JUNEAU COUNTY LAND AND WATER RESOURCES DEPARTMENT

Juneau County Land & Water Resource Management Plan

2019-2028

10/1/2018

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Plan Summary

Juneau County Land and Water Resource Management Plan

The Juneau County Land and Water Resource Management Plan is a ten year plan (2019-2028) intended to describe the approach the Juneau County Land and Water Resources Department (LWRD) will follow to improve the natural resources in the County. The plan is divided into 5 chapters (Introduction, Background, Resource Assessment and Water Quality Objectives, Plan Implementation, and Implementation Strategies) that describe how the plan was developed and what direction, strategies, and priorities will be used to address the resource concerns identified.

Chapter 1 –Introduction

In 1997, Chapter 92 of the Wisconsin Statutes was amended to create a county land and water resource management program. Land and Water Resource Management (LWRM) plans are written to satisfy the requirement of Chapter 92.10 of the Wisconsin Statutes in 1997 Wisconsin Act 27 (1997-1999) State Biennial Budget and 1999 Wisconsin Act 9 (2000-2001 Budget Bill). It is important that the LWRM plans incorporate public views as well as a technical input from those working on natural resource issues in Juneau County. As part of the development process for the Juneau County LWRM plan, a public opinion web-based survey was made available and advertised throughout the County from October through November 2017 to gain input on how the public views the resources and had them identify what their major concerns were. This survey was developed from a previous survey that was used for the 2013 LWRM plan to identify potential differences or similarities. Upon closing the web-based survey, two public opinion/citizen advisory committee meetings were held to review the survey results as well as take additional input. A technical advisory meeting was held in December 2017. This meeting included over 50 participants from Federal, State, and County Agencies, as well as local municipalities and their engineering consulting firms. The technical advisory meeting also reviewed the public opinion survey results and discussed approaches and benefits of a watershed based LWRM plan. A public hearing was held on April 12, 2018 as part of the LWRD committee meeting prior to going to County Board from approval.

Chapter 2 – Background

Juneau County is in the south central part of Wisconsin with a population of nearly 27,000 residences (2015 census). It has a total area of 514,752 acres including 18,900 acres of surface water. Juneau County lies within two major physiographic settings with distinct characteristics: the Wisconsin Central Plain and the Western Upland. These landscape settings are what makes the Juneau County resources and approaches to conservation of these resources so unique. The northeastern part of the county is in the Wisconsin Central Plain characterized by broad glacial lake basin topography and soils. The southwestern part of the county is in the Western Uplands and is part of the unglaciated upland that is dissected by streams and has steep sandstone escarpments.

The soil in each physiographic setting can be attributed to the type of land use and potential resource concerns. The Central Plain setting of Juneau County has soils represented by a proglacial lake plain (Glacial Lake Wisconsin) that was formed by the settling and deposition of lake and off-shore sediments. The sources of the sandy sediments deposited in the nearly level lakebed are both glacial and erosional in origin. The soils in the Western Uplands

physiographical can be described as silt on the ridge tops overlying bedrock at varying depths. The side slopes are a combination of washed silts to areas of clay in parts of the watershed and make up the prime farmland in the County.

There are 10 major (HUC 10) watersheds in the county and all are draining to the Wisconsin River; Wisconsin Rapids, Cranberry Creek, Beaver Creek, Lower Yellow River, Castle Rock, Little Lemonweir River, Lower Lemonweir River, Seymour Creek, Dell Creek, and Crossman Creek. These watersheds and subsequent water-quality conditions are a product of settings and land use. The two major impoundments are Petenwell and Castle Rock Lakes located in the Central Plains setting of the county and encompass nearly 36,000 acres and boarders with Adams County.

Agriculture is the dominant land use in both physiographic settings and has some of the greatest impacts to the natural resources. According to the county agricultural census the number of farms in the county has been holding steady between 800 and 830 farms, however the number of farms milking cows is on the decline but the number of milking cows in the county has been increasing. In addition there is an increasing trend in crop production towards cash crops including corn grain and soybeans.

Chapter 3 Resource Assessment and Water Quality Objectives

Soil Erosion

Soil erosion is a concern throughout the county for a number of reasons. The major sources of soil erosion in the Central Plain settings of Juneau County are runoff from agricultural fields, construction activities, and wind erosion. In the Western Uplands portion of the county, soil erosion is primarily from runoff. This part of the county is hilly and clayey soils and contains the majority of the agricultural land in the county.

When addressing soil erosion throughout Juneau County, the T-values determined from the transect survey, RUSLE2, and nutrient management plans are used to identify areas of concerns.

Water Quality

Juneau County has an abundance of surface water resources and extensive use of the groundwater for production and residential needs. However with the abundance of water (surface and subsurface) coupled with the agricultural setting of the county, these valuable resources are the priorities addressed by this LWRM plan. Most of the pollutants that enter these waters are carried in runoff from nonpoint sources. The major pollutants of concern are sediment and phosphorus from agricultural and non-agricultural sources. Total phosphorus is the major pollutant that is impacting almost every water body in the county. The Wisconsin River TMDL is in progress of being written during the drafting phase of this report but is described in the report. This TMDL will have an impact on the direction, approaches, and priority watersheds with the water quality issues facing Juneau County.

In addition to surface water, groundwater is a valuable resource in Juneau County indicated by the public opinion survey. Groundwater in Juneau County is generally of good quality whether it is from the bedrock aquifer or from the glacial lake and outwash aquifer. However, groundwater quality is becoming an increasing concern with levels of nitrate in private and public well tests on the rise.

Land Use

Land use changes and activities that promote better uses of the land are important to include as a separate category in the land and water resource plan. Juneau County, like many other counties, is dealing with situations where the land use is affecting agricultural and residential activities.

This includes areas where flooding limits crop production and impacts residential and agricultural activities or where transitions of forested property to agriculture may be linked to water quality problems. In addition, it is also important to continue to educate the county residence on proper disposal of hazardous waste or installation of management practices that target residential activities that goes beyond just agricultural conservation practices.

Other Related Water Quality Concerns:

Failing Septic Systems
Improperly Abandoned Wells and Cisterns
Leaching of Irrigation Waters
Leaking Underground Storage Tanks
Improper Use of Nutrients, Chemicals and Pesticides

Chapter 4 Plan Implementation

As described in the introduction, this LWRM plan was put together using the previous LWRM plan results along with a public opinion survey, public opinion meetings, and a technical advisory group input. The Public Hearing for the Juneau County Land & Water Resource Management Plan was held on April 12, 2018 and County Board Approval of the Plan was June 27, 2018 (Appendix 1). This plan was developed to provide a focused approach to conservation efforts and builds off the resource concerns that were identified. This plan highlights the major resource concerns but also identifies the recommended approach and goals to address those concerns. The goals established in this plan will be implemented over a ten year planning period beginning in 2019 and running through the year 2028. They represent priorities for land and water resource management for Juneau County. The watershed approach described at the beginning of this plan will allow for more detailed and measurable steps toward reaching each goal.

Soil Erosion

Goal 1	Reduce or maintain soil erosion from agricultural fields to tolerable soil loss “T” or less
Goal 2	Encourage shoreline and stream bank conservation efforts through demonstrations and targeted watershed projects
Goal 3	Encourage innovative conservation efforts through outreach and education

Water Quality

Goal 1	Target watersheds to do focused conservation efforts that would have a greater opportunity of improving water quality
Goal 2	Develop and participate in monitoring programs to evaluate ground and surface water concerns to determine potential solutions
Goal 3	Develop outreach and demonstration projects to improve communication and increase conservation adoption

Land Use Management

Goal 1	Work in areas prone to flooding to identify potential conservation approaches
Goal 2	Improve nutrient management strategies and education for producers to make informed nutrient application decisions

Goal 3	Offer opportunities for hazardous waste recycling and disposal to reduce risk of undesirable dumping
Goal 4	Implement an Edible Landscapes and Wildlife Escapes program

Chapter 5 Implementation Strategies

The Juneau County LWRM plan is identifying an approach to mimic components of a watershed program to address the resource concerns. To implement these strategies, watersheds will be selected based on water-quality criteria as well as potential adoption rates. These watersheds will then be further evaluated using existing data and identify any gaps. The purposes of these evaluations are to identify conservation strategies and approaches and will be done through farm visits and survey/land use data, with the intent to engage the producers within each watershed. It is the intent of this effort to inform the producers of the voluntary programs that are being supported by the LWRD and partners, but also remind them of the compliance procedures and regulations that the LWRD is responsible for (NR151 and ATCP 50). Rules to control polluted runoff from farms and other sources in Wisconsin went into effect on October 1, 2002 with revisions effective in 2011. As these rules are updated and changed, the County will enforce the updated rules. DNR NR 151 rule sets performance standards and prohibitions for farms. The DATCP rule, ATCP 50, identifies conservation practices that farmers must follow to meet performance standards. The county will continue to rely upon voluntary implementation as a first step as outlined in activities identified in the Work Plan. However, in order to meet the watershed goals, the county will work with collaborating agencies to ensure compliance with the water quality and practice criteria and track progress. This includes initiating conversations with Juneau County producers if non-compliance is reported and taking the necessary steps to bring them in compliance and/or work with the DNR and DATCP programs to achieve the desired goals. Juneau County adopted the Farmland Preservation Soil Loss Standard and will continue to follow the rules and regulations of the program for those farmers who enrolled under it. To be eligible, the land for which the tax credit is made must meet soil and water conservation standards developed by the County and approved by the Wisconsin Land and Water Conservation Board. Juneau County will continue to enforce their Animal Waste Management Ordinance and update it as needed. In addition Juneau County will continue to support producer written nutrient management planning as well as assist with updating plans through technical support.

Another component of a successful watershed program is the implantation of a monitoring strategy. Monitoring can take on different forms depending on the approach and methods used. It is the intent of Juneau County to continue to track pollutant load reduction, develop a water monitoring program, and improve our ability to show success.

Progress will be evaluated in three categories: accomplishments, financial expenditures and staff time spent on projects. This information will be provided to the DATCP and the DNR as requested. It will also be available to other agencies for their use including but not limited to the NRCS, the Farm Service Agency, UW-Extension, and the general public.

Many agencies and organizations are involved in protecting land and water resources in Juneau County. Although each agency and organization has its own individual mission and supervision, all are united in their goal to preserve the environment for future generations. Other agencies listed in the plan are often consulted and partnered with on projects even though there are no cooperative agreements between the agencies.

As part of the outreach/educational component of the LWRM plan additional steps are going to be needed to show the successes and improve conservation adoption rates. The Juneau County LWRD will partner with the participating agencies to develop programs and outreach events. These events will provide an opportunity for each agency to discuss workable solutions to the participants as well as encourage peer to peer sharing of ideas.

Priority Farms

The process to identify priority farms will be changing as watersheds are identified and resource evaluations are conducted. However, priority will be given to the following farms, not in any particular order:

1. Farms currently under Farmland Preservation agreements and farms applying for credits under the Working Lands Initiative (meeting NR 151 standards is required by rule)
2. Farms located in watersheds draining to 303(d) waters (which are impaired waters of the State) or participating in a watershed program
3. Farms located in Water Quality Management Areas (300 feet from a stream; 1,000 feet from a lake; or in areas susceptible to groundwater contamination)
4. Farms that have over 200 animal units

Chapter 1 - INTRODUCTION

In 1997, Chapter 92 of the Wisconsin Statutes was amended to create a county land and water resource management program. Land and Water Resource Management (LWRM) plans are written to satisfy the requirement of Chapter 92.10 of the Wisconsin Statutes in 1997 Wisconsin Act 27 (1997-1999) State Biennial Budget and 1999 Wisconsin Act 9 (2000-2001 Budget Bill). Juneau County completed its previous 5 year plan in 2013 and is updating to a 10 year plan in 2018.

The development of LWRM plans are intended to be a holistic review of the natural resource concerns, management/conservation alternatives, and potential partnerships that occur in the unique settings and conditions of each County. These plans are used to ensure that the goals and direction of the conservation efforts are meaningful and accountable as well as provide the flexibility to adapt to changing environments or innovations.

Plan Development and Input

In order to develop the 10 year LWRM plan, Juneau County relied on input from local citizens and a technical advisory committee to provide a broad spectrum of interests and perspectives. In October 2017 a web-based public opinion survey was developed and made available to Juneau County citizens until the end of November 2017. This survey was followed up with two public opinion meetings held on November 30, 2017 to review the survey results, discuss the goals of the LWRM plan, and get further input. It was the intent of the county to utilize the input from the citizen survey to guide the discussion and goals with the technical advisory committee. The technical advisory committee was a one day meeting in which members from the Federal, State, and Local agencies, as well as municipalities and environmental consultants were organized to discuss the input from the citizen survey as well as discuss a proposed approach to the LWRM plan.

Juneau County Public Opinion

The survey and public opinion meeting results highlighted the resource concerns and work direction that the county citizens felt the LWRM plan should address. The web-based survey was formatted after the previous survey developed in 2013 (to document any potential changes to public perceptions). The survey was distributed via the local newspaper, UW-Extension and FSA newsletters, hosted on the Juneau County website, as well as sent to the known lake groups and conservation clubs in the County. The survey was a series of several basic questions with multiple choice answers, as well as room for additional comments:

1. What local natural resource are you most concerned about?
2. What are the biggest threats to your natural resources?
3. What services should be emphasized in the LWRM plan?
4. Any additional comments/concerns?

Results from the 2017 survey were graphed to show the distributions of responses as well as the additional comments summarized or grouped by common theme and compared to the 2013 survey (Appendix 1). It was identified, by those that responded to the survey, that groundwater and activities related to water quality were the natural resources that most were concerned about, followed by concerns impacting recreation. This was similar to the 2013 survey, despite two different methods of survey distribution. When evaluating the perceived biggest threats to the natural resources and what the LWRM plan should address, the survey results indicated that agricultural activities (cropping to manure management) were the perceived biggest threats followed by invasive species and development activities (both rural and urban). The survey results also identified that the county citizens would like to see water-quality monitoring and educational/outreach efforts included in the LWRM plan as well as part of the conservation approach in the County. These results are also similar to the 2013 survey except less emphasis was put on forest management and tree planting.

The additional comments from the survey can be summarized into a couple of categories that follow what the three multiple choice questions identified. Most of the comments related to addressing water quality and groundwater issues and to protect the rivers and streams. Several comments pointed to agricultural activities as a concern as well as concerns regarding development and fragmentation of the landscape.

On November 30, 2017 two public opinion meetings were held to review the survey and take additional comments. Despite the meetings not being well attended, the participants further identified water-quality concerns in Juneau County. However, with those that participated being local agricultural producers, it was good to get the perspective on what they feel the best approach would be. These citizens identified educational activities like nutrient management and soil health demonstrations as good tools to engage the agricultural community and promote further conservation efforts.

Juneau County Technical Advisory Meeting

On December 5, 2017 Juneau County Land and Water Resources Department hosted a technical advisory meeting at the Necedah Wildlife Refuge. This meeting was attended by over 50 people representing Federal, State, and Local agencies as well as municipalities and environmental engineers. The morning presentations focused on innovative applications of technology for conservation to updates on progress of the Wisconsin TMDL that will have an impact on conservation activities. In the afternoon, a group discussion was held reviewing the results of the public opinion survey as well as potential approaches to the LWRM plan.

The meeting participants noted similarities in the public opinion results to those they have seen in other counties. The group agreed with the public opinion results on resource concerns to address and order of importance. However, they identified that there should be some focus on ways to address flooding issues, which has been a recent concern in Juneau County in 2017, as well as wind erosion.

In addition to discussion of resource concerns, Juneau County presented a potential watershed approach to the LWRM plan which provided further discussion on potential approaches, benefits, and potential issues. There was also suggested ways to partner with the participating agencies to accomplish these goals. The watershed approach will be further defined within the context of the LWRM plan, but a basic description would be; the Land and Water Resources Department (LWRD) would select two, approximately HUC12 watersheds, in the county and focus educational and conservation outreach for 3-5 years. The concept to do this approach would be to allow the LWRD to focus its effort in smaller areas, rather than the whole county at once, as well as ensure that all geographic locations in the county are represented. This approach sparked a lot of discussion on this concept as far as potential approaches but there was agreement that it would be a good approach and compliments the watershed programs that other agency and municipalities are dealing with.

