Land & Water Resource Management Plan

April 2025

Land Conservation Committee

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Chapter I - Introduction

Background

Wisconsin Act 27 (1997) and Wisconsin Act 9 (1999) amended Chapter 92 of the Wisconsin State Statutes, formally requiring counties to develop a Land and Water Resource Management Plan (LWRMP). The intent of this change was to foster and support locally led processes which improve decision making, streamline the administrative delivery mechanisms, and better utilize local, state, and federal funds to protect and restore the land and water resources of the state. Plans are developed for a 10-year period with a review at 5 years. The plan is intended to be dynamic and flexible in order to account for shifts in resource protection priorities and programs. Every year, typically, goals and targets are identified in the annual work plan submitted to WiDATCP.

The initial Rusk County LWRMP was developed in 2001 with the purpose of guiding citizens, and county, state, and federal agencies in their efforts to conserve and protect natural resources while supporting economic and recreational uses. Subsequent revisions of the plan in 2007 and 2016 continued to support these goals and this current revision is no different.

The purpose of the Rusk County LWRMP is to:

- Identify and prioritize natural resource concerns within the county
- Develop a coordinated effort to address these concerns
- Determine the roles and responsibilities of agencies in implementing the plan
- Develop strategies, goals, objectives, and outcomes for program years 2025 - 2035
- Guide funding for the protection and improvement of natural resources in Rusk County

Meeting the goals and objectives of this plan is the primary responsibility of the Rusk County Land & Water Conservation Division (LWCD) and, to be effective, relies on having adequate staffing and funding support from all sources. The LWCD is one division of 3 within the county's Land Conservation & Development Department, the other divisions being Zoning and Land Information. All 3 divisions work very closely together to provide a coordinated effort to land management within the county. The mission of the LWCD is to provide timely and professional services to the landowners of Rusk County in order to promote natural resource conservation, design and implement resource conservation projects, and monitor resource related concerns. Through the LWRMP, every effort will be made to accomplish this mission.

A preliminary review of this plan has been conducted by citizen representatives and agency staff, both within and outside of the county, to ensure that the best interests of the county and the counties residents are being addressed. Appendix F provides advisory committee agendas. The LWRMP is a living document, with initial goals and work plan outlined, which will be reviewed on an annual basis and modified to be responsive to changes in funding and/or resource concerns.

Related Plans and Documents

Rusk County Comprehensive Plan
WI Administrative Code - Chapters 23, 30, 31, 88, 91, 92, 160, 283
WI Administrative Code - ATCP 50, 52

WI Administrative Code - NR 102, 103, 105, 107, 109, 115, 120, 121, 132, 135, 140, 142, 151, 153, 154, 193, 243
USDA-NRCS Technical Standards
Rusk County Code of Ordinance - Chapter 20, 50
Rusk County Land Records Improvement Plan
USDA-NRCS/Rusk County LWCD Memorandum of Understanding

County Setting

Rusk County is located in Northwest Wisconsin, roughly 120 miles South of Lake Superior and 75 miles East of the St. Croix River. The total area of the county is 595,885 acres (931 sq miles) of which approximately 53% is forested and 18% is in agricultural land use. Rusk County was the 71st county to be formed in Wisconsin, officially designated in 1901, formed out of the Northern portion of Chippewa County. Originally named Gates County after Milwaukee land speculator James L. Gates, the county was renamed in 1905 to Rusk after Jeremiah M. Rusk, governor of Wisconsin and the first U.S. Secretary of Agriculture.

The 2020 U.S. census bureau population for Rusk County was 14,188, which is a 3.8% decrease from the 2010 census. Various sources have projected a continuing decline in population by anywhere from 6% - 18%. A majority of the county's population (22%) live within the City of Ladysmith which is the county seat. Rusk County is primarily a rural county with an estimated density of 15

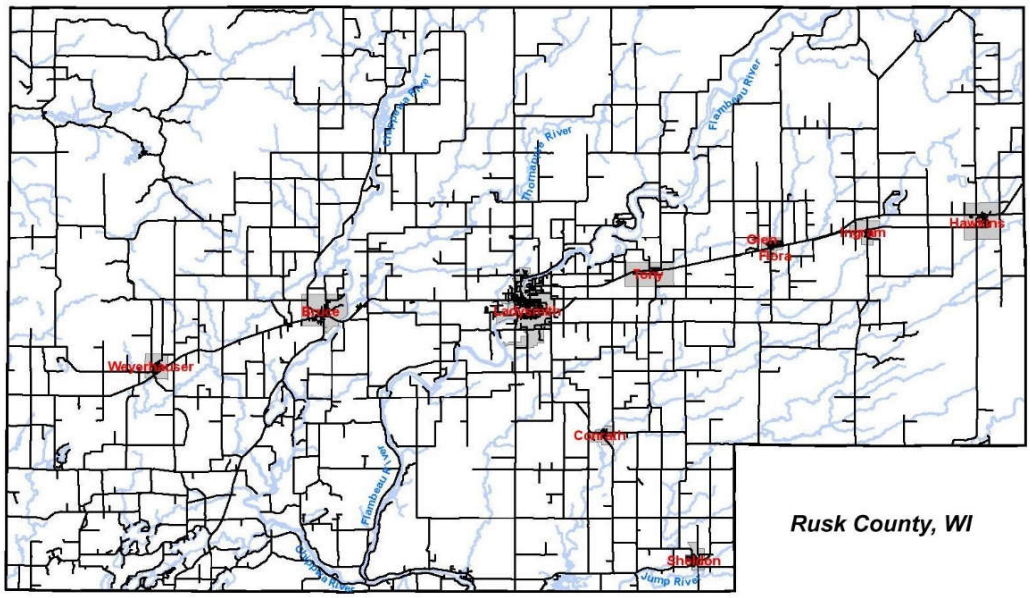

Figure 2. Rusk County, Wisconsin

persons per sq. mile. The county ranks 65th out of 72 Wisconsin counties for population density. The primary industries within the county are timber production, agriculture, and some manufacturing.

Trends

The county has seen a significant shift in land cover from the 1800's to today. Historical vegetation derived from original government survey notes show the county dominated by deciduous/coniferous forests (79%) containing hemlock, sugar maple, yellow birch, white pine, and red pine with smaller areas of swamp conifers and dry, sandy oak and jack pine forest. Today we see a variety of land cover including urban, forest, and agriculture. In recent years, there has been significant development pressure around the lakes and reservoirs as can be seen in Figure 3.

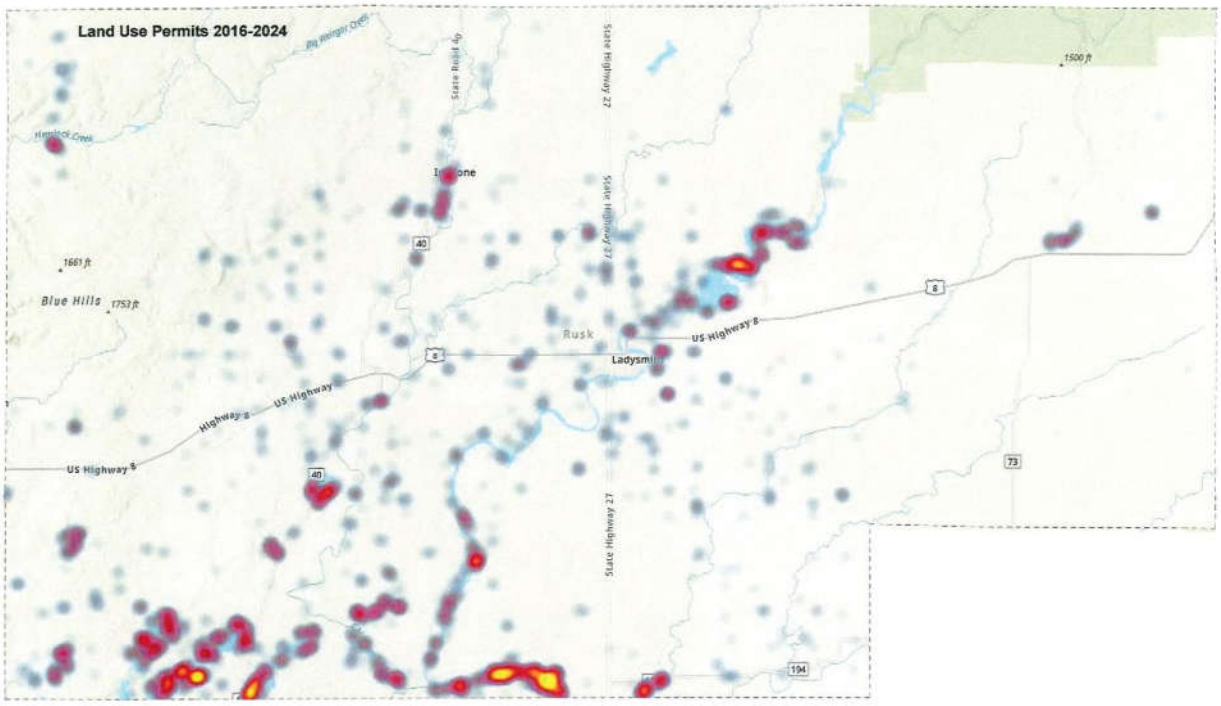

Figure 3. Heat Map of Land Use Permits, 2016-2024

Agricultural land use in the county has seen significant trends over the years and is currently in a statewide trend toward less individual farms but increasing acreage (figures 4 and 5). Ag continues to be a significant source of revenue for the county, totaling over 84 million dollars in sales in 2022. An analysis of U.S. Census of Agriculture data shows that Rusk County has experienced a 160% increase in average farm size from the mid 1930's to today while at the same time has seen an 83% decrease in the number of individual farms for the same time period.

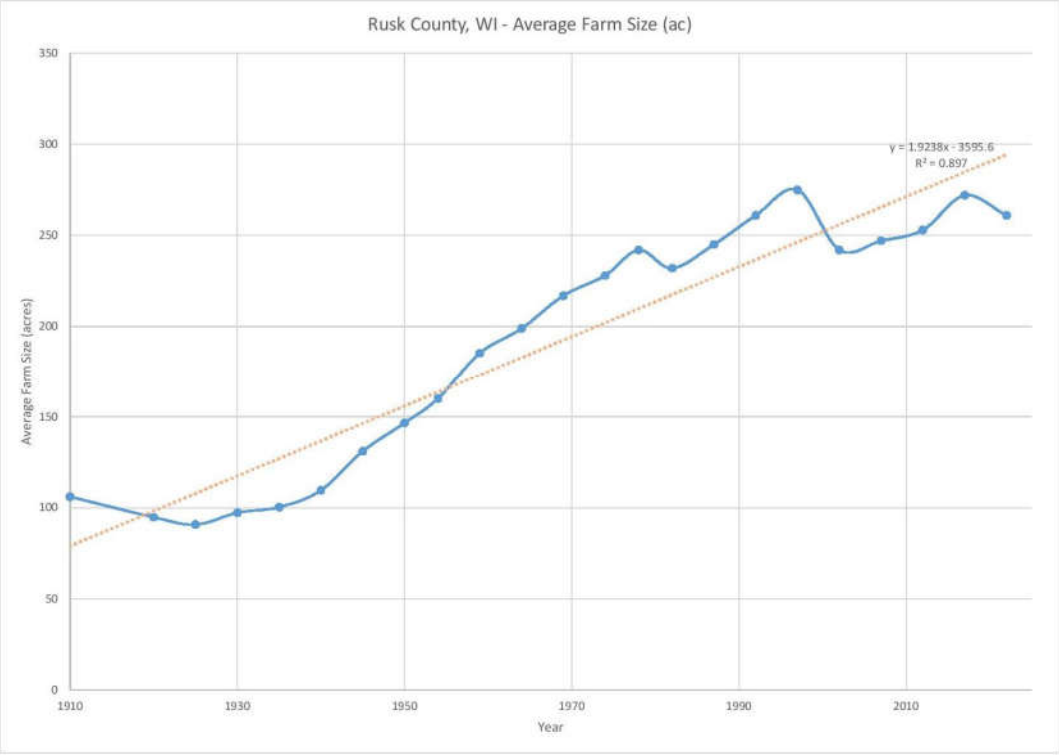

Figure 4. Rusk County - Average Farm Size (acres) 1910 – 2022 (Source: *USDA-National Agriculture Statistics Service, Census of Agriculture*)

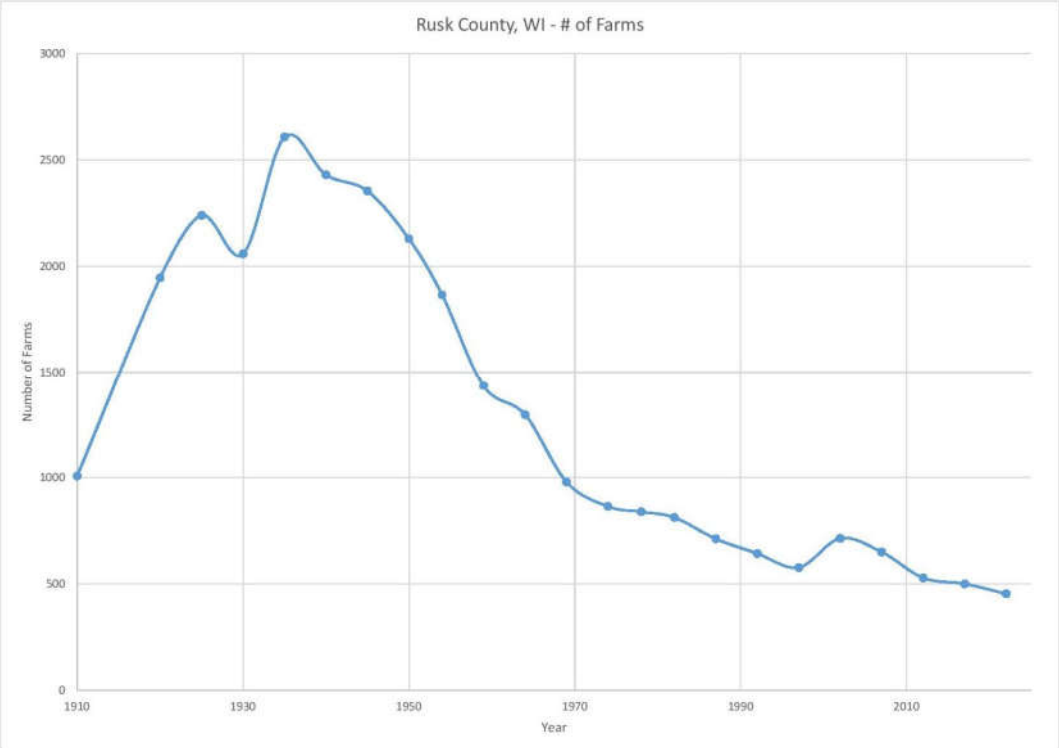

Figure 5. Rusk County - Total Number of Farms, 1910 – 2022 (Source: *USDA National Agriculture Statistics Service, Census of Agriculture*)

This shift to larger but fewer farm operations has definite impacts on all aspects of how we conduct business from outreach material to types of projects funded as well as implications on the types of crops grown and crop rotations. Census data shows that producers are growing slightly more cash grain (corn, soybeans, oats, rye) than forage (hay, haylage, corn silage) today than they did even 10 years ago. There are other impacts which are more difficult to quantify, but should be investigated such as the effects on the local economy, sociological changes, and rural communities.

Forest products have consistently been a significant portion of the Rusk County economy. The County itself manages over 90,000 acres of forest for multiple uses including recreation, wildlife habitat, and forest products. Over the last 5 years, the county forest has generated an average of almost 2 million dollars per year from forest products alone (Figure 6). We estimate that the remaining privately held forest land generates an additional 2.45 million dollars in revenue.

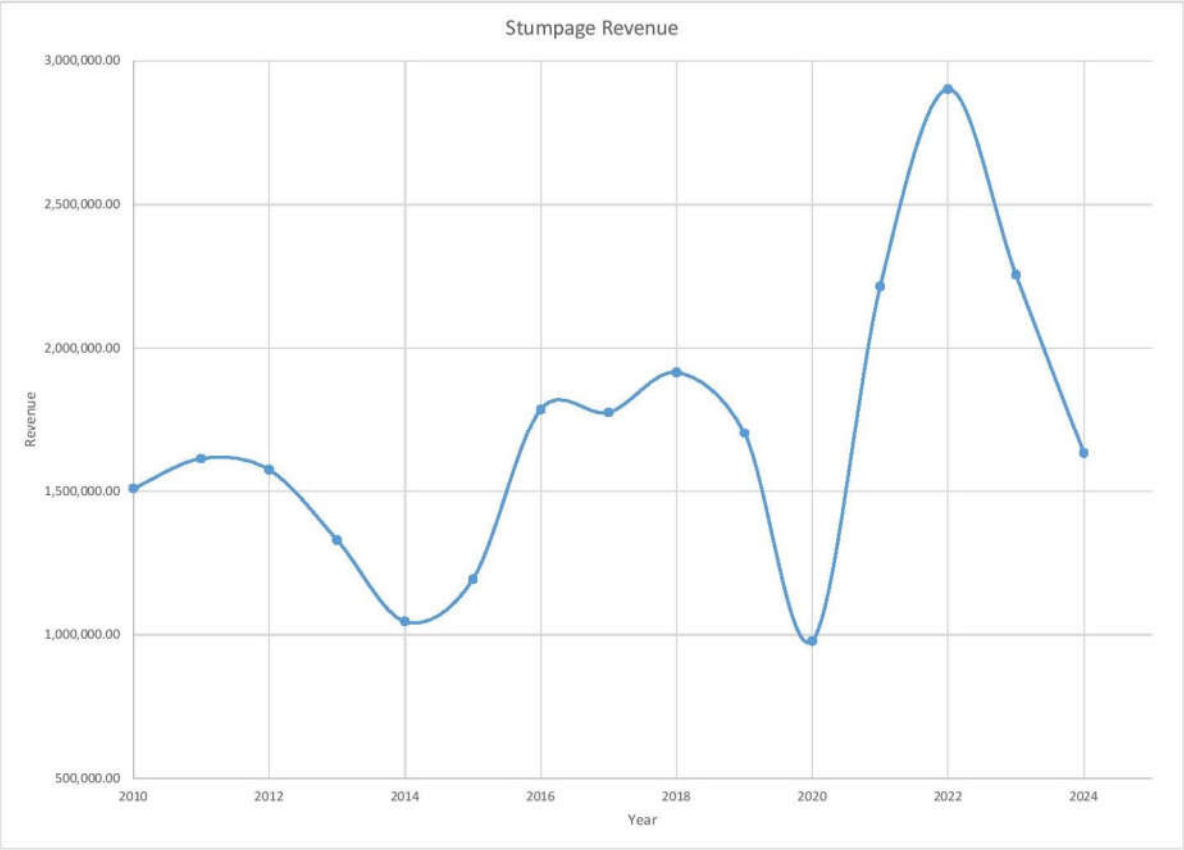

Figure 6. Rusk County - County Forest Annual Stumpage Revenue

As noted earlier, total population within the county is expected to continue declining, which will lead to an increase of absentee or out of area landowners. While these types of landowners do not necessarily change the size or type of conservation projects, it does make project planning and administration more difficult. It should also be noted that the age distribution of the population in the county is skewed toward older individuals with 59% of the population over 40 years old (figure 7). This has potential

implications on adoption of new or innovative conservation techniques as well as the possibility of gaining young, progressive ag producers.

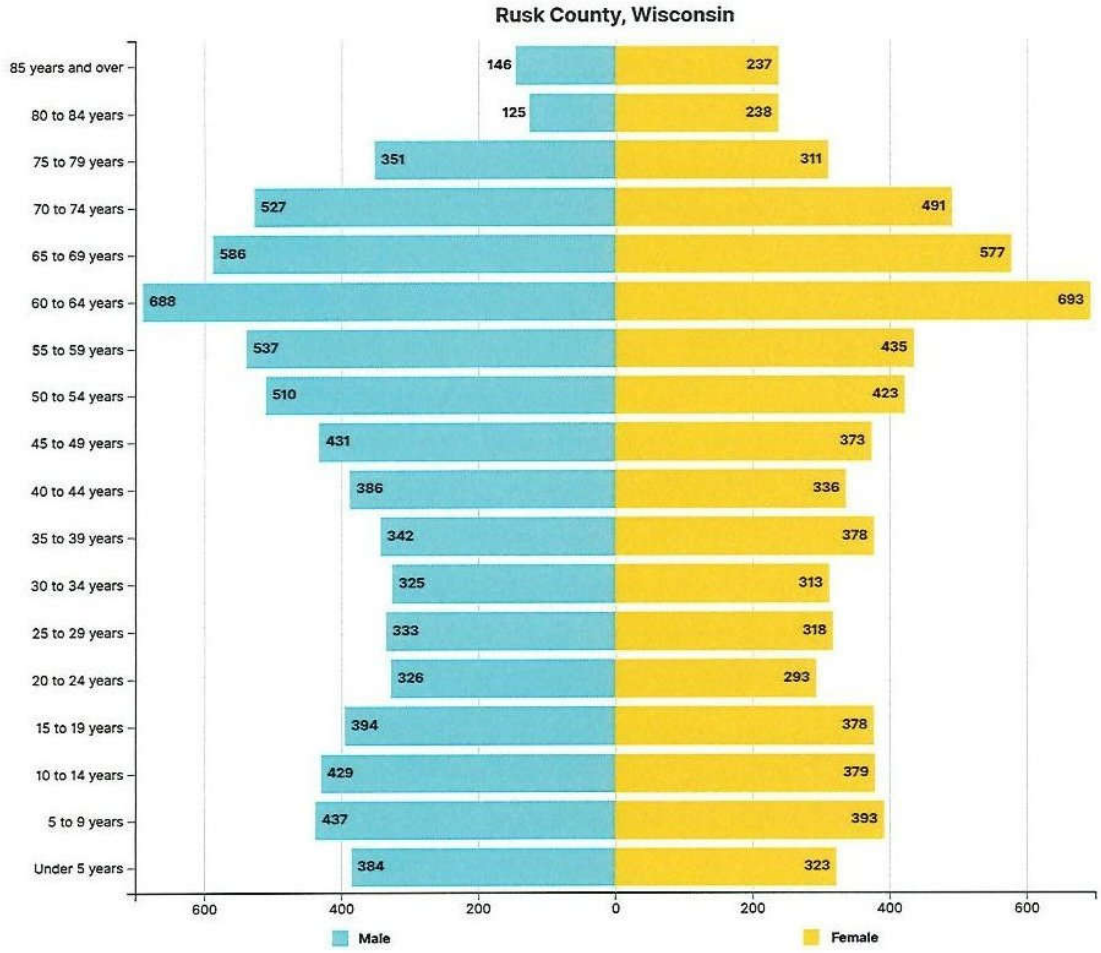

Figure 7. Rusk County - Population Pyramid by Age and Sex. (Source: *US Census Bureau, 2022 ACS 5-year Estimates*)

Chapter II - Rusk County Setting

Climate

Regionally, the climate of Rusk County is characterized by significant seasonal variability with warm summers and long, cold winters. Average annual high temperatures ranged from 49 - 59 degrees F with average annual lows between 26 - 36 degrees. Annual precipitation is typically 30 - 35 inches per year. This combination of rainfall and temperature leads to an excess of precipitation over evapo-transpiration and contributes to a slower accumulation of organic matter over time.

However, current trends suggest that climate variables are changing which could have an impact on soil genesis, agricultural production, wildlife, and recreation. Regionally, annual average high and low temperatures are increasing (Figures 8 and 9). However, these increases are not evenly distributed. Average annual high temperatures have not increased as much as average annual lows and the largest increases are occurring in the winter with more moderate increases in spring and fall.

