



# LAND AND WATER RESOURCE MANAGEMENT PLAN

**2025-2036**



# ACKNOWLEDGEMENTS

The development of this plan is a result of the dedicated contributions from members of the public, staff and other conservation partners. Special thanks are extended to the following people:

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## Abbreviations/Acronyms

AEA	Agricultural Enterprise Area
AIS	Aquatic Invasive Species
BMP	Best Management Practice
CAC	Citizen Advisory Committee
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CSP	Conservation Stewardship Program
DALC	Driftless Area Land Conservancy
DATCP	Department of Agriculture, Trade, and Consumer Protection
DNR	Wisconsin Department of Natural Resources
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ERW	Exceptional Resource Waters
EWP	Emergency Watershed Protection Program
FPP	Farmland Preservation Plan
FSA	Farm Service Agency
FWS	Fish and Wildlife Service
GIS	Geographic Information Systems
GRP	Grassland Reserve Program
IBI	Index of Biological Integrity
LCPZD	Lafayette County Land Conservation and Planning & Zoning Department
LWCB	Land and Water Conservation Board
LWRM	Land and Water Resource Management Plan
MFL	Managed Forest Law
NMP	Nutrient Management Plan
NOD	Notice of Discharge
NOI	Notice of Intent to Issue a Notice of Discharge
NRCS	Natural Resource Conservation Service
SWWRPC	Southwest Wisconsin Regional Planning Commission
TSS	Total Suspended Solids
TMDL	Total Maximum Daily Limits
USRWA	Upper Sugar River Watershed Association
USDA	United States Department of Agriculture
UWEX	University of Wisconsin Extension
Wis. Adm. Code	Wisconsin Administrative Code
WLI	Working Lands Initiative
WPDES	Wisconsin Pollutant Discharge Elimination System
WRP	Wetland Reserve Program



# Executive Summary

The Lafayette County Land and Water Resource Management (LWRM) Plan addresses soil and water quality concerns using local, state, and federal programs. It is a 10-year (2025 – 2036) action and implementation plan that emphasizes cooperation with partners in Lafayette County with a five-year workplan. The Lafayette County LWRM Plan was written with the assistance of partner agencies, including the Wisconsin Department of Agriculture, Trade and Consumer Protection; Wisconsin Department of Natural Resources; and United States Department of Agriculture - Natural Resources Conservation Service. The input on the plan came from a citizen advisory committee, comprised of individuals who represent a wide array of interests.

The Land Conservation Department staff and a citizen advisory committee (CAC) reviewed the past LWRM plan and evaluated their effectiveness at enhancing conservation and documenting results. Using the resource assessment and information from existing water quality plans along with supplementary data presented through a series of maps as a starting point.

The objectives of the plan are to provide:

- An assessment of the current conditions of land and water resources in Lafayette County.
- An overview of and status report on various land and water conservation implementation programs.
- Regulatory requirements related to land conservation and water quality, including state mandated NR 151 performance standards.
- Monitoring and evaluation methods administered by the LCPZD and other agencies for the purpose of determining conservation needs and documenting responses in natural resources.
- Outreach and education initiatives that will be used to raise awareness of the importance of maintaining and enhancing natural resources.
- An implementation strategy to guide LCPZD in carrying out the recommendations of the plan.

In summary, the LWRM Plan outlines a comprehensive strategy for the implementation of soil and water conservation in Lafayette County from 2025 through 2036. It identifies nine critical goals for carrying out natural resource protection in Lafayette County.

- Reduce soil erosion
- Develop urban and agriculture stakeholder interest
- Ensure effective nutrient and manure management
- Ensure safe drinking water supply
- Address water and soil quality issues in Farmland Preservation Plan and Land Use Plans
- Promote sustainable agriculture and plan for climate change
- Promote restoration and protection of surface water
- Address invasive species
- Promote sustainable forest management

August 8, 2024 – Citizen’s Advisory Committee Meets

February 6, 2025 – Public Hearing regarding the LWRM Plan

TBD – Approval of LWRM Plan by Wisconsin Department of Natural Resources

TBD – Approval by the Lafayette County Land Conservation Committee

April 1, 2025 – Presentation of Plan to Wisconsin Land & Water Conservation Board

TBD – DATCP letter adopting the plan following LWCB recommendations

TBD – Final Adoption of the plan by the Lafayette County Board of Supervisors

# Section 1: Introduction

## Overview

Through Wisconsin Act 27 (1997-1999 Biennial Budget Bill), Chapter 92.10 of the Wisconsin Statutes was amended, creating a county land and water resource management planning program. The impetus behind the program is to develop a locally led process that protects Wisconsin's land and water resources by streamlining administrative and delivery mechanisms, improving decision-making, and making better use of local, state, and federal funds. This plan revises prior plans that were written and approved in 2008 and 2015. It reflects an overall effort to tie together conservation programs, available funding, and other resources to effectively address the land and water resource management issues facing Lafayette County from 2025 through 2036.

Lafayette County's LWRM Plan is intended to complement and coordinate with existing plans rather than replace them. It is an action and implementation plan that emphasizes cooperation among conservation partners. The successful implementation of this plan depends upon many local agencies, landowners, and organizations working together. Moreover, success can only be achieved with continued levels of current staffing and financial resources. Through continued cooperation between the Land Conservation and Planning & Zoning Department (LCPZD) and its partners and stable funding, citizens will be able to enjoy Lafayette County's soil and water resources today and well into the future.

The goals and objectives outlined in the workplan clearly reflect the existing resources in Lafayette County and were developed to specifically meet conservation needs. Previous resource management plans and current county responsibilities factored into the final development of the workplan.

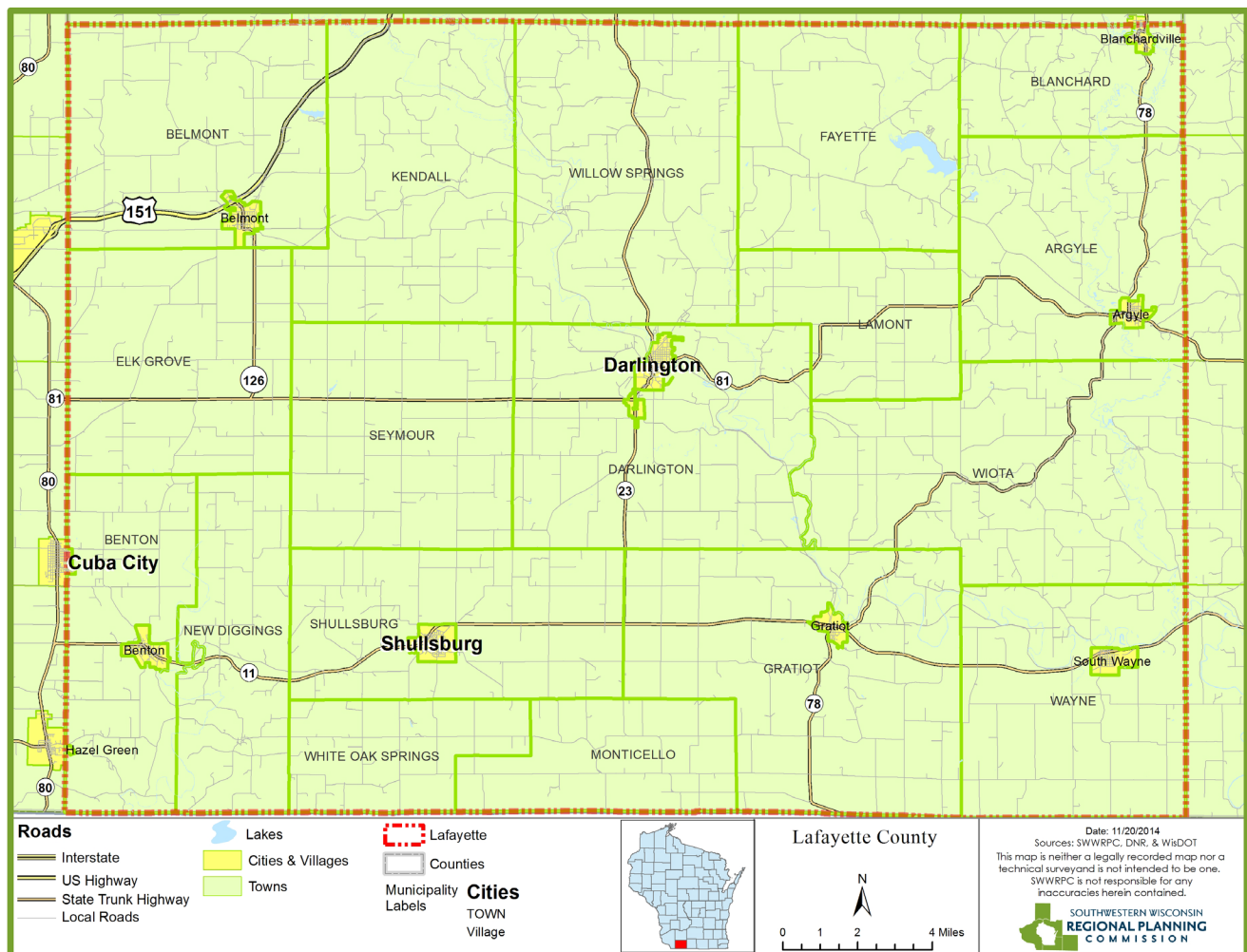


Figure 1: Overview of Lafayette County showing all municipal boundaries.

## Section 2: County Overview and Existing Conditions

### History

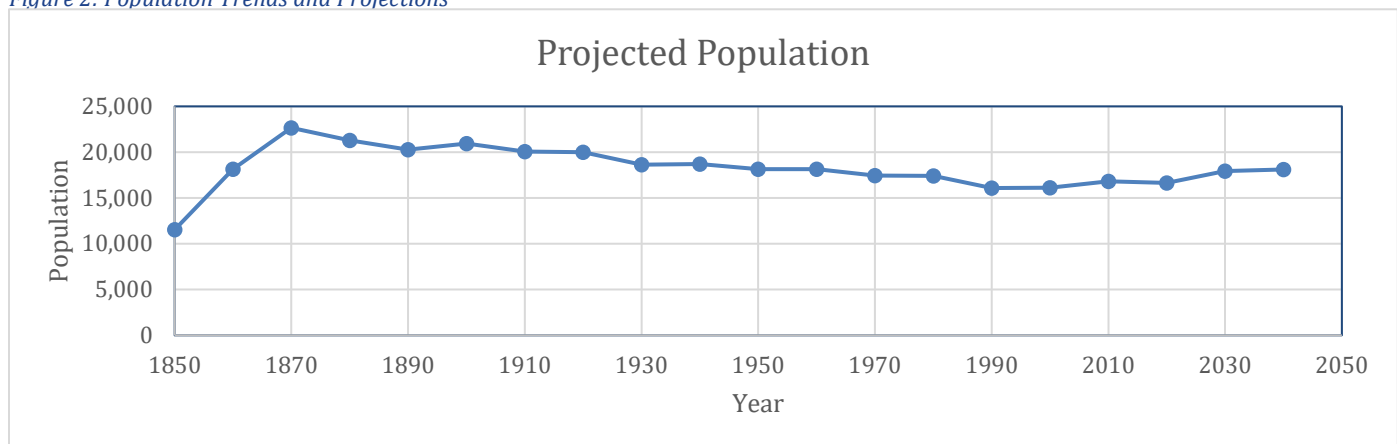
The first settlements developed by permanent occupation in Lafayette County were made during the 1800s and were due to the existence of lead mines. Miners were attracted to the area for its rich deposits of lead in the southwest corner of the county, however, there remains little records to determine who first settled in the so called “lead region” of what was known as the Michigan Territory at the time. Native Americans were believed to have mined lead in the county long before any settlers arrived and sold to early traders. Lafayette county had abundant wildlife and streams that were full of fish, therefore very little farming was done by the miners in the beginning. However, immigrant farmers began to move into the area following the opening of the Erie Canal and the end of the Blackhawk War, around 1832.

In 1835, the Territorial Governor designated the village of Belmont as the place for the first session of the Legislature of the Wisconsin Territory. However, the Legislature selected Madison, WI as the permanent capital in 1836. In 1846, Lafayette County split from Iowa County and was named after, Marquis de Lafayette, a French nobleman and general in the Continental Army during the Revolutionary War.

The first railroad came through Lafayette County in 1857 and provided the means for shipping goods and agricultural products to and from the area. Wheat, small grains, corn, and flax were the main crops at the time. Farming became increasingly popular due to highly productive prairie soils cultivated by early settlers. Gradually, the raising of beef and hogs for market took over. By the 1900s, however, dairy farming became the main source of income and the acres in corn, oats, hay, and pasture increased.

In 1870, a peak population of 22,659 people lived in Lafayette County, but with the discovery of valuable minerals in other regions the population waned to 21,330 in 1880. Lafayette County’s population has slowly diminished since 1870 to 16,836 in 2010 and diminished more by 2020 with a population of 16,646. Darlington is the county seat with a population of 2,462 (2020 Census). Cuba City (mostly in Grant County) and Shullsburg are two additional cities in Lafayette County. The population has been slowly rising since 1990 and according to the Wisconsin Department of Administration the population is expected to keep increasing (Figure 2).

Figure 2: Population Trends and Projections



Source: U.S. Census Bureau, 1850 – 2010 data, and Department of Administration, 2020 - 2040 data



## Geography and Topography

Lafayette County is located within southwest Wisconsin and is surrounded by Grant, Green, and Iowa Counties in Wisconsin, and Stephenson and Jo Daviess County in Illinois. Lafayette County has 18 townships (Figure 1) and covers a surface area of approximately 635 square miles, or 406,400 acres.

Lafayette County lies within the unglaciated region of Wisconsin, in the Driftless area characterized by rolling ridges and steep-sided valleys. The Driftless Area geology is characterized by both sandstone and dolomite outcrops that create a complex scenic landscape. Most of the land is in agriculture, with woodlots on the steeper slopes and cropland in the valley floors and on ridge tops. The Platte Mounds in the northwestern part of Lafayette County are the most prominent topographical features in the county. These mounds rise from 180 to 300 feet above the ground and are 1,200 to 1,500 feet above sea level. The valley of the Pecatonica River, in contrast, is about 800 to 860 feet above sea level. The bottom of this valley seldom exceeds one-half mile in width, and it is the widest where the river leaves the County in Wayne Township (Figure 3).

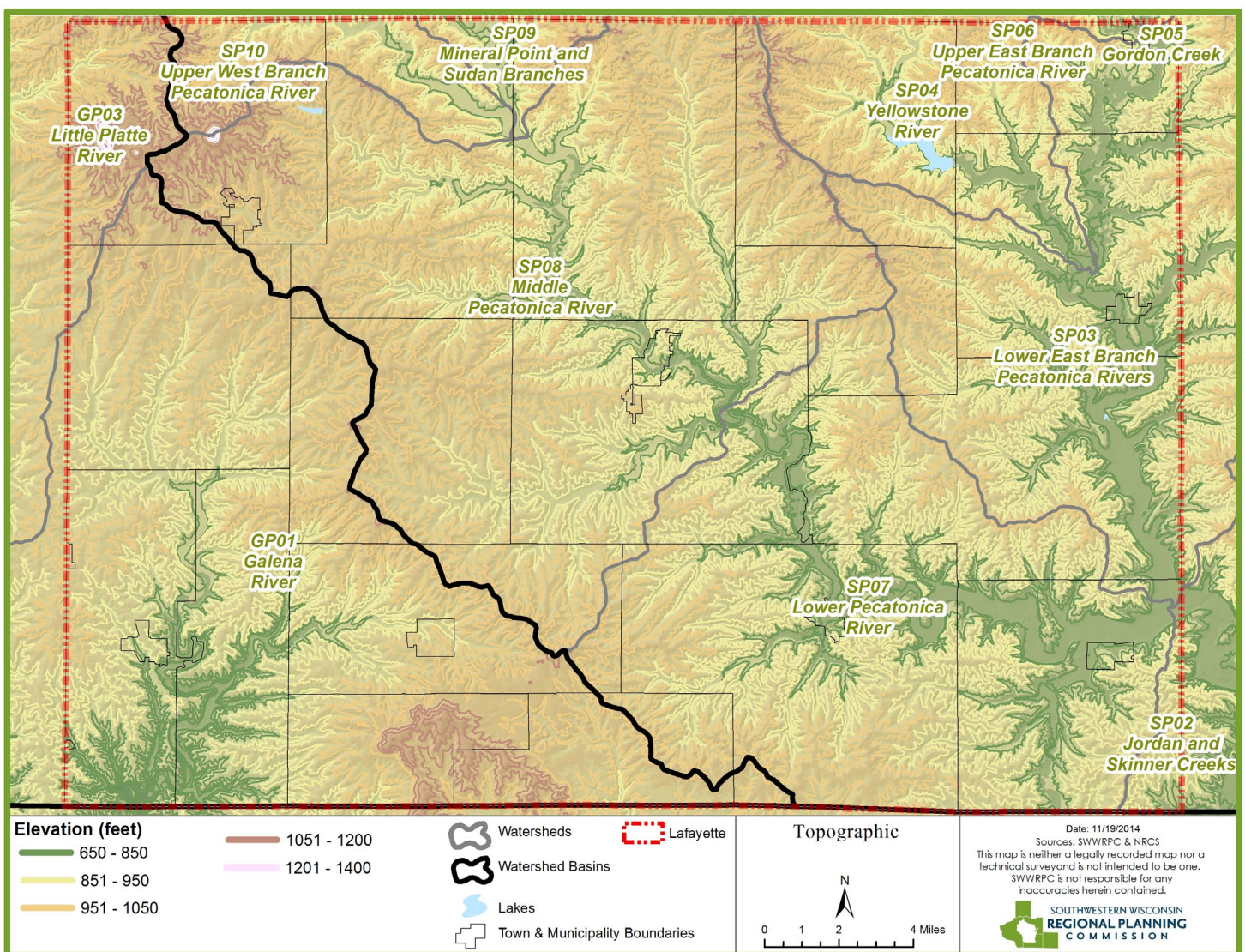


Figure 3: Topographic Map



# Existing Land Use and Agriculture Trends

## Overall Trends:

Lafayette County is arguably the most agriculture-dependent county in the state. Per the Lafayette County Economic Development Department, Agriculture accounts for 85% of total business sales and 54% of all employment in the county.

Dairy production and cheese processing form the twin pillars of the county’s economy. Agriculture has played a huge role in Lafayette County’s history and is expected to remain so into the future albeit with some challenges.

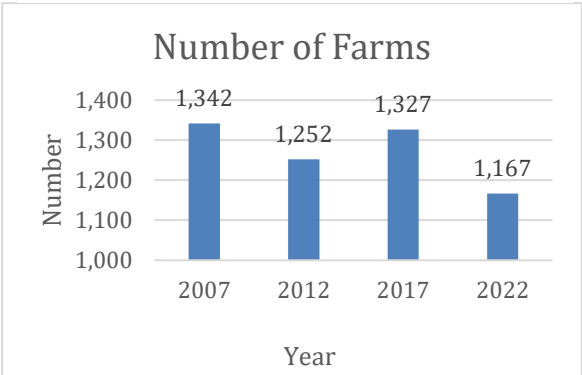
A trend throughout the whole state continues as dairy farms overall continue to decrease. Based off statistics from the USDA Census of Agriculture in 2022 and 2017, Lafayette County has fell from 223 dairy farms to 146 farms, but still remains 8<sup>th</sup> in most dairy farms in the state. At this point, the existing farms that remain continue to grow in size in order to maximize efficiency and remain operational according to personal accounts from LCPZD staff.

Looking at figures on the right side of this page, we can see what agriculture is trending towards in Lafayette County.

- Number of total farms are on a decreasing trend (Figure 4)
- Land in farms are on a decreasing trend (Figure 5)
- Average farm acreage are on an increasing trend (Figure 6)
- Livestock numbers are on an increasing trend (Figure 7)

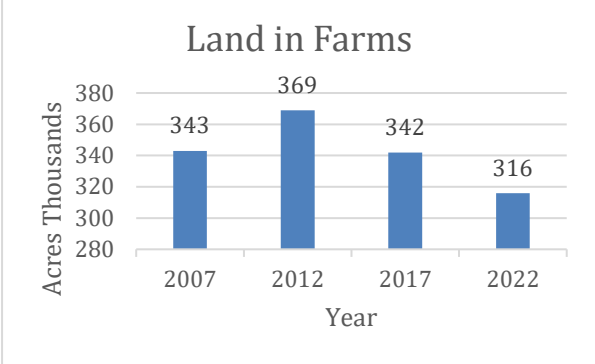
In addition, per the 2024 Wisconsin Agricultural Statistics (produced by USDA-NASS) the average price per acre of land sold was \$13,103, second only to Milwaukee County (which is to be assumed the land was purchased for development). Also, Lafayette County’s 2024 non-irrigated cropland rent was highest in the state at \$261 per acre on average.

Figure 4: Number of Farms, 2007-2022



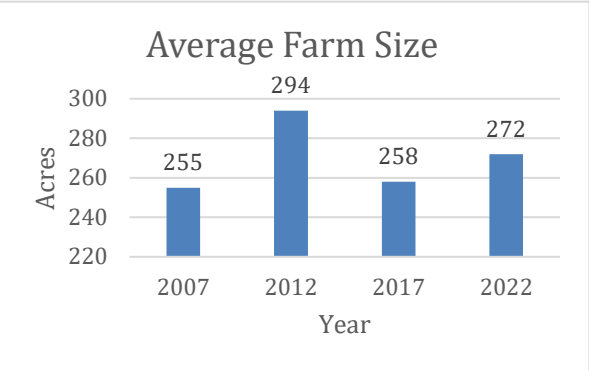
Source: USDA Census of Agriculture

Figure 5: Land in Farms, 2007 - 2022



Source: USDA Census of Agriculture

Figure 6: Average Farm Size, 2007 - 2022



Source: USDA Census of Agriculture

Figure 7: Livestock Figures, 2017 & 2022

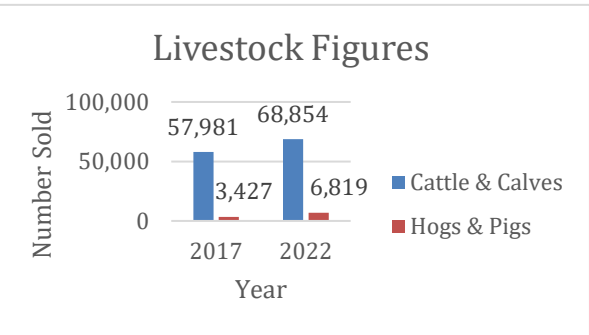
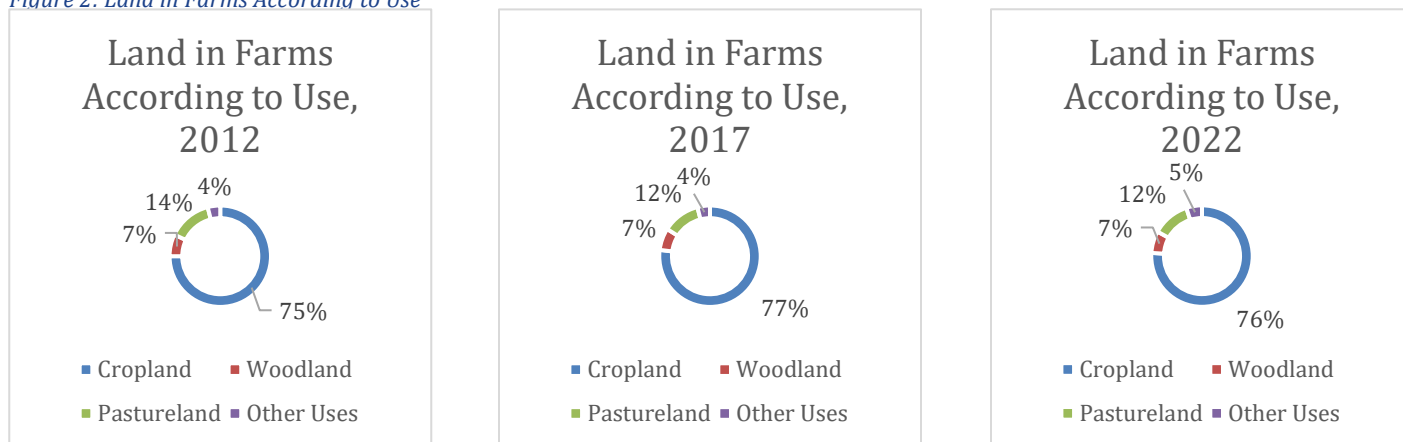


Figure 2: Land in Farms According to Use



Source: USDA Census of Agriculture

As shown in Figure 8, the land in farms hasn't changed much in terms of use with just a slight reduction in pasture and cropland and a slight increase in other uses.

### **Notable Agricultural Product Trends:**

Looking at statistics from the USDA Census of Agriculture from 2017 and 2022, we looked at the trends of the agricultural products predominantly produced in Lafayette County:

#### **Cattle & Calves**

Cattle and calf production have remained at the top in the state ranking in 5<sup>th</sup> after being 4<sup>th</sup> in 2017.

#### **Corn for Grain**

Corn for grain production has remained at 6<sup>th</sup> in acres in production, but increased from 6<sup>th</sup> to 4<sup>th</sup> in bushel production.

#### **Corn for Silage**

Corn for silage production has dropped from 6<sup>th</sup> to 30<sup>th</sup> in acres in production, but increase from 6<sup>th</sup> to 4<sup>th</sup> in tonnage production.

#### **Rye for Grain**

Rye for Grain ranking in acres planted and bushels produced in 2017 was 23<sup>rd</sup> and 22<sup>nd</sup> respectively. In 2022, those rankings soared to 6<sup>th</sup> in acres planted and 1<sup>st</sup> in bushels produced.

#### **Sheep, goats and their products**

Sheep, goats and their products fell from being ranked 1<sup>st</sup> in 2017 to 2<sup>nd</sup> in 2022.

#### **Soybeans**

Soybean production has risen from 13<sup>th</sup> to 7<sup>th</sup> in acres in production, but has remained steady at 5<sup>th</sup> in bushel production in the state.

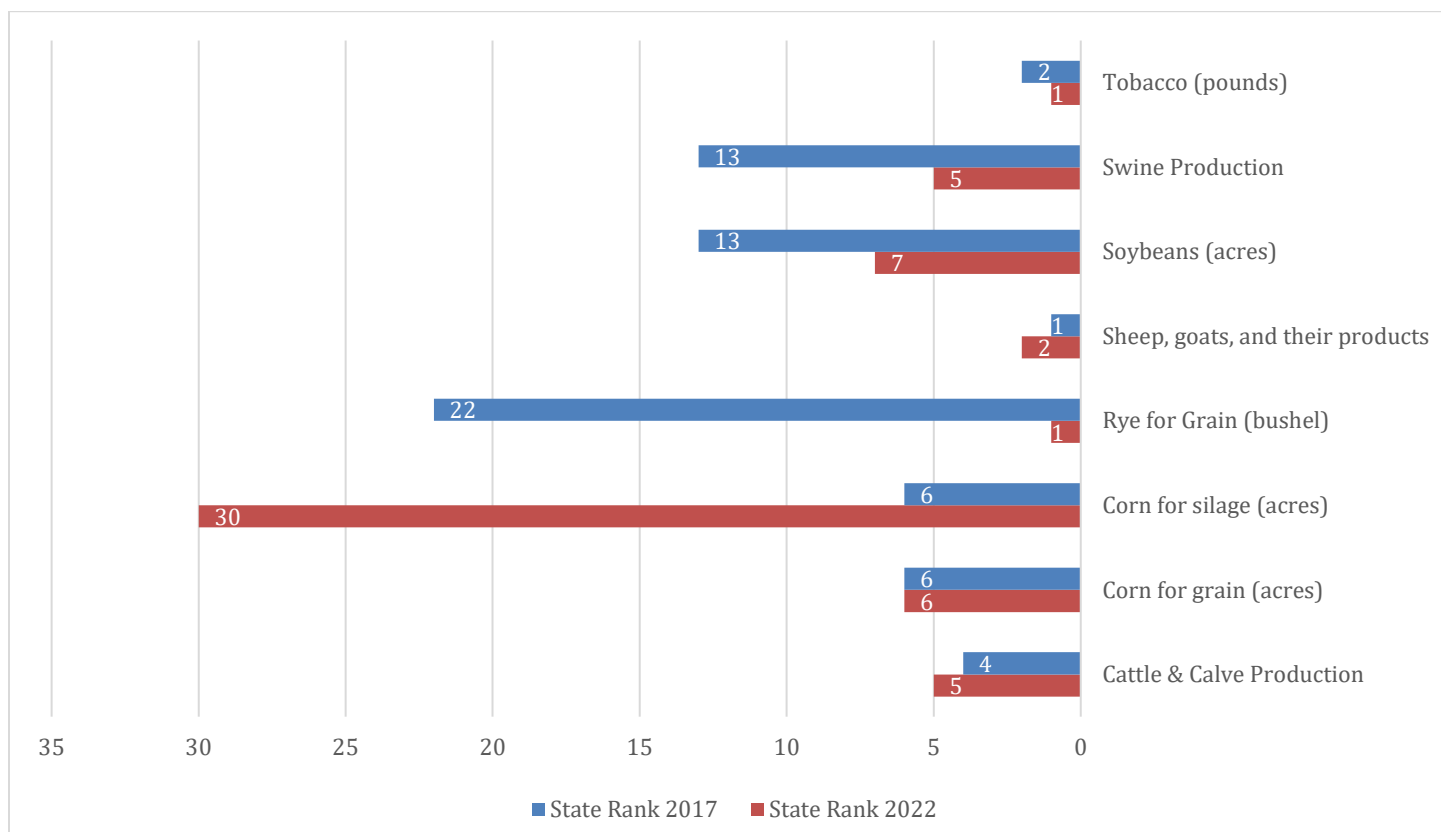
#### **Swine**

Swine production has jumped from 13<sup>th</sup> in 2017 to being the top 5 in the state rankings in 2022.