Plan Development

The LWRM plan is intended to be a process by which a county can assess their resource conditions and needs and decide how to best manage those resources. The Plan is intended to:

- Develop a seamless approach between programs,
- Focus on local resource conditions,
- Provide a mechanism for partnering with other agencies, municipalities, organizations, landowners, and other interested parties,
- Track progress toward meeting the Plan's goals, including compliance with state standards,
- Effectively use local, state, federal and private resources,
- Satisfy state requirements and remain eligible for state funds.

While much of the information in the LWRM plan is not new, the watershed approach to the LWRM plan is a way to focus on and prioritize the resource needs of Juneau County. The intent of this watershed approach is not to define specific watersheds and what years they will be targeted but provide guidelines to the watershed selection, activities/partnerships that will be formed, a review of achievements, and willingness to adapt.

With comments from the technical advisory committee, the watershed approach to the LWRM plan includes:

1. Select two ~HUC12 watersheds, one in each of the two pre-dominant landscape settings of Juneau County, using water-quality criteria as well as potential conservation adoption potential.
    a. Watershed selection will be based on water-quality concerns and potential conservation adoption rates
    b. Address the different resource concerns identified in each landscape setting
2. Focus outreach to both the agricultural and non-agricultural entities
    a. Focus on conservation efforts for producers, including nutrient management and soil health programs
    b. Begin demonstration of urban, stream bank, and shoreline conservation efforts that target non-agricultural audiences

3. Inform participants in the identified watersheds of these efforts and perform site visits
    a. Begin conversations with those producers and landowners who are not aware of conservation efforts
    b. Access private property to discuss potential solutions to conservation concerns
4. Develop partnerships to achieve conservation goals
    a. Work with Federal, State, and Local agencies for conservation assistance and potential overlap with 9 key element plans and TMDL requirements
    b. Work with municipalities to help achieve common goals
5. Annually evaluate conservation adoption rate and outreach participation
    a. Maintain flexibility to conservation issues and funding opportunities
    b. Willingness to move watersheds

In addition to the watershed approach, performance standards and prohibitions are an important concept in the LWRM plan and need to be covered county wide. Through Wisconsin Act 27, the Legislature amended the Wisconsin State Statutes to allow county Land Conservation Committees to develop and adopt standards and specifications for management practices to control erosion, sedimentation, nutrient loading and non point sources of water pollution.

The State also required the Department of Natural Resources (DNR) and the Department of Agriculture, Trade and Consumer Protection (DATCP) to develop performance standards for both agriculture and non-agriculture nonpoint pollution sources. Any standards, including those developed by the county must address the Manure Management Prohibitions.

All State developed standards or prohibitions will be followed in Juneau County unless the county has developed more stringent restrictions which would take precedence (NR151 and ATCP 50). Juneau County will adopt changes to these rules and standards as they become effective.

Juneau County currently has the following standards, ordinances and prohibitions relating to land and water resource management:

- Atrazine Use Prohibition Area (Chapter ATCP 30),
- Juneau County Animal Waste Management Ordinance,
- Juneau County Shoreland Zoning Ordinance,
- General Zoning Ordinance,
- Juneau County Wetland Zoning Ordinance,
- Juneau County Floodplain Zoning Ordinance,
- Non-Metallic Mining Reclamation Ordinance
- Private Sewage Disposal System Ordinance,
- Farmland Preservation Plan.

This LWRM plan will be an extension of previous plans as well as incorporate information developed in the 2010 Juneau County Comprehensive Plan and information from Priority Watershed Plans, the Central Sands Wind Erosion Control Project, the current Wisconsin Agricultural Statistics and other documents.

Plan Goals

As part of the resource concerns identified through the public and technical advisory committee meetings as well as review of historic LWRM plans and committee meetings, the following goals and priorities have been developed. These goals have been divided into three general categories:

1. Soil Erosion
    a. Objective: Reduce or maintain soil erosion from agricultural fields to tolerable soil loss "T" or less
    b. Objective: Encourage shoreline and stream bank conservation efforts through demonstrations and targeted watershed projects
    c. Objective: Encourage innovative conservation efforts through outreach and education
2. Water Quality
    a. Objective: Target watersheds to do focused conservation efforts that would have a greater opportunity of improving water quality
    b. Objective: Develop and participate in monitoring programs to evaluate ground and surface water concerns to determine potential solutions
    c. Objective: Develop outreach and demonstration projects to improve communication and increase conservation adoption
3. Land Use Management
    a. Objective: Work in areas prone to flooding to identify potential conservation approaches
    b. Objective: Improve nutrient management strategies and education for producers to make informed nutrient application decisions
    c. Objective: Offer opportunities for hazardous waste recycling and disposal to reduce risk of undesirable dumping

Chapter 2 - Background

COUNTY DESCRIPTION

Juneau County is in the south central part of Wisconsin with a population of nearly 27,000 residences (2015 census). It has a total area of 514,752 acres including 18,900 acres of surface water. Juneau County is bordered on the north by Wood County, on the east by the Wisconsin River which separates it from Adams County, on the south by Sauk County and on the west by Vernon, Monroe and Jackson Counties. The Wisconsin River contains the Petenwell and Castle Rock Flowages. Other flowages in the county include: Sprague-Mather, Meadow Valley, Rynearson, Eagle Nest, and Suk Cenery. Lakes include Big, Necedah, Partridge, and Decorah. There are named rivers and creeks flowing through every township of the county. Wetlands are dotted throughout the county with large tracts of wetlands in the north.

Juneau County lies within two major physiographic settings with distinct characteristics: the Wisconsin Central Plain and the Western Upland. These landscape settings are what makes the Juneau County resources and approaches to conservation of these resources so unique. The northeastern part of the county is in the Wisconsin Central Plain. This part of the Central Plain is characterized by a broad glacial lake basin. The lake basin has extensive areas of wetlands which result from a flat topography, a high water table, and slowly permeable layers of silt or clay within the lake deposits. All of the surface drainage is towards the Wisconsin River. The Lemonweir, Little Yellow and Yellow Rivers flow through and drain the majority of the lake basin. Both Petenwell and Castle Rock lakes are located in this part of the county and are the border with Adams County

The southwestern part of the county is in the Western Uplands. This unglaciated upland is a thoroughly dissected, hilly area with steep sandstone escarpments marking its northern and eastern boundaries. At the higher elevations are remnants of the more resistant dolomite bedrock which capped these uplands. The valleys, incised 200-350 feet below the ridge tops, are long and v-shaped and have relatively narrow bottoms. The highest elevation is about 1,380 feet on Johnson Hill in Plymouth Township. The drainage pattern is dendritic and most of the area is well drained. All parts of this upland area are reached by streams that provide outlets for drainage waters. Many streams are spring fed. Although the whole county is considered to be within the Wisconsin River Drainage Basin, the Baraboo River is the major tributary draining these uplands.

Agricultural Snapshot

Agriculture is the dominant land use in both physiographic settings and has some of the greatest impacts to the natural resources. According to the county agricultural census the number of farms in the county has been holding steady between 800 and 830 farms (2012 census data). The majority (43%) of these farms range in size from 50-179 acres but farm sizes haven't changed dramatically from 2002 to 2012 (**table 1**). When looking at the animal production; beef cow numbers have also remained constant from 2002 to 2012 with approximately 2,600 cows in the county. The dairy cow numbers follow a similar trend to how the dairy industry has been moving in the state with the number of farms that are milking reducing (126 farms in 2002 to 81 farms in 2012) but the number of cows being milked increasing (8,880 in 2002 to 10,787 cows in 2012). Pork production has also seen reductions with pig numbers dropping to below 500 animals in 2012 (nearly 800 animals in 2002). Poultry production has seen an increase from 60 farms in 2002 to 80 farms in 2012, with broilers/meat poultry driving the increase.

	Dairy		Hogs		Poultry		Corn Grain
Year	Farms	Cows	Farms	Hogs	Farms	Broilers	Harvested acres
1997	198	9815	44	860	11	617	34,243
2002	126	8880	30	816	18	874	30,964
2007	103	9906	21	563	4	36	38,185
2012	81	10787	28	485	12	1803	40,373

Table 1. Juneau County Agriculture Statistics, USDA, National Agricultural Statistics Service

Crop production in the county has undergone of the biggest changes that relate to animal production numbers and the farms transitioning to cash cropping. To use corn grain production as a representative for cash crop trends, the number of farms harvesting corn for grain has increased from 297 farms in 2002 to 339 farms in 2012. The number of acres planted to corn grain was nearly 31,000 acres in 2002 to almost 40,400 acres in 2012. A recent review of the National Agricultural Statistics Service (NASS) for grain production in Juneau County reported 44,700 acres planted to grain in 2016.

SOILS

The soil in each physiographic setting can be attributed to the type of land use and potential resource concerns (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm). The Central Plain setting of Juneau County falls within the Castle Rock River Watershed (HUC 0707003). An excerpt from the Natural Resources Conservation Service (NRCS) rapid watershed assessment (https://www.nrcs.usda.gov/wps/portal/nrcs/detail/wi/technical/dma/rwa/?cid=nrcs142p2_020825) defines the soils in this part of the county are represented by a proglacial lake plain (Glacial Lake Wisconsin) that was formed by the settling and deposition of lake and off-shore sediments. The sources of the sandy sediments deposited in the nearly level lakebed are both glacial and erosional in origin. The sand east of the Yellow and Wisconsin Rivers is from proglacial stream sediments deposited by glacial melt-water streams during the Late Wisconsinan Glaciation. The sand in the western part is from hillslope sediment (primarily quartz) deposited by water that flowed over and eroded Cambrian sand and sandstone. Wind forces deposited eolian sands that formed dunes throughout much of this lake plain. Generally the soils within this lake plain have surface textures that include sand and loamy sand, but some areas include sandy loam textures. These soils range from excessively drained to poorly drained and typically have apparent high water tables. They have very rapid to rapid permeability and very low to low available water capacity. Swamps, bogs, and marshes are common, especially in the western part, and include very poorly drained soils that formed in organic or sandy deposits. In the southwest part of the lake plain, along the Lemonweir River, the nearly level landscape is the result of deposition of offshore silts and clays. Post-glacial stream cutting and deposition that formed floodplains, terraces, and swamps along major rivers include soils that formed in sandy to clayey alluvium. The soils on these landforms formed in sandy to loamy residuum or colluvium. Along the southwestern edge of the watershed is a dissected landscape consisting of narrow ridges, broad sloping shoulders and hills,

Soils investigation in Southwest Juneau County

steep to very steep valley sides, pediments, and narrow valley floors. This landscape is the result of hillslope processes that include sheet wash, soil creep, and soil flowage that eroded the hill slopes, cut into the underlying Cambrian rock, and transported erosional debris to adjacent streams. The soils in this area formed in loess, silty alluvium, loamy to clayey residuum, and sandy to loamy colluvium over sandstone or dolostone and have surface textures that range from silt loam to loamy sand. These soils range from excessively drained to somewhat poorly drained and have moderate to rapid permeability and moderate to low available water capacity.

The soils in the Western Uplands physiographical setting are located in the Baraboo Watershed (HUC 0707004). The watershed soils can be described as silt on the ridge tops overlying bedrock at varying depths. The side slopes are a combination of washed silts to areas of clay in parts of the watershed. Sand can be found in the valleys, along the streams, but is less prominent that found in the Central Plain setting of the county. The soils in this part of the county are better suited for agriculture as the soils have better water holding capacity and are well drained. The NRCS classifies much of this part of the county as prime Farmland.

Hydrology

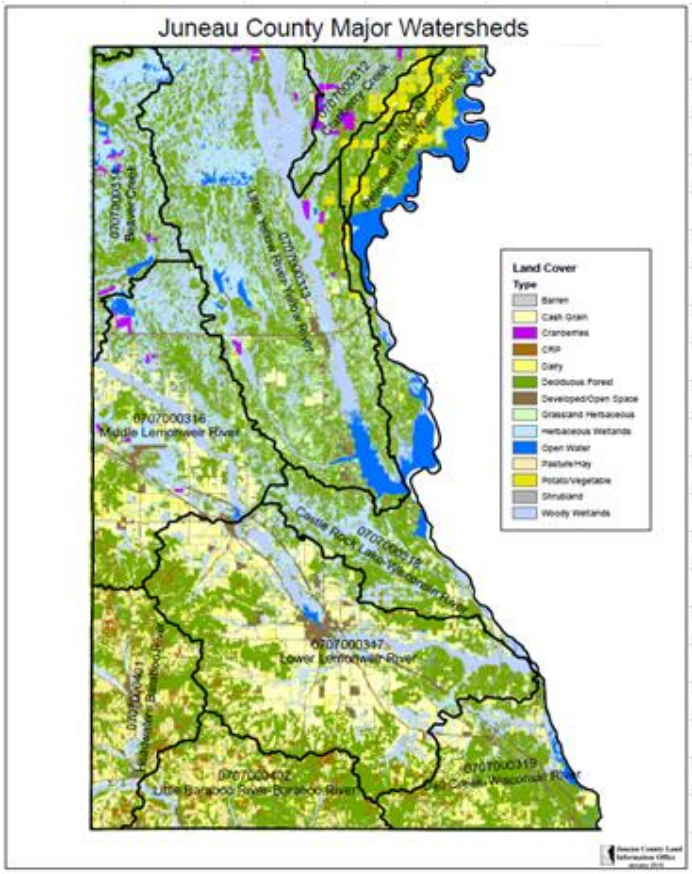


Figure 1. Juneau County Major Watersheds and Land Cover

With the differing physiographical settings and soils in the county the hydrology also varies. The rivers, lakes, and streams are a vital resource to Juneau County through recreational opportunities and commerce (power production, transportation, development, etc.). The two major impoundments are Petenwell and Castle Rock Lakes located in the Central Plains setting of the county and encompass nearly 36,000 acres and boarders with Adams County.

There are 10 major (HUC 10) watersheds in the county and all are draining to the Mississippi River; Wisconsin Rapids, Cranberry Creek, Beaver Creek, Lower Yellow River, Castle Rock, Little Lemonweir River, Lower Lemonweir River, Seymour Creek, Dell Creek, and Crossman Creek (Figure 1). These watersheds and subsequent water-quality conditions are a product of settings and land use. A detailed description of each watershed can be found on the Department of Natural Resources (DNR) website (http://dnr.wi.gov/water/watershedSearch.aspx).

Wisconsin Rapids: This watershed is highly developed with industry and supports several large paper mills within a relatively small section of the Wisconsin River. The Wisconsin Rapids watershed has poor water quality ranking but the majority of the watershed hasn't been evaluated. Approximately 98 percent of total acreage in the watershed erodes at greater than the tolerable soil loss level with average annual soil loss of nine tons per acre (Gunderson, 1987). The Juneau County Erosion Control Plan also indicates the need for wind erosion control and improved irrigation management

Cranberry Creek: This watershed is made up of very diverse habitats but is known for the cranberry marshes. This watershed was ranked using the Nonpoint Source Priority Watershed Selection Criteria. Based on surface and ground water data, the overall ranking is low but hasn't been the target of many assessments. There are 17 to 20 cranberry-growing operations with over 100 cranberry bogs in this watershed. There is a concern that nutrients from fertilizers and pesticides/herbicides discharged from these marshes could be degrading water quality and harming sensitive species of aquatic life. Additional research is needed to fill data gaps. The Juneau County soil erosion control plan listed the Cranberry Creek/Wisconsin Rapids Watersheds as a priority for erosion control and improved irrigation management. According to estimates, nearly all the cropland is eroding at greater than tolerable levels due to wind erosion (Meyer, 1987). There is a potential for groundwater pollution due to the rapid permeability of soils and poor irrigation management (Meyer, 1987).

Beaver Creek: Numerous impoundments are found throughout the watershed, some of which are used for cranberry production and others are managed for wildlife production or fishing. Land adjacent to many flowages is county, state or federally owned. The Beaver Creek Watershed has extensive acreage of wetlands and forest. Since over three-fourths of the Beaver Creek Watershed is either forested, wetland, or open water, nonpoint sources of pollution are not as pervasive as in other watersheds where agriculture prevails. The nonpoint source ranking of the watershed for lakes and groundwater is low.