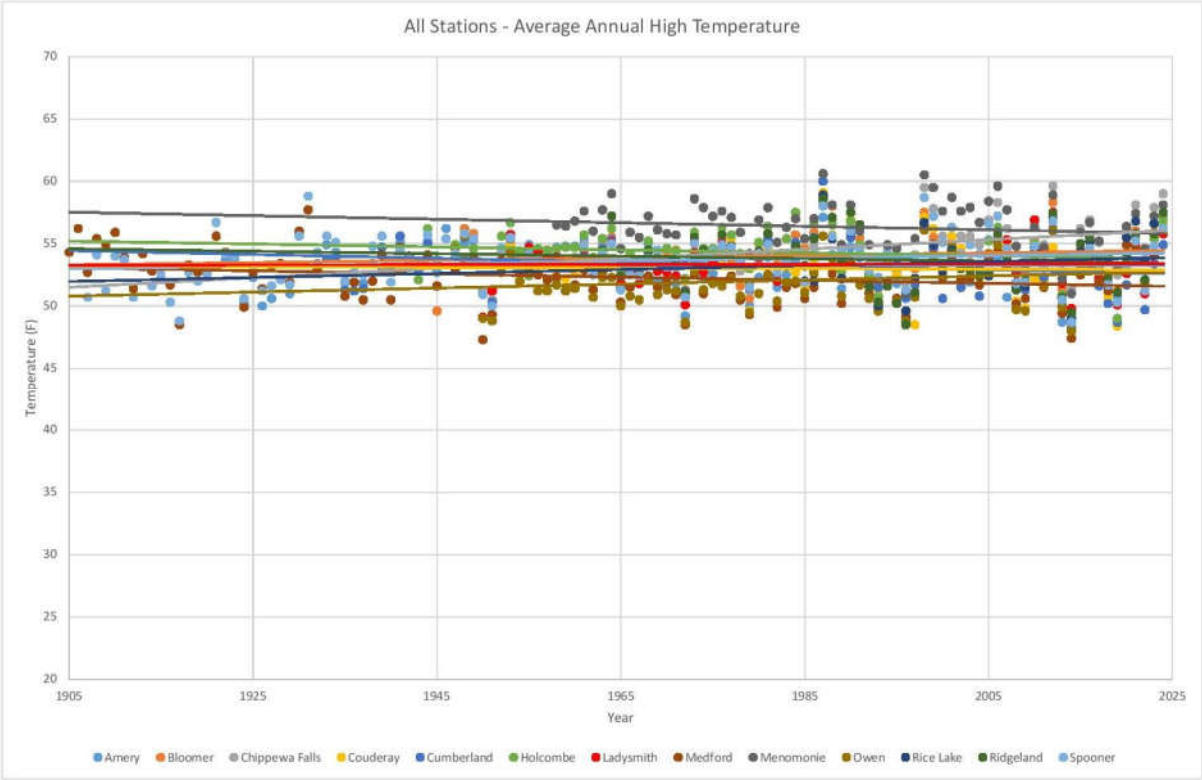

Figure 8. Regional Average Annual High Temperature, 1905 – 2024. (Source: *Midwest Regional Climate Center, cli-MATE Database*)

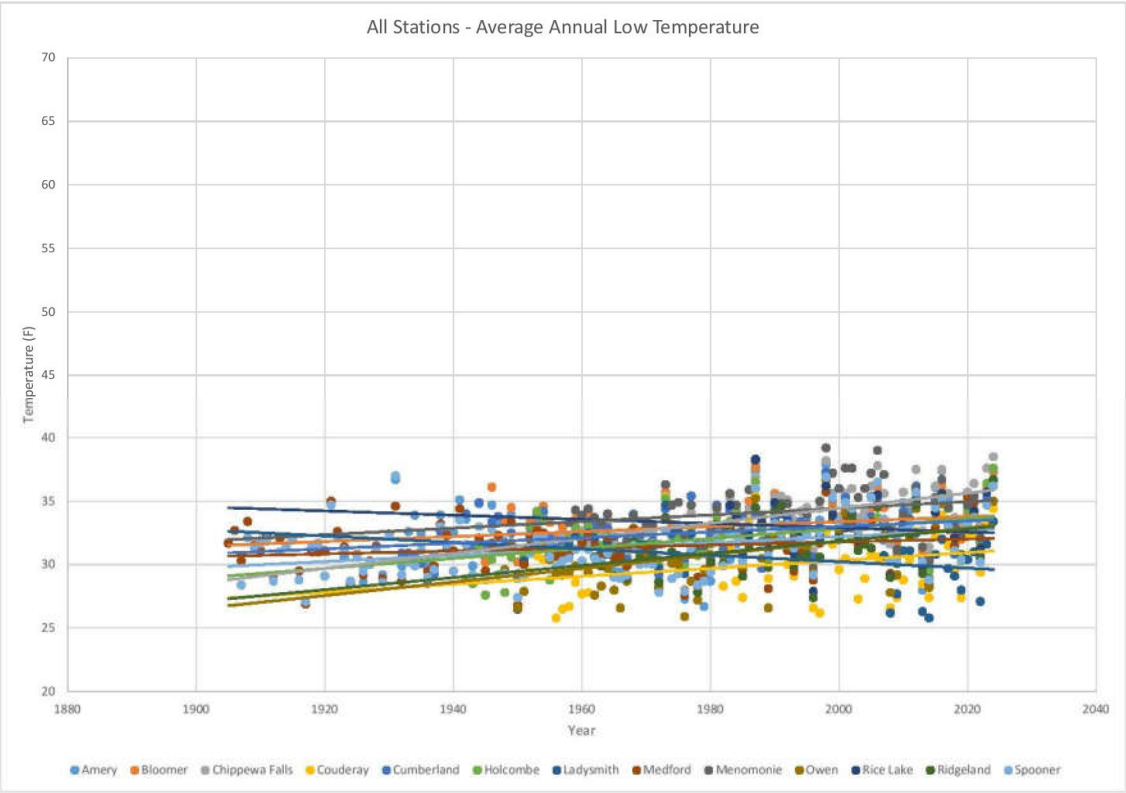

Figure 9. Regional Average Annual Low Temperature, 1905 – 2024. (Source: *Midwest Regional Climate Center, cli-MATE Database*)

These changes are most evident in nighttime lows, which are increasing, thus decreasing the total temperature range on a daily basis. These changes have implications on frost-freeze cycles and the habitability for plant and animal species. Overall, average annual temperature is increasing in Rusk County, particularly since 1950 (Figure 10). Projected average annual temperature in Rusk County is expected to increase by approximately 5-6 F by mid-century. This increase will be most evident in the fall and winter, potentially extending the growing season and opportunity to plant cover crops.

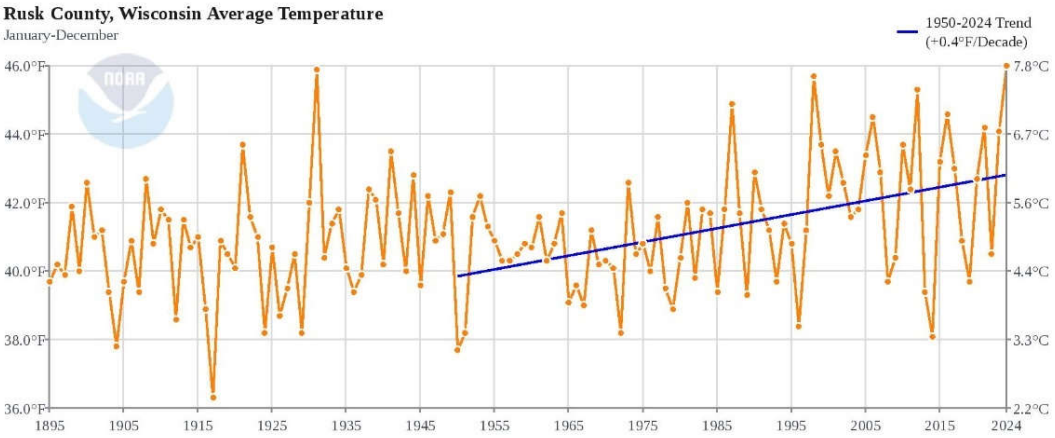

Figure 10. Rusk County – Average Annual Temperature (Source: *NOAA, National Centers for Environmental Information, Climate at a Glance: County Time Series*)

Regionally, average annual precipitation has increased (Figure 11), and specifically in Rusk County, precipitation is increasing at a rate of about .2 inches each decade (Figure 12).

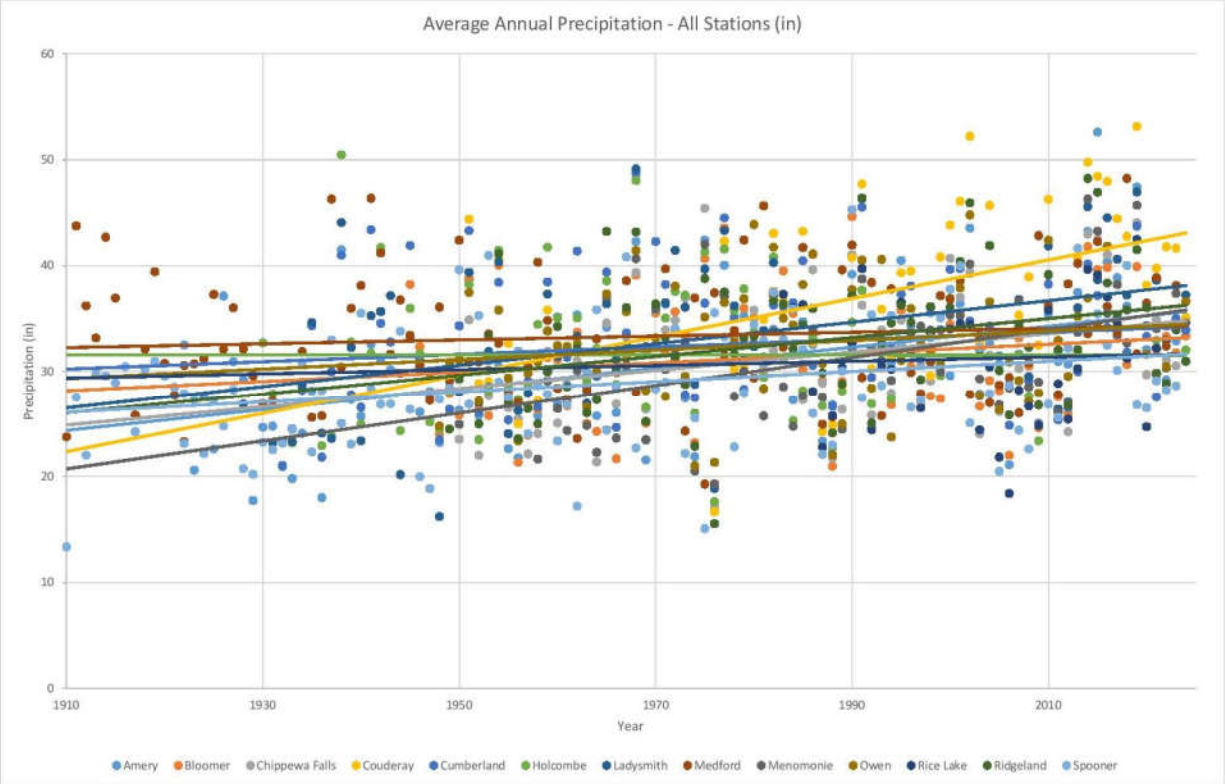

Figure 11. Regional Average Annual Precipitation, 1905 – 2024. (Source: *Midwestern Regional Climate Center, cli-MATE Database*)

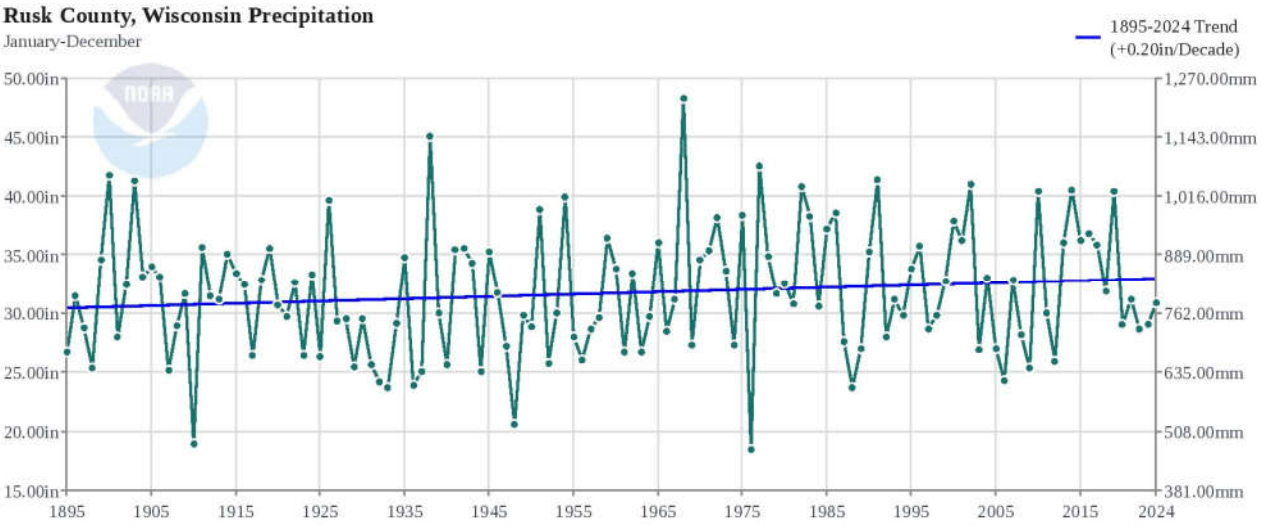

Figure 12. Rusk County – Average Annual Precipitation. (Source: *NOAA, National Centers for Environmental Information, Climate at a Glance: County Time Series*)

However, these precipitation trends have varied by season. Winter, Spring, and Fall precipitation in Rusk County have increased while Summers have become drier. These trends are expected to continue with the largest increase in precipitation in winter, moderate increases in fall/spring, and variable changes in summer moisture, Figure 13. Future summer precipitation trends are more uncertain, but current evidence suggests that there will be greater variability in the frequency, amount, and duration of rainfall events which will lead to cycles of drought and flood, greater variability in soil moisture, and increased potential for soil loss by runoff and wind.

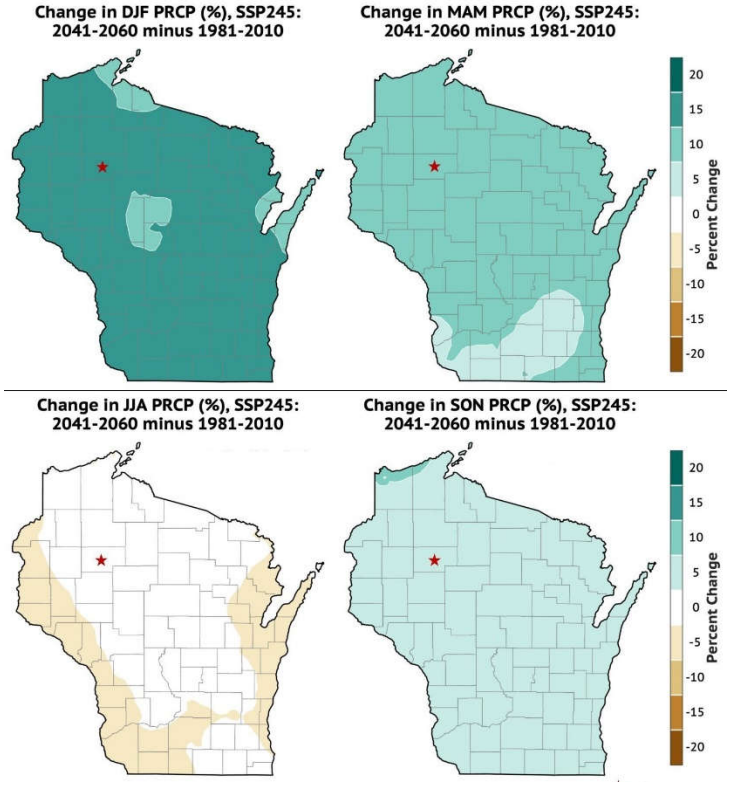

Figure 13. Projected Precip. Change by Season, 1941 – 2060. (Source: *UW-Madison Nelson Institute, Center for Climatic Research, Probabilistic Downscaled Data v3.0, University of Wisconsin – Madison*)

Changes in nighttime lows have additional considerations. As temperatures increase, the number of nights with below freezing temperature decreases (Figure 14). Climate models forecast 20-40 fewer nights below freezing by mid-century which has implications for surface water ecosystems, wildlife habitat suitability, snow and ice cover which will impact tourism, ice-fishing, and other winter recreation and industries such as logging which rely on frozen ground.

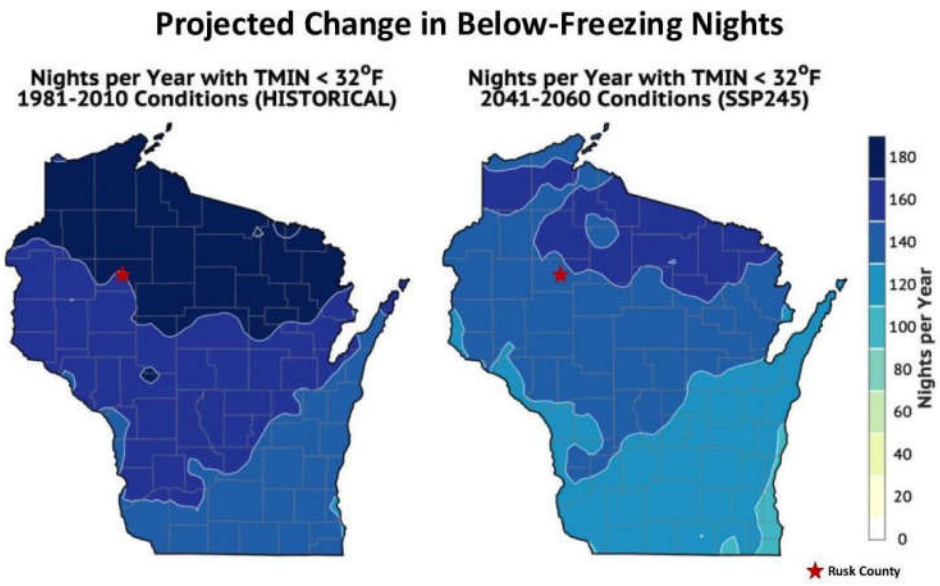

Figure 14. Projected Change in Below Freezing Nights (Source: *UW-Madison Nelson Institute, Center for Climatic Research, Probabilistic Downscaled Data v3.0, University of Wisconsin – Madison*)

Geology

Rusk County has 3 fairly distinct areas of bedrock with Lower Proterozoic granite, diorite, and gneiss and basaltic metavolcanic rock in the Eastern half of the county, Cambrian age sandstone with some dolomite and shale in the South-Western half of the county, and a ridge of Lower Proterozoic quartzite in the North-Western half which forms the spine of the Blue Hills Region (Figure 15). In general, depth to bedrock is 50 feet or more except for the Blue Hills and upper Flambeau River valley where bedrock is 5 feet or less below the surface.

Figure 15. Bedrock Geology of Rusk County (Source: *UWEX Geological and Natural History Survey, 1981, Revised 2005*)

The most important factor driving the geology and other geographic features of Rusk County is the most recent glaciation. The Chippewa lobe of the Laurentide ice sheet began its advance into Rusk County about 29,500 years ago, scouring the land and removing all but the most resistant rock. The ice sheet went through a number of advances and recessions, with the peak advance about 22,000 years ago, reaching into central Chippewa County. There was then a steady recession, with the glacial lobe gone from Rusk County by about 20,000 years ago. By about 11,000 years ago, the glacier was completely gone from Wisconsin, but remained in Canada for several thousand more years.

This advance and recession of the glacial greatly altered the land and created the soil parent material and landscape features that we see today. The surface geology of the county is characterized by end moraine features in the western part of the county, pitted outwash along the present day Chippewa River valley, and ground moraine features in the rest of the county. The retreating lobe of the glacier carved relatively deep, linear, SW-NE valleys in the eastern half of the county which are evident today.

Soils

Rusk County is dominated by silt loam soils derived from the glacial till with silts located in depressional areas and sandy loams along the major river valleys (Figure 16). Throughout the county, regardless of soil texture, soils tend to be somewhat rocky, especially in the Northern and Western parts of the county. The predominance of silt soils in depressional areas correlates highly to hydric and predominantly hydric soil conditions throughout the county.

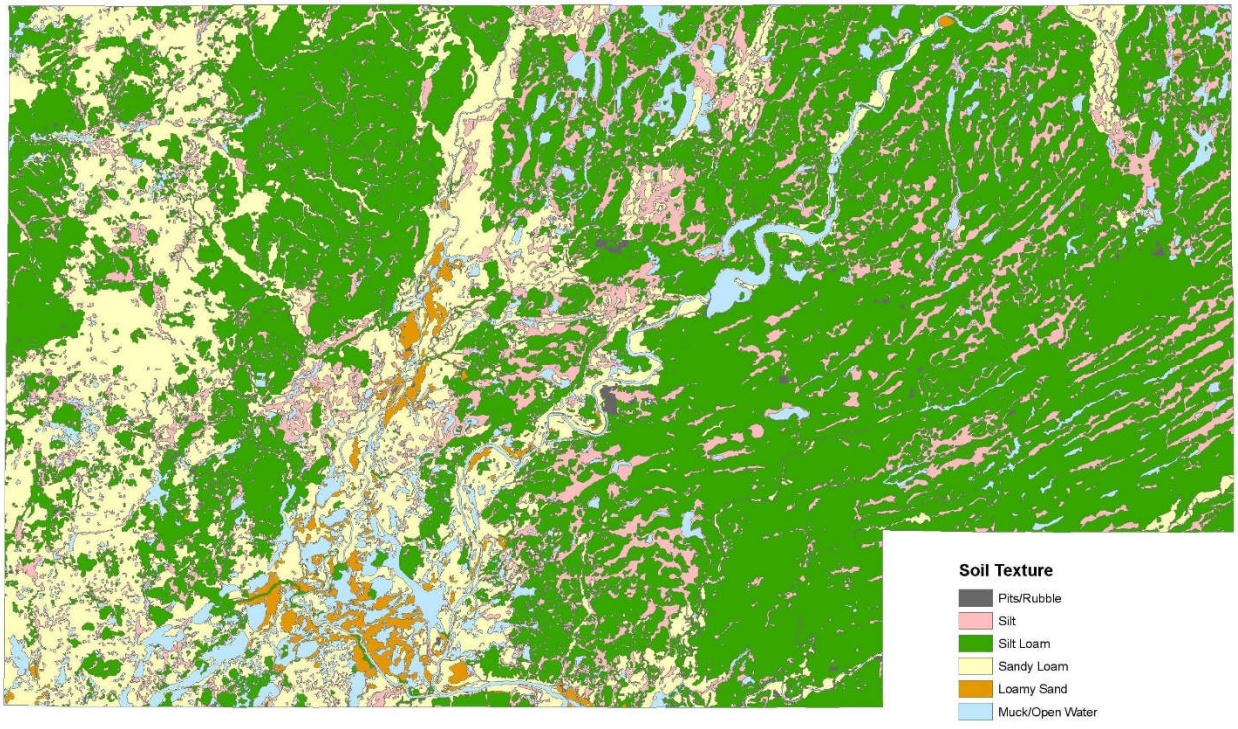

Figure 16. Rusk County - Soil Texture. (Source: *USDA, SSURGO Database*)

Not surprisingly, agriculture is concentrated in areas with silt loam soils having a sand component of 5-30%. These areas correspond to the central portion of the county, South of Ladysmith and the Western

part of the county between the Blue Hills and the Chippewa River Valley. Outside of these areas, other factors limit agricultural land use such as relief, water table, or soil thickness.

All soils identified in the USDA Soil Survey have been assigned a Land Capability Classification. This classification defines, in a general way, the suitability of the soil for crops or other uses. The capability categories range from 1 - 8, with 1 being no or very minor limitations and 8 having limitations which prevent crop production and restrict uses to recreation, wildlife habitat, or esthetic purposes. Within Rusk County, about 31% of soils have a capability class of 2, 3, or 4, having slight to severe restrictions but can be productive with proper management and choice of plants. A significant percentage of soils in the county (57%) have a capability class of 6 which are not suited to cultivation and are restricted to pasture, forestland, or wildlife habitat. Roughly 12% of the county soils have a capability class of 7 or 8, severely limiting their use and making them unsuited for cultivation and restricting use to forestland, wildlife habitat, or recreational purposes.

Land Cover

Pre-Settlement land cover in Rusk County was almost entirely forest with hemlock-sugar maple-yellow birch-white pine-red pine forests in the silt loam soils and sugar maple-yellow birch-white pine-red pine forests in the sandier soils of western Rusk County. Pockets of swamp conifer occurred throughout the county with small areas of jack pine and oak forests in the South-West corner (Figure 17).

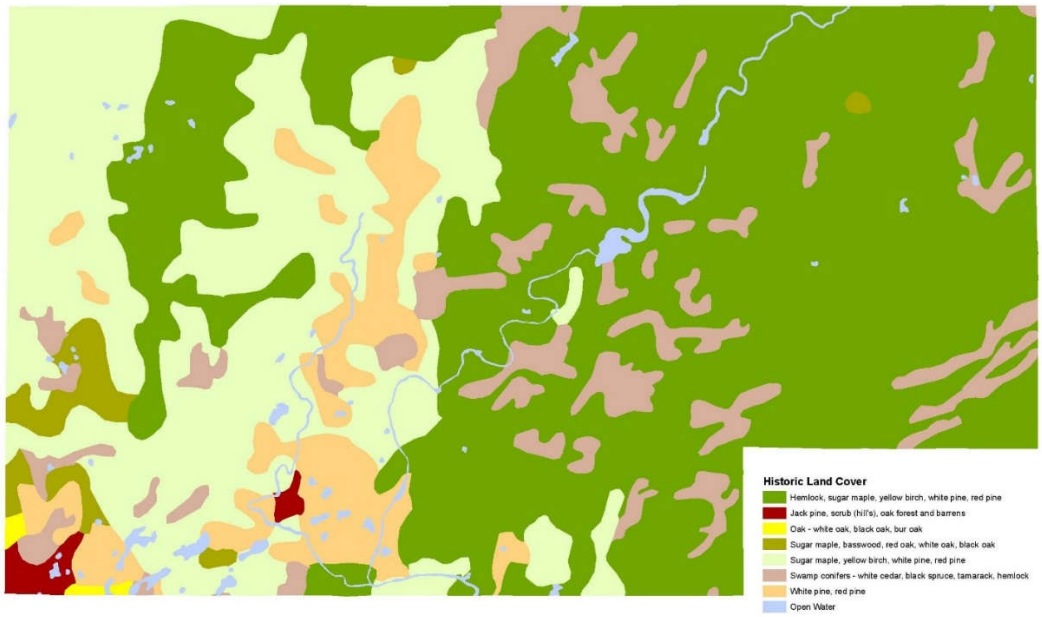

Figure 17. Rusk County - Pre-settlement Land Cover. (Source: WiDNR, Open Data Portal)

These vast forests led to the initial settlement of the county for logging and timber production which is still economically important today.