#### **Tobacco**

Lafayette County's ranking in tobacco production has risen from 2<sup>nd</sup> to 1<sup>st</sup> in acres in production and has increased from 2<sup>nd</sup> to 1<sup>st</sup> in pounds produced in the state.

Figure 9: Lafayette County's Notable State Rankings in Ag Products Produced in 2022



Source: USDA Census of Agriculture

### Take aways from current trends:

Given the data in this section, we can make the following assumptions:

1. Farms are being consolidated into larger operations.
2. Land in former dairy farm crop rotations are moving towards conventional row crop rotations
3. New farmers are not being established as land sale and rental prices are high
4. Land being taken out of agricultural production for other uses, forcing land to be farmed more intensely.
5. Adoption of Rye for grain has increased in Lafayette County, which is typically re-used or sold for use as cover crops per observations by LCPZD staff.

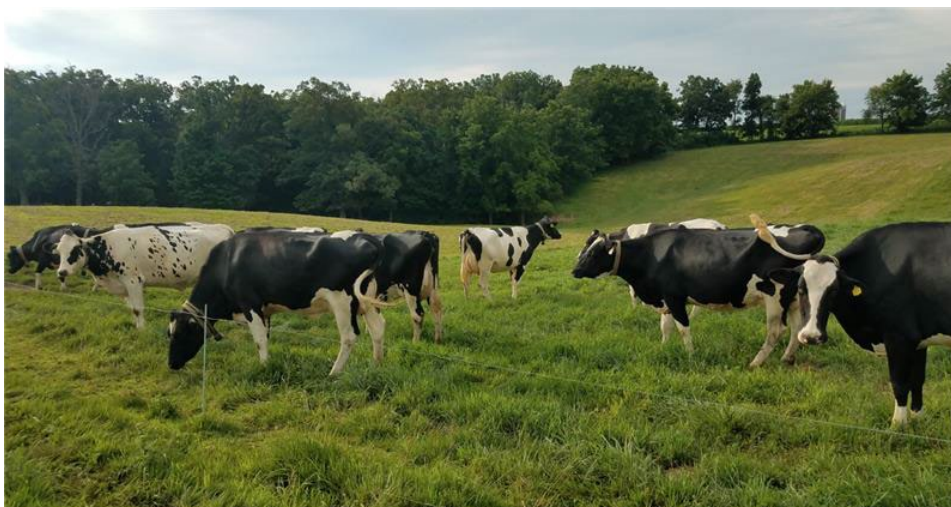


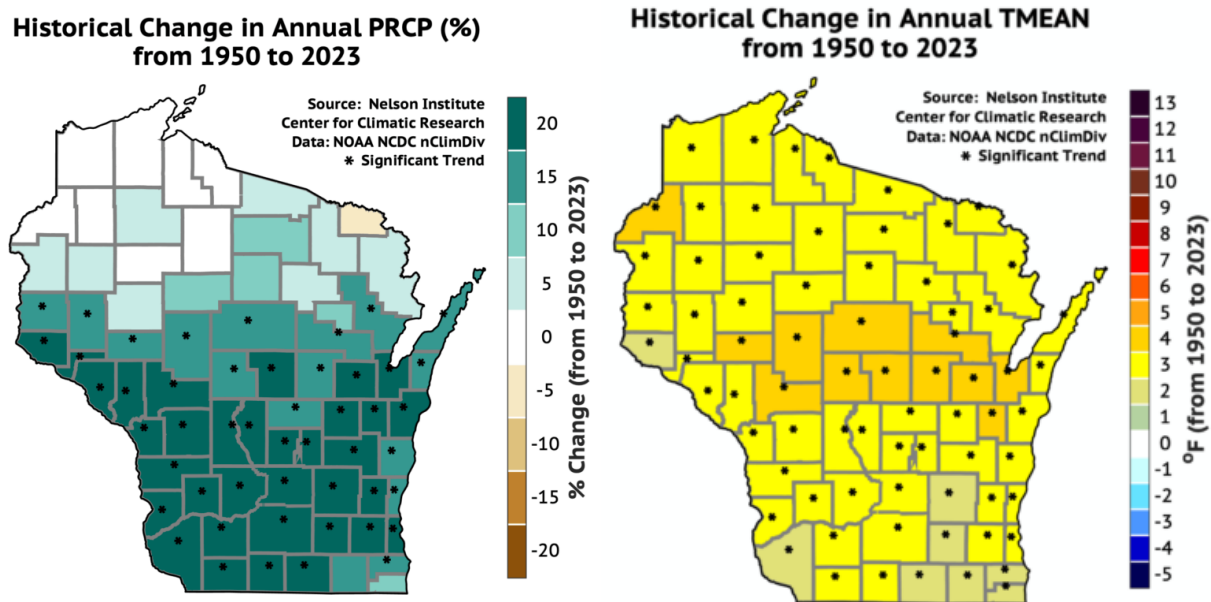
Photo: Holstien cows on rotational grazed pasture in Blanchard Township

## Climate

The 1966 Soil Survey of Lafayette County states that the county has a continental climate. Winters have become sporadic with temperatures ranging from subfreezing to mild. The summers are warm and have periods of hot, humid weather. Spring and fall are generally short and are marked by sharp changes in temperature. The area is in the path of pressure systems that move across the country from west to east and sometimes cause storms of cyclonic intensity.

According to the National Oceanic and Atmospheric Administration's (NOAA) Climatic data Center from 1950 to 2023, Lafayette County has seen an increase by 3 degrees in average annual temperature and 20 percent increase in annual precipitation. NOAA denotes these changes as a significant trend.

Figure 10: Lafayette County Historical Change in Annual Precipitation (1950-2023) and Change in Annual Average Temperature (1950-2023)



Source: Wisconsin Initiative on Climate Change Impacts & NOAA

These increases are expected to continue and have major negative implications for Lafayette County's agricultural production and the conservation of the land and water resources. Increasing temperatures point to potential impacts such as increased crop stress, increased crop pest/disease pressure, increased drought potential and increased livestock stress/mortality. An increasing precipitation can potentially increase soil erosion/nutrient loss, increase contaminated runoff into our waterbodies and increase flooding. Flooding specifically impacts the county greatly as it can damage our transportation infrastructure, hinder crop production and create accumulation of sediment and nutrients in local waterbodies. Both conditions could also present an increase of terrestrial and aquatic invasive species and a reduction in native plant species populations which in turn would affect wildlife populations.

Lafayette County recognizes that there has been a change in agricultural productivity due to the changing climate in our county. We understand that since these climate changes are occurring, some farmers are already actively looking at adopting practices to account for these changes, while many farmers will still need time and help to adjust to newer agricultural practices to help conserve the land and water.



## Watersheds

Lafayette County is divided into two basins. These are the Grant-Platte River Basin and the Sugar-Pecatonica River Basin. Lafayette County contains 11 total watersheds within these two Basins (Figure 11). The watershed information contained in this plan consists of the most recent information available from Wisconsin DNR.

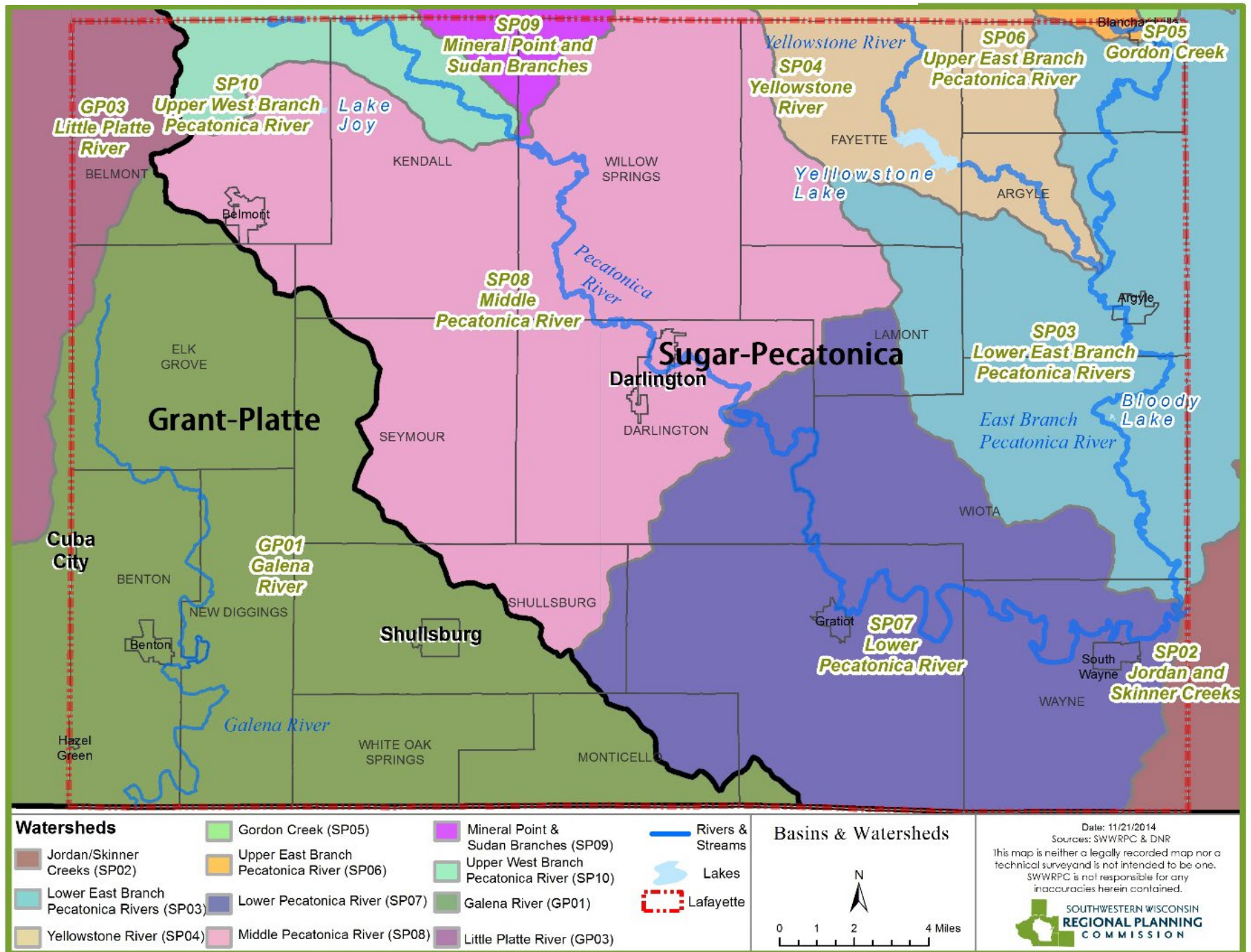
Table 1 lists each watershed and its corresponding area, stream miles, length of trout streams, percentage of watershed within the county, percentage of the county comprised of the watershed, and the available nonpoint source rank from DNR. The majority of Lafayette County is comprised of the Galena River, Middle Pecatonica River, and Lower Pecatonica River, which together account for 74% of the County. All watersheds have a watershed identification number (ID) numbered 01 through 10 with a watershed basin prefix. For example, the Galena River watershed ID is GP01 because the watershed is within the Grant-Platte River Watershed Basin. This ID is used throughout this plan to locate the watersheds in the map and cross-reference them with tables.

*Table 1: Watershed Summary*

Basin	Watershed	Stream miles	Watershed area	Class II trout (miles)	% of watershed in County	% of County comprised of watershed	Non-point source rank
Grant - Platte River	Galena River (GP01)	260	241.84 mi <sup>2</sup>	0	66.31%	25.29%	No information
	Little Platte River (GP03)	20.81	154.94 mi <sup>2</sup>	4.35	9.88%	2.41%	High
Sugar-Pecatonica River	Jordan and Skinner Creeks (SP02)	4.85	94.06 mi <sup>2</sup>	0	4.58%	0.68%	No information
	Lower East Branch Pecatonica (SP03)	131.5	144.80 mi <sup>2</sup>	57.87	56.16%	12.82%	No information
	Yellowstone River (SP04)	52.17	57.46 mi <sup>2</sup>	12.41	62.75%	5.69%	High
	Gordon Creek (SP05)	0	76.90 mi <sup>2</sup>	0	0.17%	0.02%	High
	Upper East Branch Pecatonica River (SP06)	2	140.18 mi <sup>2</sup>	5.07	0.58%	0.13%	No information
	Lower Pecatonica River (SP07)	217.96	134.23 mi <sup>2</sup>	47.85	93%	21.17%	Not yet accessed
	Middle Pecatonica River (SP08)	324.16	186.42 mi <sup>2</sup>	6.74	94.47%	27.78%	High
	Mineral Point and Sudan Branches (SP09)	15.53	108.26 mi <sup>2</sup>	0	6.40%	1.09%	No information
	Upper West Branch Pecatonica River (SP10)	30.41	77.75 mi <sup>2</sup>	5.19	23.56%	2.89%	High

*Source: Wisconsin Department of Natural Resources, Watersheds & Basins*

Figure 11: Basins and Watershed Map



## Grant-Platte River Basin (HUC8)

### Watersheds:

Galena River (GP01)

Little Platte River (GP03)

### General Concerns for All Watersheds:

- Streams have been ranked as a high priority because the stream habitats are impacted by agricultural nonpoint pollution.
- Increases in farm size have the potential for causing more animals to graze adjacent to streams.

### Specific Concerns:

- Runoff from agricultural fields and barnyards are considered to be the major sources of nonpoint pollution.
- Over-grazing of stream banks, which results in trampled banks, exposed eroding banks, streams becoming wider and shallower, and stream warming.
- Direct Drainage from barnyards is a major source of nutrient loading to surface waters.
- Drainage from cropland to streams carries eroded sediments, which affects in-stream habitat and fish spawning areas. Nutrients, fertilizers and pesticides attach to soil particles and can further pollute streams.
- Encroachment from tillage/cropping operations to stream banks causing streambank instability and erosion.

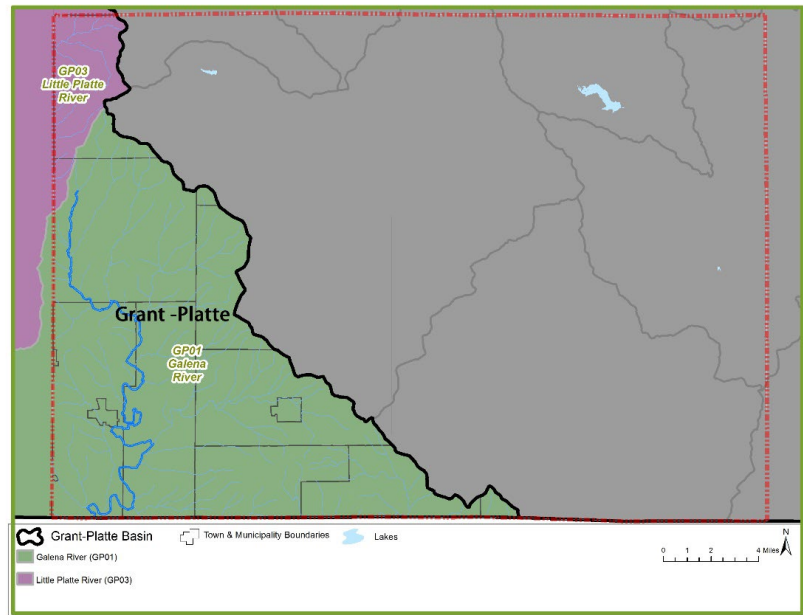


Figure 12: Grant-Platte Basin Watersheds (HUC10)

**Galena River (GP01)** – The center of historic lead and zinc mining in Wisconsin is in the west and southwest portion of the county. It is estimated that about 35 abandoned mine sites and 125 mine waste piles are located throughout the watershed. Most of these mine waste piles are located adjacent to streams or drainage ways that lead to perennial streams. Runoff from abandoned mine waste piles has resulted in fish kills in the past.

**Little Platte River (GP03)** – There are least 17 abandoned mines and at least that many known mining waste piles in the watershed.<sup>1</sup> Mine waste piles in other parts of southwest Wisconsin have been documented as sources of pollution and degradation to some streams. There are also an unknown number of mine airshafts in the watershed. It is not known what effect, if any, these mines and airshafts are having on groundwater or surface water quality.

<sup>1</sup> A waste pile is an open, uncontained pile used for treating or storing waste. Hazardous waste piles must be placed on top of a double liner system to ensure leachate from the waste does not contaminate surface or ground water supplies.



## Sugar-Pecatonica Basin (HUC8)

### Watersheds:

Jordan and Skinner Creeks (SP02)  
Lower East Branch Pecatonica River (SP03)  
Yellowstone River (SP04)  
Gordon Creek (SP05)  
Lower Pecatonica River (SP07)  
Middle Pecatonica River (SP08)  
Mineral Point and Sudan Branches (SP09)  
Upper West Branch Pecatonica River (SP10)

### General Concerns for All Watersheds:

- The principal land use in the watersheds is agriculture, dominated by row crop cultivation with some areas of woodlots and grasslands.
- Streams have been ranked as a high priority because the stream habitats are impacted by agricultural nonpoint pollution.
- Erosion from cropland, runoff from barnyards, and stream bank pasturing result in degradation of habitat, increased sedimentation, turbidity, and nutrient load.
- Increases in farm size has the potential for causing more animals grazing adjacent to streams.
- Encroachment from tillage/cropping operations to stream banks causing streambank instability and erosion.

### Specific Concerns:

- Runoff from agricultural fields and barnyards are considered to be the major sources of nonpoint pollution.
- Direct Drainage from barnyards is a major source of nutrient loading to surface waters.

**Jordan and Skinner Creeks (SP02)** – The Jordan and Skinner Creeks watershed is mainly located in southwest Green County. The watershed is dominated by agriculture, although it does have some areas of woodlots and grasslands. The habitat in all of the streams is impacted by agricultural nonpoint source pollution.<sup>2</sup>

**Lower East Branch Pecatonica River (SP03)** – The dominant land use in the watershed is agriculture (76%) followed by forest (16%). The trends in agriculture toward fewer dairy farms with reduced need for alfalfa and pasture means many of those acres are being replaced with corn and soybeans. In steeply sloping areas of the state, this inevitably means higher rates of runoff of soil and nutrients. Broadleaf deciduous woods and grasslands make up the balance of the land cover.<sup>3</sup>

**Yellowstone River (SP04)** – The Yellowstone River Watershed is located in southeastern Iowa county and northeastern Lafayette County and is 36,772 acres in size. The watershed contains 159 miles of streams and rivers, nine acres of lakes and 636 acres of wetlands. The watershed is dominated by agriculture (60%), forest (26%) and grassland (11%) and is ranked high for nonpoint source issues affecting streams and groundwater and medium for nonpoint source issues affecting lakes.<sup>4</sup> Yellowstone Lake is identified as a Land Legacy Place considering the southwestern part of the state has

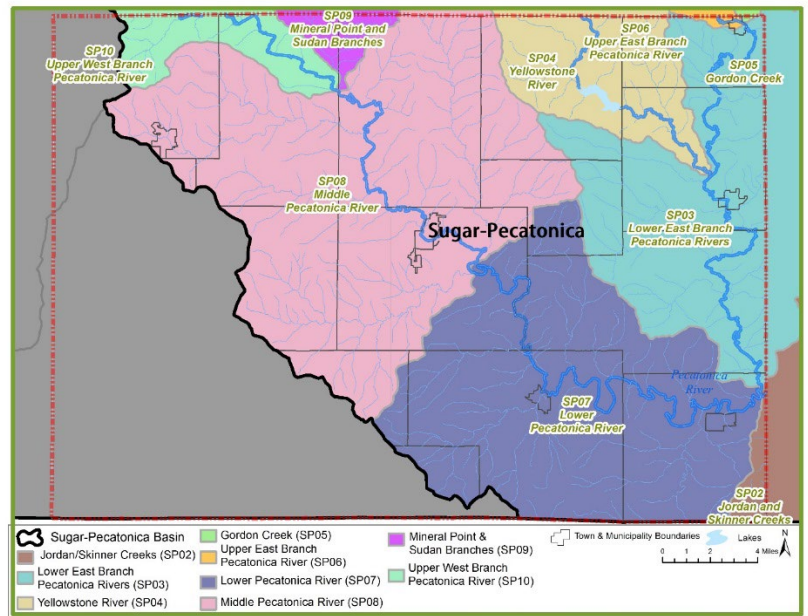


Figure 13: Sugar - Pecatonica Basin Watersheds (HUC10)

<sup>2</sup> "Watershed Detail- Jordan and Skinner Creeks, [apps.dnr.wi.gov/water/watershedDetail.aspx?Code=SP02&Name=Jordan+and+Skinner+Creeks](https://apps.dnr.wi.gov/water/watershedDetail.aspx?Code=SP02&Name=Jordan+and+Skinner+Creeks). Accessed 12 Apr. 2024

<sup>3</sup> "Watershed Detail- Lower East Branch Pecatonica Rivers, [apps.dnr.wi.gov/water/watershedDetail.aspx?Code=SP03&Name=Lower+East+branch+Pecatonica+Rivers](https://apps.dnr.wi.gov/water/watershedDetail.aspx?Code=SP03&Name=Lower+East+branch+Pecatonica+Rivers). Accessed 12 Apr. 2024

<sup>4</sup> "Watershed Detail - Yellowstone River, [apps.dnr.wi.gov/water/watershedDetail.aspx?Code=SP04&Name=Yellowstone+River](https://apps.dnr.wi.gov/water/watershedDetail.aspx?Code=SP04&Name=Yellowstone+River). Accessed 12 Apr. 2024



few large waterbodies and Yellowstone Lake, as the largest impoundment in the area, is a very popular recreation destination.<sup>5</sup>

**Gordon Creek (SP05)** – The Gordon Creek Watershed lies in southwestern Dane, northwestern Green and southeastern Iowa counties, with a small percentage in Lafayette County. The watershed is impacted by agricultural nonpoint source pollutions and ranks high in priority for nonpoint source pollution abatement.<sup>6</sup>

**Middle Pecatonica River (SP08)** – The Middle Pecatonica Watershed lies in the central portion of Lafayette County with a small portion extending into southern Iowa County. The landscape is dominated by agriculture with scattered woodlots and grasslands making up most of the remaining portion. The major known water quality problems in the watershed are from nonpoint source pollution validating the groundwater protection high priority ranking.<sup>7</sup>

**Lower Pecatonica River (SP07)** – The Lower Pecatonica River Watershed lies in the southeast portion of Lafayette County. The landscape is dominated by agriculture with scattered woodlots and grasslands making up most of the remaining portion. The major water quality problems in the watershed are from nonpoint source pollution. Erosion from cropland, runoff from barnyards, and stream bank pasturing result in degradation of habitat through increased sedimentation, turbidity, and nutrient load.<sup>8</sup>

**Mineral Point and Sudan Branches (SP09)** – The Mineral Point and Sudan Branches Watershed lies in southwestern Iowa County and dips into extreme northern Lafayette County. The watershed is dominated by agriculture with scattered woodlots and grasslands. Mining was a major industry in the Mineral Point area. Waste piles that remain from lead, zinc, and copper mining as well as runoff from mines has degraded water quality, especially for Brewery Creek.<sup>9</sup>

**Upper West Branch Pecatonica River (SP10)** – The Upper West Branch Pecatonica River watershed is in southwestern Iowa and northwestern Lafayette counties. Two small municipalities discharge surface water in the watershed. The population is not expected to grow significantly over the next 20 years in this predominantly rural area. The principal land use in the watershed is agricultural, dominated by row crop cultivation.<sup>10</sup>

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<sup>5</sup> The purpose of the Wisconsin Land Legacy Report is to identify the places considered most important to meet Wisconsin's conservation and recreation needs over the next 50 years.

<sup>6</sup> "Watershed Detail - Gordon Creek, [apps.dnr.wi.gov/water/watershedDetail.aspx?code=SP05&Name=Gordon+Creek](https://apps.dnr.wi.gov/water/watershedDetail.aspx?code=SP05&Name=Gordon+Creek). Accessed 12 Apr. 2024

<sup>7</sup> "Watershed Detail- Middle Pecatonica River, [apps.dnr.wi.gov/water/watershedDetail.aspx?code=SP08&Name=Middle+Pecatonica+River](https://apps.dnr.wi.gov/water/watershedDetail.aspx?code=SP08&Name=Middle+Pecatonica+River). Accessed 12 Apr. 2024

<sup>8</sup> "Watershed Detail - Lower Pecatonica River, [apps.wi.dnr.gov/water/watershedDetail.aspx?code=SP07&Name=Lower+Pecatonica+River](https://apps.wi.dnr.gov/water/watershedDetail.aspx?code=SP07&Name=Lower+Pecatonica+River). Accessed 12 Apr. 2024

<sup>9</sup> "Watershed Detail - Mineral Point and Sudan Branches, [apps.dnr.wi.gov/water/watershedDetail.aspx?code=SP09&Name=Mineral+Point+and+Sudan+branches](https://apps.dnr.wi.gov/water/watershedDetail.aspx?code=SP09&Name=Mineral+Point+and+Sudan+branches). Accessed 12 Apr. 2024

<sup>10</sup> "Watershed Detail- Upper West Branch Pecatonica River, [apps.dnr.wi.gov/water/watershedDetail.aspx?code=SP10&Name=Upper+West+branch+Pecatonica+River](https://apps.dnr.wi.gov/water/watershedDetail.aspx?code=SP10&Name=Upper+West+branch+Pecatonica+River). Accessed 12 Apr. 2024

## Ames Branch-Pecatonica River HUC 10 Targeted Watershed Assessment Project

The Ames Branch-Pecatonica River HUC10 Targeted Watershed Assessment project was completed during 2023 and 2024. This project was to monitor fish, habitat, and macroinvertebrate data to assess the contemporary status of streams in the watershed. Data gathered by this project will be used to determine management actions to protect vulnerable streams. This project is located within HUC10 0709000303. Monitoring will be conducted on all of the 6 HUC12s (070900030301, 070900030302, 070900030303, 070900030304, 070900030306, 070900030305).