Lower Yellow River: The watershed is approximately 167,075 acres in size with 65,343 acres of wetland. The watershed is dominated by wetlands and forests. This watershed has a low Nonpoint Source Priority Watershed ranking, with little information known. The majority of the watershed streams are ditched. A portion of the watershed lies within the Necedah National Wildlife Refuge. Historically the land in and around the refuge was once a vast open peat bog with scattered islands of savanna and woodland. Once settlers arrived, the land use surrounding the refuge drastically changed.

Castle Rock Lake: This watershed is part of the Duck Creek HUC 10 that extends into Adams and Columbia County. This watershed makes up a small part of Juneau County and primarily represents Castle Rock Lake as well as the wetland areas of the Wisconsin River. The nonpoint water quality is low priority given the wetland make-up, however groundwater concerns are high.

Middle Lemonweir River: Many streams drain large wetland and isolated spring ponds throughout the watershed. The dominant land cover in the Middle Lemonweir River Watershed is agricultural. In addition, approximately 32% of the watershed is forested and 13% is

considered wetland. The majority of the wetlands and lowland areas are located in the upper stretches of the Middle Lemonweir River and the South Fork of the Lemonweir River. Grassland is also an important component, covering just over 10% of the watershed. The majority of the waters in this watershed haven't been evaluated so this watershed also has a low Nonpoint Source Priority Ranking.

Lower Lemonweir River: The watershed is located in the driftless region of Wisconsin in Juneau County. Many of the creeks in the watershed consist of sand and silt substrates, with low gradients and small to moderately sized attached spring ponds. Forest and agriculture are the primary land use in the watershed. Wetlands account for just over 13% of the watershed. Overall, nonpoint source pollution from both urban and rural sources is considered the primary cause of water quality problems but much of the water quality is unknown. The groundwater in the Lower Lemonweir River Watershed has been ranked as a high priority with respect to nonpoint source pollution reduction. The cause of groundwater contamination from nonpoint sources of pollution may result from over fertilizing and over spreading of manure on agriculture fields. In fact, there are a couple of areas in the watershed that are considered to be atrazine prohibition zones. These areas indicated that elevated levels of atrazine, an herbicide used on corn, have been found in some tested private water wells. Soils are permeable which has allowed atrazine to reach the groundwater in some locations.

Seymour Creek and Upper Baraboo River: The land in this watershed is characteristic of the driftless area with steep hills, however many stream valleys are fairly wide. Agricultural activities are found both on the wider ridgetops and in most valleys. Approximately 65% of the primary land use throughout the watershed is agriculture. The remainder of the watershed is largely forested. Wetlands occupy just over 4% of the watershed and are located adjacent to the Baraboo River, Seymour Creek and the West Branch of the Baraboo River. Nonpoint sources of pollution primarily from agricultural activities have created water quality problems in the watershed giving it a high ranking for nonpoint source pollution reduction.

Dell Creek: The watershed is hilly with intensive agriculture and has a high nonpoint ranking. Overall, broad-leaf deciduous vegetation covers the largest percentage of the watershed, but agricultural land use and grasslands cover a good portion of the watershed and are susceptible to nonpoint sources of pollution, particularly from erosion. The land and wildlife resources of the watershed are also potentially impacted by urban and rural land uses. In the Juneau County portion of the watershed it is less developed so the primary nonpoint sources of pollution are from erosion from agricultural activities.

Crossman Creek and Little Baraboo River: This area is in the driftless, or unglaciated region of Wisconsin. The dominant land use in the watershed is agriculture. Forest and grassland also cover a large portion of the watershed. Nonpoint sources of pollution are problematic in the watershed giving it a high importance ranking for nonpoint source pollution reduction. In response, the watershed was the focus of a nonpoint source priority watershed project. The project was jointly sponsored by the Department of Natural Resources, the Department of Agriculture, Trade and Consumer Protection, and the Sauk, Richland and Juneau County Land Conservation Departments. The project was selected in 1983 and was completed in the mid 1990's. Goals of the project were to protect and improve water quality and fisheries habitat by

controlling erosion from farm fields, reducing streambank erosion, reducing or controlling barnyard runoff, and better management of manure spreading in the watershed. When the priority watershed project was completed, 60% of eligible landowners had signed up, but only 65% of the signed projects were actually completed. The project did achieve its goal of 70% phosphorus reduction and 50% sediment reduction.

Chapter 3 Resource Assessment & Water Quality Objectives

RESOURCE ASSESSMENT

As discussed through the public opinion process and strengthened with the technical advisory committee meeting, the goal of this plan is to create a mechanism to address the three major threats to the county which have been identified as soil erosion, water quality, and land use management. With Juneau County having two different physiographical settings, several approaches are needed to address those resources and meet the LWRM plan goals.

1. Soil Erosion

Soil erosion is a concern throughout the county for a number of reasons. The major sources of soil erosion in the Central Plain settings of Juneau County are runoff from agricultural fields, construction activities, and wind erosion. This is due to the relatively lower slope and sandier soils that were previously described. In the Western Uplands setting, the non-point sources of soil erosion are primarily related to agricultural fields as a result of the abundance of agriculture, higher slopes, and tillage practices still used today.

Juneau County soil loss standard is based on “T-value” and is tracking soil erosion through the transect survey method since 1996. This information includes average soil loss (t/ac/y), number of fields and number of acres that are less than “T”, between “T” and 2”T”, etc. Based on estimates provided by the *Juneau County Erosion Control Plan* (1987) average cropland erosion rates for water erosion was 7.5 tons per acre per year (t/ac/yr). The NRCS Field Office Technical Guide (FOTG) identifies the Revised Universal Soil Loss Equation (RUSLE2) calculated T-values to range from two to five tons of acceptable soil loss annually. These rates are higher than the tolerable rates for the county soils calculated through the transect survey. The average county-wide soil erosion rate has increased over the last four years. In 2014 it was 1.26 t/ac/yr; 2015 - 1.56 t/ac/yr; 2016 – 1.69 t/ac/yr and 2017 – 2.02 t/ac/yr. The hilly parts of the county in the southwest have an average of 5 to 8 t/ac/yr loss with the highest field being 25.95 and the flat, sandy, irrigated fields in the northeast having virtually 0 t/ac/yr. This tends to distort the overall results. This does not include wind erosion. The Wind Erosion Equation (WEE) is not a strict calculation but rather a function of various factors. Wind erosion rates have not been historically calculated in Juneau County.

When addressing soil erosion throughout Juneau County, the T-values determined from the transect survey, RUSLE2, and nutrient management plans are used to identify areas of concerns. In the Central Plains setting of the county the primary challenge with soil erosion is tied to erosion from cropland as well as wind erosion. Specific areas to concentrate on would be in the

Yellow River and the Cranberry Creek watersheds (Figure 1). These watersheds have been identified to have the highest T-values calculated as well as are located in part of the county that is also susceptible to wind erosion. In the Western Uplands setting of the county the Crossman Creek watershed would merit action within the next 10 years as a result of tillage practices, crop rotation, and limited use of cover crops.

2. Water Quality

Surface Water

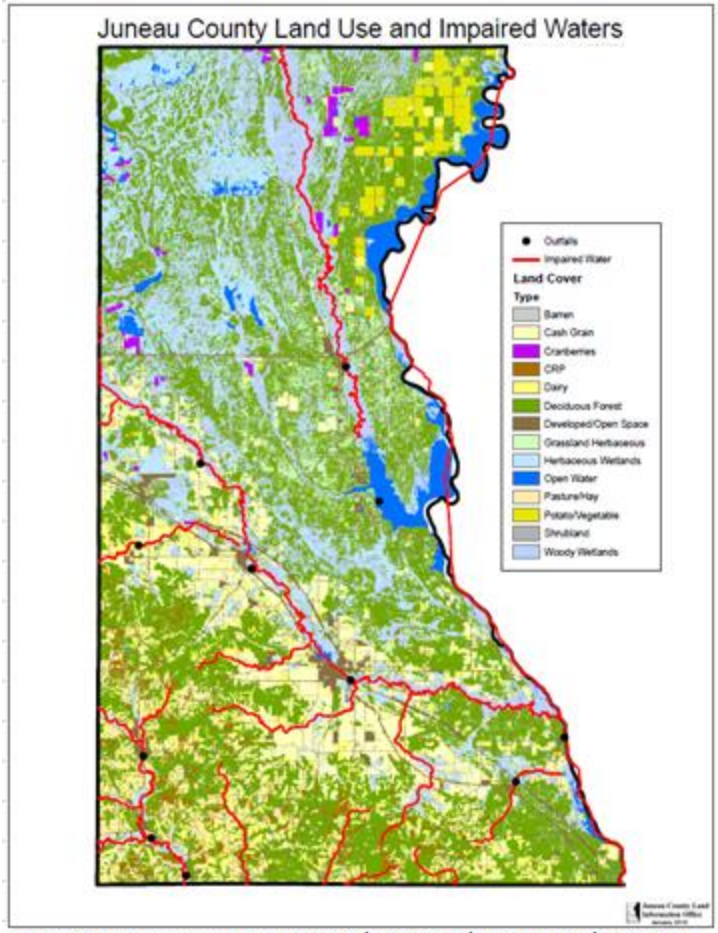


Figure 2. Juneau County Land Use and Impaired Waters

Juneau County has an abundance of surface water resources and extensive use of the groundwater for production and residential needs. However with the abundance of water (surface and subsurface) coupled with the agricultural setting of the county, these valuable resources are the priorities addressed by this LWRM plan. Most of the pollutants that enter these waters are carried in runoff from nonpoint sources. The major pollutants of concern are sediment and phosphorus from agricultural and non-agricultural sources.

The Wisconsin DNR is the primary entity that has evaluated Juneau County's surface water conditions. Areas of specific concern are the waters listed by the DNR as impaired (http://dnr.wi.gov/water/impairedSearch.aspx) with over 60 sections of the streams, rivers, or lakes. Figure 2 shows the location of the impaired waters at the time of this publication (streams

are being added and removed as more information is gathered). Table 2 shows the water bodies that are impaired by pollutant. While not all impaired waters have approved TMDL's,
conservation efforts are needed in these basins to improve the water quality. Total phosphorus is the major pollutant that is impacting almost every water body in the county. Nonpoint sources of pollution are the main source of the water quality problems in these watersheds and are preventing many miles of stream from fully achieving their biological use potential. The cause of problems includes:

Watershed Name	Pollutant/Impairment
Baraboo River	Total phosphorus
Bear Creek	Total phosphorus, degraded biological community
Beaver Creek	Total phosphorus
Brewer Creek	Degraded biological community
Castle Rock Flowage	Total phosphorus, dioxin, mercury, PCBs
Cleaver Creek	Total phosphorus
Crossman Creen	Total phosphorus, Suspended Solids
Dell Creek	Total phosphorus, elevated water temperature
East Branch Big Creek	Total phosphorus
Hills Creek	Total phosphorus
Lemonweir River	Total phosphorus
Little Hoten Creek	Total phosphorus
Little Lemonweir River	Total phosphorus
Lyndon Creek	Total phophorus
New Lisbon Lake	Mercury
Onemile Creek	Total phosphorus
Petenwell Flowage	Total phosphorus, dioxin, mercury, PCBs
Sevenmile Creek	Total phosphorus
Seymour Creek	Total phosphorus
West Branch Baraboo River	Total phosphorus, suspended solids, low DO, BOD
West Branch Big Creek	Total phosphorus
Wisconsin River	Total phosphorus, dioxin, mercury, PCBs
Yellow River	Total phosphorus, degraded biological community

Table 2. Juneau County impaired waters listed by watershed name and pollutant. Specific information on each watershed segment or impairment status can be found at http://dnr.wi.gov/water/impairedSearch.aspx

1. Steambank pasturing
2. Woodlot pasturing
3. Barnyard or exercise runoff
4. Streambank erosion
5. Cropland erosion (sediment, nutrients and pesticides)
6. Wind erosion
7. Urban storm water runoff
8. Irrigation
9. Winterspread manure

Phosphorus loading into the Wisconsin River from point and nonpoint sources contributes to bluegreen algae blooms, dense growth of aquatic plants, and poor water-quality conditions for game fish. The Wisconsin River TMDL is in progress of being written during the drafting phase of this report. This TMDL will have a significant impact on the direction and approaches to the water quality issues facing Juneau County Watersheds. This is evident in the Wisconsin River flowages and impoundments like Petenwell and Castle Rock Lakes. The Wisconsin DNR highlighted the impact of these impoundments at reducing phosphorus from moving downstream (through settling). As this phosphorus settles out, further water-quality impairments occur as indicated through the impaired waters listing for those Lakes. Despite this settling affect, phosphorus continues to increase after the impoundments as more tributaries contributed to the Wisconsin River (figure 3).

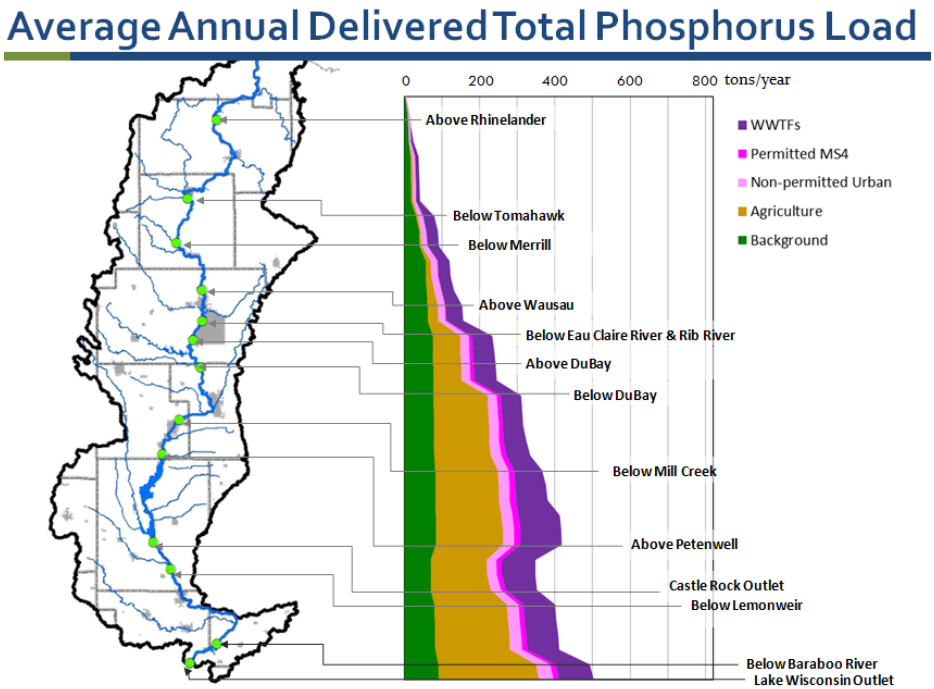


Figure 3. Wisconsin River Basin Cumulative Total Phosphorus Loading

In the draft document for the Wisconsin River TMDL (https://dnr.wi.gov/topic/TMDLs/documents/WisconsinRiver/DraftReport/WRBDraftTMDLReport20180221.pdf, visited March 21, 2018), the Wisconsin River subwatersheds have the impaired waters and water quality reduction criteria identified. Excerpts of the tables and maps from this draft document can be found in the appendix for Juneau County. The subwatersheds identified through the TMDL process can be used to identify a priority structure to our watershed based LWRM plan. Several of the higher phosphorus loading watersheds to the Wisconsin River either begin or are a major part of the Juneau County landscape. These watersheds include the Baraboo River, Lemonweir River, Lower Wisconsin River Corridor, Central Wisconsin River Corridor, and the Yellow River watershed.

Surface water point dischargers are also having an impact on the potential approaches and efforts that will be impacting the Juneau County surface waters and are included in the Wisconsin River TMDL publication. These permit holders have to meet state phosphorus discharge limits, however the DNR has provided several options in order to get into compliance, with several of those options including conservation efforts and/or working directly with the LWRD. A description of these options can be found on the DNR website (http://dnr.wi.gov/topic/SurfaceWater/documents/phosphorus/PhosphorusGuidance.pdf). Figure 2 shows the location of the point source discharge permit holders throughout the county.

Groundwater

In addition to surface water, groundwater is a valuable resource in Juneau County indicated by the public opinion survey. Groundwater is readily available in quantities adequate to meet present and anticipated future needs for domestic, agricultural, municipal, and industrial needs. Municipal water supplies in Juneau County obtain groundwater from the Cambrian sandstone aquifer which underlies the southern half of the county. The sandstone aquifer also provides

groundwater for private water supplies in about the southern one-third of the county. The aquifer provides reliable supplies of water suitable for virtually all uses. It can produce yields as high as 1,850 gallons per minute. The average yield for high capacity wells is 500 gallons per minute and actual yields from some wells in Juneau County range from 150 to 840 gallons per minute.

