

IRON COUNTY LAND & WATER RESOURCE MANAGEMENT PLAN



March, 2020



Iron County Land & Water Conservation Department
607 3rd Ave North
Hurley, WI 54534



Northwest Regional Planning Commission
NWRPC
keeping your future as our focus

**Iron County
Land and Water Resource Management Plan**

MARCH 2020

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Plan Development Northwest Regional Planning Commission

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Iron County Land and Water Resource Management Plan

2021-2030

Executive Summary

Introduction

The Iron County Land and Water Resource Management Plan (LWRM Plan) will assist the Land and Water Conservation Department (LWCD) in its efforts to protect and improve land and water resources in Iron County. Goals and objectives laid out in this plan will guide LWCD activities from 2021 until 2030. They will also provide the basis for funding those activities from various private, local, state, and federal sources. Used as a tool to guide and coordinate a variety of programs, the plan will help to streamline decision-making and program administration.

Plan Organization

Chapter 1. Introduction

Description of public involvement, plan requirements, and related partnerships.

Chapter 2. Resource Assessment

Climate, topography, natural resources, coastal resources, invasive species, population and housing trends, and land use information.

Chapter 3. Federal, State, and Local Soil and Water Regulations

Listing of pertinent federal, state, and local regulations as well as voluntary best management practices. Also includes a description of the county commitments to implement agricultural and non-agricultural performance standards and prohibitions.

Chapter 4. Goals, Objectives, and Activities

Identifies a detailed implementation strategy for the five plan goals. Objectives and activities are identified for each goal and an education strategy is outlined.

Chapter 5. Plan Implementation

Outlines plan roles and responsibilities, agricultural and non-agricultural standards and prohibitions implementation strategy and plans, strategies to meet the goals, objectives, and activities, accomplishment tracking, and a detailed implementation plan that includes each goal, objective, and activity.

Chapter 6. Conclusion

The focus of the plan is to provide a link between citizens and agencies involved in natural resource protection.

Appendices

Additional information and summaries of related resource plans for reference.

Public Participation

The purpose of the plan update was to review current resource concerns and to revise goals and implementation strategies.

Local Advisory Committee

An advisory committee of twelve individuals including farmers, lake homeowners, concerned citizens, locally elected officials, educators, and agency staff involved in land and water resource protection in Iron County assisted with the plan revision. Land Conservation Committee members were a critical component of the group. The advisory committee met three times to discuss the development of the LWRM plan and the county work plan. Other concerned citizens not able to participate in the local advisory committee were encouraged to provide comments throughout the process. A public hearing was properly noticed and the hearing was held on March 11, 2020.

Resource Assessment

General Description

Iron County is located in northwestern Wisconsin with Lake Superior along its north border and Michigan's Upper Peninsula to the east. It includes parts of two Native American reservations, the Turtle-Flambeau Flowage, and part of the Northern Highland State Forest. Forestry and recreation are the major land uses. The county's northern landscape is characterized by the Lake Superior shore, few inland lakes, and cascading waterfalls. Lakes and wetlands characterize southern Iron County.

Groundwater

Groundwater is the primary water supply source for Iron County residents. Groundwater is also important for recharge to the many wetlands, lakes, rivers, and streams. Detailed information on the quality of groundwater is not currently available. However, a combination of sandy soils and shallow groundwater make most of the central and southern parts of Iron County particularly susceptible to groundwater contamination (**Map 2**) as identified in the Iron County report on the *Protecting Wisconsin's Groundwater Through Comprehensive Planning* website: https://wi.water.usgs.gov/gwcomp/find/iron/index_full.html.

Surface Water

Iron County has an abundance of surface water resources. Inland lakes make up over six percent of Iron County's total surface area. There are 495 lakes and impoundments in the county with frontage of 612 miles. Two-thirds of the county's lakes are small seepage lakes less than 10 acres in size. This factor increases their sensitivity to pollution and development. Iron County's land falls into two major drainage basins aligned along the continental divide. The northern half of the county is in the Lake Superior basin and the southern half is in the Upper Chippewa River basin. Iron County has 222 named streams totaling 724 linear miles; 84 streams (336 linear miles) are classified as trout waters. In addition, Iron County's most northern border lies along approximately seven

miles of Lake Superior's coast. Private land ownership encompasses about two-thirds of this coast, while the other third is split between tribal land and county forest.

