



Barron County Land & Water Resource Management Plan 2020 -2029



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PLAN SUMMARY

The 2019 Barron County Land and Water Resource Management Plan (LWRMP) will serve as the department work plan for the next ten years. The LWRMP meets the requirements of Wisconsin Act 27, Chapter 92 of the Wisconsin Statutes and is consistent with the 2010 Barron County Comprehensive Plan.

Introduction

Barron County is located in west central Wisconsin; it is perfectly square, measuring 30 miles on each side and is comprised of 25 townships. The topography was influenced by two major factors; the Blue Hills located in northeastern Barron County and the Wisconsin glacier. A primary terminal moraine of the Wisconsin glacier is located across the northwest and northern area of Barron County. The Blue Hills are the remains of an ancient mountain range that has been worn down by four episodes of continental glaciers. Nonetheless, they rise more than 500 feet over the rest of Barron County. The Wisconsin glacier, which began to recede approximately 10,000 years ago, is responsible for the hummocky terrain in northern and northwestern Barron County and sandy outwash plain in the eastern 1/3 of the county. This outwash material, which gave rise to the forested conditions that were found by Europeans, also gave rise to the fertile yet thin layer of topsoil.

The major influence that the Europeans had on the land started in approximately 1870 with the logging era. Most of Barron County was logged off and agriculture began in approximately 1915. The 1920s brought dairy farming, which continues to be a major part of our agricultural economy to date. Today in Barron County, there are approximately 1600 farms which cultivate 230,700 acres of land. Barron County ranks in the top eight counties in the state in the total value of agricultural products sold. In 2012, the last year in which data is available, agriculture contributed \$537 million to the county's total income. The primary animal agriculture in Barron County is dairy farming, followed by poultry, in particular turkeys, and a minor beef industry. The cropping agriculture of Barron County includes corn, soybeans, alfalfa, snap beans, and small grains.

Public Participation

An advisory committee of twenty citizens with various backgrounds and agency personnel was chosen to review the plan and offer suggestions. The committee met twice in November; minutes of these meetings are on file at the SWCD office. A public hearing was held July 11, 2019 with six members of the public in attendance. A copy of the public notice is in the appendix and minutes and affidavits of publication are on file at the SWCD. The Barron County Board of Supervisors approved the 2019 Land and Water Resource Management Plan on August 19, 2019.

Resource Concerns

Wisconsin Act 27, Chapter 92 of the Wisconsin Statutes was amended to require counties to develop a land and water resources management plan. The plan will be primarily focused on soil conservation and water quality, describing our implementation strategies for bringing County landowners in compliance with NR 151 standards. It defines our resource concerns as:

- Soil Erosion & Depletion
- Non-Point Pollution of Surface Water
- Loss of Productive Farmland
- Quality & Quantity of Groundwater
- Loss of Resources/Habitat Protection
- Protection of Forested Areas & Wildlife Habitat

The plan will lay out the objectives for addressing these concerns and will identify the federal, state and local resources that will be used.

High Priority Work Plan

The work plan chart identifies the goals and associated action items necessary to improve or maintain the resources specified as priorities. It is broken down by resource concern and includes partner agencies, funding sources and evaluation tools.

Priority Farm Designation

A farm in Barron County will be given priority status if one or more items from each of the categories below pertain to that farm:

- **Sites with known State Manure Prohibitions**
 - Overflow of manure storage facilities.
 - Unconfined manure piles in a water quality management area.
 - Direct runoff from feedlots or stored manure into state waters.
 - Unlimited livestock access to waters of the state in locations where high concentrations of animals prevent the maintenance of adequate or self-sustaining vegetative cover.
- **FPP participants** needing assistance to achieve or maintain program eligibility.
- **Medium CAFO** Farms with between 300 and 999 animal units
- **Located on glacial outwash soils** - for situations potentially impacting groundwater
- **Location of farm** – the sites above will be given additional precedence if found to have direct influence on:
 - Impaired waterbody on the 303(d) list.
 - Exceptional or Outstanding Water Resource

Performance Standards & Prohibitions Implementation

Implementing the Agriculture Performance Standards and identifying and rectifying manure prohibitions are main components of the 2019 LWRMP.

Monitoring & Evaluation

A variety of tools will be used to monitor and evaluate plan effectiveness, including an annual soil erosion transect survey, FSA cover crop reporting, GIS tracking of the status of manure storage facilities and prohibition violation sites, conservation planning and nutrient management planning. The LCC will review the plan annually, assessing progress as outlined in the plan.

Conclusion

The public has a vested interest in protecting soil and water resources. Barron County has productive soils that are the result of thousands of years of formation. The loss of soil productivity would diminish the agricultural portion of our economy and degrade the lakes, rivers and wetlands, harming our quality of life in Northern Wisconsin.

Although landowner participation is key, implementing many aspects of this plan is dependent on funding from the State and County. Currently, the State statutory funding amounts are not being met and are inadequate to fully implement all work plan actions. Creation of the two additional positions as described in this plan is vital to accomplish all the work outlined in this plan.

PROGRESS 2011-PRESENT

Conservation projects

- Manure storage closures: 24 facilities were closed through the work of Barron County staff. We partnered with NRCS for funding through the EQIP program for many of these projects.
- Barnyard runoff systems: 5 projects were installed. Combined phosphorus reduction of 348 lbs. per year from the BARNY Model.
- Milkhouse waste collection system: 1 project was completed to eliminate a discharge site by diverting it to an existing manure storage facility.
- Stream and lakeshore fencing: 6 projects installed for a total 10,800' of fencing.
- Clean water diversions: 3 projects established for a total of 1800' of diversions.
- Grassed waterways: 13 projects for a total of 10,000' of waterways.

Farmland Preservation Plan and Ordinance updates

In 2015 the Barron County Farmland Preservation Plan was updated. This allows FPP areas within the towns of Clinton, Cedar Lake and Doyle to be certified. Individuals can now petition to rezone into the A-1 district if they meet district criteria. In addition, the density standards for housing in this Exclusive Ag district were changed to give farmers more options without fragmenting their land. Ag Preservation Covenants are used to protect cropland and help divert new residences to non-cropped areas

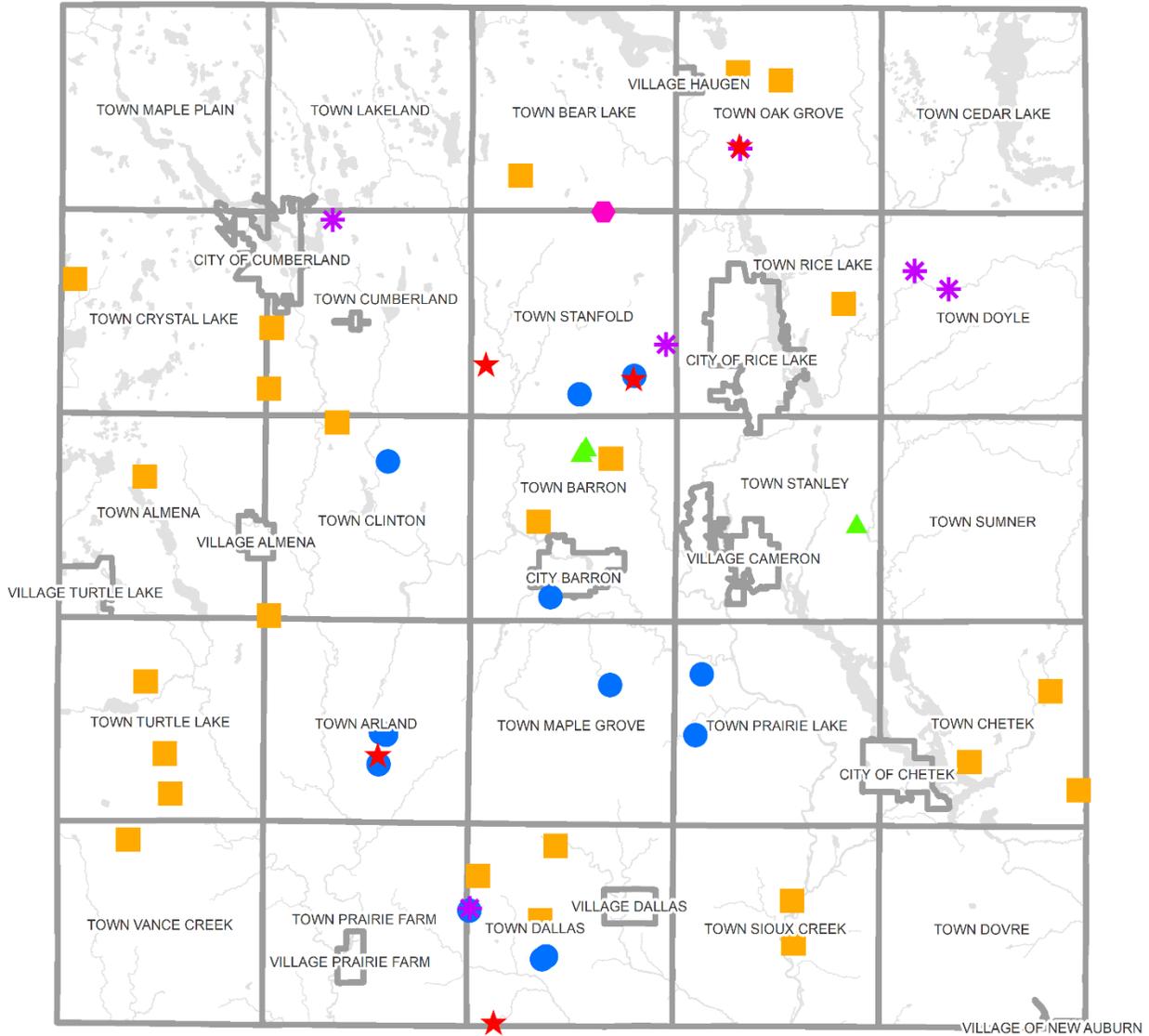
Since ordinance revision in 2016, 2314 acres have been certified and rezoned in the Town of Clinton to allow this acreage to become eligible for the Farmland Preservation Program as the compliance measures are achieved.

A total of 211 Certificates of Compliance have been issued in Barron County for a total of 46,177 acres.

Department efficiencies

At the time of the previous Land & Water Resource Management Plan in 2011, the Soil & Water Conservation Department was merged into the Department of Land Services along with the Zoning and Land Information Departments. In addition to moving into the same physical location, efficiencies in shared initiatives within the department have also been realized in areas such as the Farmland Preservation Program, GIS mapping, and lakeshore development and restoration.

CONSERVATION PROJECTS 2011-2019



**BARRON COUNTY
LAND & WATER RESOURCE
MANAGEMENT PLAN 2019-2028**

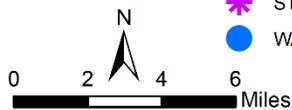


BARRON COUNTY
SOIL & WATER
CONSERVATION
DEPARTMENT

PROJECT TYPE

- AWSF CLOSURE
- ★ BARNYARD
- ▲ DIVERSION
- ◆ MILKHOUSE WASTE
- ✱ STREAM FENCING
- WATERWAY

- MUNICIPAL BOUNDARY
- SURFACE WATER



05/03/2019

Barron County Soil and Water Conservation Department

MISSION STATEMENT

Our mission is to promote, assist and implement wise land use decisions in order to protect and sustain Barron County's soil, water and other natural resources.

*The mission statement was updated on October 6, 2008 by the Land Conservation Committee.

ASSESSMENT OF NATURAL RESOURCES

Soil

While Barron County shares the same average precipitation and climate as other counties on the same latitude, it boasts much more productive soils. The reason for this is that the Late St. Croix lobe of the Wisconsin glacier stopped in northwestern Barron County (with State Highway 63 running along the moraine). This allowed soil formation to continue on previously glaciated areas, producing the foundation for our current dairy industry. After the Ice Age, Barron County became predominantly forested, and the soils that formed over the next 10,000 years were the typical thin, but fertile, forest soils. Logging of Barron County began about 1870 and continued for about forty years. Once the forests had been cleared, agriculture was the next industry to use the soils of Barron County. Today, nearly 230,700 acres or 40% of Barron County land is under agricultural production.

After the last Ice Age and after 10,000 years of forested condition, a typical soil profile in Barron County is 10-12 inches of silt loam soil, underlain by several inches of silty loam subsoil and further underlain by glacial till or sandy outwash.

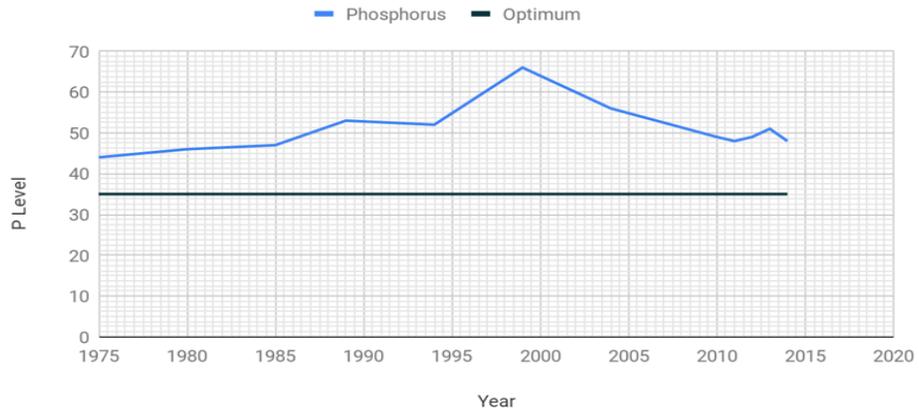
Conserving our soil must become our primary goal. The Tolerable “T” soil loss for soils in Barron County ranges from 3 – 5 tons/acre/year.

However, T or “tolerable soil loss,” has no scientific basis and is higher than the rate of the soil formation process. Therefore, we should actually be striving to reduce soil loss to below T. In order for a soil to be farmed at a sustainable rate, or at the same rate of soil formation, the soil loss per acre would need to be approximately 1.5 ton /acre/year. Traditionally it was felt that soil formation in cropland was not possible. However, the science of soil health has shown that it is possible to “grow” the soil using the 5 Principles of Soil Health as follows:

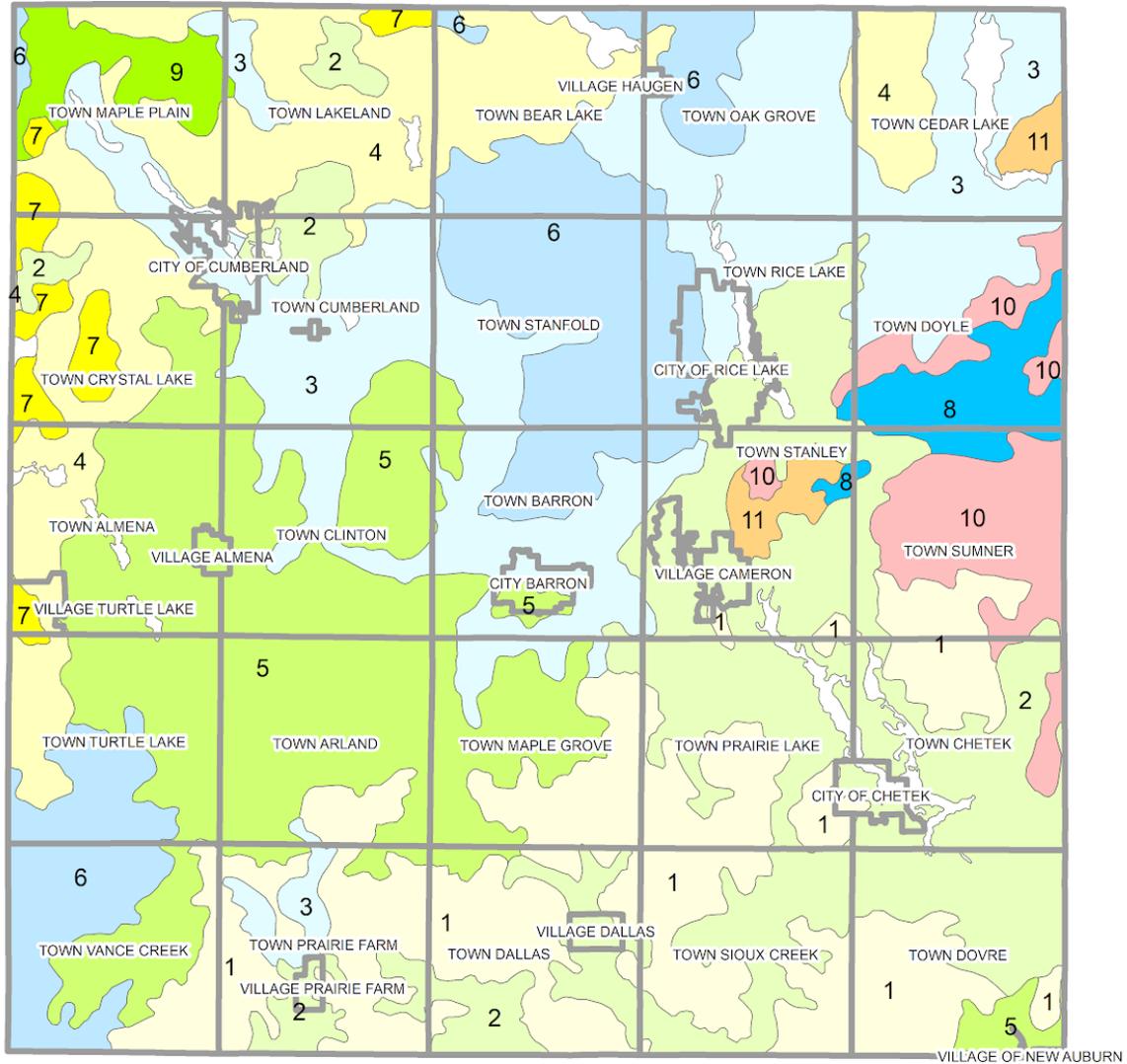
- 1. Armor the soil**
- 2. Minimize soil disturbance**
- 3. Increase plant diversity**
- 4. Keep a living root at all times**
- 5. Integrate Livestock - Grazing**

From years of farming, both dairy and turkey manure production, along with naturally occurring sources, Barron County soils have developed high levels of phosphorus. This makes the implementation of nutrient management that much more critical as an environmental protection tool. By applying P only to crop needs in conjunction with using conservation practices that limit runoff of soluble and particulate P, we will over time reduce soil test P levels to an acceptable range while improving water quality.

Barron County Average Soil Phosphorus Levels



SOIL ASSOCIATIONS



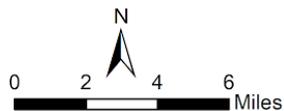
▬ MUNICIPAL BOUNDARY SOIL LEGEND

- 1-ARLAND-HAYRIVER-FREEON
- 2-CHETEK-ROSHOLT-MENAHA
- 3-ANIGON-ROSHOLT-CHETEK
- 4-HAUGEN-GREENWOOD-AMERY
- 5-FREEON-SPENCER-MAGNOR
- 6-FREEON-HAUGEN-MAGNOR
- 7-CRYSTAL LAKE-COMSTOCK-BARRONETT
- 8-RIBHILL-MAGNOR-FREEON
- 9-CRESS-MAHTOMEDI-SEELYEVILLE
- 10-FREEON-MAGNOR-NEWOOD
- 11-NEWOOD-NEWOT

BARRON COUNTY LAND & WATER RESOURCE MANAGEMENT PLAN 2019-2028



BARRON COUNTY
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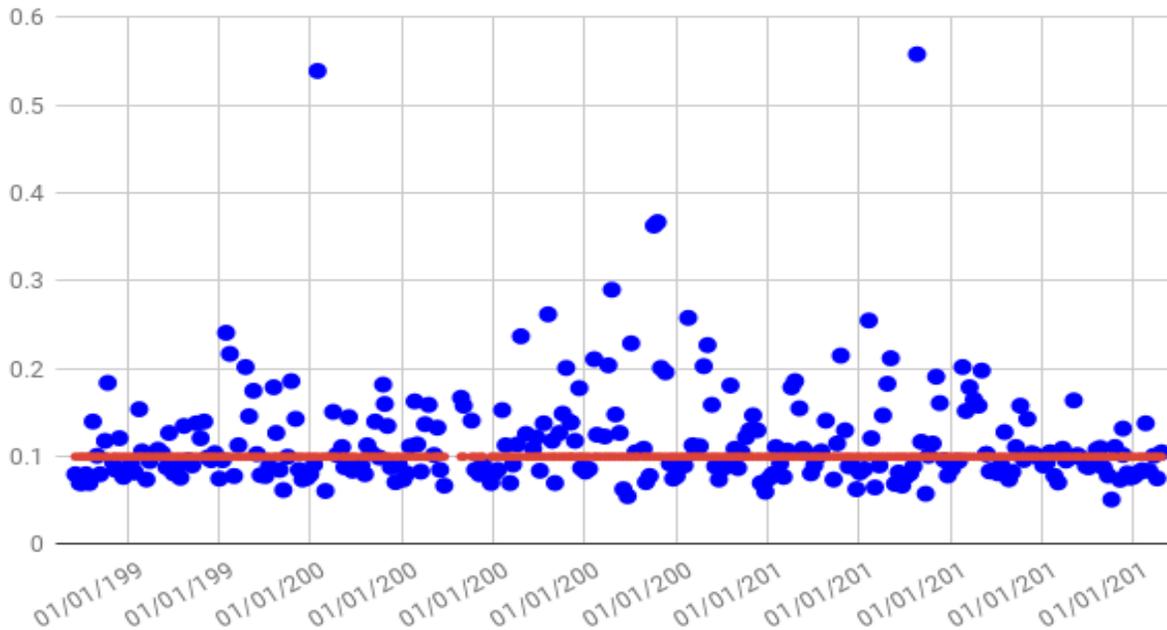
SOURCE: USDA/NRCS

04/11/2019

Surface water quality

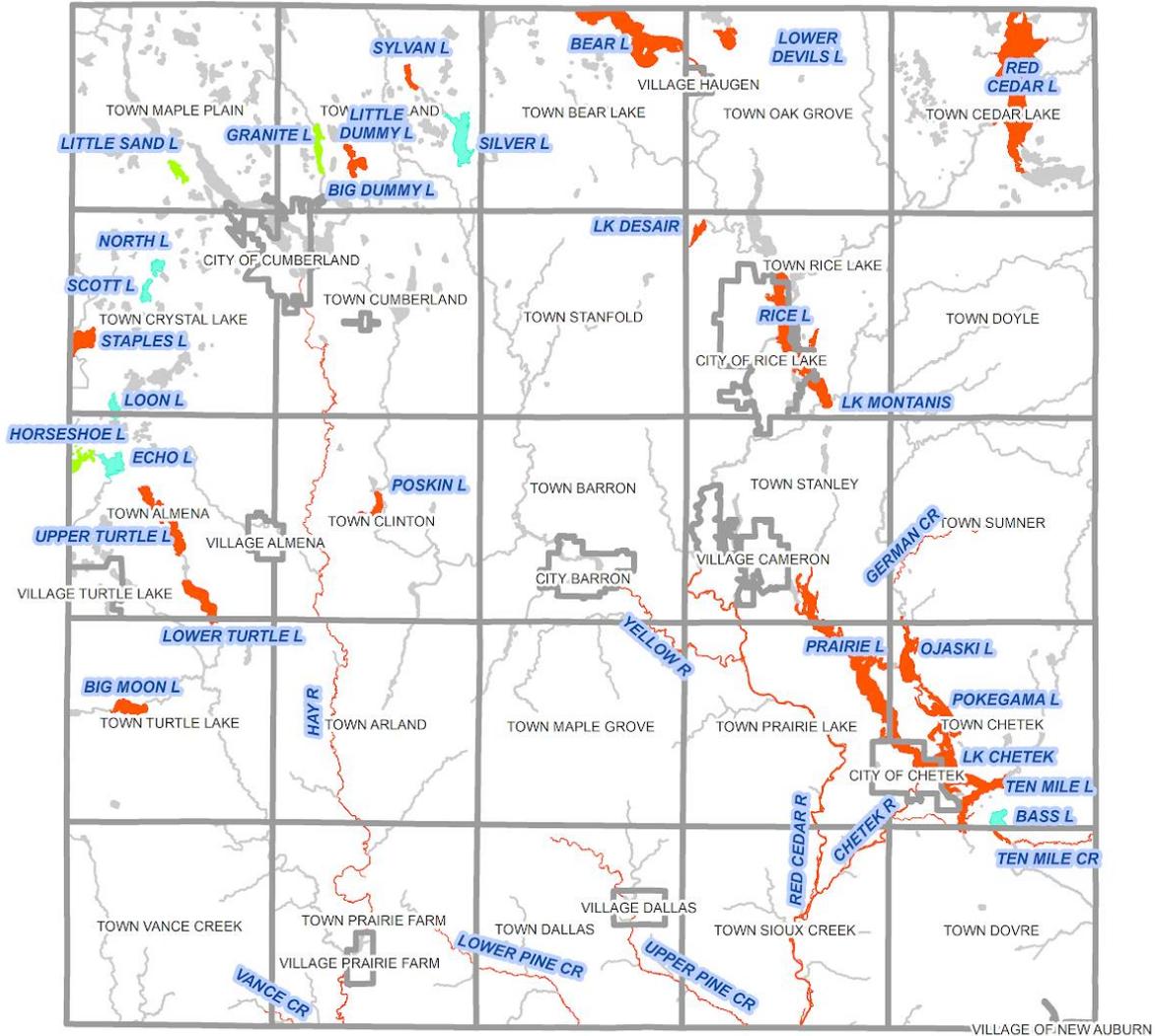
With 364 lakes and 470 miles of rivers and streams, water is important in Barron County. While water quality varies from water body to water body, generally most lakes, rivers and streams in Barron County have been adversely affected by non-point pollution. The greatest source of non-point pollution is soil sediment from erosion and the nutrients that it carries. The amount of pollution from barnyard feeding operations has decreased with the number of farms and a change in management philosophy to increased confinement.

In Barron County there are several bodies of water-designated as 303(d) (impaired) by the WDNR and US EPA. Among those with excess nutrient problems are the Red Cedar River, Hay River, Yellow River, Lake Desair, Rice Lake, and the Chetek Chain of Lakes. Nearly all of Barron County (excluding the Clam River and Apple River Watersheds on our western border) drains to the Red Cedar River and ultimately Tainter Lake in Dunn County which is also on the 303(d) list. It is the designation of Tainter and Menomin Lakes as impaired that the TMDL and its implementation plan, “A River Run Through Us: A Water Quality Strategy for the Land and Waters of the Red Cedar River Basin” were developed. The Clam and Apple Rivers watersheds drain to the St. Croix River which also has had a TMDL plan and implementation plan developed. See pages 53 – 58 for further description of the TMDLs.



**Monthly phosphorus samples from the Red Cedar River at Menomonie from 1994 - 2018
Red Line is the goal level for rivers in Wisconsin. Vertical axis is in Mg/l**

IMPAIRED WATERS



BARRON COUNTY LAND & WATER RESOURCE MANAGEMENT PLAN 2019-2028



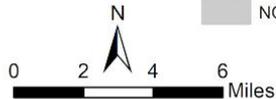
BARRON COUNTY
SOIL & WATER
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EPA303D TYPE

- ALGAE
- MERCURY
- PHOSPHORUS
- NOT IMPAIRED

MUNICIPAL BOUNDARY

SOURCE: EPA & WIDNR

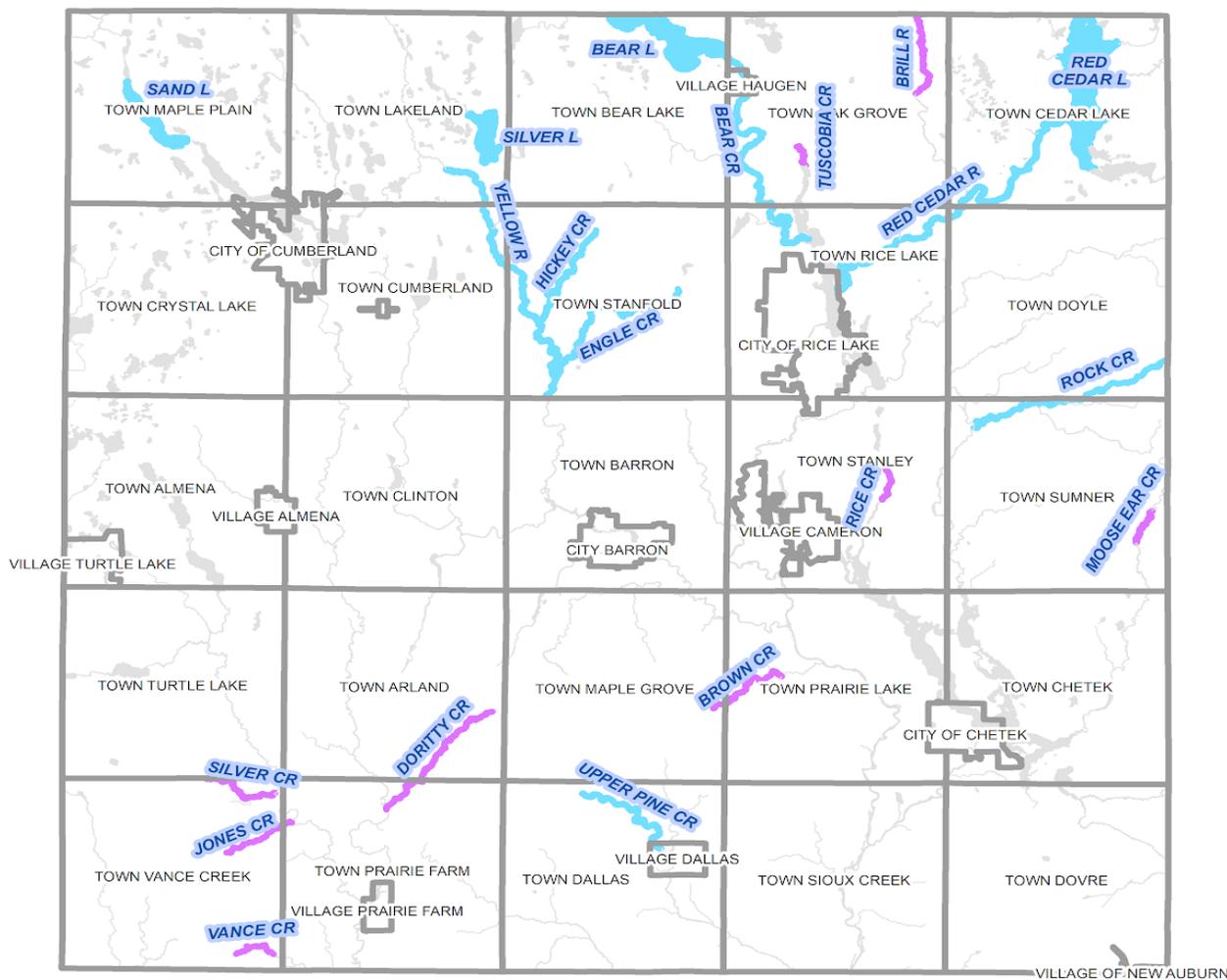


02/26/2019

Outstanding & exceptional resource waters

Wisconsin has designated many of the state’s highest quality waters as Outstanding Resource Waters (ORWs) or Exceptional Resource Waters (ERWs). Waters designated as ORW or ERW are surface waters which provide outstanding recreational opportunities, support valuable fisheries and wildlife habitat, have good water quality, and are not significantly impacted by human activities. These waters have been determined to warrant additional protection from the effects of pollution, with ORWs receiving maximum protection. ERWs may have had some influence from point sources. See Appendix F for a detailed list.

OUTSTANDING & EXCEPTIONAL RESOURCE WATERS



**BARRON COUNTY
LAND & WATER RESOURCE
MANAGEMENT PLAN 2019-2028**



BARRON COUNTY
SOIL & WATER
CONSERVATION
DEPARTMENT

STATUS

- █ OUTSTANDING RESOURCE WATERS
- █ EXCEPTIONAL RESOURCE WATERS
- █ OTHER
- █ MUNICIPAL BOUNDARY

SOURCE: WIDNR



02/26/2019

HUC-12 watersheds

The United States is divided and subdivided into successively smaller hydrologic units which are classified into four levels: regions, sub-regions, accounting units, and cataloging units. The hydrologic units are arranged or nested within each other, from the largest geographic area (regions) to the smallest geographic area (cataloging units). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to eight digits based on the four levels of classification in the hydrologic unit system.

The first level of classification divides the Nation into 21 major geographic areas, or regions. These geographic areas contain either the drainage area of a major river, such as the Missouri region, or the combined drainage areas of a series of rivers, such as the Texas-Gulf region, which includes a number of rivers draining into the Gulf of Mexico. Eighteen of the regions occupy the land area of the conterminous United States.

The HUC-12 is the size watershed that was used in the Red Cedar Basin TMDL, and the last 3 digits (of the 12) are needed to identify the unique watershed.

The current conditions of each watershed are described, followed by what the focus of planned work.

