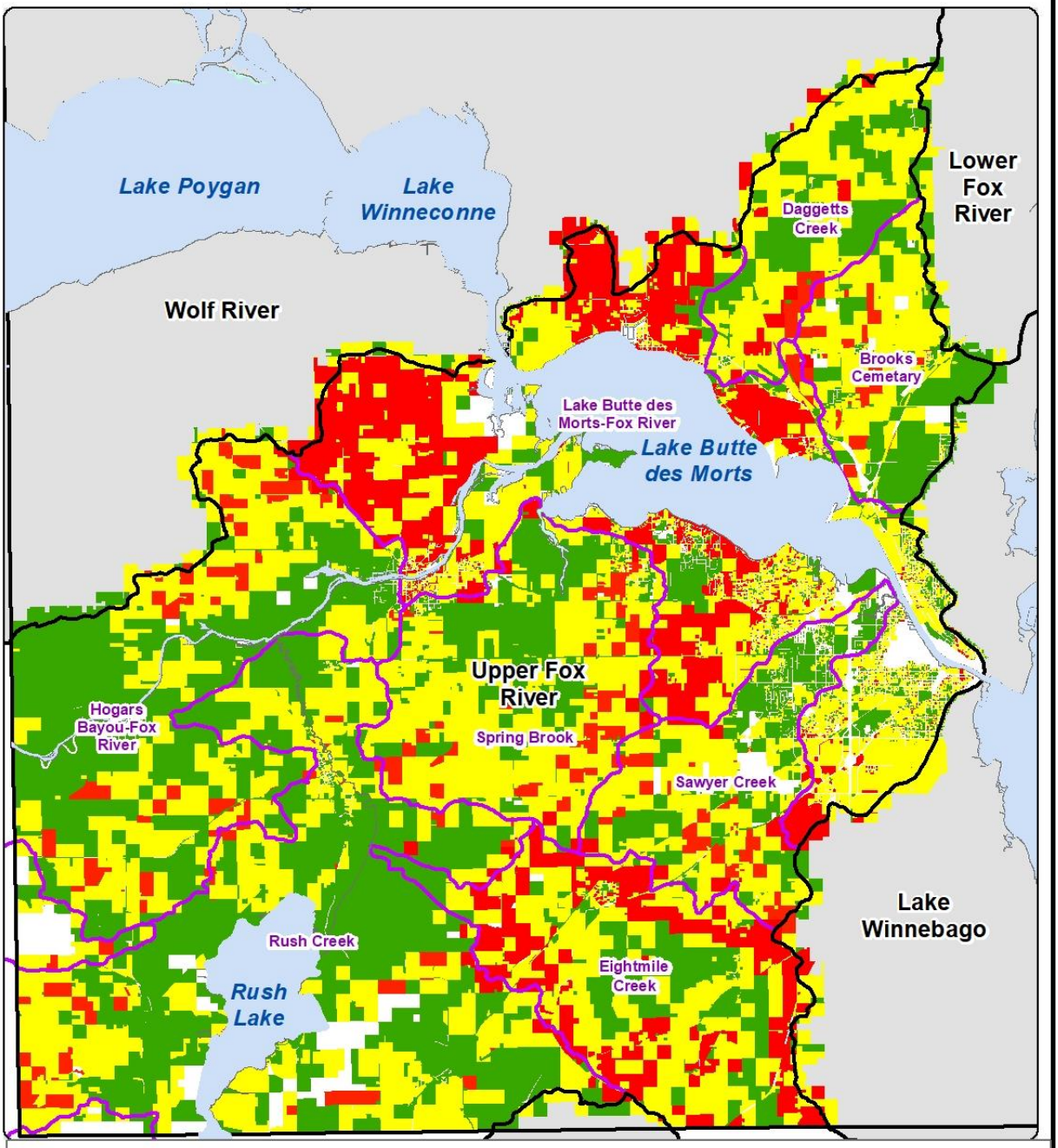
**Erosion Vulnerability Index (EVI)**

- Low
- Medium
- High
- State Owned/No Data/Urban

- HUC 12 Watershed Boundary
- HUC 8 Watershed Boundary

EVAAL (Erosion Vulnerability Assessment for Agricultural Lands)
Upper Fox River Winnebago County, WI