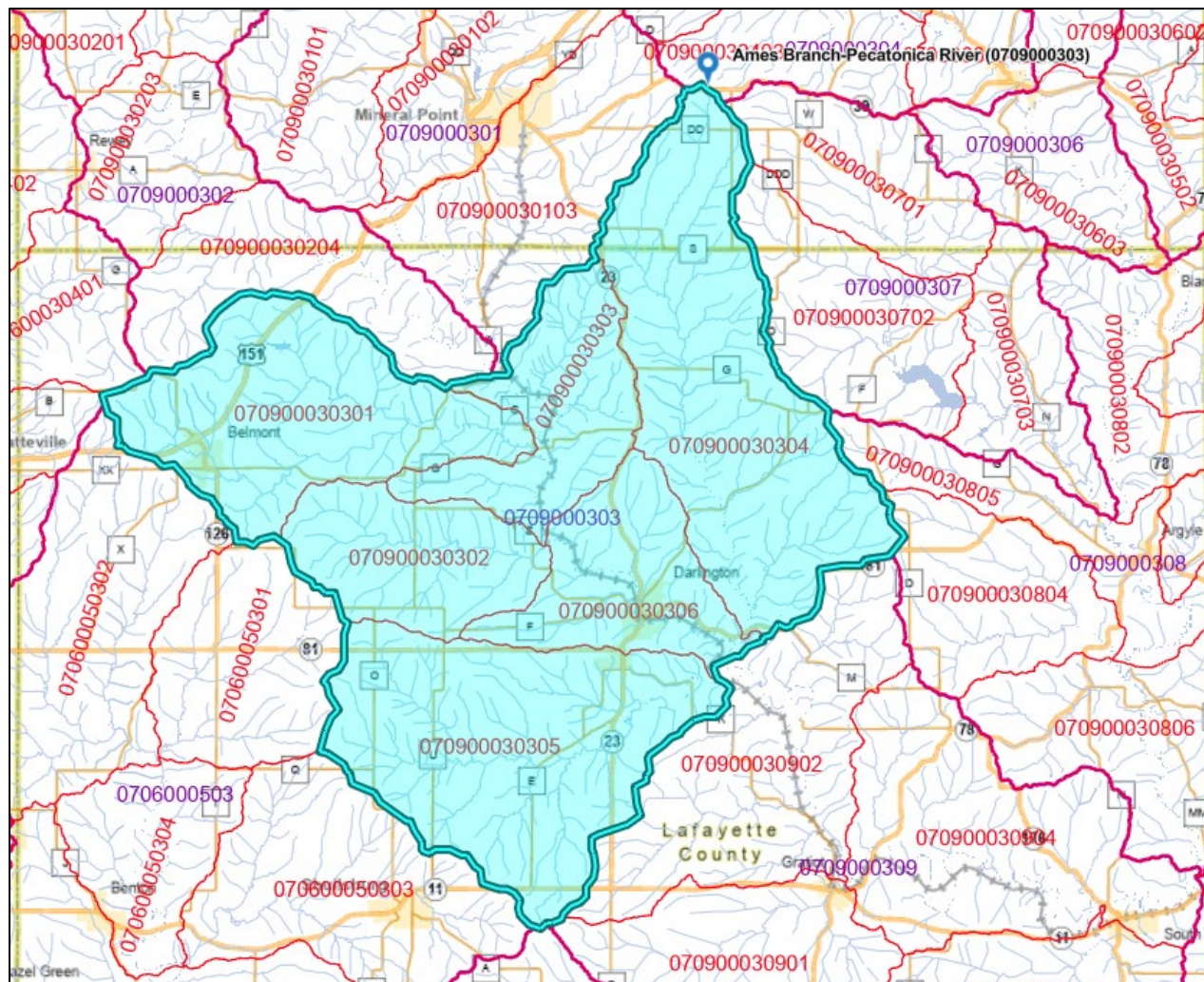


Figure 14: Map showing the Ames Branch – Pecatonica HUC10 with associated HUC12 within

Results from this project are still being compiled and the report is not yet ready for release. Based on what the findings are of the project, this will guide LCPZD and may encourage other interested organizations to determine if additional focus for best management practices are needed on the landscape such as increased stream buffers, cover crops and nutrient management in this area. These practices will increase farm profitability while protecting and enhancing water quality throughout the watershed.

## Healthy Watersheds, High-Quality Waters

The Wisconsin DNR's Water Quality Program launched the Healthy Watersheds, High-Quality Waters (HWHQW) initiative in April 2022. This nationally recognized new program focuses specifically on the proactive protection and maintenance of waterbodies and watersheds that are currently “healthy.” Working with the US Environmental Protection Agency (EPA), other DNR programs, and partners, the HWHQW team identified key attributes of healthy watersheds to model all HUC12 watersheds statewide. High-Quality Waters (HQW) were then assessed using existing data and resource classifications, such as Trout Waters and waters within or adjacent to State Natural Areas. The assessment also included the identification of Healthy & Rare wetlands.

The modeled watersheds (HUC12 scale) can be sorted statewide and by major drainage basin (HUC6). The 30% healthiest watersheds in the state and within each major drainage basin are the geographic protection priorities for this statewide plan. As outlined in the Healthy Watersheds, High-Quality Waters Action Plan, the statewide goal is to keep 100% of the watershed protection priorities and high-quality waters within them healthy through 2030.

The Healthy Watersheds and High-Quality Waters priorities within Lafayette are summarized below. A corresponding map and table of High-Quality Waters can be found within Figures 15 and 16.

### Watershed Protection Priorities

Within the Rock River Major Drainage Basin (HUC6), there are two Watershed Protection Priorities (Top 30% Healthiest) located with Lafayette County.

- Middle Yellowstone River (HUC12 Code: 070900030702)
  - Watershed Health Score: 53/100
  - Percent Natural Land Cover: 30.7%
  - Top 10% Watershed in the Rock River Basin
- Brennan Creek – East Branch Pecatonica River (HUC12 Code: 070900030802)
  - Watershed Health Score: 43/100
  - Percent Natural Land Cover: 27.7%
  - Top 20 – 30% Watershed in the Rock River Basin

### High Quality Waters

As of the 2021 assessment, there are 19 high-quality rivers and streams that meet the high-quality waters criteria and two healthy wetlands. Many of these waterbodies are designated high-quality due to their status as trout water and their good-to-excellent IBI data (fish or macroinvertebrate). Three of these waterbodies are located within the Rock River Basin Watershed Protection Priorities: Canon Creek, Sawmill Creek, and Steiner Branch.

### HEALTHY WATERSHED

An area draining to a stream, lake or wetland where natural land cover supports the dynamic processes, habitat size and connectivity, and water quality conditions able to support healthy biological communities (adapted from EPA, [epa.gov/hwp](http://epa.gov/hwp)).

### HIGH-QUALITY WATERS

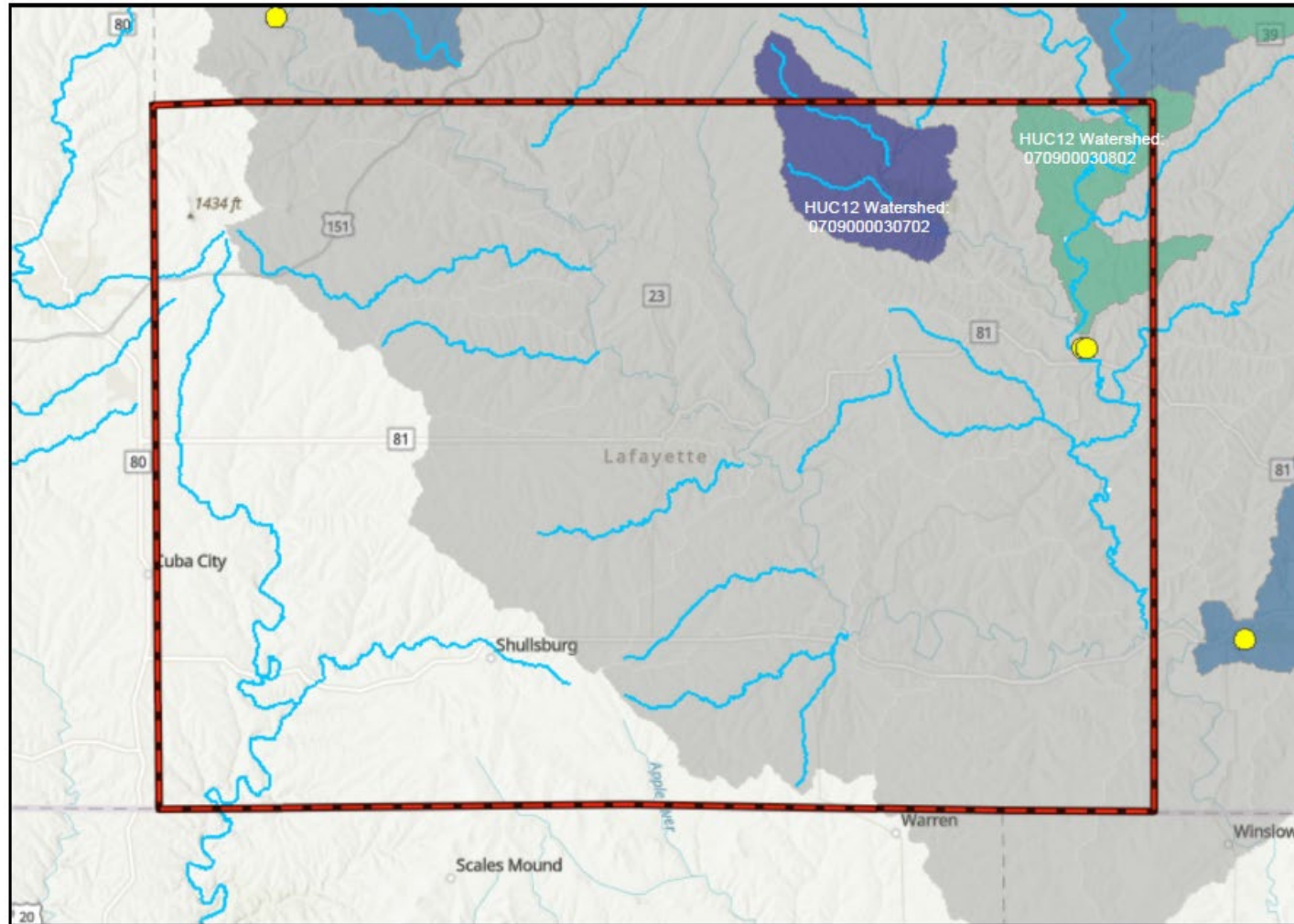
Lakes, streams, and rivers with at least two of the following attributes: unique or rare resource, attaining state water quality standards, or good-to-excellent biotic integrity. Also included are unique wetlands and those with least disturbed or reference conditions.



Figure 15: Healthy Watershed Protection Priorities



## Lafayette County: Watershed Protection Priorities - Rock River Basin (HUC6) Top 30%

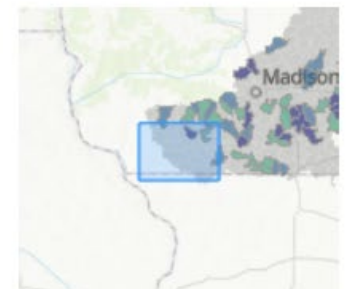


### Legend

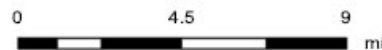
- Protection - Healthy Watersheds, High-Quality Waters
- Healthy & Rare Wetlands
- High-Quality Streams
- High-Quality Lakes & Large Rivers
- Watershed Health Index
- HUC12 Boundaries

### Notes

Map displays the WI DNR identified Rock River Basin (HUC6) Top 30% Protection Priority Watersheds (HUC12) and the assessed High-Quality Waters (2021). For the most up to date information, please reference the assessment results and mapping services on the website: <https://dnr.wisconsin.gov/topic/SurfaceWater/HQW.html>



1:400,000



Service layer credits:  
Luke Beringer, Pamela Toshner, Aaron Marti


**This map is a product generated by a DNR mapping application.**

This map is for informational purposes only and may not have been prepared for or be suitable for legal, engineering or surveying purposes. The user is solely responsible for verifying the accuracy of information before using for any purpose. By using this product for any purpose user agrees to be bound by all disclaimers found here: <https://dnr.wisconsin.gov/legal>


Date Printed: 08/30/2024



Figure 16: DNR Identified High Quality Waters and Wetlands in Lafayette County

<div>  <b>2021 High-Quality Waters: Lakes, Rivers, Streams</b> </div>										
<b>Lafayette County - 19 High-Quality Waters identified in 2021</b> Data sorted by alphabetical county and alphabetical waterbody name										
OFFICIAL NAME	LOCAL NAME	WBIC	PRIORITY WATERSHEDS HUC6: *      State: ** Both: ***	COUNTY NAME (STREAM MOUTH & LAKE LOCATION)	HUC6	HUC12 CODE (STREAM MOUTH & LAKE LOCATION)	UNIQUE & RARE RESOURCES (COUNT)	Attaining WQS (COUNT)	IBIs (COUNT)	HQW CRITERIA (COUNT)
Ames Br		921200		Lafayette	Rock	070900030305		1	1	2
Apple Branch		899800		Lafayette	Rock	070900030804	1		3	2
Bonner Br		927000		Lafayette	Rock	070900030303		1	1	2
Canon Creek		904500		Lafayette	Rock	070900030702	1	1	2	3
Copper Creek	Coppermine	919800		Lafayette	Rock	070900030902	2		1	2
Dougherty Creek	Puddledock	901000		Lafayette	Rock	070900030803	2		1	2
East Branch Pecatonica River		897800		Lafayette	Rock	070900030806	1		7	2
Furnace Creek		928000		Lafayette	Rock	070900030103		1	2	2
Galena River	Fever River	935500		Lafayette	Rock	070600050306	1	1	6	3
Gordon Creek		907300		Lafayette	Rock	070900030603	4	4	10	3
Lovett Creek		920700		Lafayette	Rock	070900030902	2		1	2
Sawmill Creek		906000		Lafayette	Rock	070900030802	3		1	2
Shullsburg Br		937000		Lafayette	Rock	070600050303		1	3	2
Steiner Br		904000		Lafayette	Rock	070900030702	2	2	1	3
Trout Brook	Slawther Cr	918100		Lafayette	Rock	070900030901	2	1	1	3
Unnamed		904700		Lafayette	Rock	070900030701		1	2	2
Whiteside Creek		899700		Lafayette	Rock	070900030804	2	1	1	3
Wolf Creek		918000		Lafayette	Rock	070900030902	3	1	4	3
Wood Br		926300		Lafayette	Rock	070900030302		1	1	2

<div>  <b>2021 High-Quality Waters: Healthy Wetlands</b> </div>										
<b>Lafayette County - 2 Healthy Wetlands identified in 2021</b> Data sorted by alphabetical county and increasing Healthy Wetland ID										
WETLAND ID	SITE NAME	SITE ID	PRIORITY WATERSHEDS HUC6: *      State: ** Both: ***	COUNTY NAME	HUC6	HUC12 CODE	DISTURBANCE RANK	PLANT COMMUNITY CONDITION	LAT	LONG
Healthy_10	Erickson SSM	DA056		Lafayette	Rock	070900030805	2	2	42.707526	-89.879403
Healthy_9	Argyle Marsh	DA107		Lafayette	Rock	070900030805	1	1	42.707409	-89.87706

## Soil Resources

The soils for Lafayette County are grouped into general soil associations (Figure 17). An association is a landscape that has a distinctive pattern of soils. As a rule, each association contains a few major and several minor soils. Each is named for the major soil series in it. The following is a list of the nine associations found in Lafayette County:

**Dubuque – Sogn** – Light-colored, and moderately deep to shallow over limestone. These soils are mostly on ridges in the northern and eastern parts of the county. A small acreage is on narrow bottom lands of streams. The ridgetops in this association are narrower than those in the Fayette-Palsgrove association, and the slopes are steeper. Originally, the vegetation consisted of various kinds of hardwoods.

**Arenzille – Huntsville** – Nearly level soils on bottom lands of gently sloping soils on terraces. These soils are along the Pecatonica and Galena Rivers and their tributaries.

**Tama – Ashdale** – Dark-colored, deep, and silty soils underlain by limestone. These soils are mostly on broad ridgetops and adjoining side slopes in the uplands, but some areas are on narrow bottom lands.

**Tama – Muscatine – Sable** – Dark-colored, deep, nearly level to sloping soils underlain by limestone or shale. These soils are on broad ridgetops southeast of Shullsburg and near the Platte Mounds. They formed under prairie grasses in four feet or more of wind-laid silt. Depth to bed-rock ranges from 4-to-10 feet.

**Hixton – Northfield** – This association consists mainly of light-colored, moderately deep to shallow soils and of stony and rocky land. The areas are mostly on steep side slopes along the Pecatonica River between Blanchardville and South Wayne.

**Derinda – Calamine** – Light-colored, moderately deep to shallow soils underlain by shale. Soils are on ridgetops and steep slopes or is on levels to gently sloping low areas. The areas are south of Shullsburg and near the Platte Mounds. The soils formed under various kinds of hardwoods in wind-laid silt 15 to 50 inches thick over shale bedrock. All of the soils have yellowish clay, weathered from the shale, in the lower part of the sub-soil.

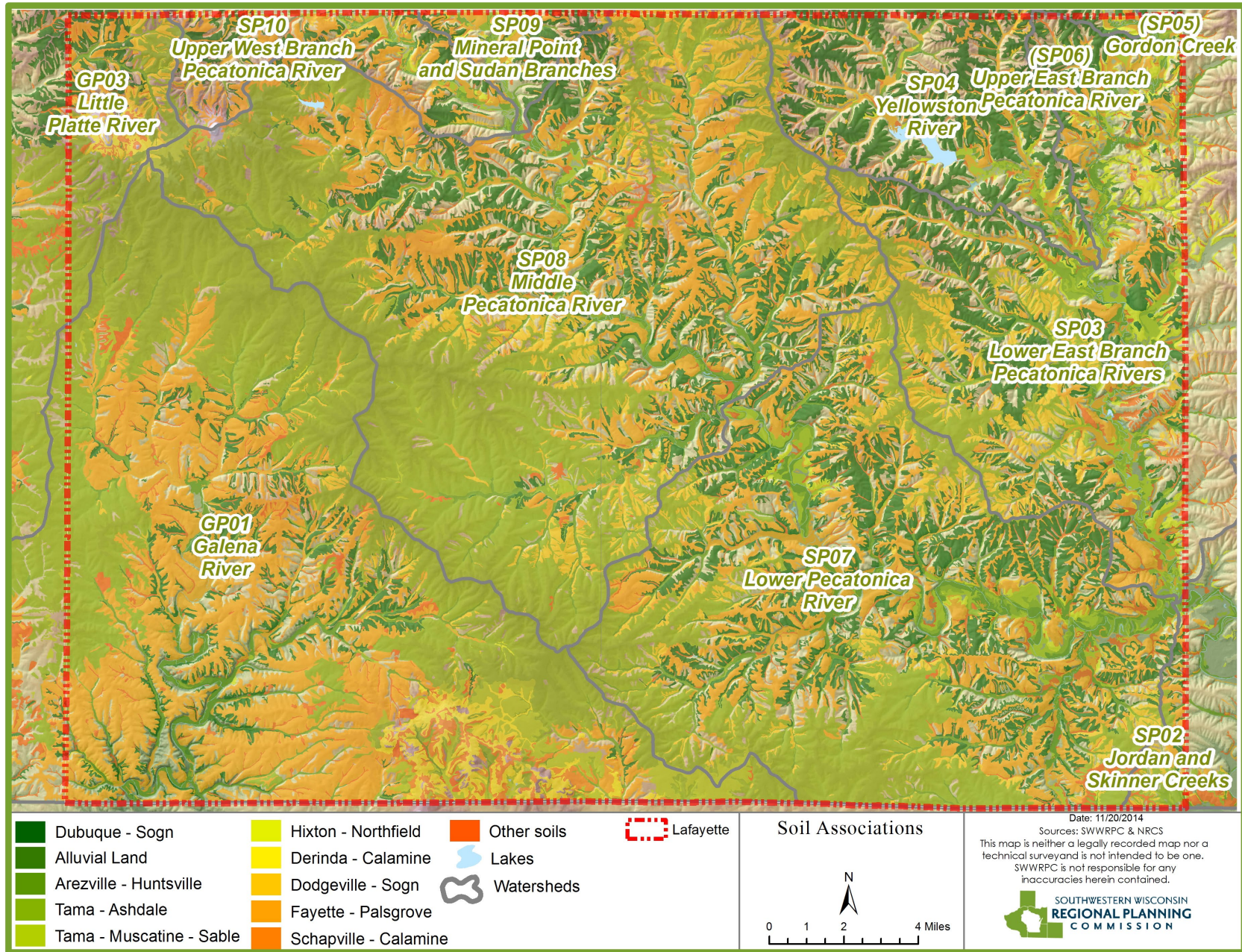
**Dodgeville – Sogn** – Dark-colored, moderately deep to shallow, gently sloping to steep soils underlain by limestone. The areas are on ridges and side slopes in the eastern part of the county. These soils formed under prairie grasses in wind-laid silt that is underlain by limestone or red clay.

**Fayette – Palsgrove** – Light-colored, deep soils. These soils are mostly on gently sloping, broad to narrow ridgetops and moderately steep to steep side slopes, but some are on narrow bottom lands. Mainly in the southwestern part of county.

**Schapville – Calamine** – Dark-colored, moderately deep to shallow soils underlain by shale. These soils are on ridgetops and steep slopes and in flat or depressed areas south of Shullsburg and in the Platte Mound area. Formed under prairie grasses in wind-laid silt 15 to 50 inches thick over shale bedrock. The soils all have yellowish clay, weathered from the shale, in the lower part of the subsoil.



Figure 17: Soil Associations Map





# Soil Erosion

Soil erosion in the county typically occurs on cropland in valleys and slopes leading to lakeshores and stream banks. Cropland comprises most of Lafayette County’s landscape. The critical components of soil erosion and sediment delivery in the county, though, are slopes and hills throughout the county combined with cropland cultivation practices.

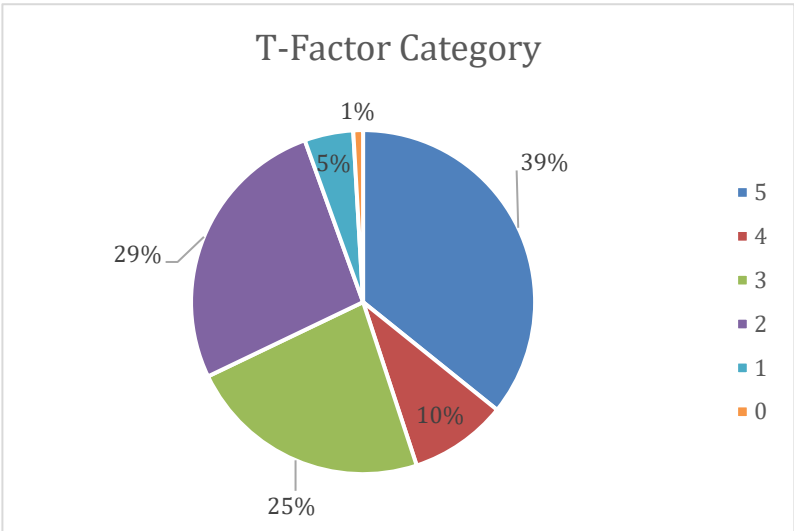
Soil erosion is ideally mapped through a transect survey, which measures tillage methods, crop residue information, and soil loss. Unfortunately, the Lafayette County transect survey data was lost in 2010 due to a technical error. No new data has been added because the LCPZD stopped conducting the survey in 2015.

As a result, this report utilized an estimated soil erosion data set provided by Natural Resources Conservation Service (NRCS), and a new soil erosion tool provided by DNR. The estimated soil erosion provided NRCS measures the maximum average annual rate of soil erosion by wind or water that could possibly occur. The dataset measures the rate of erosion in tons per acre per year, called a T-Factor. The T-Factor is the maximum amount of annual sheet and rill erosion that permits the fertility and productive capacity of the soil to be maintained indefinitely. The T-Factor values range from one

ton per acre per year for the most fragile soils, to five tons per acre per year for soils that can sustain more erosion without losing significant productive potential.

Figure 18 displays the percentage of acres under each allowable T factor value within Lafayette County. Figure 19 displays the T factor values mapped spatially across Lafayette County. The soils with highest estimated soil loss potential are within Yellowstone River Watershed, and Lower East Branch Pecatonica Rivers.

Figure 18: Percent of acres in the county for each T-Factor category



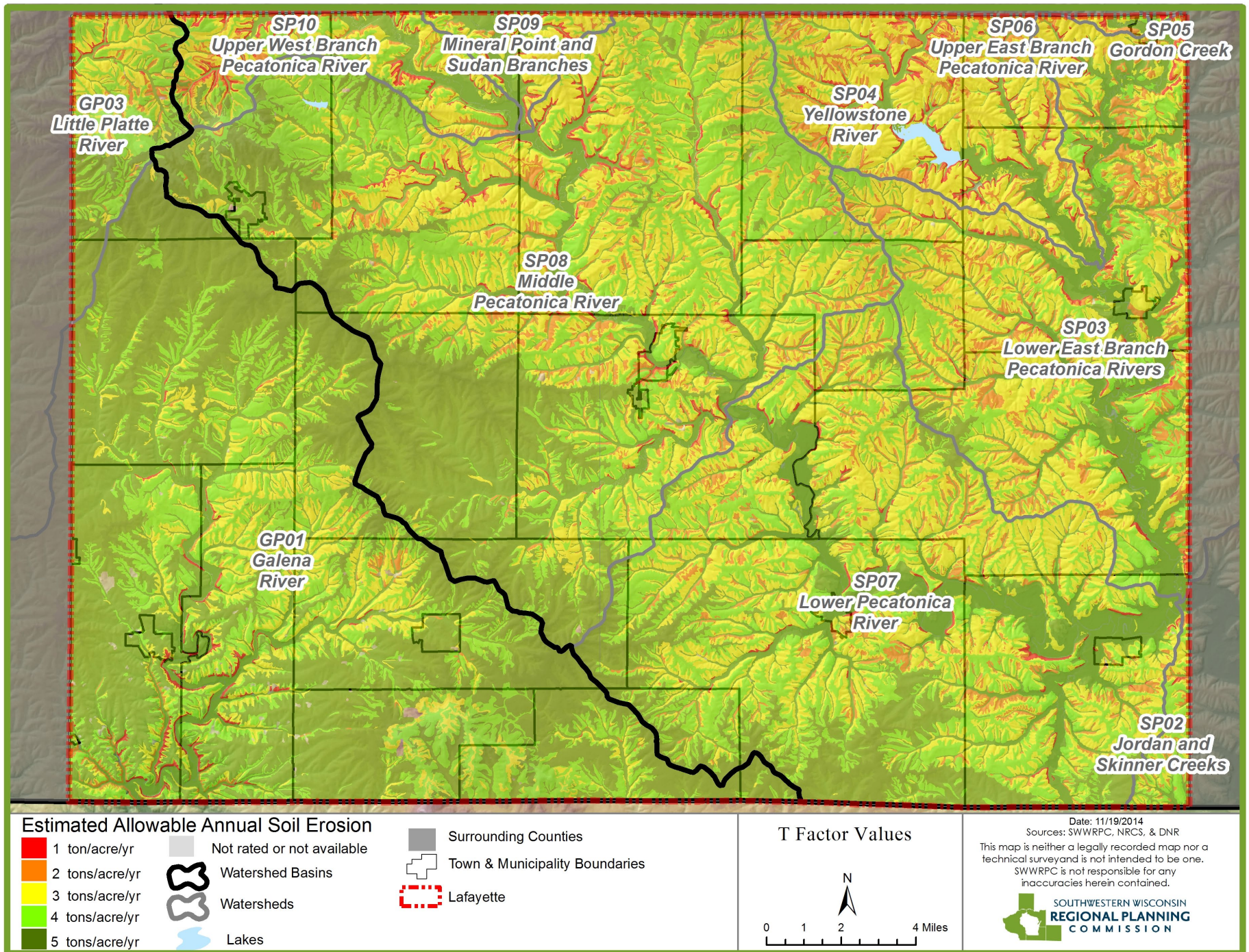
Source: Web Soil Survey



Photo: Corn planted in terminated rye cover crop in Belmont Township



Figure 19: T-Factor Values Map





## **Modeling Areas of High Soil Erosion Potential**

Wisconsin Department of Natural Resources (DNR) released the Erosion Vulnerability Analysis for Agricultural Lands (EVAAL) toolset version 1.0 in September 2014. EVAAL is a Geographic Information System (GIS)-based analysis tool that was developed to support the prioritization and implementation of agricultural best management practices (BMP) for improving surface water quality and can be used to strategize adaptive management and water quality trading potential in a watershed. It evaluates locations of relative vulnerability to sheet, rill, and gully erosion using readily available information about topography, soils, rainfall, and land cover. This tool enables people to prioritize and focus field-scale data collection efforts and increases the probability of locating fields with high sediment and nutrient export for implementation of best management practices.