Summary of Watershed Priorities

Watershed	Reduce Nonpoint source pollutants	Reduce Soil Erosion	Protect Outstanding & Exceptional Waters	Susceptible to groundwater contamination
Upper Yellow River	High	High	High	High
Vermillion River	Low	Medium	N/A	High
Lower Yellow River	High	High	N/A	High
Fourmile & Quarderer's Creeks	Medium	High	N/A	Medium
Brill, Fenton, Rice, Upper Red Cedar	Medium	Medium	High	High
Bear and Tuscobia Creeks	Medium	High	Medium	Medium
Desair Lake	High	High	N/A	Low
Spring Creek	Low	Medium	N/A	High
Chetek Chain of Lakes	Medium	High	Medium	High
Brown's Creek and Lower Red Cedar	Medium	High	High	High
Pine Creeks	High	High	Medium	High
South Fork Hay River	High	High	N/A	Low
Upper Hay River	High	High	N/A	Medium
Upper Turtle Creek	Medium	Medium	N/A	High
Lower Turtle, Silver & Vance Creeks	High	High	High	Medium
Lower Hay River	High	High	High	Medium
Staples & Sand Lakes	Medium	Medium	N/A	Medium

Upper Yellow 201

This watershed includes several small headwater streams in addition to the Yellow River: Trout Creek, Granite Creek, and unnamed streams in the Sylvan and Silver Lake drainage systems. The Yellow River is classified as Class II trout water downstream of Hwy B.

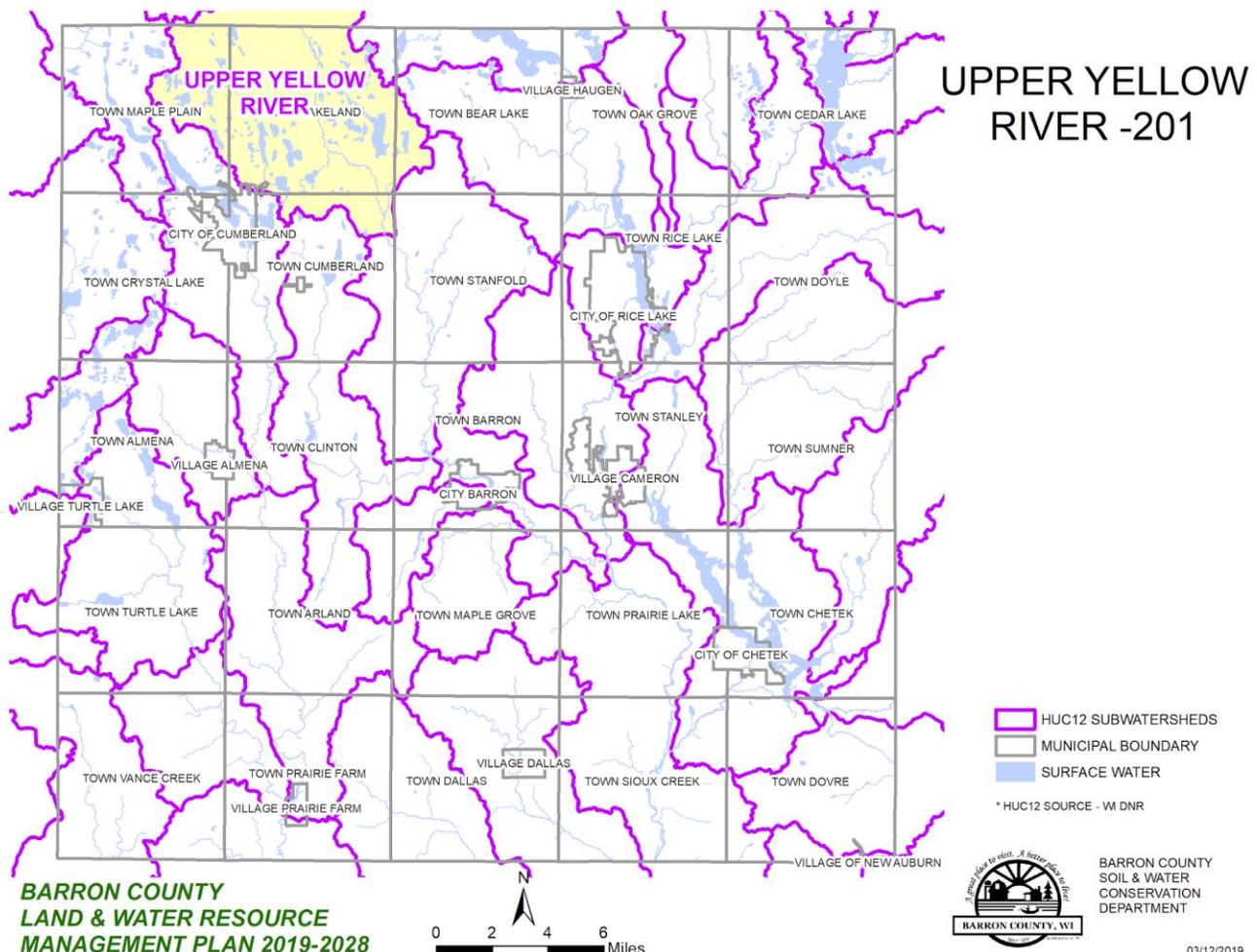
The western portion of this watershed was diverted into the Beaver Dam Lake/Hay River system in the 1930s.

The watershed has agricultural areas north and south of the terminal moraine which bisects it. North of the moraine there are 4 dairy farms, 3 of which have adequate manure storage to prevent winter spreading. Two of the sites have had conservation projects done in the past to eliminate significant discharges. In observing the 2018 orthophoto, some corrections to the management of these areas should be addressed.

Focus

South of the moraine, there are 2 dairy farms that have done projects to correct areas of significant discharge. Neither of them have long-term manure storage. The majority of this area has a corn-soybean rotation along with some snap bean production.

There are also some areas delineated as potential cropland buffer areas.



Vermillion River 202

The Vermillion Lakes form the headwaters of the Vermillion River. It is a warm water stream that flows south into and then out of Poskin Lake, which is on the impaired waters list. Below Poskin Lake it is considered a nursery area for smallmouth bass due to its connection to the larger Yellow River.

The north and central portions of the watershed have converted to a cash grain and snap bean production area. There is a medium CAFO in the southern portion, which has adequate winter storage.

Sweeney Pond Creek flows north and joins the Vermillion north of Hwy 8. This subshed has 4 small dairies, all with manure storage.

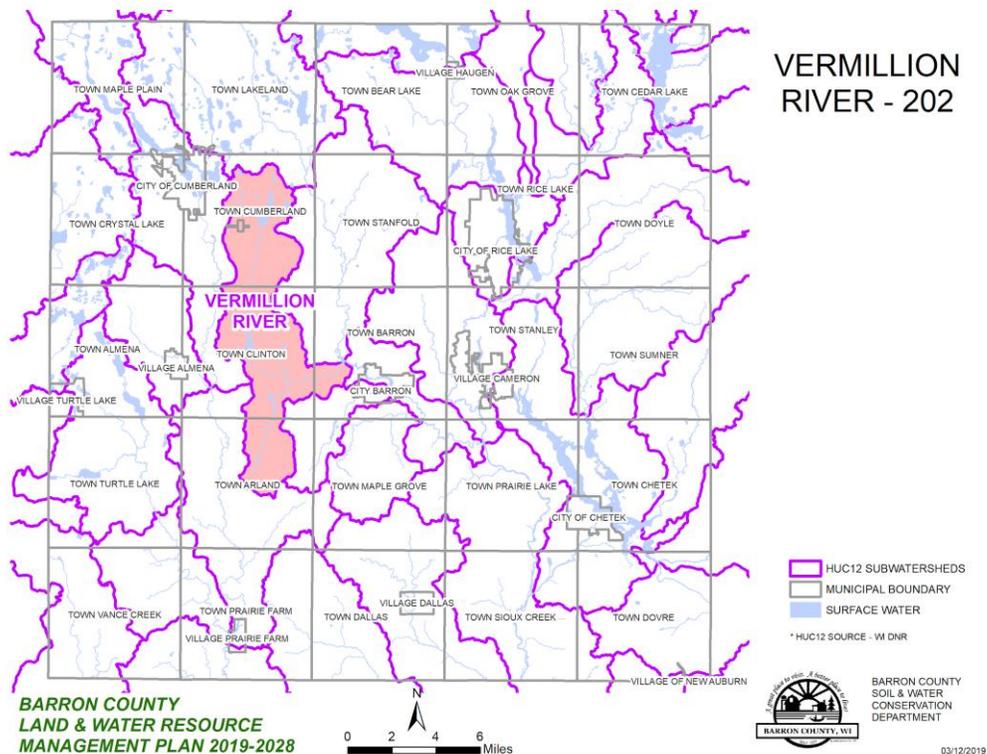
Sweeney Pond Creek has a significant wild rice population. Generally it is felt that wild rice is an indicator of good water quality. This population has expanded down the Vermillion River and is occasionally found in the Yellow River in Barron. Clear water is important to rice, so reducing sediment loss from adjacent land is important.

Focus:

There are 3 idle earthen manure storages that should be closed.

The area upstream of Poskin Lake has been inventoried for areas of concentrated flow that are cropped through. These are relatively low gradient and not prone to creating deep gullies and are typically addressed on an annual basis with tillage. Although these only flow during large events and when the soil is frozen, they are a prime location for the transport of sediment and nutrients to the Vermillion River and should be revisited to establish grass in these areas.

Increasing soil health principles, especially in the sandy outwash areas.



Yellow River 203 and 206

This section runs from Hwy 48 to the Red Cedar River. It is a Class II trout stream above the Barron Flowages. Engle and Hickey Creeks are tributary streams to Yellow River. Both streams are Class I brook trout streams that serve an important role to the Yellow River.

There is a CAFO in the watershed that has upgraded its storage. However, it has some outdoor lots that need to be addressed.

There was a significant discharge site that was addressed through the construction of a barnyard and vegetated treatment area at one of the farms in 2013. Two other barnyard projects were installed in this area during the Yellow River Priority River Project of the 1990s. As a reference to the change in agriculture, 37 barnyards on dairy farms were inventoried in this area in 1990, and today there are only 3.

Engle Creek is a 9-mile-long low-gradient tributary. There are 2 small active dairy farms in the watershed. Neither of them have winter storage, so there is a threat of runoff from winter-spread manure. There are no active runoff sites of significant discharge. It is classified as an Outstanding Resource Water and is a Class II trout stream.

Hickey Creek is a moderate-gradient tributary. It is classified as both an Outstanding Resource Water and a Class I trout water above Hwy 48 and Class II below.

There are 4 dairy farms in the watershed with 3 of them having winter storage.

After flowing through the 3 Barron Flowages, the Yellow River continues on 7 miles until reaching the Red Cedar River. There are two dairy farms in this region, one of which had the largest barnyard runoff system installed during the Yellow River watershed project.

Focus:

The bedload of the stream includes large quantities of fine sediments. Work must be done to reduce additions of sediment. Nutrient Management Planning and grassed waterways will be important in this area. With the conversion from dairy to cash cropping, this reduces the amount of land in perennial forages. Increasing the soil health principles is needed in this area. There is a considerable amount of corn silage grown for the CAFOs and, with it, liquid dairy manure produced. The largest of the CAFOs has recently invested in low disturbance injection equipment.

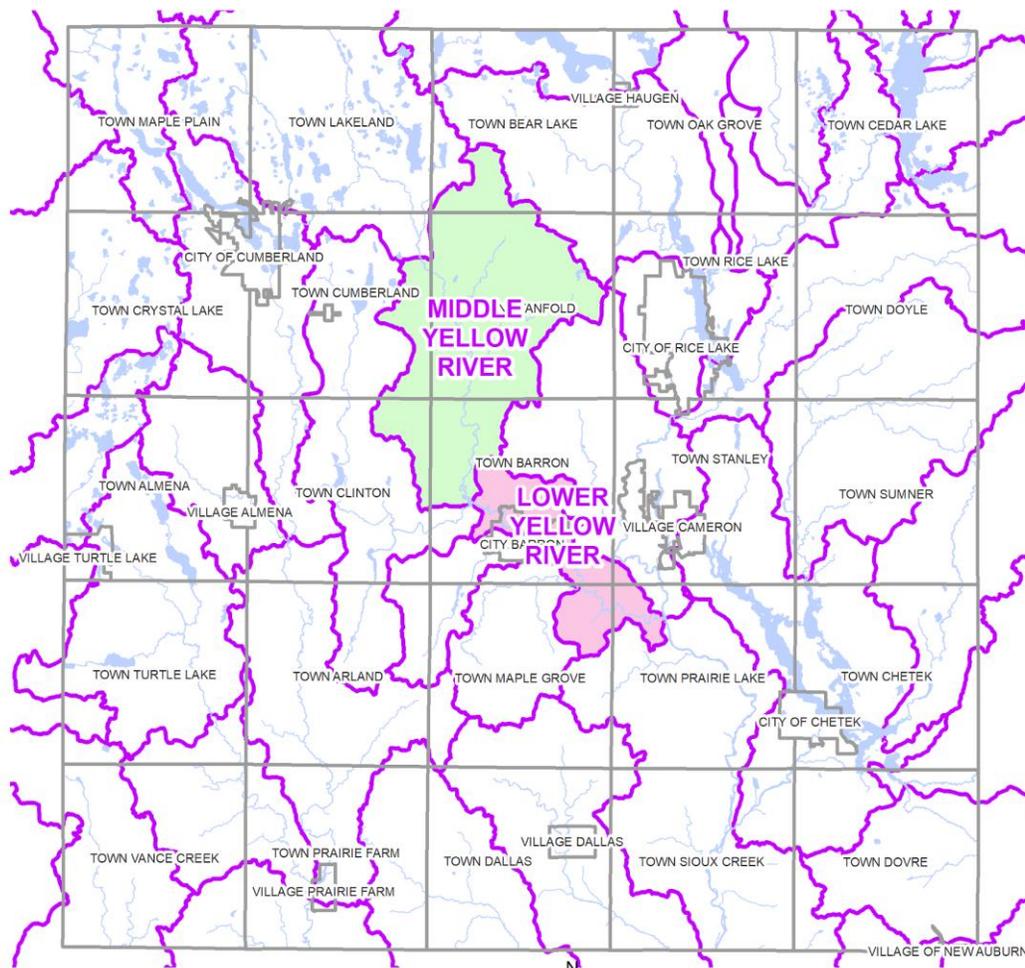
There is a runoff site at a medium CAFO that needs to be addressed.

There are two idle earthen manure storages that should be closed.

There is one farm with a significant discharge. It is located high in the landscape and should be able to be corrected with a combination of clean water diversion, fencing, and access lanes.

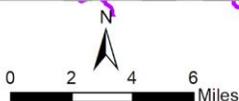
The Jennie-O Turkey Store maintains its own wastewater treatment plant downstream from the City of Barron. They are working to determine how to meet lower phosphorus discharge limits for their wastewater. Two options that may involve Barron County would be using the Multi Discharge Variance and the Phosphorus Trading Programs.

YELLOW RIVER 203 & 206



-  HUC12 SUBWATERSHEDS
 -  MUNICIPAL BOUNDARY
 -  SURFACE WATER
- * HUC12 SOURCE - WI DNR

**BARRON COUNTY
LAND & WATER RESOURCE
MANAGEMENT PLAN 2019-2028**



BARRON COUNTY
SOIL & WATER
CONSERVATION
DEPARTMENT

03/26/2019

Fourmile Creek 205 and Quaderer's Creek 204

Fourmile Creek is approximately 11 miles long with a moderate gradient and is a tributary to the Yellow River below the City of Barron. It is classified as a Class II trout water and has a moderate abundance of brook trout.

Quaderer's Creek is a warmwater stream that flows northwest into the City of Barron where it joins the Yellow River below the lower dam. There is a shallow, one mile long wildlife pond managed by the Wis DNR about midway through its journey to Barron. Below the pond, the stream meanders through a wetland and has very little gradient until reaching the City of Barron. Runoff from the City of Barron south of Hwy 8 drains into the creek.

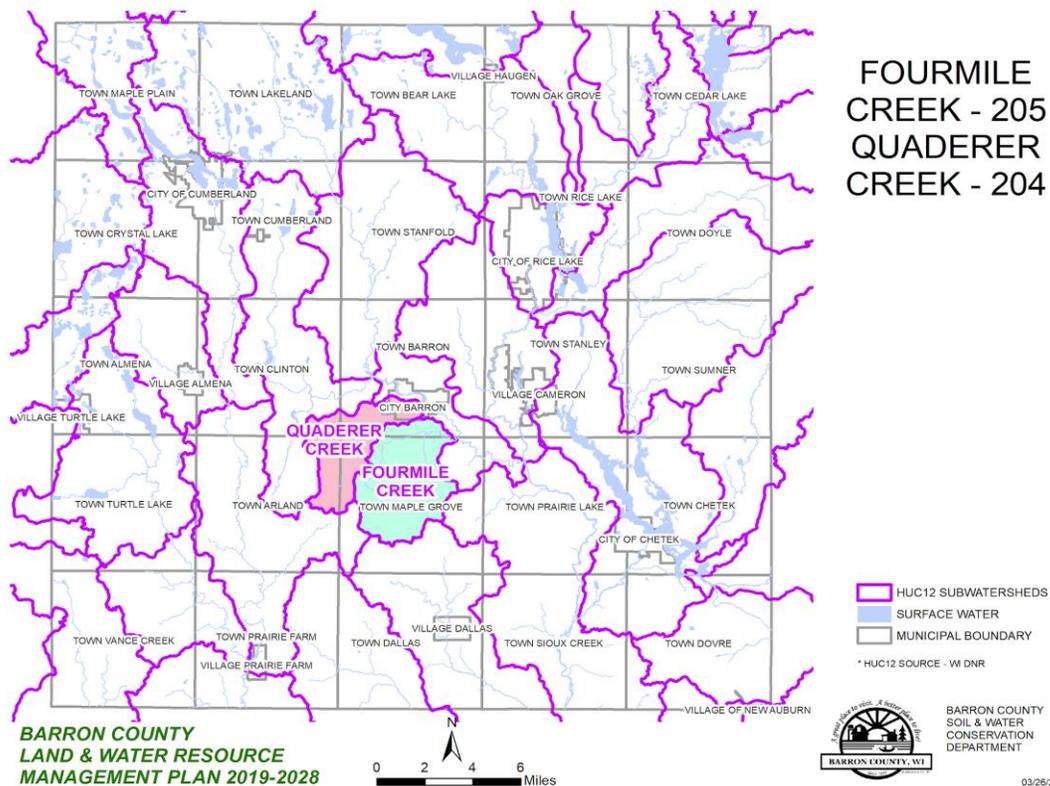
There has been a significant decrease in the number of dairy farms in the watershed as shown by the 13 manure storage facilities that have been closed, and 4 others which are idle. Two of them are earthen and should be a priority for closure. Two Medium sized CAFOs in this area have adequate winter storage. Eight other small dairy farms are located in the watershed, many of them with manure storage.

There was significant grazing of the streams 20 years ago. This has been eliminated with only a small number of cattle occasionally accessing the stream.

Focus:

This area has had some considerable cropland erosion in recent years. Several grass waterways have been recently installed and several more are planned.

Managing soil and nutrient loss in the corn silage and liquid dairy manure environment is critical. Measures such as low disturbance injection of manure, cover crops and no-till planting are needed in this watershed.



Brill, Red Cedar, Rice Lake and Fenton Lake 303, 304, 305, 309, 102, 103, 104,105

This includes the Brill River (303), Upper Red Cedar River (305) and Fenton Lake (304) as well as the watersheds leading to Red Cedar Lake (102, 103,104,105).

Both the Brill River and the Upper Red Cedar are outlets of large Outstanding Resource Waters (Long and Red Cedar Lakes). As such, they have relatively constant flows. The Brill River has a cool-warmwater fish community and has a fairly diverse population of minnow and sucker species. The middle section of the Brill River is a Class II trout stream for brook trout and brown trout and supports a quality trout fishery.

A substantial percentage of the phosphorus budget to Red Cedar Lake comes from the Big Chetac watershed (102). The Red Cedar Hemlock Lakes Association is working on this issue with the Big Chetac Lake Association.

The area is classified as pitted outwash with row crop production being the predominant farming. There are 21 center pivot irrigation units in the area. Nitrate levels are a concern in outwash areas in Barron County. Well water testing data needs to be improved to check the levels.

The Fenton Lake Watershed (304) is known in the office as the “Super Waterway.” It’s a 9-mile-long intermittent stream starting at the Washburn County line and running south until reaching the Red Cedar River just above its entrance to Rice Lake. For the majority of its path, the streambed is farmed. The average slope of the channel is only 0.2%, and thus there is very little visible erosion. However, the stream can have substantial flows during the spring runoff period. Water running over bare soil will pick up nutrients and transport them downstream. This type of runoff is being found by the UW - Discovery Farms program as having the potential for large amounts of soluble phosphorus to leave these sites. Work should be done to establish permanent grass in this area. This is further described in the Concentrated Flow section of this plan.

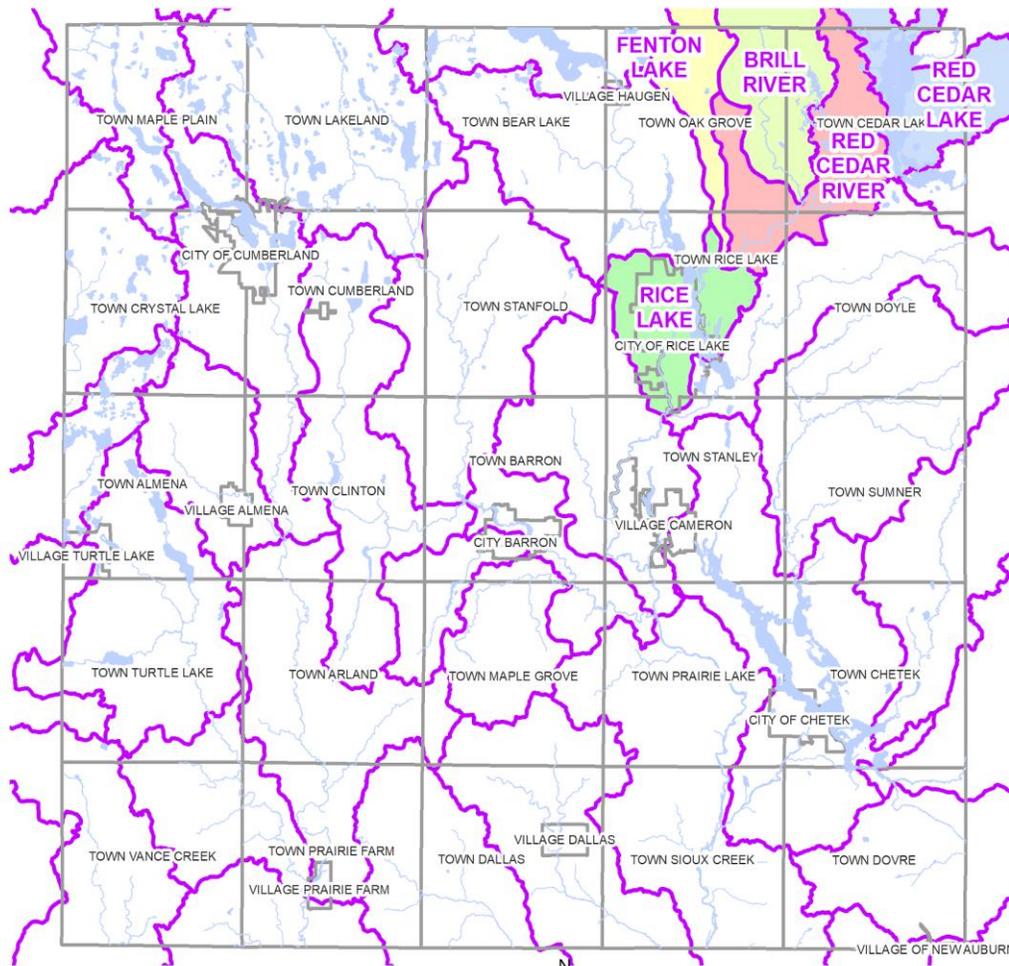
The City of Rice Lake and the lake itself are the majority of HUC 309. The City of Rice Lake along with Lake District are working on stormwater issues.

Focus:

Establishing permanent vegetation in areas of concentrated flow.

There are 6 active and 6 idle manure storage facilities in the watersheds. Two of the idle storages are earthen and should be a priority for closure.

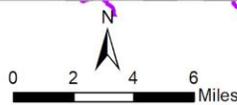
There is one site with the potential to be classified as a significant discharge. Possible corrective measures include clean water diversion and fencing.



BRILL RIVER
303
FENTON LAKE
304
RED CEDAR
RIVER - 305
RICE LAKE 309
RED CEDAR
LAKE - 105

* HUC12 SOURCE - WI DNR

**BARRON COUNTY
LAND & WATER RESOURCE
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Bear Creek and Tuscobia Creek 306, 307

These are 2 of the 3 direct headwater streams of the Rice Lake system. Tuscobia Creek drains into the north end of Tuscobia Lake and is an Exceptional Resource Water and a Class I trout stream. Bear Creek, formed by the outlet of Bear Lake, which is on the impaired waters list due to phosphorus levels, contains a diverse warmwater fish community and is considered an Outstanding Resource Water. Little Bear Creek, a tributary to Bear Creek, is a considered coolwater fish community and is classified as a Class II brook trout stream.

There are 4 dairy farms in the Bear Creek watershed along with several farms raising youngstock. Three of the 4 dairies have adequate manure storage. There is also a hog facility and a bison ranch.

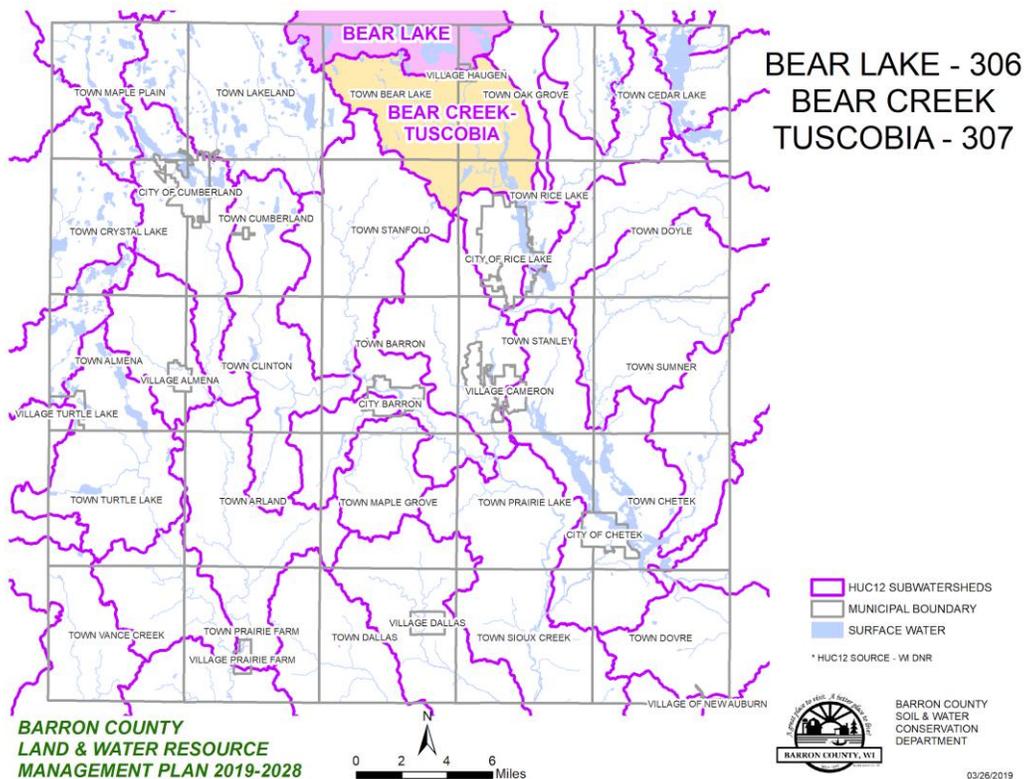
There are 3 dairy farms in the Tuscobia Creek watershed. One of them has adequate manure storage. A barnyard runoff system was installed on one of the farms in 2015, correcting a significant manure discharge situation. Dredging of sediments from the spring ponds was done in conjunction with the barnyard project, and a 2018 survey found large numbers of brook trout in areas previously inhabited only by tadpoles and sticklebacks.

Focus:

The area has glacial till soils that are prone to erosion, especially in the areas of long slopes. Soil conservation and nutrient management plans should be implemented.

There is one farm that has youngstock located in a watercourse that could be corrected with a clean water diversion and some fencing.

There is one idle earthen manure storage facility that is located in an outwash area and should be closed.



Desair Lake Watershed (See Bear Creek map)

The Desair Lake watershed is subwatershed of the Bear Creek watershed upstream of Rice Lake.

Desair Lake was one of the first lakes in the county classified as an Impaired Water. It is a relatively small watershed of 3900 acres and, because of focused conservation projects for the last 25 years, it receives its own description.

Past projects:

- Two large wetland enhancements, greatly reducing the discharge from 400 acres.
- A sediment basin near the lake that controls the runoff from 37 acres was installed in 2003. Additional work has been done on the intermittent stream leading to it. A field at the headwater has an infiltration swale to further aid in reducing runoff.
- A series of grade-stabilizing gabion structures in a gully that leads directly to the lake. This area was a barnyard with a significant discharge of nutrients to the lake. There are no longer cattle at the site.
- The Lake Association has installed 1463 feet of streambank riprap on the main inlet stream to the lake. This watershed is very flashy and, as such, has caused considerable bank erosion in the past. They have also created a 10-acre prairie in this area on highly erodible land.
- One significant barnyard discharge site is no longer an issue due to cattle no longer being present. The farming practices have changed over the decades in that there are no longer any cattle on outdoor feeding areas in the watershed.
- There is a medium sized CAFO in the watershed. In the last 10 years, they have installed a waste storage facility and a separate leachate collection facility.
- The lake association has been active, monitoring water quality for 25 years, maintaining an aerator for fish survival, and there is a slow-no-wake ordinance on the entire lake.

Focus:

The watershed has many long slopes which are prone to erosion.

Managing soil and nutrient loss in the corn silage and liquid dairy manure environment is critical. Measures such as low disturbance injection of manure, cover crops, and no-till planting are needed in this watershed.

Spring Creek 308

Spring Creek originates in the Blue Hills of Rusk County and drops onto the outwash plain east of Rice Lake. It flows through Lake Montanis and then on to the Red Cedar River below Rice Lake. It exhibits characteristics of an alluvial fan where it drops out of the Blue Hills. There was a proposal in 1964 to address flooding issues under the PL-566 program. In 2005 a 10" rainfall caused the stream to leave its main channel and flood a closed depression in the landscape.

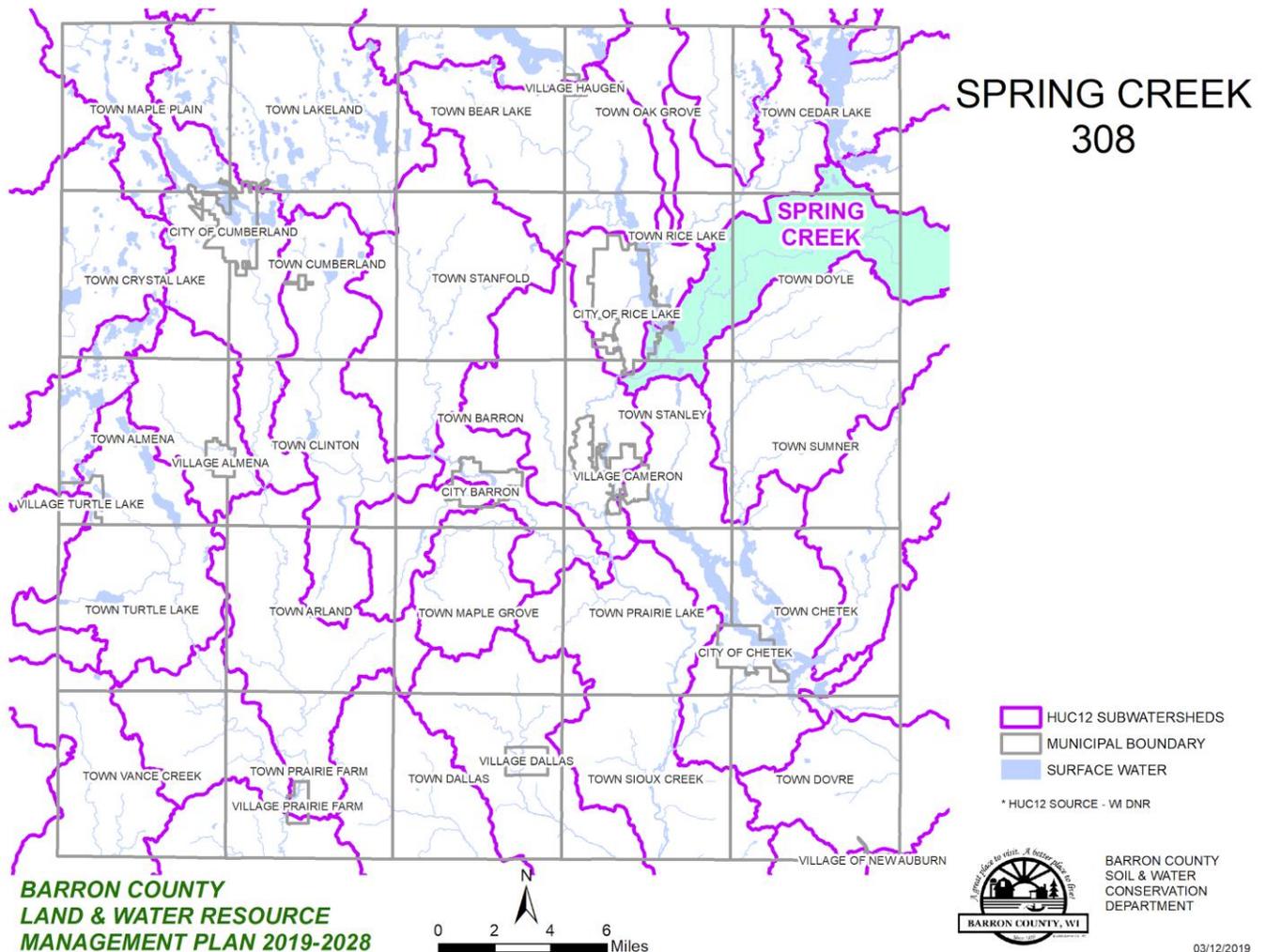
The stream is classified as a Class II trout stream in its lower 2 miles. Base flow can fall to very low levels in dry years.