# MAP 16

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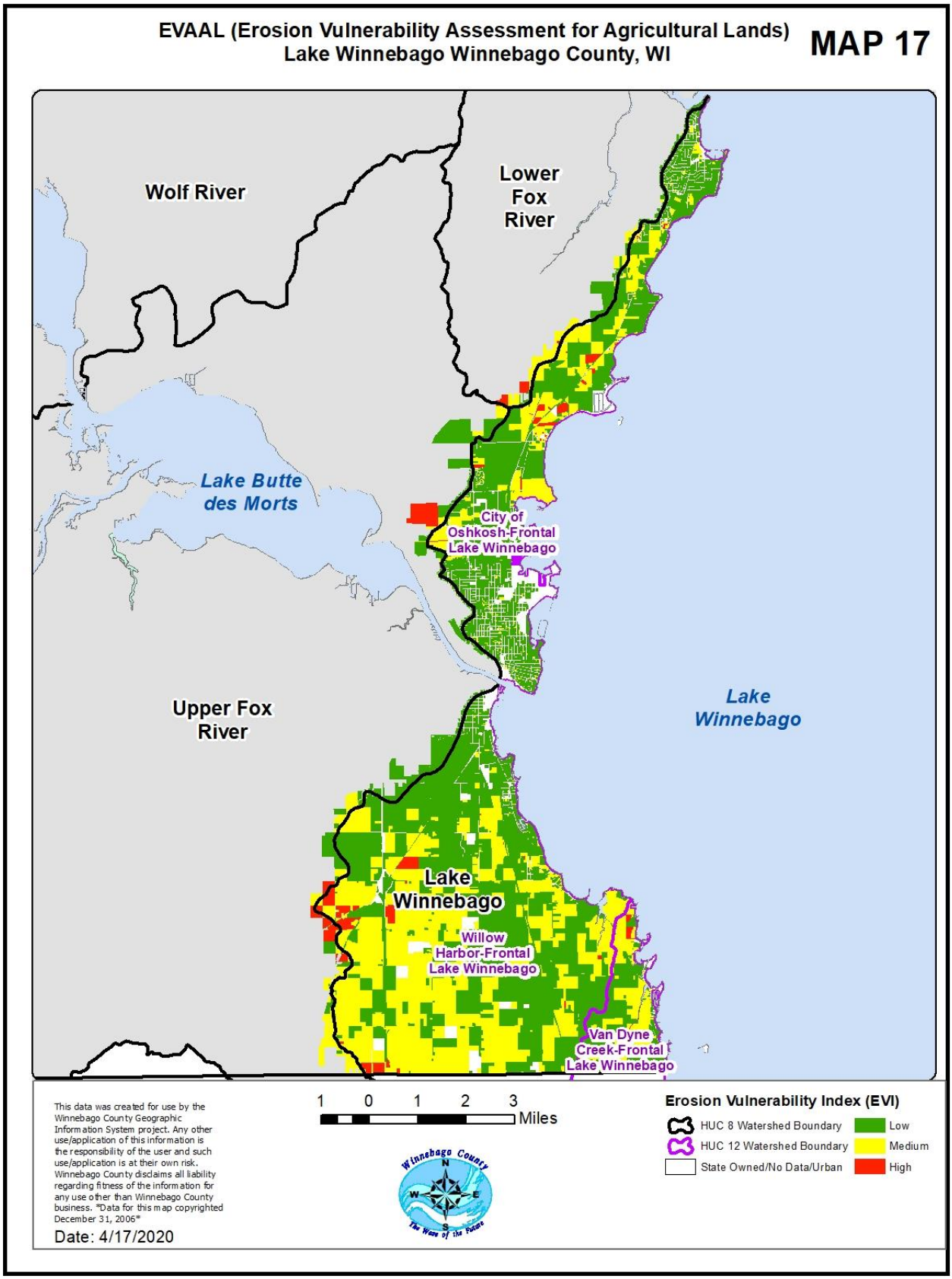
Date: 4/17/2020

1 0 1 2 3 Miles

Erosion Vulnerability Index (EVI)

- HUC 8 Watershed Boundary
- HUC 12 Watershed Boundary
- Low
- Medium
- High
- State Owned/No Data/Urban