Glacial lake and outwash deposits make up an aquifer that is the major source of groundwater for private water supplies in about the northern two-thirds of the county. This aquifer is thickest (50 to more than 100 feet) along the Wisconsin River from the north end of Castle Rock Lake to the north end of Petenwell Lake. In this area, well yields of 500 to more than 1,000 gallons per minute can be expected. Yields of 50 to 500 gallons per minute can be expected in a band several miles wide along the periphery of the high yield area. In the remainder of this area this aquifer is less than 50 feet thick and generally produces yields of less than 50 gallons per minute.

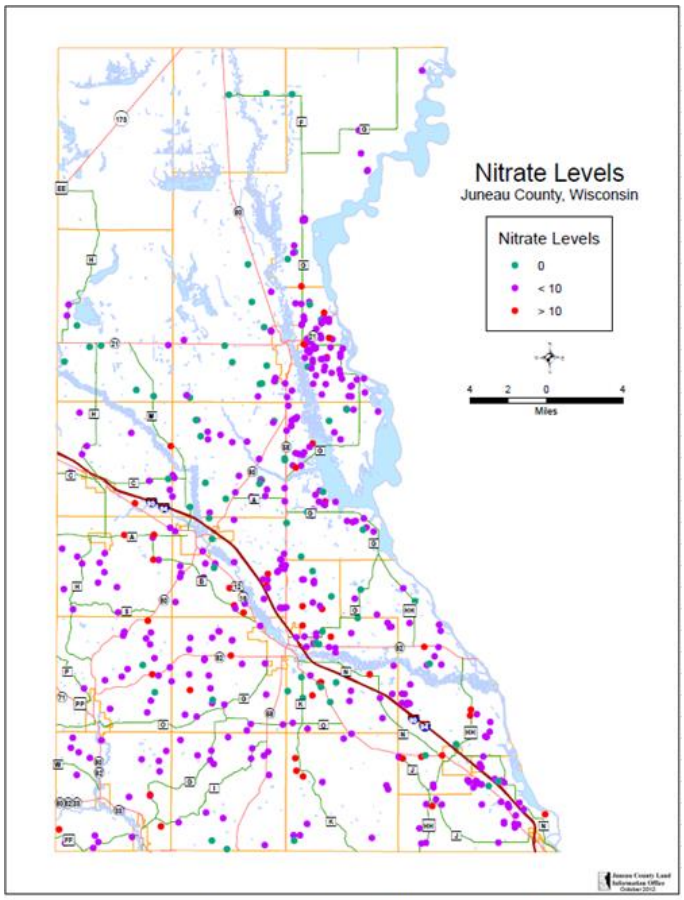


Figure 4. Junue County Health Department Reported Nitrate Values from 2002

Groundwater in Juneau County is generally of good quality whether it is from the bedrock aquifer or from the glacial lake and outwash aquifer. However, groundwater quality is becoming an increasing concern with levels of nitrate in private and public well tests on the rise. A review of well water-quality tests administered through the Juneau County Health Department showed that public supply wells are having an increasing trend in nitrate with the 2015 average nitrate being 1.75mg/L whereas the private well data showed no trend but average concentrations are 3.77mg/L (table 4). Figure Y shows the nitrate levels of tested wells in Juneau County produced in 2002. For the most part groundwater nitrate levels are below the drinking water quality standard (10mg/L), but given the soils and land use in much of the county, groundwater quality is a major concern. In the northeastern part of the county there have been more recent public discussions about the groundwater quality, with private wells having nitrate concentrations above 20mg/L. Keep in mind that nitrate is a standard test of water quality and though nitrate levels are important to human health, nitrate can be used as an indicator for other potential pollutants (bacteria, pathogens, viruses) found in the water.

Juneau County Nitrate Trends

	Public Supply Wells Data		*Private Wells Data*	
Year	Average (mg/L)	Standard Deviation	Average (mg/L)	Standard Deviation
1999	1.70	2.07	3.51	5.52
2000	1.38	1.66	2.47	3.28
2001	1.83	2.38	3.08	4.25
2002	1.94	3.16	2.91	4.30
2003	1.51	1.85	2.87	4.62
2004	1.18	1.40	2.57	3.68
2005	1.54	1.76	2.78	3.66
2006	1.79	2.87	3.23	5.08
2007	1.83	2.42	3.94	5.68
2008	2.02	2.82	4.43	6.12
2009	2.08	2.98	4.84	5.77
2010	2.29	3.52	5.71	9.83
2011	2.01	2.45	2.82	2.76
2012	2.01	2.37	1.93	2.71
2013	2.19	2.62	2.69	2.22
2014	1.91	2.22	2.48	2.64
2015	1.75	2.23	3.77	4.17

Table 4. Juneau County Average Nitrate Values for Public and Private Supply Wells

Water Quality Objectives

As part of any LWRM plan, the primary goal is to improve or maintain water quality to support the biological condition that water body is suited (cold or warm) to provide beneficial use. This means assessing the water body, identifying the problems, providing measures of conservation, and then reassessing the water body to document the change. The information provided by the DNR (Wisconsin River TMDL, impaired waters, water body condition index, water quality sampling, etc.) and combining that with conservation activities and/or abilities is critical to be able to set water quality objectives for any given water body.

Watershed Rankings:

As part of the assessment process, ranking watersheds by water quality impairment is one of the first steps. Ten major watersheds are contained in whole or part, in Juneau County. These watersheds are divided between two basins, the Upper Wisconsin (Central Plain setting) and the Lower Wisconsin (Western Upland setting). These watersheds have varying degrees of water quality issues for different reasons and were ranked by the DNR as part of the watershed descriptions. This ranking sets a foundation but is built on available data so further evaluations of the water bodies and conditions are needed, given the relatively low amount of evaluations that have occurred in Juneau County. The ranking of Wisconsin's watersheds is found in the Nonpoint Source Watershed and Lake List (http://dnr.wi.gov/topic/watersheds/hwa.html). This list was developed to assist the Wisconsin Land and Water Conservation Board in identifying priority watershed and priority lake projects. The rankings were accepted by the Land and Water Board in July 2002. The Land and Water Resources Department also ranked these watersheds in 1987 according to the following criteria:

1. The amount and severity of cropland erosion,
2. Water quality degradation and other off-site damages,
3. Value of the productive capacity lost through erosion,

4. Health hazards,
5. Extent to which erosion is preventable and the relative cost of that prevention,
6. Coordination with exiting conservation programs.

The Land and Water Resources Committee in 1987 designated the Seymour Creek/Upper Baraboo River Watershed, the Dell Creek Watershed, the Wisconsin Rapids/Cranberry Creek Watershed, and the Lower Lemonweir River Watershed as priority areas. The watershed rankings of the LWRD differ from those of the DNR for two reasons: the county used criteria that went beyond nonpoint pollution to surface water; and the county has not re-ranked these watersheds since 1987 (Table 5).

Watershed Name	County Ranking	DNR Ranking
Crossman Creek	Low	High
Dell Creek	High	High
Lower Lemonweir	High	High
Seymour Creek	High	High
Cranberry Creek	High	Medium
Lower Yellow	Low	Low
Wisconsin Rapids	High	High
Beaver Creek	Low	Low
Little Lemonweir	Medium	High
Castle Rock	Low	Low

Table 5. Juneau County Watershed Ranking

Despite the ranking occurring over 20 years ago (at the time of this publication), the ranking criteria and results still hold true today. The major watersheds identified are still critical watersheds in Juneau County when you evaluate the transect survey for measures of soil erosion as well as locations of DNR qualified impaired waters.

When using the Wisconsin River TMDL information to rank watersheds or at a minimum use as guidance to our watershed approach, the ranking would look slightly different. Going beyond just the streams that are listed as impaired but looking at the highest loading watershed in each subwatershed, the priority watersheds would be: in the Lower Wisconsin River Corridor focus on Dell Creek; in the Baraboo Watershed focus efforts will want to address West Branch of the Baraboo; in the Lemonweir River Watershed, priority should be put on One Mile Creek or the Little Lemonweir; in the Central Wiscosin River Corridor focus should be made along the Castle Rock and Petenwell Lakes, and in the Yellow River subwatershed, priority should be placed on Little Yellow River. These watersheds fall in line with those watersheds indentified in Table 5, with some additions as newer data was made available through the TMDL process.

Outstanding and Exceptional Waters	
Waterbody Name	**Total Miles Identified**
Brewer Creek	8.8
Gilmore Creek	1.4
Horton Creek	2.2
Onemile Creek	7
Cheese Factory Creek	3.9

Table 6. Juneau County Outstanding and Exceptional Waters

We don't want to forget about the waters that are of good quality. Juneau County does have Waters that are on the Outstanding or Exceptional Resource Waters list (Table 6). Despite some of these streams having segments being impaired, it is important to continue to

focus our conservation efforts to maintain the outstanding and exceptional status.

3. Land Use

Soil erosion and surface and groundwater quality make up the majority of resource concerns in the county. However, land use changes and activities that promote better uses of the land are important to include as a separate category in the land and water resource plan. Juneau County, like many other counties, is dealing with situations where the land use is affecting agricultural and residential activities. This includes areas where flooding limits crop production and impacts residential and agricultural activities or where transitions of forested property to agriculture may be linked to water quality problems. In addition, it is also important to continue to educate the county residence on proper disposal of hazardous waste or installation of management practices that target residential activities that goes beyond just agricultural conservation practices.

Other Related Water Quality Concerns

In addition to soil erosion and the nonpoint concerns already listed, there are other threats to the quality of ground and surface water in Juneau County. Some of these include failing septic systems, improperly abandoned wells and cisterns, leaching of irrigation waters, leaking underground storage tanks, improper use of chemicals, pesticides and nutrients, (storm sewer drainage of chemicals and pesticides, and over application of lawn & car chemicals).

Failing Septic Systems: While the cities in Juneau County have municipal sewage treatment plants, rural homeowners and subdivisions rely on private septic systems and wells. Several departments within the county offer information on proper septic and well maintenance and encourage rural homeowners to test their drinking water supply often. Many homeowners, however, fail to follow that advice.

Improperly Abandoned Wells and Cisterns: By state law, wells that have not been used for over three years must be properly sealed and abandoned. However, improperly abandoned wells and cisterns are found throughout the county. Wells are a direct conduit to ground water. If pesticides or fertilizers are used around these improperly abandoned wells, the chance for groundwater contamination is great. Manure and other contaminants also find their way into the groundwater through this source. Although not used anymore, many old cisterns still exist, often filled with garbage. Both cisterns and wells pose another safety threat – small children and pets have fallen into these structures, another compelling reason for proper abandonment.

Leaching of Irrigation Waters: Much of the irrigation being done occurs in the northeast part of the county on sandy soils. These soils are highly permeable and excess fertilizer and pesticides or improperly timed application can cause groundwater contamination.

Leaking Underground Storage Tanks: Underground storage tanks for liquid petroleum products pose a health threat if they leak. Owners of underground storage tanks are responsible for any leakage that may occur. Small amounts of gasoline in groundwater may

not be detected by taste or smell yet pose a significant health risk. Cleanup of leaking tanks is expensive and very difficult.

Improper Use of Nutrients, Chemicals and Pesticides: Over application or poorly timed application of nutrients, pesticides and chemicals on farm fields or lawns can cause both groundwater and surface water problems. Storm sewer water from cities and villages does not get treated but drains directly to a water body.

Chapter 4 PLAN IMPLEMENTATION

Identification of Concerns

As described in the introduction, this LWRM plan was put together using the previous LWRM plan results along with a public opinion survey, public opinion meetings, and a technical advisory group input. The Public Hearing for the Juneau County Land & Water Resource Management Plan was held on April 12, 2018 and County Board Approval of the Plan was June 27, 2018. This plan was developed to provide a focused approach to conservation efforts and builds off the resource concerns that were identified. This plan highlights the major resource concerns but also identifies the recommended approach and goals to address those concerns. Figure 5 is a graph of the responses from the public opinion survey.

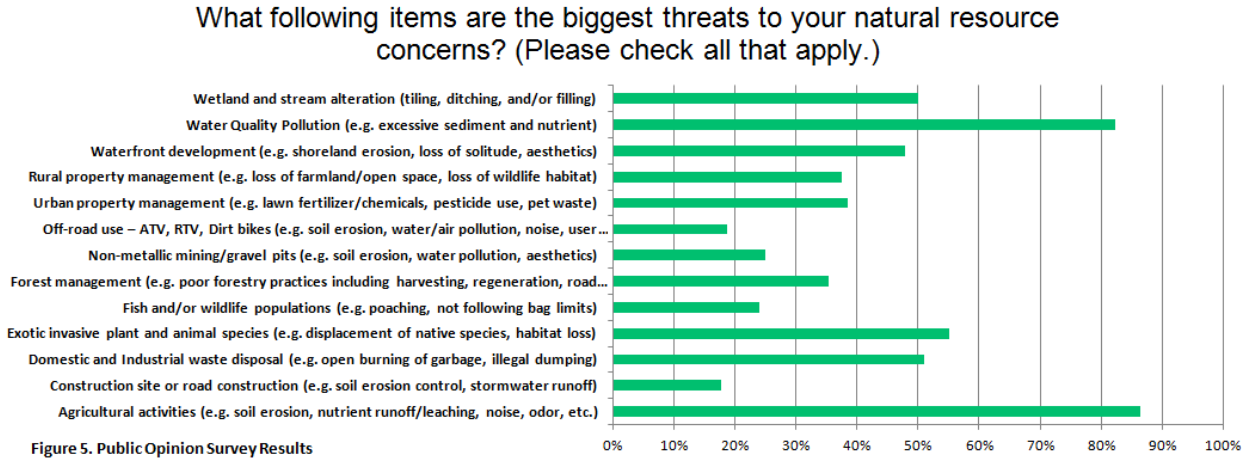


Figure 5. Public Opinion Survey Results

The major resource concerns were identified as agricultural activities and their impact on water quality as well as invasive species, waste disposal, and development (both urban and rural). These concerns were similar to the previous LWRM plan but with less emphasis on forestry and tree planting needs.

GOALS AND PRIORITIES

The goals established in this plan will be implemented over a ten year planning period beginning in 2019 and running through the year 2028. They represent priorities for land and water resource management for Juneau County. The watershed approach described at the

beginning of this plan will allow for more detailed and measurable steps toward reaching each goal. The goals and priorities for Juneau County 10 year LWRM plan include:

1. Soil Erosion
    a. Priority: Reduce or maintain soil erosion from agricultural fields to tolerable soil loss "T" or less
    b. Priority: Encourage shoreline and stream bank conservation efforts through demonstrations and targeted watershed projects
    c. Priority: Encourage innovative conservation efforts through outreach and education
2. Water Quality
    a. Priority: Target watersheds to do focused conservation efforts in a smaller area that would have a greater opportunity of improving water quality, including the development of producer-led watersheds
    b. Priority: Develop and participate in monitoring programs to evaluate ground and surface water concerns to determine potential solutions
    c. Priority: Develop outreach and demonstration projects to improve communication and increase conservation adoption including a streambank stabilization project that incorporates upland conservation practices.
3. Land Use Management
    a. Priority: Work in areas prone to flooding to identify potential conservation approaches
    b. Priority: Improve nutrient management strategies and education for producers to make informed nutrient application decisions
    c. Priority: Offer opportunities for hazardous waste recycling and disposal to reduce risk of undesirable dumping and education programs to promote residential BMPs

The watershed approach to these goals is essentially a selection process to prioritize the messaging and actions to a smaller area to make it easier to document and build successes. This doesn't mean that as resource concerns are identified that funding and efforts will not be done outside of the selected watersheds on any given year. The watershed selection process will be based on water-quality concerns as well as potential for conservation adoption rates and will be focused work for 3-5 years depending on level of cooperation. As identified in the technical advisory meeting, a watershed approach must include focusing on the major resources in the watershed but also have the willingness to move if adoption rates are low. This approach helps align projects and efforts with other partnering agencies which will allow for a collaborative program.