The lakes, rivers, and wetlands of the county are impacted by land use practices in the watersheds that drain to them. Most of the pollutants that enter water resources are carried in runoff from many nonpoint sources. The major pollutants of concern are sediment carried from eroding streambanks, road washouts, crop fields, and construction sites, and phosphorous attached to soil particles from fertilizers and livestock operations.

Wetlands

Iron County's glacial history created numerous wetlands, evident on today's landscape. Approximately 32% of the county's land base is mapped as wetland. These wetlands help provide important fish and wildlife habitat, help to filter pollutants before they enter surface and groundwater, provide shoreline erosion control, and reduce peak stormwater flows and flooding by temporarily storing and slowly releasing water from rain and snowmelt.

Population and Housing

Iron County is a rural community with an estimated population in 2010 of 5,916.

Over the past several years, the county has seen an increase in building permits for new construction. Most of these new homes are in or near sensitive environmental areas, such as lakes, rivers, and streams. When homes are built near the water, the buffer of vegetation at the water's edge is frequently removed or greatly reduced. When vegetative buffers are removed during home and road construction, there are dramatic increases in the rates of soil loss and resulting sedimentation of water resources. Rates of runoff increase due to an increase in impervious surfaces such as roads, roofs, and driveways. The impacts of construction on the sandy soils of Iron County can be detrimental to waterways. Sands are highly erosive once vegetative cover is removed. In addition, these soils are difficult to revegetate.

Woodlands

Iron County's forests provide habitat for a diversity of plants and animals, opportunities for recreation, and sustainable economic benefits with proper forest management. The vast majority of Iron County's landscape is forested, and forestry is the county's greatest source of economic income. Forested land as a percent of Iron County follows:

- 36.3% - County & Municipal Forest
- 22.8% - Private Forest
- 14.5% - Forest Industry
- 12.8% - State Owned Forest & Natural Areas

Recreation

Iron County's inland lakes and rivers, Lake Superior, natural beauty, and vast forests support a wide range of recreational opportunities of which sustain the area's second greatest source of economic income – tourism. Motorized recreation comprises the largest recreational use in the county, and continues to increase. The environmental risks associated with motorized recreation continue to challenge resource managers to protect the county's natural resources.

Agriculture

Croplands are concentrated in the northern part of the county among seven main farms. Although farms do not constitute a major land use in the county, they are still economically and environmentally important. Smaller producers providing locally sourced products for farmers markets are an important part of the county's agricultural mix.

Concern regarding cropland soil erosion is generally low in the county because of the limited amount of cropland and low erosion rates. The average tolerable soil loss is less than one ton per acre. The tolerable soil loss rate, commonly referred to as "T," is defined as the maximum average annual rate of soil erosion for each soil type that will permit a high level of crop productivity. Extended hay rotations, relatively low numbers of acres in row crops, and few animal operations reduce the threat of nonpoint source pollution from agriculture. Due to the limited number of farming operations in Iron County (<10), the LWCD has provided technical assistance to one producer in the last five years. The LWCD is also available to train producers to write their own Nutrient Management plans.

Other resource concerns outlined in the resource assessment include:

- Climate
- Topography
- Bedrock geology
- Metallic and nonmetallic minerals
- Glacial geology and soils
- Nonpoint source pollution assessments
- Coastal resources
- Outstanding & exceptional resource protection
- Impaired water resources
- Threatened and endangered resources
- Invasive species
- Cultural resources

Soil and Water Resource Regulations

Statewide program rules developed by the Wisconsin Department of Natural Resources (WDNR) are implemented through the LWRM Plan. These standards and regulations are listed in Chapter 3.

Implementation of the NR 151 Agricultural Performance Standards and Prohibitions is a role of the Iron County Land Conservation Committee. A strategy for implementation of the Agricultural Performance Standards and Prohibitions is outlined in Chapter 5.

Goals, Objectives, and Activities

Summary of the Work Plan

The following local goals were developed to address natural resource concerns. Many of these goals compliment those of the Lake Superior Binational Program's ecosystem goals for Lake Superior.

Plan Goals

Goal 1: Increase the public's level of environmental knowledge and stewardship.

Goal 2: Protect and enhance surface and groundwater quality.

Goal 3: Mitigate invasive species impacts.

Goal 4: Promote sustainable land use practices.

Goal 5: Maintain a well-trained professional staff.