EVAAL (Erosion Vulnerability Assessment for Agricultural Lands)
Lake Winnebago Winnebago County, WI
MAP 17
Wolf River
Lower Fox River
Lake Butte des Morts
City of Oshkosh-Frontal Lake Winnebago
Upper Fox River
Lake Winnebago
Lake Winnebago
Willow Harbor-Frontal Lake Winnebago
Van Dyne Creek-Frontal Lake Winnebago
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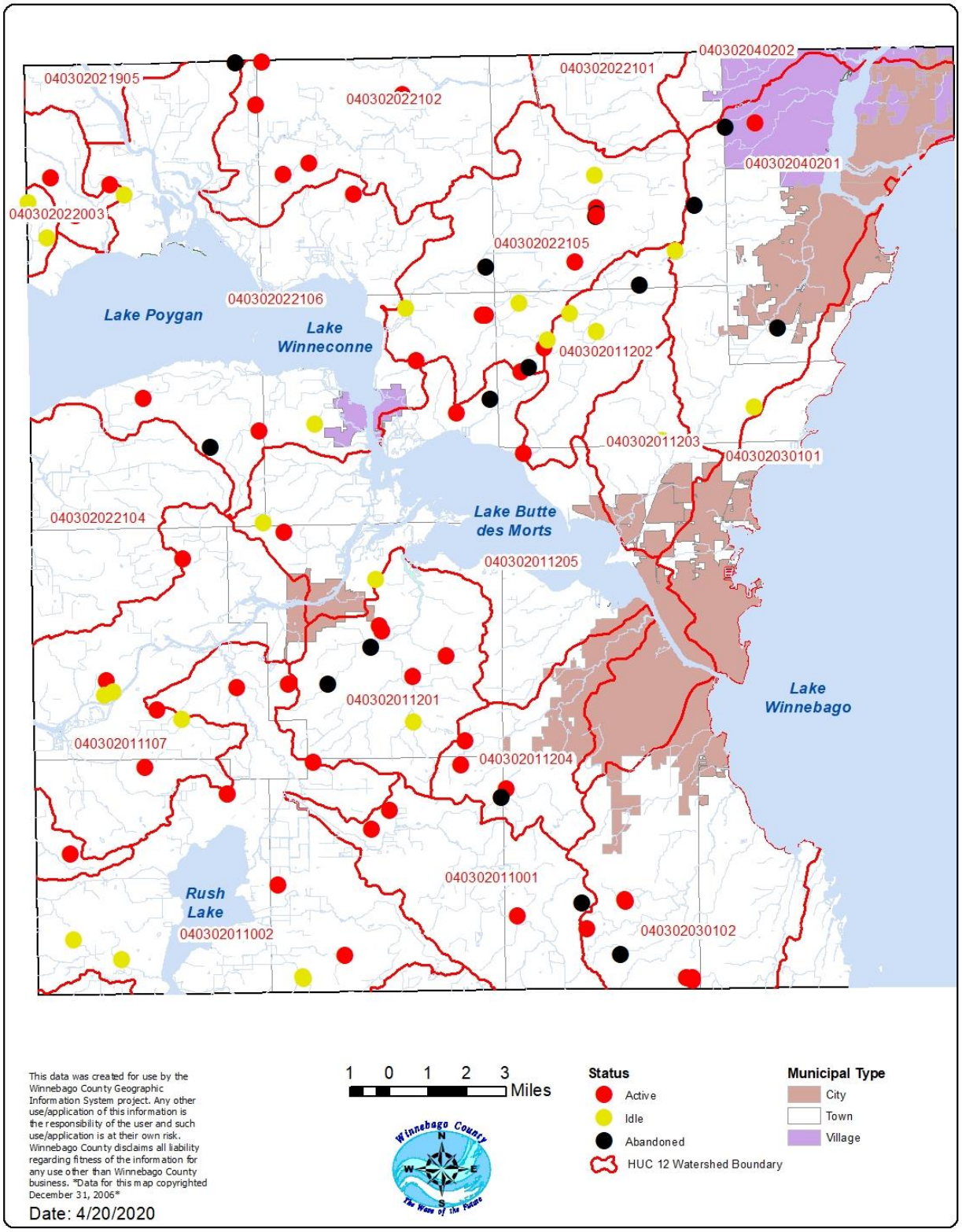
Date: 4/17/2020
1 0 1 2 3
Miles
Winnebago County
The Wave of the Future
Erosion Vulnerability Index (EVI)
HUC 8 Watershed Boundary
HUC 12 Watershed Boundary
State Owned/No Data/Urban
Low
Medium
High