1. SOIL EROSION

Contour Strips and Grassed Waterways in Southwest Juneau County

Juneau County is going to continue to use the Wisconsin Cropland Transect Survey and RUSLE2 to get reliable estimates of erosion and

tillage methods. As watersheds are selected, a review of the transect data and RUSLE2 data within each watershed will be conducted. This information will be used to identify data gaps but will also be an indicator of what conservation efforts should be focused on. Given the different geophysical settings in the county, there will be different approaches to each watershed based on soil erosion type and amount. The County will also evaluate the Wisconsin DNR's Environmental EVAAL (Erosion Vulnerability Assessment for Agricultural Lands) tool, which can be used to prioritize areas within a watershed that are more susceptible to erosion. More information for this model can be found at http://dnr.wi.gov/topic/Nonpoint/EVAAL.html. With the watershed approach and partnering with DNR, using this tool on smaller watershed areas will make completion of the modeling scenarios more achievable.

In preperation of the LWRM plan, DNR ran the EVAAL model for two County slected watersheds to begin the process of identifying source areas and working at the watershed scale. The two watershed selected was the Lake Redstone watershed (Big Creek) as well as Brewer Creek watershed. The Lake Redstone watershed is in the process of developing a producer-led watershed program as well as is a focus area of conservation efforts as part of the RCPP program. Brewer Creek was identified through the Wisconsin River TMDL development as one of the largest contributor of phosphorus to the Wisconsin River from Juneau County. The maps of the model outputs can be found in the appendix but was a step in identifying producers to begin working with to start making improvements in each of the watersheds. These two watersheds will be the focus of Juneau County's outreach and conservation efforts for the next 5 years.

In addition to the agricultural related projects, Juneau County will work with the municipalities, highway, and parks to identify stream bank, shoreline, road, and urban conservation practices to help reduce soil erosion in the County and encouraging Juneau County residence to participate. This includes putting in shoreline conservation practices in all County Parks and ensuring that all erosion control strategies are being followed during road construction projects. It also includes finding ways to incorporated federal, state, and local funding options to promote stream bank stabilization projects. Finding demonstration projects in municipalities and parks to show other conservation efforts, like rain gardens or winter salt reduction strategies, will be developed as part of the watershed approach.

Outreach and education will be a critical component of any strategy and will be a major focus over the next 10 years. With soil erosion issues, it is the goal of the County to highlight success stories within the watersheds being addressed. As part of this process, we will develop several educational series that will be conducted to improve the peer to peer sharing of information as well as demonstrate successful programs to both the agricultural and non-agricultural community.

Goal 1	Reduce or maintain soil erosion from agricultural fields to tolerable soil loss "T" or less

Actions:

1. Continue to use transect surveys, RUSLE2, and Snap+ to track soil erosion conditions in the watershed of interests
2. Work with DNR to develop EVAAL model for selected watersheds and develop baseline then look at conservation scenarios
3. Develop site evaluations in the selected watersheds, work with producers on cropland and pasture erosion issues.

Goal 2	Encourage shoreline and stream bank conservation efforts through demonstrations and targeted watershed projects

Actions:

1. Work with County Forestry and Parks to identify conservation practices that can be included in the County Parks, including shoreline, stream bank, and urban conservation practices (rain gardens, etc.) and promote to Juneau County residents and producers
2. Meet with municipalities within the selected watersheds to promote urban and shoreline conservation efforts and promote to Juneau County residents and producers
3. Work with the townships within the selected watershed on invasive species issues
4. Develop stream bank stabilization program to utilize funding from federal, state, and local partners to improve Juneau County streams.

Goal 3	Encourage innovative conservation efforts through outreach and education

Actions:

1. Engage with producers within the selected watershed on "outside-the-box" conservation ideas and find ways to test them
2. Bring private companies into the discussions to set up demonstration sites to try new equipment or techniques to perform field operations or plant cover crops.
3. Develop outreach events where producers share their ideas and show the benefits of their conservation efforts.

2. Water Quality

Juneau County has primarily focused on working with DNR to monitor water quality and identify areas of concerns. The impaired water quality list, described earlier, highlights those issue areas and will be used to develop the watershed approach. However, Juneau County needs to take a more active approach to make improvements. The goal of the watershed approach is to do specific work in a given watershed for a number of years and then move. This approach allows for focused conservation but also focused outreach. As part of this process it is important to identify mechanisms to help demonstrate what improvement is made but also if it is making a difference or improving the water quality.

As part of the water quality goals, Juneau County will work with partners to identify monitoring methods and techniques that can be used to evaluate surface and groundwater quality. This includes the development of water quality monitoring programs as well as outreach events. Successful watershed programs (Wisconsin Buffer Initiative, Discovery Farms, Mississippi River Basin Initiative, and Great Lakes Restoration Initiative) rely on a combination of conservation adoption and monitoring to show success. These programs get further conservation adoption through the peer to peer sharing that occurs with organized outreach events and demonstration projects.

Goal 1	Target watersheds to do focused conservation efforts that would have a greater opportunity of improving water quality

Actions:

1. As part of the selection process an evaluation of the stream quality will be conducted through some sampling efforts as well as determination on if there are study sites available.
2. Try to focus conservation dollars in those selected watersheds as part of the cycle, but continue to be willing to work outside of the selected watersheds as issues or opportunities arise.
3. Try to promote funding opportunities by partners (DATCP, DNR, and NRCS) as part of watershed programs to increase conservation adoption rates.

Goal 2	Develop and participate in monitoring programs to evaluate ground and surface water concerns to determine potential solutions

Actions:

1. Work with the County Health Department to develop a groundwater monitoring network to evaluated groundwater levels and quality around the County.
2. Obtain equipment and develop partnerships to begin targeted surface water monitoring of streams and edge-of-field sites in conjunction with some of the watershed projects.
3. Work with the Juneau County Land Information to track/map results.

Goal 3	Develop outreach and demonstration projects to improve communication and increase conservation adoption

Actions:

1. Develop annual outreach programs in each watershed to discuss conservation improvements and encourage peer to peer sharing of ideas.
2. Set up demonstration sites where producers and citizens can hear and view conservation practices on private farms.
3. Work with UW Extension on annual outreach projects that encourage conservation efforts.

3. Land Use Management

Land use management includes a wide array of resource concerns that are common in Juneau County, but require attention through the watershed process. The goals for these concerns include improving areas prone to flooding to identify potential conservation efforts or programs that may mitigate flooding issues. This includes working with organizations like the Necedah Wildlife Refuge to show the benefits of wetlands and potential flooding retention that wetlands provide. In addition, continue to work with U.S. Army Corps on floodplain studies and identifying potential options to reduce the impact from flooding.

Nutrient management was also an identified concern and goal for Juneau County. According to the Department of Trade and Consumer Protection, Juneau County only has ~9%

of the available cropland following a nutrient management plan (https://datcp.wi.gov/Documents/NMUpdate2017.pdf). The nutrient management plan process is new to many of the producers in the county, with the farmland preservation program diminishing. However, it is the goal of the county to continue to develop producer written nutrient management trainings as well as make nutrient management plans part of cost shared conservation practices. It is through nutrient management discussions that practices like manure storage and barnyards will have the biggest impact on the environment.

Providing an easy and cost effective way for Juneau County to dispose of hazardous waste can also be included in land use management. The "clean sweep" event has been a common program put on by the county that allows commercial and residential citizens to properly dispose of waste that doesn't belong in a landfill. It is the intent to continue this program and continue the outreach to encourage participating in the event.

In addition to providing assistance for nutrient management education on agricultural fields and proper disposal of hazardous waste, the LWRD also intends to address the non-agricultural citizens in Juneau County with an edible landscapes and wildlife escapes program. Similar to the tree sales that are conducted by many counties, this program is intended to engage citizen in conservation activities like landscape features that promote food production or habitat creation for wildlife.

Goal 1	Work in areas prone to flooding to identify potential conservation approaches

Actions:

1. In selected watersheds that have areas prone to flooding, work with the landowners on options to either improve drainage or storage of water to mitigate flooding events
2. Continue to work with County entities (Highway, Forestry, and Emergency Management) on flooding issues to document extent and causes.
3. Work with the Necedah Wildlife Refuge to show the benefit of wetlands and create outreach events to inform Juneau County citizens.

Flood Damage in Northern Juneau County

Goal 2	Improve nutrient management strategies and education for producers to make informed nutrient application decisions

Actions:

1. Continue to provide and promote nutrient management programs to area producers through discussions on conservation needs and tie to certain conservation practices (barnyards and manure storage).
2. Work with local crop consultants and fertilizer vendors to develop workshops regarding nutrient management planning.
3. Continue to work with the Farmland preservation participants to update nutrient management plans.

Goal 3	Offer opportunities for hazardous waste recycling and disposal to reduce risk of undesirable

	dumping

Actions:

1. Continue to organize and offer the "clean sweep" program for Juneau County residents and businesses
2. Provide educational meetings with classrooms and with businesses on proper handling and disposal of hazardous waste

Goal 4	Implement an Edible Landscapes and Wildlife Escapes program

Actions:

1. Provide educational events to promote urban conservation projects
2. Develop a program similar to the tree sales that targets habitat that would benefit wildlife in the urban setting
3. Help promote neighboring counties tree sales

Chapter 5 Implementation Strategies

Successful watershed programs have three main components:

1. Conservation strategy and approach. This includes identified resource concerns and the partnerships to address those concerns
2. Monitoring to track progress.
3. Outreach/education programs to keep people engaged.

Conservation Strategy

Barnyard Runoff Control System	NR 151.06
Conservation Tillage	NR 151.02
Contour Strip Cropping	NR 151.02
Cover Crops	NR 151.02
Critical Area Plantings	NR 151.02
Diversions	NR 151.02
Fencing	NR 151.08
Field Windbreaks	NR 151.02
Filter Strips	NR 151.02
Grade Stabilization Structures	NR 151.02
Grassed Waterways	NR 151.02
Manure Storage Abandonment	NR 151.05
Manure Storage Facilities	NR 151.05
Nutrient & Pest Management	NR 151.07
Sediment Basins	NR 151.02
Riparian Buffers	NR 151.02
Streambank Protection	NR 151.02
Vegetative Row Buffers	NR 151.02
Well Abandonment	
Wetland Restoration	

Table 7. Conservation Practices

The Juneau County LWRM plan is identifying an approach to mimic components of a watershed program to address the resource concerns. To implement these strategies, watersheds will be selected based on water-quality criteria as well as potential adoption rates. These watersheds will then be further evaluated using existing data and identify any gaps. The purposes of these evaluations are to identify conservation strategies and approaches and will be done through farm visits and survey/land use data, with the intent to engage the producers within each watershed. It is the intent of this effort to inform the producers of the voluntary programs that are being supported by the LWRD and partners, but also remind them of the compliance procedures and regulations that the LWRD is responsible for (NR151 and ATCP 50).

Conservation practices that will be used to achieve compliance are shown in table 7. In addition to those practices, new and innovative practices will be discussed with the goal to

encourage further adoption of conservation practices or management strategies. It is important that we continue to find new methods or techniques to address the resource concerns.

NR151 AGRICULTURAL PERFORMANCE STANDARDS

Rules to control polluted runoff from farms and other sources in Wisconsin went into effect on October 1, 2002 with revisions effective in 2011. As these rules are updated and changed, the County will enforce the updated rules. DNR rule NR 151 sets performance standards and prohibitions for farms. The DATCP rule, ATCP 50, identifies conservation practices that farmers must follow to meet performance standards. The following is the short description of the agricultural performance standards and prohibitions:

All farmers must:

- Meet tolerable soil loss ("T") on cropped fields and pastures.
- Annually develop and follow a Nutrient Management Plan (NMP) designed to keep nutrients and sediment from entering lakes, streams, wetlands and groundwater. Farmers may hire a certified crop advisor or prepare their own NMP if they have received proper training.
- Use the phosphorous index (PI) standard to ensure that their NMP adequately controls phosphorous runoff over the accounting period.
- Avoid tilling within 5 feet of the edge of the bank of surface waters. This setback may be extended up to 20 feet to ensure bank integrity and prevent soil deposition.

Additional Standards:

Farmers With Livestock Must:

- Prevent direct runoff from feedlots or stored manure from entering lakes, streams, wetlands and groundwater.
- Limit access or otherwise manage livestock along lakes, streams and wetlands to prevent vegetative cover and prevent erosion.
- Prevent significant discharges of process wastewater into lakes, streams, wetlands or groundwater.

Farmers who have, or plan to build manure storage structures must:

- Maintain structures to prevent overflow and maintain contents at or below the specified margin of safety.
- Repair or upgrade any failing or leaking structures to prevent negative impacts to public health, aquatic life and groundwater.
- Close idle structures according to accepted standards.
- Meet technical standards for newly constructed or significantly altered structures.

Farmers with land in a Water Quality Management Area must:

- Avoid stacking manure in unconfined piles.
- Divert clean water away from feedlots, manure storage areas and barnyards located within this area.

The county will continue to rely upon voluntary implementation as a first step as outlined in activities identified in the Work Plan. However, in order to meet the watershed goals, the county

will work with collaborating agencies to ensure compliance with the water quality and practice criteria and track progress. This means that if producer is in violation of current state standards or county ordinances that steps will be taken to ensure compliance. An offer of cost share will be made to work voluntarily and notification by letter that they are out of compliance. If the offer is declined, the county will assist our partnering regulatory agencies (DNR/DATCP) to obtain the necessary information to offer further assistance, otherwise engage in enforcement proceedings. It is essential to address the compliance issues if water-quality benefits are a goal of LWRM plan implementation.

Minimum Performance Standards

Certain land use and land management activities are known to impair surface and groundwater resources. The challenge is to determine at what point those activities begin to adversely impact the resource. Debate on this issue has resulted in a call for minimum performance standards relating to land use activities. The following standards and prohibitions will be followed, at a minimum, and will be upgraded as needed.

Manure Management Prohibitions

For those who raise, feed or house livestock:

- Allow no direct runoff from feedlots or stored manure into lakes, streams, wetlands or groundwater;
- Limit livestock access to lakes, streams and wetlands where concentrations of animals prevent the maintenance of adequate or self sustaining sod cover;
- Prevent significant discharges of process wastewater into lakes, streams, wetlands or groundwater.

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

- Maintain a structure to prevent overflow, leakage and structural failure;
- Repair or upgrade a failing or leaking structure that poses an imminent health threat, aquatic life or violates groundwater standards;
- Meet technical standards for newly constructed or substantially-altered structures;
- Close idle structures according to accepted standards.

*For farmers with land in a water quality management area (*defined as 300 feet from a stream or 1000 feet from a lake, or areas susceptible to groundwater contamination)

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

All farms must:

- Meet tolerable soil loss (“T”) on cropped fields and pasture
- Annually develop and follow a Nutrient Management Plan (NMP)
- Use the phosphorous index (PI) standard to ensure their NMP controls their phosphorous runoff

- Avoid tilling within 5 feet of the edge of the bank of surface waters. This setback may be extended up to 20 feet to ensure bank integrity and prevent soil deposition

Soil and Water Conservation Standards

Juneau County adopted the Farmland Preservation Soil Loss Standard and will continue to follow the rules and regulations of the program for those farmers who enrolled under it. To be eligible, the land for which the tax credit is made must meet soil and water conservation standards developed by the County and approved by the Wisconsin Land and Water Conservation Board. The standards developed by the County read: "Participants in the Farmland Preservation Program shall implement soil and water conservation standards according to a schedule of compliance approved by the Land Conservation Committee, on all lands for which the participant claims farmland preservation tax credits". For landowners entering into agreements after the Working Lands Initiative was implemented, those acres follow the new rules and regulations. Juneau County updated the Farmland Preservation Plan in 2013 and a copy of that Plan will be provided upon request.

There will continue to be a 25% spot check on active participants in the Farmland Preservation program. If participants are found to be out of compliance, a review of the farm plan is done with the landowner utilizing RUSLE2 to adjust their conservation system to work with their farming methods and still make sure they are in compliance with the rules of the program. The current partnership between NRCS and LWRD is strong and there is a sharing of resources and when there is a program compliance overlap, credit is taken for the compliance implementation.

If compliance still is not met, a notice of non-compliance will be issued following the procedure within ATCP 50.

In addition, farmers who grow agricultural crops must now meet "T" on cropped fields and follow a nutrient management plan designed to limit entry of nutrients into waters of the state.