There is one dairy farm in the watershed, and it has adequate manure storage in a modern concrete facility.

One significant discharge site on the stream and one on a side stream have been corrected through fencing.

Focus:

This area should be investigated for Nitrate levels in the groundwater. Surveys show that there has been limited adoption of no-till practices in this area. The pitted outwash contains many internally drained areas, and they are likely to be areas of concern due to the amount of water infiltrating.



Chetek Chain of Lakes 401-405

The Chetek Chain of Lakes is the largest body of water in Barron County at nearly 3800 acres, and the most impaired. The Chetek Chain is a very productive waterbody and supports a popular sport fishery for panfish, bass, northern pike, and walleye. The first note in the WDNR file related to algae was a July of 1945 letter from a District Sanitary Engineer suggesting that steps should be taken to treat “at least one arm of Prairie Lake which borders on Highway 53 north (now Hwy SS) of the city and which annually shows heavy algae growth.”

It is recognized that there are no simple fixes available for a problem as severe as the conditions on the Chetek Chain.

There have been several lake studies done throughout the decades. Most notably, the two following:

Internal Phosphorus Loading and Sediment Phosphorus Fractionation Analysis for the Chetek Chain of Lakes, Wisconsin, 2011

William F. James

ERDC Eau Galle Aquatic Ecology Laboratory

Overall, sediments collected in the Chetek Chain of Lakes were very flocculent with high organic matter contents. Iron-bound P concentrations in the sediment were relatively high and, thus, represented an important source of mobile P to the overlying water column. Rates of diffusive P flux under anoxic conditions were high and comparable to other eutrophic systems. Sediments in the Chetek system can contribute internal P loads to the overlying water column for algal uptake under aerobic conditions and may play a role in sustaining high algal productivity in addition to external tributary P loads.

Chetek Lakes Comprehensive Management Plan 2015

Prepared by:

Short Elliott Hendrickson Inc.

Several Management alternatives were explored:

- Water Level Management
- Biomanipulation
- Dredging
- Re-directing flow
- In-lake phosphorus inactivation - Alum and Iron
- No - Wake Zones
- Hypolimnetic Withdrawal - Irrigated onto cropland
- Aeration and Artificial Circulation
- Expand City Sewer Service
- Near shore and in-lake nutrient loading control
- Watershed Nutrient Loading Control

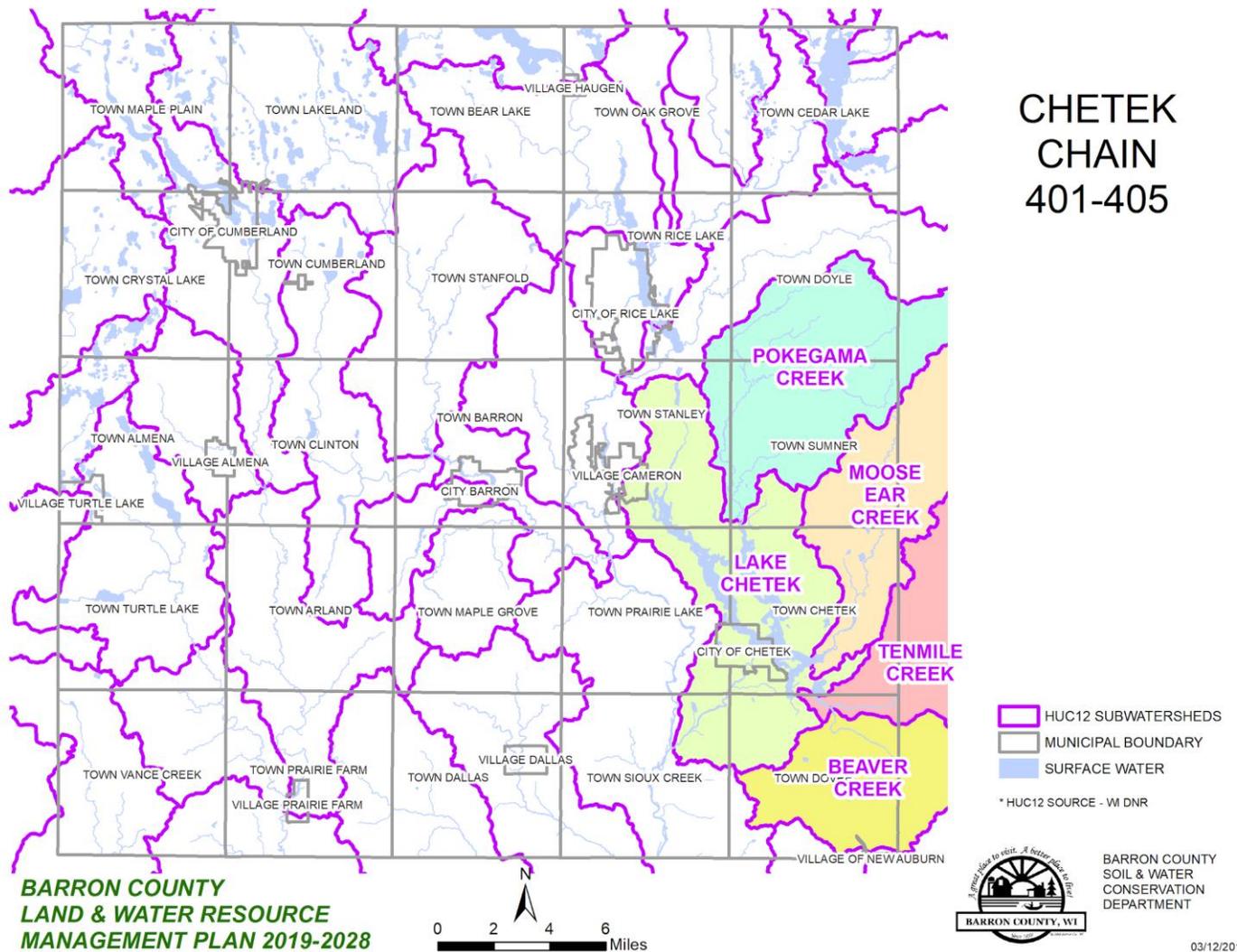
The alternatives underlined are further described in the section of this plan titled “Chetek Chain Phosphorus Withdrawal.”

Focus:

The area farms have not yet adopted no-till farming at the same rates as other areas in the county. These soils have little ability to attenuate nutrients, and there is the potential for leaching nutrients, especially nitrogen, into the groundwater. Work should be done to implement soil health measures of no-till farming and cover crops along with nutrient management planning.

The watershed has seen a decrease in animal agriculture. There are 7 dairies in the watershed with 2 of them having adequate winter manure storage. The ones without storage are relatively small. There are 2 idle manure storage facilities that should be a priority for closure.

Due to the high rates of infiltration of the outwash soils, there is little noticeable surface erosion. There are areas of low gradient concentrated flow that typically only flow during snowmelt conditions where the subsoil is frozen. The surface water does have the ability to pick up nutrients from the soil in these situations. These areas have been identified and opportunities for establishing permanent grass should be explored. These are described more fully in the Concentrated Flow section of this plan.



Brown's Creek and south along the Red Cedar 704

Brown's Creek is listed as a cool-cold headwater stream with a moderate gradient. During the 1990 inventory, the stream was listed as severely degraded. There were 3 locations with serious barnyard runoff occurring. All 3 of these locations no longer have cattle and have been naturally restored. There is only one active dairy farm, and they rotationally graze, limiting the amount of runoff. There are several beef operations.

With these changes in the watershed, the stream has rebounded. It is now listed as an Exceptional Resource Water with Class I Trout designation in the upper half and Class II in the lower half.

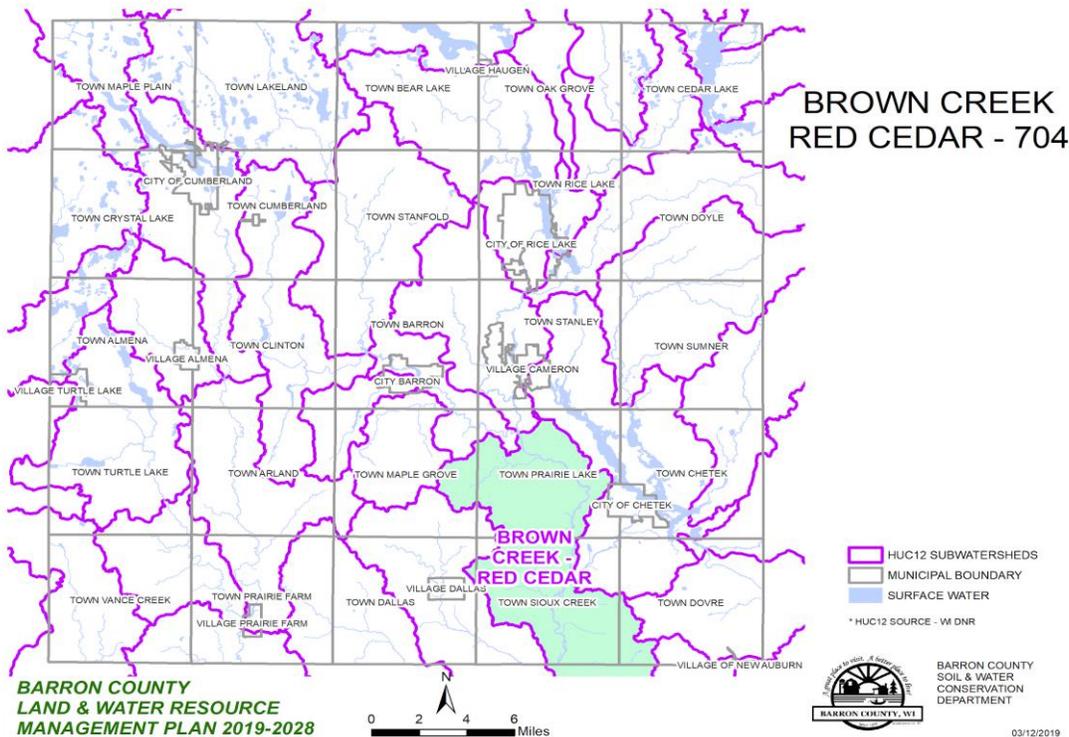
The Red Cedar River is impaired through this watershed and continuing to the Dunn County lakes. This water was assessed during the 2018 listing cycle; new total phosphorus sample data exceed 2018 WisCALM listing criteria for the Fish and Aquatic Life use. However, available biological data does not indicate impairment (i.e. no macroinvertebrate or fish Index of Biotic Integrity (IBI) scored in the "poor" condition category).

Focus:

The cropland in this watershed is uplands over sandstone. With the decrease in cattle, many areas are now continuous corn-soybean production. Many producers in the area have adopted no-till planting methods. We will continue to encourage this along with other soil health measures.

There is an idle earthen manure storage which was constructed into a sandy outwash subsoil. Closing of this facility should be a priority. There is only one other earthen manure storage in this watershed, and it is on an active farm. Several others have been properly closed.

This landscape continues south along the Red Cedar River. It is a mix of upland soils over sandstone and glacial outwash, mainly near the river. The outwash areas are less likely to have the soil health principles, no-till planting and cover crops, implemented on them. This is true for these areas throughout the county and should be a priority.



Upper and Lower Pine Creek 701 & 703

Both streams start in the sandstone hills and flow south and east onto an outwash plain.

The section of a headwater stream and the main thread of Lower Pine Creek below Hwy 25 are Class II Trout waters. These sections are also on the Impaired Waters list. The stretches above the Dallas Flowage of Upper Pine Creek are classified as ORW and Class I Trout waters for brook and brown trout. Below the dam in Dallas, the stream is a Class II trout water. It is also listed as an impaired water on the 303(d) list. It is a direct tributary of the Red Cedar River in Dunn County.

Two significant barnyard runoff sites have been corrected in the last 5 years. There are no other sites identified as being of significant discharge.

There are 3 CAFO dairies in the watershed and 4 smaller ones. The CAFOs have adequate manure storage and have begun using low disturbance manure injection equipment and planting cover crops after corn silage harvest.

Focus:

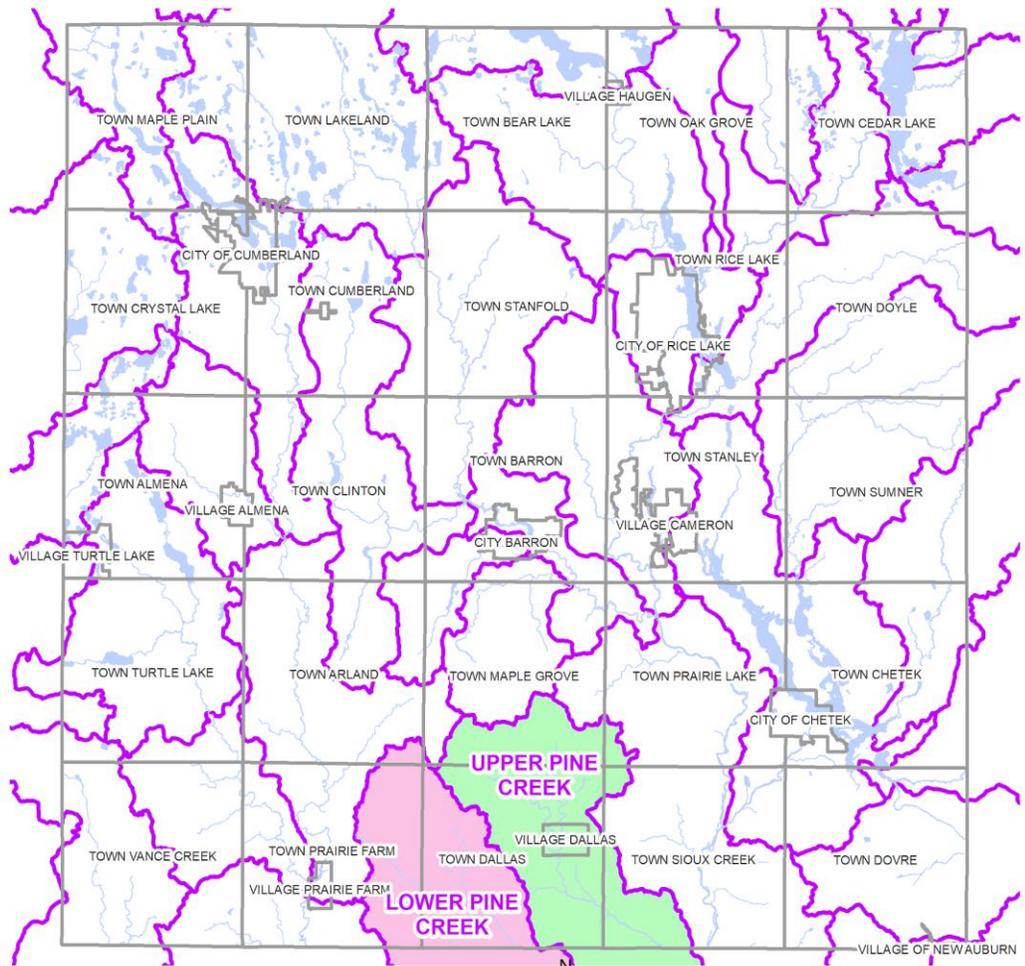
There are 4 earthen manure storages on farms that no longer have dairy and, as such, should be properly closed.

There are many locations in both watersheds where buffer opportunities should be explored.

There are several wetlands in the Lower Pine Creek watershed that have been previously drained using surface drainage that may be candidates for restoration.

Adoption of no-till farming has been greater than average in this watershed. Building on this, along with other traditional soil health practices will be important.

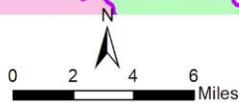
The Dallas Flowage usage has become limited due to sedimentation. With trout habitat above and below the structure, removal of the dam would provide for a long stretch of free flowing trout habitat without the increase in temperature due to the impoundment. The Village of Dallas would no longer be responsible for maintenance and inspection of a dam, and the flowage area could be restored to a park with fishing access.



**UPPER PINE CREEK - 701
LOWER PINE CREEK - 703**

-  HUC12 SUBWATERSHEDS
 -  MUNICIPAL BOUNDARY
 -  SURFACE WATER
- * HUC12 SOURCE - WI DNR

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South Fork Hay 501

The South Fork of the Hay River begins in Polk County and flows into Barron County through a series of wetlands, the largest of which is called Long Lake, and joins with another intermittent stream to become the South Fork Hay. The South Fork Hay River picks up coldwater inputs south of CTH A and becomes a Class I brook trout stream. It has a genetically diverse “wild” population of native brook trout.

The South Fork of the Hay River Watershed was selected as a priority watershed in 1993, and the project was completed in 2005. The DNR performed a final stream inventory in 2015 to gather data on the long-term effects of the project.

The area is cropland on the uplands with the channels in deep forested valleys.

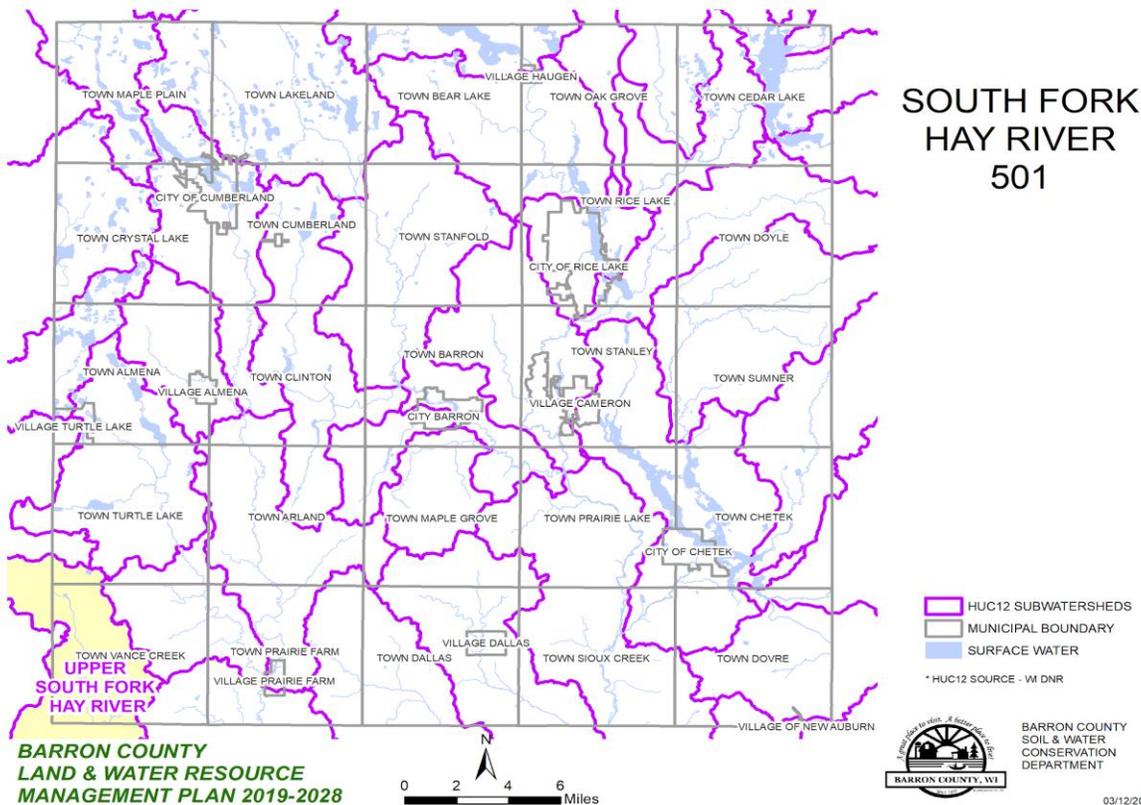
Conner’s Creek is a tributary to the mainstream, joining just south of the county line, it too is a Class I Trout Stream

Focus:

Reduce cropland erosion and animal waste runoff.

There is an idle earthen manure storage facility in the watershed. Its closure is a priority.

There are two dairy farms in the watershed. One of them has several outdoor lots that have a drainage through them. Addressing this site is a priority.



Upper Turtle Creek 603

This watershed has 3 large lakes, Upper & Lower Turtle Lakes and Big Moon Lake, which outlet as headwater streams draining to a large wetland complex where they join to form Turtle Creek.

There was a watershed project in the upper regions that focused on no-till planting and had great success. There are now Lake Districts on Upper Turtle and Lower Turtle Lakes, and they have had an interest in working in the watershed to reduce runoff. While both lakes are on the Impaired list for Phosphorus, Lower Turtle Lake suffers from poorer water quality.

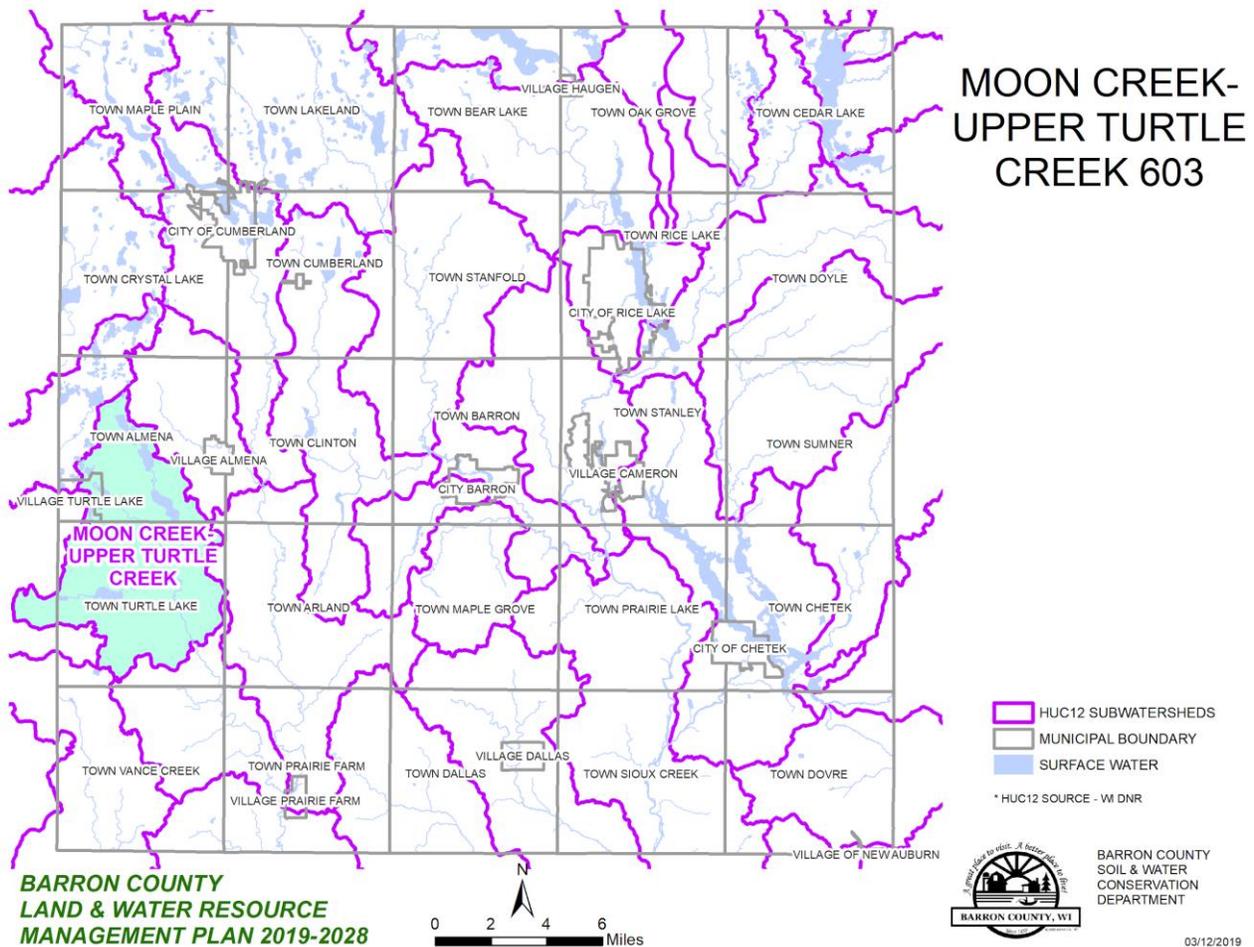
There is one medium CAFO in the central portion of the watershed. They have adequate manure storage to prevent winter spreading of manure.

Focus:

There are 2 idle earthen manure storage facilities.

There are several wetlands that have been drained and may have opportunities for restoration. There is one large restoration project planned for construction.

There is considerable snap bean production in this area. The short growing season of snap bean affords time grow soil building, weed suppressing cover crops.



Lower Hay River 605

The Hay River Watershed was one of the first Priority Watershed Projects in the state, starting in 1979. The focus of the project was correcting animal waste runoff through the construction of barnyard runoff systems and manure storage facilities. Great strides were made towards this goal through that project and in subsequent years.

There is one CAFO dairy in the watershed. It has adequate storage to prevent winter spreading of manure.

There are 7 other dairy farms in the watershed. Six of them have adequate storage to prevent winter spreading.

The largest tributary to the Hay River is Doritty Creek. It is a Class I Trout Stream and exhibits characteristics - cold temperature base flow and flashy in storms - of coulee region streams well to our south. With these conditions, Doritty Creek consistently has high catches of brook trout and serves as an important feeder stream to the Hay River.

Tainter Creek is also a Class I brook trout stream that joins the Hay just upstream of Doritty Creek.

There is considerable Industrial (Frac) Sand mining in this area.

Focus:

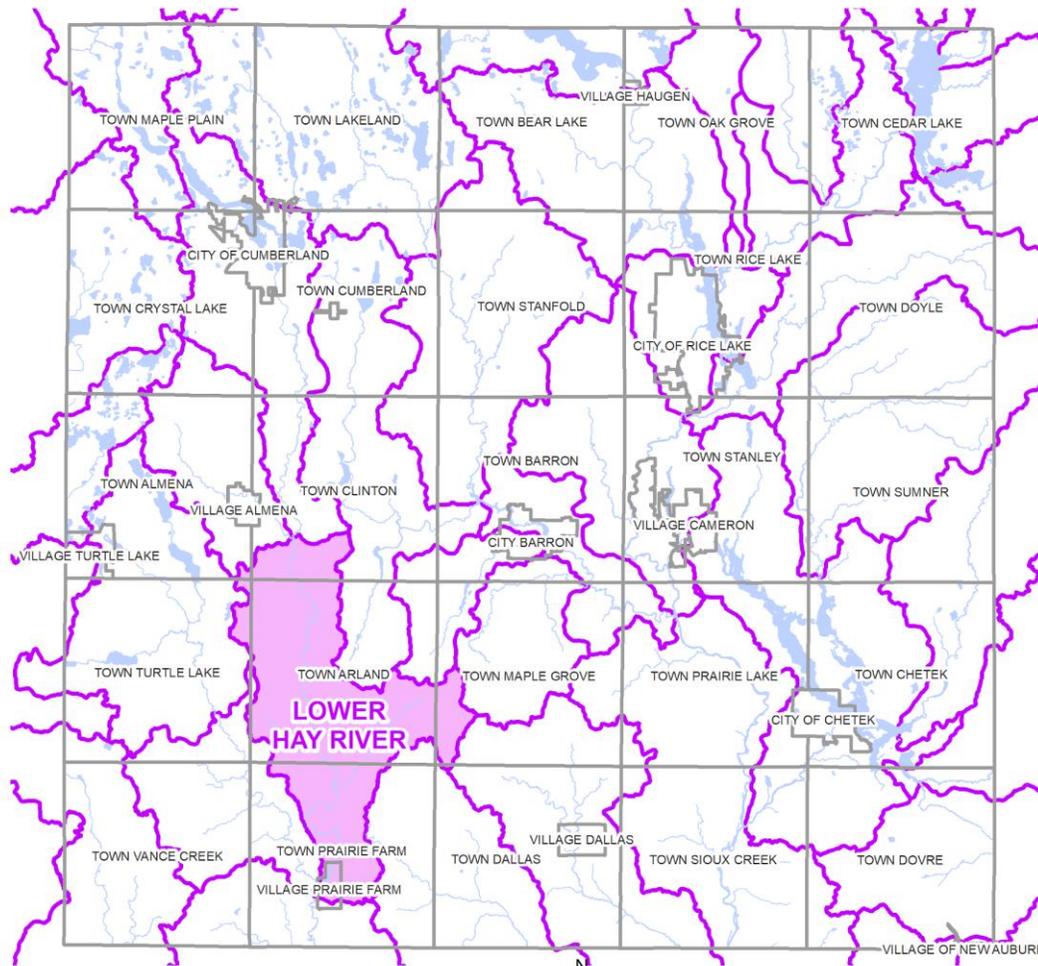
At this time there are 3 sites that are classified as having significant discharge from an animal feeding operation. These sites should be prioritized for work.

Many of the fields in the watershed have considerable slope on them and are prone to erosion. Drainage patterns are well defined, thus grass waterways are very important.

There are 5 idle earthen manure storage facilities that should be properly closed.

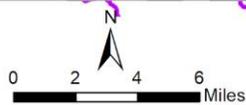
Four industrial sand mines are located in the watershed. Three of them have begun the process of reclamation on areas that have been mined. We monitor these sites for runoff events and verify the reclamation process.

LOWER HAY RIVER 605



-  HUC12 SUBWATERSHEDS
 -  MUNICIPAL BOUNDARY
 -  SURFACE WATER
- * HUC12 SOURCE - WI DNR

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St Croix River Watersheds - Staples Lake, Sand Creek/Lake, and Beaver Brook- 701, 803, 902

These watersheds are part of the St Croix watershed and, as such, covered under the TMDL for it. The outlet of Staples Lake is a headwater of the Apple River, and Sand Lake is the headwater of the North Fork of the Clam River.

Staples Lake is an impaired waterbody due to nutrient loading. The lake is hypereutrophic; winter aeration is required to prevent fish kills. Staples Lake is a popular fishing lake, especially for panfish, largemouth bass, and northern pike. There are extensive wetlands managed by the Wis. DNR in the area downstream of Staples Lake.

It was a focus of watershed project in the 1980s. As part of that project, 5 earthen manure storage facilities were constructed. All 5 of the farms no longer have cattle, and two of the facilities have been closed; closure of the other 3 is a priority.

There are two active beef operations in the watershed.

The Wisconsin Dept of Transportation has the largest restored wetland in the county within the watershed, and the NRCS has another one adjacent to it. There are several drained wetlands in the east arm of the watershed that may be additional candidates for restoration.