# Manure Storage
# Winnebago County, WI

## MAP 18

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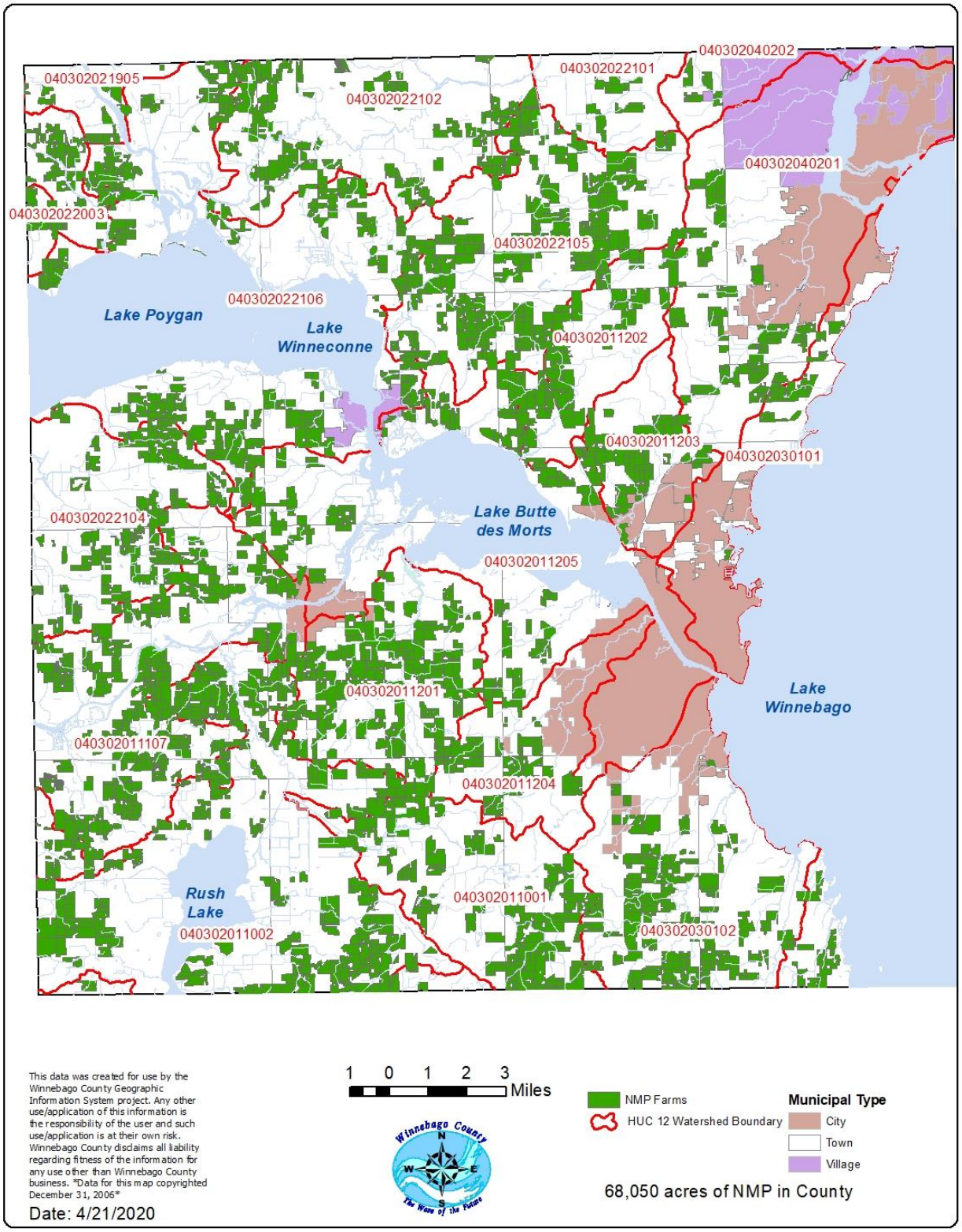
Date: 4/20/2020

# Nutrient Management Plans (NMP)
# Winnebago County, WI

## MAP 19

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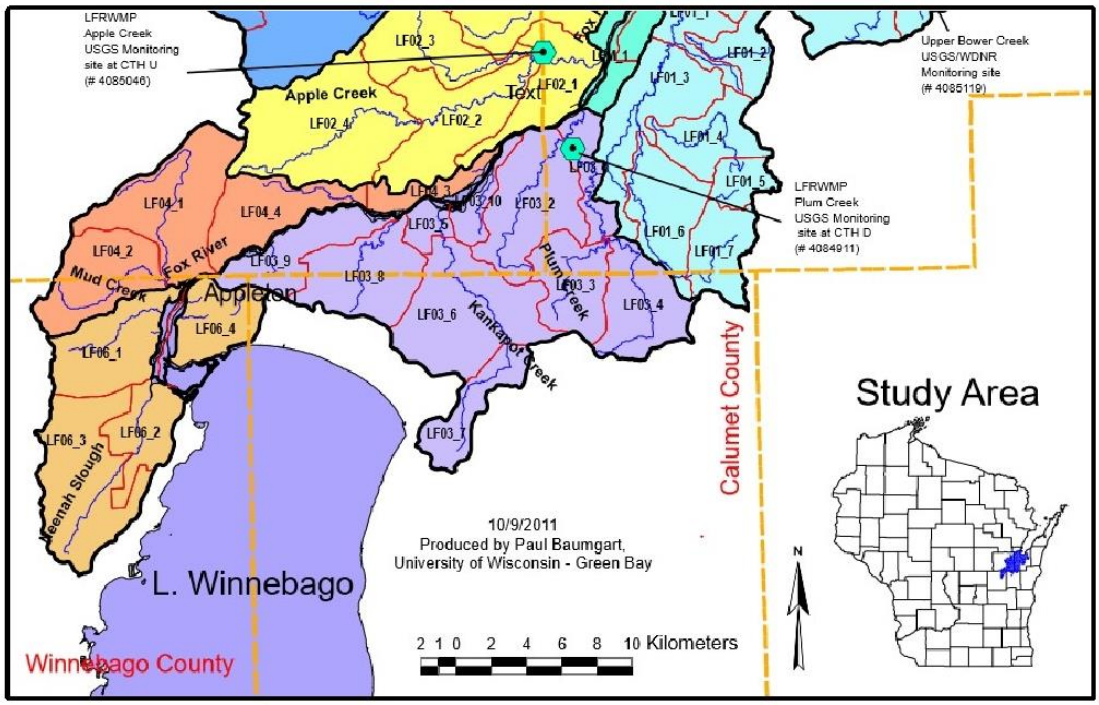
Date: 4/21/2020