Today, forest is still the dominant land cover in the county, comprising 53% of the land cover. As the land was cleared for timber production, agriculture began to take hold and today accounts for about 17% of the counties land cover. Given the glaciated terrain and soils of the county, it is not surprising that 26% of the county is considered wetland. The remaining 4% of the county is split between urban, open water, and shrubland (Figure 18). Land Use/Land Cover details are shown in Table 1.

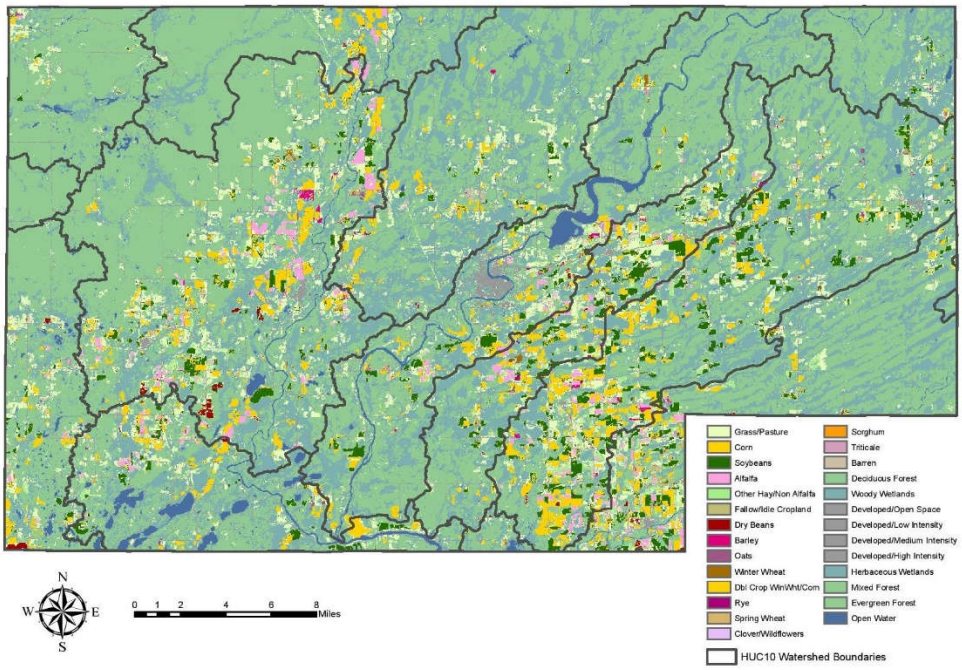

Figure 18. Rusk County - Present Day Land Use/Land Cover. (Source: *George Mason University, Center for Spatial Information and Systems, CropScape-Cropland Data Layer*)

Agricultural Landuse	*Acres*
Grass/Pasture	45,735.2
Corn	24,519.7
Soybeans	16,013.3
Alfalfa	7,363.9
Other Hay/Non Alfalfa	5,282.5
Fallow/Idle Cropland	1,990.7
Dry Beans	809.1
Barren	743.7
Barley	621.8
Oats	477.5
Winter Wheat	446.8
Dbl Crop Winter Wheat/Corn	292.4
Rye	178.6
Spring Wheat	176.8
Clover/Wildflowers	174.1
Sorghum	156.6
Triticale	147.9
Peas	38.9
Sweet Corn	28.2
Sunflowers	24.5
Herbs	4.7
Apples	3.6
Christmas Trees	1.8
Potatoes	1.6
Total	**105,233.9**

Non-Agricultural Landuse	*Acres*
Deciduous Forest	297,845.2
Woody Wetlands	144,321.0
Developed/Open Space	13,789.6
Herbaceous Wetlands	11,839.8
Mixed Forest	11,466.7
Open Water	10,708.7
Developed/Low Intensity	3,412.0
Evergreen Forest	2,333.4
Developed/Medium Intensity	442.3
Developed/High Intensity	361.4
Shrubland	7.8
Total	**498,527.9**

Table 1. Rusk County Land use/Land Cover, 2024. (Source: *George Mason University, Center for Spatial Information and Systems, CropScape-Cropland Data Layer*)

Agricultural land use in Rusk County is concentrated in the Deer Tail Creek, Main Creek, and Soft Maple-Chippewa River HUC10 watersheds with more regionalized ag land use in the Lower Flambeau, Lake Chetek, and Jump River watersheds. These areas generally correspond to areas of the county with silt loam soils which are predominately non-hydric and where wetlands are confined to drainageways and stream corridors.

Watershed

Rusk County is located entirely within the Upper Mississippi River region, within the Chippewa River HUC6 basin. The county is further subdivided into 14 HUC10 watersheds (Figure 19) and 46 HUC12 watersheds.

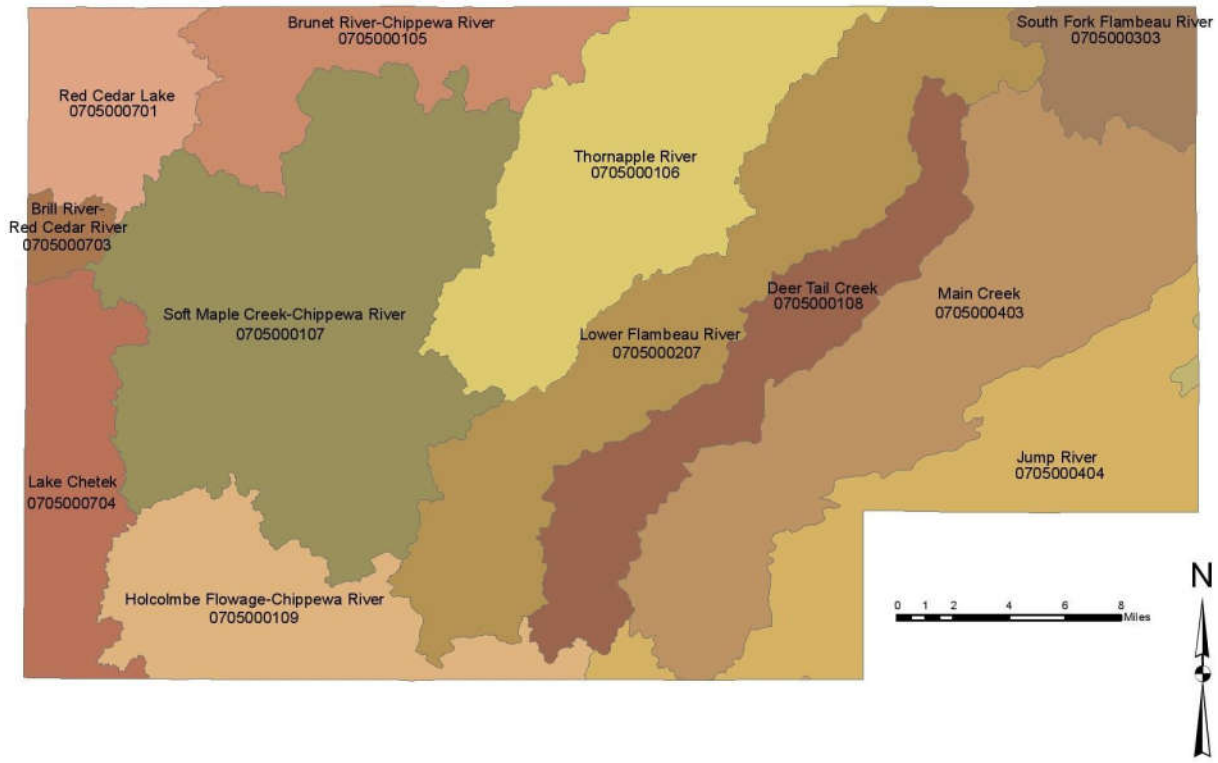

Figure 19. Rusk County - HUC10 Watershed Boundaries. (Source: *USGS Watershed Boundary Dataset*)

The county contains numerous streams, lakes, and 4 major rivers (Chippewa, Flambeau, Jump, and Thornapple). Drainage patterns in the Eastern half of the county are generally NE to SW while remaining parts of the county exhibit a more dendritic pattern.

Surface Water

Rusk County contains over 8,500 acres of lakes and over 1,200 miles of streams within its border (Figure 20). These surface waters support a diverse population of plant and animal species and forms an important recreational opportunity for residents and visitors.

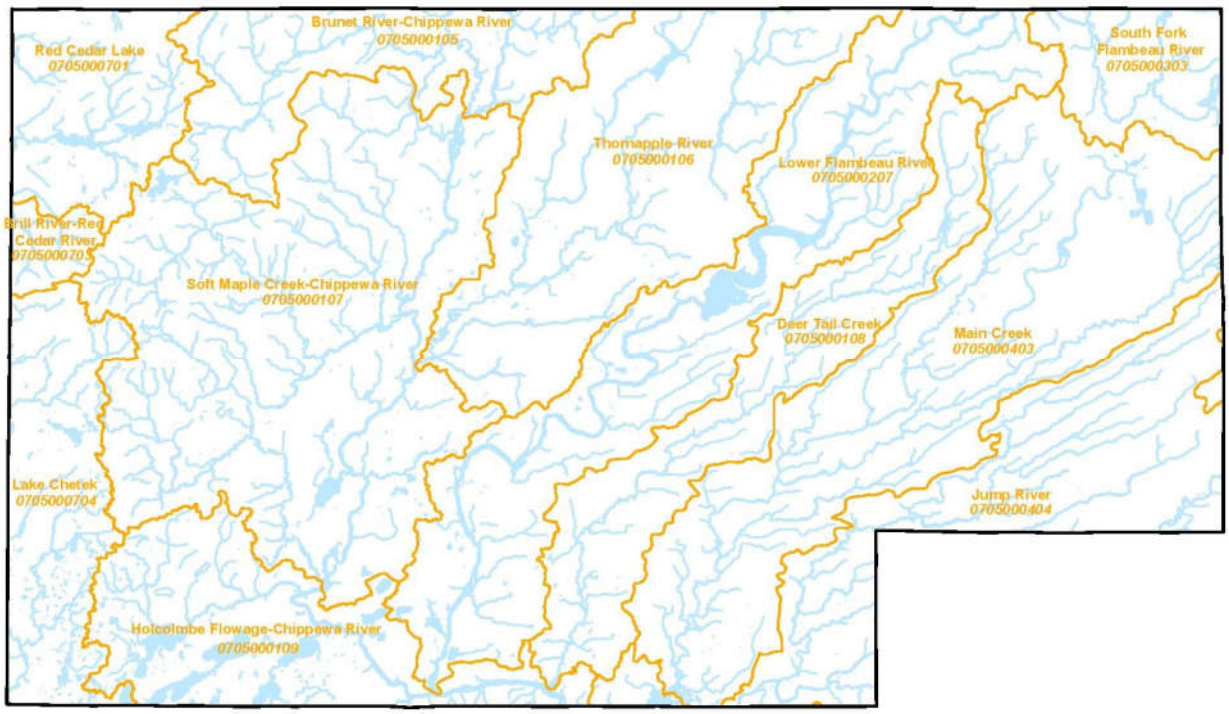

Figure 20. Rusk County - Surface Water. (Source: *WiDNR Open Data Portal*)

Sediment and nutrient delivery to these surface waters is the primary concern within the county. Land uses such as agriculture, construction, livestock operations, and urban development all may potentially contribute sediment and nutrients to surface water. These sources may also contribute other harmful chemicals, bacteria, or organic matter however, the extent of these pollutants has not been quantified. A preliminary search of the WiDNR Surface Water Integrated Monitoring System (SWIMS) database shows 507 stations within Rusk County with historic data ranging from 1973 to 2014 (Figure 21) and 564 stations with recent data ranging from 2015 to 2025 (Figure 22). Most of this data appears to be of limited temporal resolution and tested parameters are not consistent, which prevents any regional or trend analysis, however the data is useful as a snapshot of conditions throughout the county. A much more detailed analysis is needed to fully evaluate the data and integrate results into ongoing conservation efforts.

Currently, the county has 6 lakes and 7 streams listed on the US-EPA 303(d) list of impaired waters. The 303(d) list is compiled and reviewed by the US-EPA and Wi-DNR and identifies water bodies that do not meet water quality standards. These impairments are generally a result of either atmospheric deposition or land use within the drainage area. The lakes are listed primarily for mercury and excessive sediment/nutrient delivery while the streams are listed mainly for elevated total phosphorus. The county also has 21 WiDNR assessed high-quality lakes, rivers, and streams and 2 healthy and rare wetlands under the Healthy Watersheds, High-Quality Waters (HWHQW) initiative. The HWHQW program objective was to identify the healthiest watersheds and waterbodies in Wisconsin using the best available datasets in order to enable water resource protection for both watersheds and waterbodies. Assessments of waterbodies were based on presence of unique and rare natural

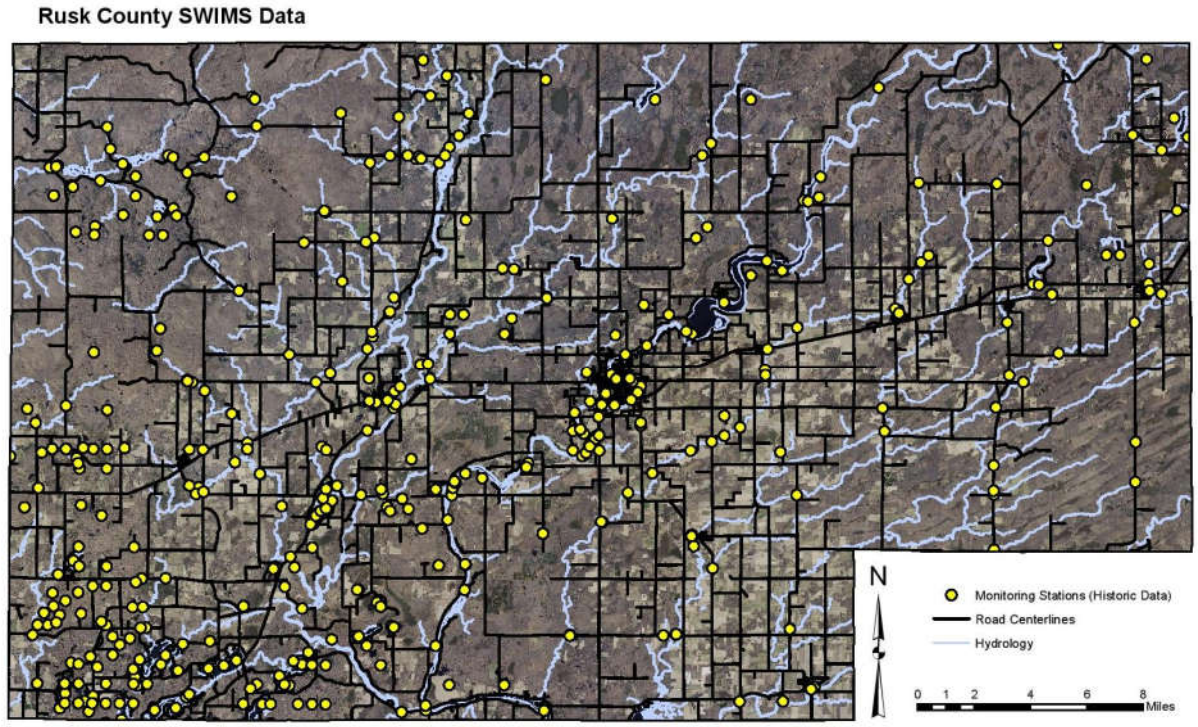

Figure 21. Monitoring Stations with Historical Data (1973 - 2014). (Source: *WiDNR SWIMS Database*)

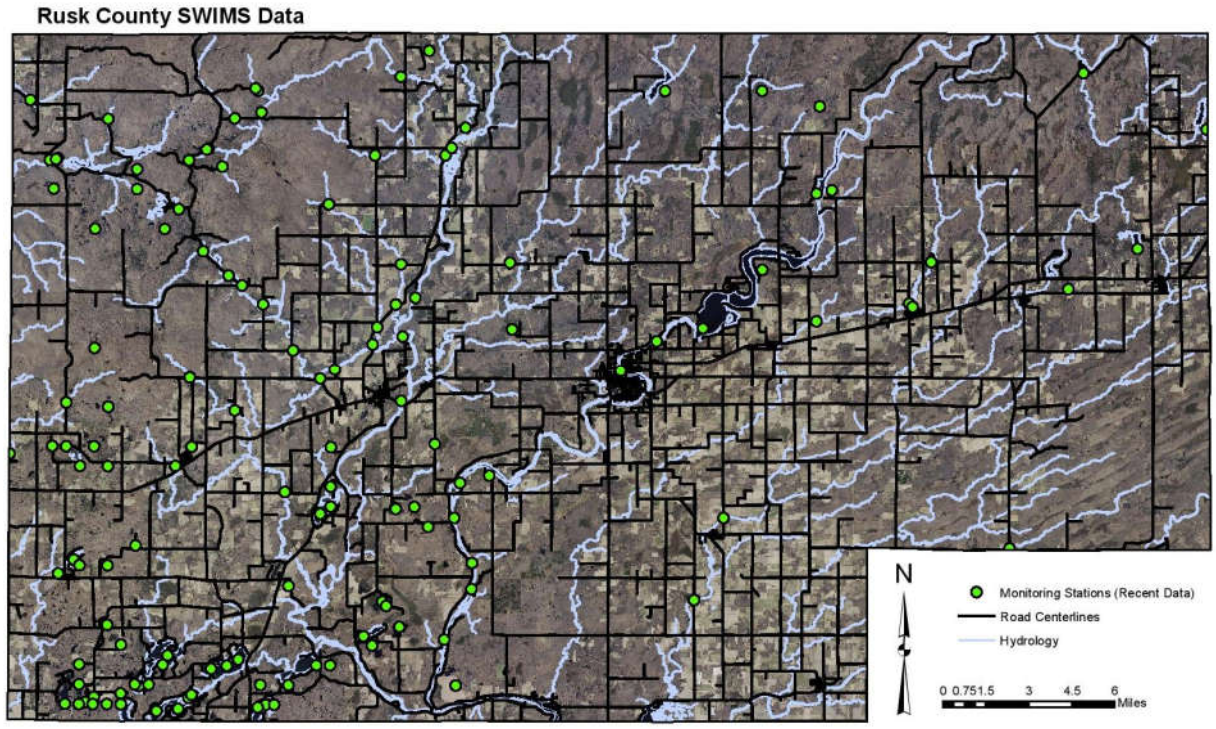

Figure 22. Monitoring Stations with Recent Data (2015 - Present). (Source: *WiDNR SWIMS Database*)

communities, ability to attain water quality standards, and presence of good-to-excellent biotic integrity. Watershed assessments used landscape condition, hydrology, geomorphology, habitat, water

quality, and biological data to model overall watershed health. Figure 23 and Tables 2 and 3 show both the high-quality waters and 303(d) listed waters within Rusk County.

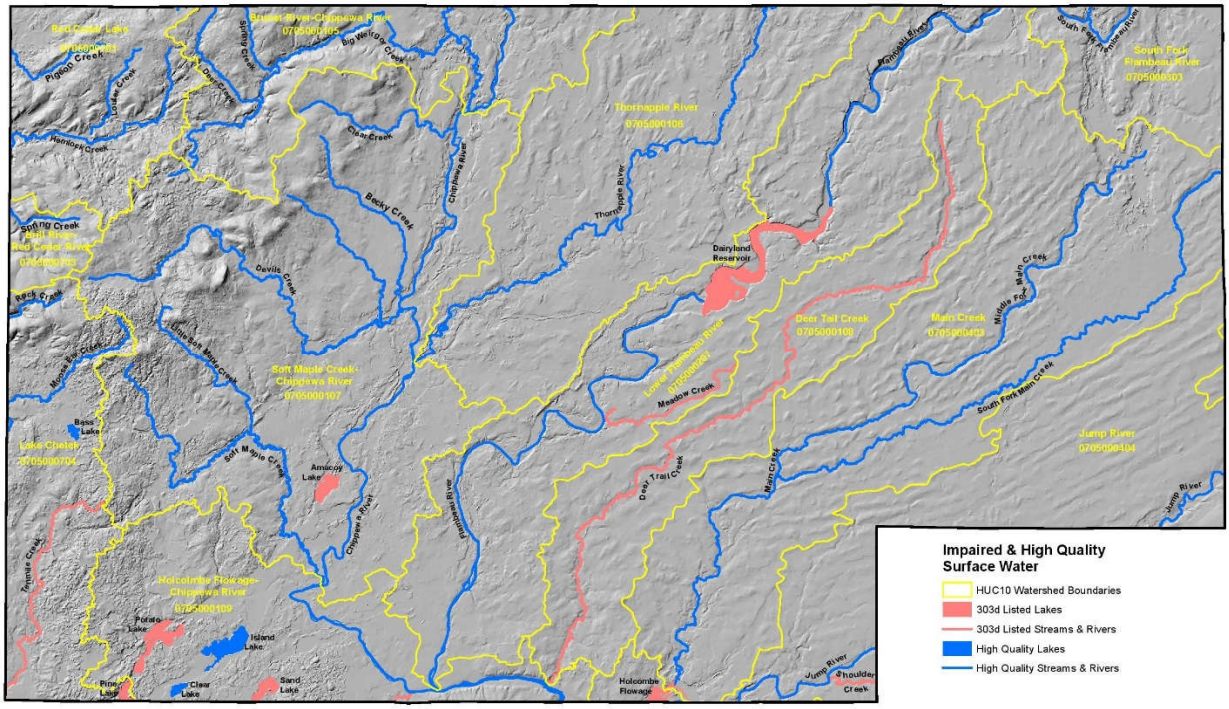

Figure 23. Rusk County - 303(d) Listed and High-Quality Waters. (Source: *WiDNR Open Data Portal*)

2021 High-Quality Waters: Lakes, Rivers, Streams

Rusk County - 21 High-Quality Waters identified in 2021

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)
Alder Creek		2366700	••	Rusk	Chippewa	070500010701	6		4	2
Bass Lake		2090900	••	Rusk	Chippewa	070500070402	1	1		2
Becky Creek		2369600	••	Rusk	Chippewa	070500010702	4	1	3	3
Big Weirgor Creek	Weirgor	2370400	•••	Rusk	Chippewa	070500010508	2	1	7	3
Clear Creek		2370100	••	Rusk	Chippewa	070500010702	2		4	2
Clear Lake		2350600		Rusk	Chippewa	070500010902	1	1		2
Deer Creek		2374200	•••	Rusk	Chippewa	070500010508	4		3	2
Devils Creek		2366600	••	Rusk	Chippewa	070500010701	5	2	9	3
Flambeau River		2225000	•••	Rusk	Chippewa	070500010904	7	4	10	3
Hackett Creek		2231400	•••	Rusk	Chippewa	070500030304	3		1	2
Island Lake		2350200		Rusk	Chippewa	070500010902	2	1		2
Little Soft Maple Creek		2357300	••	Rusk	Chippewa	070500010703	1	1	1	3
Little Weirgor Creek	Weirgor	2370500	•••	Rusk	Chippewa	070500010508	4		5	2
Louler Creek		2111000	••	Rusk	Chippewa	070500070104	2		1	2
Main Creek		2217100		Rusk	Chippewa	070500040305	1		5	2
Middle Fk Main Creek		2219700		Rusk	Chippewa	070500040302	2		1	2
Soft Maple Creek		2356600	••	Rusk	Chippewa	070500010703	6		4	2
South Fork Flambeau River		2231200	•••	Rusk	Chippewa	070500020607	5		8	2
South Fork Main Creek		2218000		Rusk	Chippewa	070500040304	4	4	11	3
Spring Creek		2374100	•••	Rusk	Chippewa	070500010508	2	1	2	3
Thornapple River		2360800	•••	Rusk	Chippewa	070500010607	1	2	6	3

2021 High-Quality Waters: Healthy Wetlands

Rusk County - 2 Healthy Wetlands identified in 2021

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_351	NLF-340	NL355		Rusk	Chippewa	070500040305	2	2	45.394192	-91.026016
Healthy_354	NLF-341	NL356	••	Rusk	Chippewa	070500010704	3	2	45.431812	-91.235283

Table 2. WiDNR Designated Healthy Waters within Rusk County.