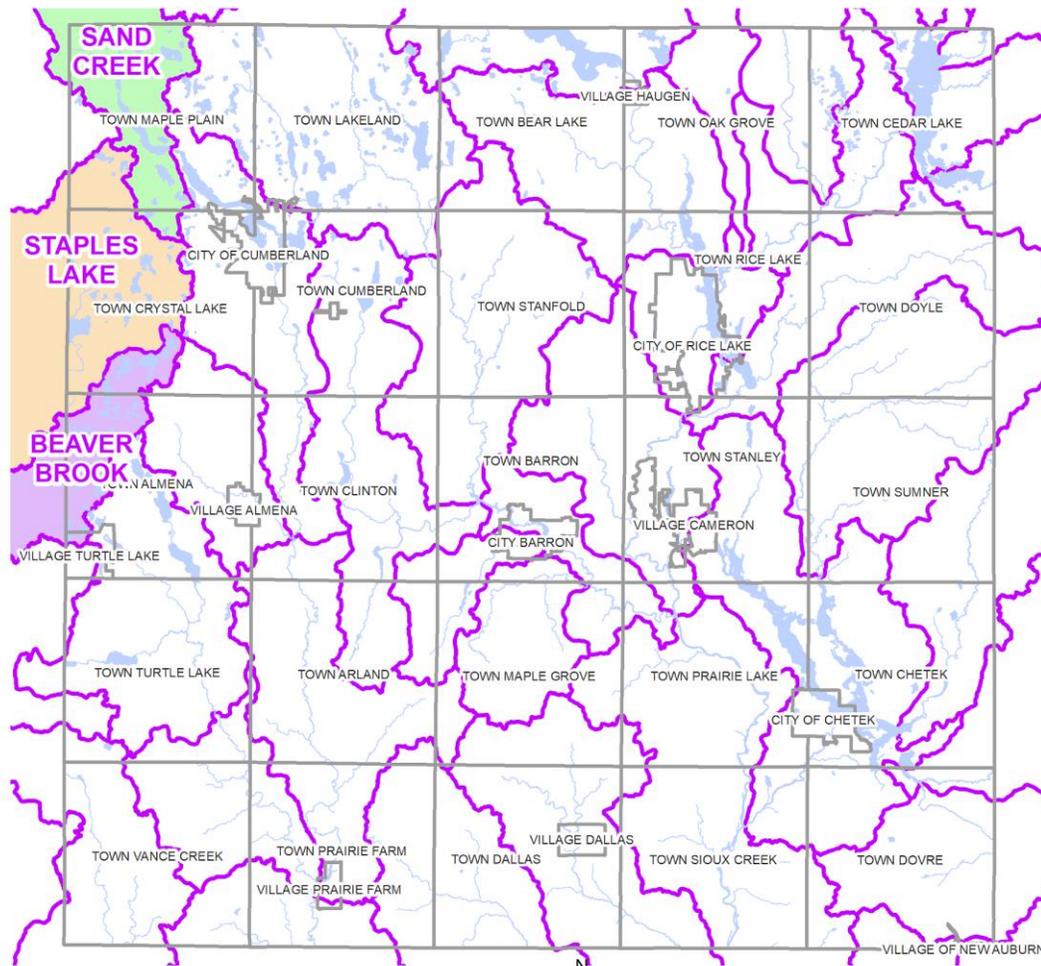
Sand Lake is an Outstanding Resource Water. The lake is 57' deep and is one of the few lakes in the county with a muskie population. The majority of the Sand Lake watershed is forested. There have been investigations to restore the original drainage regime to disconnect wetlands that have been previously drained.

Focus:

There is a Lake Management District on both lakes. They would be potential partners for any work done in their respective watersheds.

Most of the cropland is glacial lake plain and, as such, has very little slope. These soils can have lower levels of infiltration which could be improved with soil health measures such as no-till and cover crops. Many of the streams have been straightened, and cropping is done to the streambank. Several buffer sites have had buffer possibilities delineated. There are also opportunities for additional wetland restoration work in both watersheds.

In the Sand Lake watershed, work with the Lake District on projects to disconnect previously drained wetlands leading to the lake.



STAPLES LAKE
 701
 SAND CREEK
 803
 BEAVER BROOK
 706

 MUNICIPAL BOUNDARY
 SURFACE WATER
 HUC12 SUBWATERSHEDS
 * HUC12 SOURCE - WI DNR

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Lakes

There are 364 lakes in Barron County; 176 named lakes and 188 unnamed.

Lake size Information:

- 17,533 acres of named lakes
- 756 acres of unnamed lakes
- 18,289 total acres of lakes in Barron County
- Largest lake: Red Cedar – 1,841 acres
- Smallest named lake: Robinson Lake, Pea Viner Lake and Meadow Lake - all at 3 acres
- Deepest lake: Beaver Dam – 106'
- Shallowest lake: Couderay – 3'

Lake Development:

Total dwellings on lakes:

In 1963 – 1856

In 2010 – 4342

The most significant impacts on our lakes remain the following:

- Runoff from urban areas adjacent to them (Beaver Dam, Rice Lake, Chetek Lakes).
- Development along lakeshores that results in the removal of vegetation and coarse woody debris near the shore causing destruction of wildlife and fish habitat.
- Invasion of exotic species including Eurasian watermilfoil and curly leaf pondweed.
- Runoff from agricultural land
- Extensive use of our lakes by large and powerful boats

Many lakes in Barron County have changed from oligotrophic to mesotrophic lakes or from mesotrophic to eutrophic lakes. There are 18 lakes in Barron County that are classified as impaired due to nutrients. It is primarily non-point pollution sources, such as those listed above that are causing these water quality changes in our lakes.

Wetlands

Before logging, agriculture and development, there were more wetlands in Barron County. Like much of Wisconsin, many of our wetlands have been lost due to draining and filling. Although we continue to lose wetlands, the rate of loss has decreased dramatically due to Federal and State laws. Wetlands provide natural filtering of runoff, groundwater recharge, wildlife and fisheries habitat, and storing of flood waters to protect downstream areas. The USDA-NRCS Soil Survey shows 44,000 acres of hydric soils, and the WDNR inventory shows 42,600 acres of wetlands in units larger than 2 acres. The SWCD is committed to protecting our remaining wetlands and will not fund or provide assistance for any project involved in draining or filling of these valuable resources.

In addition to the total loss of acres of wetlands, the quality of many of our wetlands has been reduced. Common causes are trampling by livestock and by siltation from agricultural and urban runoff. This may cause near monocultures of non-native invasive species such as reed canary grass and narrow-leaf cattail. Purple Loosestrife is a threat for expanded distribution, and the SWCD been raising and releasing beetles for its control for approximately 20 years. Non-native phragmites has not been identified here as of 2018. We are continuing to monitor the area and will address it if found.

Protecting our wetlands from loss to other land uses and from degradation is an important goal for the future.

Groundwater

Groundwater, the water that occupies the spaces between soil particles and rocks below the earth's surface, is the source of drinking water for Barron County residents. The source of all groundwater is precipitation, which percolates down through the soil until it reaches the saturated zone called an aquifer, where it is then contained. Our aquifers are local to Barron County and the immediate surrounding counties. Our groundwater doesn't come from Lake Superior or Canada.

Water in an aquifer travels from its source to a discharge point such as a well, wetland, spring, stream or lake.

Groundwater resources in Barron County are supplied by aquifers that underlie the county at varying depths from less than 20 feet to over 200 feet.

The groundwater contamination susceptibility map below is a composite map of five resource characteristic maps: depth to bedrock, bedrock type, soil characteristics, depth to water table, and surficial deposits. This map highlights areas sensitive to groundwater contamination from surface activities.

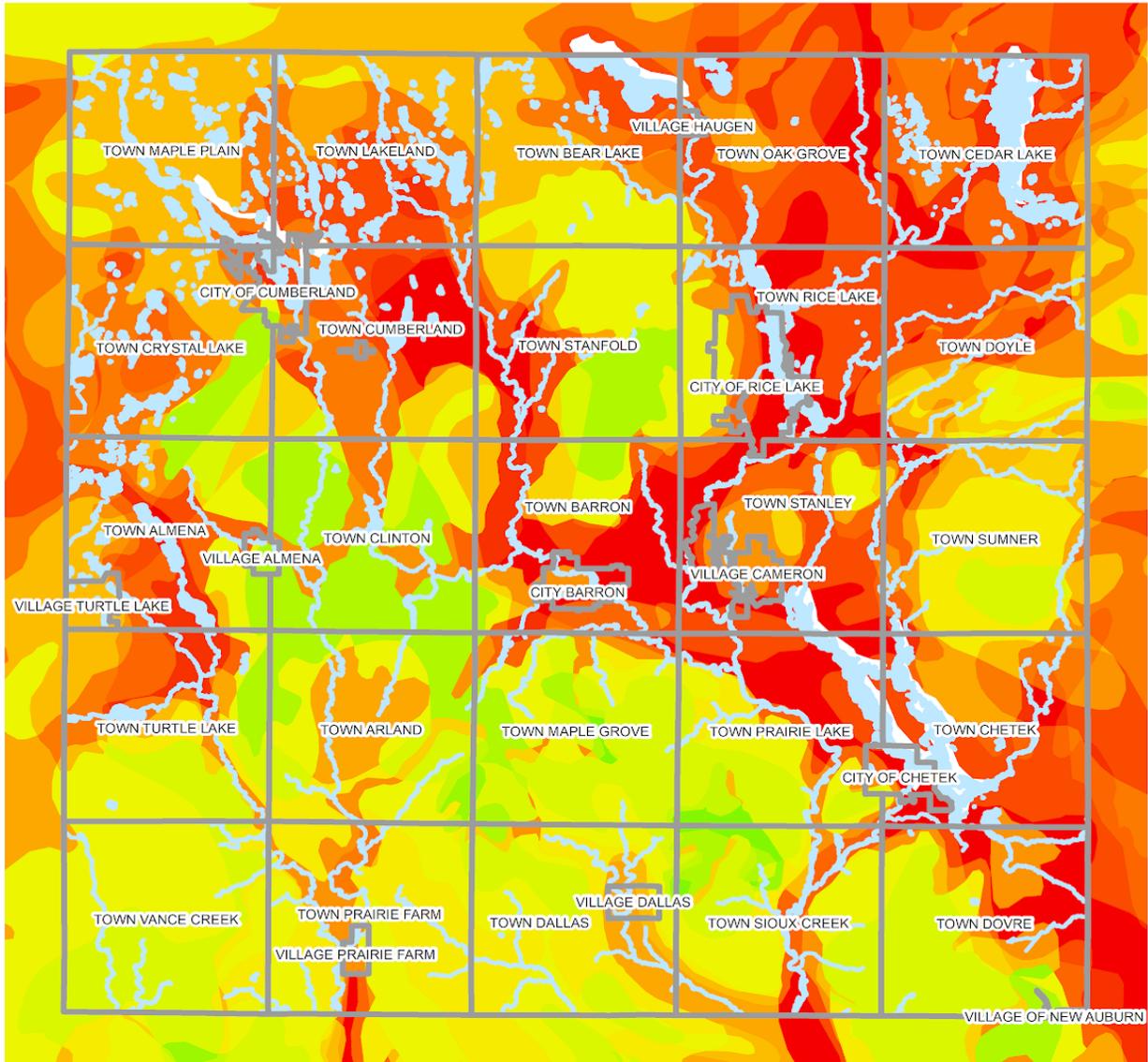
There are currently 216 center pivot irrigation units in Barron County. This is an increase from 100 in 2005. They are generally constructed on the outwash plains as these soils have limited water holding capacity; pivot locations have been identified in our GIS. The aquifer under these outwash plains has been described as having the capacity to withstand large withdrawals of water without decline (1975 UWEX irrigation study). It is in these areas that we are most concerned with the potential for groundwater pollution from use of nutrients, farm chemicals and idle earthen manure storage facilities.

Barron County is blessed with a large quantity of high quality groundwater. Many of our aquifers are shallow and constantly recharged. However, this makes them more susceptible to contamination. If measures are not taken to protect the quality of our groundwater, future water supplies could be threatened.

Susceptibility of groundwater to pollutants is the ease with which a contaminant can be transported from the land surface to the groundwater level. The amount of protection offered by the overlying material varies depending on the materials. In areas of sandy glacial outwash, the overlying soil materials allow contaminants to reach the groundwater more easily than in areas of glacial till.

Groundwater quality concerns have been appearing more and more in the news. Chippewa County recently conducted a study of private wells in that county and found that the average nitrate level has gone from 4.2 mg N/L) in 1985 to 5.5 mg N/L in 2016 with 18.3% of the wells testing greater than 10 mg/l. Barron County had similar test results during the periods of earlier testing. The areas in Chippewa County that had the highest levels were in the NW corner of the county. That is the same aquifer that extends into Barron County along Hwy 53 in the glacial outwash plain.

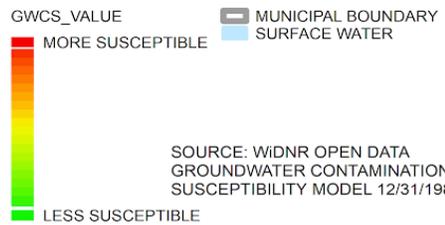
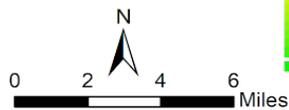
GROUNDWATER CONTAMINATION SUSCEPTIBILITY



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SOURCE: WIDNR OPEN DATA
GROUNDWATER CONTAMINATION
SUSCEPTIBILITY MODEL 12/31/1986

02/26/2019

Manure storage

Barron County has had a long history with manure storage facilities. The first was constructed in 1971, and a total of 357 have been built since. Many are earthen facilities could not be constructed today to meet the NRCS standards due to the increased clay liner requirements. All are identified in the County GIS.

Current Inventory

- 107 properly closed
- 137 active facilities
- 77 idle - These are defined as not having additional manure added for one year and are unlikely to be used due to lack of land or livestock facilities on site. There are an additional 23 that are suspected to be idle
- 11 temporarily idle - not currently in use, but adequate livestock facilities and land exist to allow for future use

Wisconsin Manure Prohibitions

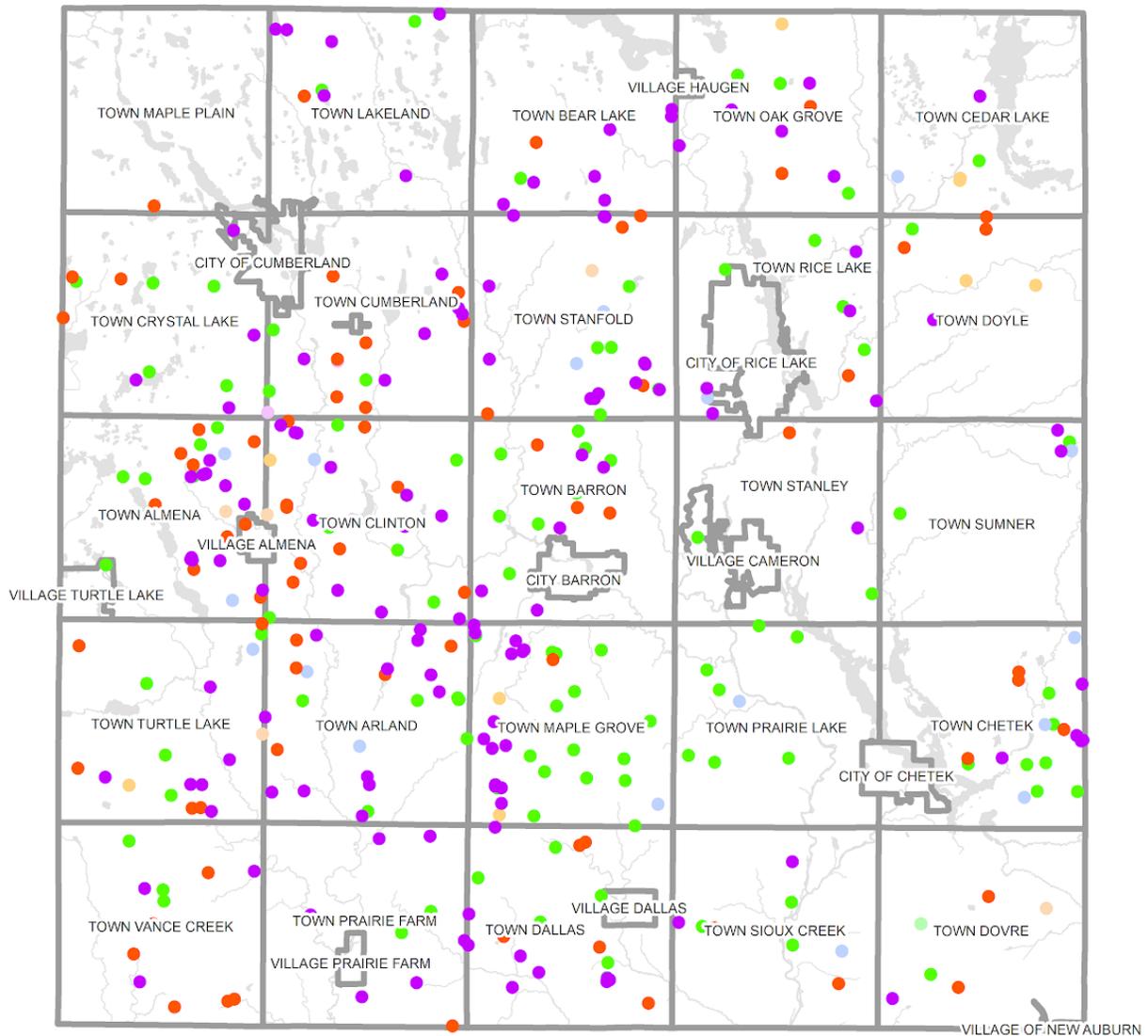
As part of NR 151, all producers must comply with four manure management prohibitions:

1. No manure storage facility overflow
2. No unconfined manure piles in water quality management areas
3. No direct runoff from a feedlot or stored manure into waters of the state
4. No unlimited livestock access to waters of the state in a location where high concentrations of animals prevent maintenance of adequate sod or self-sustaining vegetative cover

Through past inventories, manure prohibitions were noted and have been documented on the GIS layer.

State Prohibition	2000	2006	2010	2018
1	0	0	0	0
2	4	1	3	0
3	31	12	49	9
4	57	28	7	1

MANURE STORAGE FACILITY STATUS



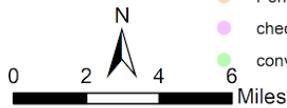
- STATUS**
- ACTIVE
 - IDLE
 - TEMPORARILY IDLE
 - PROPERLY ABANDONED
 - CHECK
 - Pending
 - check
 - converted

- ▭ MUNICIPAL BOUNDARY
- ▭ SURFACE WATER

BARRON COUNTY
LAND & WATER RESOURCE
MANAGEMENT PLAN 2019-2028

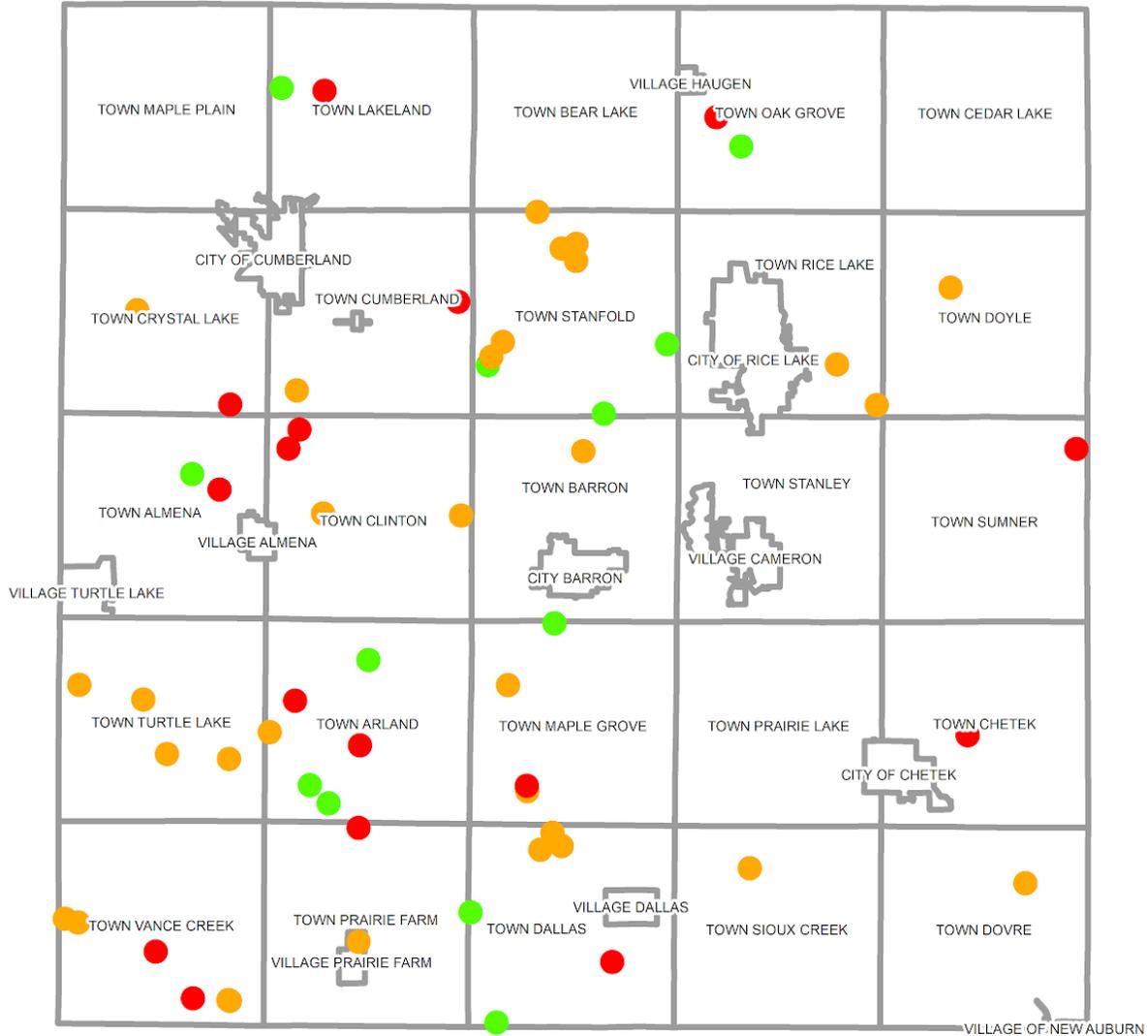


BARRON COUNTY
 SOIL & WATER
 CONSERVATION
 DEPARTMENT



02/26/2019

SITES WITH MANURE MANAGEMENT PROHIBITIONS

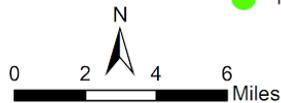


**BARRON COUNTY
LAND & WATER RESOURCE
MANAGEMENT PLAN 2019-2028**



BARRON COUNTY
SOIL & WATER
CONSERVATION
DEPARTMENT

- STATUS**
- ACTIVE
 - POTENTIAL
 - RESOLVED
- MUNICIPAL BOUNDARY



02/26/2019

Woodlands

Woodlands are one of the primary natural resources of Barron County, and the county is steeped in forest history. The pioneers logged the forests for lumber and to make way for farming and cities; approximately 30% of the county is forested with the re-growth of these lands in a variety of forest types. Today, forest-related industries and businesses remain an important part of the local economy. The county's generally fertile soils support high value hardwood stands. Major forest types in the county include northern hardwoods, oak, and aspen-birch. Good forest management can sustain the full range of economic, ecological, and social benefits that our forests provide.

In Barron County, 86% of forest acreage is privately owned, 13% by state or county government and 1% by forest industries. About 1/3 of the county's private woodland owners have participated in various Wisconsin forest tax and management programs in the past.

Barron County has approximately 159,000 acres of woodlands; 36,000 acres of private lands are in the State Managed Forest Law program which requires a management plan. There are also 16,000 acres of County Forest land. They provide timber for various industries in Barron County and northwestern Wisconsin. They also provide energy for the heating systems for the Barron School and Rice Lake school districts. Runoff from these areas is much less than from cultivated and urbanized areas. Additionally, these lands provide wildlife habitat and recreational opportunities that characterize our way of life. There have been losses due to residential development and fragmentation of remaining areas which hamper many of the benefits listed above.

The SWCD annually sells approximately 17,000 trees and shrubs to county residents.

Unfortunately there is a practice of grazing a woodlot in order to change the real estate tax assessment from recreational to agricultural. This practice reduces regeneration, increases runoff, and encourages undesirable species such as buckthorn and prickly ash.

Several exotic invasive species threaten area woodlands; these include common and glossy buckthorn and various bush honeysuckles. They spread rapidly once established, displacing native species and creating monocultures if left unchecked. Eradication efforts include pulling, cutting, spraying and burning. These practices must be continued annually/semi-annually to be successful. Buckthorn and honeysuckle have spread throughout the county, and the eradication efforts necessary are beyond the scope of SWCD; we will continue to provide information and education to area residents. Garlic Mustard, Wild Chervil and Japanese Barberry are not yet widespread in our woodlands; however, they are present in the County and will continue to expand.

Wildlife

Barron County has a diversity of habitats and a rich complement and abundance of wildlife. Barron County is located on what is referred to as the "Tension Zone," which is a climatic and habitat delineation within the state of Wisconsin where north meets south. Simply put, it is where the southern farmland meets the northern forest. In the southern part of the county, wildlife includes species found in or around agricultural fields and fragmented woodlots. These would include ring-necked pheasant, wild turkey, cottontail rabbit, and gray and fox squirrel. In the northern part, wildlife more typical of the northern forest includes the Eastern timber wolf, bobcat, fisher, and black bear. As wildlife has adapted, and perhaps due to changing climate, these lines are not as dramatic, and all these species may now be found almost anywhere in the county.

The two big game species in the county, white-tailed deer and black bear, have become extremely abundant. Deer thrive in the almost equal mix of forest and farmland found in Barron County, especially

in the southern tier of townships, where they are most abundant. Black bear have adapted to people and farm crops, especially corn. Crop damage and nuisance complaints for both species have increased dramatically and are important social and biological issues.

Barron County has an abundance of wetlands, such as lakes, rivers, streams, ponds, and marshes, all of which provide rich habitat for waterfowl, waterbirds, furbearers, and other wetland dependent wildlife. Osprey, which depend entirely on fish for their whole diet, benefit from these abundant wetlands. There are approximately 14 active nests, most of which are on platforms and many of which are around the City of Rice Lake. Bald eagles also feed on fish as well as waterfowl and road killed deer. Bald eagles nest in large white pine, often near water, and there are approximately 28 active nests in the county.

With the number and quality of wetlands in the county, ducks, geese, and swans are present year round in good numbers. Mallards, wood ducks, and blue-winged teal are the most common resident ducks but virtually any species of duck can be seen during the spring and fall migration. Resident Giant Canada geese are found everywhere, and while they provide great hunting opportunity, they have reached nuisance status on some lakes. The county also winters a few thousand Canada geese and hundreds of mallards on the major rivers which stay open throughout the winter. Trumpeter swans have been a great success story statewide after they were reintroduced in the 1990s. In the county they have gone from being rarely seen to nesting on many of the ponds and flowages, including state wildlife areas such as Sweeney Pond, Quaderer's Creek, and John Porter Flowage, to name just a few. Seeing them is no longer unusual and has become quite common.

Overall, wildlife presence and abundance is a function of habitat, and the main habitats in the county are forest, field, and wetland. The county is approximately 40% forested, of which most consists of fragmented patches interspersed with agricultural land and residential areas. Habitat generalists that do well in small forest patches do very well with the arrangement. Wildlife species that need more extensive forest find the best habitat in public forests in the eastern and northern parts of the county. Large blocks of continuous grassland are one of the most scarce habitats in the county. The main blocks of grassland sufficient to meet the needs of grassland utilizing wildlife are found on Wildlife Management Areas scattered across the county or on Conservation Reserve Program (CRP) fields. Much like fragmented forests, habitat generalists that can exist on small fragments of grassland found in various areas across the county are doing well.

Wetlands contain some of the richest and most diverse wildlife species components found in the state. These are also areas of most concern that can be impacted by various activities, such as development and agriculture, if proper safeguards are not undertaken. Studies have shown that current lot sizes along lakes, rivers, and streams are too small to adequately protect critical areas where fish, reptiles, and amphibians live and breed. These studies have stated it is important to take steps to protect these critical areas for the benefit of wildlife and people. Along this line, buffer zones along wetlands have been shown to benefit water quality and provide important wildlife habitat. Other water quality practices that provide habitat and protect wetlands are also important to recognize and implement whenever possible.

Kevin Morgan-Wildlife Biologist
Wisconsin DNR

Threatened and endangered species and species of special concern found In Barron County

Plants

Wild lupine	host plant to the endangered karner blue butterfly
Dragon wormweed	special concern
Assiniboine sedge	special concern
Robbins spikerush	special concern
Torrey's bulrush	special concern
Spotted pondweed	endangered
Squashberry	endangered
Canada gooseberry	threatened

Amphibians

Bullfrog	special concern
Blandings turtle	threatened
Wood turtle	threatened

Fish

Least darter	special concern
Ozark minnow	threatened
Weed shiner	special concern
Redfin shiner	threatened
Pugnose shiner	threatened

Birds

Bald eagle	special concern (federal)
Red shouldered hawk	threatened
Yellow rail	special concern
Trumpeter swan	endangered
Le Conte's sparrow	special concern

Insects

Skillet clubtail dragonfly	special concern
Pygmy snaketail dragonfly	special concern
Green faced clubtail dragonfly	special concern
Karner Blue butterfly	endangered

Natural Areas: the following are ecologically unique communities

Northern sedge meadow	Northern mesic forest
Northern dry mesic forest	Northern wet forest

Nonmetallic Mining – Current Status

Sand & Gravel

- 65 permitted sites
- 2586 permitted acres
- 792 active acres
- 15 Completely reclaimed sites (2004-2018)
- 118 Reclaimed acres of completed sites (since 2004-2018)

Note: Report does not include partially reclaimed acres of active sites as of January 1, 2019.

Rock (Quartzite)

- 1 permitted site
- 50 permitted acres
- 28 active acres
- 0 Completely reclaimed sites
- 0 Reclaimed acres of completed sites

Industrial (Frac) Sand

- 15 permitted sites
- 4846 permitted acres
- 1462 active acres
- 0 Completely reclaimed sites
- 0 Reclaimed acres of completed sites

Nonmetallic Mining Reclamation Program

The goals of the Nonmetallic Mining Reclamation Program are to rehabilitate sites where nonmetallic mining takes place in order to:

- promote the removal or reuse of nonmetallic mining refuse
- removal of roads no longer in use, grading of the nonmetallic mining site
- replacement of topsoil
- stabilization of soil conditions
- establishment of vegetative cover
- control of surface water flow and groundwater withdrawal
- prevention of environmental pollution
- development and reclamation of existing nonmetallic mining sites
- development and restoration of plant, fish and wildlife habitat if needed to comply with an approved reclamation plan.

Additional goals of the program are to assure nonmetallic mining operations are conducted in a manner that promotes successful reclamation consistent with standards established in the Nonmetallic Mining Reclamation Ordinance. The intention is to also minimize the cost of nonmetallic mining reclamation, encourage the development and reclamation of existing nonmetallic mining sites and, to the extent practicable, minimize areas disturbed by nonmetallic mining at any time and provide for contemporaneous nonmetallic mining reclamation.

NONMETALLIC MINING



**BARRON COUNTY
LAND & WATER RESOURCE
MANAGEMENT PLAN 2019-2028**



BARRON COUNTY
SOIL & WATER
CONSERVATION
DEPARTMENT



05/03/2019

WORK PLAN - RESOURCE CONCERNS

- Total Maximum Daily Load Plans
- Goals
- Objectives

Summary

The work plan section of the LWRMP identifies the resources concerns in Barron County, the goals to maintain or improve them, and the objectives and action items necessary to accomplish these goals. It also identifies key partners and funding sources for each action item and lists evaluation tools where appropriate.

We have identified soil erosion and depletion as our priority resource concern; thus reducing soil loss on cropland is a primary goal. Through conservation planning, promotion of the 5 principles of soil health: Armor the soil, Minimize soil disturbance, Increase plant diversity, Keep a living root at all times, and Integrating livestock, as well as BMP installation, among others, staff will assist farmers in achieving soil loss rates at or below T (tolerable soil loss). It is our long-term goal to attain soil loss rates of sustainable levels on the cropland of the county.

Improving surface water quality is also of great concern, and these will benefit from the protection of cropland soils. We will continue to assist farmers in writing their own nutrient management plans. We also are offering the DATCP SEG funds for plans to be developed by independent agronomists. Due to the discrepancy in funding amounts, our efforts are concentrated on SEG funds, but if the NMFE grant program should provide more equitable incentives, we would utilize that source as well. The future of managing both point and nonpoint sources of water pollution in Barron County will be driven by the fact that Tainter Lake in Dunn County has been designated as an impaired water body on the U.S. EPA 303(d) list. Because of this designation, a total maximum daily load (TMDL) has been developed by the Wisconsin DNR for the waters draining into the lake, including the Red Cedar and Hay River watersheds. By reducing sediment and nutrient losses from farm fields and enforcing the state prohibitions for nutrient management, animal waste, the water quality of the impaired waters of the county should improve along with all the waters of the basin.

Remaining resource concerns including protection of farmland (from conversion to non-agricultural uses), groundwater, local resources, woodlands and wildlife. These are detailed in the following sections.