## Lower Fox HUC 12 Sub-basins
## Baseline TMDL TP & Sediment Loss with Reduction Goals

**MAP 20**




Source: Wisconsin DNR Communication and Lower Fox TMDL report

| Subbasin | Area (acres) | Baseline TP (lb/ac/yr) | TMDL TP % reduction | TP Target (lb/ac/yr) | | Baseline Sed (tons/ac/yr) | TMDL Sed % reduction | Sed Target (tons/ac/yr) |
|---|---|---|---|---|---|---|---|---|
| LF060100 | 1615.50 | 3.31 | 0.67 | 1.10 | | 2.72 | 0.43 | 1.54 |
| LF060200 | 119.93 | 2.92 | 0.67 | 0.97 | | 1.99 | 0.43 | 1.13 |
| LF060300 | 5923.08 | 3.12 | 0.67 | 1.04 | | 2.46 | 0.43 | 1.40 |
| LF060400 | 5.67 | 2.30 | 0.00 | 2.30 | | 1.52 | 0.00 | 1.52 |



Date: 4/22/2020

# APPENDIX D: TABLES & CHARTS

## Table 1: 2018 Impaired Waters – Winnebago County

| Official Name (Click for Details) | Local Name (Click for Map) | Start Mile | End Mile | Water Type | County | Pollutant | Impairment | Status |
|---|---|---|---|---|---|---|---|---|
| Rat River | Rat River | 0.00 | 13.14 | River | Winnebago | Unknown Pollutant | Elevated Water Temperature | 303d Listed |
| Pumpkinseed Creek | Pumpkinseed Creek | 0.00 | 3.00 | River | Waushara, Winnebago | Total Phosphorus | Degraded Biological Community | TMDL Development |
| Arrowhead River | Arrowhead River | 0.00 | 6.50 | River | Winnebago | Total Phosphorus | Degraded Biological Community | TMDL Development |
| Lake Winneconne | Winneconne Lake | | | Lake | Winnebago | Total Phosphorus | Eutrophication, Excess Algal Growth | TMDL Development |
| Spring Brook | Spring Brook | 0.93 | 3.13 | River | Winnebago | Total Phosphorus | High Phosphorus Levels | TMDL Development |
| Lake Butte des Morts | Lake Butte Des Morts | | | Lake | Winnebago | Total Phosphorus | Low DO, Eutrophication, Excess Algal Growth | TMDL Development |
| Neenah Slough | Neenah Slough | 0.00 | 2.77 | River | Winnebago | Total Phosphorus | Low DO | TMDL Approved |
| Mud Creek | Mud Creek | 0.00 | 3.71 | River | Outagamie, Winnebago | Total Phosphorus | Degraded Habitat | TMDL Approved |
| Pumpkinseed Creek | Pumpkinseed Creek | 3.00 | 6.12 | River | Waushara, Winnebago | Total Phosphorus | Degraded Biological Community | TMDL Development |
| Waukau Creek | Waukau Creek | 0.00 | 4.22 | River | Winnebago | Total Phosphorus | Impairment Unknown | TMDL Development |
| Lake Poygan | Poygan Lake | | | Lake | Waushara, Winnebago | Total Phosphorus | High Phosphorus Levels, Excess Algal Growth | TMDL Development |
| Rat River | Rat River | 0.00 | 13.14 | River | Winnebago | Total Phosphorus | Low DO | TMDL Development |
| Wolf River | Wolf River-Main Stem | 0.00 | 9.45 | River | Winnebago | Total Phosphorus | Low DO | TMDL Development |
| Neenah Slough | Neenah Slough | 3.55 | 6.12 | River | Winnebago | Total Phosphorus | Low DO, Degraded Biological Community | TMDL Approved |
| Fox River | Lower Fox River (Appleton Dam | 32.18 | 40.09 | River | Outagamie, Winnebago | Total Phosphorus | Low DO | TMDL Approved |