The tool uses 10 steps with an area limit of sub-watershed area because of the amount of processing and type of specific data such as precipitation, internally draining areas, soil types, stream power index and additional data. The final output utilizes all of the combined data to produce an erosion vulnerability index that can be aggregated to areas such as parcels. This tool estimates vulnerability by separately assessing the risk for sheet and rill erosion (using RUSLE 2, Revised Universal Soil Loss Equation version 2), and gully erosion (using the Stream Power index, SPI), while de-prioritizing those areas that are not hydrologically connected to surface waters (also known as internally drained areas, IDA). These three pieces are combined to produce an erosion vulnerability index value. Areas with high soil loss and stream power index will have high erosion vulnerability. The erosion vulnerability index is a relative index; the index value for each grid cell is calculated relative to all the other grid cells within the study area.

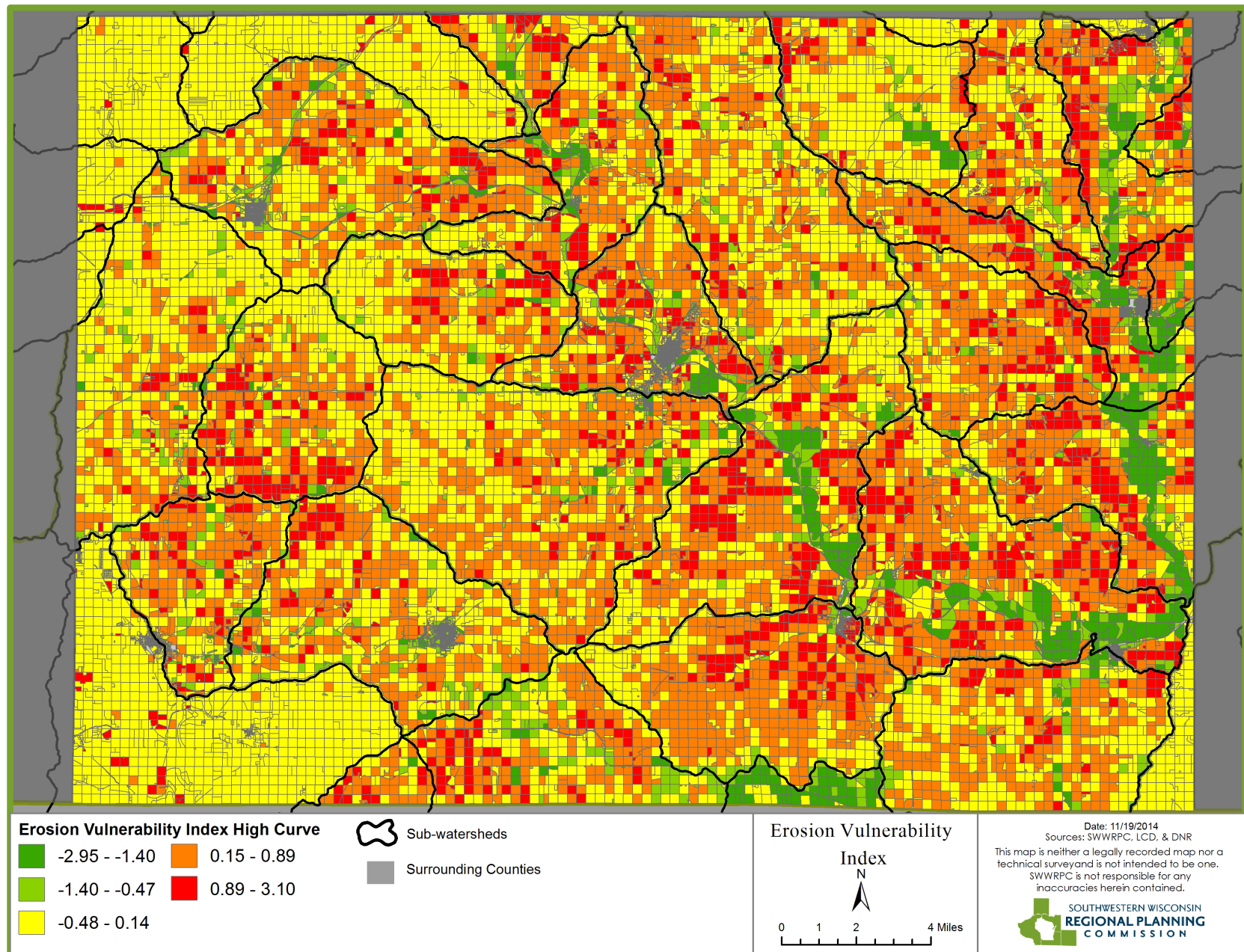
The toolset allows the GIS user to select the best scenarios and worst-case scenarios. This plan used the worst-case scenario for soil loss and erosion vulnerability index, which presumes management practices occurring in the area of interest are increasing or contributing to erosion. The erosion vulnerability index can be used to identify the most vulnerable areas and then check to see whether those areas are indeed without conservation measures.

During the previous LWRM plan revision, Southwest Wisconsin Regional Planning Commission staff completed EVAAL on all of Lafayette County. Figure 20 displays the erosion vulnerability index using the worst-case scenario for Lafayette County with five categories of soil erosion areas green, light green, and yellow are areas of least concern while areas that are orange and red are areas of concern and should be field checked.



*Photo: Completed grassed waterway project being seeded in Darlington Township*

Figure 20: Soil Erosion Vulnerability Index Map





## Surface Water Resources and Quality

There are 52 streams, creeks, and rivers that account for 1,005 miles of water flowing through Lafayette County. The Pecatonica and Galena rivers provide the major waterways and drainage areas, which drain to the Mississippi River. In addition, there are five lakes, which include: Yellowstone Lake, Horseshoe Lake, Lake Joy, Hidden Valley Lake, and Bloody Lake.

Surface water quality in Lafayette County is impacted by both nonpoint and point sources of pollution. Pollutants such as sediments, phosphorus, nitrogen, and bacterial pathogens find their way into surface and ground waters, often times degrading fish and wildlife habitat, and also posing threats to human health and safety. Because of the rural nature of Lafayette County, and the fact that agriculture is the dominant land use, it has long been presumed that the majority of nonpoint pollutants can be attributed to agricultural land use activities.



*Photo: Wolf Creek*



## Fishery Resources

The fishery resources of Lafayette County consist primarily of streams. There are 70 miles of classified trout streams encompassed in 17 streams. Brown trout and brook trout are the only two species of trout actively managed in Lafayette County. Brown trout are present in all of the trout streams while brook trout are found only in the Steiner Branch. All Lafayette County trout streams are a class 2 classification, which require stocking to maintain a fishable population because the streams may have some natural reproduction, but not enough to utilize available food and space. The DNR stocks each stream annually with small fingerling brown and brook trout.

Warm water sport fisheries can be found in 13 streams totaling just under 106 miles. Smallmouth bass, channel catfish, walleye, and northern pike are the primary species found in Lafayette County's warm water streams. The Pecatonica and East Branch of the Pecatonica Rivers support fishable populations of walleye, channel catfish, and northern pike. The channel catfish and northern pike populations are sustained naturally while the walleye populations are sustained through supplemental stockings. Walleye are stocked annually by the DNR.

Smallmouth bass streams are a unique fishery located in southwest Wisconsin and were once nationally recognized. These small, but productive streams are still a primary destination for many anglers looking to catch smallmouth bass. Popular smallmouth bass streams in Lafayette County include the Galena, Shullsburg Branch, Ames Branch, and the Yellowstone River above Yellowstone Lake. The most notable of these is the Galena. Thirty-five miles of the Galena River are considered Exceptional Resource Water (ERW) under state administrative rules. The Galena River supports one of the best wadable stream smallmouth bass fisheries in the state. There are just over 15 miles of public fishing easement located on the Galena River allowing public access to utilize this resource.

Yellowstone Lake, Horseshoe Lake, and Bloody Lake are three lakes which offer public access and support fishable populations of gamefish or panfish. Located in Blackhawk Memorial Park in Woodford, Horseshoe and Bloody Lake are not actively managed, and the fisheries are a result of flood waters from the East Branch of the Pecatonica River. During long winters with deep ice and snow cover it is not uncommon for Horseshoe or Bloody Lake to experience a winterkill of the fishery. Each lake supports a small fishery of black bullheads, black crappie, bluegill sunfish, and the occasional largemouth bass or channel catfish.

## Yellowstone Lake

This relatively shallow, 453-acre reservoir in Northeastern Lafayette County is a popular lake for recreational fishing. This is largely due to the lack of natural lakes and scarcity of large impoundments in the driftless area, making it a notable resource for Lafayette County. Compared to other impoundments throughout the state, Yellowstone Lake is more lake-like and less riverine due to the long water residence time (>15 days). The DNR classifies this lake as Complex-Warm-Dark lake based on low water clarity, the warmwater thermal regime, and the complex assemblage gamefish species inhabiting the lake.

This classification helps to set fisheries management expectations for the lake. Currently, fish species such as walleye, largemouth bass, smallmouth bass, black crappie, bluegill, muskellunge, and channel catfish have populations that are actively managed in the lake. Unfortunately, management of several of these species has been difficult due to habitat changes over the last 20-30 years related to increasing eutrophication (i.e., increasing nutrient concentrations and decreasing water clarity), sedimentation, loss of submerged aquatic plants, detrimental species and other factors.



*Photo: Yellowstone Lake – Credit: Travel Wisconsin*

A recent comprehensive assessment of fish populations in Yellowstone Lake was performed in 2022-2023. In general, fish species more tolerant of turbid lake conditions (walleye, black crappie, channel catfish, common carp, bigmouth buffalo) were found to have high levels of abundance. Fish populations tending to perform better in clear water lake systems with abundant submerged aquatic plants (largemouth bass, bluegill) were found to have lower levels abundance and signs of recruitment limitations. Muskellunge also showed signs of reduced, but this was primarily attributed to reservoir escapement. Although stocking and fishing regulations have helped to maintain the fishery, the best long-term management of the fishery and water quality will likely involve habitat improvement work and working with partners to implement conservation best management practices to reduce upstream sediment and nutrient loading

This 2022-2023 assessment also determined that detrimental common carp were less prevalent in Yellowstone Lake than previously observed. Bigmouth buffalo, a species similar in appearance to common carp, were found to be 10-11 times more abundant than carp. Bigmouth buffalo are a native planktivore that occurs naturally in the Pecatonica River basin yet have only known to occur in Yellowstone Lake for the last 15 years. Although planktivore fish species can cause turbid lake conditions through food-web interactions, it's unknown how detrimental bigmouth buffalo can be in Yellowstone Lake. To better understand the effects of bigmouth buffalo and common carp, and distinguish these effects from land use impacts, contract removals were performed in 2022-2023 in attempt to biomanipulate the lake in attempt to improve water clarity. Measures of water quality will be monitored for improvements in the years following these removals.

## Smallmouth Bass Streams

Probably the most notable fishery resources in Lafayette County are the smallmouth bass streams. These streams are supported entirely through natural reproduction and contain other unique fish populations. Smallmouth bass in this county occur in both cool and warm water streams, which have the habitat to be either nursery streams for juveniles or streams that can also support adult abundance with higher size structure. The most productive smallmouth bass populations with popular fisheries occur in the Fever River (aka Galena River), Shullsburg Branch, Ames Branch, Mineral Point Branch and Pat's Creek. Historically, there were fishable abundances of smallmouth bass occurring in Otter Branch and Woods Branch, but these productive populations no longer exist likely due to habitat degradation and fish kills. Yellowstone River has had a notable smallmouth bass population, but that population has oscillated in abundance and has experienced decline over time due to sedimentation impacts. Other smallmouth bass populations occur in the West Branch Pecatonica River and East Branch Pecatonica River, but the current population status of these streams is relatively unknown.

Some streams such as the Yellowstone River have shown lower catch rates over the years. Yellowstone River appears to be showing increased signs of sedimentation and other potential water quality impacts may be limiting smallmouth bass. Similarly, there were some formerly notable smallmouth bass streams like Otter Creek that went from a thriving fishery to nearly extirpated population. The stream was long altered from agricultural impacts, but after several major historical fish kills, the population was wiped out. Few smallmouth bass occur in Otter Creek anymore based on recent surveys. There may be potential for restoration in Otter Creek, but the scale of work required would be substantial.

## Trout Streams

There are 16 trout streams in Lafayette County occurring in the East Branch Pecatonica River, Yellowstone River, Spafford Creek-Pecatonica River, and Ames Branch-Pecatonica River watersheds. These trout streams primarily contain brown trout population with a few brook trout populations. Stocking has always been necessary to try to maintain fishable trout population abundance due to the lack of natural reproduction. Despite the marginal conditions of many of these streams, trout habitat suitability was not fully considered when trout were originally stocked for the purpose of creating new fishing opportunities. Many of these streams were assumed to be Class II trout streams, so trout stocking continued in many of streams without fully assessing the survival of stocked trout and natural reproduction.

In 2022, an assessment of the classified trout streams was performed in the Pecatonica River Basin of Lafayette County. This was an assessment of all the classified trout streams in Lafayette County, except for the trout streams originating in Green County (Brennan, Dougherty, Erickson, and Sawmill Creeks). The purpose of this 2022 assessment was to determine the current trout population status, while evaluating trout stream classification and management (stocking, habitat, access, regulation).

The assessment found that brown trout populations in all streams showed low abundances at all life-stages. Most notably, all streams had adult brown trout abundances that were less than 50 fish/mile, which is below the threshold for minimum fishable population size. No trout were found in three streams (Lovett Creek, Silver Springs Creek, Gravel Run Creek) and two streams (Canon Creek and Brown Branch) had less than 2 trout observed. Many of these streams also exhibited a range of sedimentation impacts and elevated temperatures. Streams with little to no trout and lacked suitable trout habitat were recommended for declassification. For all streams, the lack of adult brown trout abundance from this assessment and past assessments indicated that overall survival of stocked fish was continually poor. With the lack of public access on these streams and habitat not conducive to trout survival, it is not cost-effective to continue stocking brown trout. Therefore, it was recommended that brown trout stocking to be discontinued in these streams for foreseeable future. Future monitoring of these remnant trout streams (Copper Creek, Mud Branch, Apple Branch, Whiteside Creek, Steiner Branch, Wolf Creek, Trout Brook) will still continue. The next assessment will occur in 2028 and will incorporate fish surveys and the use instream temperature loggers to confirm if remnant trout streams are still suitable for trout.

Apple Branch and Wolf Creek were the only remnant brown trout populations that showed any potential for brown trout natural reproduction. These streams showed the highest levels of age-0 brown trout abundance in the assessment. Quality habitat and biotic integrity appeared to be limited in both streams, but environmental conditions can change over time and change the outlook of these populations. Currently, these streams have minimal riparian protections, no DNR streambank easements and have a limited history of conservation and habitat improvement work. The lack of streambank easement restricts the DNR from performing direct habitat work, so the DNR will have to work with external partners to accomplish any potential habitat or conservation measures for Wolf Creek and Apple Branch in the future. Apple Branch and Wolf Creek will be closely monitored in the future to see if these natural populations can rebound.

Steiner Branch contains the only brook trout population in Lafayette County and overall, it is the best overall trout stream in the county. The success of this trout stream is owed its high quality coldwater habitat and its notable watershed and riparian protections from the Yellowstone State Wildlife Area, which surrounds 70% of the stream. Steiner Branch is considered a Class II trout stream since natural reproduction has been historically limited there. Fortunately, brook trout natural reproduction has been increasing over the last 5 years. Successful brook trout spawning is a sign of good water quality and habitat conditions. Specifically, increasing brook trout natural reproduction indicates a prevalence of groundwater upwelling throughout the stream bed. The DNR still has to stock brook trout to maintain adult abundance, since there is inadequate natural recruitment to support a fishable population of adult fish. The survival of stocked brook trout is good as indicated by the numbers of adult fish in the population. Adult brook trout abundances in Steiner Branch have oscillated in the last 10 years, yet their numbers have remained strong. Steiner Branch remains a high priority trout management stream, based on the current population trends and habitat potential. Brook trout management will continue to be allocated to Steiner Branch into the future, including continued stocking and habitat improvement measures.

The other Class II trout streams shared by both Lafayette and Green Counties were assessed previously in 2018. These include Sawmill Creek, Erickson Creek, Dougherty Creek, and Brennan Creek, which all contain stocked brown trout populations. With the exception of Brennan Creek, the 2018 assessment found that all of these streams exhibited limited amounts of natural reproduction, yet low to moderate abundances of age-1 brown trout abundance indicated some signs of natural recruiting fish in Erickson, Sawmill and Dougherty Creeks. Erickson and Sawmill Creeks had moderate abundances of adult brown trout, exhibiting considerable fishing opportunities. Dougherty Creek exhibited low adult abundances that were generally considerable fishable, yet adult fish were less prevalent in upstream and downstream habitats. Brennan Creek exhibited lowest abundances brown trout at all life stages. Although habitat issues like

sedimentation were present in all of these streams, habitat quality was fair to good and streams temperatures were preferable to trout. With the exception of Brennan Creek, streams tended to be fairly conducive to brown trout indicating that stocking and habitat improvements are effective and should be continued in Erickson, Sawmill, and Dougherty Creeks. Surprisingly, Brennan Creek had the coldest water temperatures, yet lacked typical pool and riffle habitat characteristics for brown trout. It may be Brennan Creek habitat shows a greater potential for brook trout than brown trout, based on habitat characteristics. Future opportunities brook trout reintroduction should be considered if trout management is to be continued in Brennan Creek.



Photo: Copper Creek

Table 2: Trout Streams

Name of Waterbody	Trout Species	Total Length of Trout Water
<b>Apple Branch</b>	Brown	2.77 mi
<b>Brown Branch</b>	Brown	2.20 mi
<b>Brennan Creek</b>	Brown	3.36 mi
<b>Cannon Creek</b>	Brown	7.67 mi
<b>Copper Creek</b>	Brown	3.59 mi
<b>Dougherty Creek</b>	Brown	13.98 mi
<b>Gravel Run Creek</b>	Brown	4.91 mi
<b>Jones Branch</b>	Brown	5.19 mi
<b>Lovetts Creek</b>	Brown	4.13 mi
<b>Mud Branch</b>	Brown	3.03 mi
<b>Sawmill Creek</b>	Brown	4.03 mi
<b>Silver Spring Creek</b>	Brown	5.90 mi
<b>Slawther Creek</b>	Brown	1.47 mi
<b>Steiner Branch</b>	Brook	2.33 mi
<b>Wolf Creek</b>	Brown	0.97 mi
<b>Trib. To Wolf Creek</b>	Brown	3.26 mi
<b>Whiteside Creek</b>	Brown	1.55 mi

Source: DNR Surface Water Data Viewer

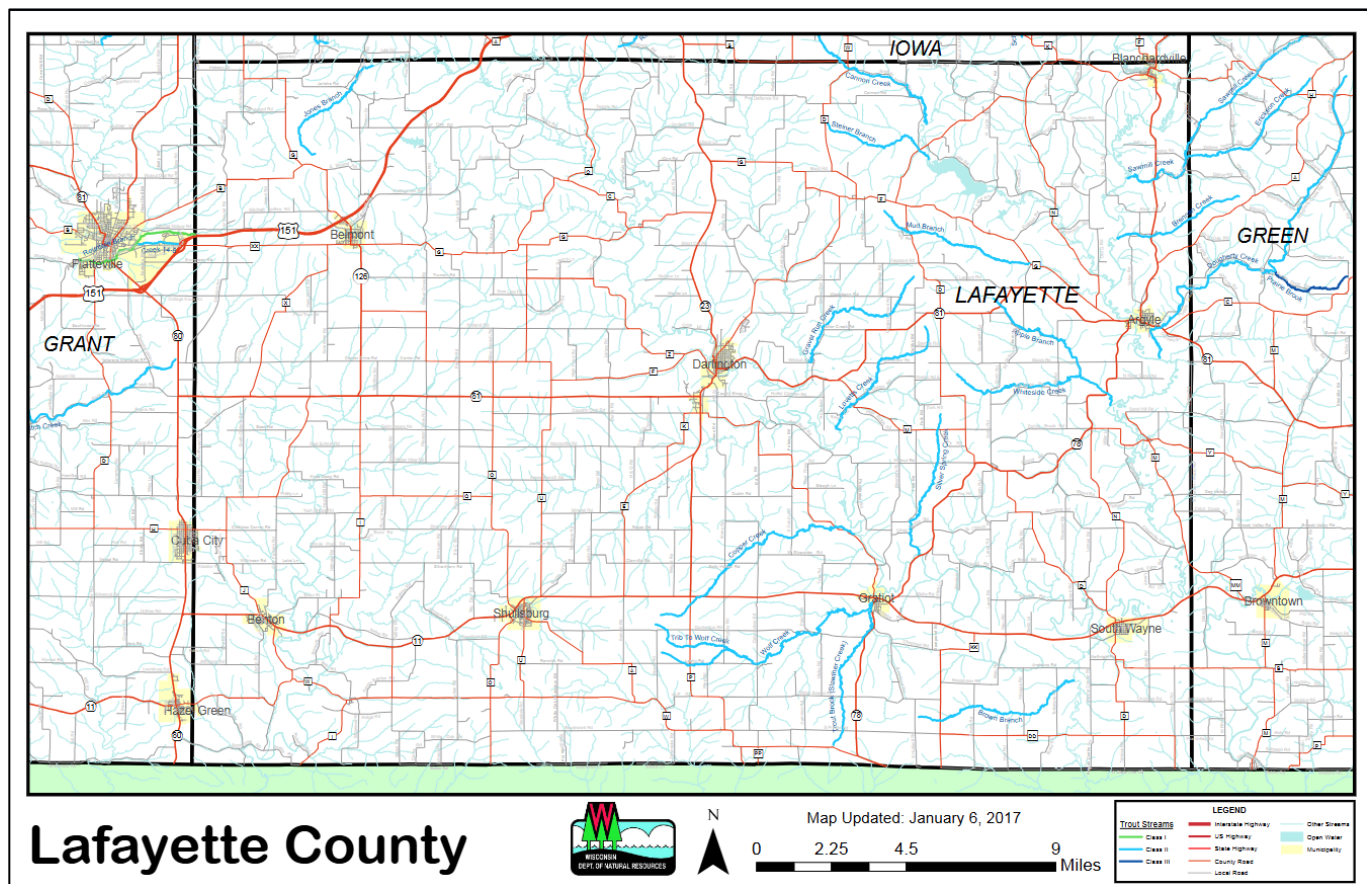


Figure 21: Map of Trout Streams in Lafayette County



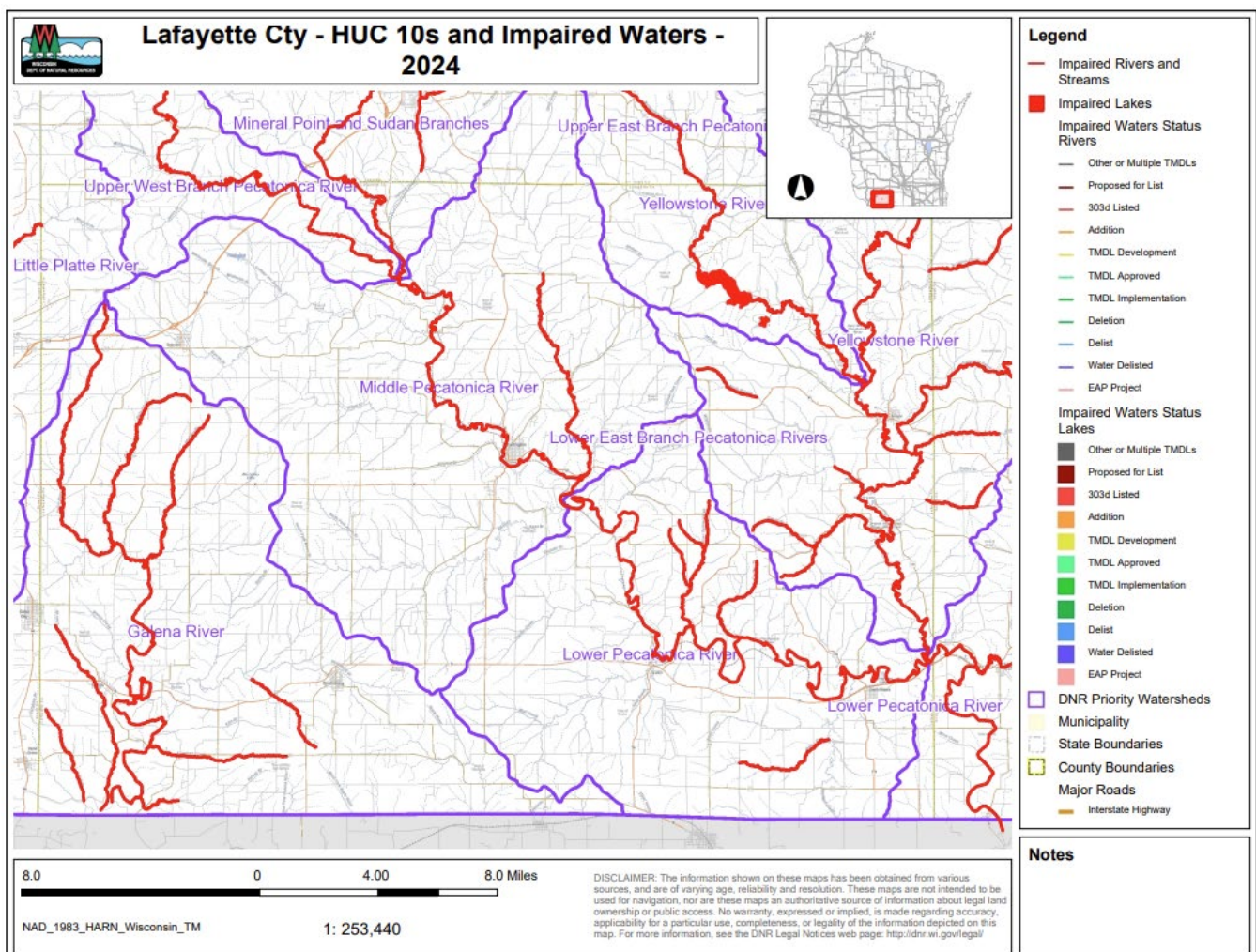
## Impaired Waters

Section 303(d) of the Federal Clean Water Act (CWA) as amended by the Water Quality Act of 1987, Public Law 100-4 requires the Environmental Protection Agency (EPA) to develop Total Maximum Daily Loads (TMDLs) for all pollutants violating or causing violation of applicable water quality standards for each impaired water body. A TMDL determines the maximum number of pollutants that a water body is capable of assimilating while continuing to meet the existing federal water quality standards. For all the sources of pollution that cause impairment, such loads are established at levels necessary to meet the applicable standards with consideration given to seasonal variations and margin of safety.

Every two years, DNR is required to assess and report to the federal government on water quality, and what the state is doing to protect, monitor, and restore it. DNR's most recent impaired waters list identifies six water bodies in Lafayette County that are impaired. Figure 22 displays the current 303(d) impaired waters, and the waters with TMDLs. Each stream is listed in Table 3, which lists the source category, pollutant, and impairment indicator.