Statewide Goals also included in this plan:

- Cropland Erosion and Nutrient Management:
Reduce cropland erosion & nonpoint source pollution and provide technical and financial assistance for nutrient management.
- Agricultural Performance Standards and Prohibitions and Non-Agricultural Standards:
Control polluted runoff from agricultural, non-agricultural, rural and urban sites.

An annual work plan lays out implementation of each goal including education, funding source, partnerships, tracking, and evaluation is detailed in Chapter 5.

Plan Implementation

Land and Water Quality Initiatives Implementation

Outlines objectives, activities, and measurable outcomes for each goal listed in the plan.

Performance Standards and Prohibitions Implementation

Outlines priority projects (i.e. priority farms) and includes agricultural standards and prohibitions and non-agricultural standards implementation plans.

Priority Areas

Priorities will be targeted for voluntary, educational, and cost-share NR 151 compliance efforts based on their geographic location and potential impacts to natural resources. The NR 151 strategies capitalize on education and voluntary compliance.

Partner Strategy

Partners and potential partners are listed in the implementation plan.

Education Strategy

Outlines information & education for each goal (**Appendix A**).

Water Quality Monitoring

Summarizes current water quality monitoring.

Evaluation

Goals, objectives, and activities will be reviewed as part of the five-year review of the LWRM Plan. Measures of the plan success include resource monitoring, practice completion, assistance provided, compliance with standards, and educational activities completed.

Budget and Funding

Many activities in the implementation plan require staff or consultant funding as well as cost-share or implementation dollars. Although local residents recognize the value of soil and water resource management, they are limited in the local dollars they can contribute.

Potential funding sources are identified in the implementation plans, but additional sources may be discovered as the plan progresses. **Table 24** (page 105) in Chapter 5 indicates the estimated staff and funding needed to implement this plan.

Conclusion

Local leadership in natural resource management is a vital component to successfully managing and protecting our natural resources. Wisconsin's Land and Water Conservation Departments, provide that vital link between balancing local needs and priorities with state and federal program and funding opportunities, and also challenges the local stakeholders to work together to take responsibility to address resource concerns.

A Land and Water Resource Management Plan is intended to be action-oriented, flexible, and reflect local resource management needs identified through a public process. Its implementation relies on a coordinated approach and adequate and consistent state funding policies.

The Iron County Land and Water Resource Management Plan provides a framework upon which to implement a local program. However, priorities reflected in this plan exceed available staff funding (**Table 24** on page 105). Iron County is limited from hiring adequate staff to fully implement the plan due to factors such as low assessed valuation and low numbers of taxpayers. The county will continue to collaborate with others to make the best use of limited funds and streamline program efforts.

Chapter 1. Introduction

Background

The 1997-1999 Biennial Budget Bill created a local water quality planning approach, requiring counties to develop a Land and Water Resource Management (LWRM) Plan. The LWRM Plan provides county government, through Land Conservation Committees, the tools, flexibility, and funding to address Wisconsin's water quality problems at the local level. The first Iron County LWRM Plan was adopted in 1999. Iron County revised the LWRM Plan in 2015 and this plan in 2020. Goals and objectives established in this plan will guide LWCD activities for the next ten years. They will also provide the basis for funding those activities from various sources. Used as a tool to guide and coordinate a variety of programs, the plan will help to streamline decision-making and program administration.

Public Participation

The focus of the plan update was to review current resource concerns and to revise goals and implementation strategies.

Local Advisory Committee

A local advisory committee, consisting of twelve individuals, representing farmers, lake homeowners, concerned citizens, locally elected officials, educators, and agency staff involved in land and water resource protection in Iron County assisted with the plan revision. Land Conservation Committee members were a critical component of the group. The advisory committee met on October 21, 2019, October 29, 2019, and November 13, 2019 to discuss the development of the LWRM plan and the county work plan. Additional citizens not able to participate in the advisory committee meetings were encouraged to provide comments throughout the process. A public hearing was held March 11, 2020.

After the presentation to the Land and Water Conservation Board on April 7, 2020, the Iron County Board of Supervisors is expected to approve the 2021-2030 Land and Water Resource Management Plan on April 28, 2020.