Rusk County - Impaired Waters, 2025

Official Name	Local Waterbody Name	Start Mile	End Mile	County	Water Type	Pollutant	Impairment	Status Code	TMDL Priority
Unnamed	Stream C, trib to Flambeau River	0.55	0.75	Rusk	River	Copper	Acute Aquatic Toxicity	303d Listed	Low
Unnamed	Stream C, trib to Flambeau River	0	0.55	Rusk	River	Copper	Acute Aquatic Toxicity	303d Listed	Low
Becky Creek	Becky Creek	0	1.24	Rusk	River	E. Coli	N/A	Pollutant Removed	Delisted 2012
Dairyland Reservoir (Flambeau)	Dairyland Reservoir (Flambeau)			Rusk	Reservoir	Mercury	Mercury Contaminated Fish Tissue	303d Listed	Low
Holcombe Flowage	Holcombe Flowage North			Chippewa, Rusk	Impoundment	Mercury	N/A	Pollutant Removed	Delisted 2008
Perch Lake	Perch Lake, Bass			Rusk	Lake	Mercury	N/A	Water Delisted	Delisted 2020
Pine Lake	Pine Lake			Chippewa, Rusk	Lake	Mercury	Mercury Contaminated Fish Tissue	303d Listed	Low
Sand Lake	Sand Lake			Chippewa, Rusk	Lake	Mercury	Mercury Contaminated Fish Tissue	303d Listed	Low
Chippewa River	Chippewa River	144.17	163.41	Rusk, Sawyer	River	PCB's	N/A	Water Delisted	Delisted 2008
Chippewa River	Chippewa River	110.12	144.17	Chippewa, Rusk	River	PCB's	N/A	Water Delisted	Delisted 2008
Becky Creek	Becky Creek	0	1.24	Rusk	River	Sediment/Total Suspended Solids	N/A	Water Delisted	Delisted 2022
Holcombe Flowage	Holcombe Flowage North			Chippewa, Rusk	Impoundment	Sediment/Total Suspended Solids	Degraded Habitat	303d Listed	Low
Deer Tail Creek	Deer Tail Creek	0	38.6	Rusk	River	Total Phosphorus	Impairment Unknown	303d Listed	Low
Holcombe Flowage	Holcombe Flowage North			Chippewa, Rusk	Impoundment	Total Phosphorus	Elevated pH, Eutrophication	303d Listed	Low
Meadow Brook	Meadow Creek	0	6.7	Rusk	River	Total Phosphorus	Impairment Unknown	303d Listed	Low
Mud Creek	Mud Creek	0	11.74	Chippewa, Rusk	River	Total Phosphorus	Impairment Unknown	303d Listed	Low
Potato Lake	Potato Lake			Rusk	Lake	Total Phosphorus	Excess Algal Growth. Eutrophication	303d Listed	Low
Shoulder Creek	Shoulder Creek	0	13	Rusk, Taylor	River	Total Phosphorus	Impairment Unknown	303d Listed	Low
Tenmile Creek	Tenmile Creek	3.24	21.12	Barron, Rusk	River	Total Phosphorus	High Phosphorus Levels	303d Listed	Low
Amacoy Lake	Amacoy Lake			Rusk	Lake	Unknown Pollutant	Excess Algal Growth	303d Listed	Low
Unnamed	Stream C, trib to Flambeau River	0.55	0.75	Rusk	River	Zinc	Acute Aquatic Toxicity	303d Listed	Low
Unnamed	Stream C, trib to Flambeau River	0	0.55	Rusk	River	Zinc	Acute Aquatic Toxicity	Pollutant Removed	Delisted 2020

Table 3. Rusk County Impaired Waters List, 2025. (Source: *WiDNR Impaired Waters Tool*)

The county also has 150 miles of classified trout stream, 72 of which are designated as class I (Figure 24). Trout streams are classified into 3 categories based upon reproduction. Class I streams are high-quality waters which have sufficient natural reproduction of wild trout at or near carrying capacity. Class II streams have some natural reproduction, but not enough to fully utilize available food or habitat. These streams require stocking to maintain a desirable sport fishery. Class III streams are marginal trout habitats with no natural reproduction. They require annual stocking to provide trout fishing opportunities and there is generally no carryover of trout from year to year.

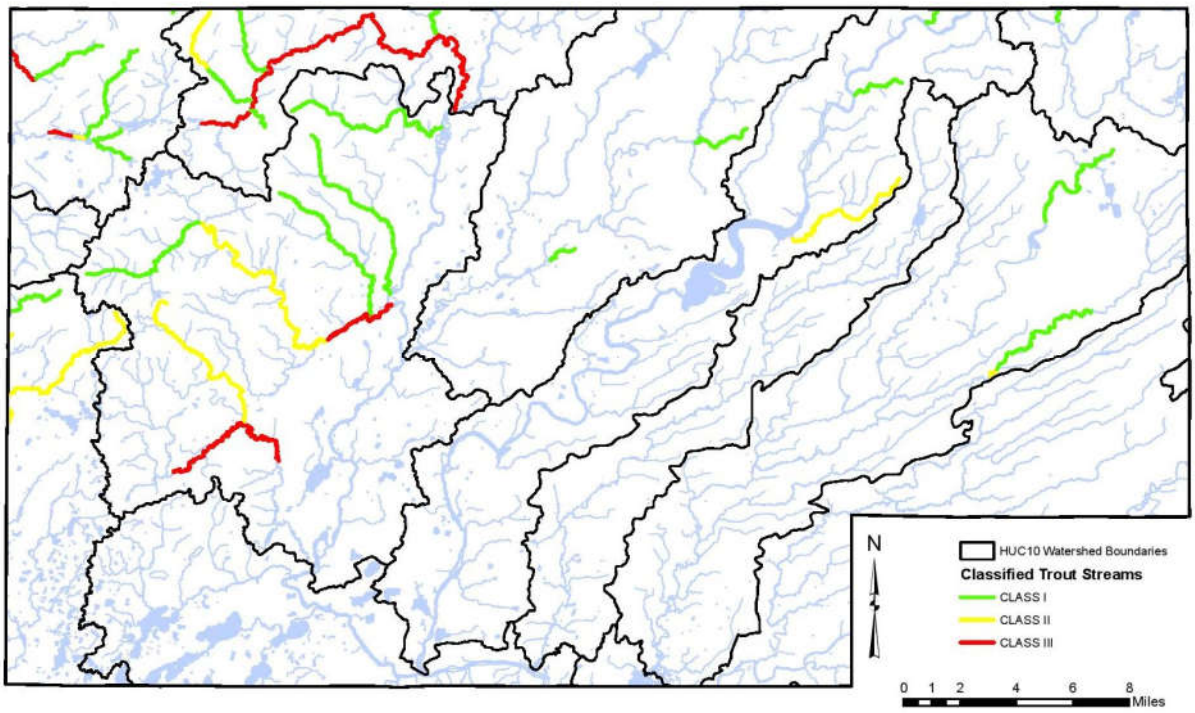

Figure 24. Rusk County - Classified Trout Streams (Source: *WiDNR Open Data Portal)*

In addition to classified trout streams, Rusk County also contains one full and two partial brook trout reserves. Brook trout reserves are areas in Wisconsin where brook trout have the best chance of surviving expected climatic changes. These designations allow us to focus conservation efforts in areas that will ensure biologically, environmentally, and climatologically resilient and self-sustaining populations of brook trout. Brook trout reserves in Rusk County are shown in Table 4 and Figure 25.

Reserve Name	BTR#	HUC12 Watersheds	Resilience Code
Blue Hills	39	Pokegama Creek Moose Ear Creek	ER-V
Rusk - Clear/Becky	42	Clear Creek-Chippewa River	ER-SH
Weirgor/Knutson Headwaters	53	Lake Chetac Knuteson Creek Little Weirgor Creek	ER-V

Table 4. Brook Trout Reserves Located Fully or Partially within Rusk County.

ER-SH = Areas with high resilience but riparian areas have little public land presenting opportunities to procure buffers and protect habitat.
ER-V = High resilience to climate change impacts. Most buffer habitat is protected by public ownership.

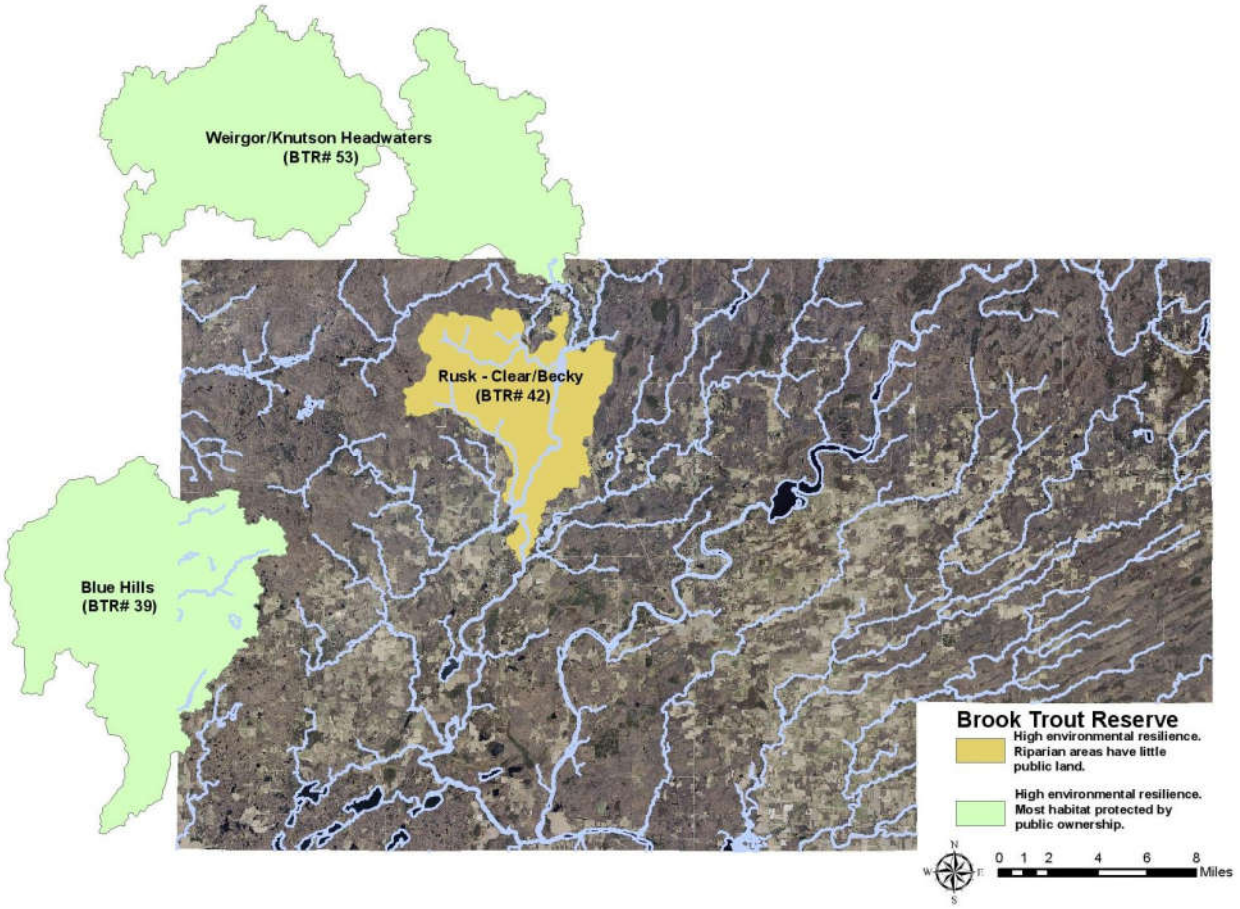

Figure 25. Brook Trout Reserves Fully or Partially within Rusk County.

Groundwater

In Rusk County, groundwater is the only source of drinking water for residents, relying on either private wells or municipal wells. Groundwater is susceptible to contamination from land use as water infiltrates through the soil, picking up contaminants, before reaching the aquifer. These contaminants are often difficult to trace and even more difficult (and costly) to remove. Another significant potential source of groundwater contamination is unused wells which have not been properly abandoned, providing a direct conduit for surface water to reach the aquifer. Rusk County has had a well abandonment program for 8 years which has been very successful at taking care of abandoned wells. To date, the program helps pay for an average of 7 abandonments per year.

Of particular concern in groundwater is PFAS, bacteria, and nitrates. Currently, we have no sampling data related to PFAS and bacteria tends to be a more localized issue affecting individual wells which were improperly constructed or wells which are shallow and close to a septic system. Nitrates, however, are potentially a more widespread problem, resulting from failing septic systems, animal waste storage structures, and widespread use of manure and commercial fertilizer on agricultural fields. In 2023, the LWCD, in conjunction with the county public health department, instituted a sampling program to record the location and results of nitrate testing in the county. Preliminary data shows that overall, nitrate contamination of groundwater in the county is very low with only a few wells showing concentrations of over 10 mg/l NO3 particularly in the lakes region of the county which would be expected due to the presence of more sandy soils with increased development.

Overall, within Rusk County, almost 78% of groundwater wells have a static water level of 10-70 feet below the surface with about 17% less than 10 ft and only 5% greater than 70 ft below the surface (Figure 26). These deeper wells are concentrated in the western part of the county, in or near the Blue Hills region.

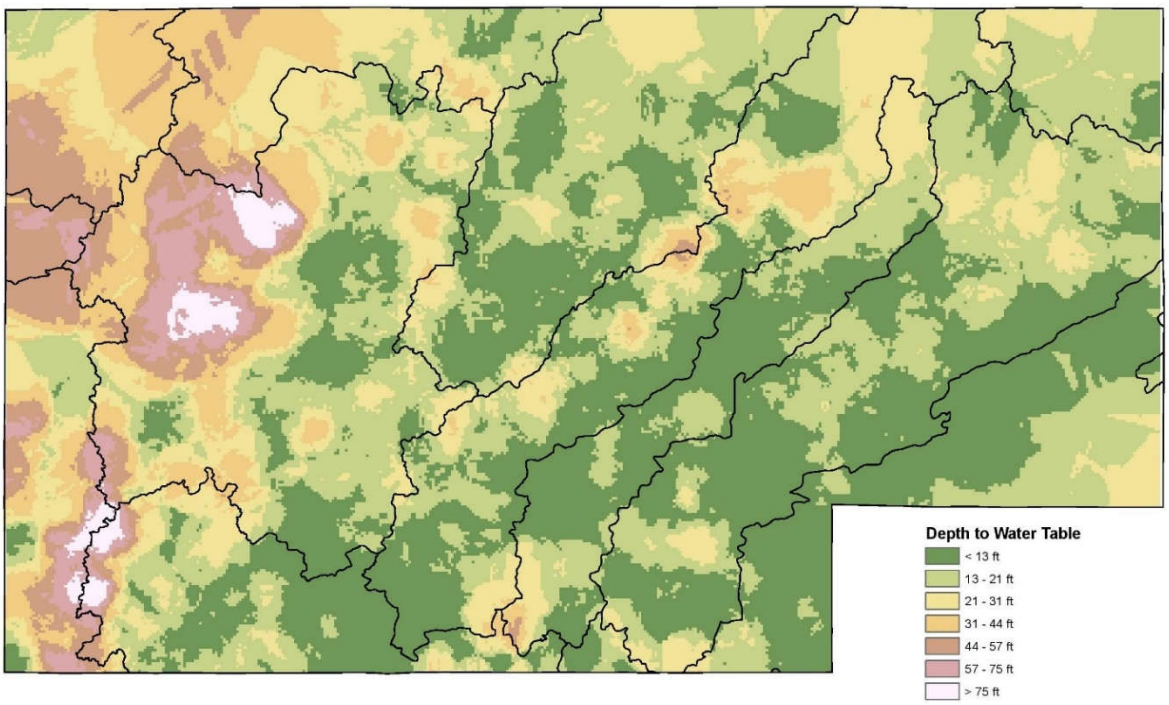

Figure 26. Rusk County Depth to Water Table Based on Available Well Logs. (Source: *WiDNR Open Data Portal*)

Figure 27 shows results of a groundwater contamination susceptibility evaluation which was conducted by the WiDNR for "Wisconsin's Groundwater Management Plan Report 5", PUBL-WR 177-87. The analysis considered 5 resource characteristics, derived from statewide data, to determine the susceptibility of groundwater to contamination from pollutants on the land surface. The datasets included depth to bedrock, type of bedrock, soil characteristics, depth to water table, and characteristics of surficial deposits. A subjective rating was assigned to these resource characteristics to calculate the susceptibility index. As such, there is inherent uncertainty in the result and more detailed analysis is warranted.

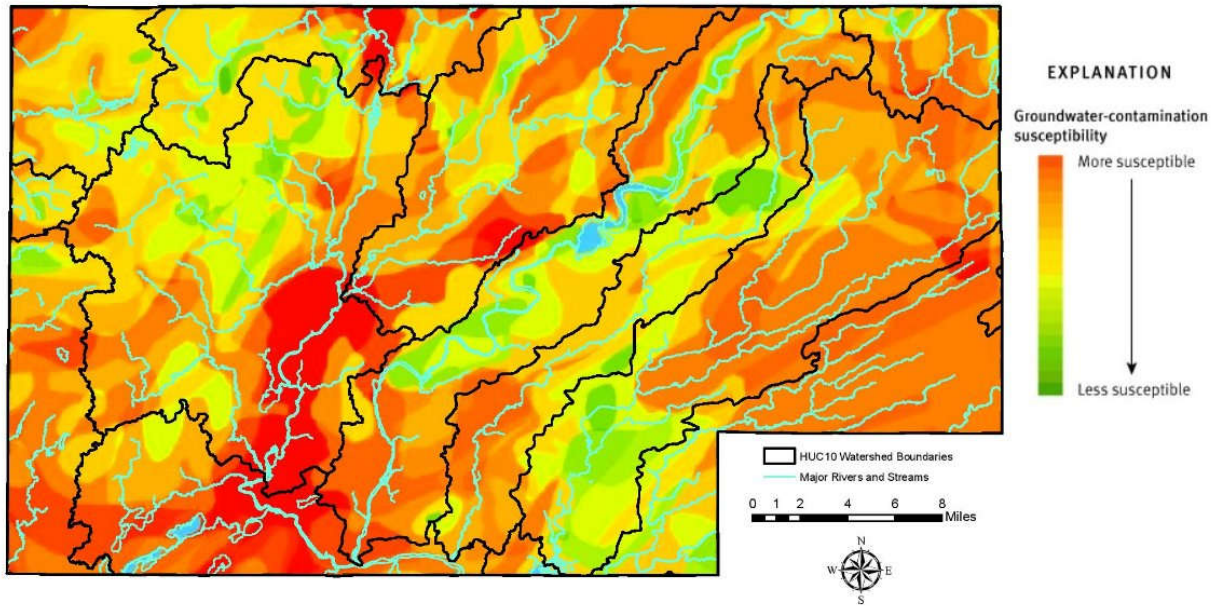

Figure 27. Rusk County Groundwater Contamination Susceptibility Risk (Source: *"Protecting Wisconsin's Groundwater Through Comprehensive Planning", 2007*)

The susceptibility data shows that areas of highest susceptibility occur in the Soft Maple-Chippewa River, Holcombe Flowage-Chippewa River, and upper reaches of the Thornapple River, Main Creek, and Jump River HUC10 watersheds, most likely due to sandy soils and shallow water tables. Interestingly, areas with the most intense agriculture in the county (Soft Maple-Chippewa River, Main Creek, and Deer Tail Creek HUC10's) have the lowest susceptibility rating.

Figure 28 shows section level results of Nitrate-N testing of private wells in Rusk County. Overall, these results show Nitrate-N levels well below the 10 mg/l standard throughout the county except for areas around the village of Bruce. This data is, however, very coarse and much more sampling needs to be conducted in order to fully understand Nitrate-N concentrations across the county.

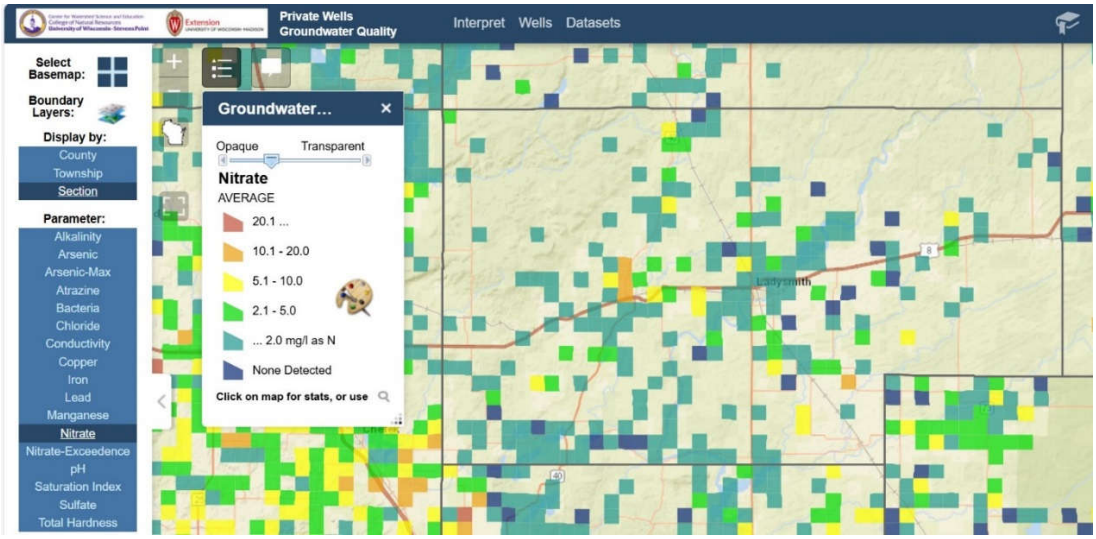

Figure 28. Nitrate-N Sampling Results from Private Wells in Rusk County. (Source: *UW-Stevens Point Center for Watershed Science and Education*)

Figure 29 shows the areas within Rusk County where proposed nitrogen use standards and prohibitions have been identified. These standards and prohibitions have been proposed to reduce nitrate-N contamination of groundwater and are proposed to be included in NR 151 agricultural performance standards and prohibitions. Areas in yellow are nitrogen restricted areas where groundwater data indicates a need for restricted use and areas in red are proposed liquid manure restricted areas where prohibition of fall/winter land application would apply.

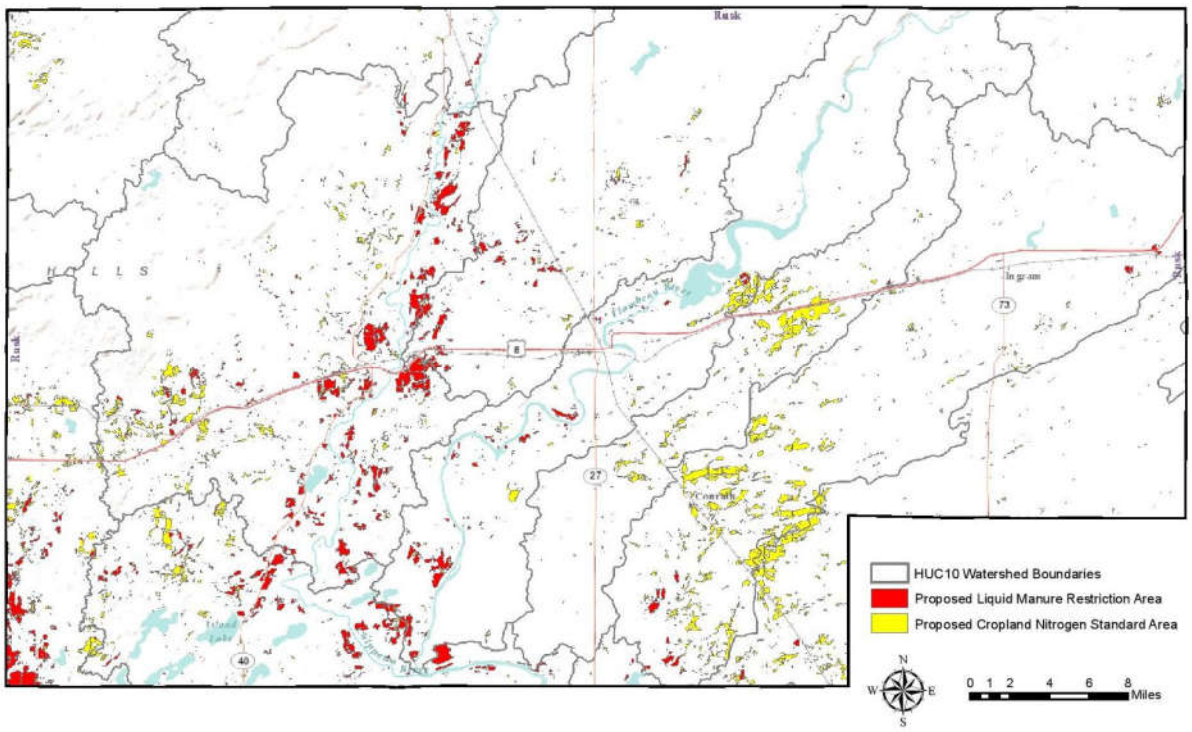

Figure 29. Proposed Nitrogen Restricted and Cropland Nitrogen Standard Areas of Rusk County. (Source: *WiDNR, Nitrogen Restriction Area Map Viewer*)

Chapter III - Drainage Basins

Rusk County Drainage Basins (HUC10)
The following information is provided for each of the HUC10 basins which occur in Rusk County. Data is presented for land areas within the county and do not include areas of the basin which fall outside of the county.