*Photo: Streambank encroachment in Lafayette County*



*Figure 22: Impaired Waters*

Table 3: Listed Impaired Waters

Waterbody Name	Length/size	Watershed	Source Category	Pollutant	Impairment indicator	Priority rank
Brown Branch	4.6 mi.	SP07	NPS	Unknown	Degraded Biological Community	LOW
Bull Branch	5.4 mi.	GP01	PS/NPS PS/NPS PS	Total Phosphorus Sediment/TSS Zinc	High Phosphorus Degraded Habitat Chronic Aquatic Toxicity	LOW MEDIUM LOW
Coon Branch	7.9 mi.	GP01	PS/NPS	Unknown	Degraded Biological Community	LOW
Diggins Creek	5.4 mi.	GP01	NPS	Lead Sediment/TSS Unknown Zinc	Chronic Aquatic Toxicity Physical Substrate Habitat Alterations Biological Integrity Chronic Toxicity	LOW MEDIUM LOW LOW
Dougherty Creek	14 mi.	SP03	NPS	Total Phosphorus	Degraded Biological Community	LOW
East Branch Pecatonica River	55.1 mi.	SP03	PS/NPS	Total Phosphorus	Unknown	LOW
Erickson Creek	5.7 mi.	SP03	NPS	Total Phosphorus	Unknown	LOW
Feather Branch	5.0 mi.	SP07	PS/NPS	Total Phosphorus	Degraded Biological Community	MEDIUM
Galena River	32.6 mi.	GP01	PS/NPS	Unknown	Degraded Biological Community	LOW
Hidden Valley Lake	22.4 ac.	SP04	NPS	Total Phosphorus	Eutrophication	LOW
Kelsey Branch	2 mi.	GP01	NPS	Total Phosphorus	Degraded Biological Community	MEDIUM
Madden Branch	7.7 mi.	GP01	NPS	Unknown	Degraded Biological Community	LOW
Mineral Point Branch	24.5 mi.	SP09	NPS	Total Phosphorus	Degraded Biological Community	MEDIUM
Mounds Branch	4.5 mi.		NPS	Unknown	Degraded Biological Community	LOW
Otter Creek	10.6 mi.	SP08	NPS	Ammonia-Toxin BOD	Degraded Biological Community Degraded Biological Community	LOW LOW
Pats Creek	9.0 mi.	GP01	NPS	Unknown	Degraded Biological Community	LOW
Pecatonica River	94.0 mi.	SP07, SP08, SP10	PS/NPS	Total Phosphorus	Unknown	LOW
Silver Spring Creek	5.9 mi.		NPS	Total Phosphorus	Degraded Biological Community	LOW
Unnamed Tributary to Shullsburg Branch	4.3 mi.	GP01	NPS	Lead Sediment/TSS Zinc	Chronic Aquatic Toxicity Degraded Habitat Chronic Aquatic Toxicity	LOW MEDIUM LOW
Unnamed Tributary to Silver Spring Creek	1.4 mi.	SP07	NPS	Total Phosphorus	Degraded Biological Community	MEDIUM
Whiteside Creek	1.6 mi.	SP03	NPS	Unknown	Degraded Biological Community	LOW
Yellowstone Lake	453.3 ac	SP04	NPS	Total Phosphorus	Eutrophication, Excess Algal Growth	LOW
Yellowstone River	22.6 mi	SP04	NPS	Total Phosphorus	Degraded Biological Community	LOW

Source: DNR 2024 Impaired Waters List

## **Impaired Water Descriptions:**

The following describes each impaired water with the most recent information and notes available from the DNR's impaired waters resource webpage. The Index of Biological Integrity (IBI), a tool used to identify and classify water pollution problems, is referenced within this section. An IBI associates anthropogenic influences on the waterbody with biological activity in the water body, and impairment is formulated using data developed from biological surveys.

**Brown Branch** – Brown Branch is in the Lower Pecatonica River watershed, and is a Class II trout stream, which are stocked annually. It has an overall high ranking for runoff impacts on groundwater. According to the 2018 assessments, the branch showed that fish and aquatic life was poor.<sup>11</sup>

**Bull Branch** – “Bull Branch is a three-mile-long tributary to the Galena River. It derives much of its flow from mine discharges in the area. The stream is listed as impaired water due to sedimentation caused by nonpoint source pollution. While this may have been a cause for impairment in the past, current data (2010) and an observation caused by land use practices suggest that the stream impairment may now be more related to high concentrations of heavy metals that are leaching from the historic mining in the area. Water chemistry data shows zinc concentrations near levels shown to cause toxicity in aquatic organisms. Biological assessments show the waters of Bull Branch inhibit growth and reproduction of test organisms at the base of the food chain. Bull Branch may be able to sustain some level of cold-water fishery if water quality is improved and physical impairments such as perched culverts are removed. However, the same groundwater that lends itself as a source of cool water to the system also contains the metals that limit its use.”<sup>12</sup>

**Coon Branch** – “Coon Branch rises near Cuba City and flows southeasterly to its junction with the Galena River. Cuba City's wastewater treatment facility discharges to a small tributary of Coon Branch. Data collected during the 1990s suggested that the stream may be impacted by heavy metal contamination from historic mining. While a fishery survey conducted in 2008 showed good numbers of common shiners, creek chubs, hornyhead chubs, and southern redbelly dace, the stream lacked the diversity of species of other streams in the area. A bioassay should be conducted to determine if metal toxicity may be a factor in limiting this stream's potential. There is also a perched culvert at Beebe Road which may be limiting fish movement up from the Galena River.”<sup>13</sup>

**Diggings Creek** – “Water quality, in-stream habitat, and the stream's fishery have been impaired in this Galena River tributary due to mine waste, specifically roaster piles, adjacent to the stream. In the late 1990's, the DNR undertook a remediation project to remove mine waste material from the stream site. The most recent macroinvertebrate survey showed the insect community to be good, although lacking in diversity and dominated by crane flies. A fisheries survey should be conducted to determine the contemporary status of the stream.”<sup>14</sup>

**Dougherty Creek** – “Dougherty Creek is a moderate sized stream that has an existing use as a Class II trout stream for much of its length. The upper 2 miles has an existing use as a limited forage fishery and is on the state's list of impaired waters for habitat degradation and dissolved oxygen problems. While most of this short section of stream has now been put in a set-aside program, there are several barnyards at the headwaters of the stream that were identified as sources of nutrients and biochemical oxygen demand (BOD) to the stream. The stream flows through small patches of forest, cropland, and wetland, but also through pasture where it suffers severe bank erosion. The stream bottom above Apple Grove Road is primarily gravel. Below this area, silt and clay become more prevalent and the water is more turbid.”<sup>15</sup>

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<sup>11</sup> “Water Detail - Brown Branch.” *Water Detail - Brown Branch, Lower Pecatonica River Watershed (SP07)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13773. Accessed 18 Apr. 2024.

<sup>12</sup> *Water Detail - Bull Branch, Galena River Watershed (GP01)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13836. Accessed 18 Apr. 2024.

<sup>13</sup> *Water Detail - Coon Branch, Galena River Watershed (GP01)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13837. Accessed 18 Apr. 2024.

<sup>14</sup> *Water Detail - Diggings Creek, Galena River Watershed (GP01)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=353842. Accessed 18 Apr. 2024.

<sup>15</sup> *Water Detail - Dougherty Creek, Lower East Branch Pecatonica Rivers Watershed (SP03)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13698. Accessed 18 Apr. 2024.



**East Branch Pecatonica River** – “The East Branch of the Pecatonica River has its headwaters between Barneveld and Blue Mounds. Both villages discharge wastewater to the East Branch. The river flows thirty-two miles down to the town of Blanchardville and is navigable for most of its length. The river has four miles of classified trout waters, but most of the river in this watershed is a warm water sport fishery. The gradient is fairly low in comparison to other streams in the area which provides holes and areas of deep, slow-moving water. Walleye, smallmouth bass, channel catfish, and northern pike are found in the river. Walleye stocking appears to have been successful with larger numbers of walleyes being caught by anglers.”<sup>16</sup>

**Erickson Creek** – “Located in northwest Green County, Erickson Creek flows toward the southwest where it joins Sawmill Creek just across the Lafayette County border. The stream is a moderate sized, Class II trout stream. Macroinvertebrate sampling showed “very good” water quality, and despite some problems associated with nonpoint source pollution and channel straightening, this creek displays the best water quality in the watershed (Marshall, 1991). It has not been surveyed recently.”<sup>17</sup>

**Feather Branch** – “Originating near the village of Wiota, this small stream flows southerly into the Pecatonica River. Little is known about this stream. The Surface Waters of Lafayette County (1967) reports that, “if it were not for its scouring floods during periods of heavy runoff it might qualify as a marginal trout stream.’ The report goes on to say that, ‘the steep banks and lack of general watershed cover in conjunction with the steep nature of the surrounding landscape do not favor a permanent fishery.’ Fago (1976) reports finding low numbers of tolerant warm water forage species.”<sup>18</sup>

**Hidden Valley Lake** – “Water is impaired due to one or more pollutants and associated quality impacts. Hidden Valley Lake, in the Yellowstone River Watershed, is a 22.39-acre lake that falls in Lafayette County. This lake is managed for fishing and swimming and is currently considered impaired.”<sup>19</sup>

**Kelsey Branch** – “Kelsey Branch is a 6 ½ mile long tributary to the Galena River that flows from east to west just north of the Illinois border. The most recent data collected (2007) suggests that this stream is a typical cool water transitional stream containing numbers of fantail darters, stonerollers, common shiners, and southern redbelly dace. Biologists noted this high gradient stream flows through a highly pastured corridor and has large areas of bank erosion and moderate sedimentation in pools. It would benefit from managed grazing and other agricultural best management practices.”<sup>20</sup>

**Madden Branch** – “Madden Branch, an 8-mile-long tributary to the Galena River in Lafayette County, has historically served as a smallmouth bass fishery with abundant non-game fish. Surveys conducted since 2006 found the presence of smallmouth bass, particularly in the lower section, and a non-game fishery indicative of a cool water fishery. Streambank pasturing and manure runoff are threats to this stream which also serves as a nursery for young-of-the year and juvenile smallmouth bass.”<sup>21</sup>

**Mineral Point Branch** – “Mineral Point Branch rises near Dodgeville and flows south to the Pecatonica River. It partially supports a warm water sport fishery, with a portion managed for smallmouth bass. This fishery may be degraded by polluted runoff. A 1990 smallmouth bass survey indicates that the bass fishery in the stream may be affected by whatever factors are causing the decline of the smallmouth bass fishery in southwestern Wisconsin (WDNR, 1992-931). A dam across the stream forms Ludden Lake. We have no information about the effects of that dam on the fishery or water quality

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<sup>16</sup> *Water Detail - E. Br. Pecatonica River, Upper East Branch Pecatonica River Watershed (SP06)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13737. Accessed 18 Apr. 2024.

<sup>17</sup> *Water Detail - Erickson Creek, Lower East Branch Pecatonica Rivers Watershed (SP03)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13708. Accessed 18 Apr. 2024.

<sup>18</sup> *Water Detail - Feather Branch, Lower Pecatonica River Watershed (SP07)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13776. Accessed 18 Apr. 2024.

<sup>19</sup> *Water Detail - Hidden Valley Lake, Yellowstone River Watershed (SP04)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=6861331. Accessed 18 Apr. 2024.

<sup>20</sup> *Water Detail - Kelsey Br, Galena River Watershed (GP01)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13839. Accessed 18 Apr. 2024.

<sup>21</sup> *Water Detail - Madden Br, Galena River Watershed (GP01)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13847. Accessed 18 Apr. 2024.

below the dam. Two fish species on the state's threatened and endangered species list have been found in this stream, the slender madtom and the Ozark minnow (Fago, 1982).”<sup>22</sup>

**Mounds Branch** – “This eight-mile-long stream has its origins in extreme northwest Lafayette and southwest Iowa counties. Historically the stream has had a minor smallmouth bass fishery. Poor agricultural practices including excessive grazing and erosion and barnyard runoff resulted in fish kills in the 1980’s. Monitoring in 2009 at a site just upstream from State Highway 80 showed the presence of smallmouth bass, as well as a diversity of cool-warm transitional forage species, including some very large specimens of common shiner and hornyhead chub. This section is still heavily pastured, with trampled banks and raw, slumping outside bends.”<sup>23</sup>

**Otter Creek** – “Otter Creek is one of the major warm water drainage streams of Lafayette County, flowing 19 miles southward into the West Branch of the Pecatonica River. The Bureau of Research has been sampling the stream over the last decade to determine if stream habitat improvement can increase populations of smallmouth bass. Historically, Otter Creek had good smallmouth bass populations, but these populations declined due to poor habitat. Additionally, the creek has suffered regular fish kills because of manure runoff. The creek has been part of the Stewardship Streambank program where the department will attempt to attain easements where water quality problems need to be addressed such as feedlots or barnyards. In 1993 and 1994, Sport Fish Restoration efforts were made to improve habitat. To date, easements have been obtained, however, stream improvement work has not been conducted on the stream due to poor water quality (Sims, pers. comm.). Despite these measures, the smallmouth bass populations have not improved. A 2001 baseline survey confirmed that this is a warm water sport fishery, but that it is on the decline. The fish population was further impacted by a fish kill during the same year that resulted from the overflow of a manure slurry pit. The Bureau of Research continues to monitor the stream as a part of the original project.”<sup>24</sup>

**Pats Creek** – “This 9-mile-long tributary to the Galena River serves as a smallmouth bass nursery stream. The stream also contains a diversity of warm and cool water transitional non-game species, including the Ozark minnow, a state threatened species. Pats Creek runs through an almost entirely agricultural sub-watershed with heavy pasturing and row cropping. During periods of high flows, the banks exhibit heavy erosion throughout their length. However, the gradient is quite high (23 feet/mile) providing scouring which leaves a bottom mostly of gravel and rubble/cobble.”<sup>25</sup>

**Pecatonica River** – “The East Branch of the Pecatonica River has its headwaters between Barneveld and Blue Mounds. Both villages discharge wastewater to the East Branch. The river flows thirty-two miles down to the town of Blanchardville and is navigable for most of its length. The river has four miles of classified trout waters, but most of the river in this watershed is a warm water sport fishery. The gradient is low in comparison to other streams in the area which provides holes and areas of deep, slow-moving water. Walleye, smallmouth bass, channel catfish, and northern pike are found in the river. Walleye stocking appears to have been successful with larger numbers of walleyes being caught by anglers.

The rapid runoff of precipitation in this predominantly agricultural watershed causes problems about habitat, turbidity, and nutrient load. Woody debris presents a problem for navigation. Additionally, the dam at Blanchardville impedes fish movement upstream.”<sup>26</sup>

**Silver Spring Creek** – “Silver Spring Creek is in southeastern Lafayette County and is part of the Lower Pecatonica River watershed. All five miles of Silver Spring Creek are currently listed on the 303(d)-list due to degraded habitat resulting from sedimentation from nonpoint source pollution. A 2001 fish survey from the Silver Spring Creek Road crossing found

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<sup>22</sup> *Water Detail - Mineral Point Branch, Mineral Point and Sudan Branches Watershed (SP09)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13810. Accessed 18 Apr. 2024.

<sup>23</sup> *Water Detail - Mounds Branch, Little Platte River Watershed (GP03)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13899. Accessed 18 Apr. 2024.

<sup>24</sup> *Water Detail - Otter Creek, Middle Pecatonica River Watershed (SP08)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13798. Accessed 18 Apr. 2024.

<sup>25</sup> *Water Detail - Pats Creek, Galena River Watershed (GP01)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13848. Accessed 18 Apr. 2024.

<sup>26</sup> *Water Detail - Pecatonica River, Middle Pecatonica River, Jordan and Skinner Creeks, Lower Pecatonica River Watershed (SP02)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13677. Accessed 18 Apr. 2024.

seven brown trout (3.0 - 14.5 inches) and eight other minnow and forage species, including the presence of brook stickleback, a cool-water indicator. Silver Spring Creek's current use is as a warm water forage fishery, but the lower 3.9 miles are classified as a Class II trout fishery."<sup>27</sup>

**Whiteside Creek** – "This tributary to the East Branch of the Pecatonica is joined by the Apple Branch about 2 miles above its mouth. This lower section is managed as a warm water forage fishery although some sportfish species have been found in 1979 (Marshall, 1991). The middle 6 miles of stream is managed as a Class II trout fishery. The stream is impacted by bank erosion and organic loading which inhibit trout survival. The goals of the priority watershed plan were to improve trout habitat and reduce erosion and organic loading."<sup>28</sup>

**Yellowstone River** – "The Yellowstone River is classified as a warmwater seepage stream which begins in a valley between two ridges. The drainage from one side of the ridges is northeasterly to Dodge Branch and the other drainage is to Otter Creek in Lafayette County to the southwest. Four unnamed tributaries enter Iowa County. Their total flow is equivalent to approximately 51 percent of Yellowstone's base flow as measured at the county line. Over 94 percent of the watershed is cleared for beef cattle pasturing. As a result of this type of farming, many areas in the watershed are over pastured."

**Yellowstone Lake** – "Yellowstone Lake is a 455-acre impoundment on the Yellowstone River. The lake has a good warm water fishery and experiences a high level of public use because it is within a state park. Water quality has been a problem. Excessive sedimentation and nutrient loading resulted in algae blooms and excessive aquatic plant growth in the past (Eagan, 1988). Lack of adequate aquatic plant growth due to sedimentation has been a more recent problem. Heavy motorboat uses and high winds cause excessive wave action resuspending sediment and nutrients and keeping the lake turbid. Carp and bullhead populations in the lake have expanded rapidly (Van Dyck, 1994). Yellowstone Lake is one of the biggest lakes in the driftless region of Wisconsin and has a relatively small watershed-to-lake surface area ratio for impoundments in this region. Thus, the lake may have a better chance of responding to improved land use management than other impoundments in the region."<sup>29</sup>

## Municipal Wastewater Treatment

DNR regulates the discharge of pollutants to waters of the state through the Wisconsin Pollutant Discharge Elimination System (WPDES) program. NR 102 establishes the water quality criteria and NR 217 establishes the procedures for translating those criteria into standards and incorporating those standards into WPDES Permits. WPDES permits are issued for five-year terms and, upon reissuance, DNR incorporates newly applicable standards or requirements into the reissued WPDES permit.

Under NR 217, DNR will establish water quality-based effluent limitations (WQBEL) for phosphorus to replace the current technology-based phosphorus limitations where the quality of the receiving water requires that level of protection. These may be based on the numerical criteria in NR 102, or on a TMDL analysis which considers all the sources of phosphorus discharge into a receiving water and apportions the contribution and reduction required of each point and non-point source.

Wastewater treatment plants treat residential and industrial wastewater to remove biological or chemical waste products from water, including phosphorus and nitrogen. Many facilities will be required to optimize their wastewater treatment plant to increase the removal of total phosphorus. Figure 23 shows the wastewater locations within the county and locations within proximity of the county along with the impaired waters.

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<sup>27</sup> *Water Detail - Silver Spring Creek, Lower Pecatonica River Watershed (SP07)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13777. Accessed 18 Apr. 2024.

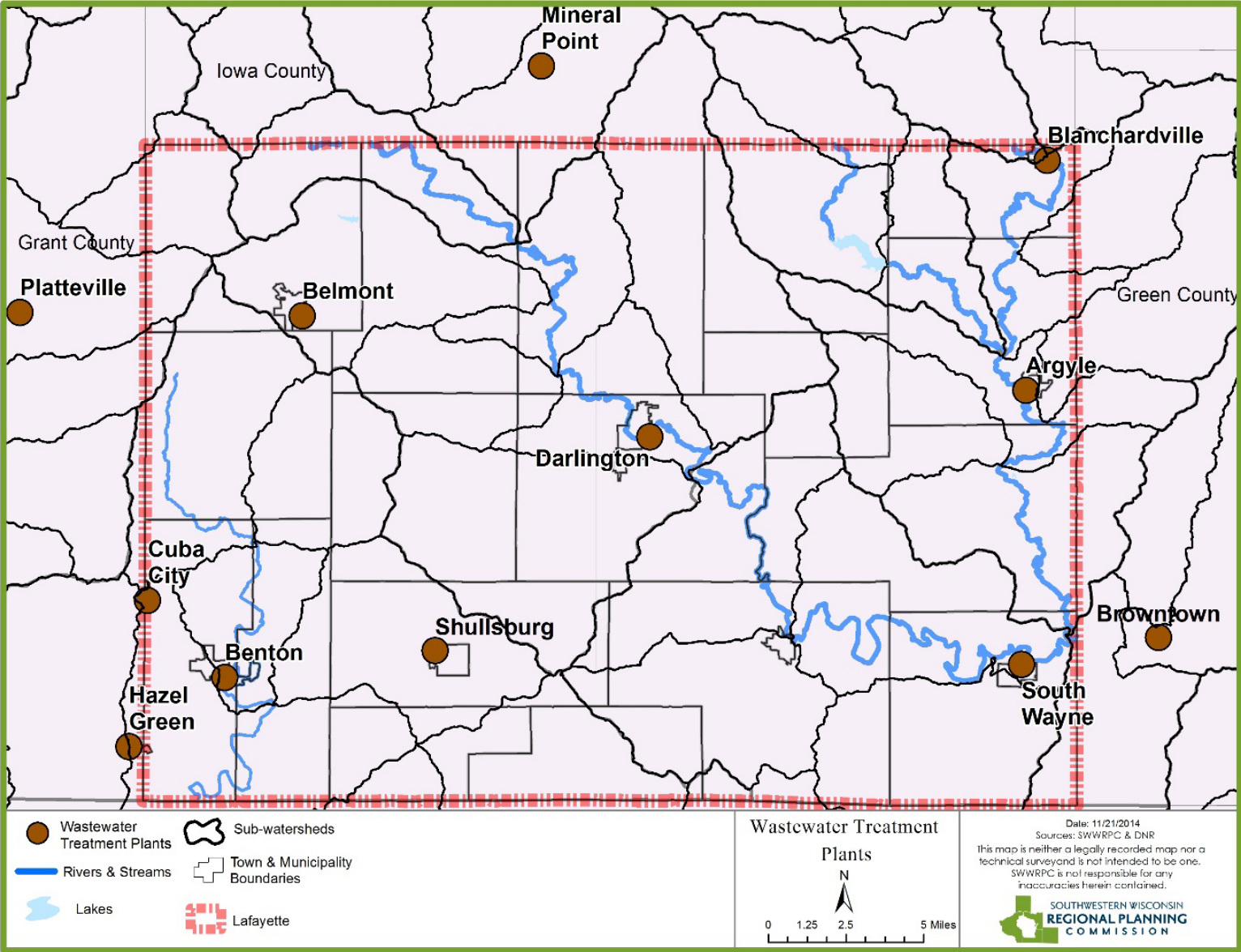
<sup>28</sup> *Water Detail - Whiteside Creek, Lower East Branch Pecatonica Rivers Watershed (SP03)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13691. Accessed 18 Apr. 2024.

<sup>29</sup> *Water Detail - Yellowstone River, Yellowstone River Watershed (SP04)*, apps.dnr.wi.gov/water/waterDetail.aspx?key=13711. Accessed 18 Apr. 2024.



LCPZD has the ability to receive funding from the Multi-Discharger Variance (MDV) program which is administered by the DNR which helps the county to reduce phosphorus discharge into local waterways. The goal is to help improve water quality with nonpoint sources of phosphorus from fields, cities or natural areas by designing projects to reduce phosphorus. MDV is a completely voluntary program for the LCPZD. Every year the Land Conservation Committee decides during budget if the LCPZD will participate. If the LCPZD is participating, they must complete a watershed plan and submit it to the DNR before they can receive the funding. The DNR must review the plans submitted by the LCPZD for the projects they are using the MDV funding for.

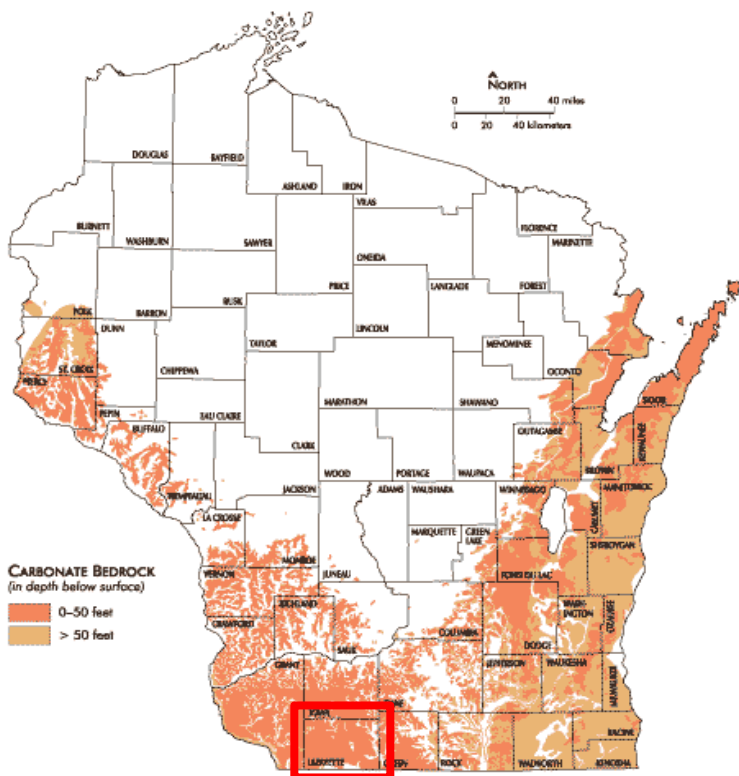
Figure 23: Wastewater Treatment Plants Map



## Ground Water Resources and Quality

Wisconsin has an abundance of groundwater resources, which are present because of the state's geologic history and climate. Lafayette County has nine municipal water systems. The source of all groundwater is precipitation, which percolates down through the soil until it reaches the saturated zone called an aquifer, where it is then contained. Water in aquifers travels from its source to a discharge point such as a well, wetland, spring, or lake. Poor land use decisions can introduce contaminants into groundwater reservoirs, especially in areas where soil is shallow to bedrock.

Figure 25: Karst Potential in Wisconsin



Source: Wisconsin Geological and Natural History Survey

Depending on the type of underlying bedrock, sinkholes can range in size from tiny depressions in the surface to gaping building-eaters that are hundreds of feet wide. Sinkholes in Wisconsin tend to be smaller than 10 feet across. The depth of sinkholes can be highly variable, although most are about as deep as they are wide. The cracks and crevasses in karst act as direct conduits for pollutants to enter groundwater, wells, springs, and streams. If there is a sinkhole, then there is karst. Agricultural communities need to protect their groundwater and wells by being careful about what is being spread in these areas.

## How Karst Works

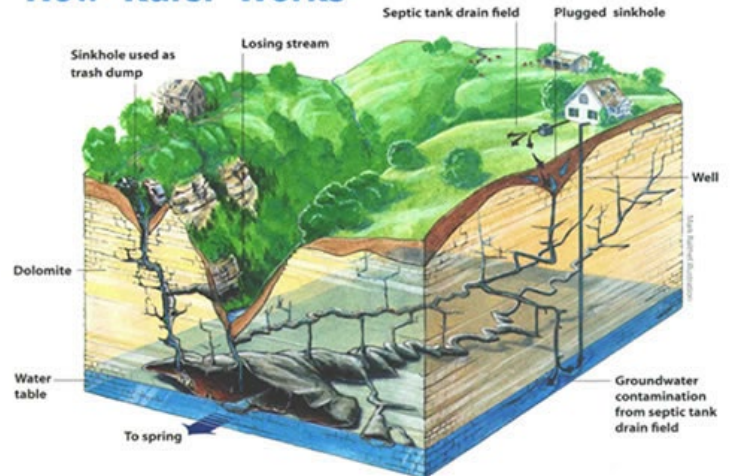


Figure 24: How Karst Works

Karst landscapes may have deep bedrock fractures, caves, disappearing streams, springs, or sinkholes (Figure 24). These features can be isolated or occur in clusters, and may be open, covered, buried, or partially filled with soil, field stones, vegetation, water, or other miscellaneous debris.