Total maximum daily load plans (TMDL)

A watershed restoration action plan called a Total Maximum Daily Load (TMDL) Plan is required for all waters listed on the impaired waters list. This plan sets limits for the amount of pollutants a waterbody can receive and still meet water quality standards. To define the TMDL for a water body, modeling is used to determine the current pollutant loads, their sources, and the amount of reduction needed from each source to reach the water quality goal. Water quality goals for Wisconsin surface waters are set in Wisconsin Administrative Code NR 102: Water Quality Standards for Wisconsin Surface Waters.

A TMDL considers both waste load allocation (WLA, point sources) and load allocation (LA, nonpoint sources). The WLAs determined in the TMDL for point sources, such as wastewater treatment plants or factories, are addressed through Wisconsin Pollutant Discharge Elimination System (WPDES) permits. Nonpoint source LAs, on the other hand, are more complex and require collaboration by many partners and stakeholders to effectively use available multi-agency programs, education, regulations, and financial and technical resources.

Barron County is part of two approved TMDLs. Both are to ultimately improve a water body outside of Barron County, but in order for them to achieve their goals, the waters of Barron County must also be improved.

Tainter Lake and Lake Menomin

Barron County is a member of the Red Cedar Partnership of the TMDL. The TMDL area is composed of the Red Cedar River Basin down to Lake Menomin. It encompasses over 1.1 million acres, covering the northern half of Dunn County and extending north through nearly all of Barron County as well as parts of Washburn, Sawyer, Rusk, Chippewa, St. Croix, and Polk Counties. Barron County dominates this watershed, and the success of the TMDL relies on work done here.

The TMDL, titled “Phosphorus Total Maximum Daily Loads (TMDLs) Tainter Lake and Lake Menomin Dunn County, Wisconsin,” was written by the DNR. Using the Simulator for Water Resources in Rural Basins (SWRRB), which is a computer-based water quality model with inputs including land use, soil type, cropping practices, topographic data, routing characteristics, and local weather, the DNR was able to determine average annual phosphorus contributions from various land uses. The SWRRB model determined that approximately 67 percent of the phosphorus load comes from cropland, 10.6 percent from forestland, 7 percent from point sources, 6.7 percent from barnyards, 6.3 percent from grassland/pasture, and 2.5 percent from urban areas. The TMDL calls for a 65 percent reduction in the quantity of phosphorus entering Tainter Lake to achieve water quality goals.

In July of 2015, “A RIVER RUNS THROUGH US: A Water Quality Strategy for the Land and Waters of the Red Cedar River Basin” was published with the following summary:

This implementation strategy is a guide for the approaches and techniques that will be used over a ten-year period to reduce the levels of phosphorus entering the Red Cedar River system. Although the TMDL was written specifically for Lakes Tainter and Menomin, their location at the lower end of the Red Cedar River necessitates that this implementation process also involves geographic areas much farther upstream. Additionally, there are several other water bodies in the watershed that are impaired by phosphorus that will benefit from the recommendations of this implementation strategy. Therefore, this will be a cooperative and collaborative effort for land managers, farmers, state and local government.

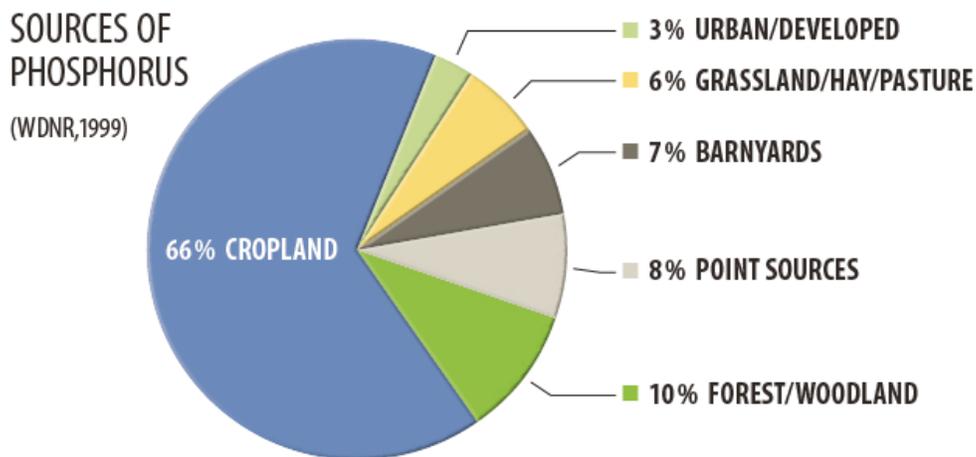
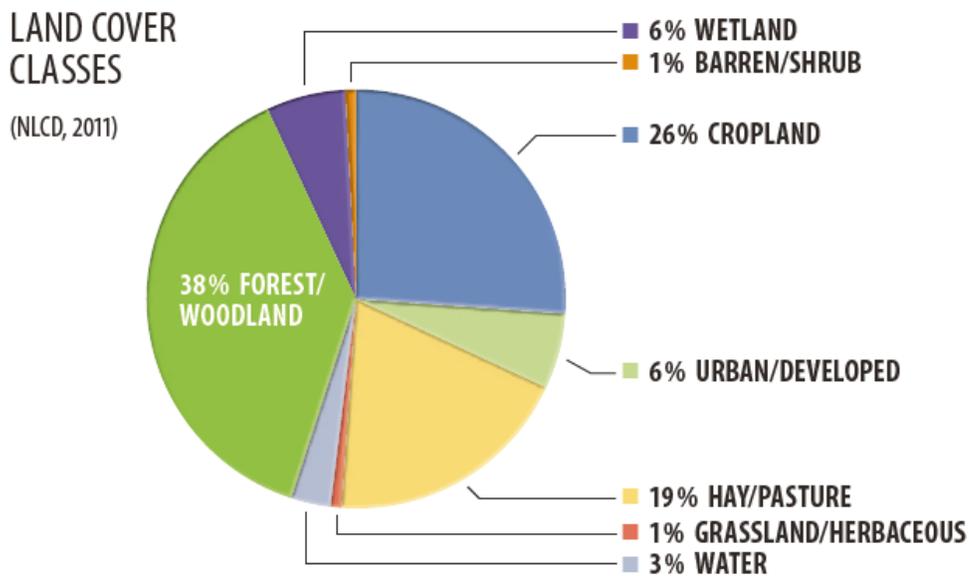


FIGURE 2.1: Sources of phosphorus compared to land use categories

Setting an interim goal

The Partnership selected an interim goal for phosphorus reductions from nonpoint sources over ten years (by 2025) based on anticipated reductions in phosphorus loads coming from multiple sources, but realizing the difficulty of achieving the full TMDL goals in only ten years. The result is a goal for an overall reduction from all nonpoint sources of 40% or 186,000 lbs/yr above Tainter Lake over the next ten years.

Best Management Practice Examples (example evaluation from area draining to Tainter Lake only)	Lbs/yr P Reduced
No-till method on 86,000 cropland acres without targeting or 60,000 acres if high delivery areas are targeted	63,000
Eliminate winter manure spreading on 6,000 acres by adding 50 manure storage structures	34,000
Draw phosphorus levels down to 25 PPM on 1/3 of cropland with the highest delivery rates (86,000 acres)	31,500
Plant cover crops on 107,000 acres (40%) of cropland	18,000
Traditional conservation practices on 10% of cropland acres	11,000
Add treatment of milk houses waste at 50 farms	6,600
Control of urban stormwater P delivery outside MS4 areas	5,700
Install stream buffers on 15% of stream miles	4,600
Add runoff control to 62 barnyards	4,200
Replace all failing, critically located septic systems (440)	420
Control stormwater on all rural, residential properties near waterbodies (2200 lots 1/4 acre in size)	220
200 acres of wetland restoration	210
Past barnyard load reductions	27,000
Total of example reductions	206,450
Interim, ten-year goal of 40% reduction in nonpoint source load	186,000
TMDL final reduction goal for nonpoint source load	306,000

Table 3.2: Estimated load reductions from various best management practices in the Red Cedar River Basin in the TMDL area of concern

The Lake St. Croix TMDL was completed in 2012 and approved by EPA in August 2012. A phosphorus load reduction of 27 percent from mid 1990s phosphorus loads is needed to meet the Lake St. Croix in-lake total phosphorus water quality standard of 40 µg/L. Phosphorus load reduction goals vary by watershed. For the Willow River and Kinnickinnic River watersheds, the phosphorus reduction goal is 37%. For the Apple River, the phosphorus reduction goal is 34%.

The Lake St. Croix TMDL Implementation Plan was completed in 2013. The plan relies on civic engagement as a key strategy for TMDL implementation. It also establishes phosphorus reduction goals by county. For the Barron County watersheds, Apple and Clam Rivers, the Lake St. Croix TMDL phosphorus load reduction is 32%. This requires 2,447 lbs./yr. of reduction from the estimated TMDL baseline load of 7,738 lbs./yr. in the early 1990s. Barron County's required reduction ranks 13th among the 19 counties in the basin.

Goals for the St. Croix watershed

Water quality impacts and phosphorus loadings are dependent on animal manure handling, crop rotations, fertilizer application rates and practices (nutrient management), tillage practices, and precipitation frequency and intensity. Improvements will be needed in all of the farming practices listed above to lower the agricultural loading, especially in the watersheds with the highest loadings (the Apple (partially Barron County), Kinnickinnic, Willow, Snake and Sunrise). Some other recommended reduction strategies include:

- Develop comprehensive nutrient management plans for all agricultural cropland in the basin.
- Directing drainage from confined livestock areas to retention basins, grassed buffer strips, constructed wetlands, or other effective nutrient-reduction practices.
- Use of holding areas and wintering areas for livestock, on a rotational basis, to prevent a build-up of nutrients in the soil. Remove manure accumulated in confined holding areas regularly and apply to crop or pasture lands at agronomic rates.
- Develop regional nutrient budgets to assist in siting intensive livestock operations and develop practical options for treating and exporting manure to nutrient-deficient areas.
- Consider new tile drainage systems, such as controlled drainage, to regulate the quantity of water removed at different times of the year.
- Work with all sectors of the agricultural community to implement new advances in agronomy, soil conservation, nutrient management, etc.

BARRON COUNTY

County Goals

The TMDL allows for 5,300 lbs/yr of phosphorus to be loaded to the St. Croix River from Barron County. This requires 2,400 lbs/yr of reduction from the estimated TMDL baseline load of 7,700 lbs/yr in the early 1990s. Barron County's required reduction ranks 13th largest among the 19 counties in the basin.

To achieve the St. Croix Basin Partners' goal of 20% Reduction by 2020, Barron County needs to reduce loadings by 1,800 lbs/yr by the year 2020. To attain this goal, activities must be implemented that achieve an average annual rate of phosphorus reduction of 60 lbs/yr over 30 yrs, or 180 lbs/yr over 10 yrs.

The table and figure below provide a breakdown of the major subwatersheds in Barron County contributing to the St. Croix River basin, land uses under TMDL baseline conditions, baseline phosphorus loadings, and needed reductions.

Barron County contributing area and baseline phosphorus loading by subwatershed

Area in St. Croix Basin (ac)		By land use (1992 NLCD) *						
County	Total	Ag	Forest	Gressland	Shrubland	Urban	Water	
Barron	35,545	8,344	17,013	7,484	8.5	133	2,561	
Subwatersheds	100%	23%	48%	21%	0%	0%	7%	
Apple	23,416	6,348	10,109	5,124	2.9	129	1,703	
Clam	12,129	1,996	6,905	2,361	5.6	4	858	
Baseline Loading (lb/yr) ***		By Land use (1992 NLCD)						TMDL Load Reduction**
County	Total	Ag	Forest	Gressland	Shrubland	Urban	Water	
Barron	7,738	4,678	1,494	1,474	1	75	16	
Subwatershed	100%	60%	19%	19%	0%	1%	0%	32%
Apple	5,539	3,559	888	1,009	0.3	73	11	1,877
Clam	2,198	1,119	606	465	0.5	2	5	570
NOTES:								
*Land use areas derived from GIS based 1992 NLCD dataset.								
**TMDL load reduction = sum of land use area * difference between baseline and TMDL phosphorus export coefficient.								
***Baseline load = sum of land use area * baseline TMDL phosphorus export coefficient.								

Where we stand today

In the past 30 years, there has been a considerable reduction in the number of barnyard runoff sites in the county through the installation of management systems and changes in the farming community.

Phosphorus reduction plans

We are working with farmers to implement Nutrient Management Plans and to increase practice of no-till planting. Any site that has runoff from a confined animal area will be addressed.

Methods of prioritization

Barron County has worked to reduce the runoff from agricultural sites, through the practices mentioned above, in all areas of the County. With the majority of the land and cropland in the Red Cedar Basin, which also has a TMDL, this will be our priority, although we will address any specific site problems in the St. Croix Basin.

We are working on developing a system to target the sites with the highest levels of phosphorus production.

Key players in implementation

The Barron County Soil & Water Conservation Department works closely with the USDA Natural Resource Conservation Service to locate and treat runoff situations.

Activities to inform, educate, engage, motivate and enable citizens

Personal contact with farmers has been and will continue to be the primary method of engagement.

Goals:

- Continue active participation in the Red Cedar Basin Partnership.
- Contribute tracking data towards the goals of the TMDLs.
- Implement BMPs to reduce measured phosphorus runoff in Barron County.

RESOURCE CONCERN: SOIL EROSION AND DEPLETION

GOAL: CONTROL SOIL EROSION ON CROPLAND

OBJECTIVE	ACTION/PROGRESS	PARTNERS	FUNDING	EVALUATION/ TRACKING
Reduce soil loss to T or lower on cropland, including water and wind erosion.	Through conservation planning and the installation of BMP's	SWCD NRCS	SWRM S & S SWRM C/S	Acres Planned, BMP's installed, GIS Tracking
	Administer the Farmland Preservation Program, conducting status reviews and assisting participants achieving and maintaining compliance.	SWCD	SWRM S & S	Status reviews of 25% of participants annually. Number of COC's
	Promote no-till and cover crops through County Conservation Program	SWCD	Barron County	Acres funded, Soil Erosion Transect Survey
	Implement State Performance Standards, conducting conservation walk-overs with landowners to determine compliance.	SWCD	SWRM S & S Barron County	Number of walkovers, Compliance issues settled
	Sponsor periodic conservation workshops.	SWCD, FLC (Farmer Led Councils), NRCS	Barron County	Number of Attendees
	Discourage farmers from planting snap beans on highly erodible land and encourage cover crops on snap bean fields	SWCD, FLC		Soil Erosion Transect
	Develop demonstration sites for soil health practices	SWCD, FLC, UWEX		Number of sites
	Develop conservation lease agreements	SWCD, FLC Red Cedar Basin, UWEX		A sample agreement

GOAL: ENHANCE AND PROTECT SOIL HEALTH

OBJECTIVE	ACTION/PROGRESS	PARTNERS	FUNDING	EVALUATION/ TRACKING
Protect and improve soil health	Through conservation planning, using appropriate crop rotations to maximize soil nutrients.	SWCD, NRCS	SWRM S & S	Acres Planned Soil Erosion Transect
	Assist farmers with nutrient management planning, utilizing SEG (1000 acres annually), NMFE programs and/or one on one assistance.	DATCP		Farmers assisted Acres Planned GIS Tracking
	Create a Soil Health Specialist position in Barron County.	NRCS WDNR	NRCS-RCPP DNR Lake Protection & Targeted Runoff Management, Foundations	
	Promote no-till and cover crop use through County Conservation Program.		Barron County	Acres planted Soil Erosion Transect
	Develop a Demonstration Farm system in the County.	SWCD, NRCS, FLC		
	Develop a Farmer Led Watershed group focusing on glacial outwash area.	FLC		

RESOURCE CONCERN: NON-POINT POLLUTION OF WATER

GOAL: PROTECT AND IMPROVE WATER QUALITY

OBJECTIVE	ACTION/PROGRESS	PARTNERS	FUNDING	EVALUATION/ TRACKING
Reduce sedimentation of wetlands, streams, rivers and lakes by soil erosion.	Lead Barron County's implementation of the EPA approved 9 Key Element Plan for Lakes Tainter and Menomin	Dunn Co. NRCS WDNR	NRCS DATCP WDNR	Percent reduction of Phosphorus entering Tainter Lake.
	Reduce soil erosion on cropland through installation of conservation practices.	SWCD, NRCS	SWRM S & S, SWRM C/S	Practices installed
	Continue to support CRP and CREP programs.	SWCD, NRCS, FSA	Barron County	Acres contracted
	Explore buffer possibilities with landowners using the GIS layer developed through previous inventories.	SWCD, Land Information	Barron County CREP	Acres planted
	Develop a program to plant concentrated flow channels on outwash soils to permanent grass	NRCS, Lake District, WDNR		Feet of channel planted
	Develop a Conservation Lease Agreement	FLC, UWEX, Red Cedar		
	Continue to implement NR 135, evaluating reclamation plans, monitoring mining operations and certifying reclamations	SWCD, Zoning	Barron County	Acres
	Evaluate farms for conservation compliance for the Farmland Preservation Program	SWCD, NRCS	SWRM C/S	Acres achieving compliance

Reduce phosphorus runoff from urban areas and lakeshores.	Evaluate Medium CAFO's (300-999 AU) for conservation compliance			Farms evaluated Goal of 4 per year
	Assist farmers, with nutrient management planning, utilizing SEG and NMFE funding.	SWCD	SWCD S & S, SWRM C/S	Acres of NMP plans Goal - Increase acreage by 5% annually
	Address prohibitions and performance standards.	NRCS, WDNR		Sites corrected Goal 4/year
	Evaluate priority fields identified through EVAAL survey			Acres evaluated
	Implement the Barron County Manure Storage Ordinance	SWCD	SWCD S & S, SWRM C/S	Facilities inspected Permits Issued
	Work with beef operations on pasture and feeding area management techniques to reduce runoff.			Farms assisted
	Partner with wastewater plants on MDV and Pollution Trading programs	WWTP	WWTP	Partnerships Developed
	Develop a Lake and Invasive Species Specialist position.	SWCD	Barron County	
	Create an online educational presence to reach maximum residents.	SWCD, WDNR	Barron County	
	Continue educational activities such as storm sewer stenciling with area students and the 6 th Grade Tour.			
Provide technical assistance to lake groups.				

<p>Improve water quality on the Chetek Chain of Lakes</p>	<p>Support the formation of a Lake District</p> <p>Support efforts of hypolimnetic withdrawal for irrigation</p> <p>Support efforts for dredging of lake sediments</p>	<p>Lake District, WDNR</p>		
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RESOURCE CONCERN: LOSS OF PRODUCTIVE FARMLAND

GOAL: REDUCE NON-AG USE OF PRODUCTIVE FARMLAND

OBJECTIVE	ACTION/PROGRESS	PARTNERS	FUNDING	EVALUATION/ TRACKING
<p>Protect productive agricultural land</p>	<p>Support Zoning Office in its efforts to maintain Exclusive Ag Zoning on farmed land.</p> <p>Follow the Barron Farmland Preservation Plan, updated in 2015.</p> <p>As part of implementing FPP plan, assist landowners interested in:</p> <ul style="list-style-type: none"> ● Assist landowners in maintaining program eligibility. ● Forming an Ag Enterprise Area (AEA) 	<p>SWCD, Zoning</p> <p>SWCD, Zoning</p> <p>SWCD, Zoning</p>	<p>SWRM S & S, Barron County</p> <p>SWRM S & S, Barron County</p> <p>SWRM S & S, Barron County</p>	

RESOURCE CONCERN - GROUNDWATER QUALITY

GOAL: PROTECT GROUNDWATER QUALITY

OBJECTIVE	ACTION/PROGRESS	PARTNERS	FUNDING	EVALUATION/ TRACKING
Prevent contaminants from entering groundwater	Assist farmers with nutrient management planning, utilizing SEG and NMFE funding.	SWCD, NRCS,	SWRM C/S, NRCS	Acres planned
	Fund well decommissioning for idle wells.	SWCD	SWRM S & S, SWRM C/S	Idle wells decommissioned
	Assist WTE facility with agricultural and household clean sweep projects to collect hazardous materials.	SWCD, WTE	Barron County, State funds	Pounds of material collected
	Fund idle manure storage facility closure, targeting earthen facilities.	SWCD NRCS	SWRM C/S NRCS -EQIP	# of facilities closed Goal - 5 per year
	Develop a Farmer Led Council targeting glacial outwash areas.	SWCD, Existing council	DATCP grants	
Determine the extent of groundwater contamination	Develop a groundwater quality testing program	Public Health	Barron County	Wells tested
	Map internally drained areas of glacial outwash soils	SWCD	Barron County	

RESOURCE CONCERN: LOCAL RESOURCE & HABITAT PROTECTION

GOAL: PRESERVE AND RESTORE LAKESHORE HABITAT

OBJECTIVE	ACTION/PROGRESS	PARTNERS	FUNDING	EVALUATION/ TRACKING
Protect and improve lakeshore sites.	Develop a Lake and Invasive Species Specialist position.	SWCD, WDNR	Barron County, WDNR, Lake Organizations	
	Develop a county-wide lakes association.	SWCD	Barron County	
	Create an online educational presence to reach maximum residents, emphasizing the use of native species.	SWCD	Barron County	# of website visitors
	Assist Barron Co. Zoning on mitigation concerns.	SWCD, Zoning	Barron County	Sites assisted on
	Assist lakeshore owners with restoration projects as outlined in the DNR Healthy Lake Program.	SWCD WDNR	Barron County, DNR Healthy Lakes	Restoration Projects

GOAL: PROTECT AND ENHANCE LOCAL RESOURCES

OBJECTIVE	ACTION/PROGRESS	PARTNERS	FUNDING	EVALUATION/ TRACKING
Control invasive species infestations.	Develop a Lake and Invasive Species Specialist position.	SWCD, WDNR	Barron County, WDNR, Lake Organizations	
	Continue program of cutting and spraying purple loosestrife, Japanese knotweed, garlic mustard and other exotic invasive species.	SWCD	Barron County	Sites treated

	Apply for AIS grants to obtain needed financial assistance for herbicides.	SWCD, WDNR	WDNR	
	Continue raising and distributing Galerucella beetles to combat purple loosestrife.	SWCD	Barron County	Sites treated
	Continue providing financial assistance to lake groups using chemical treatments for AIS such as Eurasian water milfoil.	SWCD, Lake Groups	Barron County	
	Continue to support the Clean Boats, Clean Waters Program.	SWCD, UW-EX		Lakes with programs
	Partner with the SCRC Weed COOP on terrestrial invasive issues	SWCD, USFWS, WDNR, Counties		
	Become members of PlayCleanGo Program			
	Utilize Great Lakes Early Detection Network (GLEDN) app for mapping of invasive species.	SWCD		Sites documented
	Distribute invasive species information at annual tree sale.	SWCD		
	Support County Forester in efforts to survey County Forest property for invasive species.	SWCD, NRCS, USFWS, WDNR		
	Promote wetland restoration utilizing NRCS WRP program.	SWCD, NRCS		
Improve education efforts to protect local resources	Continue poster and speaking contests	SWCD		Number of participants

	Provide Self-help Lake Monitoring information and instructions to lake groups.			
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RESOURCE CONCERN: PROTECT FOREST AREAS & WILDLIFE HABITAT

GOAL: MAINTAIN OR INCREASE FORESTED AREAS

OBJECTIVE	ACTION/PROGRESS	PARTNERS	FUNDING	EVALUATION/ TRACKING
Promote tree planting	Continue selling native trees and shrub transplants to residents.	SWCD		Trees sold
	Promote DNR tree seedling sale	SWCD, WDNR		
Educate residents on the importance of forestry habitat	Provide low cost tree planters and brush hog to facilitate large plantings.	SWCD		Trees planted
	Encourage maintenance and development of wildlife corridors.	SWCD		
	Discourage pasturing of woodlots.	SWCD		
	Continue the forestry component of the 6 th Grade Tour.	SWCD, WDNR		
	Support the Barron County Woodland Owners Association, offering information on their demonstration sites.	SWCD, BCWOA		

OBJECTIVES

CONTROL SOIL EROSION

Barron County Farmland Preservation Plan

In 2015, Barron County completed a comprehensive revision and update of the Barron County Farmland Preservation Plan originally adopted in 1979, adding three (3) additional Towns to the plan area. The original plan was created in order to be consistent with the Farmland Preservation Program, which provided tax credits to qualified agricultural lands. The plan served as the foundation for preserving Barron County's farms by tying farmland preservation to land-use planning and allowed farmers who participated in the program to take part in the tax relief offered by the State of Wisconsin. Land use decisions since have been primarily consistent with the 1979 plan as agriculture continues to be the primary cultural and economic force in Barron County. The Exclusive Agriculture District of the Barron County Land Use Ordinance was also updated to provide more flexibility to farmers while diminishing fragmentation of farmed acres.

This Farmland Preservation Plan is to guide and manage growth and development in a manner that will preserve the rural character, protect the agricultural base and natural resources, and contribute to the safety, health, and prosperity of Barron County's communities. This Farmland Preservation Plan focuses on Barron County's land use planning and zoning approach to farmland preservation and identifies "farmland preservation areas" within the county.

Since the additions to the plan area, over 2300 acres have been rezoned to the Exclusive Ag District (A1) and over 7800 acres of existing A1 land is now eligible for the program, bringing the total A1 acres in Barron County to over 198,000. FPP participants must meet NR 151 Standards and manure management prohibitions, contributing to many LWRMP goals with soil erosion a main priority.

Farmland Preservation Goals

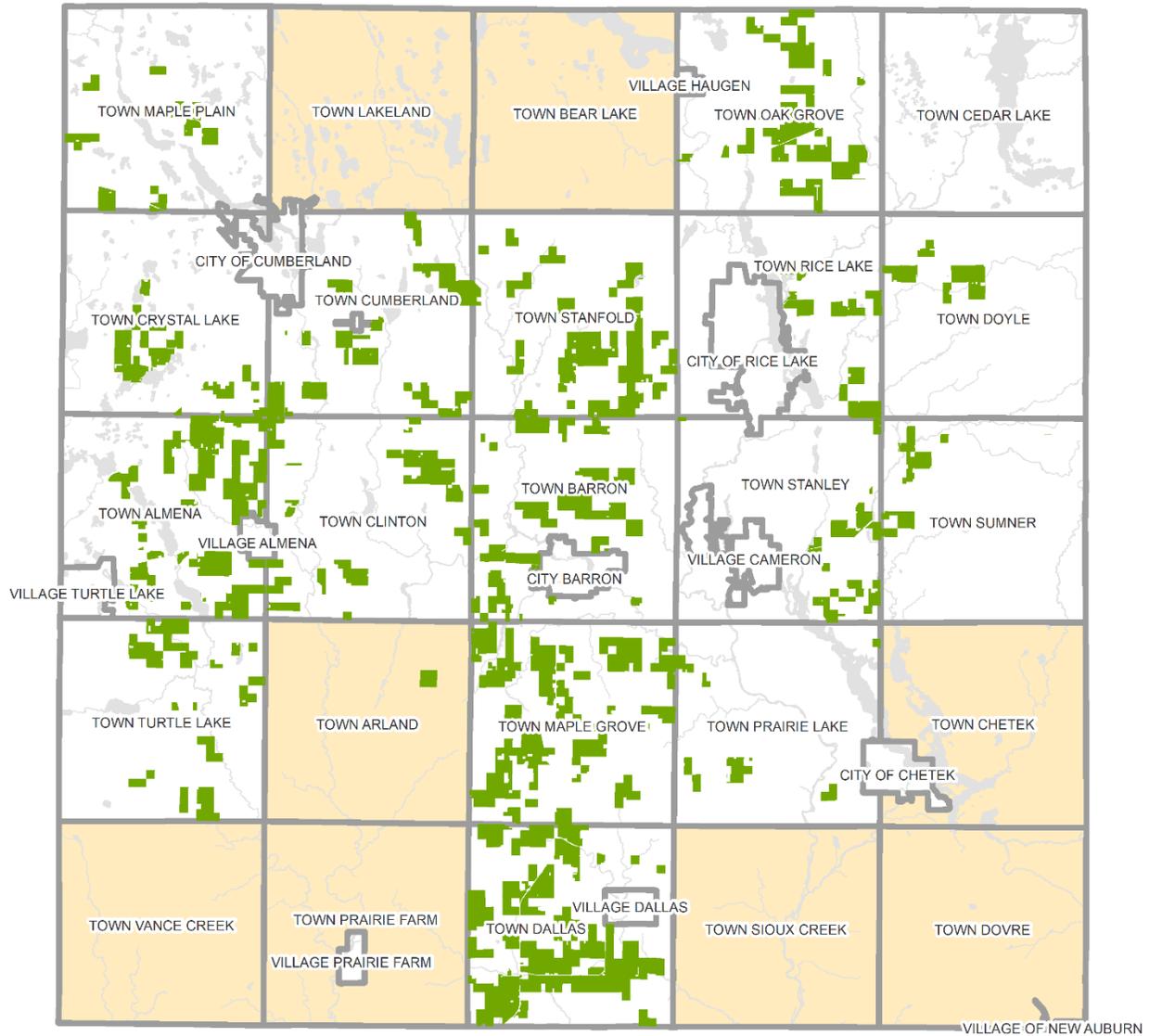
- It is the goal of the Barron County to protect, preserve and keep in production as much of the County's agricultural land as possible and maintain a viable local agricultural economy.
- It is a goal of Barron County to work with landowners to help them achieve compliance with the soil conservation standards to be eligible for tax credits under the Working Land Initiative.
- It is the goal of Barron County to direct housing to areas designated for non-agricultural development.
- It is the goal of Barron County to support a variety of existing and future agricultural activities and products that contribute to a strong local economy, the health of county residents and the sustainability of our natural environment.

Objectives

- Protect agricultural land from development.
- Protect existing farm culture within the county.
- Preserve large, contiguous blocks of farmland.
- Utilize land use controls to ensure preservation of valuable farmland.
- Utilize best management practices to promote soil health and protect natural resources.
- Plan new growth in areas that will not adversely impact planned agricultural areas of the county.

Goals: Continue to administer the FPP plan and encourage rezoning of eligible lands to the A1 district, adding to the number of farms achieving compliance with State standards.

FARMLAND PRESERVATION PARTICIPATING ACREAGE

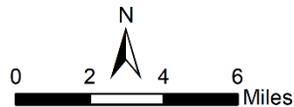


**BARRON COUNTY
LAND & WATER RESOURCE
MANAGEMENT PLAN 2019-2028**

- PARTICIPATING ACREAGE
- MUNICIPAL BOUNDARY
- SURFACE WATER
- UNZONED TOWN



BARRON COUNTY
SOIL & WATER
CONSERVATION
DEPARTMENT



05/03/2019

NR 151 AGRICULTURAL PERFORMANCE STANDARDS

Wisconsin's rules to control polluted runoff from farms, as well as other sources, went into effect October 1, 2002. The State legislature passed the rules to help protect Wisconsin's lakes, streams and groundwater. WDNR Administrative Rule NR 151 sets performance standards and prohibitions for farms. It also set urban performance standards to control construction site erosion, manage runoff from streets and roads and manage fertilizer use on large turf areas. DATCP Administrative Rule ATCP 50 identifies conservation practices that farmers must follow to meet performance standards in NR 151. ATCP 50 also sets out the requirements for nutrient management plans.

The SWCD has long been recognized as the primary tool to bring these water quality performance standards into the field. The Soil and Water Conservation Departments will have the primary responsibility for the implementation of the agricultural runoff standards. NR 151 lays the foundation for minimal expectations in regards to land use and management practices within the agricultural landscape.

For farmers who grow agricultural crops:

- Must meet tolerable soil loss ("T") on all cropped fields. Accomplished with crop rotations, residue management, contour farming and cover crops. (NR 151.02)
- Follow a nutrient management plan meeting NRCS 590 standards, designed to limit entry of nutrients into state waters (groundwater and surface water). (NR 151.07)

For farmers who raise, feed or house livestock (NR 151.08):

- Prevent direct runoff from feedlots or stored manure into state waters.
- Limit livestock access to state waters to avoid high concentrations of animals and maintain adequate or self-sustaining sod cover along waterways.

For farmers who have or plan to build, a manure storage structure:

- Maintain structures to prevent overflow. (NR 151.08)
- Repair or upgrade any failing or leaking structures that pose an imminent health threat or that violate groundwater standards. (NR 151.08)
- Close idle manure storage structures according to NRCS standards. (NR 151.08)
- Meet technical standards for newly constructed or substantially altered structures. (NR 151.05)

For farmers with land in a Water Quality Management Area (*300 feet from a stream, 1000 feet from a lake, or in areas susceptible to groundwater contamination*):

- Do not stack manure in unconfined piles. (NR151.08)
- Divert clean water away from feedlots, manure storage areas and barnyards located within this area. (NR151.06)

Additional State Standards in 2011

- **Phosphorus Risk Index** For all croplands, pastures, and winter grazing areas, the PI establish a maximum allowable P Index of 6 averaged across an accounting period of up to 8 years. They also include a P Index limit of 12 for any individual year. Use of the P Index allows growers to evaluate the relative risk of surface water pollution resulting from different management practices on a particular field in each year of their planned crop rotation.
- **Process Wastewater Handling** No significant discharges of milkhouse waste and silage leachate to a lake, stream, wetland or groundwater.
- **Tillage Setback** A minimum tillage setback of five feet is required, and can be increased to a distance of up to 20 feet on a case-by-case basis if justified. The standard does not apply to grassed waterways installed as conservation practices.