| Official Name (Click for Details) | Local Name (Click for Map) | Start Mile | End Mile | Water Type | County | Pollutant | Impairment | Status |
|---|---|---|---|---|---|---|---|---|
| | To L. Winnebago Outlet) | | | | | | | |
| Pages Slough | Pages Slough (L. Poygan) | | | Lake | Winnebago | Total Phosphorus | Eutrophication | TMDL Development |
| Rat River | Rat River | 13.14 | 24.81 | River | Outagamie, Winnebago | Total Phosphorus | Low DO | TMDL Development |
| Lake Winnebago | Lake Winnebago | | | Lake | Calumet, Fond Du Lac, Winnebago | Total Phosphorus | Low DO, Eutrophication, Excess Algal Growth | TMDL Development |
| Neenah Slough | Neenah Slough | 2.77 | 3.54 | River | Winnebago | Total Phosphorus | Low DO | TMDL Approved |
| Unnamed | Paukotuk-Candlish Creek | 0.00 | 7.92 | River | Winnebago | Total Phosphorus | Impairment Unknown | TMDL Development |
| Unnamed | Local Water | 0.00 | 1.80 | River | Winnebago | Total Phosphorus | Degraded Biological Community | TMDL Development |
| Lake Winneconne | Winneconne Lake | | | Lake | Winnebago | Mercury | NA | Pollutant Removed |
| Unnamed | Winnebago County Community Swim Area | 0.00 | 0.06 | Inland Beach | Winnebago | E. coli | Recreational Restrictions - Pathogens | 303d Listed |
| Lake Butte des Morts | Lake Butte Des Morts | | | Lake | Winnebago | Mercury | NA | Pollutant Removed |
| Wolf River | Wolf River-Main Stem | 0.00 | 9.45 | River | Winnebago | Mercury | NA | Pollutant Removed |
| Lake Winnebago | Lake Winnebago | | | Lake | Calumet, Fond Du Lac, Winnebago | Mercury | NA | Pollutant Removed |
| Lake Butte des Morts | Lake Butte Des Morts | | | Lake | Winnebago | PCBs | NA | Pollutant Removed |
| Neenah Slough | Neenah Slough | 0.00 | 2.77 | River | Winnebago | PCBs | PCBs Contaminated Fish Tissue | 303d Listed |
| Lake Winneconne | Winneconne Lake | | | Lake | Winnebago | PCBs | NA | Pollutant Removed |
| Wolf River | Wolf River-Main Stem | 9.45 | 42.00 | River | Waupaca, Winnebago | PCBs | NA | Water Delisted |
| Wolf River | Wolf River-Main Stem | 0.00 | 9.45 | River | Winnebago | PCBs | NA | Pollutant Removed |

| Official Name (Click for Details) | Local Name (Click for Map) | Start Mile | End Mile | Water Type | County | Pollutant | Impairment | Status |
|---|---|---|---|---|---|---|---|---|
| Lake Poygan | Poygan Lake | | | Lake | Waushara, Winnebago | PCBs | NA | Pollutant Removed |
| Neenah Slough | Neenah Slough | 3.55 | 6.12 | River | Winnebago | PCBs | PCBs Contaminated Fish Tissue | 303d Listed |
| Fox River | Lower Fox River (Appleton Dam To L. Winnebago Outlet) | 32.18 | 40.09 | River | Outagamie, Winnebago | PCBs | PCBs Contaminated Fish Tissue | 303d Listed |
| Neenah Slough | Neenah Slough | 2.77 | 3.54 | River | Winnebago | PCBs | PCBs Contaminated Fish Tissue | 303d Listed |
| Lake Winnebago | Lake Winnebago | | | Lake | Calumet, Fond Du Lac, Winnebago | PCBs | NA | Pollutant Removed |
| Neenah Channel | Neenah Channel | | | Bay/Harbor | Winnebago | PCBs | PCBs Contaminated Fish Tissue | 303d Listed |
| Lake Butte des Morts | Lake Butte Des Morts | | | Lake | Winnebago | Sediment/Total Suspended Solids | Eutrophication | TMDL Development |
| Mud Creek | Mud Creek | 0.00 | 3.71 | River | Outagamie, Winnebago | Sediment/Total Suspended Solids | Degraded Habitat | TMDL Approved |
| Lake Winneconne | Winneconne Lake | | | Lake | Winnebago | Sediment/Total Suspended Solids | Degraded Habitat | TMDL Development |
| Van Dyne Creek | Van Dyne Creek | 1.00 | 9.11 | River | Fond Du Lac, Winnebago | Sediment/Total Suspended Solids | Degraded Habitat | TMDL Development |
| Lake Poygan | Poygan Lake | | | Lake | Waushara, Winnebago | Sediment/Total Suspended Solids | Degraded Habitat, Turbidity | TMDL Development |
| Wolf River | Wolf River-Main Stem | 0.00 | 9.45 | River | Winnebago | Sediment/Total Suspended Solids | Degraded Habitat | TMDL Development |
| Pages Slough | Pages Slough (L. Poygan) | | | Lake | Winnebago | Sediment/Total Suspended Solids | Degraded Habitat, Turbidity | TMDL Development |
| Lake Winnebago | Lake Winnebago | | | Lake | Calumet, Fond Du Lac, Winnebago | Sediment/Total Suspended Solids | Turbidity | TMDL Development |
| Fox River | Fox River (At Oshkosh) | 57.76 | 58.25 | River | Winnebago | PAHs | Acute Aquatic Toxicity | 303d Listed |
| Mud Creek | Mud Creek | 0.00 | 3.71 | River | Outagamie, Winnebago | Chloride | Chronic Aquatic Toxicity, Acute Aquatic Toxicity | 303d Listed |