A dominant landscape feature in Lafayette County is karst which is created when water dissolves rocks such as dolomite and limestone. The rock is dissolved mostly along fractures and creates caves and other conduits that act as underground streams. Water moves readily through these openings, carrying sediment and pollutants directly into our groundwater.



Photo: A non-compliant well pit being decommissioned after the water well was sealed with bentonite



As shown in the map below, Lafayette County is one of the more susceptible areas of the state because of the thin soils on top of the areas that have fractured dolomite bedrock.<sup>30</sup>

Susceptibility of groundwater to pollutants is the ease with which a contaminant can be transported from the land surface to the top of the groundwater called the water table. The amount of protection offered by the overlying material varies depending on the materials. In some areas, the overlying soil and bedrock materials allow contaminants to reach the groundwater more easily than in other areas.

The Lafayette County groundwater protection policies include four of nine water systems that have a wellhead protection plan. These include Argyle, Benton, Darlington and Shullsburg. Benton and Blanchardville have wellhead protection ordinance. Wellhead protection plans are developed to achieve groundwater pollution prevention measures within public water supply wellhead areas. All municipal wells built after May 1992 are required to have a wellhead protection plan, which consists of several components:

- Identification of the recharge area, zone of influence, and the groundwater flow direction.
- Existing potential contamination sources must be inventoried.
- A protection area must be established.
- A contingency plan for providing safe water in the event of any contamination accident, management plan that describes local ordinances, zoning requirements, monitoring programs and other local initiatives.

Nitrate is the most common contaminant in groundwater aquifers worldwide. Nitrates are nitrogen-oxygen chemical units which can combine with various organic and inorganic compounds. They do not evaporate, do not bind to soils, are very soluble in water, and can easily migrate to ground water. Because they do not evaporate, nitrates are likely to remain in water until they are consumed by plants or other organisms.

Nitrate enters drinking water from nitrate-containing fertilizers, sewage, and septic tanks, and decaying natural material such as animal waste. As a result of human activities and population growth, nitrates are increasing in water resources. The greatest use of nitrates is in fertilizers. Studies have demonstrated long term exposure to high levels of nitrate poses a potential health risk. The Environmental Protection Agency (EPA) set levels of 10 mg/L for total nitrate in drinking water.

Although nitrogen is abundant naturally in the environment, it is also introduced through sewage and fertilizers. Chemical fertilizers or animal manure are commonly applied to crops to add nutrients. It may be difficult or expensive to retain on site all nitrogen brought on to farms for feed or fertilizer and generated by animal manure. Unless specialized structures have been built on the farms, heavy rains can generate runoff containing these

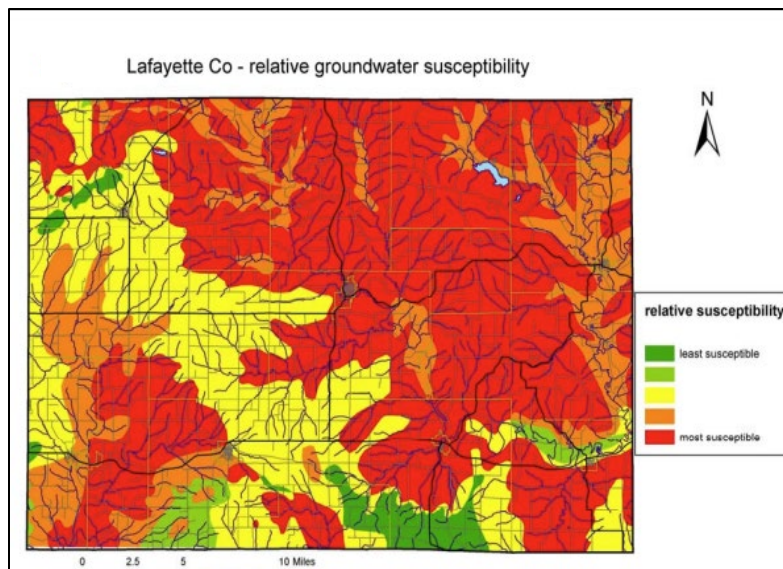


Figure 26: Groundwater Contamination Susceptibility Map

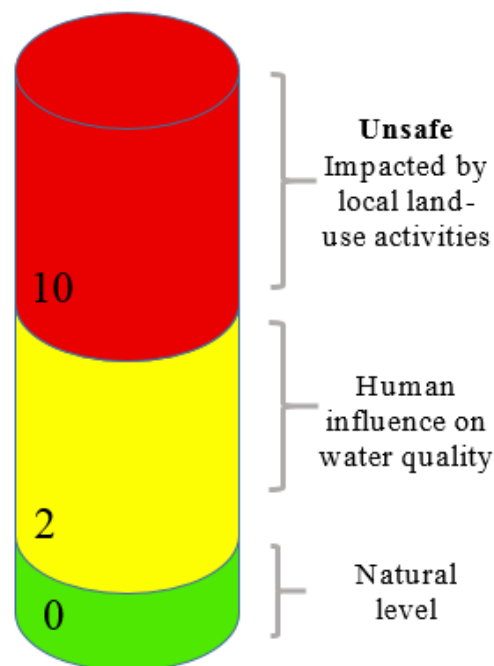


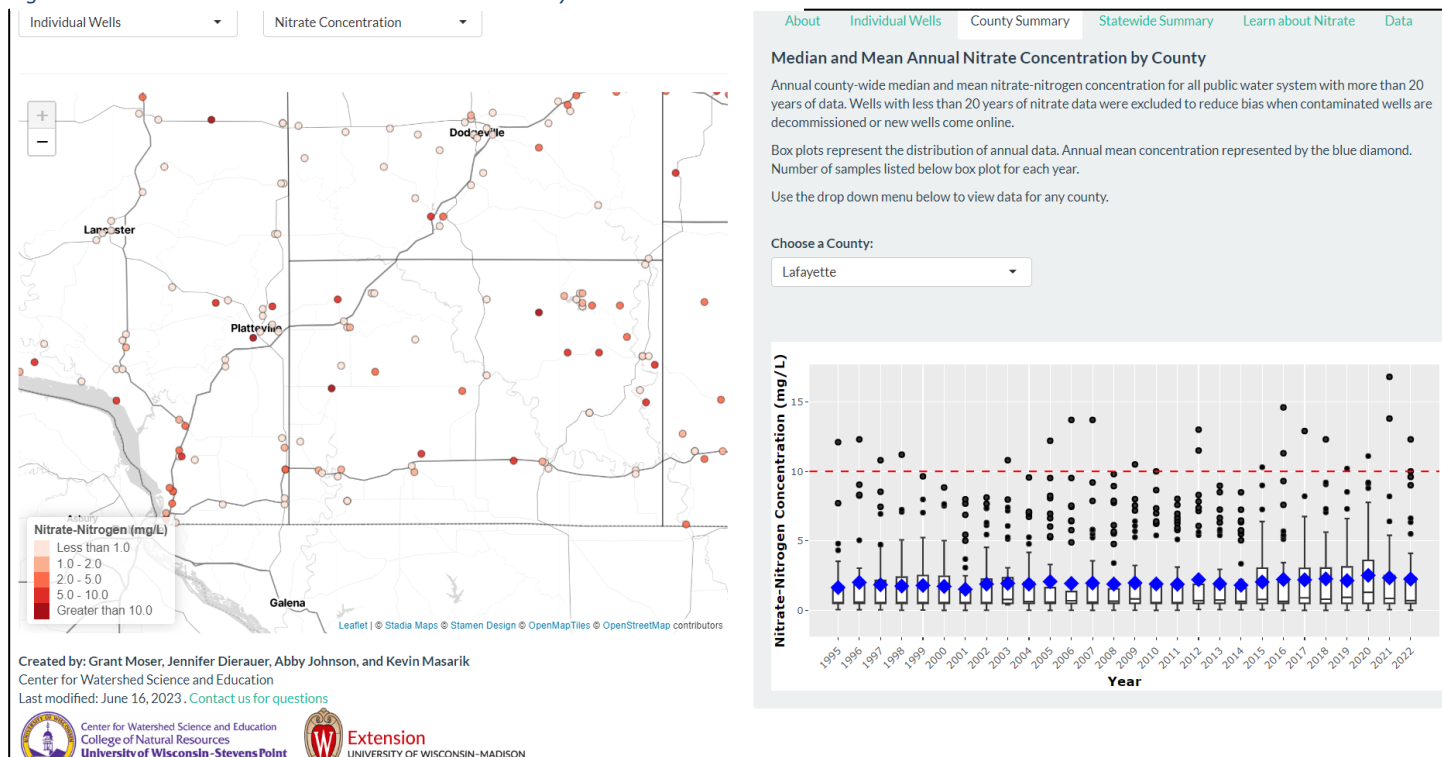
Figure 27: Nitrate mg/L Safety Levels

<sup>30</sup> UWSP, [www3.uwsp.edu/cnr-ap/clue/Documents/groundwater/casestudies/LafayetteCountyGWreport5.pdf](http://www3.uwsp.edu/cnr-ap/clue/Documents/groundwater/casestudies/LafayetteCountyGWreport5.pdf). Accessed 18 Apr. 2024.



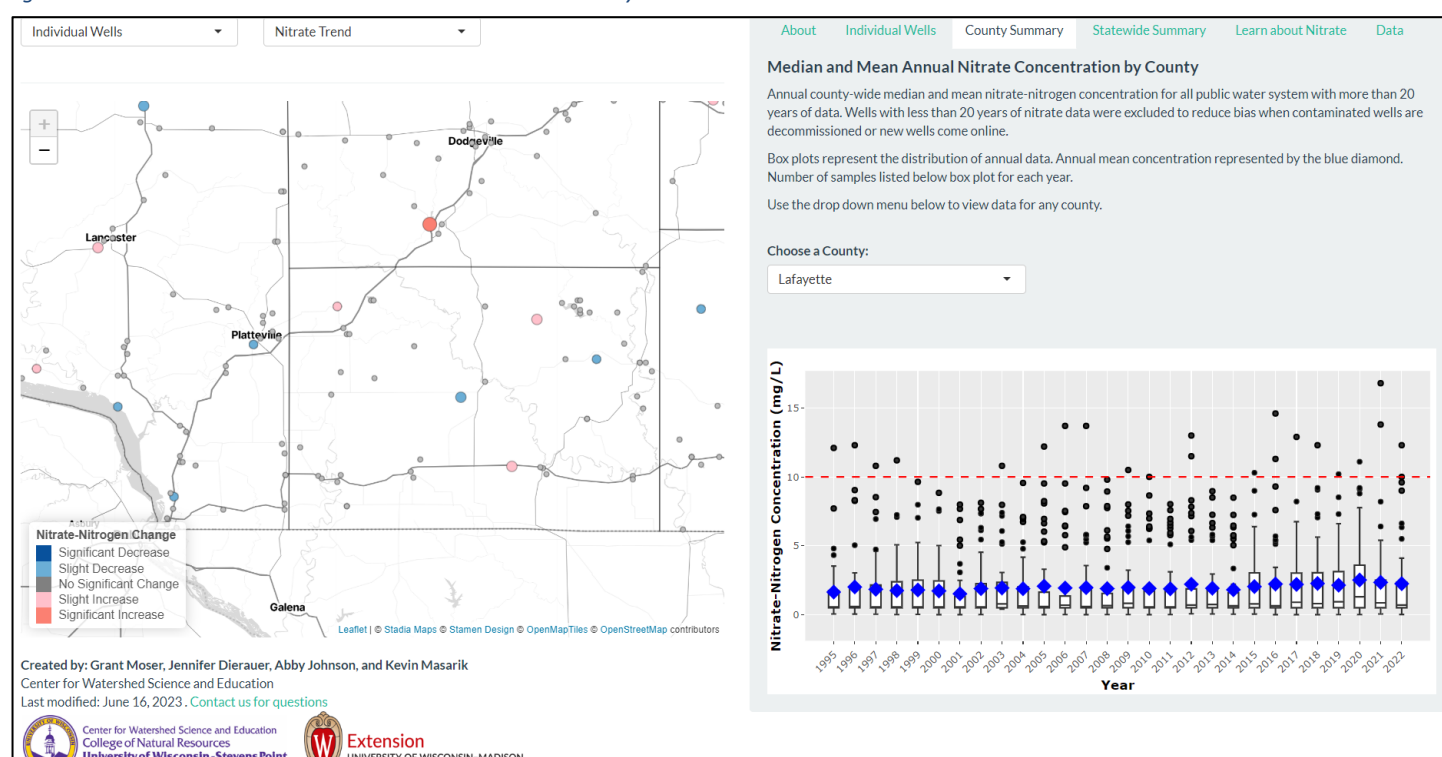
materials into nearby streams and lakes. Wastewater-treatment facilities that do not specifically remove nitrogen can also lead to excess levels of nitrogen in surface or groundwater. Figures 28 and 29 below show the trends of nitrate in Lafayette County's groundwater from 1995 to 2022. Figure 30 on the next page shows private and public well groundwater nitrate concentration by section.

Figure 28: Nitrate Concentration Levels in Public Water Systems



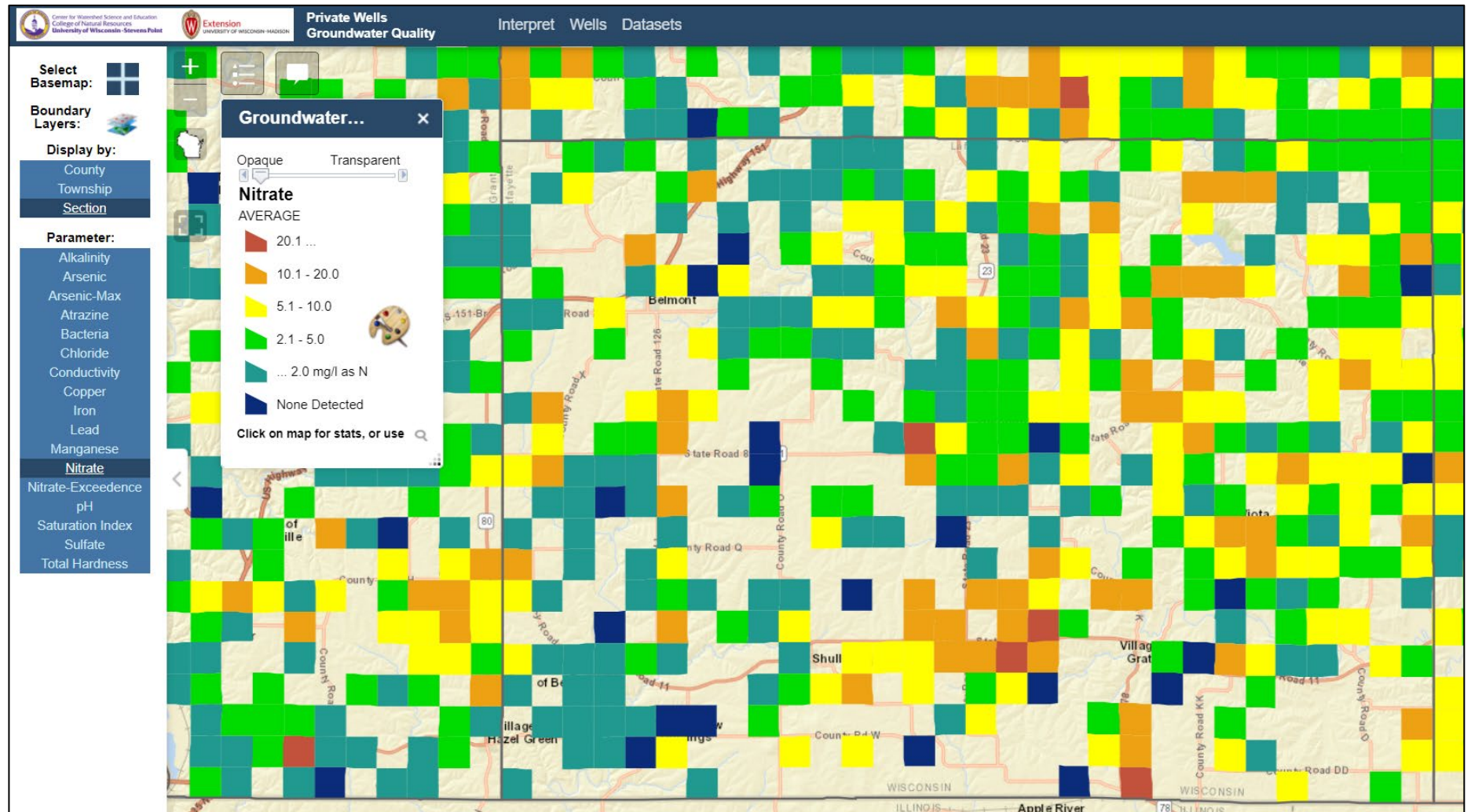
Source: UW Stevens Point Center for Watershed Science and Education - [https://www3.uwsp.edu/cnr-ap/watershed/Pages/nitrate\\_trends.aspx](https://www3.uwsp.edu/cnr-ap/watershed/Pages/nitrate_trends.aspx)

Figure 29: Nitrate Concentrations Levels Trend in Public Water Systems



Source: UW Stevens Point Center for Watershed Science and Education - [https://www3.uwsp.edu/cnr-ap/watershed/Pages/nitrate\\_trends.aspx](https://www3.uwsp.edu/cnr-ap/watershed/Pages/nitrate_trends.aspx)

Figure 30: Public and Private Well Groundwater Nitrate Concentration by Section Data as of 20224

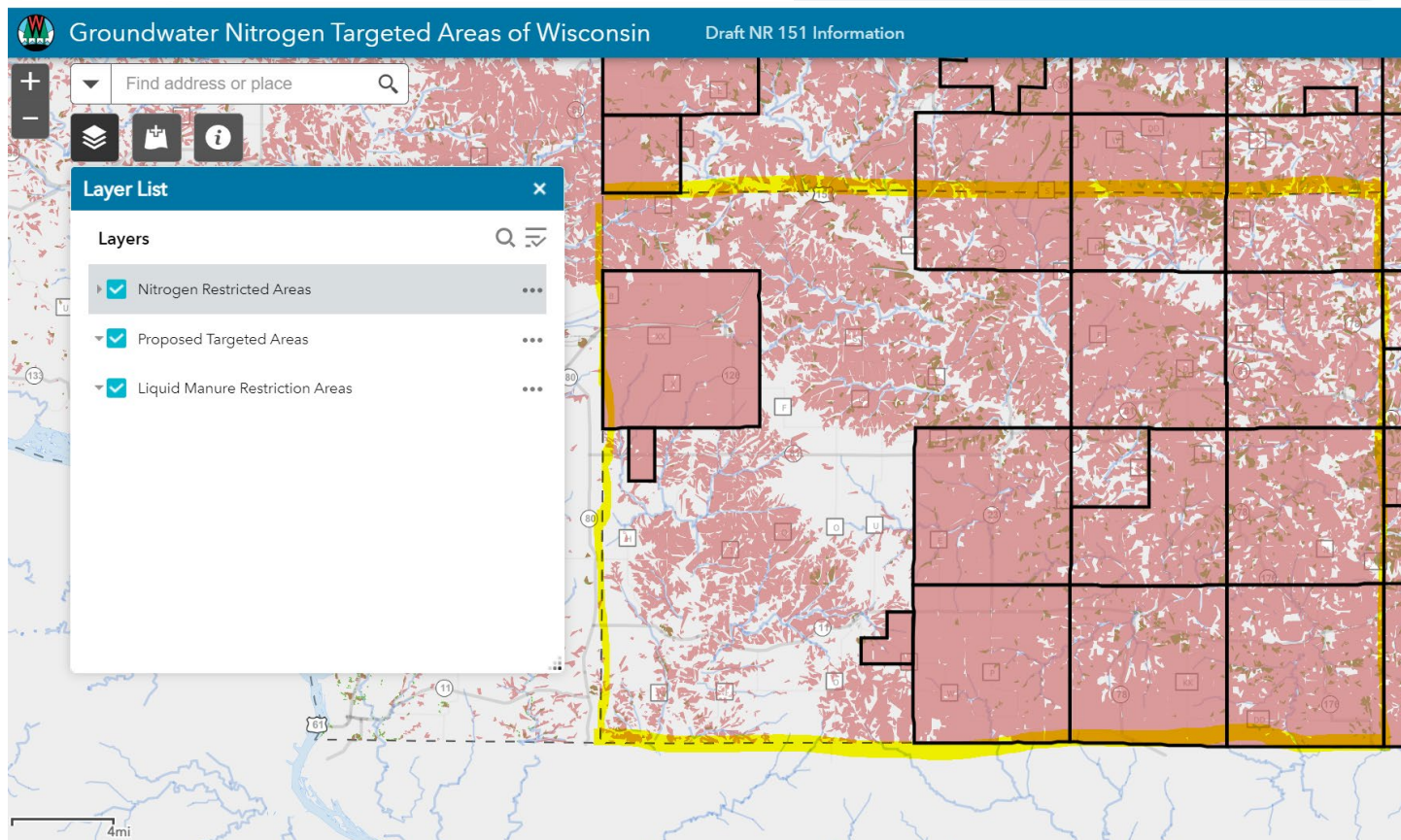


Source: UW Stevens Point Center for Watershed Science and Education - [https://www3.uwsp.edu/cnr-ap/watershed/Pages/nitrate\\_trends.aspx](https://www3.uwsp.edu/cnr-ap/watershed/Pages/nitrate_trends.aspx)



During 2020-2022, the Wisconsin DNR proposed a targeted performance standard within NR 151 to abate nitrate pollution in agricultural areas of the state with highly permeable soils which are susceptible to groundwater contamination (sensitive areas) for the purpose of achieving compliance with the nitrate groundwater standards. The proposed NR 151 rule revisions defined sensitive areas in the state and the performance standards needed to protect groundwater quality in these areas. This map represents the draft targeted areas (cropland acres) within the proposed rule located in Lafayette County. Due to multiple reasons, the DNR stopped this rulemaking effort in the summer of 2022.

Figure 31: DNR proposed areas for Nitrate Performance Standard



Source: Wisconsin DNR - <https://dnr.wisconsin.gov/topic/nonpoint/nr151nitrate.html>

## Lafayette County Health Department Water Testing

Lafayette County Health Department started a water lab in 2019 to test for bacteria. At that time any other sampling was sent out to the ERIC Lab at UW Oshkosh or to the State Lab. By June of 2023, the water lab obtained DATCP approved Nitrate testing capabilities. In 2024 alone, the Water Lab conducted 306 water sample tests with 231 for bacteria and 75 for nitrate. Of the 231 bacteria samples, 13 tested positives for bacteria and 3 tested positives for E. Coli. Of the 75 nitrate tests, 4 samples were above the 10mg/L health standard.

## Southwest Wisconsin Groundwater and Geology Study (SWIGG)

Residents in Lafayette, Iowa, and Grant Counties rely on private wells for their water. The groundwater in Lafayette County is vulnerable to contamination because the soil layer is thin and bedrock is fractured, which includes most of the area being studied. The SWIGG study included five main objectives to conduct the study and assess private well water contamination.

The SWIGG study which was completed in 2022, showed that 69% of well samples were positive for total coliform and/or had nitrate greater than 10 mg NO<sub>3</sub> -N/L. Out of the wells that tested high in total coliforms and nitrate, 138 were randomly



selected and human waste was found in 64, cattle manure in 33, and pig manure in 13.<sup>31</sup> As a result of this study the tri-county area has been meeting to discuss educational outreach in all subject areas of well, septic, geology, and agriculture. With limited resources for this educational outreach Lafayette, Iowa, and Grant counties are doing as much as they can.

## Private On-Site Wastewater Treatment Systems

Private On-Site Wastewater Treatment Systems (POWTS), commonly referred to as septic systems, are a concern because their failure can introduce raw, untreated effluent into drinking water, thereby causing a human health hazard. All new POWTS are required to be designed and installed only after they receive a county permit. State law requires that all POWTS be inspected, and pumped if needed, a minimum of every three years to ensure they are working properly and to identify any unpermitted or failing systems. The most important reason to complete POWTS maintenance is to keep families and the environment safe by preventing harmful pathogens and bacteria from entering the water table or discharging to a ditch or other surface. The life expectancy of POWTS will be enhanced with knowledgeable soil testing, site specific design, quality installation, and regular maintenance.

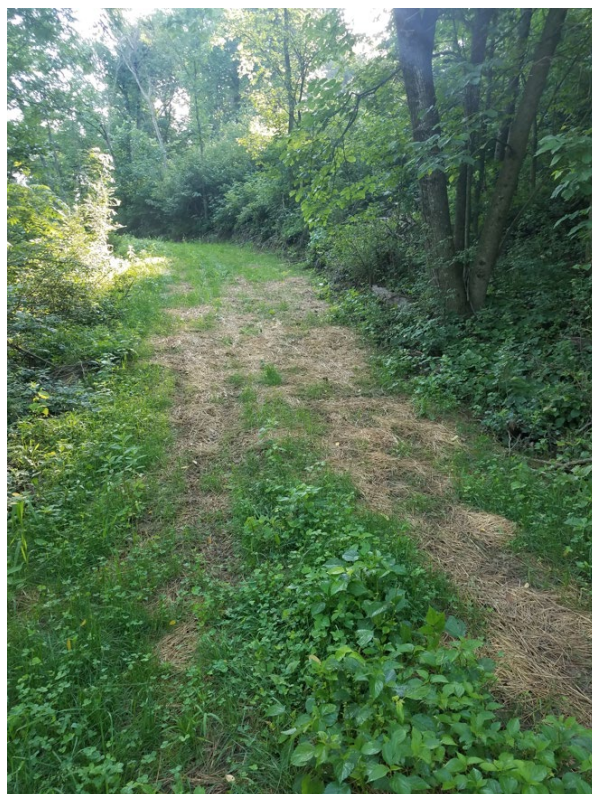
Lafayette County maintains a database that includes all failing POWTS in the county. POWTS are considered failing if they are (a) the discharge of sewage into surface water to groundwater, (b) the introduction of sewage into zones of saturation that adversely affects the operation of a private on-site wastewater treatment system, (c) the discharge of sewage to a drain tile or into zones of bedrock, (d) the discharge of sewage to the surface of the ground, (e) the failure to accept sewage discharges and back up of sewage into the structure served by the private on-site wastewater treatment system. This information, however, isn't complete and therefore isn't representative of all POWTS within the county. The data on failing or unpermitted systems are collected by POWTS pumping contractors and therefore are subject to the recording practices and thoroughness of each pumper.

## Woodland Resources

Woodlands play an integral role in the physical and economic development of Wisconsin. Today, woodlands contribute by providing financial, recreational, aesthetic, ecological, and other benefits to the community.

According to USDA Forest Service from 2021, Lafayette County has an estimated 51,440 acres of forested land, approximately 12.5% of its total area. The dominant timber type is over-mature, degraded oak woodlands which are in the process of converting to more shade tolerant central hardwoods for various reasons. The larger, older oak trees are a mix of bur oak, white oak, black oak and red oak. In many woodlots low quality, unhealthy, over-mature oaks are what is left from decades of "selective" harvesting.

Many of the woodlands throughout the county have been degraded by decades of pasturing and the introduction of exotic invasive species, the most common of which are honeysuckle, buckthorn, and garlic mustard. Currently, black walnut is being "mined" from many woodlots, without much thought given to total forest management, because a single black walnut is worth at least five times as much as other trees of similar size and quality.



*Picture: A completed erosion control project on a woodland maintenance trail in Belmont Township*

<sup>31</sup> "Southwest Wisconsin Groundwater and Geology Study." *Extension Iowa County*, [iowa.extension.wisc.edu/natural-resources/swigg/](http://iowa.extension.wisc.edu/natural-resources/swigg/). Accessed 15 July 2024.

## Wetland Resources

Wetlands are vital to the health of waterways and communities that are downstream. Wetlands feed downstream waters, trap floodwaters, recharge groundwater supplies, remove pollution, play an important role in stormwater management, flood control and provide fish and wildlife habitat. Wetlands are also economic drivers because of their key role in fishing, hunting, and recreation.