Nutrient Management Standards

Juneau County will continue to enforce their Animal Waste Management Ordinance and update it as needed. In addition Juneau County will continue to support producer written nutrient management planning as well as assist with updating plans through technical support.

Monitoring Strategy

Another component of a successful watershed program is the implantation of a monitoring strategy. Monitoring can take on different forms depending on the approach and methods used. It is the intent of Juneau County to continue to track pollutant load reduction, develop a water monitoring program, and improve our ability to show success.

There are several methods used to provide quantitative measurements of pollutant load reduction including RUSLE2, Snap +, transect survey, and documented as part of conservation engineering plans. In addition to these methods, use of the EVAAL modeling can also help forecast pollutant load reductions. Tracking these reductions and developing a mapping tool to document the location that these practices take place help show the benefit of the programs supported by the LWRD.

WATER RESOURCE MONITORING

It is generally agreed that resource monitoring is needed to adequately determine the extent of water quality and quantity problems and the progress being made toward specific goals and objectives. Limited funds and a requirement for extensive staff time to properly evaluate water quality and quantity changes preclude monitoring each watershed in the county. With the watershed approach of this LWRM plan the intent is to develop collaborative water resource monitoring programs that utilize the capabilities of all those involved.

Goals for water quality and quantity monitoring include:

- Develop partnerships with other state and federal agencies to develop a nested basin watershed approach within the county. This means the establishment of both stream gauging and edge-of-field monitoring stations within a selected HUC12 watershed

- Work to develop volunteer stream monitoring projects that collect temperature, turbidity, dissolved oxygen, macro invertebrates and a habitat assessment for area streams.

- Obtain the necessary equipment within the LWRD to make stream measurements and to annually measure flow and take water-quality samples

- Develop a groundwater monitoring network to monitor for long term changes in groundwater level as well as water quality.

Juneau County will also rely on monitoring that is done on a state-wide basis such as the DNR Water Quality Monitoring Strategy.

ADMINISTRATIVE REPORTING

Progress will be evaluated in three categories: accomplishments, financial expenditures and staff time spent on projects. This information will be provided to the DATCP and the DNR as requested. It will also be available to other agencies for their use including but not limited to the NRCS, the Farm Service Agency, UW-Extension, and the general public.

1. Accomplishment Reporting: Currently, the Juneau County LWRD uses programs developed by NRCS to meet the accomplishment reporting requirements of DATCP, DNR and NRCS. As new computer systems and software are introduced, the amount and type of information obtained may change depending on the capabilities of that computer system.

- Number of personal contacts made with landowners
- Completed information and education activities
- Number of conservation plans prepared
- Number of cost share agreements signed
- Number of status reviews completed
- Number of farms and acres of cropland checked for proper maintenance of BMP's
- Acres of conservation tillage
- Acres of cropland over "T"
- Average soil loss, and highest soil loss in the county

2. Financial Expenditures:

    - Number of landowner cost-share agreements signed
    - Amount of money encumbered in cost-share agreements
    - Number of landowner reimbursement payments made for the installation of BMP's and the amount of money paid to them
    - Information and education expenditures
    - Staff travel and training expenditure
    - Equipment, materials and supplies expenditures
    - Expenditures for professional services and staff support costs
    - Total project expenditures for the LWRD staff
    - Total LWRD budget per project

3. Staff Time Spent on Projects:

    - Project and fiscal management
    - Clerical assistance
    - Pre-design and conservation planning activities
    - Technical assistance for practice design, installation, cost-share agreement status review, and monitoring
    - Educational activities
    - Training activities
    - Leave time

Outreach/Education

Many agencies and organizations are involved in protecting land and water resources in Juneau County. Although each agency and organization has its own individual mission and supervision, all are united in their goal to preserve the environment for future generations. Cooperative agreements have been written between the Juneau County LWRD and the following agencies; DATCP, DNR, FSA, NRCS and Rural Development. These agreements will be updated as needed. Other agencies listed below are often consulted and partnered with on projects even though there are no cooperative agreements between the agencies.

Agencies and Departments Involved:

Natural Resources Conservation Service
U.S. Fish & Wildlife Service
UW-Extension
Wisconsin Department of Natural Resources
Department of Agriculture, Trade and Consumer Protection
USDA Farm Service Agency
The County Board of Juneau County
Juneau County Land & Water Resources Committee
Juneau County Land & Water Resources Department
Juneau County Parks & Forestry Department
Juneau County Health Department
Juneau County Highway Department
Juneau County Planning & Zoning Department
Juneau County Emergency Management Department
County Point Discharge Permit Holders

It is the intent of this watershed approach to engage those partners to promote further resources to be directed towards the watershed goals. Juneau County alone doesn't have the financial resources to address the resource concerns identified through this LWRM plan process. Through collaborative work, these resources can be addressed as well as promote the functionality of every agency/department participating.

As part of the outreach/educational component of the LWRM plan additional steps are going to be needed to show the successes and improve conservation adoption rates. The Juneau County LWRD will partner with the participating agencies to develop programs and outreach events. These events will provide an opportunity for each agency to discuss workable solutions to the participants as well as encourage peer to peer sharing of ideas. These events will be opportunities to review the monitoring information collected but also give the participants an opportunity to provide feedback on direction and approaches. These programs are mechanisms to encourage participation in conservation from those that are hesitant as well as help demonstrate new concepts and ideas.

Outreach Event includes:

1. Planned on-farm visits to producers in selected watersheds to review resource concerns and potential ways to address them.
2. A summer/fall field event in each watershed to talk about practice implementations
3. A winter meeting with both watershed participants to review results and next steps
4. Annual programs discussing soil health and innovative conservation strategies
5. Tours on non-agricultural conservation practices like stream bank, shoreline, rain gardens, etc.
6. Meeting with point source discharge permit holders to talk about conservation goals and options to meet permit standards

7. As nutrient management plans are developed, meetings will be conducted with producers to expand and develop agricultural enterprise areas.

PRIORITY FARMS

The process to identify priority farms will be changing as watersheds are identified and resource evaluations are conducted. However, priority will be given to the following farms, not in any particular order:

1. Farms currently under Farmland Preservation agreements and farms applying for credits under the Working Lands Initiative (meeting NR 151 standards is required by rule)
2. Farms located in watersheds draining to 303(d) waters (which are impaired waters of the State) or participating in a watershed program
3. Farms located in Water Quality Management Areas (300 feet from a stream; 1,000 feet from a lake; or in areas susceptible to groundwater contamination)
4. Farms that have over 200 animal units

There are 16 participants under Farmland Preservation Agreements upon the start of 2018 with only 5 participants after 2020. Twenty-five percent of those participating in farmland preservation are spot checked each year. These spot checks will be made in compliance with the standards adopted by the County in 2005. The standards developed by the County read: "Participants in the Farmland Preservation Program shall implement soil and water conservation standards according to a schedule of compliance, approved by the Land Conservation Committee, on all lands for which the participant claims farmland preservation tax credits". This will insure that an appropriate number of farms will be spot checked each year through this system. As a team, NRCS and LWRD staff typically visit 20 to 30 farms per year and these are checked for compliance of Federal and State issues.

Tools to help the County rank those farms that have been identified as Priority Farms include current models such as; BARNY, RUSLE2, WEPS, and Phosphorus Index and physical attributes such as total animal units, proximity to surface water. These tools will help the staff to better implement the performance standards while identifying those landowners who are in environmentally sensitive areas.

Other Priorities: To work with other agencies and landowners on a variety of projects:

<u>Objective:</u>

- Central Wisconsin Basin Projects. The LWRD will assist with the projects chosen by the Basin Partnership as services are requested. The Basin Partnership has agreed to support the Land and Water Resource Management Plan process and offered input for each county's plan.

- Programs of the NRCS – There is a Mutual Agreement between NRCS and the Juneau County LCC stating the cooperation between the two agencies, as well as an Operational Agreement between the two agencies. One of the goals of this Plan is to continue to

work as a team to conserve the natural resources of the county; continue to foster the good working relationship between the staff members of both agencies which helps to simplify the landowner's attempts at conservation and brings continuity to all the programs.

- Assist Petenwell & Castle Rock Stewards (PACRS) with implementing their action plan to improve surface and groundwater quality and remove invasive species from the lakes.

- Assist the PACRS on reporting of algae issues and water quality monitoring activities.

- Necedah Wildlife Refuge – The LWRD will continue to provide technical assistance to the Refuge whenever possible and encourage projects and outreach events to promote the benefits of wetlands.

- Well Abandonment Project and Groundwater Management – Improperly abandoned wells and cisterns can pose health hazards to people and livestock; depress property values and expose the landowner to risk for liability; and can be a physical hazard as well. Filling and sealing a well is a relatively inexpensive practice that offers a great return of protection. The Juneau County LWRD will encourage landowners to adopt this practice by discussing it with landowners who come into the office.

- Work with the Central Wisconsin Groundwater Center to inform and educate the public on groundwater issues: where it comes from, how it gets polluted, the difficulties in cleaning the polluted water, etc.

- Assist USDA-APHIS in implementing the Wildlife Damage Abatement Program.

- Self-Help Lake Monitoring Project – The Department staff will work with the public to get the DNR Self-Help Lake Monitoring Project implemented on two of the four lakes in the county.

- Endangered Species in Juneau County –Another goal is to educate the citizens of Juneau County on the species in their own backyard that are threatened and endangered as well as work with programs that help these species establish and thrive in their native environment.

- Failing Septic Systems – The Department will work with the Juneau County Planning & Zoning Department to identify septic systems that are failing and causing pollution problems for surface and groundwater.

- Land Use Planning – Individual townships within the county have completed their general land use plans. The Department will continue to work with these townships on updating their plans as needed.

- Self-Help Stream Monitoring Project – the DNR has started a program for volunteer water quality monitoring of streams. This program can be run by volunteers or by the

LWRD staff. The goal is to re-invigorate the program that was started in 2000 by encouraging members of the community to volunteer to monitor a site. The start-up cost is approximately $180 per site. Future costs are approximately $40-$80 per site each year to maintain the monitoring program.

- River Clean Up – Each year the Juneau County LWRD works with a school and sponsors a River Clean Up Day. The goal is to continue this program and expand it to include schools throughout the county.

- Continue to work with the Forestry and Parks Department on the Karner Blue Butterfly and Lupine mapping project. The mapping will be reviewed and updated as need, and for incidental take permits.

- Work with Planning and Zoning on the Frac Sand Mining permitting and reclamation process.

- Sponsor a Conservation Poster Contest annually.

- Continue to work with Central Wisconsin Windshed Partnership.

- Continue to provide conservation assistance to local sportsman's clubs.

- Continue to work with the Little Yellow River Drainage District.

- Assist with the yearly Conservation Field Days for the local schools.

- Provide a Trees for Tomorrow Scholarship as needed.
- Present conservation talks at area schools.

- Sponsor a student to attend the Wisconsin Land Conservation Summer Conservation Camp.

- Co-sponsor an Interagency meeting with NRCS for up to 50 employees from USDA, FSA, USFWS, Army Corps of Engineers, Wisconsin DNR, Forestry & Parks, Planning & Zoning Department, UW-Extension and others.

Staffing

The goals described in this work plan were designed to conform to an approximate annual 3 full-time staff within the LWRD. It was the intent of this work plan to identify projects and goals that fit the potential ability of the county, but must recognize that additional projects and work will come up over the 10 year timeframe of this plan. Current staffing levels (at the time of publication) are at 2.5 for the LWRD with potential for growth as projects develop and further conservation opportunities are identified. Because of the limited staff within the LWRD, a

collaborative effort with NRCS is vital to the success of the LWRD programs through additional staff support and project financial assistance and contribution agreements.

Appendix

Juneau County Work Plan

Juneau County Public Opinion Survey

RESPONSE BY NUMBER

Juneau County Natural Resources Opinion Survey 2017/2018

1. What **local** natural resources are you most concerned about? (Please rank **top five**, #1 being the highest.)

81	Agricultural Land
79	Air
80	Fisheries
77	Grasslands
83	Groundwater
90	Lakes, Rivers, and Streams
75	Peace and Quiet and Solitude
83	Public Recreation Lands and Trails
80	Soil
78	Unobstructed Countryside/Nightsky Views
80	Wetlands
81	Wilderness and Unique Landscapes

2. What following items are the biggest threats to your natural resource concerns? (Please check all that apply.)

83	Agricultural activities (e.g. soil erosion, nutrient runoff/leaching, noise, odor, etc.)
17	Construction site or road construction (e.g. soil erosion control, stormwater runoff)
49	Domestic and Industrial waste disposal (e.g. open burning of garbage, illegal dumping)
53	Exotic invasive plant and animal species (e.g. displacement of native species, habitat loss)
23	Fish and/or wildlife populations (e.g. poaching, not following bag limits)
34	Forest management (e.g. poor forestry practices including harvesting, regeneration, road construction)
24	Non-metallic mining/gravel pits (e.g. soil erosion, water pollution, aesthetics)
18	Off-road use – ATV, RTV, Dirt bikes (e.g. soil erosion, water/air pollution, noise, user conflicts)
37	Urban property management (e.g. lawn fertilizer/chemicals, pesticide use, pet waste)
36	Rural property management (e.g. loss of farmland/open space, loss of wildlife habitat)
46	Waterfront development (e.g. shoreland erosion, loss of solitude, aesthetics)
79	Water Quality Pollution (e.g. excessive sediment and nutrient)
48	Wetland and stream alteration (tiling, ditching, and/or filling)
10	Other (please specify)

Other (please specify)

Manure application from central sands dairy which is and has effected my water. I do not have poison water at my home with nitrate levels consistently in the 30s. I test every month. I can not shower or use any of the water in my home.

ag manure pollution

Blue green Algae blooms

paper mill discharge

Farm practices that jeopardize water quality and all other harms to the environment
PACRS Has been working for 10 yrs toward the improvement of water quality of Petenwell and Castlerock. Any efforts to promote conservation practices to keep nutrients in the fields and out of the waterways will assist our goal

clear-cutting of large forest areas.

Algea

laws by legislators with little scientific knowledge
Clean or retrench local ditches, streams, and small rivers that carries away storm water that has been neglected or not ever cleaned from when they were designed. Which our groundwater table has affected us to flood our properties.

3. What Services should be emphasized by the local, state, and federal conservation staff? (Please check all that apply.)

65 Animal Manure Management
56 Agricultural conservation education
40 Conservation best management practice information and technical assistance
13 Construction site erosion control assistance
25 Cost-sharing/financial assistance to landowners for conservation practice installation
58 Drinking water well testing
33 Environmental education programs for adults
43 Environmental education programs for kids
23 Farmland preservation and agricultural economic development
32 Forest management assistance
73 Groundwater protection
44 Invasive species information and technical assistance
55 Nutrient management planning for farmers
35 Shore land protection education/technical/financial assistance
26 Streambank restoration
41 Surface water protection
13 Urban stormwater and erosion control assistance
74 Water quality monitoring of lakes and streams
16 Well sealing/abandonment assistance for unused private wells
33 Wetland enhancement and/or restoration
48 Wildlife habitat enhancement and/or restoration
5 Other (please specify)

Other (please specify)
surface water quality monitoring
get clean water to homes in Armenia that do not have it so that we can shower and use the water in our homes again
ground water protection
reducing the floating algae problems in Petenwell
Proper monitoring of all permitted items and follow through on violations on all farms

4. Do you have any other comments, questions, or concerns?

keeping our groundwater safe to drink is a big concern

I'm concerned about large farms and poor management of farmlands.
Concerned about paying more taxes for 5 acres due to small creek that I can not excess and the neighbor has 20 acres and pays a lot less taxes than I do. I want our woods and habitat, wildlife saved. Stop making more cranberry marshes and agricultural fields. Clean up our drinking water.

Nitrates in drinking water is a huge concern and we think it is imperative to be addressed. Thank you.
It's hard to narrow down all the natural resource concerns. Survey might have been to broad to really get good results.

nope
I live in Armenia. I found out last year my water was poisoned. Very high levels of nitrates and traces of 15 pesticides in my water. The water comes out clear with no smell or any indication that anything would be wrong with it. There was no warning. I am not alone out here. People are struggling to come up with answers to get good water back into their homes. The cost to do this is so high and can run

into thousands of dollars. Where is the assistance, the help to those of us affected by farming practices that are clearly harming people's homes. No one can sell their home if there is not clean water coming out of their faucets and shower heads.