Plan Requirements

This Land and Water Resources Plan was developed to meet the requirements of the County Soil and Water Resource Management Planning Program. The program was created through amendments to Chapter 92.10 of the Wisconsin Statutes in Wisconsin Act 27. A county's Land & Water Resource Management (LWRM) Plan must include:

- Public participation
- Coordinated implementation strategy
- A resource assessment including water quality, soil erosion conditions, and causes of nonpoint source pollution.
- Water quality and soil erosion goals
- Standards for the Farmland Preservation Program
- A progress tracking and evaluation method
- A process for landowner notification if needed
- NR 151 Agricultural and Non-agricultural Performance Standards
- A public hearing

Wisconsin adopted DNR rule NR 151 on October 1, 2002 (revised 2010 and 2018) that established polluted runoff performance standards to achieve water quality standards for non-agricultural practices, as well as performance standards and prohibitions for agricultural facilities and practices. The Department of Agriculture, Trade, and Consumer Protection (DATCP) established conservation practices in ATCP 50 to meet the performance standards adopted under NR 151. County Land and Water Conservation Departments have primary responsibility for implementing the standards. Chapter 5 contains the NR 151 performance standards and prohibitions implementation for Iron County. The standards are located at: https://docs.legis.wisconsin.gov/code/admin_code/nr/100/151.

ATCP 50 requires counties to consult with the WDNR to identify water quality objectives and how the WDNR and Iron County can work to assist landowners to achieve compliance with NR 151 performance standards and prohibitions. The WDNR was an active player in the update of the Iron County LWRM Plan. Elizabeth Usborne, WDNR Nonpoint Source Coordinator was part of the planning committee offering expertise on NR 151. Through this input and review, the WDNR helped identify key water quality objectives and set goals to meet those objectives.

Chapter 2. Resource Assessment

General Description

Iron County is located in northwestern Wisconsin and encompasses 484,660 acres (757.3 square miles). It is the 34th largest county in the state.¹ The Montreal River separates the county from Michigan's Upper Peninsula along the northeast, Lake Superior forms the northern boundary, Ashland County is to the west and Price County to the south.

Iron County includes two tribal reservations encompassing 16,484 acres of land. The Bad River Reservation-Bad River Band of the Lake Superior Chippewa (Ojibwe) is located along the Ashland County border north to Lake Superior's coast and Lac du Flambeau Reservation-Lac du Flambeau Band of the Lake Superior Ojibwe is located in southeastern Iron County. Iron County is within the Ceded Territory of the Lake Superior Ojibwe.

Climate

The climate of Iron County is separated into two general classifications: a *modified continental* climate along the Lake Superior shoreline area and a *continental* climate throughout the rest of the county. The continental climate is generally characterized by hot summers and cold winters. This pattern is modified along the Lake Superior coast by the cold lake waters that moderate summertime temperatures and increase wintertime temperatures. Average temperatures in Iron County range from 13°F in January to 67°F in July. Average temperatures along the lakeshore can be as much as 10-15° cooler in the summer and slightly warmer during the winter months.

Average annual precipitation varies from about 36 inches in the Penoque-Gogebic highlands of northcentral Iron County, to 32 inches along the lake and in the far southern part of the county. Average annual snowfall ranges from 160 inches in Hurley to 80 inches in the southwestern part of the county. Lake enhancement results in generally higher snowfalls across northern Iron County, particularly in areas of high elevation.

According to historic climate records, Iron County's climate, like other areas of northwestern Wisconsin, has been warming, getting wetter and experiencing more extreme storm events. Climate projections suggest these trends will continue and should be considered when developing land use and land conservation strategies.

Topography

Iron County is divided into two distinct geographic provinces by the Penoque-Gogebic Range, which forms two parallel ridges running southwesterly from Hurley to Ashland County. These scenic hills separate the Lake Superior lowlands to the north from the

¹ Wisconsin Blue Book, 1999.

Northern Highland Peneplain to the south. This geologic feature is part of a large regional landscape that extends eastward to the Keweenaw Peninsula in the Upper Peninsula of Michigan. High concentrations of iron ore exist within metamorphic rock in the range.² The northern third of Iron County slopes generally downward from the Penokee Range northward to Lake Superior, forming a large coastal plain. Numerous rivers and streams bisect this area. To the south of the range, the northern rim of the Northern Highland Peneplain begins its gradual rise. This region contains undulating gravely pitted outwash containing many lakes and wetlands. The highest elevation found in Iron County is approximately 1,877 feet above sea level at the former Pleasant Lake Lookout in Section 34, T44N-R1E in the Town of Knight. The lowest elevation of 603 feet above sea level is found at the Lake Superior coast in the Town of Saxon.³