Financial Considerations

Many farmers voluntarily install conservation practices on their farms to help prevent soil erosion and improve water quality. Cost share dollars will still find priority with landowners looking to voluntarily implement BMPs to correct prohibition violations on their lands. Barron County will continue to offer voluntary cost sharing to others as program funds are available. The agricultural performance standards and prohibitions found in NR 151 require 70% cost sharing be offered to change an existing cropland practice or livestock facility to bring them into compliance with the new standards. The opportunity exists for an increase to 90% cost sharing if economic hardship is proven.

Farmers who have established new facilities since 2002 may be eligible for cost sharing using DATCP funds, but not DNR funds as required by Statute. Cost sharing is not required for compliance on these new operations. Those farms covered under a WPDES permit are not eligible for state cost sharing to meet performance standards and prohibitions required under their permits.

Information and Education

The SWCD will distribute information and educational material from various sources such as WDNR, DATCP and SWCD to affected landowners. We will use direct mailings, electronic mailings, workshops, newsletters, news media and onsite visits as our avenue for information distribution.

Our educational materials will be designed to accomplish the following:

- Educate landowners about Wisconsin's agricultural performance standards and prohibitions, County ordinances, applicable conservation practices and funding opportunities.
- Promote voluntary implementation of conservation practices necessary to meet standards and prohibitions.
- Inform landowners of requirements and compliance procedures and the role the county will have within those procedures.
- Make landowners aware of expectations for compliance and consequences for non-compliance.

Evaluation and Compliance Status

The Barron County Land Information System and our Geographical Information System (GIS) will be the foundation for this process. We are building a GIS layer that will associate levels of compliance for all provisions found in NR 151. Our current database includes current Manure Storage Facilities, suspected Prohibition Violation sites and BMPs installed since 2011. We are developing a procedure to track conservation plans and Nutrient Management Plans in the GIS as well.

Along with the creation of a NR 151 compliance layer, the GIS system will be used to begin and continue the process of investigating and searching out non-compliant parcels within Barron County. Using the combined data, layers can be developed to identify "potential problem areas" within the Water Quality Management Areas. The process of using the various data layers available to us through our GIS system and access to parcel mapping information and addressing information will allow us to create mailing lists to target these areas through I/E and onsite visits.

This system will assist staff and the LCC in monitoring progress towards the goals of our LWRMP. Monitoring and modeling information will be used to direct staffing efforts to accomplish implementation of the work plan and evaluate plan success.

On Site Farm Visits

When found non-compliant, corrective measures are determined along with eligibility for cost sharing. During subsequent visits, cost estimates and timelines for achieving compliance will be discussed.

Documentation and NR 151 status report

Following each site evaluation, staff will prepare and issue an NR 151 status report to owners of the evaluated parcels. The status report will include the following information:

- Current status of parcel compliance with each of the performance standards and prohibitions.
- Corrective measure options and rough cost estimates to comply with each of the standards and prohibitions for which a parcel is not in compliance.
- Status of eligibility for public cost sharing.
- Grant funding sources and technical assistance available from Federal, State and Local government and third party service providers.
- An explanation of conditions that apply if public cost share funds are used.
- A timeline for completing corrective measures, if necessary.
- Signature lines indicating landowner agreement or disagreement with report findings.
- Process and procedures to contest evaluation results to LCC.
- (Optional) A copy of performance standards and prohibitions and technical design standards.

Maintaining Public Records and Landowner Notification

The compliance information will remain public record. In an effort to ensure that subsequent landowners are made aware of NR 151 compliance on their property, we will continue to work on a long-term notification process. This will include the development of capabilities to join our GIS data layers to the County's land records system. This would allow the SWCD to be notified through the land records system when a parcel joined to an NR 151 compliance issue would change ownership.

Technical Assistance and Cost Sharing to Install BMP's:

Voluntary Participation (Cooperative):

- Receive request for cost-share and/or technical assistance from landowner
- Confirm cost-share grant eligibility and availability of cost-share and technical assistance.
- Develop and issue cost-share contract listing BMP's to be installed or implemented, estimated costs, project schedule and notification requirements.

Non-voluntary component (Non-Cooperative):

In the event that a landowner chooses not to install corrective measures either with or without cost sharing, the landowner will be issued notification per NR 151.09(5-6) and/or 151.095(6-7). The notification will include the following information:

- If eligible costs are involved, this notification shall include an offer of cost sharing.
- If no eligible costs are involved, then notification will explain justification why cost sharing does not apply.
- A description of the performance standard and prohibition being addressed.
- The compliance status determination of which best management practice or other corrective measures are needed.
- An offer to provide or coordinate technical assistance.
- A compliance period for meeting the performance standard or prohibition.
- An explanation of the possible consequences if the owner or operator fails to comply with provisions of the notice.
- An explanation of local appeals procedures.
- If cost sharing is involved, the SWCD will draft a program-specific cost share agreement including a schedule for installing or implementing BMP's.

The SWCD will provide technical assistance and oversight for all conservation practices as staff time allows with the exception of liquid Manure Storage Facilities due to their complexity.

These technical services include:

- Provide conservation plan assistance.
- Provide engineering design assistance.
- Review engineering designs provided by other parties.
- Provide construction oversight.

- Evaluate and certify installation of conservation practices.

Note: The SWCD will not provide direct NPM 590 Plan Development. We will provide assistance in leading Farmer written nutrient management plan classes and work with them on an individual basis. We will continue providing conservation planning, identifying critical spreading areas and other information. Landowners will be directed to work with Certified Crop Consultants or self-certification programs for nutrient management plan development.

Funding Sources

A variety of sources will be used to fund projects on priority farms; these include:

- DATCP State funds including SEG monies
- DNR TRM Grants
- DNR NOD Grants
- DATCP Nutrient Management Farmer Education funds
- USDA-NRCS EQIP funding
- County funding for cultural practices not covered by State funding
- Lake group contributions to fund projects in their watersheds

All projects will be evaluated to determine the optimum source or combination of sources to accomplish our conservation goals.

Re-evaluate Parcel for Compliance:

After corrective measures are applied, the parcel will be reevaluated for compliance with relevant performance standard(s) or prohibition(s). If site is compliant, the NR 151 Status Report will be updated and a Certificate of Compliance will be issued.

Note: A letter of NR 151 compliance serves as official notification that the site has been determined to now be in compliance with applicable performance standards and prohibitions. This letter would also include an appeals process if a landowner wishes to contest the findings.

If still not in compliance, seek non-regulatory remedies or initiate enforcement action.

Enforcement Action:

For the manure storage portions of the prohibitions, SWCD will utilize the Barron County Manure Storage Ordinance and the procedures outlined in it for enforcement. For FPP participants, financial sanctions will be used to enforce all standards and prohibitions. If these efforts are unsuccessful in achieving compliance and the landowner refuses to respond appropriately to the official Notice of Non-Compliance or is in breach of a cost share contract, the SWCD will prepare and issue a Notice of NR 151 Violation letter. The case will then be referred to the WDNR.

Note: Enforcement begins with this letter. It will be pursued in circumstances where:

- (1) A breach of contractual agreement has occurred including failure to install, implement or maintain BMP's, and*
- (2) Non-regulatory attempts to resolve the situation have failed.*

Process for Appeal of Non-Compliance Decision:

Landowners wishing to appeal a notice of NR 151 Non-Compliance may do so to the Barron County LCC in writing within 30 days. The Land Conservation Committee shall hear and consider the appeal at their next scheduled meeting, and not more than 45 days from when the appeal was received.

Ongoing Evaluations to verify Ongoing Compliance:

The SWCD will develop a long-term plan to balance workload relating to servicing new NR 151 noncompliant issues and spot-checking existing on-going compliance issues. It is likely that a

combination of spot-checking, self-certification forms, aerial photo interpretation and other in-field evaluation tools will be used to maintain a long-term monitoring plan to assure ongoing compliance.

Livestock Siting & CAFOs

As the dairy industry continues its progression towards fewer, larger farms two state programs come into play. Livestock Siting deals with farms expanding beyond 500 animal units in areas covered by Exclusive Agricultural Zoning and the Wisconsin Pollution Discharge Elimination System (WPDES) covers farms larger than 1000 animal units. These are referred to as CAFOs, (concentrated animal feeding operation). See Appendix D for livestock siting details.

Landowners are informed that if one or more acres of land are disturbed to construct structures such as barns, manure storage facilities or barnyard runoff control systems, they must file a notice of intent with the WDNR per NR 216.42 (2) of the Wis. Adm. Code. For buildings or facilities, they must follow an erosion and sediment control plan consistent with s. NR 216.46 and meet the performance standards of s. NR 151.11, Wis. Adm. Code.

An agricultural building or facility is not required to meet the post-construction performance standards of NR 151.12, Wis. Adm. Code.

GOALS: ENHANCE SOIL HEALTH

Soil Health

From NRCS

Soil health, also referred to as soil quality, is defined as the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans. This definition speaks to the importance of managing soils so they are sustainable for future generations. To do this, we need to remember that soil contains living organisms that when provided the basic necessities of life - food, shelter, and water - perform functions required to produce food and fiber.

Only "living" things can have health, so viewing soil as a living ecosystem reflects a fundamental shift in the way we care for our nation's soils. Soil isn't an inert growing medium, but rather is teeming with billions of bacteria, fungi, and other microbes that are the foundation of an elegant symbiotic ecosystem. Soil is an ecosystem that can be managed to provide nutrients for plant growth, absorb and hold rainwater for use during drier periods, filter and buffer potential pollutants from leaving our fields, serve as a firm foundation for agricultural activities, and provide habitat for soil microbes to flourish and diversify to keep the ecosystem running smoothly.

Benefits of good soil health include:

- Increased nutrient availability for crops
- Increased water availability as organic matter can store more water than mineral soil particles can.
- Increased infiltration due to soil structure and increased pores from root and animal channels
- Increased availability of water during droughts as the water that soaked into the soil in the spring is there for use in summer when needed. If spring rain runs off the field, it is going past St. Louis when it doesn't rain for 10 days in July.
- Decreased runoff and therefore less erosion due to the water infiltrating.
- Decreased compaction from farm machinery as the soil has a better ability to support loads.

Five principles for increasing soil health

1. Armor the soil with crop residues and cover crops. Don't let rainfall impact the soil. Armoring also reduces evaporation and heating during the summer.
2. Minimize soil disturbance. Tillage destroys soil structure and over stimulates the soil biology, burning up the carbon in the soil.
3. Increase plant diversity - Each type of plant (Warm season grass, cool season grass, legume, non- legume broadleaf) has a different root structure that feeds different aspects of the soil microbiome.
4. Continual Live Plant Root - Commercial crops grow from a low of 58 days for snap beans to 120 days for corn in Barron County. There are several crop varieties such as cereal rye and brassicas that can live beyond our median 124-day growing season. This increases the amount of time that roots can feed the microbiome of the soil and transfer carbon and energy into the soil.
5. Integrate Livestock through grazing. Properly managed grazing of cover crops and crop residues replicates some of the conditions of herds of large grazing animals in prairie environments. It also can be used to rest perennial pastures during times where they have reduced production.

These principles should be incorporated into every conversation we have. They apply just as easily (with the exception of the livestock) to a lakeshore cabin property as they do on a corn field.

There are many fields where none of these components are followed, and these are likely to see the greatest potential for benefits.

As with many new ideas, showing the technique is valuable for getting the idea out to more farmers. The establishment of a long-term Barron County Soil Health Plot would enable demonstrations to be done on a variety of no-till methods, cover crops, and additional crops in rotation.

Partnering with a Farmer Led Watershed Council would work well as they could bring the questions that farmers are looking to answer along with planting and harvesting ability.

Goals:

- **Develop a demonstration site or demonstration farm network.**
- **Create a Soil Health Specialist position in Barron County.**
- **Use County funds to promote the five principles of soil health.**
- **Encourage the formation of a Farmer Led Group on the Outwash areas of the county.**
- **Continue partnering with existing farmer led watershed groups.**

Soil Health Specialist Position concept description

This position would be responsible for conducting outreach and education with farmers and citizens in Barron County, focusing on the principles of soil health.

1. Establish, plan and implement a Demonstration Farm system across the county.
2. Plan educational events (Field Days) at the Demonstration Farm(s)
3. Provide information on cover crops and no-till techniques.
4. Work with farmers on a one on one basis dealing with soil health issues and other field conservation BMPs.
5. Coordinate the soil erosion transect
6. Work with the Farmer Led Council(s)
7. Expand the buffer program (CREP)
8. Develop a farmer led council with a focus on outwash area.

Possible funding sources

- Mississippi basin grants from NRCS RCPP
- NRCS Cooperative Conservation Agreements
- NRCS Contribution Agreements
- WDNR Lake Protection Grant - Due February 1 annually
- WDNR Large Scale Targeted Runoff Management Grant - Due April 15 annually
- McKnight Foundation - involved in Upper Mississippi basin water quality

A plan should be developed regardless of funding as opportunities can rise unexpectedly.

Conservation Lease agreements

We would like to see land managed as a collaboration between the owner and operator. Traditionally, renting land has been approached as a short-term arrangement lasting one growing season with both parties being concerned mainly with short-term financial outcomes.

The health of the soil has not always been taken into consideration; however, because this really is the basis for all crop production, it should be viewed as a primary component of the land management by the owner and operator.

Operators with longer-term agreements can be assured that they will be able to reap the benefits of their care of the land. These benefits include being more resilient to weather, both wet and dry, and increased availability of nutrients.

Landowners can be assured that their soil is maintaining and even improving fertility and tilth, not being lost to erosion, and not being degraded due to cropping practices. Reducing environmental impacts such as runoff to surface water is an added benefit to everyone.

Areas such as waterways, eroded headlands seeded to grass and other areas taken out of production to protect them from soil erosion need to be accounted for in the lease agreement. The renter is more likely to farm an area with a higher potential for erosion as they are paying the same rate for it as they are for cropland.

So with both sides standing to benefit, an agreement that lays out a plan for conservation of the land should be developed. It will require a basic level of trust to negotiate from a base of what the rent would be without conservation measures. Enforcement would be difficult or impossible if there is not a good relationship between the landowner and renter.

Barron County has set it as a goal to work with farm groups, land owners, and legal counsel to develop a conservation lease agreement that could be used by those parties.

Runoff evaluations

Barron County has approximately 225,000 acres of cropland. The majority is farmed in a manner that yields little erosion. Identifying areas that have the potential for severe erosion is difficult.

The Farmers of Barron County Watersheds (FBCW)

This group was formed in 2015. When the concept was presented to local farmers with the idea that the group would have a concentrated focus on a particular watershed, one or two townships in size, it was discussed that these issues were applicable across all areas of Barron County. The group has worked on several issues.

1. Cover Crops -- They have had an incentive program to encourage implementation. They have also done some trials on interseeding cover crops into corn silage fields. They are working with the two companies (Seneca and Lakeside), that contract snap beans in the area, to establish cover crops as a standard practice when raising beans.
2. No-till establishment of alfalfa into rye stubble. Historically alfalfa establishment required intensive tillage, and the fields were prone to erosion.
3. In 2019 they will be installing Teralytic soil probes that will measure temperature, soil moisture, soil temperature, pH, nitrate, potassium, phosphorus and more in real time. These probes will be installed into both no-till and conventional fields.
4. Hosted a winter conference in 2017, 18, 19, bringing in experts on various topics of soil health.
5. Attended annual Producer-Led-Watershed state meetings. They presented their activities at the 2018 meeting.
6. Hosted field days and tours of local cover crop sites.
7. Conducted field trials on cover crop application methods.
8. Liaison with Michael Fields Ag Institute for assistance with cover crop outreach. The FBCW need access to a cover crop specialist who can provide outreach and education on cover crops as well as help farmers planting cover crops for the first time.

Overall, their goal is to reduce incentive payments and increase workshops and one -on-one interactions with farmers to increase soil health and reduce erosion. They also continue to promote and educate Barron County producers on soil health and water quality protection practices and plan to begin a study to see what production practices work best on sandy soils to reduce surface and groundwater contamination.

Hay River Farmer-Led Watershed Council - from the Dunn County Plan

The Hay River Farmer-Led Watershed Council is one of four farmer-directed conservation groups in the St. Croix and Red Cedar River - Farmer-Led Watershed Council Project. The purpose of the project is to develop a model that engages farmers in water quality leadership roles that can be replicated throughout the Red Cedar Basin and the State of Wisconsin. Increasing farmer knowledge of water quality issues, the adoption of conservation practices utilizing performance-based incentives, and enhancing agricultural productivity are also the goals of the project.

The Hay River Farmer-Led Watershed is located in both Barron and Dunn Counties and includes Big Beaver Creek, Little Beaver Creek, Vance Creek, and the North Fork of the Hay River. The Barron County Towns of Vance Creek and Prairie Farm and the Dunn County Towns of New Haven, Sheridan, Tiffany, and Hay River all have land included in the watershed.

The farmers of the Council are enabled to influence and choose the strategies of increasing conservation and improving water quality in their watershed and community. The Council is assisted by staff from LWCD and UWEX. The staff act as a resource to provide information and technical support while the farmers take the lead and are the decision makers. Financial and administrative support is appreciated from the McKnight Foundation of Minnesota, Wisconsin Farmers Union, USDA-Sustainable Agricultural Research and Education, and DNR. The Council also values input from agency partners including USDA-Natural Resource Conservation (NRCS) Service Menomonie Field Office; NRCS Northwest Area Office; UWEX; Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP); and the DNR.

Mission Statement: A voluntary, producer-led program to promote and enhance environmentally sound management of soil and water in the Hay River Watershed.

The goal of the Farmer Led Watershed is to keep soil and nutrients on the land through increased adoption of best management practices including, but not limited to: grassed waterways, no-till and minimum till systems, perennials, and cover crops.

Barron County recognizes the importance of relationships with these Farmer Led Councils. Farmers have knowledge of what is going on the land in a way that government personnel don't.

Goal: Continue advising the current groups, and work with the Farmers of Barron County Watersheds to develop a group focused on the irrigated outwash areas of the county.

GOALS: PROTECT/IMPROVE WATER QUALITY

The water quality objectives of this plan will be the improvements that result from our efforts to reduce the sediment and phosphorus loading to the streams of the county by increasing the level of soil conservation and management of nutrient applications on all cropland within the county.

Cropland has been shown to be responsible for over 60% of the phosphorus in the Red Cedar Basin. It is for this reason that soil conservation measures must be implemented to address sheet and rill, and gully erosion.

NUTRIENT MANAGEMENT PLANNING

Nutrient management planning refers to the use of manure and other fertilizers to meet crop nutrient needs, while reducing the potential for them to run off fields to lakes, streams and groundwater. It helps assure that crops get the right amount of nutrients -- nitrogen, phosphorus and potassium, often referred to as N-P-K -- at the right time and place. Spreading restriction maps included with the plan will address setbacks from critical areas such as grassed waterways, surface water, and well locations as well as winter spreading restrictions.

This benefits the farmer by improving crop yields and reducing costs, and benefits the environment by keeping nutrients on fields and preventing them from running off to streams or leaching to groundwater. Nutrient management planning requires testing both soil and manure to learn what the nutrient content is.

In Wisconsin, per NR 151, all farms must have a nutrient management plan. These are the situations where the requirement is connected to a program.

- Participate in the Farmland Preservation Program.
- Are offered cost-sharing to develop a plan.
- Accept cost-sharing for manure storage systems.
- Are large livestock operations that require a WI Pollutant Discharge Elimination System permit.
- Are regulated under a local ordinance for manure storage or livestock siting.

Beginning in 2019, Barron County is requiring submittal of the DATCP Nutrient Management Plan Checklist by June 1 annually to maintain compliance with the Farmland Preservation Program. This is to have plans developed before the planting season.

Assisting farmers in writing and following an approved nutrient management plan will continue to be a focus of SWCD. The staff Conservation Planner is required to attain CCA certification for this purpose. SEG and the Nutrient Management Farmer Education (NMFE) funds have been utilized in the past. We have not offered the Nutrient Management Farmer Education Fund in recent years due to the discrepancy in funding related to the SEG cost share program. We have worked individually with farmers to assist them in writing their 590 plan. Staff is available to help with yearly updates by appointment. Farmers also have the option of hiring a consultant to complete a plan. Annual checklists will continue to be required and kept on file; copies will be forwarded to the appropriate DATCP staff.

There is discussion in Barron County and across the State on how to increase the amount of Nutrient Management Planning and the effectiveness of these plans. A plan by itself does nothing unless it is comprehended and implemented. This plan will be updated to reflect new ideas developed to increase the levels of nutrient management planning implementation

Goals:

Increase the amount of cropland with an approved Nutrient Management Plan by 5% annually.

Revise the Barron County Manure Storage Ordinance to add a requirement that all farms with an active manure storage facility develop and maintain a nutrient management plan.

Erosion Vulnerability Assessment for Agricultural Lands (EVAAL)

The Wisconsin Department of Natural Resources Bureau of Water Quality has developed the Erosion Vulnerability Assessment for Agricultural Lands (EVAAL) toolset to assist watershed managers in prioritizing areas within a watershed which may be vulnerable to water erosion (and thus increased nutrient export) and thus may contribute to downstream surface water quality problems. It evaluates locations of relative vulnerability to sheet, rill and gully erosion using information about topography, soils, rainfall and land cover. This tool enables watershed managers to prioritize and focus field-scale data collection efforts, thus saving time and money while increasing the probability of locating fields with high sediment and nutrient export for implementation of best management practices (BMPs).

Erosion Vulnerability Index

EVAAL was designed to quickly identify areas vulnerable to erosion, and thus more likely to export nutrients like phosphorus, using readily available data and a user-friendly interface. This tool estimates vulnerability by separately assessing the risk for sheet and rill erosion (using the Universal Soil Loss Equation, USLE), and gully erosion (using the Stream Power index, SPI), while de-prioritizing those areas that are not hydrologically connected to surface waters (also known as internally drained areas, IDA). These three pieces are combined to produce an erosion vulnerability index value that can be assessed at the grid scale or aggregated to areas, such as field boundaries.

Barron County will benefit from a FEMA LiDAR survey done in 2019. The resolution of LiDAR has increased considerably since our first survey was done in 2005.

Goal: Using the new LiDAR survey have the EVAAL model run on all of the agricultural dominant HUC-12 watersheds, and have a comparison done between the two surveys to identify areas of erosion and deposition. The secondary goal will be to evaluate all fields shown to have the highest potential for erosion.

Farmed Concentrated Flow Channels

When the soil is not disturbed for several years in a continuous no-till system, there can be a stratification of phosphorus in the upper inch of soil. This can result in significant discharges of soluble phosphorus during winter and early spring runoff events. While our northern climate can limit the number of winter runoff events compared to southern Wisconsin, spring runoff occurs nearly every year.

One simple way to reduce the potential for nutrient runoff is to make sure that all concentrated water flow occurs within areas of permanent vegetation. There are several areas of sandy outwash with high infiltration rates and some long term no-till fields where these concentrated flow areas are cropped with associated nutrient applications. Nutrients are not applied when these areas are in grass, therefore reducing the phosphorus concentration in the top layer of soil.

Cattle should not be held and/or fed in these areas to prevent buildup of manure that could be transported away. Managed grazing is allowed and encouraged in these areas during the summer, but healthy grass must be maintained.

Farmers are encouraged to plant these areas to permanent grass that may be harvested for hay. As the science is expanded, programs for establishment of these grass waterways should be explored.



These photos were taken 5 days apart. A 2019 sample at this location showed a concentration of .72mg/l. Flow was estimated to be 50cfs. This would yield 194 lbs. of phosphorus in 24 hours delivered directly to the Red Cedar River upstream of Rice Lake.

Areas of concentrated flow on glacial outwash identified through previous survey work:

- Oak Grove - the Fenton Lake HUC-12 main stream and several side channels.
- Chetek Lakes - Several areas in the outwash area surrounding the lakes
- Vermillion River Watershed - Several areas between Lower Vermillion Lake and Poskin Lake

Funding opportunities such as Lake Protection Grants from DNR, along with CRP and CREP from USDA should be explored.

Goal: It is a goal of this plan to develop a program to plant these areas to permanent grass.

BUFFER SITES

Conservation Buffers are strips or other areas of land maintained in permanent vegetation. Participants establishing conservation buffers remove cropland or marginal pastureland from agricultural production and convert the land to native grasses, trees and other vegetation. Buffers are intended to improve water quality, reduce soil erosion, and reduce the amount of sediment, phosphorus and other pollutants entering waterbodies. Barron County has identified many possible buffer locations, and delineated them in the GIS. Potential situations are along streams, grassed waterways and areas where unvegetated concentrated flow channels occur in crop fields.

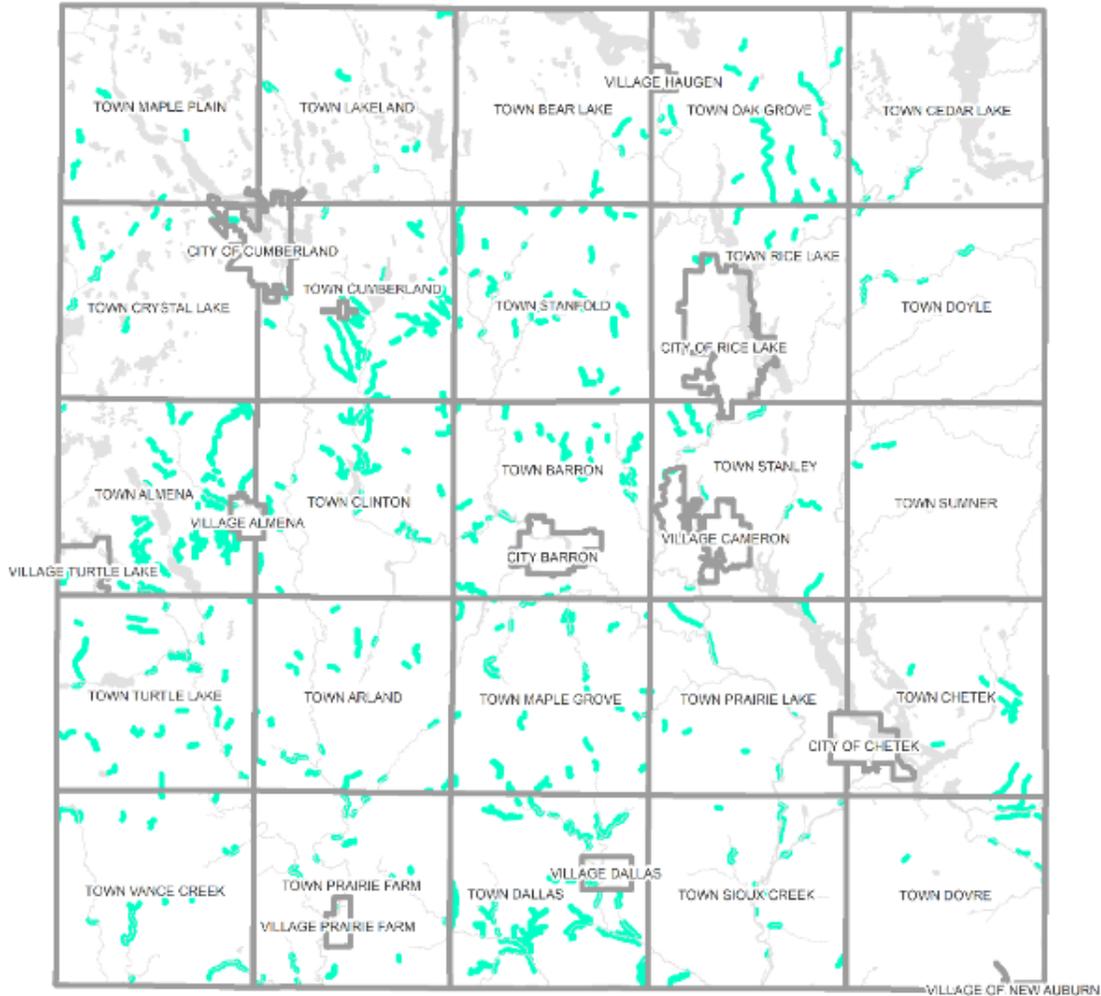
Conservation buffers work economically because of financial incentives available through USDA conservation programs--the continuous [Conservation Reserve Program](#) (CRP), [Environmental Quality Incentives Program](#) (EQIP), [Wildlife Habitat Incentives Program](#) (WHIP), general CRP, [Wetlands Reserve Program](#) (WRP), [Conservation Stewardship Program](#) (CSP) and the Honey Bee Pollinators Initiative. There also may be opportunities through Wisconsin DNR Lake Protection Grants for areas in Barron County such as the watersheds of Rice Lake, Poskin Lake, and the Chetek Chain of Lakes.

Objectives:

- Reduce sediment, phosphorus, nitrogen, and other pollutants entering streams and other waterbodies.
- Restore and protect wetlands.
- Improve wildlife habitat for grassland birds and other wildlife.

Goals:
Develop County Buffer program to address lands outside of CREP-eligible areas.
Continue participation in the CREP Buffer Program.

POTENTIAL BUFFER SITES

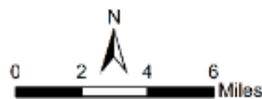


**BARRON COUNTY
 LAND & WATER RESOURCE
 MANAGEMENT PLAN 2019-2028**

- POTENTIAL BUFFER SITES
- MUNICIPAL BOUNDARY
- SURFACE WATER



BARRON COUNTY
 SOIL & WATER
 CONSERVATION
 DEPARTMENT



02/26/2019

MEDIUM CAFOS 300-999 ANIMAL UNITS

These farms have traditionally not received the same scrutiny that farms over 1000 Animal Units.

Recently the WDNR has inquired as to the compliance status of these farms across the state as they have been delegated regulatory control from the US EPA.

These farms cannot have discharge to surface waters. This is a higher threshold than smaller farms are held to, as they cannot have any significant discharge.

As of January 2019 there are an estimated 14 Medium CAFOs and 5 Large CAFOs in Barron County.

Goal: Conduct conservation compliance inspections of 4 Medium CAFO operations per year.

GROUNDWATER GOALS

Goal One

Develop and implement a drinking water testing program for the citizens of Barron County. This information would be used to further public information on the subject and guide future efforts to reduce contamination. Plan for testing approximately 300 private wells per year, distributed across the county in a fashion to accurately show what is there. Three testing areas based on underlying geologic structure - Cambrian Sandstone, Glacial Outwash, Glacial Till - with a possible fourth area in the Quartzite Blue Hills.

Goal Two

The internally drained areas of cropland in the glacial outwash are focused areas of groundwater recharge and, as such, more susceptible to leaching of nutrients and pollutants into the groundwater. Barron County is having a second LiDAR survey done in 2019, and in conjunction with the proposed EVAAL survey, these areas of focused recharge should be mapped.

Goal Three

Target areas of cropland for intensive improvements in soil health in order to increase the capacity of the soil to hold nutrients for use by the crops vs leaching into the groundwater. There is a discussion at the State level about nutrient management planning and whether there should be another set of guidelines for outwash situations, especially irrigated.

Ultimately, the goal would be to use this information to target areas of cropland for intensive improvements in soil health in order to increase the capacity of the soil to hold nutrients for use by the crops vs leaching into the groundwater. There is a discussion at the State level about nutrient management planning and should there be another set of guidelines for outwash situations especially irrigated.