Wetlands are often found alongside waterways and in flood plains. However, some wetlands have no apparent connection to surface water like rivers or lakes but have critical groundwater connections. Wetlands include all marshes, swamps, fens, bogs, and those areas excluded from cultivation or other uses because they are intermittently wet and vary widely because of differences in soils, topography, climate, hydrology, water chemistry, vegetation, and other factors.

Lafayette County is an area in which most wetlands are associated primarily with rivers and streams. The importance of glacial activity in forming lakes and wetlands is illustrated by the lack of these water bodies in the Driftless Area of southwestern Wisconsin. In fact, wetlands only cover 0.8% of Lafayette County (Figure 32). Lafayette County has few wetlands not only due to being in the Driftless Area, but also because the area has experienced wetland draining for agricultural purposes.

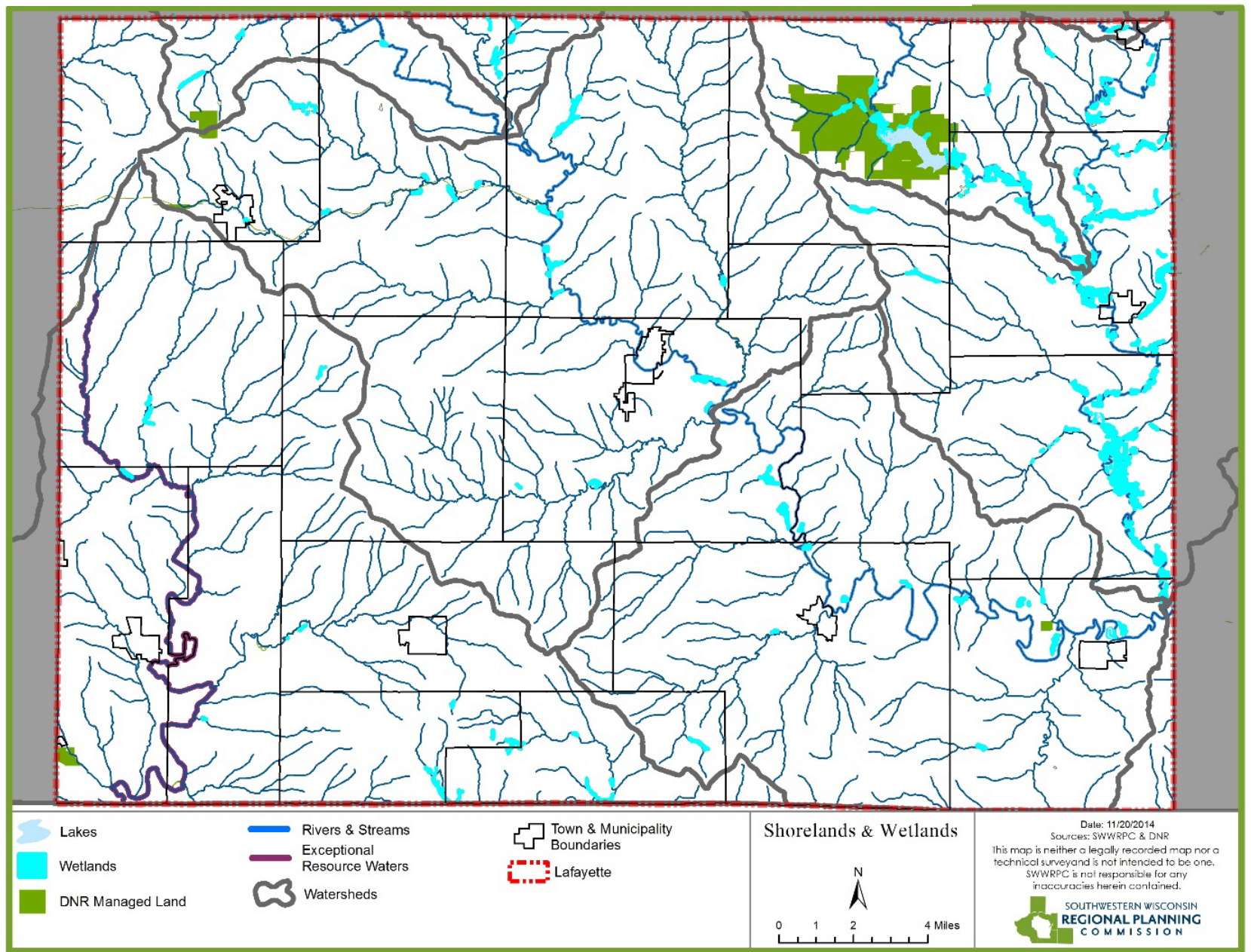


*Picture: A pristine sedge meadow wetland adjacent to Mud Branch*

Due to the small number of wetlands in the County, most towns have no management strategies for protecting wetlands, although some natural resource policies address general wetland protection. The Lafayette County Shoreland and Wetland Ordinance is described in Section 4 under county and local programs.



Figure 32: Wetlands Map





## Section 3: Plan Development Process

### Data and Information

The Lafayette County Land and Water Resource Management Plan was developed based on data and local input obtained from various county, state, federal, and private organization documents and reports, and from the input of various local, county, state, federal, and private organization staff and county citizens.

Key documents and reports from which data and information were extracted and considered in the identification and prioritization of resource concerns include the following:

- 2015 Lafayette County Land and Water Resource Management Plan
- DNR Water Quality Management Plan Update Reports
- USDA Census of Agriculture: 2012, 2017, and 2022
- USGS Wisconsin Groundwater Comprehensive Plan
- Department of Revenue, 2023 Statement of Assessment

Other data, information and observations were provided by representatives from various technical agencies, conservation organizations, and private individuals including the following:

- Department of Natural Resources
- Department of Agriculture, Trade and Consumer Protection
- Natural Resource Conservation Service
- Lafayette County Farmers and Citizens

All data and information was summarized, compiled, and forwarded for consideration by members of the Citizens Advisory Committee convened by the Lafayette County LCPZD to assist with identifying and prioritizing resource concerns within the county.



*Photo: Sedge meadow wetland adjacent to Brennan Creek*

## Citizen/Public Involvement

A list of potential citizen advisory committee members (CAC) was compiled by the LCPZD in July 2024. Invitations were sent via regular mail.

The CAC met on August 8<sup>th</sup>, 2024, to gain an understanding of the Land and Water Resource Management planning process and review Lafayette County resource issues and concerns. The CAC reviewed the data and a series of maps, most of which are contained within this plan, and prioritized the goals the Lafayette County LCPZD should address. In table 5, the anonymous surveys from CAC members ranked priority goals and objects brought in from the previous LWRM plan to see if priorities should be adjusted. Based on the data compiled, the following priority goals and objectives are re-ranked as shown below. Tie breaking data was based on receiving the greatest amounts of highest ranks.

*Table 5: CAC Survey Re-Ranking Goals & Objectives Results*

Goals & Objectives	2014 Ranking	Average Rank	2024 Ranking
Reduce soil erosion	1	1.50	1
Develop urban and agriculture stakeholder interest	2	6.33	7
Ensure effective nutrient and manure management	3	3.67	4
Ensure safe drinking water	4	3.67	3
Address water and soil quality issues in Farmland Preservation Plan and Land Use Plans	5	4.83	5
Promote sustainable agriculture and plan for climate change	6	7.00	8
Promote restoration & protection of surface water	7	3.17	2
Address invasive species	8	5.83	6

### Priority Goals and Objectives

#### **1. Reduce soil erosion**

- Reduce sediment delivery from cropland to surface waters.
- Reduce nonpoint runoff pollution.
- Work with landowners to encourage more conservation practice implementation on farms.

#### **2. Promote restoration & protection of surface water**

- Work with landowners and agencies to minimize soil erosion.

#### **3. Ensure safe drinking water supply**

- Educate the residents of Lafayette County about the Health Department's water testing lab.
- Inform private well owners of cost share opportunities to abandon old wells/manure storage facilities.
- Monitoring of septic systems through the three-year maintenance program and enforcing the replacement of failed septic systems.

#### **4. Ensure effective nutrient and manure management**

- Inform more farmers about nutrient management practices.
- Education of proper management and spreading of manure and fertilizers.
- Encourage nutrient management plans for non-permitted farms.

#### **5. Address water and soil quality issues in Farmland Preservation Plan and Land Use Plans**

- Monitor FPP compliance and encourage more farmers to join.
- Encourage CREP enrollment.

#### **6. Address invasive species**

- Protect aquatic ecosystems from non-native invasive species in partnership with USRWA.

#### **7. Develop urban and agriculture stakeholder interest**

- Create working relationships between agriculture interests and navigable water interests.
- Cultivate public awareness about land and water conservation issues.

#### **8. Promote sustainable agriculture and plan for climate change**

- Progress towards long-term adaptation of agricultural technologies & agronomic practices.
- Inform more farmers about cropping and tillage practices.

### Outreach and Education input from CAC

Further input from the CAC included a survey of outreach efforts LCPZD should pursue in the future. This survey asked for a wide range of options such as: social media, mailed newsletters, emails and publishing articles/releases in the local newspaper. Based on the results of the survey, the following efforts are to be prioritized. These outreach and educational efforts will depend on LCPZD staff's workload throughout the year.

### Priority Outreach and Education Efforts

#### 1. Social Media

- a. Establish a department page to educate the public about conservation topics
- b. Advertise local contests or meetings
- c. Advertise local field days or educational events
- d. Advertise financial assistance programs that are available to landowners and farms
- e. Post news releases about important topics in conservation or completed projects

#### 2. Advertise in Newspaper

- a. Submit news releases about important topics in conservation or completed projects
- b. Advertise local contests or meetings
- c. Advertise local field days or educational events
- d. Advertise financial assistance programs that are available to landowners and farms
- e. Submit articles encouraging more conservation practice implementation on farms.

### Other notable comments received from meeting with the CAC

"Best communication with farmers is making farm visits."

"Host farm field days for education."

"Provide a newsletter to townships to send with property tax bills."

## Priority Geographic Areas

In addition to surveying priorities in goals, objectives, outreach and education, the CAC also were surveyed to select priority geographic areas to focus in on. The Middle Pecatonica River and Yellowstone River were ranked as highest priority watersheds. The top three townships selected were Willow Springs, Fayette, and Darlington, in that order. All watershed areas selected by the CAC are within the Sugar-Pecatonica River Basin.

To tie into the CAC's selection in priority geographic areas, there is currently an approved TMDL for in Lafayette County for the Sugar-Pecatonica River Basin, which currently only covers a select twenty HUC12

watersheds. Of the twenty, three are located entirely in Lafayette County (Silver Spring Creek, Apple Branch and Cherry Branch) and two are partially in Lafayette County (Braezels Branch and Jockey Hollow Creek). The DNR is focusing their efforts on total suspended solids and edge of field practices within this TMDL. Based on discussions with various DNR staff, they are looking into merging the TMDL to cover the entire Sugar-Pecatonica River Basin within the next ten years.

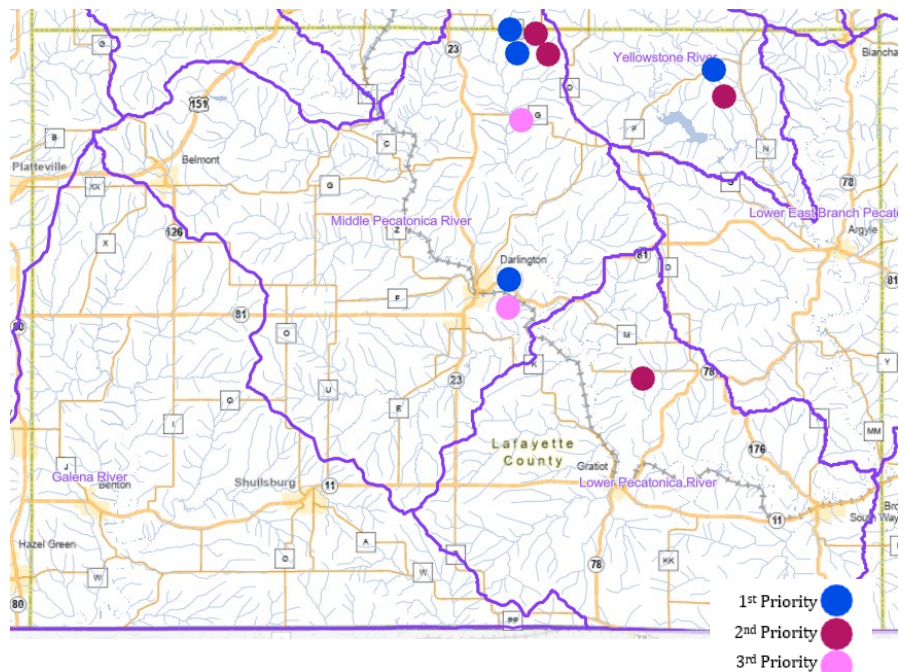
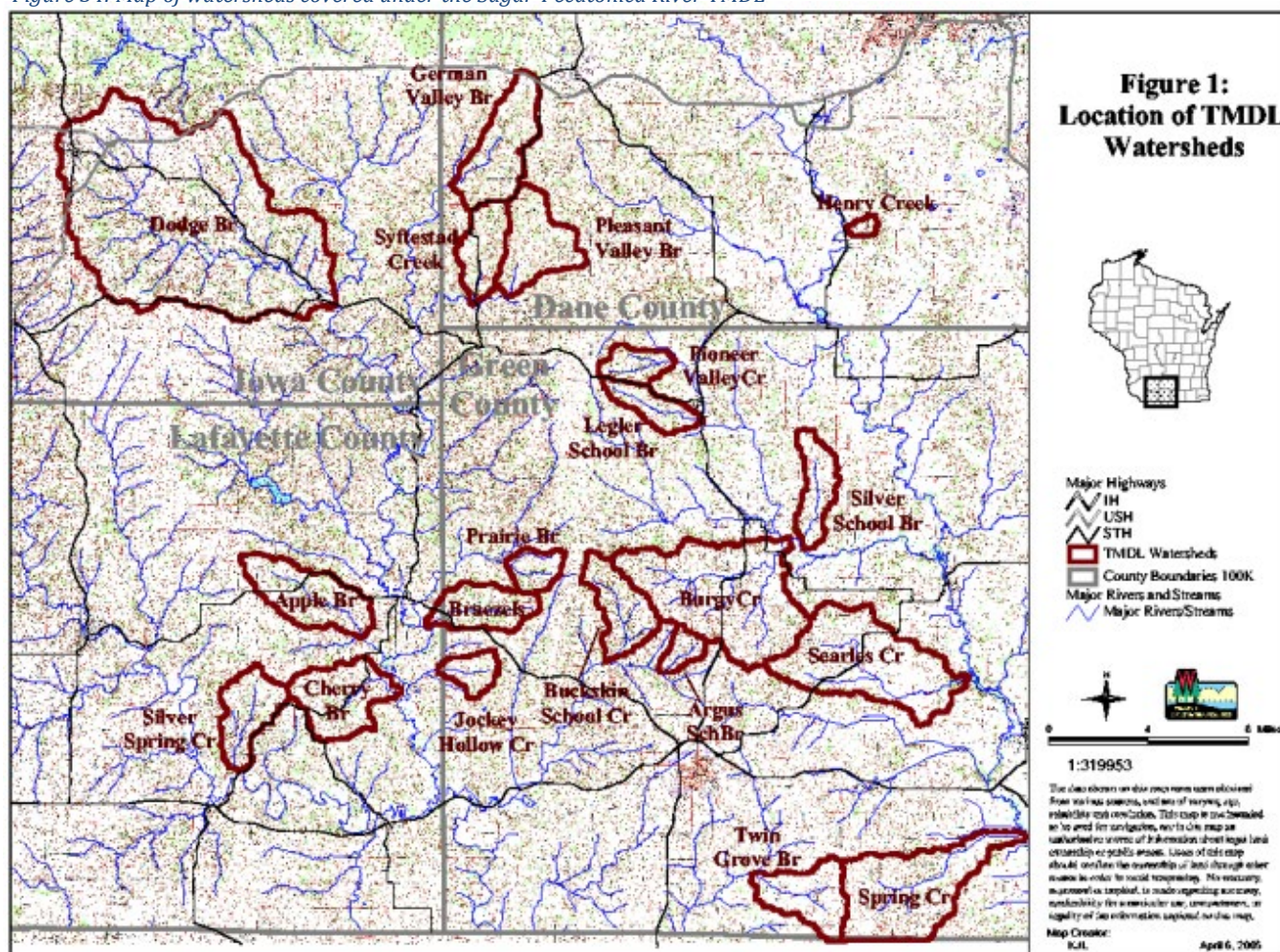


Figure 33: Priority Areas to Focus on as selected by the CAC



Figure 34: Map of watersheds covered under the Sugar-Pecatonica River TMDL



Source: Wisconsin DNR - <https://apps.dnr.wi.gov/water/tmdlDetail.aspx?key=44291861>

### This TMDL recommends the following:

- Minimize and eliminate the grazing of cattle on the wooded hill slopes. Areas that are still adversely impacted from previous grazing operations should be stabilized with vegetation.
- Efforts to enroll areas near channels and create riparian buffers through the use of the Conservation Reserve Enhancement Program need to be continued and areas already enrolled need to be kept in enrollment.
- Although not counted in the sediment reduction goals, stream banks with active erosion can be large sources of sediment and thus need to be stabilized. Cattle need to be fenced out of channels and off channel banks. In areas where cattle need to cross, stable crossings need to be maintained.
- Efforts to promote conservation tillage need to continue. As the dairy rotations give way to cash cropping, efforts need to concentrate on ensuring no-till operations for corn-soybean rotations.
- Areas with slopes greater than a 12% slope (C-slope) that are currently being cropped should be encouraged to be converted into permanent pasture

## Section 4: Land and Water Conservation Programs

Accomplishing land and water resource management is a significant undertaking and is most effective when approached through partnerships. The Lafayette County LCPZD collaborates with various federal, state, and local conservation programs. Coordination and cooperation among agencies and private landowners is critical in achieving the goals and objectives proposed in this plan. This plan details the current inter-agency coordination and cooperation among partnering agencies and identifies efforts to foster new collaborations among other agencies.

### Federal Programs

**Conservation Reserve Enhancement Program (CREP)** – CREP targets high-priority conservation issues identified by local, state, or non-governmental organizations. In exchange for removing environmentally sensitive land from production and introducing conservation practices, farmers and agricultural landowners are paid an annual rental rate. Participation is voluntary, and the contract period is typically 10–15 years, along with other federal and state incentives as applicable per each CREP agreement.

Lafayette County started the program in fall of 2001 and is one of 52 Wisconsin counties that participate. As of 2024, Lafayette County has the most lifetime acres enrolled with 13,763 acres. Of that 13,763, 374 acres are in a permanent conservation easement protection. Over \$4.2 million has been paid out alone in State incentive payments and cost-share.

**Conservation Stewardship Program (CSP)** – A voluntary conservation program that encourages landowners 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. Persons, entities, corporations, and Indian Tribes may be eligible for the program.



*Photo: CREP grassland in Kendall Township*

**Environmental Quality Incentives Program (EQIP)** – Administered by NRCS, this program provides cost-share assistance for the installation of locally selected best management practices that reduce erosion and animal waste concerns.

**Emergency Watershed Protection Program (EWP)** – A program to assist with up to 75% of the construction costs of emergency measures created by natural disasters. A total of 90% may be paid for projects within limited-resource areas as identified by U.S. Census data. The remaining costs must come from local resources and can be made in cash or in-kind services. All EWP projects reduce threats to lives and property, must be economically, environmentally, and socially defensible, be designed and implemented according to sound technical standards and conserve natural resources.

**Wetland Reserve Program (WRP)** – A voluntary program offering landowners the opportunity to protect, restore, and enhance wetlands previously altered for agricultural use. Land that is eligible has to be owned for one year and have the ability to be restored to wetland conditions. Landowners may restore with permanent, 30-year easements, or 10-year contracts. Permanent easements pay 100% of the agricultural value of the land and 100% cost-sharing; 30-year easements pay 75% of the agricultural value and 75% cost-sharing; 10-year contracts pay 75% cost-sharing only.



## State Programs

**Agricultural Clean Sweep** – Wisconsin Clean Sweep assists communities in improving and sustaining public health, the environment, and animal safety by reducing risk of exposure to hazardous chemicals, pesticides, and unwanted prescription drugs in homes, on farms and at businesses. The program provides financial assistance to Wisconsin counties, regional planning commissions, cities, villages, and other municipalities to collect unwanted pesticides, household hazardous wastes, and unwanted prescription drugs such as controlled substances, analgesics, anti-inflammatory drugs, antibiotics, gastrointestinal drugs, and antihistamines.

**Agricultural Enterprise Areas (AEA)** – This program is to designate areas important to the county for agriculture for designation from the state at the request of local landowners and local governments. Lafayette County currently has two AEAs covering 46,000 acres. Landowners in an AEA can enter into a voluntary farmland preservation agreement, which requires the landowner to meet the state NR151 standard such as control of soil erosion, nutrient management planning, and additional measures. In return, the agreement provides some protection from development and an increased FPP tax credit. Areas that are approved to be an AEA do not have to have County Zoning, so this provides an opportunity for residents in un-zoned townships to participate in FPP.

**Farmland Preservation Program (FPP)** – This program first started back in the 1980s as a tax credit program to encourage landowners to implement a basic conservation plan to meet tolerable soil loss. Over time it is ascended into a program to encourage conservation compliance with NR151 standards in return for a tax credit. As of the end of 2024, Lafayette County has 265 participants that bring in approximately \$660,700 in FPP tax credits each year on 64,700 acres.

**Managed Forest Law (MFL)** – Woodland owners in Lafayette County have agreements with the State of Wisconsin under the Managed Forest Law (MFL). As of 2014 there are 167 MFL agreements conserving 7,031 acres. Agreements are for either 25 or 50 years. Landowners agree to follow a forest management plan which addresses watershed and soil erosion issues wherever applicable. The MFL's Forest Stewardship Plans can include mandatory installation of soil control practices.

**NR 151 Nonpoint Runoff Rules** – Wisconsin has adopted rules to control polluted runoff from both rural and urban areas. These rules, found in DNR Administrative Rule NR 151, became effective October 1, 2002. The State legislature adopted these performance standards and prohibitions to help protect Wisconsin's lakes, streams, and groundwater. Revisions that inserted additional performance standards into NR 151 went into effect on January 1, 2011. Landowners continue to be encouraged to voluntarily implement conservation practices that comply with Wisconsin's nonpoint runoff rules. However, it is now possible to compel landowners to comply if voluntary efforts are not completely successful. One critical element needed to compel landowners to comply with the prohibitions and performance standards is the provision of 70% cost sharing. A summary of the NR 151 Prohibitions and Performance Standards are in Appendix A.

**Soil and Water Resource Management (SWRM)** – DATCP administers the program that supports locally-led conservation efforts. Each year DATCP awards grants primarily to counties to pay for conservation staff and provide landowner cost-sharing to implement LWRM plans.

**Targeted Runoff Management Program (TRM)** – The Program offers competitive grants to local governments for controlling nonpoint source pollution. Grants reimburse costs for agriculture or urban runoff management practices in targeted, critical geographic areas with surface water or groundwater quality concerns.

**Wisconsin Forest Landowners Grant Program (WFLGP)** – The WFLGP was created to encourage private forest landowners to manage their lands in a manner that benefits the state's forest resources and the people of the state. WFLGP provides technical assistance and cost-sharing to private landowners to protect and enhance their forested lands and water resources. The program allows qualified landowners to be reimbursed up to 50% of the cost of eligible practices. Two major emphases include the removal of unwanted small trees and brush in woodlots, and subsequent planting of desirable tree seedlings such as oak.



## County and Local Programs

**Lafayette County Comprehensive Zoning Ordinance** – Administered by Lafayette County LCPZD and applied to the unincorporated areas of Lafayette County that have adopted the ordinance. It is the intent of this Ordinance to regulate the use of all structures, lands and waters and to:

- Regulate lot coverage and the size and location of all structures to prevent overcrowding and to provide adequate sunlight, air, sanitation and drainage;
- Regulate population density and distribution to avoid sprawl, undo concentration, or overcrowding and to facilitate the provision of adequate public services and utilities;
- Protect and preserve prime agricultural land and to maintain a viable agricultural base;
- Regulate parking, loading and access to lessen congestion and promote the safety and efficiency of streets and highways;
- Ensure safety from fire, panic, flooding, pollution, contamination and other dangers;
- Stabilize and protect property values;
- Preserve and protect the natural and man-made aesthetic characteristics of the County;
- Prevent and control erosion, sedimentation, & other pollution of surface and subsurface waters;
- Maintain safe and healthful water conditions;
- Prevent flood-caused damage to persons and property and minimize expenditures for flood relief and flood control projects;
- Protect the traffic-carrying capacity of existing and proposed arterial streets and highways;
- Facilitate, the adequate provision of transportation, water, sewerage, school, park and of the public facilities and utilities;
- Promote the health and general welfare of the County;
- Implement municipal, county, watershed and regional comprehensive plans, or components of such plans adopted by the County;
- Provide and protect a variety of suitable commercial and industrial sites;
- Provide for the administration and enforcement of this Ordinance;
- Provide enforcement of the provisions of this Ordinance

**Lafayette County Manure Storage and Management Ordinance** – Administered by the Lafayette LCPZD to regulate the location, design, construction, and operation of animal manure storage facilities. All manure storage facilities installed in Lafayette County must work with the LCPZD. This ordinance was substantially overhauled in 2024, clarifying standards that apply, removing a prior size exemption rule, adding additional setbacks from roads and habitable structures, adding certain NR 151 standards and ultimately creating better enforcement mechanisms within the ordinance. As of the end of 2024, 62 facilities have been permitted in Lafayette County since the first manure storage ordinance was adopted. Any complaints of a manure storage facility will trigger a review of a nutrient management plan. A current map of permitted structures, non-permitted structures and permitted closure of structures is located on Appendix C.

**Lafayette County Nonmetallic Mining Reclamation Ordinance** – Administered by the Lafayette County LCPZD. This ordinance gives authority to enforce NR 135 regulations over rock quarrying operations. LCPZD reviews and approves reclamation plans for compliance with state laws.

**Lafayette County Sanitary Code** – The existing sanitary code is administered by Lafayette County LCPZD. At this time the code applies to all unincorporated areas of Lafayette County whether or not any Town Board has approved or disapproved them. The installation and maintenance of water supply and private sewage systems shall be in full compliance with ordinance. Private water supply and private sewage systems shall each require a permit. Public water supply plumbing fixtures shall be served by public water supply system where available. Where such a public water system is not available, a private water supply system may be used. Private water supply for construction, materials, location and permits for private water supply shall be governed by DNR. In addition, the ordinance covers waste disposal, industrial waste treatment, rubbish in navigable waters, solid waste disposal, sewage disposal, public sewer, private sewage system. This ordinance is currently under review for updates.

**Lafayette County Shoreland and Wetland Zoning Ordinance** – Administered by LCPZD, the ordinance regulates the amount of development that takes place near shore and wetland areas. Areas within 1,000 feet of the ordinary highwater mark of navigable lakes, ponds, or flowages and areas within 300 feet of the ordinary highwater mark of navigable rivers or streams, or to the landward side of the floodplain, whichever is greater are regulated areas. In addition, removal of shore cover is regulated. The purpose of tree and shrubbery cutting regulations are to protect scenic beauty, control erosion, and reduce effluent and nutrient flow from the shoreland. The ordinance set limits to the amount of tree and shrubbery cutting in an area parallel to the ordinary highwater mark and extending 35 feet inland from all points along the ordinary highwater mark.

**Lafayette County Floodplain Zoning Ordinance** – Lafayette County LCPZD administers this zoning ordinance that regulates land use in the Floodplain areas for the entire area of the county outside of villages and cities as mandated by Wisconsin law. The purpose of the ordinance is intended to regulate floodplain development to:

- Protect life, health and property;
- Minimize expenditures of public funds for flood control projects;
- Minimize rescue and relief efforts undertaken at the expense of the taxpayers;
- Minimize business interruptions and other economic disruptions;
- Minimize damage to public facilities in the floodplain;
- Minimize the occurrence of future flood blight areas in the floodplain;
- Discourage the victimization of unwary land and homebuyers;
- Prevent increases in flood heights that could increase flood damage and result in conflicts between property owners; and
- Discourage development in a floodplain if there is any practicable alternative to locate the activity, use or structure outside of the floodplain.