Source: https://dnr.wi.gov/water/impairedsearch.aspx

**Chart 1**

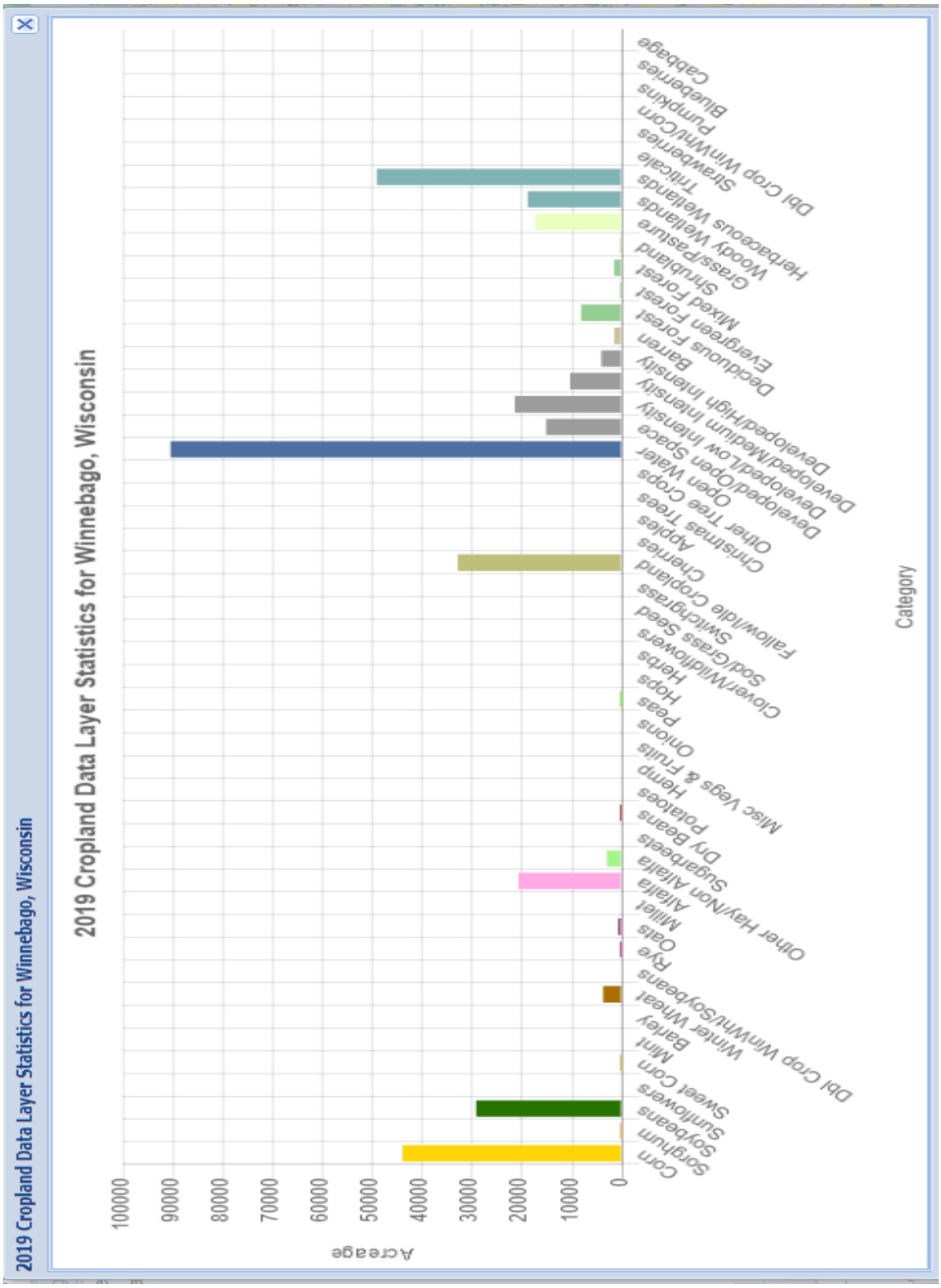

2019 Cropland Data Layer Statistics for Winnebago, Wisconsin
2019 Cropland Data Layer Statistics for Winnebago, Wisconsin
Acreage
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
Category
Corn
Sorghum
Soybeans
Sunflowers
Sweet Corn
Mint
Barley
Winter Wheat
Dbl Crop WinWht/Soybeans
Rye
Oats
Millet
Alfalfa
Other Hay/Non Alfalfa
Sugarbeets
Dry Beans
Potatoes
Hemp
Misc Vegs & Fruits
Onions
Peas
Hops
Herbs
Clover/Wildflowers
Sod/Grass Seed
Switchgrass
Fallow/Idle Cropland
Apples
Christmas Trees
Other Tree Crops
Open Water
Developed/Open Space
Developed/Low Intensity
Developed/Med Intensity
Developed/High Intensity
Barren
Deciduous Forest
Evergreen Forest
Mixed Forest
Shrubland
Grass/Pasture
Woody Wetlands
Herbaceous Wetlands
Strawberries
Triticale
Pumpkins
Dbl Crop WinWht/Corn
Blueberries
Cabbage