Brunet River-Chippewa River (0705000105)

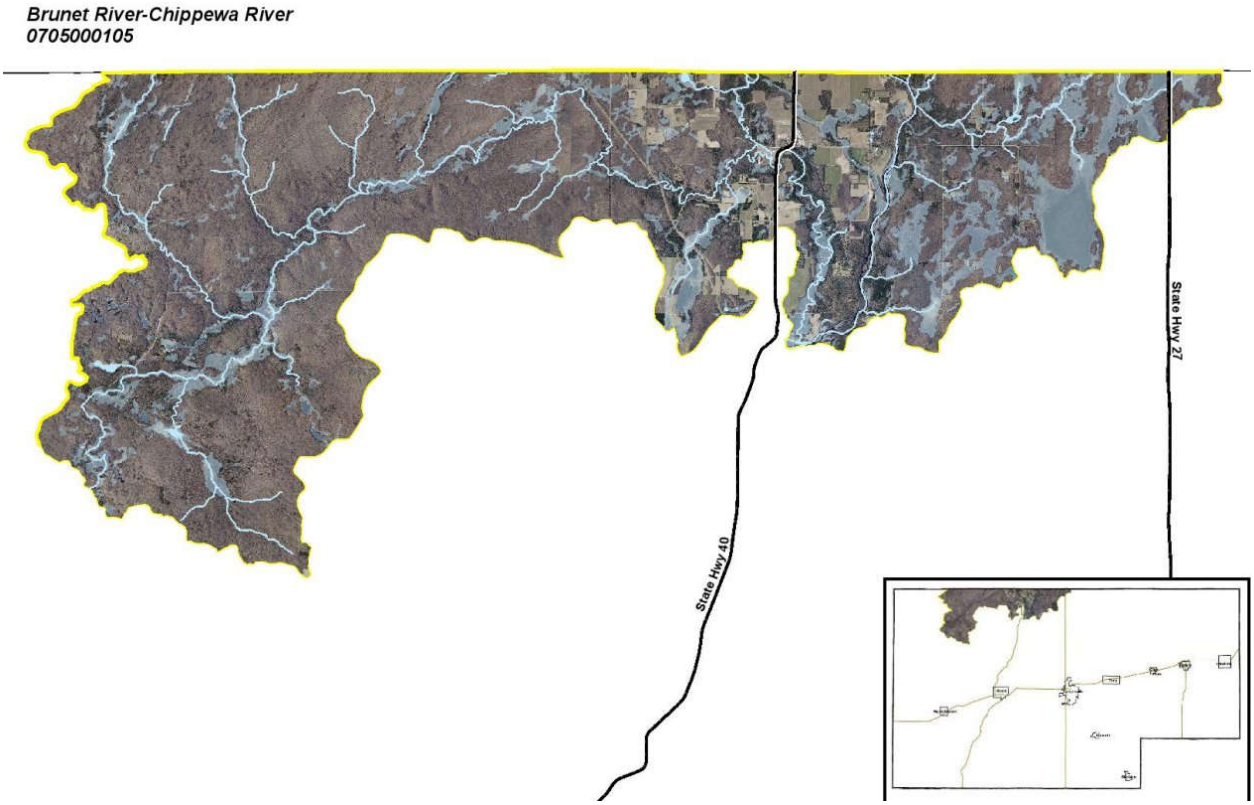

Figure 30. Brunet River-Chippewa River HUC10 Watershed.

The Brunet River-Chippewa River basin in Rusk County covers about 52 sq mi in the North-Western part of the county. It contains about 55 miles of perennial stream and 3 named lakes with an average size of 13 acres. Within this basin, Spring Creek, Deer Creek, Big Weirgor Creek, Little Weirgor Creek, and the Chippewa River are all listed as high quality waters and there are no impaired waters. The basin contains over 9 miles of class I trout stream, 3.24 miles of class II, and 20.5 miles of class III.

Land use/Land Cover in the basin is primarily forest and wetland with only small areas of agriculture. The basin has an average watershed health score of 69. Soils in the basin are predominately silt loams with sandy loam soils occurring in major drainageways. Steeper slopes occur in the western part of the basin in the Blue Hills region.

Thornapple River (0705000106)

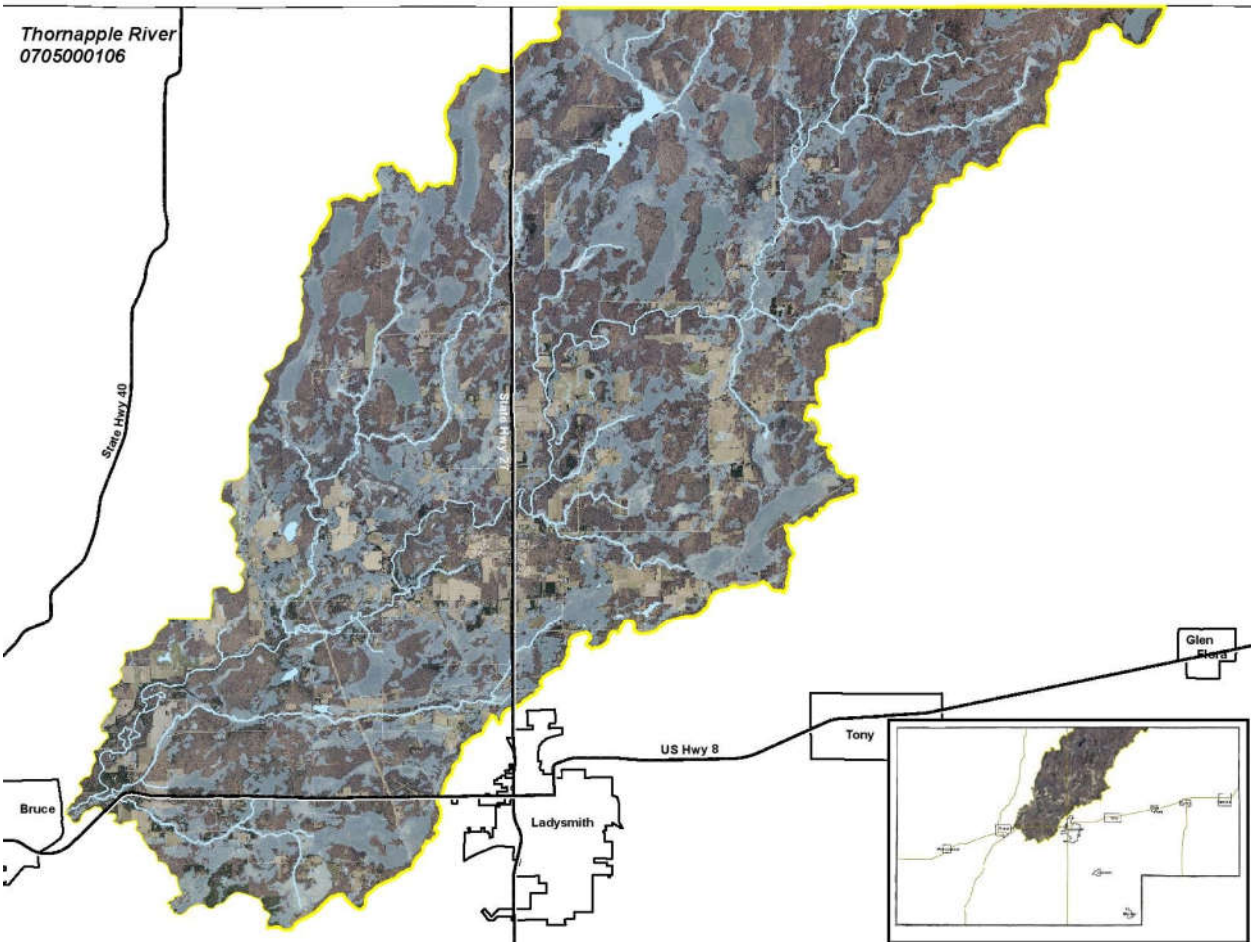

Figure 31. Thornapple River HUC10 Watershed.

The Thornapple River basin covers about 105 sq mi in North-Central Rusk County and is comprised of 4 HUC12 watersheds. It contains 94 miles of perennial stream and 4 named lakes with an average size of 70 acres. The basin contains the Thornapple River, which is listed as a high-quality water of the state, and the Lea Lake Flowage which has a sustained rice population. As the water level in Lea Lake has been maintained at a relatively stable elevation for the last few years, the rice population has degraded and there is a need to conduct a drawdown to try and rehabilitate the rice beds. There are almost 4 miles of stream designated as class I trout stream within the Thornapple River basin and there are no impaired waters.

The basin has moderate population density and the main land use/land cover is forest and wetland with a moderate amount of agriculture. The average watershed health score is 69.4.

Soft Maple Creek-Chippewa River (0705000107)

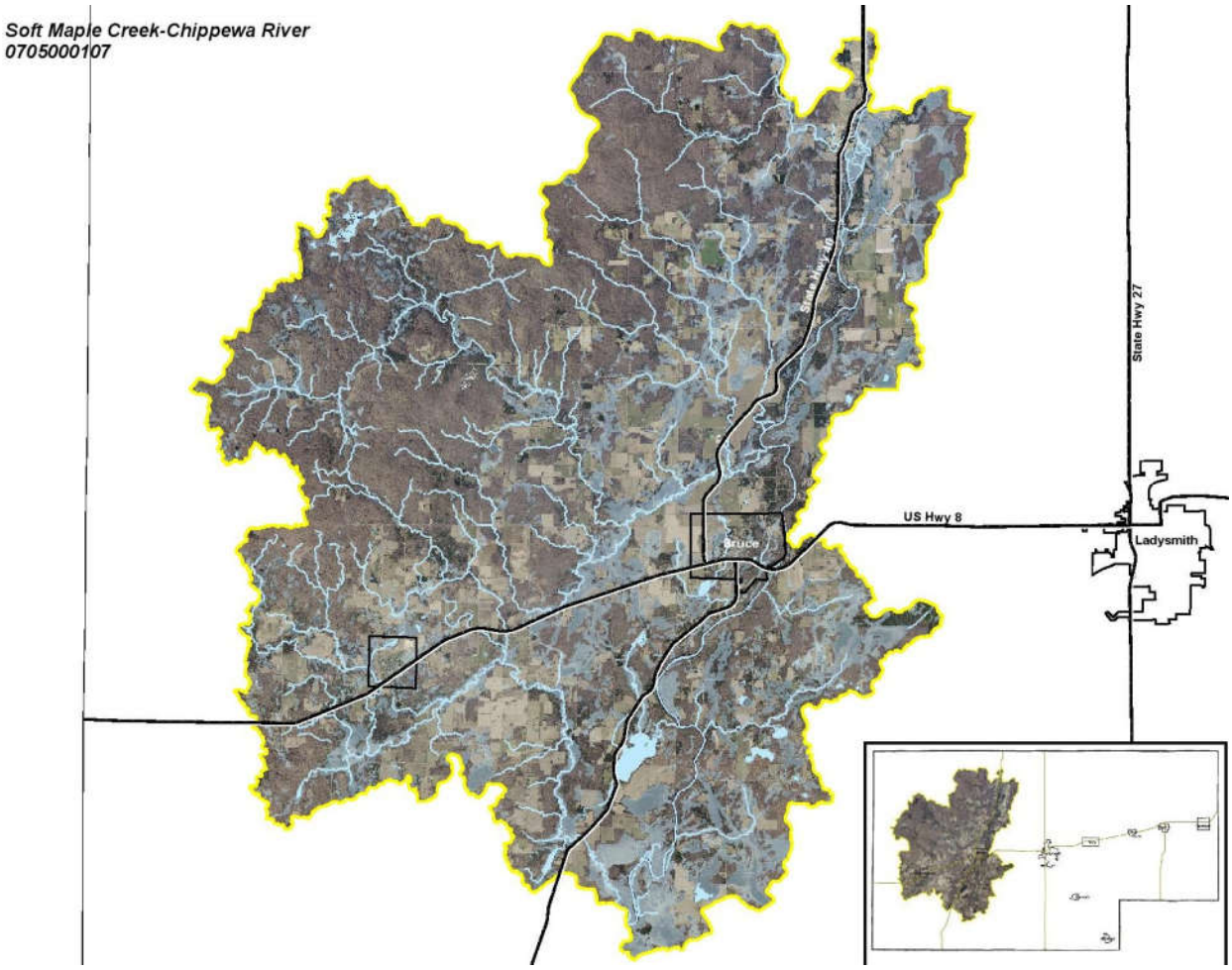

Figure 32. Soft Maple-Chippewa River HUC10 Watershed.

This basin covers approximately 177 sq mi, completely within Rusk County. It is subdivided into 4 HUC12 basins. The basin contains 142 miles of perennial stream including the Chippewa River, Devils Creek, Soft Maple Creek, Little Soft Maple Creek, Clear Creek, Becky Creek, and Alder Creek which are all listed as high quality waters. This basin was the target of a priority watershed project in the late 90's. The goal of the Soft Maple and Hay Creek Priority Watershed was to reduce suspended solids, phosphorus, and fecal coliform in surface water as well as minimize water temperature increases. Named streams in this watershed project included Alder, Becky, Buff, Clear, Lower Devils, Hay, Johns, Cranberry, Little Soft Maple, and Soft Maple as well as a portion of the Chippewa River. The initial inventory identified 4 critical barnyards and 5.9 miles of degraded streambank. Records indicate that at least 9 projects were installed, however no follow-up monitoring was conducted. In 2020, the Soft Maple and Hay Creek Targeted Watershed Assessment was published which indicates that phosphorus levels in surface water are near but below state standards for surface water, however sediment deposition in the lower reaches of the watershed persist. Currently there is no plan to renew this watershed project. Also in 2020, a surface water grant was awarded to Rusk County to perform a watershed assessment on the Devils Creek sub-watershed. Results of that effort show that sediment delivery, from both streambank erosion and upland land use, to Devils Creek is the primary degradation.

There are 12 named lakes in the basin with an average size of 53 acres. Named lakes include Audie and Perch lakes in the Blue Hills, both of which have an associated campground, and Amacoy Lake which is a moderately developed lake South of the Village of Bruce and a popular recreational resource. Amacoy Lake is listed as an impaired water for eutrophication and was the target of baseline fishery and comparative water quality survey in 1994. The Amacoy Lake Association has applied for WiDNR surface water grants for aquatic invasive species control, and will continue attempts to secure funding with assistance from the Rusk County LWCD.

The Soft Maple Creek-Chippewa River basin has the largest amount of classified trout stream in Rusk County with 30.7 miles as class I, 19.3 miles as class II, and 13 miles of class III. The basin has a moderately high population density and the primary land use/land cover is forest, wetland, and agriculture. Soils in the basin are primarily silt loam in the central part of the watershed with sandy loams dominating the Eastern and Western portions. The basin has an average watershed health score of 66.

Deer Tail Creek (0705000108)

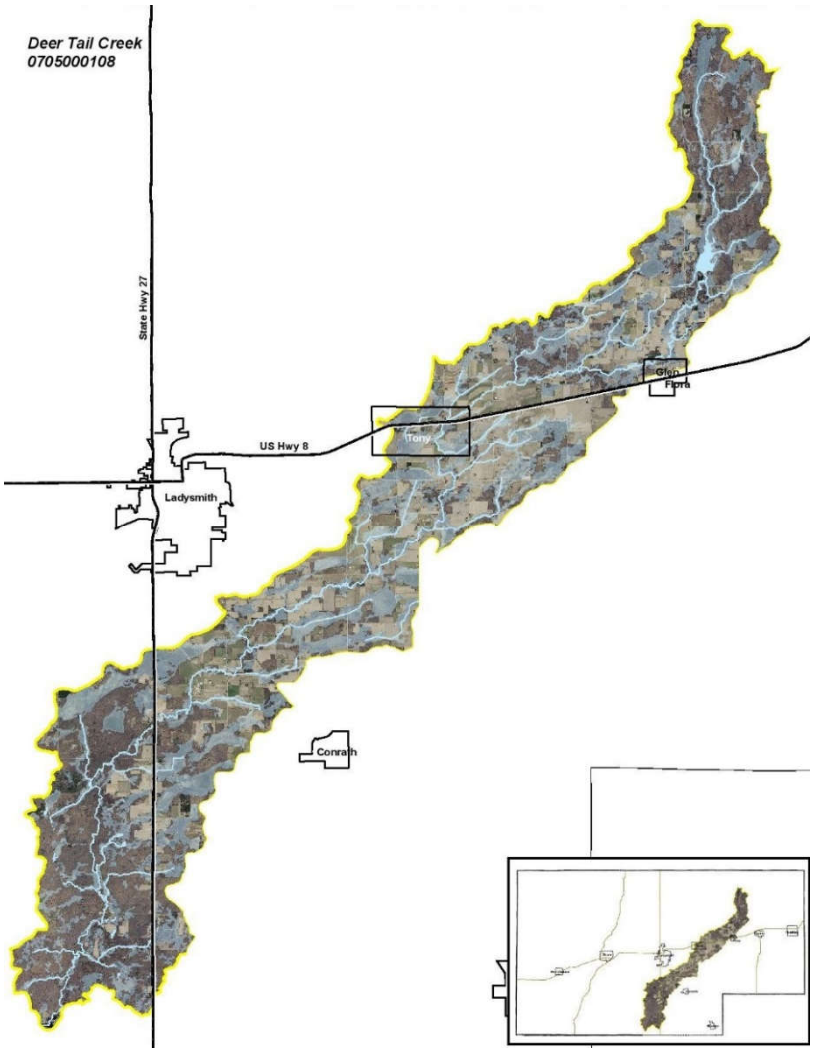

Figure 33. Deer Tail Creek HUC10 Watershed.

The Deer Tail Creek basin occurs entirely within Rusk County and is comprised of 2 HUC12 basins with a total area of 66 sq mi.. There are 59 miles of perennial stream, Deer Tail Creek most notably, and 1 named lake of about 107 acres. Deer Tail Creek is a listed 303(d) impaired water for phosphorus.

The basin has a moderate population density and an equal mix of forest, wetland, and agricultural land use/land cover. Agricultural land use occurs primarily in the central portion of the basin. Soils are mostly silt loams with silt generally occurring in wetland areas along stream valleys. The basin has an average watershed health score of 57.5. Portions of this basin are contained in the Flambeau Valley Watershed Groups producer-led watershed project. The Rusk County LWCD is an active participant in this producer-led group, providing technical support as well as acting as the groups administrative contact. The group is relatively new, but is energetic and progressive. To date we have held two informational seminars, a field day for producers, and instituted a cover crop incentive program. Future plans include regular mailings, field days, and research including field trials of various cover crops and edge of field monitoring for sediment loss under various management scenarios.

Holcombe Flowage-Chippewa River (0705000109)

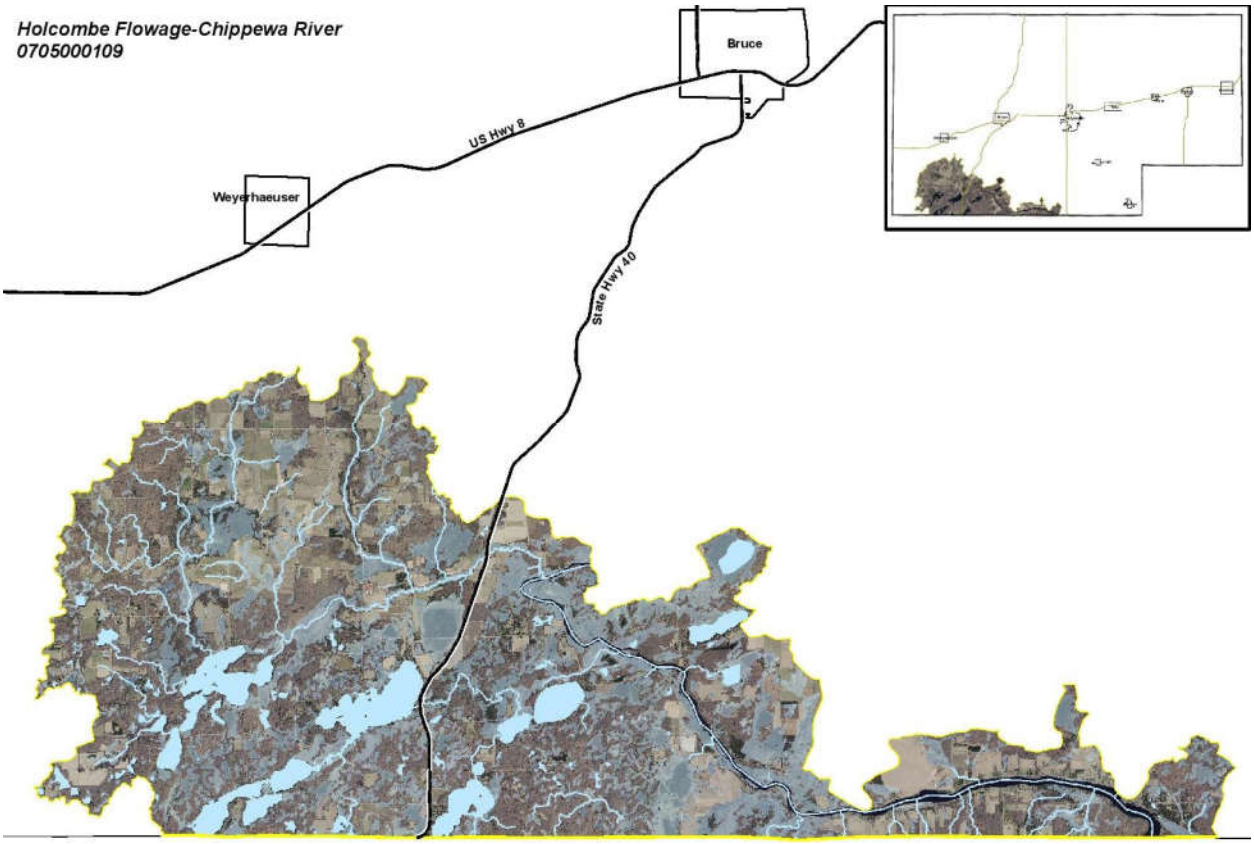

Figure 34. Holcombe Flowage-Chippewa River HUC10 Watershed.

The Holcombe Flowage-Chippewa River basin covers 64 sq mi in Rusk County and is subdivided into 4 HUC12 sub-watersheds. This basin contains most of the highly developed lakes in the county including McCann, Fireside, Pulaski, Chain, Clear, Island, Sand, and Potato Lakes. Island Lake and Clear Lake are both listed as high quality lakes of the state. Sand Lake is listed as a 303(d) water for mercury and Potato Lake is listed as an impaired water for eutrophication and excessive algae growth. In 1994, an analysis of the chemical and physical characteristics of Potato Lake was published, however, no conclusions or recommendations were provided. Development pressure is high in this basin as evident by the permitting heat map. The basin has a total of 43 miles of perennial stream including the Chippewa River and Potato Creek and 30 named lakes with an average size of 84 acres. The Chippewa River is listed as a high quality water.

Despite the development pressure around lakes, the basin as a whole has moderate population density. The basin is predominately forest and wetland with agricultural land use mostly in the Potato Creek sub-basin. Soils are a mix of sandy loam and silt loam with loamy sands along the Chippewa River valley. The basin has an average watershed health score of 65.6. Potato Lake does experience excessive algae and plant growth during the summer, most likely caused by land use activities within the Potato Creek HUC12 sub-watershed (070500010901).

Lower Flambeau River (0705000207)

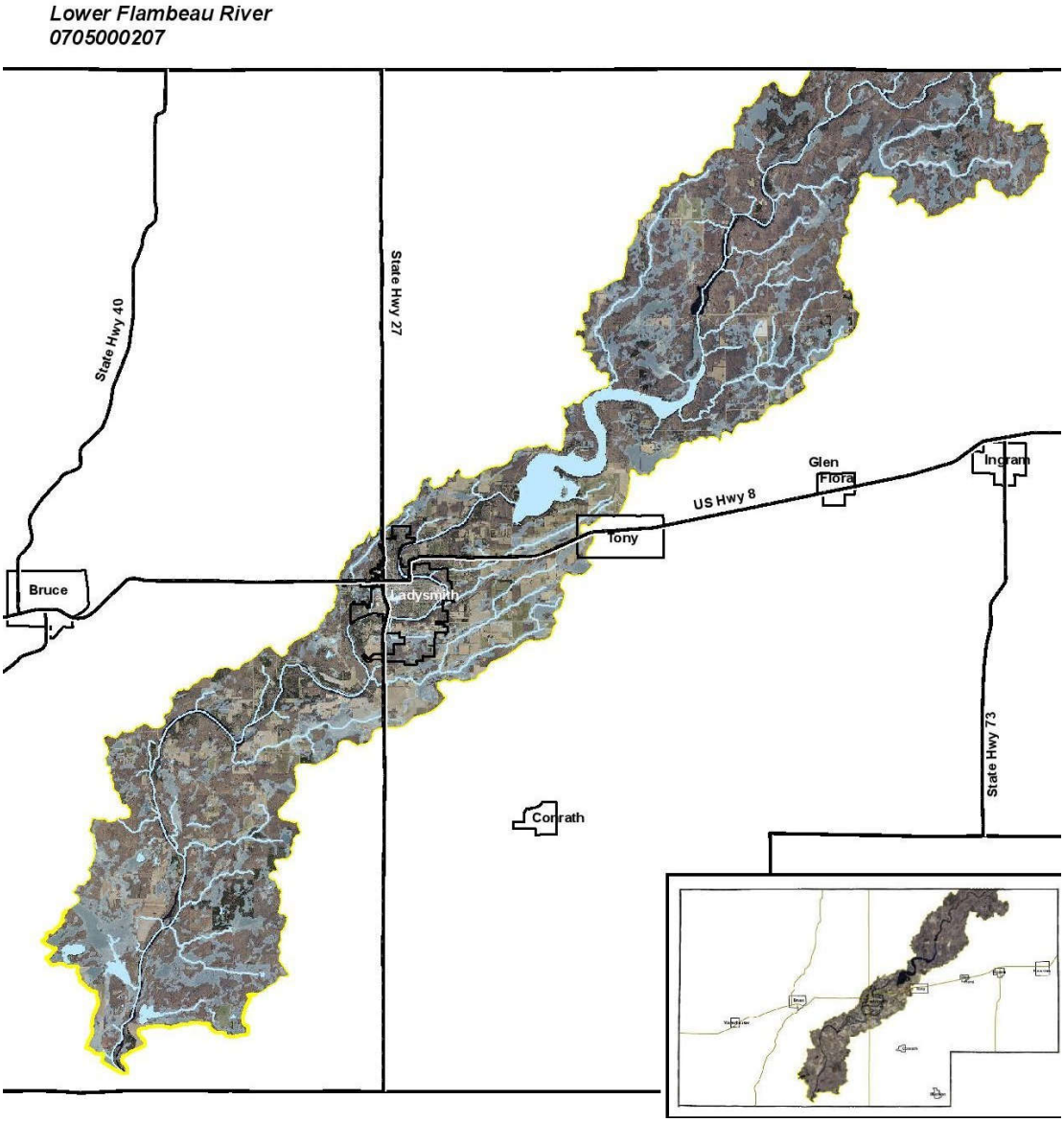

Figure 35. Lower Flambeau River HUC10 Watershed.