Bedrock Geology

Iron County is underlain by three general bedrock formations. Sedimentary rocks, which include sandstone, shale, and conglomerate, are found under the extreme northwest corner of the county. Under the area along and to the north of the Penokee-Gogebic Range are lava flows. These lava flows consist mostly of basalt and crystalline rocks of steeply dipping and complexly faulted layers of slate, iron formation, and dolomitic marble. The remainder is underlain by undifferentiated crystalline rocks. Numerous bedrock outcrop areas exist in the county, especially along streams. These outcrop areas are found along the Penokee-Gogebic Range in the Hurley-Montreal area, in the Saxon Harbor area, and in an area west of Mercer. Depths to bedrock vary widely from over 400 feet in the northwest corner of the county to less than 50 feet in and around the Penokee-Gogebic Range and other areas.

Metallic and Nonmetallic Minerals

The Penokee-Gogebic iron-bearing formations contain one of the largest iron reserves in North America. Other significant iron ore deposits have been recorded in central Iron County, particularly in the Pine Lake area. Future pressures to develop these resources will likely spur debate, as mining has the potential to expose aquifers, impact wetlands, alter the flow of rivers and streams, and increase impervious surface area. In addition to metallic mineral resources, Iron County has an abundance of non-metallic mineral reserves. Non-metallic mineral resources include sand, gravel, and aggregate deposits. Within Iron County there are several existing and former non-metallic mining sites. All of these non-metallic mining sites are sand and gravel extraction areas.

Glacial Geology and Soils

With the exception of the outcrop areas, all of Iron County is covered with a variety of glacial deposits. Clay deposits cover most of the northern end of the county and ground and end moraine glacial till deposits cover most of the center of the county. Pitted

² *Iron County Comprehensive Plan 2025*, Iron County and Northwestern Regional Planning Commission, May 2006. p 5-7.

³ *Ibid*, p 5-1

outwash covers the southern part of the county, and outwash is found in narrow areas, that primarily include streambeds. The clayey deposits consist of mostly clayey till, covered by a thin layer of clayey lake deposits in a few areas. The ground and end moraine till deposits consist of a mixture of sand, gravel, boulders, silt and clay. Most of the deposits in the county have a high proportion of sand except for mostly clayey till end moraine deposits in the far northern part of the county. The generalized soils of Iron County have been mapped at a scale of 1:250,000 as part of the Digital General Soil Map of the United States or STATSGO2 database. This level is designed for broad planning and management uses. Iron County soils have been mapped digitally by the Natural Resources Conservation Service (NRCS) and can be found at <http://soils.usda.gov>. **Table 1** lists each soil association found on the soils map.