**Table 2**

Upper Fox Wolf River TMDL - Winnebago County Watersheds

Priority Ranking - Highest to Lowest TP loading HUC 12s

| HUC12 | TMDL Subbasin | TP Baseline (lbs./ac/yr) | % Reduction | TP Target (lbs./ac/yr) | | TSS Baseline (tons/ac/yr) | % Reduction | TSS Target (tons/ac/yr) |
|---|---|---|---|---|---|---|---|---|
| 040302030302 | 75 | 3.05 | 83% | 0.52 | | 2.28 | 0% | 2.27 |
| 040302011002 | 27 | 2.76 | 83% | 0.47 | | 2.04 | 58% | 0.86 |
| 040302030301 | 75 | 2.71 | 83% | 0.46 | | 1.99 | 33% | 1.33 |
| 040302030101 | 75 | 2.65 | 83% | 0.45 | | 1.96 | 0% | 1.96 |
| 040302030303 | 75 | 2.58 | 83% | 0.44 | | 2.08 | 13% | 1.81 |
| 040302022101 | 50 | 2.57 | 83% | 0.44 | | 2.23 | 1% | 2.2 |
| 040302030103 | 75 | 2.55 | 83% | 0.43 | | 1.56 | 22% | 1.22 |
| 040302011001 | 27 | 2.54 | 83% | 0.43 | | 1.92 | 58% | 0.81 |
| 040302030305 | 75 | 2.45 | 83% | 0.42 | | 1.17 | 0% | 1.17 |
| 040302011205 | 29,73,74 | 2.41 | 83% | 0.41 | | 1.98 | 4% | 1.89 |
| 040302030102 | 75 | 2.38 | 83% | 0.41 | | 1.68 | 1% | 1.67 |
| 040302011204 | 30 | 2.32 | 83% | 0.40 | | 1.79 | 47% | 0.95 |
| 040302022006 | 28 | 2.27 | 83% | 0.39 | | 1.00 | 5% | 0.94 |
| 040302030304 | 75 | 2.15 | 83% | 0.37 | | 1.51 | 0% | 1.51 |
| 040302011201 | 31 | 2.09 | 83% | 0.36 | | 1.55 | 50% | 0.78 |
| 040302011203 | 73 | 2.09 | 83% | 0.36 | | 1.66 | 0% | 1.66 |
| 040302021901 | 71 | 2.08 | 83% | 0.36 | | 1.69 | 36% | 1.07 |
| 040302011106 | 24,26,28 | 2.02 | 83% | 0.34 | | 1.62 | 42% | 0.93 |
| 040302011202 | 73 | 2.00 | 83% | 0.34 | | 1.57 | 1% | 1.57 |
| 040302022102 | 50 | 1.89 | 83% | 0.32 | | 1.49 | 19% | 1.2 |
| 040302022105 | 51 | 1.85 | 83% | 0.32 | | 1.41 | 65% | 0.49 |
| 040302022104 | 72 | 1.72 | 83% | 0.29 | | 1.09 | 0% | 1.09 |
| 040302011107 | 28,29 | 1.7 | 83% | 0.29 | | 1.32 | 39% | 0.8 |
| 040302021904 | 71 | 1.67 | 83% | 0.28 | | 1.26 | 35% | 0.82 |
| 040302022106 | 71,72 | 1.67 | 83% | 0.28 | | 0.97 | 5% | 0.92 |
| 040302021903 | 71 | 1.65 | 83% | 0.28 | | 1.31 | 35% | 0.85 |
| 040302021902 | 71 | 1.64 | 83% | 0.28 | | 1.16 | 38% | 0.72 |
| 040302021906 | 71 | 1.46 | 83% | 0.25 | | 0.7 | 35% | 0.45 |
| 040302010805 | 28 | 1.15 | 83% | 0.20 | | 1.00 | 41% | 0.59 |
| 040302022103 | 72 | 1.13 | 83% | 0.19 | | 0.82 | 1% | 0.81 |
| 040302011104 | 28 | 1.12 | 83% | 0.19 | | 0.68 | 41% | 0.40 |
| 040302021905 | 71 | 1.04 | 83% | 0.18 | | 0.62 | 35% | 0.4 |
| 040302011105 | 28 | 1.00 | 83% | 0.17 | | 0.56 | 40% | 0.34 |

Source: https://dnr.wi.gov/topic/TMDLs/documents/UFW/DraftAppendixJ.pdf