LCPZD enforces floodplain regulations with WDNR concurrence to ensure compliance with State Statutes.

**Lafayette County Livestock Siting Ordinance** – Administered by the Lafayette County LCPZD, the ordinance is applied to all of the unincorporated areas of the county to protect the public health and safety of the people of Lafayette County by establishing standards and procedures in compliance with Sec. 93.90 of Wis. Statutes and Ch ATPC 51, Wis. Admin. Code (ATPC 51) for the issuance of licenses for new and expanded livestock facilities with 750 animal units or greater.

**Lafayette County Farmland Preservation Plan** – Administered by the Lafayette County LCPZD. The adoption of this plan allows farmers to be eligible to receive tax credits under the Farmland Preservation Program (FPP). There are 11 of 18 townships in Lafayette County that participate in exclusive agriculture zoning, and one township that is not zoned but is in an AEA which allows for it to participate in FPP.

**Nutrient Management Farmer Education** – Lafayette County has provided Nutrient Management Plan (NMP) classes since 2008 for landowners to write their plans. Participating landowners are required to attend a class either in the spring or fall to complete their own NMP. Prior to attending the in-person class at the county level, landowners are required to attend an in-person class or online training to become DATCP certified to write their own plan. We continue to apply for the Nutrient Management Farmer Education Grant to provide incentive and cost-share payments to farmers and landowners to write their own NMPs.

**Tree & Shrub Program** – LCPZD continues to buy tree and shrub seedlings in bulk to re-sell to Lafayette County landowners for smaller orders nurseries tend to not fulfill. For the 2024 distribution, there were over 62 participants who ordered over 5,450 seedlings. Lafayette County's tree planters were available for rent and planted an additional 16,760 seedlings.

## Partners and Collaborations to Pursue

**Green County** – There is a need to collaborate with surrounding counties because natural resources do not recognize geopolitical boundaries. Lafayette and Green County share the Braezels Branch and Jockey Hollow Creek impaired waters, which are mainly in Green County. In addition, a coordinated effort for the East Branch Pecatonica River, which is shared by Lafayette and Green could be pursued as it had successes in the past efforts.

**Driftless Area Land Conservancy (DALC)** – A non-profit land trust working as a voluntary conservation organization that serves the communities of southwest Wisconsin. DALC collaborates with local experts from the local community to guide their land protection efforts. The DALC has the capacity to address complex conservation and environmental needs of concerned citizens and private landowners who seek expertise in matters associated with land preservation and conservation. The DALC could be partners that assist with outreach and education programs.

**Lafayette County Health Department** – In discussions with the health department, there has been a desire to collaborate with public outreach on safe drinking water and invited LCPZD to join Lafayette County Rural Safety Coalition.

## Current Conservation Partners

**Grant & Iowa Counties and UW-Madison Division of Extension** – Currently Grant, Iowa and Lafayette County hold “Tri-County” meetings in addition with various UW-Madison Division of Extension to collaborate on outreach and education efforts. The main focus currently is utilizing results from the SWIGG Study to educate farmers, landowners and citizens about the impact well construction, well depth, septic, fertilizer/manure applications, have on groundwater and what possible steps can be taken to ensure safe drinking water in Southwest Wisconsin. Often times Extension is brought in to present data and on-going studies related to agriculture.

**Lafayette County Sportsmen’s Clubs** – The club makes presentations to 5<sup>th</sup> and 6<sup>th</sup> grades for the annual Earth Day Celebration at Woodford Park and has representation in the Wisconsin Conservation Congress.

**Local units of Government** – Cities, Villages, Townships, and private landowners.

**Southwestern Wisconsin Regional Planning Commission** – SWWRPC is an extension of local government in Southwestern Wisconsin. They provide low-cost expert planning, economic development services, and GIS services to the county, city, village, and town governments of their five-county jurisdiction (Grant, Green, Iowa, Lafayette, and Richland counties). They assist local communities to save both time and money while planning for the future.

**United States Department of Agriculture - NRCS & FSA** – NRCS & FSA are parts of the United States Department of Agriculture (USDA) that provide various financial and technical assistance programs. LCPZD interact with both for the CREP program and may assist NRCS with EQIP programs as needed.



*Photo: Lafayette County Sportsmen educating Lafayette County 5<sup>th</sup> graders*



## Section 5: Plan Implementation

The following section describes the strategies for the LCPZD to identify priority areas, determine outreach and education strategies, regulatory administration and administrative recommendations to execute this plan.

### Determining Areas of Focus

There are over 1,400 farms in Lafayette County, roughly 399,000 acres. Contacting each farm, preparing plans, and designing and installing all the conservation practices to ensure compliance with the NR 151 nonpoint runoff rules would take several years or many more staff that currently reside with Lafayette County. Therefore, a strategy to identify, contact and work with priority farms is necessary. This would ideally be done by locating the farms that contribute the most to sediment or phosphorus loading into waterways through data collected on annual transect surveys. Lafayette County has stopped conducting these surveys due to workload. As a result, the county is now challenged with finding a new way to identify priority farms for plan implementation.

In the past LWRM plan, SWWRPC created a basepoint for the LCPZD to identify priority farms. The framework used GIS to select priority farms using the following data: sub-watersheds, parcels, locations of current practices (CREP, MFL, FPP etc.) and soil erosion tool results. This process, summarized below, allows Lafayette County to identify those farms on land that is highly erodible due to natural conditions, and which is in priority watersheds as defined by those that are impaired or proposed to be impaired. Figures 35 and 36 illustrate this process. Due to prior administration, there was a lack of utilizing the data to the best of its ability. Moving forward the LCPZD aims to draw upon this tool to direct the department to areas in need of conservation efforts.

#### Focus Area Identification using EVAAL:

1. Identifying positive resources and impairments: Start with all impaired waters, parcels with soil erosion index, best practice locations, sub-watersheds, and DNR managed land.
2. Target priority watersheds: Remove all sub-watersheds that do not contain impaired or proposed impaired waters.
3. Best management practices: Remove all parcels that have been previously identified as having best practices and DNR managed land.
4. Erosion potential: Remove all parcels that have low erosion potential per the EVAAL tool.
5. Combine adjacent parcels by similar ownership so that implementation can occur at a broader scale, not just the parcel scale. The results from this work can be exported into an Excel worksheet for use by the LCPZD department as part of the implementation strategy.

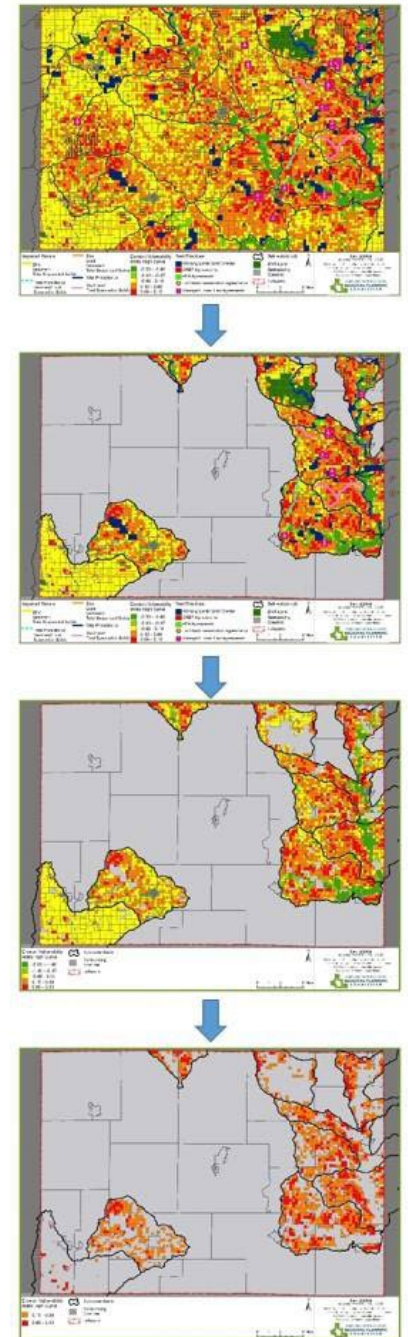


Figure 35: Priority Farm Identification Steps 1 -4

### Focus Area Identification Using Other Methods:

1. Watershed/township focus based on CAC's recommendations found on page 50.
2. Take recommended actions based on the final results published by DNR in regard to the Ames Branch-Pecatonica River Targeted Assessment results found on page 18.
3. Maintain healthy watersheds and high-quality waters found on pages 19-21.
4. Based on the assumptions made on current agricultural trends in Lafayette County found on page 11.
  - a. Maximize grant opportunities for landowners to install best management practices.
  - b. Continue to educate the public about best management practices, nutrient management and encourage crop rotations for soil health benefits.
  - c. Ensure proper land use consistent with Lafayette County's Farmland Preservation Plan.

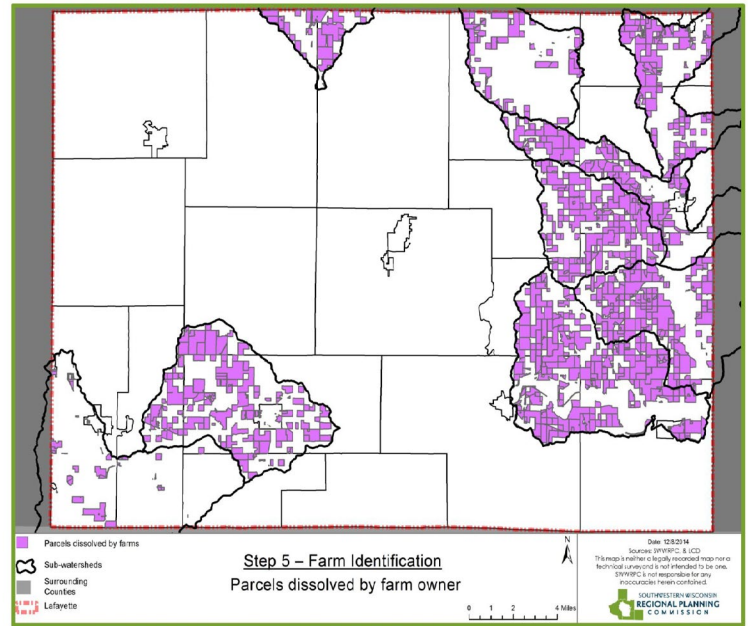


Figure 36: Priority Area Identification using EVAAL Step 5

In Appendix B, it lists Best Management Practices as referenced in ATCP 50 that can be eligible for financial assistance under the Soil and Water Resource Management Grant that Lafayette County receives. The LCC may select certain practices from this list for LCPZD to pursue with landowners and farmers to meet the goals of this plan.

### Newly Enrolled Farmland Preservation Program Lands

In addition to the priority outreach identified above, Lafayette County LCPZD staff will continue to evaluate land that is proposed for new enrollment in the Farmland Preservation Program, either under long-term agreements or under farmland preservation zoning, for compliance with NR 151 nonpoint runoff rules. Owners of land proposed for enrollment under a long-term agreement will be contacted to make them aware of the conservation compliance requirements of the program, and to offer the services of LCPZD staff to assist them in achieving full compliance with the conservation standards prior to signing the long-term agreement. If landowners do request assistance, LCPZD staff will evaluate their compliance status and help them become compliant in any areas where they are determined to be not yet compliant. Owners of land proposed for enrollment under zoning will be assisted on a first-come, first-served basis. Lafayette County LCPZD staff will monitor landowner compliance with the NR 151 runoff rules under the program.

### Education and Outreach

Since the COVID-19 pandemic, Lafayette County LCPZD has struggled with sharing education and outreach to not only farmers, but the general public as well. LCPZD staff have noticed there are far fewer walk-in appointments and more phone call-based conversations. Based on the staff's experience and the recommendations of the CAC, Lafayette County LCPZD will attempt to take on a larger role in these efforts as outlined on page 50, making more on-site visits with farmers/landowners and looking into presenting educational field days.

## Regulatory Administration

The Lafayette County LCPZD will collaborate with local, state, and federal agencies along with many private organizations to implement the goals of this plan. The following actions are proposed as a multi-faceted approach to soil and water resource management in the county and are informed by the data collection and analysis and public outreach that occurred during the planning process.

### Compliance Determination

In the past 10 years, NR 151 compliance determinations by the LCPZD were done mainly through FPP routine compliance checks with other compliance checks based solely upon anonymous complaints from the public. Looking into the future, LCPZD will attempt to do more monitoring of NR151 compliance outside of just FPP participants as staff time allows. In the past, after on-site evaluations, majority of landowners only received compliance determinations through phone calls and with letters explaining non-compliance. LCPZD looks to standardize compliance determinations within the next 10 years so that landowners can receive the following:

- A copy of a site evaluation report with a landowner signature page.
- A letter with instructions regarding appeal procedures if the landowner contests the evaluation.
- Recommendations for measures needed to achieve compliance.
- A schedule for achieving compliance.
- A list of available best management practices that address compliance violation within ATP 50

### Complaints & Enforcement

Historically, LCPZD staff accompanied and assisted DNR staff on investigations of complaints regarding NR 151 violations and intend on continuing to support DNR into the future. The Lafayette County Board of Supervisors adopted, through the Manure Storage and Management Ordinance, NR 151.05, NR 151.08(2), NR 151.08(3) and NR 151.08(4) with local enforcement mechanisms. The intent is to address violations of these certain NR 151 standards as they have been viewed as the most typical violation that occurs in Lafayette County. LCPZD hopes this local enforcement model will provide relief to DNR staff as their Non-Point Source Pollution Coordinator must cover 10 other counties besides Lafayette County for NR 151 violations that warrant investigation and potentially enforcement. A summarized process is shown in figure 37.

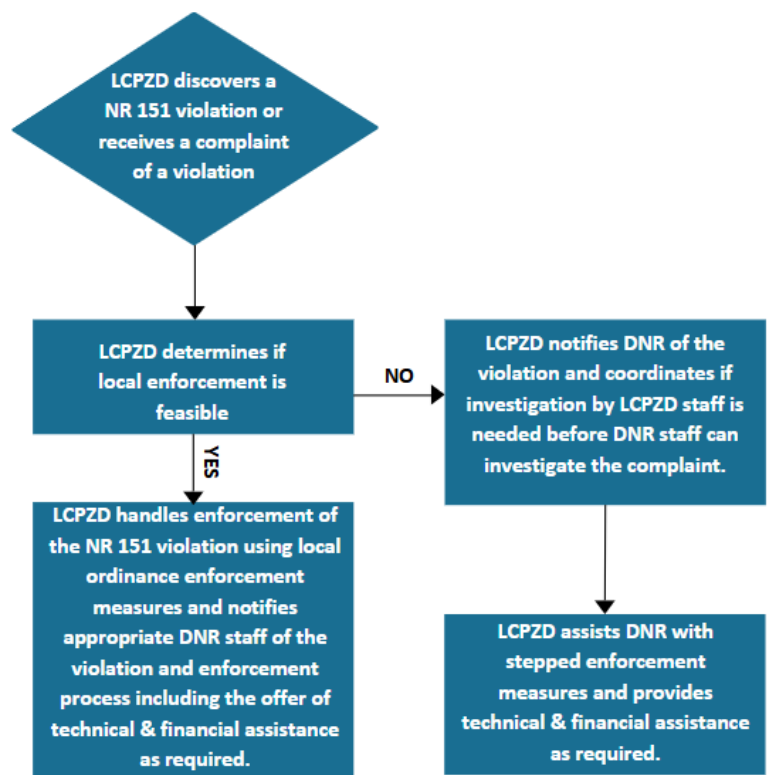


Figure 37: NR 151 Enforcement Process



## Monitoring & Evaluation

The efforts required to restore and protect the land and water resources within Lafayette County will take time and involve many different people, organizations, and agencies. The LCPZD conducts LWRM annual reporting to DATCP and recently has started presenting an annual department report to the Lafayette County Board of Supervisors which is crucial in assessing and tracking county-wide progress along the way. These reporting efforts are critical for several reasons, including:

- Informing stakeholders and policymakers of progress.
- Understanding the benefits of the efforts being made.
- Focusing resources where they can provide the biggest benefit.
- Adapting the implementation plan and efforts in response to knowledge gained.

Key actions needed to ensure progress is being made throughout ongoing implementation include:

- Surface water-quality monitoring by DNR or citizen partners
- Ground water-quality monitoring by Lafayette County Health Department
- NR 151 standards implementation tracking by the LCPZD
- Re-evaluating efforts made in the past and developing a workplan annually for the next 10 years

The LCPZD proposes using GIS and Excel worksheets in tandem to identify owners to contact by watershed. The worksheet will contain several columns such as parcel number to identify owner, a date an information letter and materials about available programs was sent, dates the owner was contacted, and programs the owner selected. LCPZD will keep in mind that several parcels could be owned by the same owner and should filter the table by watershed, and then by owner name to eliminate contacting an owner more than once. At the end of the year, the LCPZD can calculate the number of owners contacted, and number of BMPs implemented. This will be reflected in the annual accomplishment report with a summary of each activity. The LCPZD, along with NRCS and/or UWEX, will evaluate levels of success for each activity by reviewing:

- Citizen participation at meetings.
- Number of cost share agreements signed.
- Assistance requested.
- BMPs adopted.
- Site visits completed.

## Staffing

Lafayette County has a combined department model with the county conservationist and zoning administrator position being merged in a Department Manager role which can create workload conflicts due to that structure. Besides the Department Manager role, currently there are two other full-time employees devoted 100% to conservation and one part-time employee assigned to zoning but may assist with conservation work from time to time in the LCPZD.

Lafayette County has a low staffing to workload ratio when compared to neighboring counties, as seen below. As a result, the goals set in this plan may be difficult to achieve and may need additional staffing to better achieve goals.

- Grant County: 7 staff in total for a merged conservation and zoning department
- Green County: 3 full-time in the conservation department and 2 full-time in the zoning department
- Iowa County: 3 full-time in the conservation department and 2 full-time in zoning department
- Lafayette County: 2 full-time in conservation, 1 part-time in zoning department, 1 full-time split between conservation and zoning department.

### Current Land Conservation Positions:

#### Department Manager of Land Conservation and Planning & Zoning (60% focus on Conservation)

This position is responsible for directing, planning, organizing, and supervising all programs, functions, and activities of the Land Conservation and Planning & Zoning Department. The Manager provides direct support to the Land Conservation Committee, Planning & Zoning Committee, Parks Committee, Land Information Council, the Board of Adjustment and indirect support to other County Committees as needed. The Manager is responsible for all work programs, budget, personnel, and administrative functions of the department.

#### Conservation Technician (100%)

This position provides landowners with technical assistance to protect and improve the county's soil and water resources through various conservation programs and incentives, especially with design and construction oversight on installation or adoption of Best Management Practices.

#### Conservation Specialist (100%)

This position provides landowners with technical assistance and educational programs in the subjects of soil and water conservation and nutrient management planning. Administers the Farmland Preservation Program (FPP), Conservation Reserve Enhancement Program (CREP), County Tree & Shrub sale and oversees implementation of NR 151 standards in the county. Also assists the Conservation Technician with planning, surveying and construction of BMPs.

### Future Staffing Positions:

There is no expectation for Lafayette County's revenues to increase in the foreseeable future. As a result, the currently understaffed LCPZD has no expectation of being able to increase staffing levels over the next ten years; however, if the opportunity arises to acquire additional staff, the LCPZD has identified positions of need.

#### 1. Assistant County Conservationist (Desired)

This position would work under the direction of the Department Manager in administrating and implementing all land conservation plans, grants, and programs. In addition, this position would provide support to the Conservation Specialist and Conservation Technician to complete tasks as their individual workloads dictate.

#### 2. Administrative Assistant (Desired)

This position would provide technical and programmatic assistance to the department by having a vast knowledge and skill set in enforcement procedures, processes, and regulations found in County ordinances, Wis. Administrative Code, and Wis. State Statutes. In addition, this position may perform other duties as assigned including the issuance of permits and providing clerical support to staff.

## Funding Sources to Pursue

These funding sources are in addition to grants received from the Wisconsin Department of Agriculture, Trade and Consumer Protection.

**Aquatic Invasive Species** – Aquatic Invasive Species (AIS) Control Grants help prevent and control the spread of aquatic invasive species in the waters of the state. These grants can be used for education, prevention, planning, early detection, rapid response and established infestation control projects. Counties, cities, towns, villages, tribes, public inland lake protection and rehabilitation districts, and town sanitary districts and other local governmental units, qualified lake associations, qualified school districts, qualified nonprofit organizations, river management organizations, and land management agencies are eligible to apply for funding for an aquatic invasive species prevention and control grant for any waters of the state including lakes, rivers, streams, and wetlands.

**Lake Planning and Protection Grants** – Counties may apply for planning and protection grants for eligible projects such as purchase of land or conservation easements, restoration of wetlands and shorelands that will protect a lake's water quality or its natural ecosystem, and development of local regulations or ordinances to protect lakes and the education activities necessary for them to be implemented.

**Notice of Intent/Discharge Cost-Share Grants** – DNR and DATCP offer cost-share funding grants to governmental units working with owners and operators of livestock operations to meet pollution control requirements imposed by the DNR. Eligible projects are those designed to implement BMPs for improving water quality impaired by pollution discharges at an animal feeding operation. Ineligible projects are those that address previously in-compliance, were included in a previous offer of cost-sharing, cover routine maintenance and operation of BMPs, or cover a significant expansion of the livestock operation.

**River Protection Planning and River Protection Management Grants** – River planning grants can assist in the formation of a qualified river management organization, strengthening an existing organization, protecting or improving rivers and their ecosystems, river improvement education projects, and/or assessments and plan development. River management grants are available for purchasing land or conservation easements, local ordinance development, installation of nonpoint source pollution control practices and river restoration activities. They may also be used for education, planning and design activities necessary for completion of a management project.

**Targeted Runoff Management (TRM) Grant Program** – This grant program offers competitive grants for local governments for controlling NPS pollution. Grants reimburse costs for agriculture or urban runoff management practices in targeted, critical geographic areas with surface water or groundwater quality concerns. Grant monies may fund the construction of BMPs to control NPS pollution. They can also fund DMP design as part of a construction project. The cost-share rate for TRM projects is up to 70% of eligible costs. Municipal employee force account work may be reimbursable for up to 5% of the total project reimbursement.



## Administrative Recommendations

- Use the LWRM Plan to identify workplan schedules and priorities for working with partner agencies and associated programs, with the end goal of ensuring that the highest level of natural resource conservation and protection services are provided to the people of Lafayette County.
- Support new ordinances and ordinance modernization. Incorporate ordinance revisions and standards into the LWRM Plan as they become available.
- Apply for grants identified in funding sources to pursue found on pages 62.
- Attend state and local training to keep up-to-date on the newest issues and practices in land and water resource management.
- Improve records keeping and data collection for all field visits, permits issued, and other work.
- Use GIS as a tool to identify focus areas and minimize inefficient implementation as found on pages 57 and 58.



*Photo: Completed streambank protection project on a Tributary to the Ames Branch with adjacent CREP enrollment*

# Appendix A: NR 151 Standards

## **NR 151.02 Sheet, Rill and Wind Erosion**

1. All land where crops or feed are grown shall be cropped to achieve a soil erosion rate equal to, or less than, the “tolerable” (T) rate established for that soil.
2. This section applies to livestock pastures and winter grazing areas after July 1, 2012.

## **NR 151.03 Tillage Setback**

1. No tillage operation shall impact stream integrity or deposit soil directly in surface waters.
2. No tillage may be conducted within five (5) feet of the top of the channel of surface waters. Tillage setbacks greater than five (5) feet but no more than 20 feet may be required to meet this standard.
3. Producers shall maintain the five (5) foot tillage setback in sod or vegetative cover.

## **NR 151.04 Phosphorus Index**

1. Croplands, pastures and winter grazing areas shall average a Phosphorus Index of six (6) or less over the accounting period and may not exceed an index of 12 in any individual year. The Phosphorus Index shall be calculated using the version of the Wisconsin Phosphorus Index available as of January 1, 2011.

## **NR 151.05 Manure Storage Facilities**

1. All new or substantially altered manure storage facilities built after October 1, 2002 shall comply with this section.
2. All new or substantially altered manure storage facilities shall be designed, constructed and maintained to minimize failure.
3. All facilities built or altered after January 2, 2011 shall contain the additional runoff volume of a 25-year, 24-hour storm.
4. A manure storage structure where usage has ceased for 24 months shall be abandoned.
5. Facilities where future use is anticipated may be retained under specific conditions.
6. Facilities in existence as of October 1, 2002 that pose an imminent threat to public health, aquatic life or groundwater shall be upgraded, replaced or abandoned in accordance with this section.
7. Manure storage levels in new or existing (based on the definitions of new and existing) may not exceed the margin of safety.

## **NR 151.055 Process Wastewater**

1. All livestock producers shall comply with this section.
2. There may be no significant discharge of process wastewater, defined by NR 243.03(53) to waters of the state.

## **NR 151.06 Clean Water Diversion**

1. All livestock producers shall comply with this section.
2. Runoff shall be diverted from contacting feedlots, manure storage and barnyard areas within the Water Quality Management Area.
3. Private wells only need protection when located downstream of feedlots and barnyards.

## **NR 151.07 Nutrient Management**

1. All crop producers and livestock producers that apply manure or other nutrients directly or through contact to agriculture fields shall comply with ATCP 50 technical standards.
2. Manure, commercial fertilizer, and other nutrients shall be applied in conformance with an approved NRCS 590 nutrient management plan.

## **NR 151.08 Manure Management Prohibitions**

1. All livestock producers shall comply with this section.
2. All livestock operations shall have no overflow of manure storage facilities.
3. A livestock operation shall have no unconfined manure pile in a water quality management area.
4. A livestock operation shall have no direct runoff from a feedlot or stored manure into the waters of the state.
5. A livestock operation may not allow unlimited access by livestock to the waters of the state where high concentrations of animals prevent the maintenance of adequate sod cover.

## Appendix B: Best Management Practices

Best Management Practice	ATCP 50 Reference
Land taken out of agricultural production	50.08(3)
Riparian land taken out of production (CREP equivalent)	50.08(4)
Manure storage systems	50.62
Manure storage closure	50.63
Barnyard runoff control systems	50.64
Access road	50.65
Trails and walkways	50.66
Conservation Cover	50.663
Conservation crop rotation	50.668
Contour farming	50.67
Cover crop – single species + termination	50.68(1)
Cover crop – single species	50.68(2)
Cover crop – multi-species	50.68(3)
Critical area stabilization	50.69
Diversions	50.70
Feed storage runoff control systems	50.705
Field windbreaks	50.71
Filter strips	50.72
Grade stabilization structure	50.73
Habitat diversification	50.733
Harvestable buffers	50.738
Hydrologic restoration	50.74
Livestock fencing	50.75
Livestock watering facilities	50.76
Milking center waste control systems	50.77
Nutrient management for cropland or pasture	50.78(1)
Nutrient treatment systems	50.785
Pesticide management	50.79
Prescribed grazing	50.80
Relocating or abandoning animal feeding operations	50.81
Residue management	50.82
Riparian buffers	50.83
Roofs	50.84
Roof runoff systems	50.85
Sediment basins	50.86
Sinkhole treatment	50.87
Stream bank and shoreline protection	50.88
Stream restorations	50.882
Stream crossing	50.885
Strip-cropping	50.89
Subsurface drains	50.90
Terrace systems	50.91
Underground outlet	50.92
Waste transfer systems	50.93
Wastewater treatment strips	50.94
Water and sediment control basins	50.95



Waterway systems	50.96
Well decommissioning	50.97
Wetland restoration	50.98
Engineering services provided in connection with a completed cost-share practice for which Structural revenue may be used (also refer to 50.40(7)).	50.34(4)
Other practices with DATCP's written approval	50.40(3)(a)

# Appendix C: Permitted & Non-Permitted Manure Storage