The Lower Flambeau River covers 121 sq mi in central Rusk County and contains 4 sub-basins. There are 93 miles of perennial stream, including the Flambeau River which is a high-quality water, and 8 named lakes, the most notable being the Dairyland Reservoir which is listed on the impaired 303(d) list for mercury, and the Washington Creek Wildlife Management Area. Also listed as impaired is Meadow Brook for phosphorus and an unnamed tributary to the Flambeau River which is listed for acute aquatic toxicity for zinc and copper. The basin contains the City of Ladysmith as well as significant development around the Dairyland Reservoir leading to a high overall population density. In 2000, a management plan was developed for Corbett Lake, located within the City of Ladysmith. Recommendations of that plan included:

1. Installation of lake bottom aerators.

2. Mechanical harvesting of macrophytes.
3. Implementation of a minimum size limit for stocked fish.
4. Discontinue investigation of lake dredging.
5. Discontinue consideration of diverting drainage ditch into the lake.
6. Establish a biofiltration system for storm water entering the lake.
7. Discontinue snow disposal on the east side of the lake.

There are 3.1 miles of stream classified as class I and 6.1 miles of class II trout stream in this basin. Land use/Land Cover in the basin is primarily forest and wetland, with significant agriculture in the central part of the basin, South of Ladysmith. Soils are mostly silt loams, with sandier soils in the Flambeau River valley and silts in depressional and wetland areas. The basin has an average watershed health score of 68.

South Fork Flambeau River (0705000303)

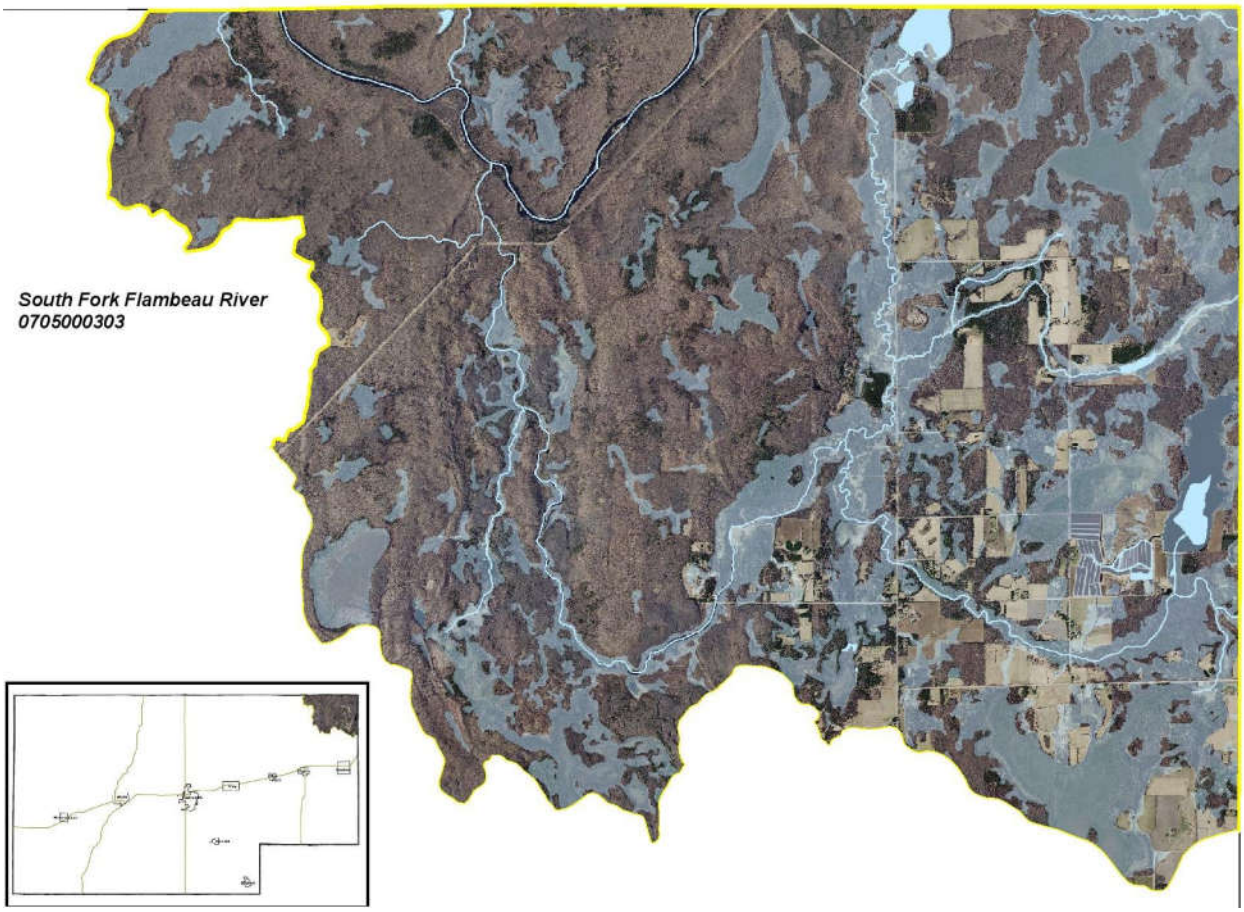

Figure 36. South Fork Flambeau River HUC10 Watershed.

The South Fork Flambeau River basin covers about 25 sq mi in Rusk County with 2 sub-basins. Land Use/Land Cover in the basin is almost entirely forest and wetland. All of the Northern and Western part of this basin is within the Flambeau State Forest or county owned forest. There are 25 miles of perennial stream and one named lake. Both sub-basins in this watershed are listed in the top 50 for protection priority within the Chippewa HUC6 basin and the South Fork Flambeau River is listed as a high quality water. There are no impaired waters in this basin.

Overall the basin has low population density and an average watershed health score of 75, which is the highest in the county. Soils in the basin are mostly silt loams with more sandy loam soils adjacent to Skinner Creek and the Flambeau River.

Main Creek (0705000403)

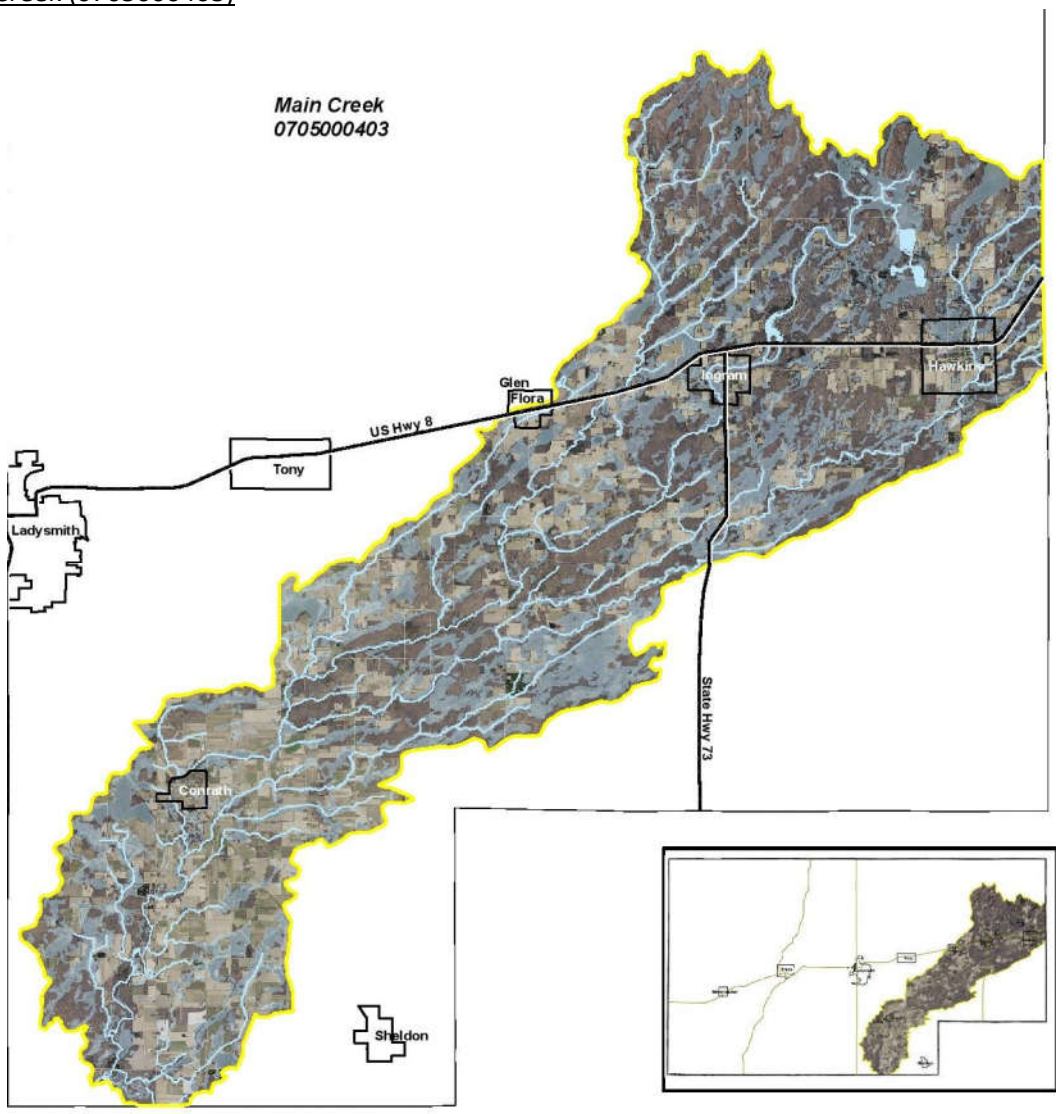

Figure 37. Main Creek HUC10 Watershed.

The Main Creek watershed has an area of 142 sq mi almost entirely in Eastern Rusk County. The watershed contains 3 sub-basins There are 141 miles of perennial stream including Main Creek, Middle Fork Main Creek, and South Fork Main Creek which are all listed as a high quality water, and 4 named lakes with an average size of 46 acres. A small portion of Lake Holcombe is contained in this basin which is on the 303(d) list for phosphorus and sediment/suspended solids. There are 11 miles of stream classified as class I trout water.

The basin has moderate population density, with higher development around Lake Holcombe and the villages of Hawkins, Ingram, and Conrath. Land Use/Land Cover in the basin is mainly forest, wetland, and agriculture. Part of this basin is in the Flambeau Valley Watershed Group's producer-led effort. The basin has an average watershed health score of 62.4 This basin has the highest vulnerability index of all basins in the county. Soils in the basin are almost entirely silt loams with silt soils located in wetlands along linear NE-SW valleys.

Jump River (0705000404)

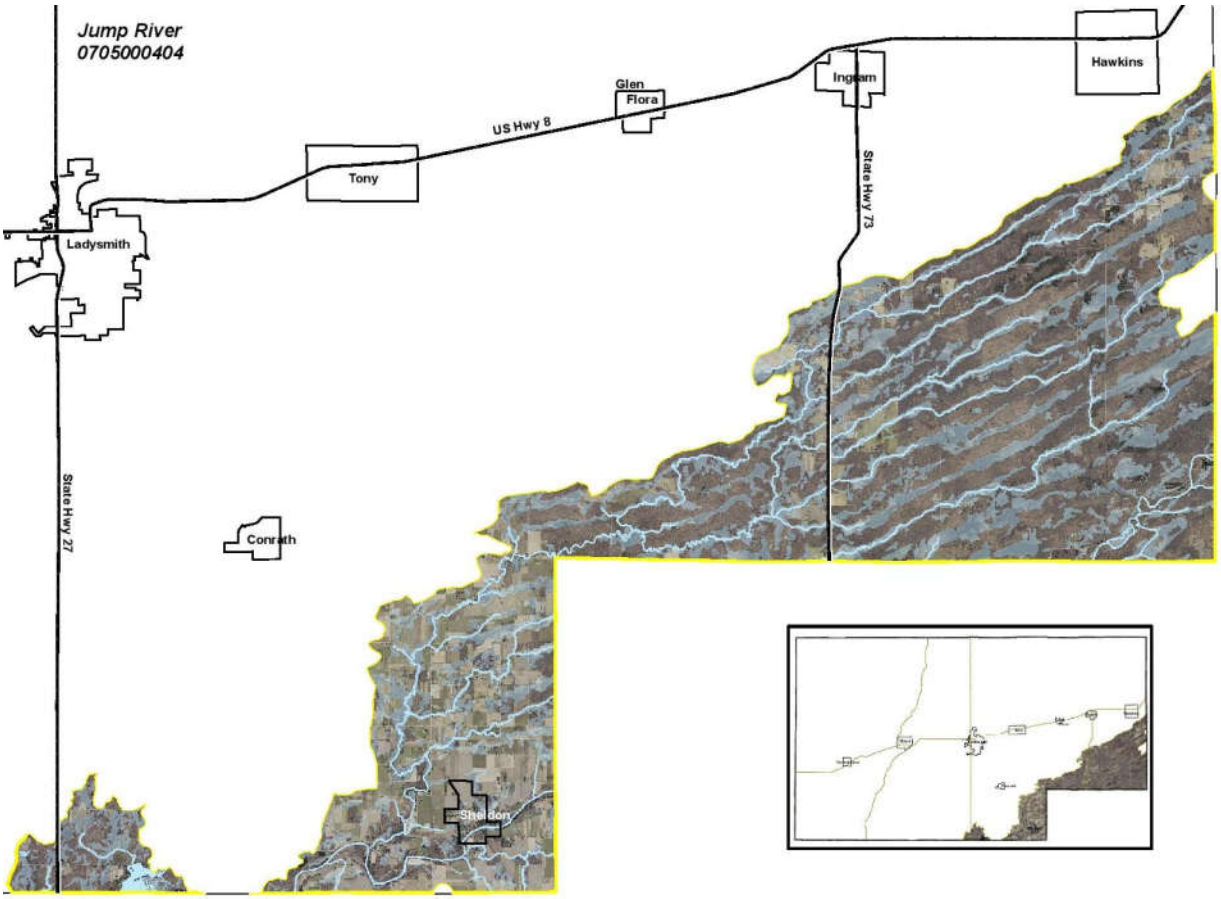

Figure 38. Jump River HUC10 Watershed.

This basin is located in South-Eastern Rusk County and covers an area of approximately 83 sq mi with 7 sub-basins. There are 118 miles of perennial stream, including the Jump River, which is listed as a high quality water, and the Little Jump River. Stream drainage in this basin is predominately NE-SW, as a result of the last glaciation. The basin contains a portion of only one named lake (Lake Holcombe) which is a 303(d) listed waterbody for phosphorus and sediment/suspended solids and a portion of Shoulder Creek with is impaired by phosphorus. Soils in the basin are dominated by silt loams with small areas of sandy loam along the Jump River and silt soils in wetlands along drainageways.

Land Use/Land Cover in the basin is mostly forest and wetland with some agriculture concentrated in the southern portion of the basin around the Village of Sheldon. The basin has an average watershed health score of 62.1. This basin is in the top 3 in Rusk County in terms of vulnerability index.

Red Cedar Lake (0705000701)

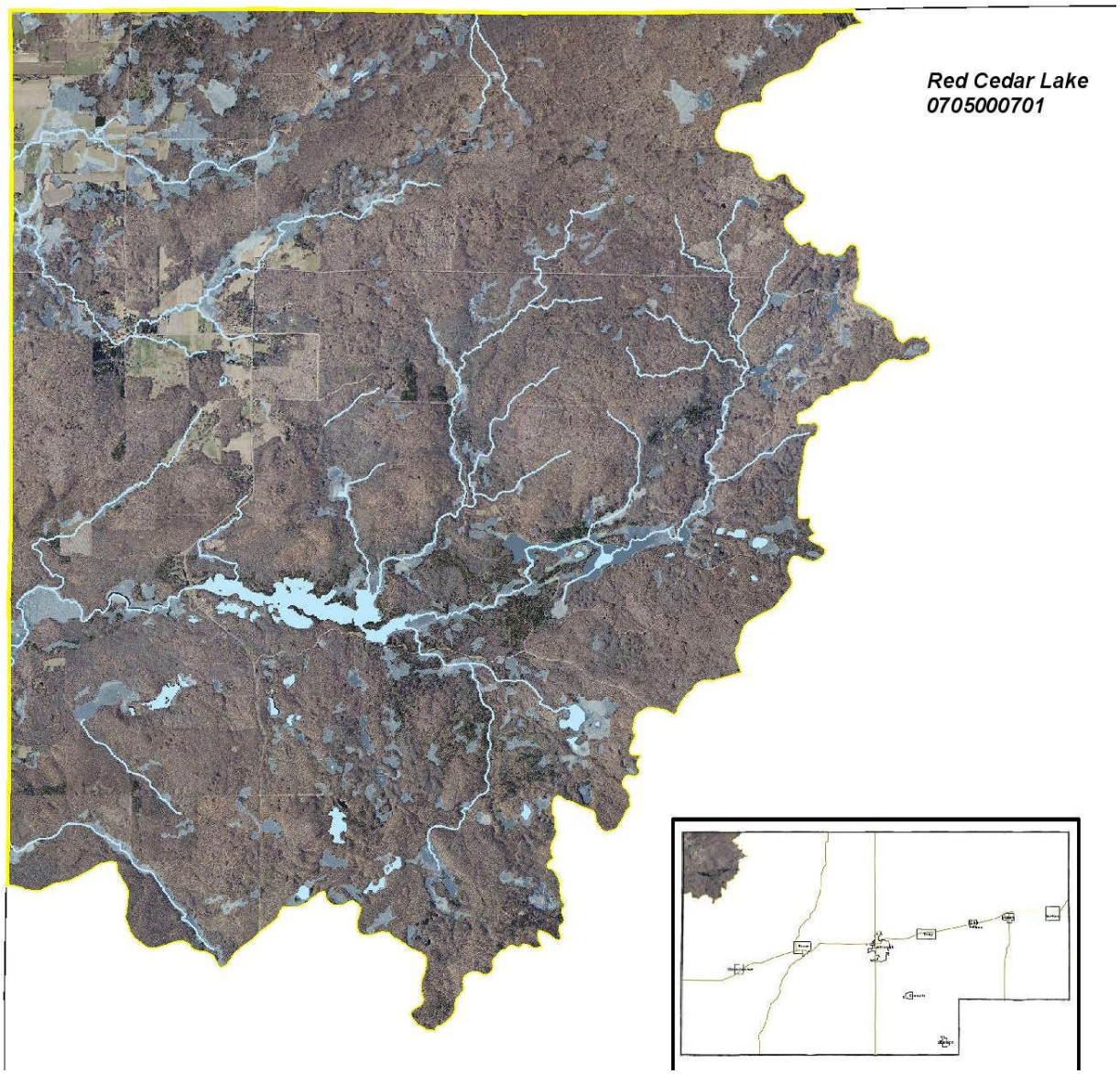

Figure 39. Red Cedar Lake HUC10 Watershed.

The Red Cedar Lake basin contains 39 sq mi in the Northwest corner of Rusk County and has 20 miles of perennial stream and 7 named lakes with an average size of 33 acres. Murphy Flowage and Bucks Lake are located in this basin, both of which are created by a low hazard county owned dam. This basin contains Louler Creek and portions of Pigeon Creek and Hemlock creek, all of which are listed as high quality waters. There are no impaired waters in the Red Cedar Lake basin. Rusk County is currently developing plans to repair a low hazard dam in this watershed which forms Sheltered Betty Lake. The reconstruction design is complete and we are awaiting WiDNR approval of the plan. Soils in the basin are a mix of sandy loam and silt loam, with silt loam soils dominating higher elevations. This basin has over 11 miles of stream classified as class I and 2.8 miles as class III.

This watershed, along with the Brill River-Red Cedar River (0705000703) and Lake Chetek (0705000704) watersheds are subject to a US-EPA approved Total Maximum Daily Load (TMDL) for Tainter and Menomin Lakes in Dunn County and the Red Cedar River. The TMDL report can be viewed at - (https://dnr.wisconsin.gov/topic/TMDLs/TainterMenomin.html). Completed in 2012, the TMDL recommends a 65% reduction in phosphorus inputs from watershed areas that drain to the lakes.

These basins also have a 9 Key Element Watershed Based plan, which was adopted in 2015. The plan can be downloaded from A Water Quality Strategy for the Land and Waters of the Red Cedar River Basin. This plan focuses primarily on reducing phosphorus delivery to surface water from agricultural lands that drain to the Red Cedar River. The Red Cedar Watershed covers a significant geographic extent and includes portions of Rusk, Sawyer, Washburn, Barron, and Dunn Counties. The Red Cedar Watershed has an active watershed group and multiple projects and initiatives have been implemented in order to reach goals of the TMDL and 9 Key Element Plan, including 1 project installed in the Lake Chetek basin (0705000704) in Rusk County. Two other projects were designed and funding was secured, unfortunately, financial and other priorities prevented them from being installed.

Producer-led groups, state and county agencies, and lake associations continue to remain active in the Red Cedar watershed, conducting AIS monitoring and treatment, education & outreach, and assistance with conservation practices. Notably, the Chetek Lake Protection Association has continued to have success with its removal of weeds and algae mats. The amount of material removed has dropped by 74% since 2016. Also, in 2023, the Tainter Lake group was successful in establishing a lake rehabilitation district. Overall, in 2023, watershed participants enrolled 2,144 new acres in nutrient management plans, installed 3 manure storage structures, properly closed 16 manure storage structures, and cost-shared cover crops on over 4,000 acres and almost 2,700 acres of no-till. These conservation efforts have led to an estimated 6,874 pound reduction in phosphorus load delivered to surface water.

The Red Cedar Lake basin in Rusk County is almost entirely in forested land cover with only small percentages of agriculture and wetland. The basin is in the heart of the Blue Hills region and has steep slopes and rocky terrain, unsuitable for most land use other than forestry and recreation. The basin has 3 sub-basins in the county and an average watershed health score of 65.3. The bulk of this basin is in Sawyer, Barron, and Washburn counties and includes a number of developed lakes which leads to an overall moderate population density.

Brill River-Red Cedar River (0705000703)

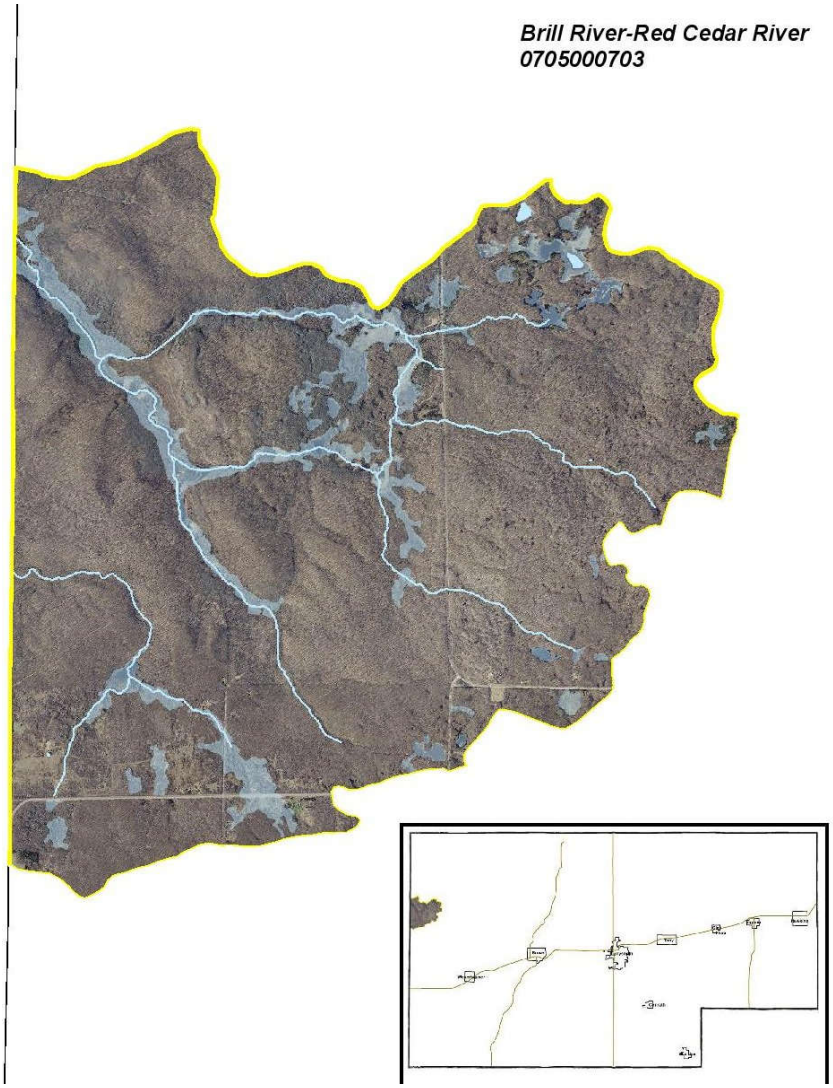

Figure 40. Brill River-Red Cedar River HUC10 Watershed.