Table 1: Soil Associations

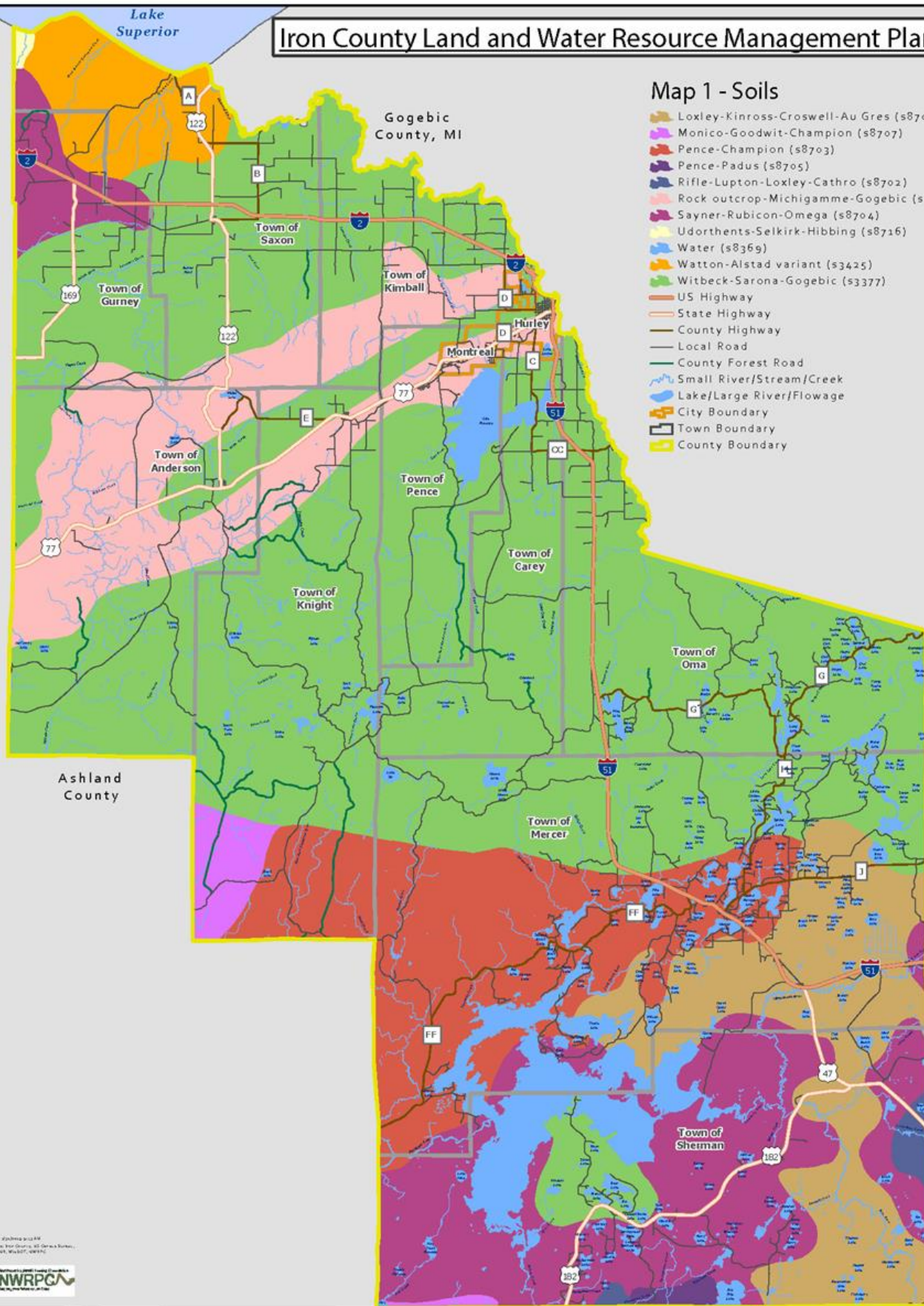
General Soil Association Unit	Soil Type & Representative Slope
Loxley-Kinross-Croswell-Au Gres (s8708)	Mucky peat; 0-2% representative slope
Monico-Goodwit-Champion (s8707)	Silt loam; 0-5%; representative slope
Pence-Champion (S8703)	Silt loam; 0-5%; representative slope
Pence-Padus (s8705)	Fine sandy loam; 15-45% representative slope
Rifle-Lupton-Loxley-Cathro (s8702)	Muck; 0-5%; representative slope
Rock Outcrop-Michigamme-Gogebic (s8709)	Very stony; 6-35% representative slope
Sayner-Rubican-Omega (s8704)	Loamy sand; 5-15% representative slope
Udorthents-Selkirk-Hibbing (s8716)	Clay loam; 0-7% representative slope
Watton-Alstad Variant (s3425)	Silt loam; 1-8% representative slope
Witbeck-Sarona-Gogebic (s3377)	Very stony, muck; 0-2% representative slope

Source: USDA-NRCS

Iron County Land and Water Resource Management Plan

Map 1 - Soils

-  Loxley-Kinross-Croswell-Au Gres (s8708)
-  Monico-Goodwit-Champion (s8707)
-  Pence-Champion (s8703)
-  Pence-Padus (s8705)
-  Rifle-Lupton-Loxley-Cathro (s8702)
-  Rock outcrop-Michigamme-Gogebic (s8709)
-  Sayner-Rubicon-Omega (s8704)
-  Udorthents-Selkirk-Hibbing (s8716)
-  Water (s8369)
-  Watton-Alstad variant (s3425)
-  Witbeck-Sarona-Gogebic (s3377)
-  US Highway
-  State Highway
-  County Highway
-  Local Road
-  County Forest Road
-  Small River/Stream/Creek
-  Lake/Large River/Flowage
-  City Boundary
-  Town Boundary
-  County Boundary



Price County

Vilas County

Soil Erosion

Concern regarding cropland soil erosion is generally low in the county because of the limited amount of cropland and low erosion rates associated with long perennial hay rotations that significantly reduce soil erosion problems. **Map 4** shows the watersheds within Iron County and **Map 7** shows impaired waters in Iron County. Most cropland in Iron County (**Map 9**) is located within the Potato River watershed and follows a hay-based rotation. The Lower Bad River watershed also contains extensive areas of forage and idle grasslands/pasture. Neither one of these watersheds contain impaired waters.