More recreational opputunity
Posting of fish size regulations at boat launches would help illegal poaching. A number of times I've seen people taking illegal fish just because they didn't know. After I advised they would release. A number of times I've seen people taking illegal fish and they knew, but it was after the rangers working hours. Also video surveillance would be nice at some of the boat launches. To many people are getting their cars broken into.

The flooding that happened in the Clearfield township this year 2017.

survey would not let me checkmark question 2 and 3. Had to write in
The pure green algae in Petenwell is getting so bad that it is detracting from any kind of use and is ruining the natural beauty and value of the lake.
Need to monitor and reduce the algae content of Lake Petenwell including reduction of high nutrient flows into the lake.

Preservation of water quality of lakes and streams is #1

Too much development taking place in dense concentration areas

Farming fertilizers are polluting our lake and rivers.

It seems the current state government runs counter to all of my concerns for our environment
I think I should be guaranteed clean and safe drinking water from my well. My well water should also be safe to shower in!
stricter control of fertilization, especially phosphate near rivers and lakes.

manure application that effect ground water resources

More public hunting land made available better management of public lands . Lower limits of pan fish . Proper funding of the DNR so we have a workforce to monitor and enforce all agricultural practices that are violated by farming and all forms of agricultural.

Realize the damage high capacity wells are doing to our public areas and water supply.

Thank you for the opportunity to be part of this survey.
i am concerned that large Ag will come into WI, use up our natural resources, water and land, make a ton of money and not pay taxes. They are polluting our air, and water and soil and have no responsibility to the citizens or the land or waters. The same goes for mining, fracking, drilling for oil, burning coal, etc .

Very concerned about nitrates in water from cow manure

the survey is too broad; will be interested in seeing whether results are of any use
We have been concerned about the number of high capacity wells in the Central Sands area and their effect on our groundwater and drinking water. Another concern is the removal of forest land to agriculture.

The effects on wild life habitat. The phosphorous runoff into Lake Petenwell causing the blue green algae continues to be a major problem during summer months.
would like to see more buffers, filter strips, crp, etc to reduce runoff and filter pollutants in our lakes and streams and to also provide more wildlife habitat.

Nothing can live without water... Nothing.

RESPONSE BY NUMBER

Juneau County Natural Resources Opinion Survey 2012/2013

3. What **local** natural resources are you most concerned about? (Please rank **top five**, #1 being the highest.)

52	**Agricultural Land**	**22**	**Peace and Quiet and Solitude**
36	**Air**	**13**	**Public Recreational Lands and Trails**
17	**Fisheries**	**31**	**Soil**
55	**Forest and Woodlands**	**15**	**Unobstructed Countryside/Nightsky Views**
11	**Grasslands**	**19**	**Wetlands**
68	**Groundwater**	**21**	**Wilderness and Unique Landscapes**
52	**Lakes, Rivers, and Streams**	**1**	**Other (Food)_____**

4. What following items are the biggest threats to your natural resource concerns? (Please check all that apply.)

49 **Agricultural cropping practices** (e.g. soil erosion, nutrient runoff/leaching)

30 **Agricultural livestock operations** (e.g. noise, odor, location, size, dust, traffic)

24 **Agricultural land clearing** (e.g. sodbusting, swampbusting)

47 **Agricultural manure/waste storage and landspreading** (e.g. unpermitted facilities, water pollution)

14 **Construction site or road construction** (e.g. soil erosion control, stormwater runoff)

18 **Domestic solid waste disposal** (e.g. open burning of garbage, illegal dumping)

35 **Exotic invasive plant and animal species** (e.g. displacement of native species, habitat loss)

28 **Fish and/or wildlife excessive harvesting** (e.g. poaching, not following bag limits

32 **Forest management** (e.g. poor forestry practices including harvesting, regeneration, road construction)

36 **Industrial and municipal sludge and wastewater disposal** (e.g. unpermitted facilities, water pollution)

14 **Jet ski and motor boat use** (e.g. habitat destruction, noise and user conflicts)

16 **Non-metallic mining/gravel pits** (e.g. soil erosion, water pollution, aesthetics)

16 **Off-road use – ATV, RTV, Dirtbikes** (e.g. soil erosion, water/air pollution, noise, user conflicts)

22 **Residential property management** (e.g. lawn fertilizer/chemicals, pesticide use, pet waste)

34 **Rural residential development** (e.g. loss of farmland/open space, loss of wildlife habitat)

22 **Waterfront development** (e.g. shoreland erosion, water pollution, loss of solitude, aesthetics)

29 **Wetland and stream alteration – tiling, ditching, and/or filling** (e.g. water pollution, soil erosion)

3 **Other - Junk stored on property, Papermill pollutants, Blue-green algae**

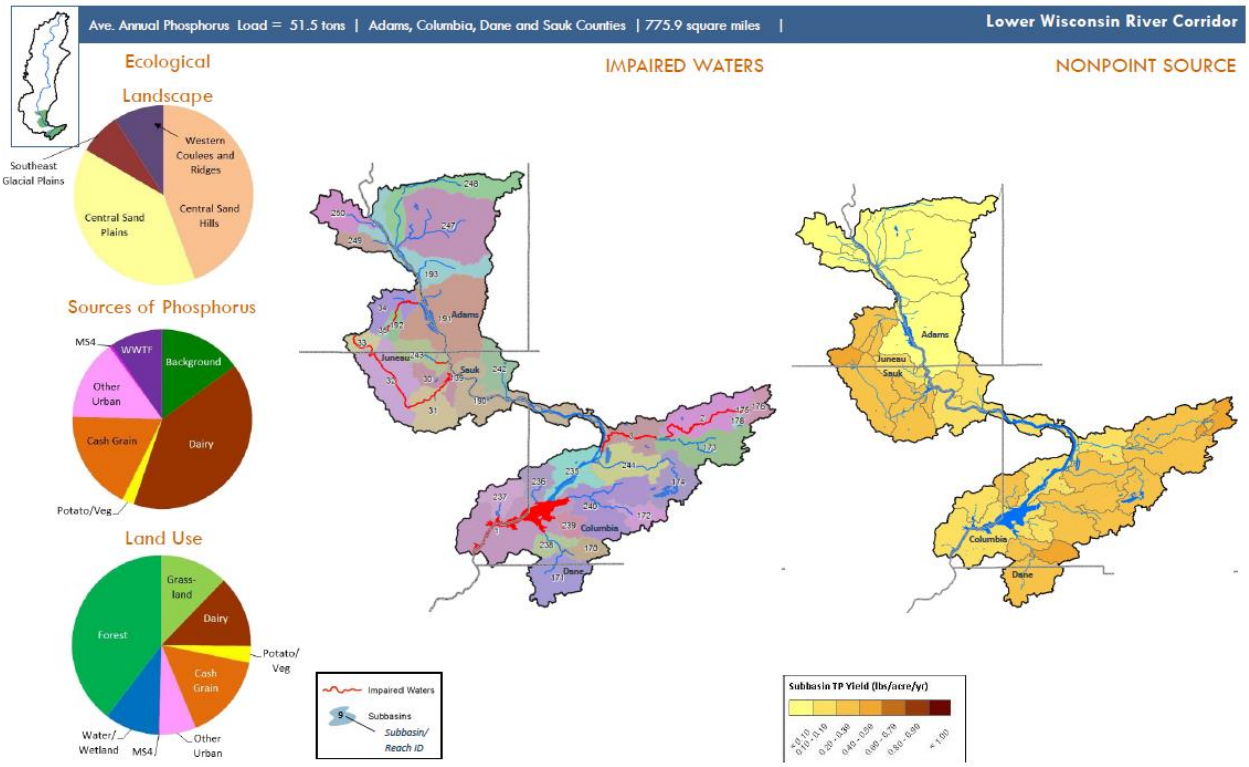
3. What Services should be emphasized by the local, state, and federal conservation staff? (Please check all that apply.)

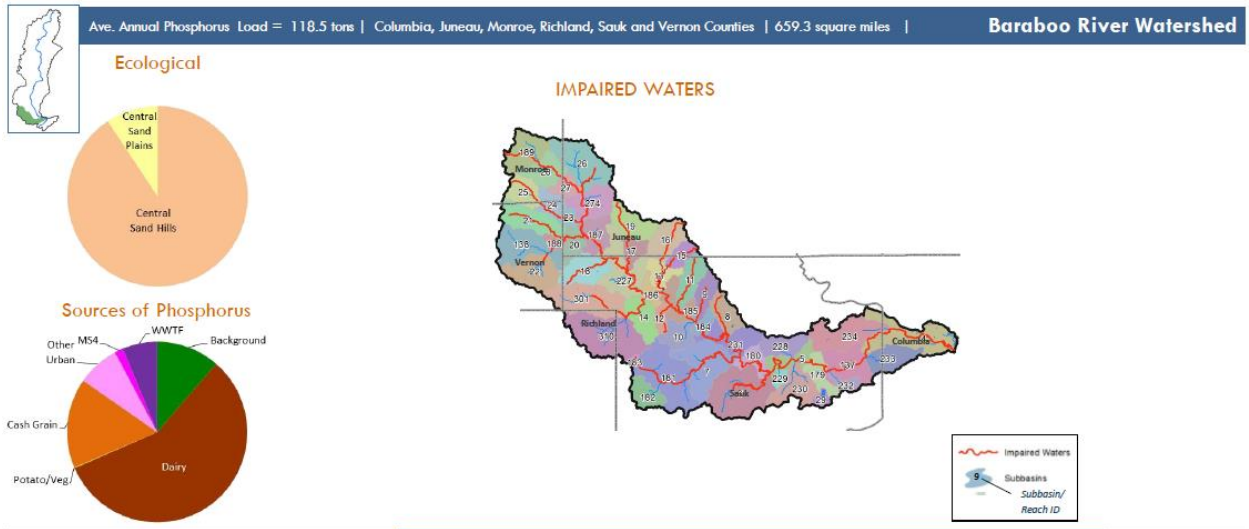
42 **Animal Manure Management Ordinance implementation**
35 **Conservation best management practice information and technical assistance**

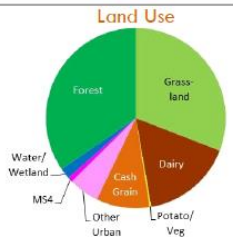
15	**Construction site erosion control assistance**
32	**Cost-sharing/financial assistance to landowners for conservation practice installation**
41	**Drinking water well testing**
24	**Environmental education programs for adults**
26	**Environmental education programs for kids**
40	**Farmland preservation and agricultural economic development**
33	**Forest management assistance**
60	**Groundwater protection**
28	**Invasive species information and technical assistance**
28	**Nutrient management planning for farmers**
14	**Shoreland Zoning Ordinance implementation**
12	**Shoreland protection education/technical/financial assistance**
35	**Surface water protection**
43	**Tree planting**
10	**Urban stormwater and erosion control assistance**
41	**Water quality monitoring of lakes and streams**
26	**Well sealing/abandonment assistance for unused private wells**
24	**Wetland enhancement and/or restoration**
38	**Wildlife habitat enhancement and/or restoration**
6	**Other - Algae blooms, Wind Erosion, Chemical & Pesticide use, Drainage, Water testing for cranberry growers; Replant hardwoods not pines & don't plant in deep furrows._____**

Questions or Comments: Two people said: Keep up the good work.

Wisconsin Preliminary TMDL Phosphorus Allocation by Basin (TMDL not approved at the time of publication)





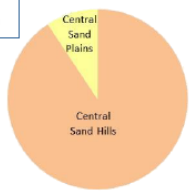


TP Impaired Waters								
Name	TP Standard (ug/L)	Subbasin/ Reach ID	Name	TP Standard (ug/L)	Subbasin/ Reach ID	Name	TP Standard (ug/L)	Subbasin/ Reach ID
Baraboo River	100	4, 5, 27, 28, 137, 179, 180, 184-187, 189, 227, 231, 274	Crossman Cr	75	17, 19	Seeley Creek	75	6
			East Br Big Cr	75	15	Seymour Cr	75	23-25
			Hays Creek	75	9	Silver Creek	75	12
W. Br. Baraboo	75	20, 138, 188	Hills Creek	75	21	South Br Creek	75	22
Cazenovia Br	75	310	Little Baraboo R.	75	14, 301	Twin Creek	75	11
Cleaver Creek	75	26	Narrows Cr	75	7, 181, 183	West Br Big Cr	75	13, 16
Copper Creek	75	8	Plum Creek	75	18	Redstone Lake	30	13

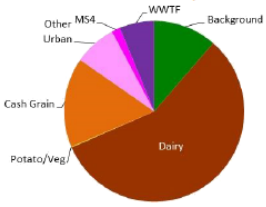
Baraboo River Watershed

Ave. Annual Phosphorus Load = 118.5 tons | Columbia, Juneau, Monroe, Richland, Sauk and Vernon Counties | 659.3 square miles |

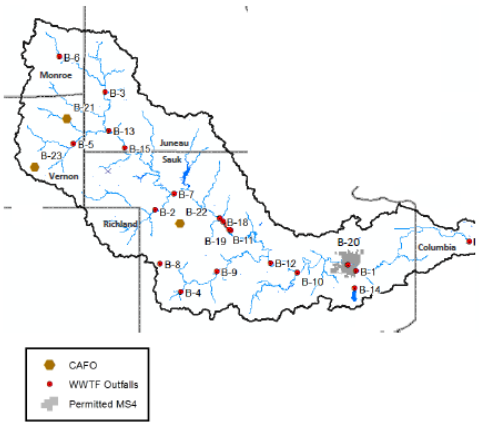
Ecological



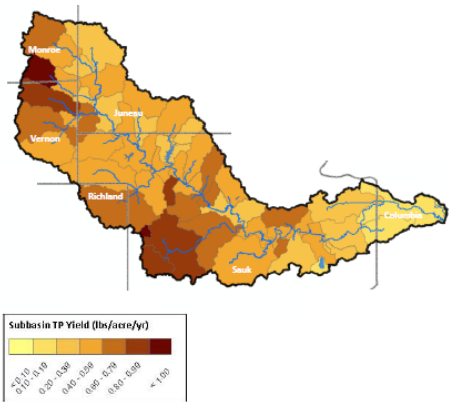
Sources of Phosphorus



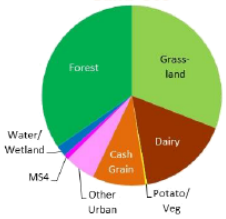
PHOSPHORUS POINT SOURCES



NONPOINT SOURCE PHOSPHORUS YIELD



Land Use



Municipal WWTFs

Permittee	Permit No.	No. Outfalls	Map ID	Permittee	Permit No.	No. Outfalls	Map ID
Baraboo	0020605	1	B-1	Loganville	0029114	1	B-9
Cazenovia	0031801	1	B-2	N. Freedom	0028011	1	B-10
Elroy	0023931	1	B-3	Reedsburg	0020371	1	B-11
Hill Point San Dist	0035483	1	B-4	Rock Springs	0029041	1	B-12
Hillsboro	0020583	1	B-5	Union Center	0025640	1	B-13
Kendall	0020516	1	B-6	Devils Lake Park	0060241	1	B-14
LaValle	0028878	1	B-7	Wonewoc	0029688	1	B-15
Lime Ridge	0036447	1	B-8				

Industrial WWTFs

Permittee	Permit No.	No. Outfalls	Map ID
Foremost Farms	35	1	B-16
Goetz Co. Inc.	35483	1	B-17
Lakeside Foods	57738	3	B-18
Saputo Cheese	59404	1	B-19

Permitted MS4s

(Covered by WPDES Gen. Permit WI-S050075-2)

Permittee	Permit No.	Map ID
City of Baraboo	0031420	B-20

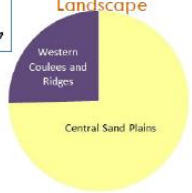
CAFOs

Permittee	Permit No.	Map ID
Hills Prairie Dairy LLC	0062634	B-21
Kinnamon Ridge Dairy LLC	0065129	B-22
O'Harrow's Family Farm LLC	0036047	B-23

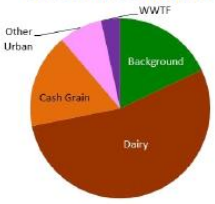
Lemonweir River Watershed

Ave. Annual Phosphorus Load = 74.7 tons | Jackson, Juneau and Monroe Counties | 679.5 square miles |