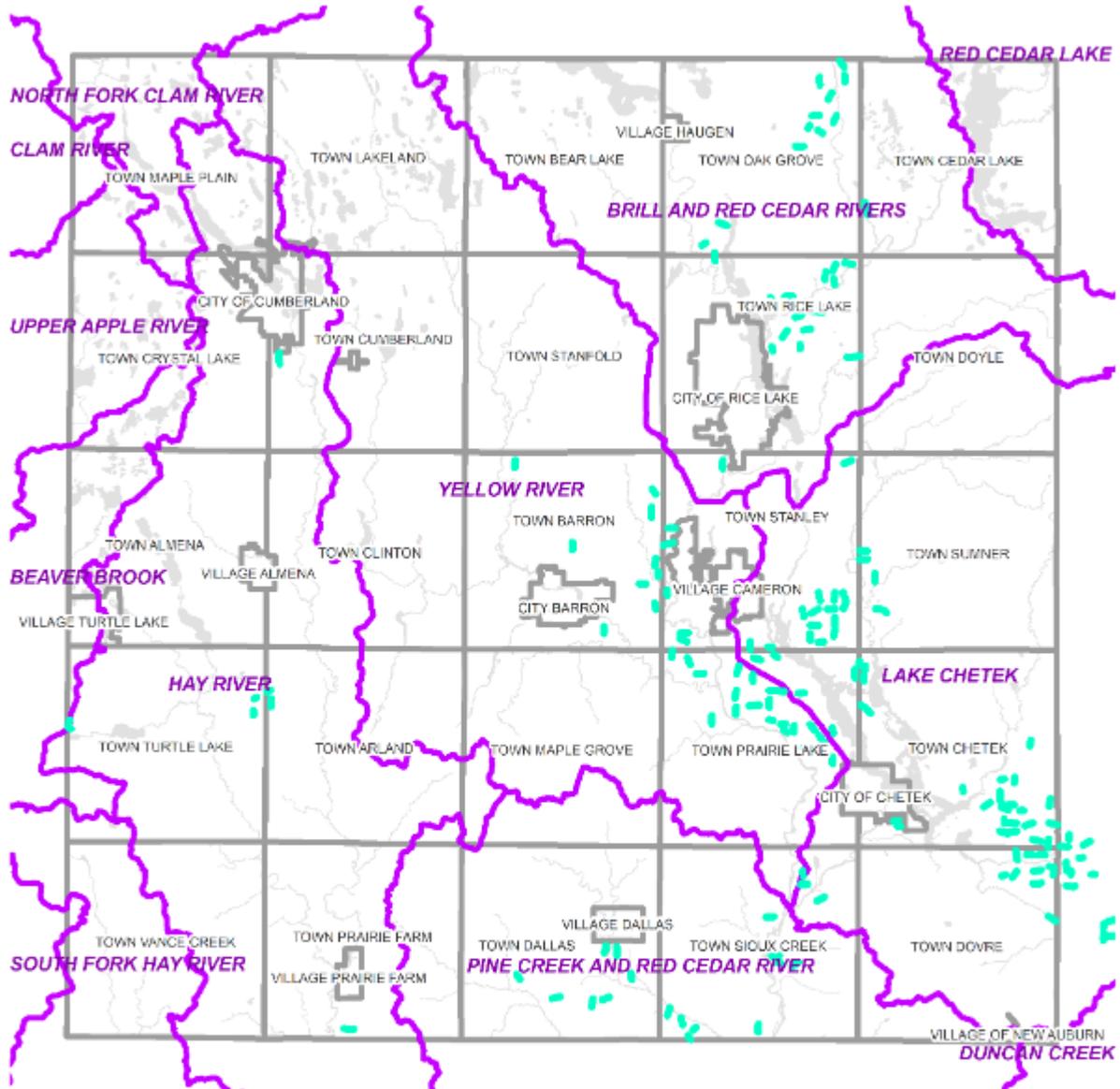
Goal Four

Closure of idle earthen manure storage facilities remain a high priority.

Goal Five

When the State required that licensed well drillers and pump installers sign off on well abandonments, we no longer cost shared on the practice due to the increase in cost and correcting runoff sites being of higher priority. This policy should be changed to once again cost share on well abandonment.

IRRIGATION UNITS

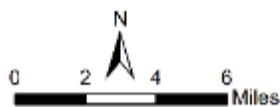


**BARRON COUNTY
LAND & WATER RESOURCE
MANAGEMENT PLAN 2019-2028**

- IRRIGATION PIVOTS
- WATERSHED
- MUNICIPAL BOUNDARY
- SURFACE WATER



BARRON COUNTY
SOIL & WATER
CONSERVATION
DEPARTMENT



03/07/2019

WASTEWATER TREATMENT PLANTS (WWTP)

Considerable work has been done in the area of reducing phosphorus discharges from point sources in the Red Cedar Watershed, (listed below). The reductions in from these sources and barnyard runoff, highlight soil erosion of cropland as the greatest contributor of phosphorus to the system.

FACILITY	1990 PHOSPHORUS	2017 PHOSPHORUS	FACILITY	1990 PHOSPHORUS	2017 PHOSPHORUS
Almena WWTP	992	546	Turtle Lake WWTP	8952	1151
Cumberland WWTP	12,591	1460	Dallas WWTP	n/a	310
Crystal Lk. San. Dist.	2141	106	Jennie O Turkey Store	1693	1119
Prairie Farm WWTP	194	296			
Saputo Cheese	176	0	Rice Lake WWTP	11,384	4106
Chetek WWTP	1997	528	TOTALS:	40,120	8,423

Even with these reductions, some of the plants may need to reduce phosphorus levels further. There are two programs that offer the opportunity for the WWTP to fund work in the watershed to reduce nonpoint pollution at a higher level for a lower cost than could be done at the plant. The Multi-discharger variance (MDV) is a time extension for the WWTP to meet a more restrictive phosphorus discharge level. During the extension period, direct payments to the County can be made to augment our existing soil conservation programs.

Water Quality Trading involves a point source facing relatively high pollutant reduction costs compensating another party to achieve less costly pollutant reduction with the same or greater water quality benefit. In other words, water quality trading provides point sources with the flexibility to acquire pollutant reductions from other sources in the watershed to offset their point source load so that they will comply with their own permit requirements.

Barron County is in a position to more easily work with a WWTP on the MDV program in that it augments existing programs while Water Quality Trading would require the plant to fully fund staff for the County.

MANURE STORAGE

Landowners are required to obtain a permit from Barron County to construct a manure storage facility regardless of size. They need a design from a licensed PE or an individual with job approval from NRCS and a current nutrient management plan meeting NRCS 590 standard.

Due to the increased complexity in manure storage facilities, in particular the transfer systems, Barron County will no longer provide designs for landowners.

Proper abandonment of idle facilities is required within two years of inactivity by County Ordinance. This has been a priority and will continue to be. Groundwater contamination potential is greatest in areas of glacial outwash soils. Facilities in these areas are a priority in our work plan. A permit is required to abandon a manure storage facility.

With the number of Barron County dairy herds at the end of 2018 at 160 and 10 to 15 herds dispersing annually, there will be approximately 3-5 earthen facilities becoming idle annually throughout the life of this plan, this is in addition to the 29 known and 17 possible idle facilities as of 2018

A goal of closing 5 earthen facilities for each year of this plan should be made. Average cost of closure \$12,000 x 70%cost sharing = \$8,400 x 5 projects = \$42,000 Annual Cost

The Barron County **Manure Storage Ordinance was last updated in 2005**. DATCP has developed a checklist to determine whether a county should update their ordinance and below is a list of elements where the county ordinance is not adequate:

1. Requirement that any new facility comply with the Performance Standards of the State.
2. We need to broaden the definition of manure to include silage leachate and milkhouse wastewater
3. We need to add a requirement for submission of engineering documentation certifying construction according the NRCS Technical Standards
4. We don't require an annual nutrient management plan. Just one at time of installation.
5. We don't have a certificate of use that establishes the terms of operation for the storage facility during its life.
6. Our variance language should be modified to have that the County has to get a variance from the NRCS in order to not use their Standards.
7. We don't require construction approval and as-built sheets before use is allowed.

With the decline in the dairy industry, very few new facilities will be constructed. **The biggest change in the ordinance would be to require an update of the nutrient management plan every year for every facility with a manure storage.** This would create another avenue to increase the number of farms with approved plans.

We have not allowed permits for earthen manure storages to be constructed since 1989. This was in response to concerns that our soils were not adequate and some were built in questionable situations. This prohibition should be taken out of the ordinance as we are not to be more restrictive than the State. The resources of Barron County will still be protected as the standards have become more stringent.

Goal: A goal of this plan is that the Barron County Manure Ordinance be revised.

CONSERVATION PRACTICES & COST SHARING

PRACTICE	COST SHARE RATE	FUNDING SOURCE	ANNUAL OUTCOMES
No-till??	\$15.00/acre	County, Nutrient Trading Programs, Lake Grants	2000 acres
Cover Crop	\$25/acre	County, Nutrient Trading Programs, Lake Grants	300 acres
Nutrient Management Planning	Varies per program	State SEG Funds, UWEX NMFE Grants, NRCS	5110 acres
Grass Waterway	70%	SWRM Cost Share, NRCS	5
AWSF Closure	70%	SWRM Cost Share, NRCS	5
Well Decommissioning	70%	SWRM Cost Share, NRCS	5
Diversion	70%	SWRM Cost Share, NRCS	2
Streambank/Shoreline Fencing	70%	SWRM Cost Share, Lake Grants, NRCS	2
Stream Crossing	70%	SWRM Cost Share, NRCS	
Wetland Restoration	70%	SWRM Cost Share, NRCS	1
Critical Area Stabilization	70%	SWRM Cost Share, NRCS	1
Headland Planting	\$95.00/acre	SWRM Cost Share, NRCS	10
Buffers	TBD	SWRM Cost Share, NRCS	
Barnyard Runoff System	70%	SWRM Cost Share, NRCS	As needed
Lakeshore Restoration	70%	SWRM Cost Share, Lake Grants	2

Practices may be added at the discretion of the SWCD Department Head; annual outcomes are dependent on State funding and, to some degree, the economy.

Funding of Conservation Practices

SWCD has the following funding options:

- \$TBD in SWRM/LWRMP bonding funds from DATCP
- \$TBD in SEG funds from DATCP
- NRCS EQIP funding
- Wisconsin DNR Targeted Runoff Management (TRM) Program
- Wisconsin DNR Notice of Discharge (NOD) Program

Below is additional information on prioritization and implementation.

Loss of Productive Farmland: Mention Ag Covenant Program which reduces fragmentation

The removal of productive farmland as the result of development has a lasting effect on farming in Barron County. The reclassification of farmland from an Exclusive Agricultural District, and development in general, results in the fragmentation of large agricultural areas. The SWCD will encourage the use of additional tools and incentives provided through the Working Lands Initiative (WLI) and recent revisions to Chapter 91, Farmland Preservation Program, in protecting our productive farmland, the Barron County Farmland Preservation Plan has been updated to reflect the revisions to Chapter 91.

LOCAL RESOURCE/HABITAT PROTECTION

Barron County Lake and Invasive Species Specialist

Lakes and their health are vital to the social and economic well-being of the county.

As funding allows, Barron County will create a lakes and invasive species technician position. We anticipate the duties to be:

- Work with landowners on Healthy Lakes Grant projects
 - Assisting with grant application
 - Site visits, designs, construction inspection
 - Rain Gardens
 - Native Plantings
 - Infiltration devices
 - Fishsticks
- Assist with shoreline restoration (full buffer) projects - grant application assistance, design
- Assist Zoning with lakeshore sites.
 - Mitigation designs and implementation
 - Shoreland Land Use Permit setbacks and inspections
 - View corridor issues
- Assist Districts and Associations - education events, trainings, technical assistance, monitoring projects
- Develop a Countywide Lakes Association
- Develop a Lakes newsletter, website information program
- Assist and train water quality monitors the Citizens Lake Monitoring Network Program
- Assist with boat landing improvement projects

Coordinate all invasive species work (terrestrial and aquatic)

- Participate in cooperative weed management area activities
- Assist and train AIS monitoring volunteer
- Assist and train Clean Boats Clean Waters inspectors
- Coordinate AIS grants and possible grant opportunities for control of terrestrial invasives.
- Assist with invasive control efforts, particularly wetland and shoreland species like purple loosestrife, knotweed etc. and biocontrol measures.
- Provide a rapid response to new discoveries.

For funding, the following grant opportunities will be explored:

- Wisconsin DNR Lake Planning Grants & Lake Protection Grants
- Support from Barron County Lake Organizations
- AIS Grants - this will be moving to a direct contract between Counties and DNR - grants won't be necessary for basic AIS activities like education, monitoring, outreach, training, etc.
- AIS control grants for Purple Loosestrife, knotweed, phragmites (rapid response), control efforts
- Wisconsin Citizen-based Monitoring Network

Protect Forested Areas & Wildlife Habitat

We will continue to discourage the pasturing of woodlots, encourage tree planting on marginal cropland, especially areas with high runoff potential and along water bodies. We will continue our monitoring and eradication efforts on terrestrial invasive species. Staff will use the GLEDN app for the mapping of invasives, and will encourage its use by the public.

GENERAL INFORMATION AND EDUCATION STRATEGY

Wisconsin Envirothon

Wisconsin Envirothon is our state's ultimate middle and high school environmental science challenge, where teams of five high school or middle school students participate in the hands-on, outdoor field challenges designed by natural resources professionals and educators. This day-long event is an excellent opportunity for students to develop leadership and communication skills that champion a more sustainable and environmentally-aware community.

The Island City Academy in Cumberland has participated in the Envirothon. Barron County has contributed \$55 annually to WI Land + Water to support Envirothon and will in the future.

SWCD Web Page

In conjunction with the Barron County Web Page, the Soil & Water Conservation Department will have a section of the web page. The web page will include personnel, services offered, and a schedule of upcoming events.

Continue the following annual education programs:

- Poster Contest
- Speaking Contest
- Sixth Grade Conservation Tour

Staffing

The Soil & Water Conservation Department has a staff of four: County Conservationist-Technician, Conservation Planner, Conservation Specialist I and Administrative Assistant (50%), and is under the supervision of the Director of Land Services. As the SWCD is part of the Land Services Department, we are collocated with Zoning and Land Information personnel, providing crucial assistance for projects such as GIS and lakeshore issues.

Coordination with Other Agencies

The County has partnered with many agencies over the years in our conservation efforts. These include:

USDA-NRCS
USDA-FSA
Zoning Administration
UW-Extension
Department of Natural Resources
Lake Districts & Associations

- The SWCD and NRCS have shared the workload generated by our respective conservation programs. This coordination benefits both agencies and enables us to provide quality assistance to landowners.
- SWCD works with FSA on CREP projects and benefits from their association with NRCS.
- The SWCD works closely with Zoning on the development and conversion of agriculture lands and lakeshore issues. As both agencies are now part of the larger Land Services Department this has increased and continues to develop.
- The SWCD works with personnel from UW Extension on a regular basis and shares an oversight committee. UW Extension will provide agronomy assistance for the nutrient management

planning as well as other issues relating to the Red Cedar Partnership, crop production, manure management, conservation education, etc.

- The SWCD and DNR coordinate on stormwater issues, lake protection grants, CAFOs and other issues. The Barron County SWCD and the Forestry Department of the DNR, located in Barron, together own 3 tree planters and a brush mower.
- The SWCD works with lake districts and associations on a variety of issues including grant projects, invasive species education and eradication, lakeshore rehabilitation and lake group structure.

PLAN MONITORING AND EVALUATION

Each goal and action item in the work plan will be evaluated for effectiveness in addressing the resource issue. Evaluation methods may vary based on the specific action but most are straightforward, i.e. number of acres or practices installed. Examples of evaluation methods that may be used include: completion of the action item, written survey/evaluation by participants, funding acquisition, etc. Monitoring of action impacts on the resource can be completed by a variety of methods including but not limited to:

- Annual Soil Transect Surveys
- Lakes Self Help Monitoring Program
- Natural Resource Inventory (USDA)
- GIS Tracking
- Accomplishment Reports
- Annual FPP Self Certification

GIS tracking of projects will be used to evaluate program effectiveness as well as compliance with State standards. Information layers will include:

- Acres with achieved compliance status
- Acres of nutrient management planning
- Active, temporarily idle, idle and closed manure storage facilities
- Active and corrected State Prohibition sites
- Cost shared projects such as grassed waterways, decommissioned wells, critical areas stabilized, barnyard runoff systems
- Acres of cover crop funded
- Buffers, possible sites and installations
- FPP parcel identification

An annual evaluation of the Barron County Land & Water Resource Management Plan will be completed by the Land Conservation Committee. This plan is intended to be a working document and will be updated on a regular basis. Annual accomplishment reports will be sent to DATCP detailing completed projects.

Ordinances

Barron County currently has a manure storage facility ordinance, an illegal transport of aquatic plants and invasive animals ordinance, and an ordinance for implementing NR 135, the Non-Metallic Mining Law. All are available on the Barron County website. These ordinances will be used as tools to achieve our objectives for the county's resource concerns and assist in enforcing manure prohibitions.

CONCLUSION

The Barron County Land and Water Resource Management Plan will provide an integrated approach to soil and water conservation of our local resources. We have looked at the resources in Barron County, identified the highest priority areas and identified the primary sources of nonpoint pollution.

In the past forty years, there have been six watershed based water quality projects in Barron County. They include the *Staples Lake Lake Management Project*; the *Upper Pine Creek Farmer's Fund Project*; three priority watershed projects: the *Hay River*, the *Yellow River* and the *South Fork Hay River*; and the *Lake Desair Watershed Project*. In these six watershed projects, while there were some efforts made to install soil conservation measures, the projects focused on keeping animal wastes out of our streams and lakes. These projects were successful and did improve water quality. Recently the WDNR has added many stream segments in the county as supporting a trout fishery where formerly they did not.

However it has been shown in numerous studies that the principle non-point pollutants from agricultural watersheds are sediment and phosphorus from soil erosion of cropland. Our primary goal must be soil conservation; if not, we are ignoring the latest research in soil and water conservation.

While the public wants us to control soil erosion for the sole purpose of water quality, we must rise above that goal and control soil erosion for the purpose of preserving our soil for generations to come. We have proven many times that water quality can be improved, and the water resource can be rehabilitated. However, soil, once it is eroded away, cannot be recovered, rehabilitated, rebuilt or in any way renewed.

Groundwater quality has become a topic of concern here and across the State. We are looking to study the state of our groundwater and develop methods to address areas with groundwater contamination. While a stream can recover quickly from disturbance, contaminated groundwater can take decades to remedy.

The face of farming continues to change in Barron County as the dairy cows become concentrated on fewer, larger farms. Other areas are being more intensively cropped for cash grain commodities. These changes bring the potential for increased pollution, but also increased levels of management to deal with these issues. We must actively assist the land managers of the county in finding methods to protect the soil for the future.

APPENDIX A – IMPAIRED WATERS

The Impaired Waters and Total Maximum Daily Load (TMDL) Program is an important component of the Clean Water Act's (CWA) framework to restore and protect our Nation's waters. The program is comprised primarily of a two part process. First, states identify waters that are impaired or in danger of becoming impaired (threatened) and second, for these waters, states calculate and allocate pollutant reduction levels necessary to meet approved water quality standards.

The goal of the Clean Water Act (CWA) is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (33 U.S.C §1251(a)). Under section 303(d) of the CWA, states, territories and authorized tribes, collectively referred to in the act as "states," are required to develop lists of impaired waters. These are waters for which technology-based regulations and other required controls are not stringent enough to meet the water quality standards set by states. The law requires that states establish priority rankings for waters on the lists and develop Total Maximum Daily Loads (TMDLs) for these waters. A TMDL includes a calculation of the maximum amount of a pollutant that can be present in a waterbody and still meet water quality standards.

303(d) Listed Waters - Total phosphorus impairment

Lakes

Sylvan Lake
Lower Turtle Lake
Big Moon Lake
Red Cedar Lake
Bear lake
Rice Lake
Lake Montanis
Lake Desair - Also listed for sediment
impairment
Lower Devils Lake
Poskin Lake
Little Dummy Lake
Big Dummy Lake
Prairie Lake
Tenmile Lake
Lake Chetek
Pokegama Lake
Mud Lake
Staples Lake

Rivers

Hay River
Upper Pine Creek
Lower Pine Creek
Yellow River - Below the City of Barron
Vance Creek
German Creek
Chetek River
Red Cedar River - Below Hwy W

Other listed waterbodies - Excess Algal Growth and Degraded biological community

Little Sand Lake
Horseshoe Lake - Town of Almena
Granite Lake
Poskin Lake
Upper Turtle Lake
Spring Creek
Upper Pine Creek

APPENDIX B – OUTSTANDING & EXCEPTIONAL RESOURCE WATERS

Wisconsin has designated many of the state's highest quality waters as **Outstanding Resource Waters (ORWs)** or **Exceptional Resource Waters (ERWs)**.

Waters designated as an ORW or ERW are surface waters which provide outstanding recreational opportunities, support valuable fisheries and wildlife habitat, have good water quality, and are not significantly impacted by human activities. ORW and ERW status identifies waters that the State of Wisconsin has determined warrant additional protection from the effects of pollution. These designations are intended to meet federal Clean Water Act obligations requiring Wisconsin to adopt an 'antidegradation' policy that is designed to prevent any lowering of water quality – especially in those waters having significant ecological or cultural value.

- **ORWs:** ORWs typically do not have any point sources discharging pollutants directly to the water (for instance, no industrial sources or municipal sewage treatment plants), though they may receive runoff from nonpoint sources. New discharges may be permitted only if their effluent quality is equal to or better than the background water quality of that waterway at all times—no increases of pollutant levels are allowed.

Bear Creek, Engle Creek, Hickey Creek, Red Cedar Lake, the Red Cedar River above Rice Lake, Rock Creek, Sand Lake, Silver Lake, Upper Pine Creek above Dallas, and Yellow River in Stanfold comprise the Barron County ORWs.

- **ERWs:** If a waterbody has existing point sources at the time of designation, it is more likely to be designated as an ERW. Like ORWs, dischargers to ERW waters are required to maintain background water quality levels; however, exceptions can be made for certain situations when an increase of pollutant loading to an ERW is warranted
- because human health would otherwise be compromised.

The Brill River, Brown Creek, Doritty Creek, Jones Creek, Moose Ear Creek, Rice Creek, Sand Creek in Dovre, Silver Creek, and Tuscobia Creek are Barron County's ERWs.

APPENDIX C – INVASIVE SPECIES OF BARRON COUNTY

The variety and abundance of invasive species in Barron County has been increasing, as it has throughout the country. This is due to increasing ease of mobility, lack of predators or competitors, and their ability to change the environment in which they live. The following species have had, or have the potential to have, a major impact on the area. These are listed according to habitat type, progressing from dry terrestrial sites to aquatic.

Spotted Knapweed has become established on the roadsides of the area. It is especially pervasive on the HWY 53 right of way. It produces a toxin that prevents other plant life from occurring in its surroundings. This results in exposed soil that could be susceptible to erosion. There are 2 weevils, *Larinus minutus* and *L. obutus*, along with two seedhead flies, *Urophora quadrifasciata* and *U. affinis*, which have been introduced throughout Wisconsin for biocontrol purposes and are considered ubiquitous across the state.

Leafy Spurge is a perennial plant that is invasive in grassland areas. It is allelopathic, which means it emits chemicals from its roots that retard the growth or seed germination of other plants. Its deep root system makes eradication of the species extremely difficult. Leafy spurge can be catastrophic to grasslands for both economic and ecological reasons. The plant is not palatable to cattle. It has been identified at one location in the County. Biocontrol beetles (*Aphthona* sp) have been released at the site, and it appears to be shrinking in coverage.

The forests of the county are being changed by a combination of **earthworms** and **Common Buckthorn**. They are both European species that evolved together in forests without fungal associations in the root layer. The earthworms change the soil, allowing the buckthorn to come into the forest. Once established, the buckthorn quickly forms a thicket that prevents seedlings of native species from growing. Due to its pervasiveness in the County, eradication is not practical; however, efforts should be made to keep it out of new areas and eliminate it from high-quality sites. In 2018 a project was done to treat a section of the Barron County Forest in Cedar Lake Township for buckthorn. Its effectiveness will not be known for several years.

Wild Parsnip Wild parsnip readily moves into disturbed habitats, along edges and or in disturbed patches. It is most common in road ditches in the southern half of the county, and is being spread by mowing. The juice of wild parsnip in contact with skin in the presence of sunlight can cause a severe rash and blistering and discoloration of the skin (phytophotodermatitis).

Garlic Mustard is a rapidly spreading woodland weed that is displacing native woodland wildflowers in Wisconsin. At this point it has been identified several woodlots in Barron County. It dominates the forest floor and can displace most native herbaceous species within ten years. This plant is a major threat to the survival of Wisconsin's woodland herbaceous flora and the wildlife that depend on it.

Japanese Barberry has been identified in a few locations in the county. It has been found to create habitat favored by mice, which then leads to more ticks and the diseases associated with them. It severely impacts the recreational value of a woodlot.

Wild Chervil is another rapidly spreading woodland/grassland weed. It is a member of the carrot family. Currently it is spreading through the road ditches of the southern half of the county. It has the potential to grow in shaded areas and as such invade woodlands. Several Counties and Towns south of Barron County have begun spraying programs in the road right of ways. This should be explored further in Barron County.

Earthworms, Common Buckthorn, Japanese Barberry, Wild Chervil, and Garlic Mustard collectively have the potential to change the makeup of the forests of Barron County on a scale not seen since the logging era of the 19th century.

Japanese/Bohemian/Giant Knotweeds are perennials that grow to heights of 5-10 feet in large clones up to several acres in size. The arching stems are hollow and bamboo-like, a reddish-brown to tan color, and remain upright through the winter. Of particular concern is that they have a tendency to invade valuable wetland habitat and line the banks of creeks and rivers where it often forms an impenetrable wall of stems, crowding out native vegetation and leaving banks vulnerable to erosion when it dies in winter. They have been identified at several sites in the County, and control work has taken place in several areas including Rice Lake and Chetek.

Purple Loosestrife is a wetland plant that adjusts to a wide range of environmental conditions giving it a competitive advantage; it tends to create monotypic stands that reduce biotic diversity. Purple loosestrife displaces native wetland vegetation and degrades wildlife habitat. A single plant can produce 1 million seeds annually. As native vegetation is displaced, rare plants are often the first species to disappear. Eventually, purple loosestrife can overrun wetlands thousands of acres in size. The plant can also be detrimental to recreation by choking waterways. Barron County has had a program for spraying Purple Loosestrife and raising *Galerucella* beetles (for biocontrol) for release in areas of severe infestation for 25 years. It is felt that the beetles have suppressed the populations.

Curly-leaf pondweed is an aquatic plant that becomes invasive in some areas because of its tolerance for low light and low water temperatures. In mid-summer, when most aquatic plants are growing, curly-leaf pondweed plants are dying off. Plant die-offs may result in a critical loss of dissolved oxygen. Furthermore, the decaying plants can increase nutrients which contribute to algal blooms as well as create unpleasant stinking messes on beaches. It is found in the majority of the larger lakes in the County. Weed cutting controls are done on Rice Lake.

Eurasian Milfoil is a submersed aquatic plant native to Europe, Asia, and northern Africa. It is the only non-native milfoil in Wisconsin. Milfoil is readily dispersed by boats, motors, trailers, bilges, live wells, or bait buckets, and can stay alive for weeks if kept moist. Once established in an aquatic community, milfoil reproduces from shoot fragments and stolons (runners that creep along the lake bed). Monotypic stands of Eurasian milfoil provide only a single habitat and threaten the integrity of aquatic communities in a number of ways. Dense stands of Eurasian water milfoil also inhibit recreational uses like swimming, boating, and fishing. It has been located in Beaver Dam, Shallow, Echo, Lower Vermillion, Sand and Horseshoe lake. Spraying has taken place on Beaver Dam, and Lower Vermillion Lakes.

Several species of concern not yet found in Barron County

Zebra Mussels. Barron County is surrounded by populations of zebra mussels. Once they get into a lake, no one has found a way to eliminate them. Several lakes in the county have enough calcium that they could become established. Upper Turtle, Lower Turtle, Upper Vermillion, and Lower Vermillion have the highest levels of calcium of our large lakes. A watercraft decontamination station was installed on Silver Lake utilizing a bleach solution. This should be expanded to other lakes. There are other invasive species that this may also be effective on.

Emerald Ash Borer - Barron County does not have extensive stands of ash where the concern is loss of woodland habitat, but rather it has been planted extensively in the urban areas of the county. In 2019 the county is doing some limited surveillance trapping and will continue as long as the traps are available.

Amur Cork tree - a fast growing tree found in Dunn and St. Croix Counties. Suppresses and displaces native plant populations. It is adaptable to many soil types, but prefers moist, well-drained soil, grows in both full sun and under dense shade and reproduces by both seed and by resprouting from stumps.

Phragmites - Non-native Phragmites is a perennial wetland grass found in a variety of wet soil habitats. It can grow over 15 feet tall. It forms dense clonal stands containing both living and dead shoots from previous growing seasons. If cut down, the plant can re-sprout along the stem in many places. It is commonly found in roadside ditches. The native grass is present, however the invasive eurasian variety has not been identified in the county.

Japanese Hops Japanese hops are native to eastern Asia. They have escaped cultivation and are displacing desirable species and impeding forest regeneration. Unlike common hops, which is a related species, Japanese hops are not utilized for beer production. Japanese hops are herbaceous annual vines that can grow up to 35 feet in a single growing season. They twine to climb adjacent vegetation and structures and sprawl across open ground to form dense mats several feet deep.

Lesser celandine, also called fig buttercup, is a native of Europe, Asia and North Africa. It has been introduced into North America as a garden ornamental. It invades moist woodlands, forming a dense monoculture very early in the spring. Although the foliage dies back by June, a dense network of underground roots and tubers remain, inhibiting the growth of native flowers. Lesser celandine reproduces by seed, bulblets and underground tubers and can easily be spread when soil is disturbed or moved.

Oriental bittersweet is a woody vine that is native to China, Korea, and Japan. Oriental bittersweet has since spread throughout the temperate eastern US and Canada. The vines girdle and smother trees and shrubs. The vine grows up to 66' long. The vines climb by winding around a tree or other support structure.

APPENDIX D – LIVESTOCK SITING LAW

The Livestock Facility Siting Law consists of [State Statute ss. 93.90 and Administrative Rule \(ATCP 51\)](#), which establish state standards and procedures local governments must use if they choose to require conditional use or other permits for siting new and expanded livestock operations. The siting statute affects local ordinances that require conditional use or other similar permits, but does not affect other ordinances such as shoreland and flood plain zoning. The statute limits the exclusion of livestock facilities from agricultural zoning districts by local units of government. It also created the [Livestock Facility Siting Review Board](#) to hear appeals concerning local permit decisions.

The law is implemented by Barron County in townships with Exclusive Agricultural Zoning. Maple Plain, Crystal Lake, Almena, Turtle Lake, Cumberland, Stanford, Barron, Maple Grove, Dallas, Oak Grove, Rice Lake, Stanley, Prairie Lake and Sumner.

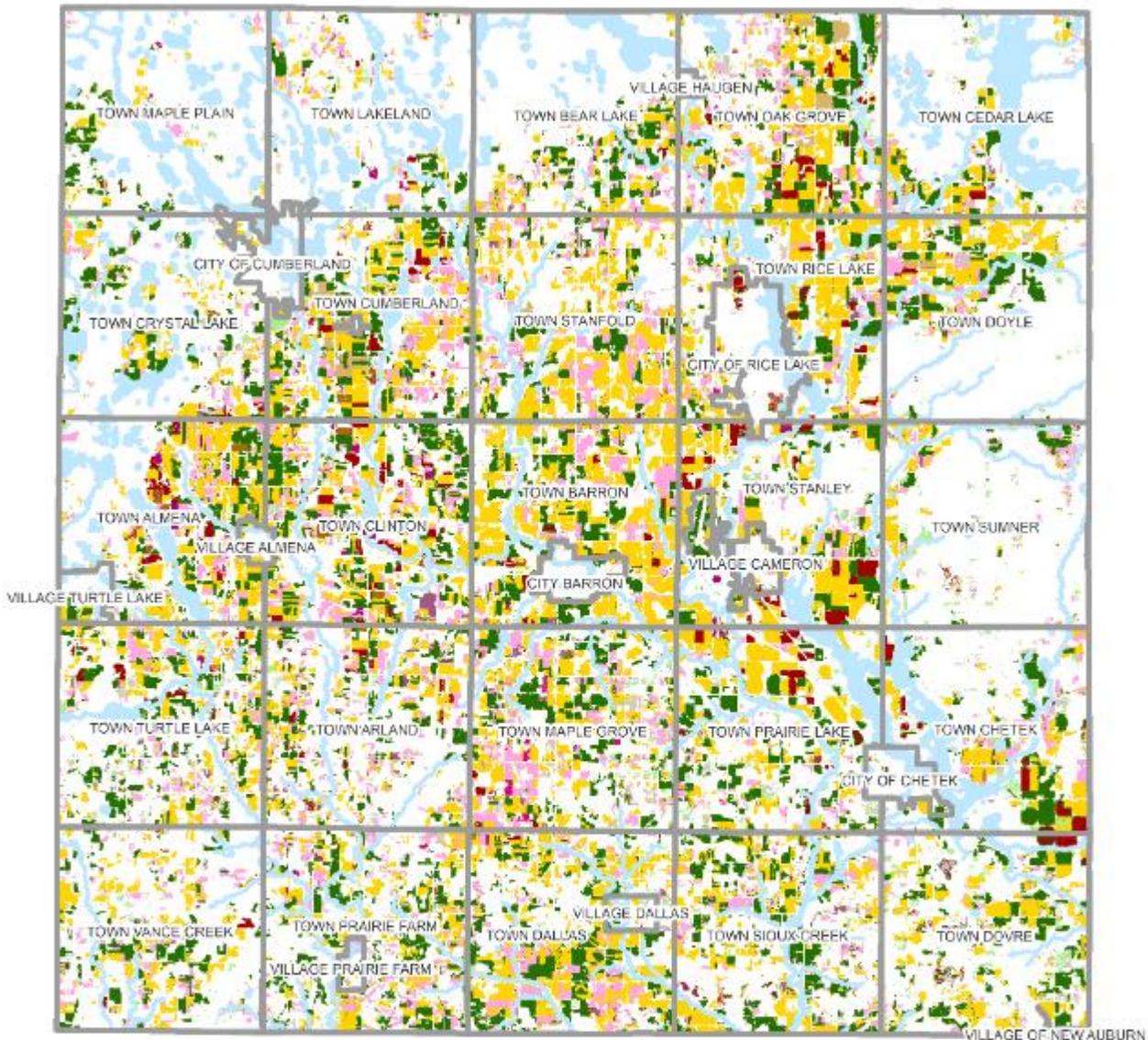
Provisions of the siting law can be incorporated into local ordinance at any time. ATCP 51 became effective on May 1, 2006 and existing ordinances had to be revised by November 1, 2006 to be enforceable, or to keep a permit threshold lower than 500 animal units. Barron County uses the state standards. Local governments must use the [application worksheets](#) in the rule to determine if a proposed facility meets these standards:

- Property line and road setbacks
- Management and training plans
- Odor management
- Nutrient management
- Manure storage facilities
- Runoff management

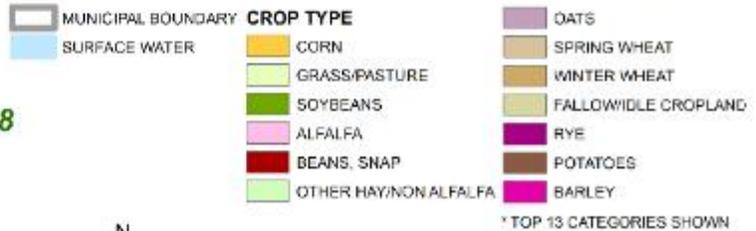
Reviews are done by Soil & Water Conservation staff utilizing the State checklist.