Brill River-Red Cedar River is a large basin, falling mainly in Barron and Washburn County with only a small portion in Rusk County. The basin contains numerous developed lakes and the City of Rice Lake which results in a high population density. In Rusk County, this basin contains only one sub-basin with 5 mi of perennial streams and no named lakes. Spring Creek is listed as a high quality water and there are no impaired waters in this basin within Rusk County. Land Use/Land Cover in the basin is almost entirely forest. This basin, along with the Red Cedar Lake and Lake Chetek basins are contained within the Red Cedar HUC8 basin (07050007) which has a TMDL and 9 Key Element Plan. Nutrient and sediment contributions to the Red Cedar River are minimal from this basin due to the lack of agricultural and residential land use.

Overall, this basin has an average watershed health score of 53. Soils are primarily silt loams with silt soils occurring lower in the landscape along stream corridors and some sandy loam soils in the Eastern part of the watershed.

Lake Chetek (0705000704)

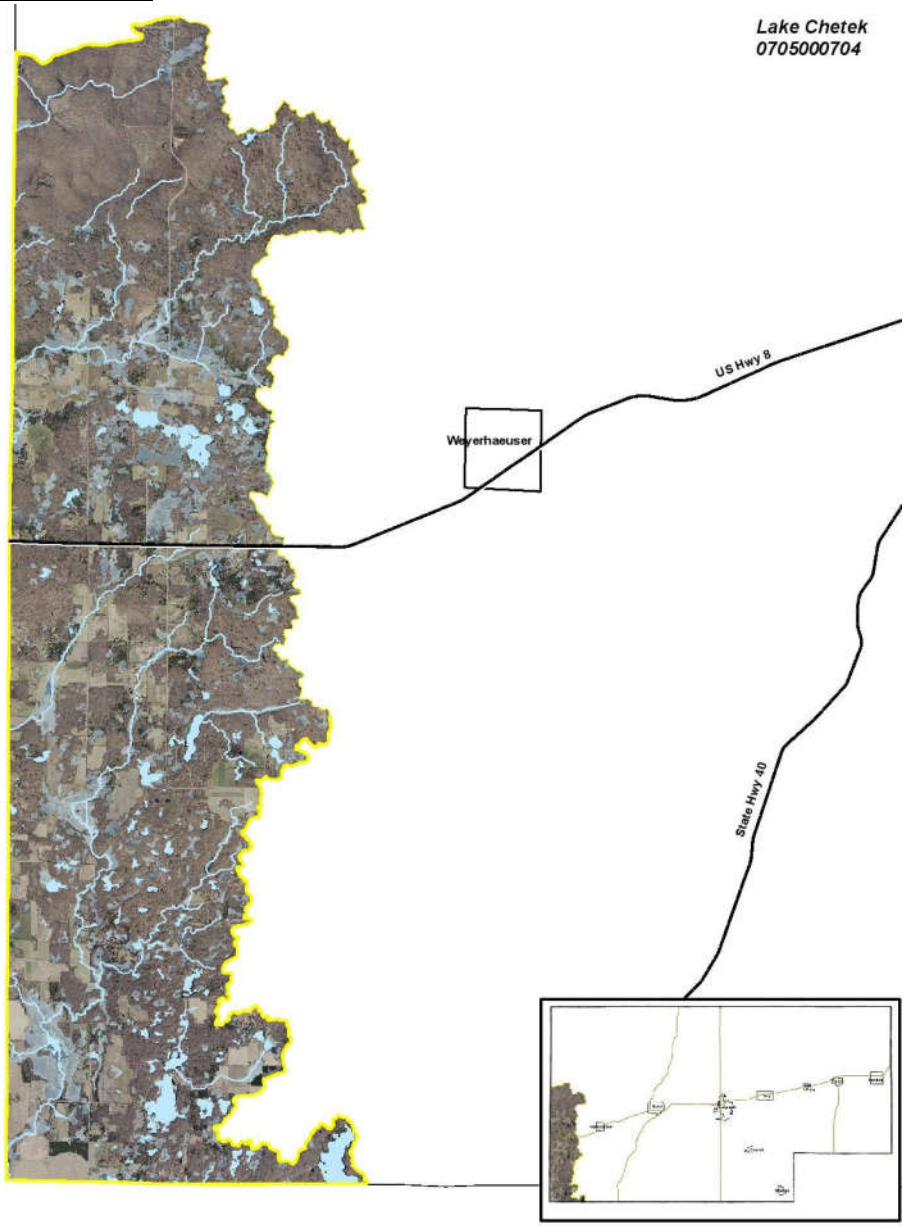

Figure 41. Lake Chetek HUC10 Watershed.

The Lake Chetek basin, which is in the Red Cedar HUC8, is a fairly large basin residing mostly in Barron County with 48 sq mi in the extreme Western part of Rusk County. The basin contains 26 mi of perennial stream and 23 named lakes with an average size of 28 acres. None of the lakes are as highly developed as in other parts of the county. Within this basin, in Rusk County, Moose Ear Creek and Bass Lake are listed as high quality waters. Tenmile creek is listed as an impaired water for total phosphorus and Pine Lake is listed as impaired for mercury. Land Use/Land Cover in the basin is mainly forest and wetland in the Northern half and a mix of forest, wetland, and agriculture in the Southern half. Soils are primarily sandy loam with some silt loam and silt mainly along stream corridors. The Lake Chetek basin in Rusk County contains 2.6 miles of class I trout stream and almost 9 miles of class II. The basin has 3 sub-basins within Rusk County and an average watershed health score of 61.

Summary

Taken as a whole, watershed basins in Rusk County are generally healthy, however, information from the WiDNR Healthy Watersheds, High-Quality Waters (HWHQW) initiative can be used to better target areas for both protection of healthy, high-quality water resources and restoration of impaired waters and non-point source pollution through conservation efforts. Based upon the watershed health score, previous conservation efforts, and local resource concerns, priority basins have been identified as follows and in Figure 40 :

Healthy, High-Quality Watershed Protection Priorities by HUC12 - Ranked by Watershed Health Score:
Skinner Creek (070500030303) - 77.00
Big Falls Flowage-Flambeau River (070500020701) - 74.01
South Fork Flambeau River (070500030304) - 73.12
Flambeau River (070500020704) - 72.61
Spring Creek-Thornapple River (070500010604) - 72.41

Degraded Watershed Restoration Priorities by HUC12 - Ranked by Watershed Health Score:
Spring Creek (070500070308) - 53.46
Shoulder Creek (070500040402) - 55.01
Lower Little Jump River (070500040406) - 55.27
Headwaters Deer Tail Creek (070500010801) - 56.83
Skunk Creek-Main Creek (070500040305) - 57.76

Local Priorities by HUC 12:
Devils Creek (070500010701) - Upper half of the watershed is healthy and should be protected while the lower half is degraded by sediment.

Potato Creek (070500010901) - Significant degradation of Potato Lake by excessive plant and algae growth. Most likely from land use in the basin.

Deer Tail Creek (070500010802) - Degradation by sediment attributed to land use within the basin and basin is within the producer-led group boundary.

Rice Creek (070500010902) - Significant development around lakes for County Shoreland Protection Program and Healthy Lakes Grant.

Holcombe Flowage-Chippewa River (070500010904) - Significant development along Chippewa River for County Shoreland Protection Program and Healthy Lakes Grant.

Dairyland Reservoir-Flambeau River (070500020702) - Significant development around flowage for County Shoreland Protection Program & Healthy Lakes Grant.

Red Cedar Lake (070500070105) - Red Cedar Watershed TMDL and 9 Key Elements Plan.

Moose Ear Creek (070500070402) - Red Cedar Watershed TMDL and 9 Key Elements Plan.

Tenmile Creek (070500070402) - Red Cedar Watershed TMDL and 9 Key Elements Plan.

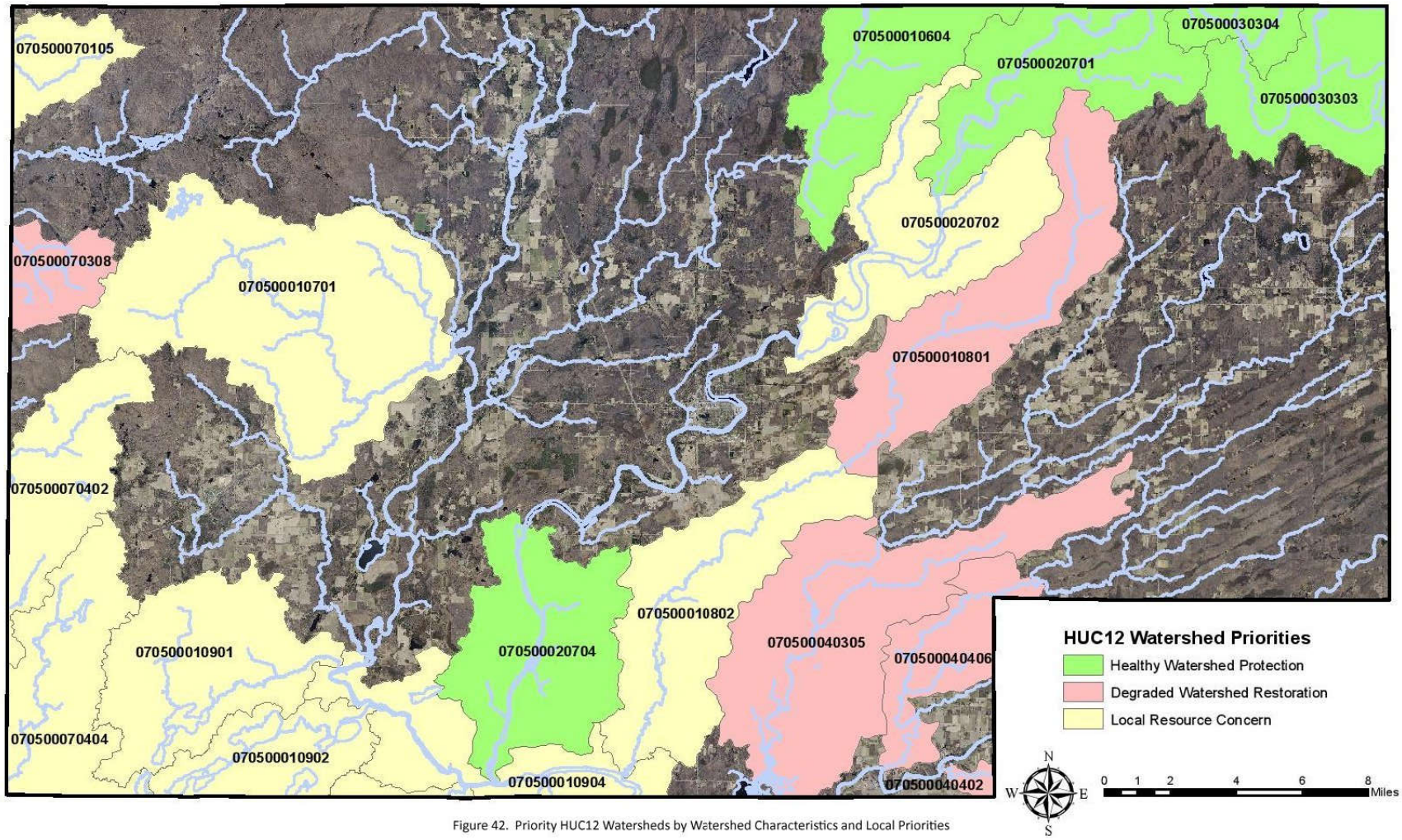

Figure 42. Priority HUC12 Watersheds by Watershed Characteristics and Local Priorities

Chapter IV – Natural Resource Management Goals and Objectives

Goal 1 – Protect and Improve Surface Water Quality

Objectives

1. Reduce sediment and nutrient delivery to surface water
2. Work with cities and villages to improve stormwater management
3. Evaluate implementation of a wetland preservation/restoration program
4. Develop a countywide stormwater erosion control ordinance
5. Work with the Rusk County Highway Department to promote erosion control and culvert Sizing
6. Protect aquatic ecosystems from invasive species
7. Continue County shore land protection program
8. Evaluate digital data needs

Goal 2 – Conserve and Protect Productive Agricultural Land

Objectives

1. Evaluate and re-implement county Farmland Preservation Program
2. Continue to pursue enrollment of county in CREP
3. Increase promotion of no-till, cover crops, and NMP programs
4. Promote farmer-led watershed groups
5. Increase involvement in the Grasslands 2.0 initiative
6. Integrate farmland protections into County comprehensive planning efforts
7. Evaluate digital data needs

Goal 3 – Protect and Improve Ground Water Quality

Objectives

1. Continue County well abandonment program
2. Expand well sampling and mapping program with Rusk County HHS
3. Improve digital data related to geology and ground water

Goal 4 – Improve and Expand Outreach and Education Programs

Objectives

1. Continue to provide timely and relevant information to K-12 students and the public
2. Utilize additional public outreach opportunities
3. Develop I&E facilities at the Gustafson property
4. Develop digital demographic data
5. Research social, economic, and political barriers to conservation implementation

Goal 5 – Demonstrate Program Effectiveness

Objectives

1. Expand countywide monitoring of land use and soil erosion
2. Create long term surface water monitoring network
3. Continue to provide County Board and the public with LWCD program information
4. Continue working with Wi-DNR and Wi-DATCP to report LWCD activities
5. Prioritize cost share dollars for high return practice installations
6. Use LWRMP to acquire additional cost share and staffing funding
7. Maintain appropriate records
8. Continue to use and improve MapFeeder application for program management

Goal 6 – Improve Integration of Wildlife Habitat with Conservation Efforts

Objectives

1. Develop pollinator habitat program
2. Evaluate strategies for wildlife plantings to adapt to climate change
3. Continue tree, shrub, and plant sale
4. Expand terrestrial invasive species control efforts
5. Evaluate digital data needs

Detailed Objectives and Action Items

Annual staff costs for identified goals and costs associated with non re-occurring action items are shown in Table 5. Tables 6 - 10 provide detail specific actions related to resource protection goals and objectives the Land Conservation Committee plans to address within the next ten years. Tables also include estimated staff costs and anticipated outcomes. Action items are color coded between annual costs (green) and costs which are not re-occurring once complete (blue). . All costs are calculated for current staffing levels and may be modified if/when additional grant or other funding sources are obtained.

Anticipated costs and timing	Year									
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Anticipated Annual Staff Costs	$262,200.00	$268,755.00	$275,474.00	$282,361.00	$289,420.00	$296,655.00	$304,072.00	$311,673.00	$319,465.00	$327,452.00
Improve snow removal disposal	$1,000.00	$1,000.00								
Map storm drains & outfalls			$4,000.00	$4,000.00	$4,000.00					
Work w/ volunteer organizations to paint all storm drains						$5,000.00	$5,000.00			
Research impact of wetlands on sediment removal	$1,200.00									
Research impact of wetlands on climate resiliency	$1,200.00									
Develop stormwater ordinance		$10,000.00	$10,000.00							
Create GIS coverage of watersheds to 1st order				$10,000.00	$10,000.00	$10,000.00	$10,000.00			
Improve stream network data								$10,000.00	$10,000.00	
Discuss FLP w/ landowners	$2,000.00									
Implement FLP		$1,600.00								
Continue discussions with WiDATCP regarding CREP	$800.00									
Work w/ NWRPC on comprehensive plan	$1,000.00	$1,000.00								
Map agricultural land							$5,000.00	$5,000.00	$5,000.00	$5,000.00
Develop information on well abandonment	$1,600.00									
GIS coverage of well locations		$1,600.00								
GIS coverage of water table depth			$2,000.00							
Surficial geology mapping				$2,400.00						
GIS coverage of county demographics				$4,000.00	$4,000.00					
Improve trail system on Gustafson Nature Area	$12,000.00									
Construct pavillion on Gustafson Nature Area		$2,200.00								
Learn more about rural sociology										
County survey on natural resources and conservation		$1,600.00						$1,600.00		
Research message delivery systems	$1,600.00									
Surface water monitoring station network						$7,000.00	$7,000.00			
Load all data into MapFeeder	$2,500.00	$2,500.00								
Develop parameters of a pollinator program	$3,200.00									
Determine the timing of shifts in climate and wildlife populations		$3,000.00	$3,000.00							
GIS coverages of invasive species			$1,000.00	$1,000.00	$1,000.00	$1,000.00	$1,000.00	$1,000.00	$1,000.00	
Create more detailed land cover map							$10,000.00	$10,000.00	$10,000.00	$10,000.00
Develop information and outreach related to beaver control	$700.00	$700.00								
Develop information and outreach related to bat conservation	$700.00	$700.00								

Table 5. Summary of anticipated costs and timing of goal action items.

Goal #1 - Protect and Improve Surface Water Quality			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Reduce sediment and nutrient delivery to surface water	Encourage adoption of no-till and cover crops through one-on-one discussion with farmers	100 hrs ($4,000)	Increase adoption of no-till and cover crops by 5% annually
	Work with NRCS to encourage landowner participation in CRP	20 hrs ($800)	Maximized use of CRP funding made available to Rusk County
	Hold producer level educational sessions on conservation practices and soil health	155 hrs ($6200)	3 trainings held annually
	Promote soil conservation through education and outreach	100 hrs ($4,000)	Increased awareness of soil conservation issues through monthly mailing to producer mailing list
	Continue installation of SWRM and County supported BMPs	350 hrs ($14,000)	100% of allocation expended on BMPs
	Build climate resiliance into engineering design for installed practices (1)	30 hrs ($1,200)	Future projects are better able to withstand changes in climatic patterns and intensity

Table 6. Objectives and action items under Goal #1

Goal #1 - Protect and Improve Surface Water Quality			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Work with Cities & Villages to improve stormwater management	Storm drain education for the public	150 hrs ($6,000)	Increased public awareness of where stormwater goes when entering a storm drain
	Improve snow removal disposal	50 hrs ($2,000)	Elimination of piling removed snow at boat landings or other locations which drain directly to surface water
	Map storm drains and outfalls (2)	300 hrs ($12,000)	Digital data showing the location of all storm drains and outfalls
	Work with volunteer organizations to paint all storm drains (3)	250 hrs ($10,000)	All storm drains stenciled with "Drains Directly To River"

Table 6 (cont.)

Goal #1 - Protect and Improve Surface Water Quality			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Improve wetland restoration efforts	Inventory potential locations by conducting field observations during significant rainfall events	150 hrs ($6,000)	Digital data set showing the location of potentially restorable wetlands to target
	Educate public on functions and values of wetlands (4)	75 hrs ($3,000)	Increase in public awareness of wetland functions and values, focused on K-12 students
	Research impact of wetlands for sediment removal	30 hrs ($1,200)	Ability to more accurately estimate sediment removal by restored wetlands
	Research impact of wetlands on climate resiliency	30 hrs ($1,200)	Ability to show the importance of wetlands for climate resiliency and provide information to the public
	Promote restoration as a BMP	100 hrs ($4,000)	Complete 1 restoration annually
	Promote wetland protection through conservancy or easement	50 hrs ($2,000)	1-2 high-quality or unique wetlands protected per year, focused in priority watersheds

Table 6 (cont.)

Goal #1 - Protect and Improve Surface Water Quality			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Work with Rusk County Highway Department to promote erosion control and culvert sizing	Conduct annual seminar with Highway Dept on topics of erosion control	50 hrs ($2,000)	Highway Department is better able to place erosion control to minimize impact on surface waters
	Provide assistance to Highway Department for wetland identification	40 hrs ($1,600)	Field assistance for Highway Department, as needed, to identify wetlands and minimize impact
	Provide assistance to Highway Department with culvert sizing to account for climate impacts	60 hrs ($2,400)	As culverts are replaced, they are better able to convey water
Develop and implement a countywide stormwater and erosion control ordinance	Develop ordinance and achieve approval by 2027 (5)	500 hrs ($20,000)	Ability of the county to better regulate construction site erosion and minimize impacts to surface water

Table 6 (cont.)

Goal #1 - Protect and Improve Surface Water Quality			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Protect aquatic ecosystems from invasive species	Continue partnership with Beaver Creek Reserve (6)	10 hrs ($400)	Consistent messaging to lake associations and the public regarding aquatic invasive species
	Provide support to Lake Associations (7)	50 hrs ($2,000)	Increased awareness of aquatic invasive species and how to minimize spread
	Begin a program raising *Galerucella* beetles for purple loosestrife control	100 hrs ($4,000)	Ability to provide biological control to interested parties throughout the county

Table 6 (cont.)

Goal #1 - Protect and Improve Surface Water Quality			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Continue County Shoreland Protection Program	Annual presentations to lake associations	40 hrs ($1,600)	Increased awareness and participation in the county program
	Mailing to targeted lakes each year	40 hrs ($1,600)	Solicit additional potential shoreland projects
	Continue County Shoreland Protection Program (8)	50 hrs ($2,000)	5 projects funded each year
Evaluate Digital Data Needs	Create GIS coverage of watersheds down to 1st order streams by 2030	1000 hrs ($40,000)	GIS coverage which would allow us to identify and target specific watershed areas
	Improve stream network data	500 hrs ($20,000)	Better ability to map streams and determine project areas and surrounding landuse

Table 6 (cont.)

Goal #2 - Conserve and Protect Productive Agricultural Land			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Increase promotion of no-till, cover crops, and nutrient management planning	Continue development of County no-till drill program (9)	100 hrs ($4,000)	County owned no-till drill that can be made available to producers
	Incentive program for farmer-led groups	100 hrs ($4,000)	5% annual increase in adoption of no-till and cover crops. 2 producers per year under a nutrient management plan
	Informational sessions for producers	50 hrs ($2,000)	Increased awareness of the benefits of these practices and increased adoption
	Continue to provide SWRM funds for no-till, cover crops, and NMP	200 hrs ($8,000)	Maximized use of available funds
	Work with NRCS to provide assistance	50 hrs ($2,000)	Increased adoption of practices

Table 7. Objectives and action items under Goal #2

Goal #2 - Conserve and Protect Productive Agricultural Land			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Evaluate and potentially implement County FLP	Discussions with landowners regarding FLP	50 hrs ($2,000)	Enough interest to pursue FLP
	Implement FLP in the County	40 hrs ($1,600)	FLP becomes an option for producers
	Promote enrollment in FLP	50 hrs ($2,000)	5 FLP enrollments annually
Continue to pursue enrollment of Rusk County into the CREP program	Continue to have discussions with WiDATCP regarding CREP (10)	20 hrs ($800)	CREP becomes available as an option in Rusk County

Table 7 (cont.)

Goal #2 - Conserve and Protect Productive Agricultural Land			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Promote farmer-led watershed groups	Continue to support the Flambeau Valley Watershed Group	50 hrs ($2,000)	Strengthen relationship with the group and increase membership
	Add additional farmer-led groups	75 hrs ($3,000)	2 additional farmer-led groups in the County created by 2035
Integrate farmland protections into County comprehensive planning efforts	Work with NWRPC during development of the comprehensive plan	50 hrs ($2,000)	Farmland protections included in the County's comprehensive plan
Evaluate digital data needs	Map agricultural land use using all available data (11)	500 hrs ($20,000)	Bi-annual map of agricultural land use for planning and tracking

Table 7 (cont.)

Goal #3 - Protect and Improve Ground Water Quality			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Continue County well abandonment program	Annual information to all well drillers about the program	25 hrs ($1,000)	Increased participation in the program
	Continue County Well Abandonment Program (12)	35 hrs ($1,400)	7 well abandonments completed per year
	Develop information for the public regarding the importance of properly abandoning a well	40 hrs ($1,600)	Increased awareness of the public about the importance of proper well abandonment
Look for opportunities to reduce surface runoff and increase groundwater recharge	Encourage construction of groundwater infiltration basins	50 hrs ($2,000)	Install 2 infiltration basins per year
	Promote field edge buffers (13)	50 hrs ($2,000)	Install 5 acres of field edge buffer per year

Table 8. Objectives and action items related to goal #3

Goal #3 - Protect and Improve Ground Water Quality			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Continue and expand well sampling program with Rusk County Health and Human Services	Continue to promote participation (14)	10 hrs ($400)	Increase number of participants by 5 per year
Improve digital data related to geology and ground water in Rusk County	Map well locations using well log data	40 hrs ($1,600)	Digital location of wells in the County
	Map water table depth using well log data	50 hrs ($2,000)	Countywide depth to groundwater to determine potentially susceptible areas for ground water contamination
	Search for surficial geology or create from well log data	60 hrs ($2,400)	Digital map of surficial geology which could be used to identify areas of ground water susceptibility

Table 8 (cont.)

Goal #4 - Improve and Expand Outreach and Education Programs			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Continue to provide relevant and timely information to K-12 students, agricultural producers, and the general public	Develop classroom programs for area schools	100 hrs ($4,000)	Increased presence in K-12 classrooms related to natural resources and conservation education
	Continue presence at farmers market (15)	40 hrs ($1,600)	Increased interaction with the public and providing conservation related messaging
	Explore possibility of library program	10 hrs ($400)	Delivery of conservation related programs to a diverse audience
	Continue to run conservation poster and speaking contest (16)	30 hrs ($1,200)	Continued presence in the schools and the community
Develop digital demographic data	Map county demographics	200 hrs ($8,000)	Able to target areas of the county with unique, relevant information based on demographics

Table 9. Objectives and action items related to goal #4

Goal #4 - Improve and Expand Outreach and Education Programs			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Develop I&E facility at Gustafson property *(17)*	Improve trail system	300 hrs ($12,000)	Provides opportunity to develop a self-guided, natural resources hike
	Construct pavillion	55 hrs ($2,200)	Facility to allow conducting educational programs for the public
Research social, economic, and political barriers to conservation practices	Learn more about rural sociology	75 hrs ($3,000)	Better able to understand the audience and target messaging
	Survey to address attitudes toward natural resources and conservation	80 hrs ($3,200)	Better understanding of public attitude and focus areas for I&E efforts
	Research message delivery systems	40 hrs ($1,600)	Improved delivery of conservation related message to target audiences

Table 9 (cont.)