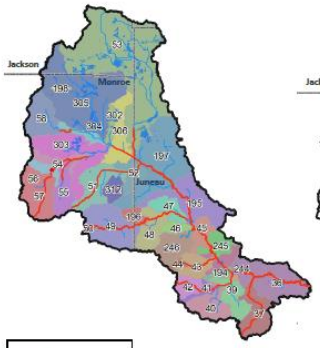
Ecological Landscape



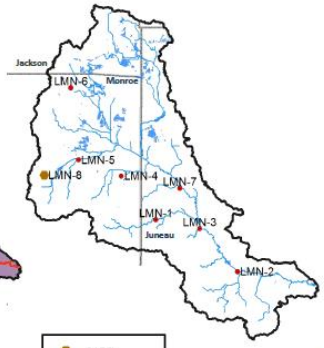
Sources of Phosphorus



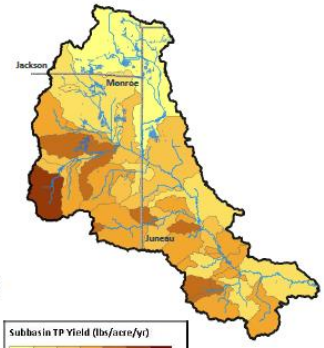
IMPAIRED WATERS



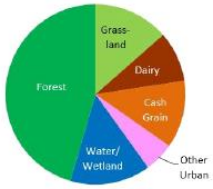
PHOSPHORUS POINT SOURCES



NONPOINT SOURCE PHOSPHORUS YIELD



Land Use



Impaired Waters

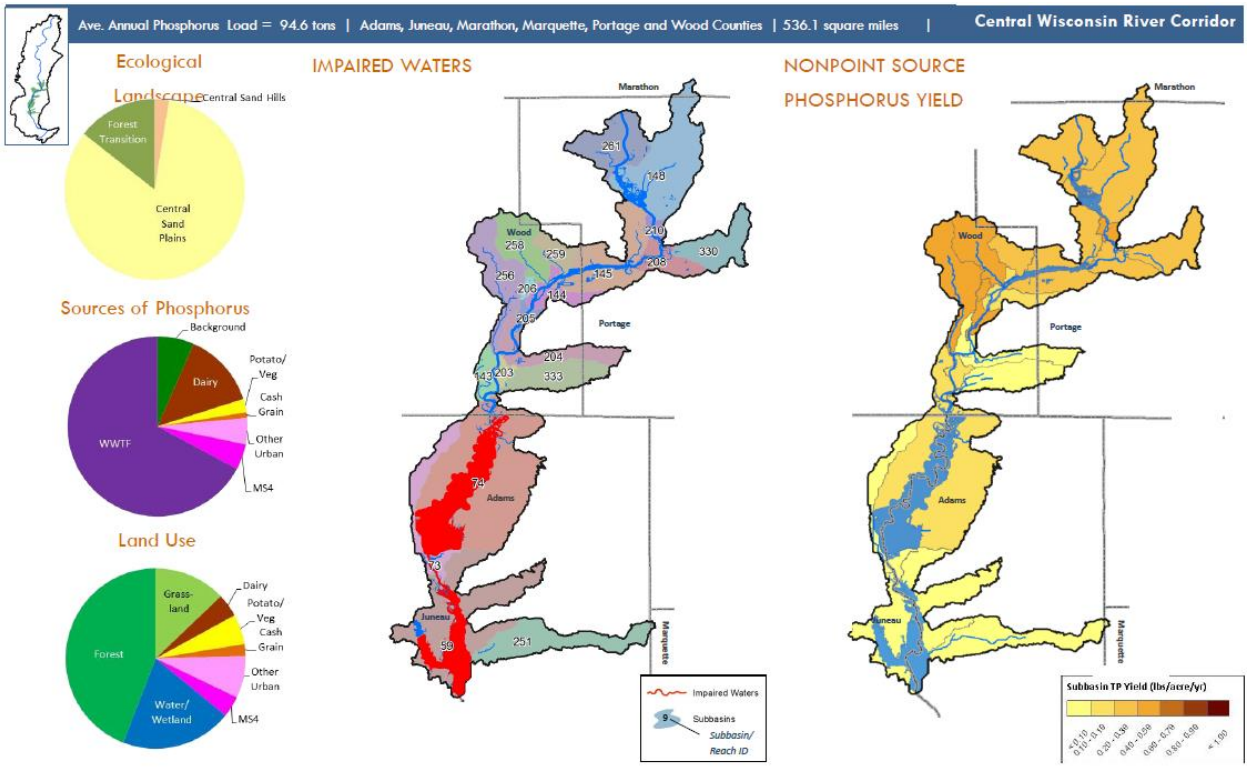
Name	TP Standard (ug/L)	Subbasin/ Reach ID	Name	TP Standard (ug/L)	Subbasin/ Reach ID
Bear Creek	75	51, 52	Little Lemonweir	75	47-50, 196
Beaver Creek	75	53	Mill Creek	75	58, 305
Brewer Creek	75	44, 45	Onemile Creek	75	38, 39, 41,42
Council Creek	75	55	Sevenmile Creek	75	37
Lemonweir River		36, 194,244, 245, 45, 195, 197, 306	South Fork, Lemonweir River	75	54-57
			Tomah Lake	40	56

Municipal WWTFs

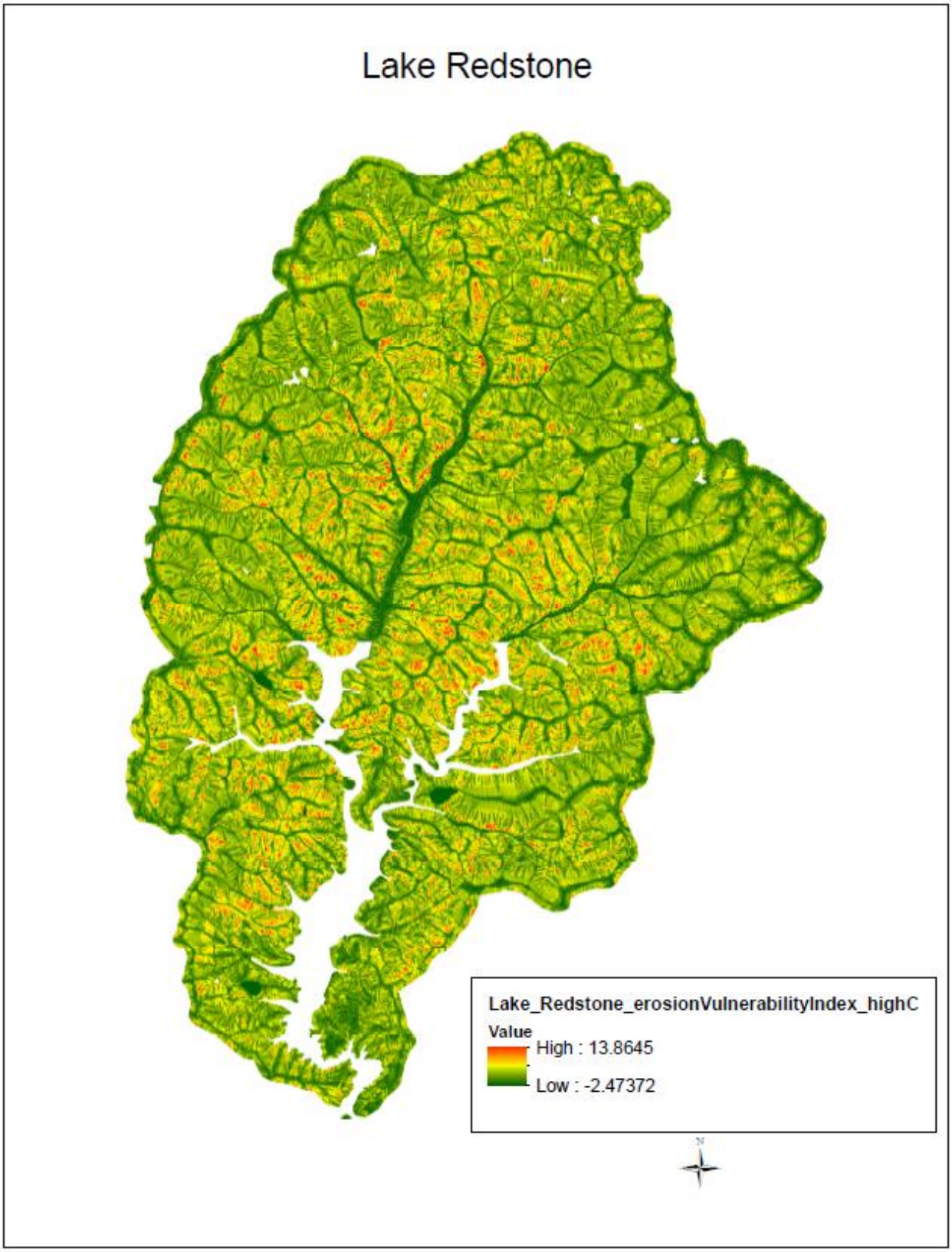
Permittee	Permit No.	No. Outfalls	Map ID	Permittee	Permit No.	No. Outfalls	Map ID
Hustler WWTF	0032085	1	LMN-1	WI Air National Guard WWTF	0023078	1	LMN-7
Mauston WWTF	0024635	1	LMN-2				
New Lisbon WWTF	0020699	1	LMN-3				
Oakdale WWTF	0031259	1	LMN-4				
Tomah WWTF	0021318	1	LMN-5				
Warrens WWTF	0060259	1	LMN-6				

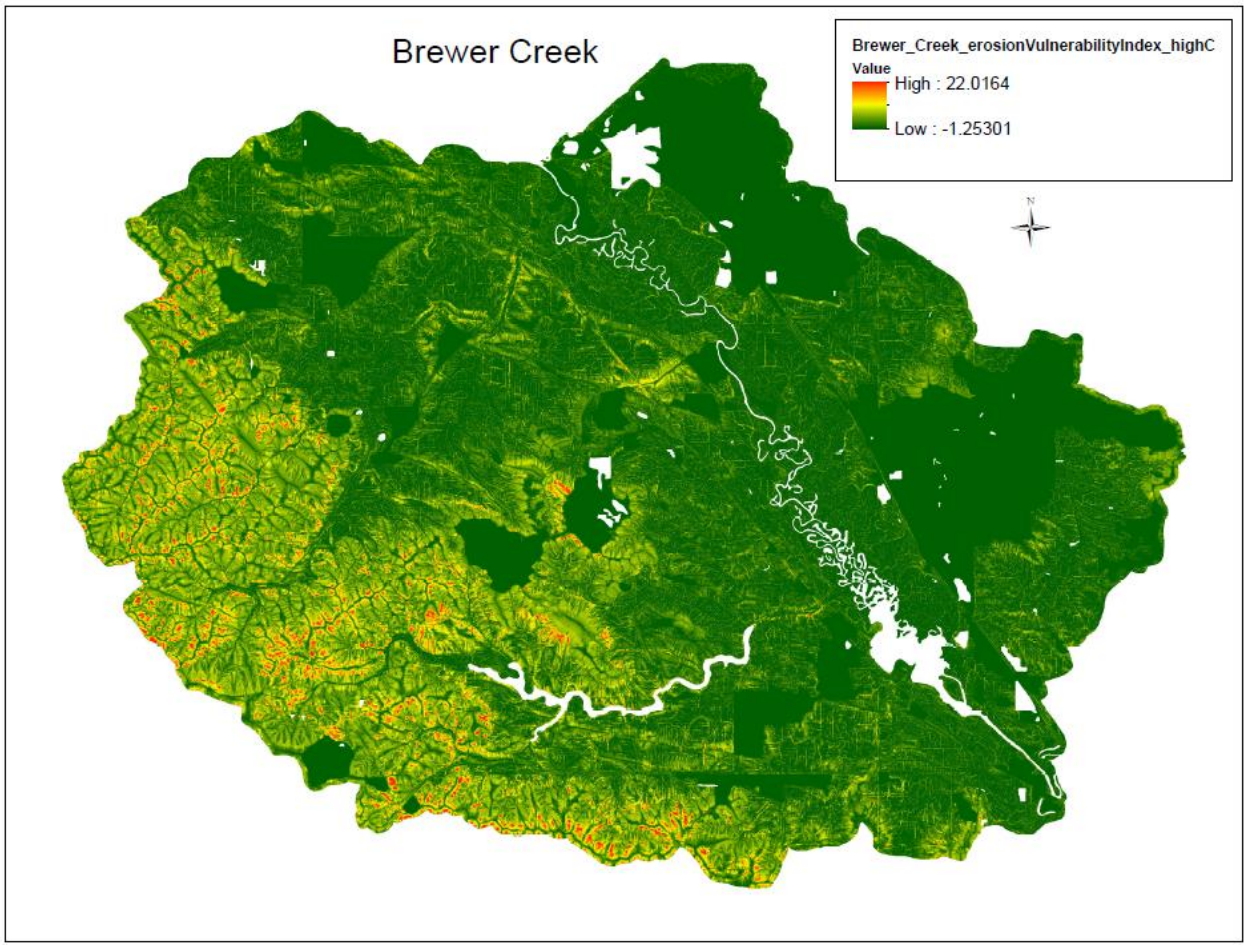
CAFOs

Permittee	Permit No.	Map ID
Chapman Brothers Farms	0062774	LMN-8



EVAAL output for Brewer and Lake Redstone Watersheds


Lake Redstone
Lake_Redstone_erosionVulnerabilityIndex_highC
Value
High : 13.8645
Low : -2.47372
N



Public Hearing/County Board Notice

JUNEAU COUNTY LAND & WATER RESOURCES

PUBLIC HEARING NOTICE

April 12, 2018 from 8:15 a.m. to 8:30 a.m.

Notice is hereby given that the Land & Water Resources Committee of Juneau County, Wisconsin, will hold a public hearing at Beyond the Daily Grind, 241 E. State Street, Mauston, Wisconsin from 8:15 a.m. to 8:30 a.m. on Thursday April 12, 2018 for the purpose of considering the Juneau County Land & Water Resources Management plan. Interested persons can contact the Land & Water Resources Department in writing prior to the meeting date or they may attend the meeting. A copy of the plan is available in the office for review.

Written comments should be sent to Matt Komiskey, County Conservationist, Juneau County Land & Water Resources Department, 220 LaCrosse Street, Rm 14, Mauston, WI 53948. Written comments will be accepted until Monday, April 9, 2018.

PUBLISHED: March 29 and April 5, 2018

WNALXP

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JUNEAU COUNTY LAND & WATER RESOURCES

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PUBLISHED: March 29 and April 5, 2018

WNALXP

Juneau County Board of Supervisors

Courthouse, 220 East State Street
Mauston, Wisconsin 53948

RESOLUTION No. 18 – 31 **DATE: June 27, 2018**

INTRODUCED BY: Land & Water Conservation Committee

SYNOPSIS: Approving the Juneau County Land & Water Resource Management Plan and authorizing submission of the Plan to the Wisconsin Land & Water Conservation Board for approval.

FISCAL NOTE: none

WHEREAS, in 1997 Wisconsin Act 27, Chapter 92.10 of the Wisconsin State Statutes was amended creating a county land and water resources management planning program, and

WHEREAS, a plan was prepared to assess Juneau County's natural resources and develop a plan of action on how to best manage these resources, and

WHEREAS, this plan was developed through several local advisory groups involving federal, state and local units of government, special interest groups and the general public, and

WHEREAS, the Juneau County Land and Water Resources Management Plan will fulfill the statutory requirements and allow the county Land & Water Resources Department to apply for implementation grants;

NOW, THEREFORE BE IT RESOLVED, that the Juneau County Board of Supervisors shall and hereby does approve the Juneau County Land and Water Resources Management Plan, and the Land & Water Resources Conservation Committee is authorized to submit the plan to the Wisconsin Land & Water Conservation Board.

INTRODUCED AND RECOMMENDED FOR ADOPTION ON JUNE 27, 2018.

LAND & WATER CONSERVATION COMMITTEE:

Joe Lally, Chairperson

Tim Hartford

Rodney M. Seamans

Scott Wilhorn

Adopted by the County Board of Supervisors of Juneau County on June 27, 2018

Terri L. Treptow, Juneau County Clerk