APPENDIX E – CROPSCAPE MAP

CROPSCAPE 2018 CROPLAND DATA



**BARRON COUNTY
LAND & WATER RESOURCE
MANAGEMENT PLAN 2019-2028**

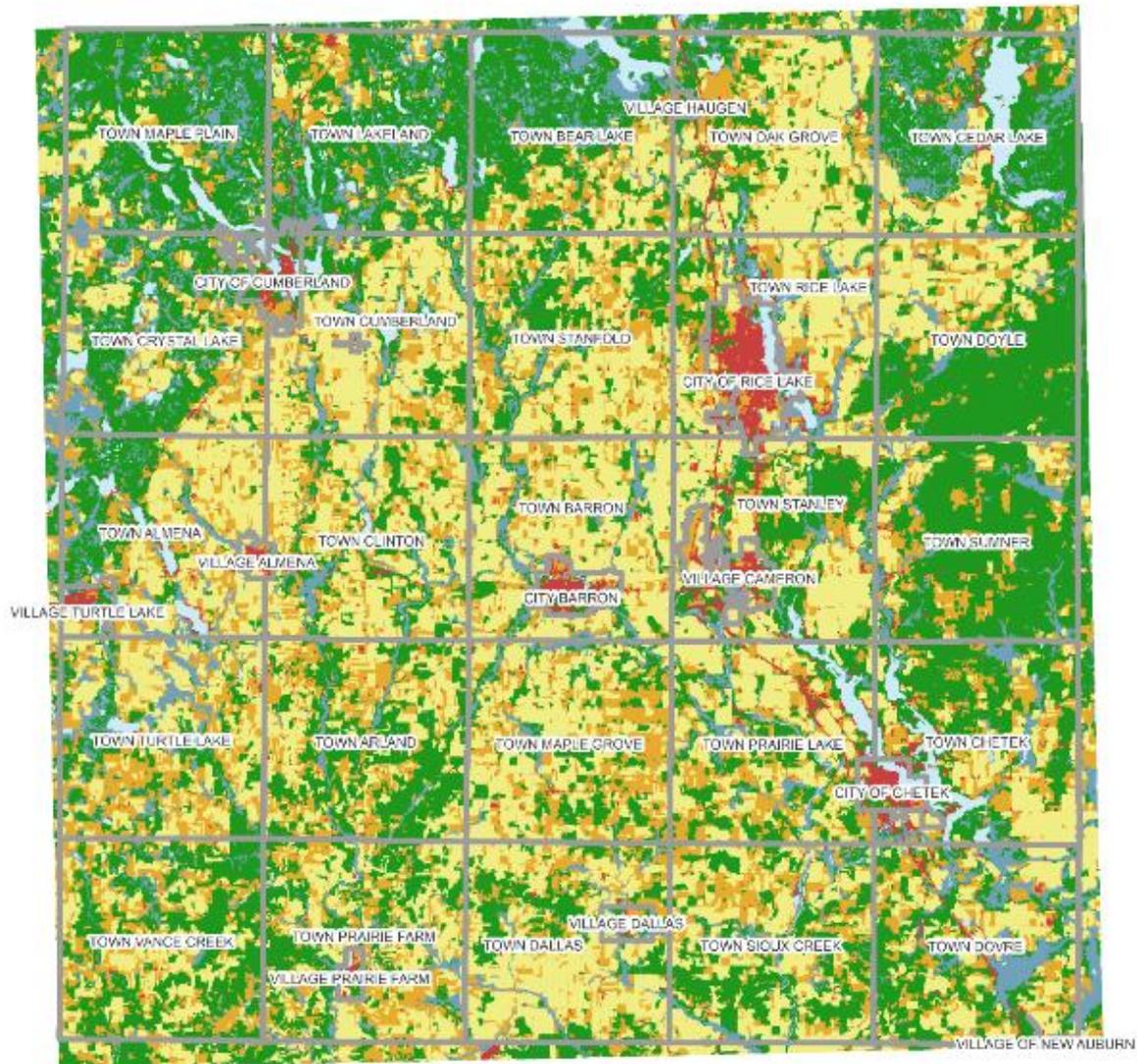


BARRON COUNTY
SOIL & WATER
CONSERVATION
DEPARTMENT



SOURCE: USDA NATIONAL
AGRICULTURAL STATISTICS SERVICE 03/29/2019

WISCLAND 2 LAND COVER



**BARRON COUNTY
LAND & WATER RESOURCE
MANAGEMENT PLAN 2019-2028**

- | | |
|-------------------------|--------------------|
| URBAN/DEVELOPED | OPEN WATER |
| AGRICULTURE | WETLAND |
| GRASSLAND | BARREN |
| FOREST | SHRUBLAND |
| SOURCE: WI DNR & WI SCS | |
| | MUNICIPAL BOUNDARY |



BARRON COUNTY
SOIL & WATER
CONSERVATION
DEPARTMENT



02/26/2019

APPENDIX G - PUBLIC PARTICIPATION

Citizen Advisory Committee (CAC)

Meetings of the 20 member Citizen Advisory Committee were held on November 1 and 29, 2018 and May 2, 2019; meeting minutes are available for review in the Soil & Water Conservation Department.

The draft was presented to the Barron County Extension and Land Conservation Committee on May 7, 2019

Public Notice

The public hearing was held July 11, 2019; affidavits of publication from local papers are on file at the Soil & Water Conservation Department.

Meeting Minutes

LAND & WATER RESOURCE MGT PLAN – Advisory Committee Meeting Notes

Thursday, October 18, 2018, 3:00 p.m.

Government Center-Room 2151

=====
Present: Russ Rindsig, Tyler Gruetzmacher, Justin Everson, Bronson Thalacker, Patrick Richter, Ruth King, David Gifford, Kurt Kelsey, Peter DeJardin, Dale Hanson, Barry Ausen, Tim Boerner, Aaron Cole, Kevin Morgan, Janette Cain (3:13), Randy Bina, Kristina Olson (3:30 by phone), and Kim Russell-Collins.

Absent: Alex Smith, Dan Scheps, Fran Felber, Jason Saffert, Karyn Schauf, Keith Kolpack, Ken Hafstad, Micah Halvorson, Tom Schroeder and Troy Bol.

Gruetzmacher opened the meeting at 3:03 p.m. and, after introductions, explained the purpose of the committee. He then presented an overview of the current Land & Water Resource Management Plan (LWRMP) goals and objectives.

The following concerns/suggestions were made:

- Is the tillage setback requirement used/needed in Barron County?
- Buffers are needed on streams, lakes and wetlands; they are beneficial to water quality and wildlife. What options are available to encourage buffers?
- How can lawn maintenance ordinances be dealt with on lakeshore properties in incorporated areas?
- Goals and objectives must include measurable actions to document progress.
- Farmer-led groups need to be included in the update as they work with soil health issues.
- Are local CoOps a source for no-till equipment? If not, what are other sources?
- Healthy Lakes grants are a viable funding source for projects on lakeshores such as rain gardens, native plantings and diversions.
- Does the LWRMP address working within incorporated areas?
- Stormwater issues should be addressed.
- Social media should be used to create awareness of natural resource issues.
- Investigate forming a countywide Lakes & Rivers Association.

Gruetzmacher asked for more comments and suggestions at the next meeting, November 1, 2018 at 3:00 p.m. in the Govt. Center Auditorium. He declared the meeting adjourned at 4:45 p.m.

Respectfully submitted,

Kim Russell-Collins
Administrative Secretary, Land Services

LAND & WATER RESOURCE MGT PLAN – Advisory Committee Meeting Notes

Thursday, November 1, 2018, 3:00 p.m.

Government Center-Auditorium

=====
Present: Keith Kolpack, Justin Everson, Dale Hanson, Karen Schauf, Tyler Gruetzmacher, Bronson Thalacker, Barry Ausen, Ruth King, Russ Rindsig, Kurt Kelsey, Alex Smith, Jason Saffert, Janette Cain, Tim Boerner, Dave Gifford (3:18), and Kim Russell-Collins.

Absent: Patrick Richter, Randy Bina, Ken Hafstad, Micah Halvorson, Tom Schroeder, Kevin Morgan, Aaron Cole, Peter DeJardin, Kristina Olson, Dan Scheps, Fran Felber and Troy Bol.

Gruetzmacher opened the meeting at 3:00 p.m. and, after introductions, explained the purpose of the committee. He then presented a brief overview of the previous advisory committee meeting.

A discussion ensued on the following topics:

- Manure handling: injection, composting, reverse osmosis.
- Possible phosphorus monitoring where the Red Cedar enters Barron County.
- Farmer Led Council activities.
- Soil health
- Conservation lease agreements: encourage landowners' involvement with conservation.
- Cover crops: interseeding, shorter day variety corn, County provide rye in lieu of incentive.
- Excessive rainfall events: waterway constructed for 100 year events?

The next meeting was set for November 29th at 3:00 p.m.; topics will include lake issues, invasive species and education programs. Gruetzmacher adjourned the meeting at 5:00 p.m.

Respectfully submitted

Kim Russell-Collins
Administrative Secretary

LAND & WATER RESOURCE MGT PLAN – Advisory Committee Meeting Notes

Thursday, May 2, 2019, 3:00 p.m.

Government Center-Auditorium

=====
Present: Tom Schroeder, Kevin Morgan, Aaron Cole, Justin Everson, Dale Hanson, Karen Schauf, Tyler Gruetzmacher, Bronson Thalacker, Russ Rindsig, Tim Boerner and Kim Russell-Collins.

Absent: Kurt Kelsey, Alex Smith, Jason Saffert, Janette Cain, Barry Ausen, Ruth King, Keith Kolpack, Patrick Richter, Randy Bina, Ken Hafstad, Micah Halvorson, Peter DeJardin, Kristina Olson, Dan Scheps, Fran Felber, Dave Gifford and Troy Bol.

Gruetzmacher opened the meeting at 3:00 p.m. and provided an update on possible changes to the staffing amounts provided by WI DATCP.

The committee reviewed the LWRMP highlights, making minor content changes.

Gruetzmacher adjourned the meeting at 4:35 p.m.

Respectfully submitted,

Kim Russell-Collins
Administrative Secretary

NOTICE OF PUBLIC HEARING

STATE OF WISCONSIN SS

COUNTY OF BARRON

June 26, 2019

TO WHOM IT MAY CONCERN:

PUBLIC NOTICE is hereby given to all persons in the County of Barron, Wisconsin that a public hearing will be held on Thursday, July 11, 2019 at 3:00 p.m. in room 2151 of the Government Center, 335 East Monroe Avenue, Barron, Wisconsin, to solicit comments on the proposed 2019-2029 Land & Water Resource Management Plan for Barron County.

A copy of the proposed plan can be viewed on the Soil & Water Conservation Department home page of the Barron County website.

LAND & WATER RESOURCE MGT PLAN – Public Hearing Meeting Notes

Thursday, July 11, 2019, 3:00 p.m.

Government Center – Room 2151

=====

Present: Dave Gifford, Justin Everson, Bronson Thalacker, Russ Rindsig, Jerry McRoberts, Kirsten Huth, Kim Russell-Collins.

Thalacker called the hearing to order at 6:00 p.m. and Collins read the public notice.

Everson and Thalacker presented an overview of the proposed Land & Water Resource Mgt. Plan.

Public comment was received.

Everson adjourned the hearing at 3:45 p.m.

Respectfully submitted,

Kim Russell-Collins,
Administrative Secretary, Land Services

COUNTY BOARD APPROVAL

The Barron County Board of Supervisors approved the 2019 -2029 LWRMP on Monday, August 19, 2019.

APPENDIX H – PLAN REVISION REVIEW FORM



Land and Water Conservation Board County Land and Water Resource Management Plan Review of LWRM Plan Revisions

County: Barron

Implementation Covering Past Five Years and Future Directions

Answer these four questions in writing (not to exceed 4 pages)

1. Provide a representative number of accomplishments within the last five years that can be directly traced to activities identified in multiple work plans. For each accomplishment, explain how the planning process helped the county achieve its outcome, including planning adjustments that helped better target county activities.

Many of our accomplishments go back further than the last 5 years or previous Land & Water Plans. Conservation has been important in Barron County for decades. We worked on one of the first Priority Watershed Projects with a focus of barnyard runoff systems and concurrently the SCS was constructing a considerable number of manure storage facilities. Barron County first began implementing Farmland Preservation in 1979.

This has followed with our work plans. Farm inspections to implement the State Performance Standards and Prohibitions have been, and will continue to be, our priority activity.

Since 2013, 208 Certificates of Compliance for a total of 44,115 acres have been issued. Our single Conservation Planner works through the entire process of inspecting the farms, developing a conservation plan, and in many cases assisting farmers in writing their own nutrient management plan. Also, we have noticed that when a farmer hires someone to write the plan for them, they receive a completed plan but have missed the planning process, so they fail to realize the worth of a nutrient mngt. plan. When the farmer is not present during the planning, the plan is not present during the farming.

Our farmer written nutrient management plan acreage has increased from 2,030 acres in 2013 to 15,850 acres for this current 2019 crop season. This is done without cost sharing. The majority of the farmers are writing their own plans in order to achieve compliance with the requirement to be eligible for the Farmland Preservation Tax Credit.

It was a goal of the last plan to update our Farmland Preservation Plan, and this was accomplished in 2013.

We have been using county cost-share funds of \$20,000 annually to promote the use of cover crops with \$25/ac incentives. This is one of the reasons that there have been 8000 acres of cover crops annually in Barron County.

Five Barnyard Runoff Systems have been constructed to eliminate significant discharges from feeding areas. While the BARNY model tells us how many pounds of phosphorus are leaving the barnyard, my favorite question is “how many manure spreader loads do you collect from the new barnyard?” Two of them are collecting two spreader loads a week that used to flow downstream.

There were 24 manure storage closures in the last five years, which brings our total to 105. With a considerable number of them built in an era of less stringent liner requirements, and an increasing number of farms no longer having cattle, this has been and will continue to be a priority. We partner with NRCS for many of these, the county providing the technical assistance and NRCS, the funding.

In 2011, at the time of our last plan, the world of industrial (frac) sand mining was just appearing on the horizon in Barron County. We had an NR 135 program dealing with sand and gravel operations and one quartzite quarry. We had 61 permits totalling 750 acres of which 670 were active. Today we have 79 permitted operations totalling 7727 acres of which 2289 are active. There has been reclamation of 65 acres in the last 5 years, and 135 are scheduled to be reclaimed and evaluated for completion this year. Currently, the industry is contracting and reclamation will be a focus of many operations. This is reflected in our proposed plan.

2. Identify any areas where the county was unable to make desired progress in implementing activities identified in recent work plans. For each area identified, explain the work plan adjustments that were made to refocus planned activities. If no areas are identified, explain how the county was able to make progress in all the areas planned.

We set a goal to have a GIS tracking system for compliance monitoring of Farmland Preservation. We have not accomplished this although we do have a plan going forward. Department staff has explored several avenues to track participants of the Farmland Preservation Program. This information is currently maintained within a simple Excel spreadsheet. Any new tracking system to be implemented should allow for linking of tabular data with the county GIS data. A module of the county's Property & Assessment software was considered, but it did not provide for a straightforward GIS link nor did it automatically alert staff of ownership changes on FPP parcels. We also looked at software used by other counties and found it to be too expensive and/or beyond the scope of what staff had time to maintain. Therefore, we are in the process of designing an FPP module within a departmental tracking system using an existing organizational software called Laserfiche. IT and Land Services staff will be involved in the design. This system will store Certificate of Compliance tax parcel information and monitor changes in ownership via a link to the Property & Assessment software. Any ownership or acreage changes will automatically be emailed to key staff for review. The system will also allow for retrieval of parcel information for mailings and extracts for GIS mapping as well as maintenance of Certificate parcels. We are hopeful that the system will be in place during 2019.

Using SEG funding to increase our NMP acres in the County was an identified goal. The permanent continuing compliance obligation has created hesitancy in individuals applying for the funds.

Also identified was outreach to lakeshore organizations and other groups. Outreach has taken a back seat to priority projects described above. At a time when the conservation staff in the county was larger than it is now, and without having to deal with Industrial Sand, more things like newsletters and presentations were done. It is in our plan to reverse the trend to add both a lakeshore specialist and a soil health specialist to increase our efforts in this area. This will, of course, be dependent on funding.

We have had a goal of investigating groundwater issues for the past 2 years and have had discussions with our Public Health Department and UWSP regarding approaches to begin this project. Related to groundwater, and due to them being of a lower priority with lack of fund availability, no well abandonments have been accomplished in the last 8 years. We have increased the priority of these.

We have not worked on Clean Boats, Clean Waters projects and many other lakes projects, again due to staffing constraints. Fortunately, Washburn County has provided training to many of our lake groups. We have set a goal of developing a County Lakes Specialist position which would work on this and other projects on our nearly 400 lakes of which the properties adjoining them account for 30% of the valuation of the county.

3. Describe the county's approach to implementation of its priority farm strategy including outreach, farm inventories and making use of multiple funding sources. How has the county evaluated the effectiveness of its priority farm strategy and used this information to improve implementation of the agricultural performance standards and conservation practices on farms?

Through previous manure storage permits and aerial photos, we have documented all of the manure storages and areas of significant discharge from feeding areas. This database is used to track these practices, which is easier than the aforementioned Farmland Preservation Tracking. Based on this list, and our priority farm strategy, contacts are made with farms to develop plans for them to achieve compliance with the Performance Standards. With the costs of these practices being higher than traditional soil conservation practices they have taken a considerable portion of our SWRM funds from DATCP. We have taken somewhat of a pause from them, and are working on grassed waterways. We have partnered with NRCS on several AWSF closures in the past and will continue to in the future in an effort to get as much conservation accomplished as possible.

4. Provide representative examples that show changes in direction in the county's LWRM plan and annual work plans, with specific examples provided showing adjustments in goals, objectives or planned activities.

The increasing discussion in Soil Health has been entered into nearly every discussion we have, whether it be with a farmer or a lakeshore resident. It especially ties into our work with the local farmer led council, Farmers of Barron County Watersheds, which is also something that wasn't mentioned in our 2011 plan. Due to the importance of soil health, we are proposing to develop a Soil Health Specialist position in the county.

Annual Work Plans

Attach both of the following:

- a. The most current annual work plan (2019), prepared in the current format from DATCP, and addresses all required items such as needed funding and staff hours.

- b. The work plan for the previous year (2018) that includes a column that identifies the progress in implementing the planned activities for that year.

Presentation Regarding County Resource Concerns

Prepare and present an 8-10 minute snapshot to the board regarding county resources and management issues. The county must prepare one of following as part of this brief presentation:

- a. A PowerPoint (showing what your county looks like, can include maps), or
- b. A hand out (2 page max)

Guidance on Board Review Process

The LWCB's review supplements, but does not replace compliance with the DATCP checklist for LWRM plan approval. This encourages and supports honest presentations from the county. The county is strongly encouraged to have the LCC chair or committee member be a part of the presentation to the Board to contribute policy and other insights to the discussion. The goal of the review is not to fail counties. The board recognizes the dynamic nature of the planning process. Board members are interested in how counties tackle priorities over time and how they respond to changing conditions in pursuing their priorities. The board will evaluate a county's planning and implementation based on how well the county balances and prioritizes the following: agricultural performance standards, other state priorities (impaired waters, FPP checks), and local priorities. When needed, the Board will provide constructive support to counties to improve the quality of their planning.

Land Conservation Committee Notification

The LCC was provided a completed copy of this form (including attachments) on:

Signature of Authorized Representative: Don Herten Date: 6-21-19
(e.g. County Conservationist, LCC chair)

Send completed form and attachments to:
Lisa.Trumble@wi.gov

APPENDIX I - 2018 WORK PLAN ACCOMPLISHMENTS AND 2019 ANNUAL WORK PLAN

**BARRON COUNTY 2018 ANNUAL WORK PLAN
LOCALLY-IDENTIFIED PRIORITIES**

Table 1: Planned activities and performance measures by category

CATEGORY (goal and objective from LWRM plan can be added in each category)	PLANNED ACTIVITIES WITH BENCHMARKS If applicable identify focus areas, e.g. HUC 12 watershed code (examples of types of "planned activities" in italics)	PERFORMANCE MEASUREMENTS (examples in italics)
<ul style="list-style-type: none"> <i>Cropland</i> 		
<p>Cropland, soil health and/or nutrient management</p>	<p>*Using Barron County funds (\$20,000), cost share 800 acres of cover crops, targeting individuals with limited experience and new techniques</p> <p>*Administer the Farmland Preservation Program, conducting 50 Status Reviews on current participants and 15 Conservation Compliance Certificates (FPP and NR151) for new locations.</p> <p>*For Nutrient Management Planning, using the SEG funds for 1000 acres of new plans.</p> <p>*Work one on one and in small groups of farmers to assist them in writing their own nutrient management plans.</p> <p>*We will begin using SNAP Plus to run the Soil Erosion Transect Survey. We are also investigating running it an additional time to determine cover crop implementation.</p> <p>*Install 17,000 feet (16 acres) of grassed waterway</p>	<p>Acres of Cover Crop cost shared Goal of 800 700 acres cost shared</p> <p>Number of Status Reviews completed Goal of 50 72 Status Reviews Completed</p> <p>Number of Certificates of Compliance issued Goal of 15 Acres on these farms 30 COCs for 8058 acres</p> <p>Nutrient Management Planning acres cost shared Goal of 4 1 Nutrient Management Planning acres assisted 220</p> <p>Goal of 45 individual training sessions 57 individual sessions 713 new acres planned 15800 acres updated</p> <p>Feet and Acres of Grassed Waterways installed. 8 acres of waterway installed</p>

- *Livestock*

Livestock	<p>Work with 4 landowners to correct livestock runoff prohibitions using Clean Water Diversions, fencing and roof runoff outlets.</p> <p>Review waste storage designs for permitting under the Barron County Manure Storage Ordinance.</p> <p>Inspections of existing manure storage facilities (5)</p> <p>Inspections of barnyard areas for compliance with NR151 (5)</p>	<p># lbs of P reduced (BARNY) 1 project completed 30 lbs P reduced</p> <p># of livestock facilities in compliance with a performance standard</p>
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- *Water quality*

Water quality/quantity (other than activities already listed in other categories)	<p>Investigate groundwater contamination of Nitrates primarily in the sandy outwash areas of the county. Developing a partnership with the Wis DNR and Wis Land+Water for this.</p>	<p>We did not develop a program. We are discussing this with our Public Health Dept and UWSP</p>
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- *Forestry*

Forestry	<i>None</i>	
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- *Invasive*

Invasive species	<p>Continue program of cutting and spraying, purple loosestrife, Japanese Knotweed, garlic mustard, and other invasive species, focusing on early infestations.</p> <p>Partner with Invasive Plants Association of Wisconsin on a field day</p> <p>Raising bio-control beetles for Purple Loosestrife and assisting Lake Associations in their efforts.</p>	<p>Number of control efforts implemented/sites treated We worked on 20 sites for Japanese Knotweed and Purple Loosestrife</p> <p>Number of field days Goal of 1 - We hosted a field day with IPAW</p> <p>Number of beetle release sites - Unable to obtain beetles in 2018</p>
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- *Wildlife*

Wildlife-Wetlands-Habitat (other than forestry or invasive species)	<p>Conduct our annual tree sale</p> <p>Rent out our tree planters</p>	<p>Number of trees sold – Goal of 15,000 15,000 sold</p> <p>Trees planted by our planters - unknown</p>
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- *Urban*

Urban issues	None	
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- *Watershed*

Watershed strategies	Work with the Farmers of Barron County Watersheds on Soil Health issues including demos and field days.	Worked with the FLC on a variety of issues
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- *Other*

Other	<p>Sand & Gravel and Industrial Sand mines</p> <ul style="list-style-type: none"> · Review of Reclamation Plans · Issue reclamation permits · Monitor active mining operations · Survey active mining areas · Evaluate reclaimed sites <p>Erosion Control work with straw mulcher</p>	<p>Number of plans reviewed 5 planned 5 done</p> <p>Number of inspections 115 115 done</p> <p>Certification of Reclamation Sites 1 1 site 1 acre done</p> <p>Number of Sites Mulched 2 2 sites done</p>
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Table 2: Planned activity related to permits and ordinances

Permits and Ordinances	Plans/application reviews anticipated	Permits anticipated to be issued
Feedlot permits	NA	
Manure storage construction and transfer systems	1	1 1
Manure storage closure	2	2 2 permits and closures
Livestock facility siting	4	4 2 issued
Nonmetallic/frac sand mining	5	5 3 reviewed and issued
Stormwater and construction site erosion control	NA	
Shoreland zoning	NA	
Wetlands and waterways (Ch. 30)	NA	
Other		

Table 3: Planned inspections

Inspections	Number of inspections planned	
Total Farm Inspections	60	72
For FPP	60	72
For NR 151	60	72
Animal waste ordinance	10	5
Livestock facility siting	4	1
Stormwater and construction site erosion control	NA	
Nonmetallic mining		

Table 4: Planned outreach and education activities

Activity	Number
Tours	
Field days - Invasive Plants	1
NMP 1 on 1 trainings	45
School-age programs (camps, field days, classroom)	Poster, Speaking 6th Grade
Newsletters	
Social media posts	
News release/story	5

Table 5: Staff Hours and Expected Costs (staff can be combined or listed individually)

Staff/Support	Hours	Costs
<i>County Conservationist/Technician (95%)</i>	1976	\$84,526
<i>Conservation Planner</i>	2080	\$86,005
County Technician/Specialist	2080	\$77,965
Administrative Assistant (50%)	1040	\$31,231
Department Head	686	\$39,929
Cost Sharing (can be combined)		
Barron County - Cover Crops	N/A	\$20,000
DATCP SWRM Bonding	N/A	\$65,250
DATCP SEG funding for NMP	N/A	\$40,000

BARRON COUNTY 2019 ANNUAL WORK PLAN
LOCALLY-IDENTIFIED PRIORITIES

Table 1: Planned activities and performance measures by category

CATEGORY (goal and objective from LWRM plan can be added in each category)	PLANNED ACTIVITIES WITH BENCHMARKS If applicable identify focus areas, e.g. HUC 12 watershed code (examples of types of “planned activities” in italics)	PERFORMANCE MEASUREMENTS (examples in italics)
<ul style="list-style-type: none"> • <i>Cropland</i> 		
<p>Cropland, soil health and/or nutrient management</p>	<p>*Using Barron County funds (\$20,000), cost share 800 acres of cover crops, targeting individuals with limited experience and new techniques</p> <p>*Administer the Farmland Preservation Program, conducting 50 Status Reviews on current participants and 15 Conservation Compliance Certificates (FPP and NR151) for new locations.</p> <p>*For Nutrient Management Planning, using the SEG funds for 1000 acres of new plans.</p> <p>*Work one on one and in small groups of farmers to assist them in writing their own nutrient management plans.</p> <p>*We will begin using SNAP Plus to run the Soil Erosion Transect Survey. We are also investigating running it an additional time to determine cover crop implementation.</p> <p>*Install 15,000 feet (12 acres) of grassed waterway</p>	<p>Acres of Cover Crop cost shared Goal of 800</p> <p>Number of Status Reviews completed Goal of 50 Acres on these farms</p> <p>Number of Certificates of Compliance issued Goal of 15 Acres on these farms</p> <p>Nutrient Management Planning acres cost shared Goal of 4 Nutrient Management Planning acres assisted</p> <p>Goal of 45 individual training sessions</p> <p>Feet and Acres of Grassed Waterways installed.</p>
<ul style="list-style-type: none"> • <i>Livestock</i> 		
<p>Livestock</p>	<p>Work with 4 landowners to correct livestock runoff prohibitions using Clean Water Diversions, fencing and roof runoff outlets.</p> <p>Review waste storage designs for permitting under the Barron County Manure Storage Ordinance.</p> <p>Inspections of existing manure storage facilities (5)</p> <p>Inspections of barnyard areas for compliance with NR151 (5)</p>	<p># lbs of P reduced (BARNY)</p> <p># of livestock facilities in compliance with a performance standard</p>

<ul style="list-style-type: none"> <i>Water quality</i> 		
Water quality/quantity (other than activities already listed in other categories)	Investigate groundwater contamination of Nitrates primarily in the sandy outwash areas of the county. Developing a partnership our Public Health Department for this.	Program developed
<ul style="list-style-type: none"> <i>Forestry</i> 		
Forestry	Conduct our annual tree sale	Number of trees sold – Goal 15,000
	Rental of our tree planters	Number of trees planted
<ul style="list-style-type: none"> <i>Invasive</i> 		
Invasive species	Continue program of cutting and spraying, purple loosestrife, Japanese Knotweed, garlic mustard, and other invasive species, focusing on early infestations. Use the GLEDN App for mapping of sites in the county. Raising bio-control beetles for Purple Loosestrife and assisting Lake Associations in their efforts	Number of control efforts implemented/sites treated Sites recorded by staff Number of beetle release sites
<ul style="list-style-type: none"> <i>Wildlife</i> 		
Wildlife-Wetlands-Habitat (other than forestry or invasive species)		
<ul style="list-style-type: none"> <i>Urban</i> 		
Urban issues	None	
<i>Watershed</i>		
Watershed strategies	Participate in the Red Cedar Basin Partnership Assist the Farmers of Barron County Watersheds with their soil probe project	6 meetings per year

• *Other*

Other	Sand & Gravel and Industrial Sand mines	Number of plans reviewed 5 planned
	<ul style="list-style-type: none"> · Review of Reclamation Plans · Issue reclamation permits · Monitor active mining operations · Survey active mining areas · Evaluate reclaimed sites 	Number of inspections 115
	Erosion Control work with straw mulcher	Certification of Reclamation Sites 2
		Number of Sites Mulched 2

Table 2: Planned activity related to permits and ordinances

Permits and Ordinances	Plans/application reviews anticipated	Permits anticipated to be issued
Feedlot permits	NA	
Manure storage construction and transfer systems	1	1
Manure storage closure	5	5
Livestock facility siting	1	1
Nonmetallic/frac sand mining	5	5
Stormwater and construction site erosion control	NA	
Shoreland zoning	NA	
Wetlands and waterways (Ch. 30)	NA	
Other		

Table 3: Planned inspections

Inspections	Number of inspections planned
Total Farm Inspections	60
For FPP	60
For NR 151	60
Animal waste ordinance	10
Livestock facility siting	1
Stormwater and construction site erosion control	NA
Nonmetallic mining	115

Table 4: Planned outreach and education activities

Activity	Number
Tours	
Field days	1
Trainings/workshops NMP 1 on 1	45
School-age programs (camps, field days, classroom)	Poster contest 1 Speaking contest 1 6 th Grade Tour 1
Newsletters	
Social media posts - Email list	20
News release/story	5

Table 5: Staff Hours and Expected Costs (staff can be combined or listed individually)

Staff/Support	Hours	Costs
County Conservationist/Technician (95%)	1976	\$86,981
Conservation Planner	2080	\$88,897
County Technician/Specialist	2080	\$81,472
Administrative Assistant (50%)	1040	\$32,081
Department head	520	\$28,895
Cost Sharing (can be combined)		
DATCP SWRM Bonding	N/A	\$66,750
DATCP SEG for NMP	N/A	\$40,000
Barron County – Cover crops	N/A	\$20,000