Goal #4 - Improve and Expand Outreach and Education Programs			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Look at additional public outreach opportunities	Provide a monthly or quarterly newspaper article	60 hrs ($2,400)	Ability to reach a much wider audience with conservation related education
	Develop a more formal newsletter for producer distribution list	150 hrs ($6,000)	Provides information of relevance to producers
	Look for other community events to attend	50 hrs ($2,000)	Provides additional opportunities to interact with the public
	Adult education programs at the Gustafson property	200 hrs ($8,000)	Able to provide hands on education to the public on natural resource and conservation related topics
	Develop volunteer sampling network with North Cedar Academy (18)	70 hrs ($2,800)	Obtain project specific data and educate students

Table 9 (cont.)

Goal #5 - Demonstrate Program Effectiveness			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Expand countywide monitoring of land use and soil erosion	Sediment delivery modeling using developed data	300 hrs ($12,000)	Ability to show the impact of conservation practices
	Edge of field monitoring	500 hrs ($20,000)	Obtain local data related to soil loss and the impact of management practices
Create long-term surface water monitoring network	Set-up monitoring stations to collect flow data	350 hrs ($14,000)	Long term data to show trends in flow rate and volume
	Surface water sampling program for basic water quality parameters (19)	200 hrs ($8,000)	Track changes in water quality over time and show impact of practices on water quality
Continue to provide County Board and the public with LWCD program information	Develop annual report for County Board	60 hrs ($2,400)	County Board and the general public continue to be informed of LWCD activities

Table 10. Objectives and action items related to goal #5

Goal #5 - Demonstrate Program Effectiveness			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Continue working with WiDNR and WiDATCP to report LWCD activities	Annual report to WiDATCP	15 hrs ($600)	Continued support for LWCD activites
	Participate in area organizations and meetings	75 hrs ($3,000)	Inform other counties, WiDNR, UWEX, and other groups of LWCD activities
Prioritize cost-share dollars for high return practice installations	Rank potential practices based on environmental impact	50 hrs ($2000)	Cost-share dollars are used to maximize return in soil and water quality improvement
Use LWRMP to acquire additional cost-share and staffing funding	Apply for additional grants based on plan goals and objectives	300 hrs ($12,000)	Grants and other resources to increase the amount of staff time and conservation practice installation

Table 10 (cont.)

Goal #5 - Demonstrate Program Effectiveness			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Maintain appropriate records	Continually monitor contracting and project installation	200 hrs ($8,000)	Records are kept according to accepted standards and projects are constructed following technical standards
	Conduct random inspection of projects to insure maintenance	100 hrs ($4,000)	3-5 random projects selected each year for inspection to ensure continued maintenance
Continue to use and improve the MapFeeder application for project tracking and management *(20)*	Load all data into application by end of 2025	125 hrs ($5,000)	Complete digital access to project information in a map-based environment and ability to easily access information remotely
	Use contact management to improve intra-office communication	75 hrs ($3,000)	All staff are better able to see activites related to landowners

Table 10 (cont.)

Goal #6 - Improve Integration of Wildlife Habitat with Conservation Projects			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Develop pollinator habitat program	Develop parameters of a pollinator program	80 hrs ($3,200)	A prospectus that can be presented to potential sponsors and grantors
	Use prospectus to acquire funding	200 hrs ($8,000)	Grants and other support which provide funding to implement projects
Continue annual tree, shrub, and plant sale	Continue annual tree, shrub, and plant sale	100 hrs ($4,000)	Sale of trees, shrubs, and plants to the public which are planted in the county
Evaluate strategies for wildlife plantings to help adapt to climate changes *(21)*	Determine the timing of shifts in climate patterns and wildlife population ranges	150 hrs ($6,000)	Insight into how rapidly climate patterns and wildlife ranges are shifting
	Research vegetation to help as wildlife population ranges shift North or South	100 hrs ($4,000)	Change in seed mixes and plantings on conservation projects which anticipate shifting populations

Table 11. Objectives and action items related to goal #6

Goal #6 - Improve Integration of Wildlife Habitat with Conservation Projects			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Expand terrestrial invasive species control efforts	Form citizen science group to help map invasive species locations	100 hrs ($4,000)	Digital map of invasive species locations
	Buckthorn control trial plots	250 hrs ($10,000)	Document the effectiveness of different control techniques on buckthorn
	Provide tools for public to eradicate buckthorn (22)	25 hrs ($1,000)	Enables the public to help eradicate buckthorn
	Obtain and manage a small herd of goats for buckthorn control	500 hrs ($20,000)	A small herd of goats that can be moved to different locations for buckthorn control
Evaluate digital data needs	Map invasive species	200 hrs ($8,000)	Digital data showing locations of invasive species (buckthorn, knotweed, loosestrife, garlic mustard)
	Create more detailed land cover map	1000 hrs ($40,000)	Detailed land cover map to use when designing projects to match plantings to surrounding land cover

Table 11 (cont.)

Goal #6 - Improve Integration of Wildlife Habitat with Conservation Projects			
Objectives	**Actions**	**Estimated staff cost**	**Anticipated Outcomes**
Expand wildlife conservation efforts which impact water quality and agriculture	Promote non-lethal beaver control, under certain circumstances, to encourage creation of ponds (23)	50 hrs ($2,000)	Increases in the number of ponds providing sediment & nutrient removal and increases in diverse wildlife habitat
	Develop informational program and outreach material for beaver control	35 hrs ($1,400)	General public is aware of the role beavers play in the ecosystem and methods to limit or control damage
	Work with WiDNR Wisconsin Bat Program to increase volunteer population surveys	30 hrs ($1,200)	Accurate estimates of bat populations within Rusk County
	Develop informational program and outreach material for bat conservation (24)	35 hrs ($1,400)	General public is educated on the importance of bats and conservation efforts
	Hold annual bat house construction program with hands on building of bat house	50 hrs ($2,000)	Public will learn about bat conservation while building and installing their own bat house

Table 11 (cont.)

Notes:

[1] *May include changes to design storms used for practice design, changes to culvert size, changes to seed mix/species diversity, flow rates used for practice design.*

[2] *Much of this data may already be available in a digital format.*

[3] *This activity presents an opportunity to engage with civic groups and the general public.*

[4] *May be an opportunity to organize a wetland field day for the public and elected officials to tour different wetland locations in the county and talk about wetland functions and values.*

[5] *Will require involvement of County Zoning Division.*

[6] *We have partnered with Beaver Creek Reserve to deliver AIS services since 2020.*

[7] *We currently have 4 active lake associations (Island Chain of Lakes, Sand Lake, Amacoy Lake, and Potato Lake).*

[8] *This is a county funded program which pays 50% of the practice installation cost, up to a maximum of $1,000.00 per practice.*

[9] *County has already secured partial funding and is currently seeking additional funding through grants, donations, or endowments.*

[10] *Once approved, we plan on enrolling 17 of the 24 county townships into the program.*

[11] *This data would provide more reliable and accurate estimates of crop acreages and types on an annual basis.*

[12] *This is a county funded program which pays 30% of the cost for well abandonment up to a maximum of $300.00.*

[13] *Buffer plantings would emphasize pollinator habitat.*

[14] *The department developed an online mapping application, for use by HHS, which streamlines the sample point location collection and assignment of sample ID.*

[15] *We will continue to plan on having a presence at 2 farmers markets each month, from June - October, and 1-2 times during the winter market events (December - May).*

[16] *The 2024 junior division state winner was from Rusk County (Joshua Price, Bruce School District).*

[17] *The Gustafson property is a 58 acre, partially wooded, parcel which was donated to the county in 2023. The owners wanted to ensure that the parcel remain undeveloped and used for conservation education. The Land & Water Conservation Division has been designated as the manager of the*

property for Rusk County.

[18] *There has been significant interest from students and staff in assisting with surface water data collection and analysis efforts in the county.*

[19] *This action presents an opportunity to partner with area schools and other interested civic groups and expand educational outreach efforts.*

[20] *MapFeeder is a collaborative effort by 4 county's (Burnett, Polk, Ashland, and Rusk) to develop a map-based data management and reporting system. Initial system development is complete, and the system is being used and refined. Currently, the system contains modules for BMP tracking, Boat Landings, Bait Shops, Farmland Preservation, NR151 Compliance, Client/Project Tracking, Non-Metallic Mining, Nutrient Management Plans, and Invasive Species.*

[21] *Weiskopf, S.R., et. al., 2020, Climate change effects on biodiversity, ecosystems, ecosystem services, and natural resource management in the United States. Science of the Total Environment 733, https://doi.org/10.1016/j.scitotenv.2020.137782.*

[22] *We currently provide on-site consultation, herbicide, and hand tools for removal and treatment.*

[23] *Flow leveler device demonstration project scheduled for 2025 installation.*

[24] *Frank, E.G. 2024, The economic impacts of ecosystem disruptions: Costs from substituting biological pest control. Science 385, https://doi.org/10.1126/science.adg0344.*

Chapter V – Agricultural Performance Standards and Prohibitions

Effective October 1, 2002, Ch. NR 151, Wis. Adm. Code established runoff pollution performance standards for non-agricultural facilities and transportation facilities and performance standards and prohibitions for agricultural facilities and practices designed to achieve water quality standards. The agricultural standards and prohibitions were developed to control polluted runoff from all cropland and livestock operations while protecting Wisconsin's water resources. It is the landowner's responsibility to meet the agricultural performance standards and prohibitions. The role of the Rusk County LWCD is to assist landowners in planning, designing, installing, and approving management plans and conservation practices to meet these standards. Performance standards and prohibitions are listed below.

NR 151.02 Sheet, rill, and wind erosion

All cropped fields shall meet the tolerable (T) soil erosion rate established for that soil by USDA.

NR 151.03 Tillage setback

The purpose of this standard is to prevent tillage operations from destroying stream banks and depositing soil directly in surface waters of the state.

1. No crop producer may conduct a tillage operation that negatively impacts stream bank integrity or deposits soil directly into surface waters of the state.
2. No tillage operations may be conducted within 5 feet of the top of the channel of surface waters. Tillage setbacks greater than 5 feet but no more than 20 feet may be required for this standard.
3. Crop producers shall maintain the area within the tillage setback in adequate sod or self-sustaining vegetative cover that provides a minimum of 70% coverage.

Note, this standard does not apply to grassed waterways installed as conservation practices.

NR 151.04 Phosphorus index

1. All crop and livestock producers shall comply with this section.
2. Croplands, pastures, and winter grazing areas shall average a phosphorus index of 6 or less over the accounting period and may not exceed a phosphorus index of 12 in any individual year within the accounting period.
3. If the phosphorus index is not applicable to a particular crop or situation, an equivalent calculation, approved by the department, shall be used instead to meet the requirements of this standard.

The phosphorus index is used to determine the potential for phosphorus to be transported from agricultural fields to surface water. The tool uses soil, landscape, conservation practice, and P management factors on an individual field. The phosphorus index can be used by agricultural producers and conservation planners to evaluate the potential for phosphorus reaching surface waters and evaluate management techniques to reduce this potential. The index was developed by Iowa State University, the National Soil Tilth Lab, and NRCS.

NR 151.05 Manure storage facilities performance standards

All livestock producers building new manure storage facilities, substantially altering manure storage facilities, or choosing to abandon their manure storage facilities shall comply with this section. New or substantially altered manure storage facilities shall be designed, constructed, and maintained to minimize the risk of structural failure and minimize leakage in order to comply with the ground water standards.

Closure of a manure storage facility shall occur when an operation where the facility is located ceases operations or where manure has not been added or removed from the facility for a period of 24 months. The owner or operator may retain the facility for a longer period of time by demonstrating that all of the following conditions are met:

1. The facility is designed, constructed, and maintained in accordance with an accepted standard.
2. The facility is designed to store manure for a period of time longer than 24 months.
3. Retention of the facility is warranted based on anticipated use.

Manure storage facilities that were constructed on or after October 1, 2002 that pose an imminent threat to public health, fish, or other aquatic life or are causing a violation of ground water standards need to be upgraded, replaced, or abandoned in accordance with this section.

NR 151.055 Process wastewater handling

All livestock producers must comply with this standard. For these producers, there must be no significant discharge of process wastewater to waters of the state. The WiDNR will use the following factors to determine whether a discharge of process wastewater is a significant discharge:

1. Volume and frequency of the discharge.
2. Location of the source relative to receiving waters.
3. Means of process wastewater conveyance to waters of the state.
4. Slope, vegetation, rainfall, and other factors affecting the likelihood or frequency of process wastewater discharge to waters of the state.
5. Available evidence of discharge to a surface water of the state or to a direct conduit to ground water.
6. Whether the process wastewater discharge is to a site that is defined as a site susceptible to ground water contamination.
7. Other factors relevant to the impact of the discharge on water quality standards of the receiving water or to ground water standards.

NR 151.06 Clean water diversions

All livestock producers within a Water Quality Management Area (WQMA) shall comply with this standard. A WQMA, as defined under NR 151, as:

1. The area within 1,000 feet from the ordinary high water mark of navigable lake, pond, or flowage, except for a navigable glacial pothole lake.
2. The area within 300 feet from the ordinary high water mark of a navigable stream or river.
3. A site that is susceptible to ground water contamination or has the potential to be a direct conduit for contamination to reach ground water.

Runoff shall be diverted away from contacting feedlot, manure storage areas, and barnyard areas within a WQMA except that a diversion to protect a private well is required only when the feedlot, manure storage area, or barnyard area is located upslope from the private well.

NR 151.07 Nutrient management

All livestock and crop producers that apply manure or other nutrients directly or through contract to agricultural fields shall comply with this standard.

1. Manure, commercial fertilizer, and other nutrients shall be applied in conformance with a nutrient management plan.
2. The nutrient management plan shall be designed to limit or reduce the discharge of nutrients to waters of the state in order to comply with state water quality standards and ground water standards.
3. This standard applies to all farms on January 1, 2005 if the farm the farm is located within:
    a. Watersheds containing outstanding or exceptional waters.
    b. Watersheds containing impaired waters.
    c. Source water protection areas.
4. The standard applies to all other farms on January 1, 2008.

NR 151.075 Silurian bedrock performance standards

In 2018, Silurian bedrock performance standards were incorporated into NR 151. Areas of Silurian bedrock areas are particularly susceptible to ground water contamination and require a substantially more rigorous management of surface applied nutrients. Silurian bedrock areas in Wisconsin occur generally in the Eastern third of the state outside so this standard is not applicable to Rusk County.

NR 151.08 Manure management prohibitions

All livestock producers are required to comply with this section.

1. No overflow of manure storage facilities.
2. No unconfined manure pile in a Water Quality Management Area.
3. No direct runoff from a feedlot or stored manure into waters of the state.
4. No unlimited access by livestock to waters of the state.

NR151 Local Implementation Strategy

To date, the Rusk County NR 151 compliance strategy has been based on information and education and reacting to complaints received regarding potential violations. Limited staffing has made a more robust compliance check program difficult to implement. We have, however, not had any known violations. This may be a result, at least partially, of the information and education activities in the county, as well as the limited number of farms compared to other counties in the state.

That does not mean that we shouldn't improve our compliance activities. The LWCD is planning on implementing the following as a means of ensuring NR 151 compliance from agricultural producers.

1. The LWCD will work with UWEX and WiDNR to develop an information and education program, specifically targeting agricultural producers, to inform producers of the requirements of NR 151. This program will use social media, community events, and local press releases to inform landowners and gain voluntary compliance.
2. During all on-farm visits, information will be provided regarding the requirements of NR 151. We will develop an informational packet which can be provided along with a direct conversation with the producer.
3. The 2022 USDA census of agriculture shows 454 individual farms in the county and that number has decreased even more since then. However, we still need to prioritize how and when

compliance evaluations are conducted. The LWCD has identified the following determination strategy.

- First Priority – Farms where a valid complaint has been received regarding a potential violation of the agricultural performance standards or prohibitions.
- Second Priority – Farms applying for a County Animal Waste and Manure Management permit.
- Third Priority – Farms that receive cost-share assistance under the Soil and Water Resource Management grant program.
- Fourth Priority – Farms located in high quality watersheds identified in the Healthy Watersheds, High Quality Waters initiative.
- Fifth Priority – Farms located in watersheds containing 303(d) impaired waters or watersheds containing private well nitrate-N concentrations near or exceeding the 10 mg/l threshold.

We anticipate implementing a program of randomly selecting 5 – 10 farms per year from the third, fourth, and fifth priorities to conduct an on-farm evaluation. Producers will be notified of the compliance check a minimum of 2 weeks prior to the scheduled visit.

4. The on-site evaluation will consist of a complete walkover with the landowner. An evaluation form, provided in Appendix D, will be completed and provided to the landowner with a landowner signature page along with the following:
    - Instructions on the appeal procedures if the landowner contests the evaluation.
    - Recommendations for measures needed (if any) to achieve compliance.
    - A schedule for achieving compliance with standards, if required.
    - The availability and source of cost-share funds for installation of recommended practices.
5. Enforcement of actions associated with NR 151.09 and NR 151.095 will be coordinated with the WiDNR. If a landowner continues to remain in noncompliance with the state performance standards and/or prohibitions, or should a landowner refuse technical and/or financial assistance from the LWCD, the LWCD will forward all information related to the infraction(s) to the WiDNR and will notify the landowner(s) by registered mail that they are subject to an enforcement action pursuant to NR 151.09 and NR 151.095.
6. Any person aggrieved by a decision of the LWCD may file a written appeal of the decision to the Rusk County Land & Water Conservation Division, 311 Miner Ave. E., Ladysmith, WI 54848 within 30 days of the department's decision. A hearing on the appeal shall be commenced within 60 days of the date of appeal.
7. Cost-share funds will be made available to landowners through the County's Soil and Water Resource Management Program. Cost-share funds will be available for installing Best Management Practices (BMP's) listed in ATCP 50. Allowed BMP's are as follows:

Manure storage systems	Pesticide management
Manure storage system closure	Prescribed grazing
Barnyard runoff control systems	Relocating or abandoning animal feeding operations
Access roads and cattle crossings	Residue management
Trails and walkways	Riparian buffers
Conservation cover	Roofs
Conservation crop rotation	Roof runoff systems
Contour farming	Sediment basins
Cover crop	Sinkhole treatment

Critical area stabilization	Streambank and shoreline protection
Diversions	Stream restoration
Feed storage runoff control systems	Stream crossing
Field windbreaks	Strip cropping
Filter strips	Subsurface drains
Grade stabilization structures	Terrace systems
Habitat diversification	Underground outlets
Harvestable buffers	Verification of depth to bedrock
Hydrologic restoration	Waste transfer systems
Livestock fencing	Wastewater treatment strips
Livestock watering facilities	Water and sediment control basins
Milking center waste control systems	Waterway systems
Nutrient management	Well decommissioning
Nutrient treatment system	Wetland development or restoration

8. To receive financial assistance, landowners must enter into a cost-share agreement with the LWCD. Cost-share agreements are binding documents that secure funds for installing BMP's. The administration of the cost-share programs is the responsibility of the Rusk County LWCD, using the Rusk County Bidding, Installation, and Payment Procedures, provided in Appendix E. The department maintains participating landowner files in according to approved methods and practices for accounting and record keeping. The department is also responsible for the monitoring of BMP's installed with cost-share assistance to ensure proper operation and maintenance during the expected life of the practice.

Chapter VI – Coordination with Other Resource Management Plans

A. Intra-County Coordination

Rusk County Animal Waste Storage Ordinance
The purpose of this ordinance is to regulate the location, design, construction, installation, alteration and use of animal waste storage facilities, and the application of wastes from these facilities in order to prevent water pollution and thereby protect the health of Rusk County residents and transients; prevent the spread of disease; and promote the prosperity and general welfare of the citizens of Rusk County. It is also intended to provide for the administration and enforcement of the ordinance and to provide penalties for its violation. The full Animal Waste Storage and Nutrient Management Ordinance is provided in Appendix A.

Rusk County Shoreland Zoning Ordinance
The Shoreland Zoning Ordinance has been established to promote public health, safety, convenience, and welfare and promoting and protecting the public trust in navigable waters in order to:

1. Further the maintenance of safe and healthful conditions and prevent and control pollution.
2. Protect spawning grounds, fish, and aquatic life.
3. Control building site, placement of structures, and land uses.
4. Preserve shore land vegetation and natural beauty.

Full text of the Rusk County Shoreland Zoning Ordinance is provided in Appendix B.

Rusk County Non-Metallic Mining Ordinance
The Rusk County Non-Metallic Mining Ordinance is intended to establish a local program to ensure the effective reclamation of nonmetallic mining sites on which nonmetallic mining takes place in the county. The Ordinance applies to nonmetallic mines abandoned after the August 1, 2001. Full text of the Nonmetallic Mining Ordinance is provided in Appendix C.

Rusk County Forestry Dept. 15 Year Comprehensive Land Use Plan
The mission of the Rusk County Forestry Dept. is to manage, conserve, and protect natural resources on a sustainable basis for present and future generations. These resources, such as those provided by the County Forest, are the basis for addressing the ecological and socioeconomic needs of society. The goal of the 15 Year Comprehensive Land Use Plan is to provide background information regarding the Rusk County Forest and provide details of the departments operating policies and procedures which will be followed in administration of the County Forest.

B. State of Wisconsin Programs

Targeted Resource Management Program (TRM)
Provides cost-share assistance to landowners who install best management practices in designated watersheds or areas. Funding is provided by WiDNR.

Soil and Water Resource Management (SWRM)
Provides cost-share assistance and staffing grants to County Land Conservation Departments to implement their Land and Water Management Plans. Funds are provided by WiDATCP.

Lake Management and Planning Grants
Funds provided by WiDNR to protect and improve water quality in Wisconsin Lakes.

Managed Forest Law (MFL)
Provides a tax incentive to landowners who manage their woodlots in accordance to an approved timber management plan.

Agricultural Clean Sweep
Provides funding to local units of government to implement a program for collecting unwanted hazardous wastes.

Aquatic Invasive Species Prevention and Control Grants
Funds provided by WiDNR to help prevent and control the spread of aquatic invasive species in the waters of the state.

Notice of Intent/Discharge Cost-Share Grants
Cost-share funding provided by WiDNR to governmental units working with owners and operators of livestock operations to meet pollution control requirements.

River Protection Planning Grants
Funds provided by the WiDNR to protect or improve rivers and their ecosystems.

C. Federal Programs

Environmental Quality Incentives Program (EQIP)
Provides cost-share assistance for the installation of locally selected best management practices that reduce erosion and animal waste concerns. The EQIP program is administered by the USDA Farm Service Agency (FSA) and the USDA Natural Resources Conservation Service (NRCS).

Conservation Reserve Program (CRP)
A program administered by FSA and NRCS that provides funding to landowners for setting aside eligible lands for conservation purposes.

Conservation Reserve Enhancement Program (CREP)
A multi-agency coordinated program (WiDATCP, FSA, NRCS) that provides land rental payments to landowners who install buffers along streams and waterways and to landowners who establish or maintain grasslands in the grasslands project area.

Wetland Reserve Program (WRP)
A FSA and NRCS administered program that provides cost-share assistance to restore converted wetlands from agricultural use.

Partners for Fish and Wildlife Program
US Fish and Wildlife Service Program used in Wisconsin to assist in wetland restoration, fish and wildlife habitat improvement, and restoration of habitats of special concern.

Agricultural Conservation Easement Program (ACEP)
Provides funds for the purchase of conservation easements on eligible agricultural lands and wetlands to protect and preserve land and its natural resources.

D. Non-Governmental Agencies

There are a multitude of non-governmental conservation organizations which provide information and education material, material donations, financial assistance, and/or purchase of specific products targeting conservation practices. Listed below are just a few organizations which are active in Wisconsin.

The Nature Conservancy
The Nature Conservancy was founded in 1951 and has become one of the largest conservation non-profits. Their mission is to conserve land and water to preserve nature, promote diversity, and enable climate resilience.

Pheasants Forever
Pheasants Forever's mission is to conserve pheasants, quail, and other wildlife through habitat improvements, public access, education, and conservation advocacy. Along with other conservation and education programs, they provide seed mixes targeting CRP conservation cover and work closely with NRCS.

Trout Unlimited
Trout unlimited brings together diverse interests to maintain and restore rivers and streams. They provide funding opportunities and volunteer labor to assist with stream and river restoration and habitat projects.

Xerces Society for Invertebrate Conservation
The Xerces society for Invertebrate Conservation is a science-based conservation organization, working with scientists, land managers, educators, policymakers, farmers, and communities to help conserve invertebrates and their habitat. They provide monitoring of invertebrate populations, trainings to local, regional, state, and federal agencies and can assist with conservation planning.

Seed A Legacy
Is a non-profit organization that can help landowners plant high-quality pollinator habitat. They provide free seed and one-on-one technical guidance to establish both honeybee and monarch specific mixes. They currently provide services to a 14 state region in the upper Midwest.

Appendix A - Animal Waste Storage Ordinance

Appendix B - Shoreland Zoning Ordinance

Appendix C - Nonmetallic Mining Ordinance

Appendix D - Agricultural Performance Standards Checklist

Appendix E - Rusk County Bidding Procedure

Appendix F - Advisory Committee Agendas

Appendix G - Notice of Public Hearing