The average tolerable soil loss in Iron County is less than one ton per acre. The tolerable soil loss rate ("T"), is the maximum average annual rate of soil erosion for each soil type that will permit a high level of crop productivity. Most Iron County farmers recognize the environmental and economic benefits of nutrient management. Extended hay rotations, relatively low numbers of row crops, few animal operations, and adequate riparian buffers minimize severe concern of soil erosion and corresponding nonpoint source agricultural runoff and pollution. The LWCD encourages landowners to write Nutrient Management Plans and to implement conservation practices. Participation is voluntary with individual agreement.

The Iron County Farmland Preservation Plan was updated in 2017 and will be maintained to reflect the Agricultural Performance Standards as part of this plan. Iron County will provide ongoing farm technical assistance for conservation practices and nutrient management planning. The county encourages participation in Natural Resource Conservation Service programs to protect soil and water quality.

Groundwater

Groundwater is fresh water from rain or melting ice and snow that soaks into the soil and is stored in the tiny spaces (pores) between rocks and particles of soil. Groundwater is the primary source of household water in rural Iron County. The cities of Hurley and Montreal as well as the unincorporated areas of Iron Belt, Saxon, Pence, Mercer, and Whitecap Mountain are served by a municipal or separate water supply. All other residents receive their water through private wells. Wells drilled in the glacial drift material are common and often shallow. Wells drilled in the bedrock aquifer have generally low yield. Under natural conditions, a balance exists between the volume of water entering an aquifer and the volume of water being discharged from an aquifer. With the development of water wells, the natural balance between recharge rates and discharge rates is disrupted. In Wisconsin, the overall groundwater supply has been depleted due to increased discharge. Natural fluctuations in groundwater supply can occur due to droughts or natural seasonal precipitation fluctuations.

The quality of natural groundwater varies by location. As groundwater passes through natural sediments, naturally occurring chemicals may become deposited in the water. Iron County's groundwater can show excessive mineralization, hardness and iron content. While naturally occurring groundwater contamination is generally mild, human-induced contaminants can make groundwater supplies unusable. The quality of

groundwater is directly related to land use activities. The application of fertilizers, chemical spills, urban runoff, leaky underground storage tanks, and nonpoint pollution from animal waste, road salt or other materials can contribute to decreased quality of groundwater reserves. Improperly abandoned wells or mines can act as conduits for transportation of contaminants.

Groundwater depths across Iron County range from 0 to 50 feet, with greater depths occurring along portions of the Penokee-Gogebic Range. In general, the county is considered moderate-very susceptible to groundwater contamination. This is due, in part, to relatively shallow water tables, shallow bedrock depth, and soil characteristics found within the county. The exception is the area north of the Penokee-Gogebic Range to Lake Superior, which is considered low-moderately susceptible to groundwater contamination due in part to a protective layer of impermeable clay⁴ (**Map 2**).

Nitrate is Wisconsin’s most widespread groundwater contaminant and is increasing in extent and severity. While nitrogen is an essential plant nutrient, high concentrations of nitrate-nitrogen in groundwater leads to public health concerns.⁵ Of the 400 well samples taken from private wells in Iron County, only one sample (<1%) met or exceeded the drinking water standard for nitrate (**Table 2**). This data is available via the UW Stevens Point Center for Watershed Science and Education’s Well Water quality viewer available at: https://gissrv3.uwsp.edu/webapps/gwc/pri_wells/.

Table 2: Private Well Test Records of Nitrate (mg/L as N)

Range	Number	Percent	Summary
None Detected	259	65%	Minimum: No Detect
2.0	121	30%	
2.1 - 5.0	15	4%	Median: No Detect
5.1 - 10.0	4	1%	Average: 0.4
10.1 - 20.0	1	<1%	
20.1	0	0%	Maximum: 10.6

Source: WI Well Water Quality Viewer

⁴ Lynn Markham, Mechenich Christine, Miskowski Raquel, Charles Dunning, James Raumann, Elizabeth Woodcock, Cheryl Buchwald, Jennifer Bruce, and Ann Moser. *Protecting Wisconsin’s Groundwater Through Comprehensive Planning*. USGS. 14 Jan 2007. <https://wi.water.usgs.gov/gwcomp/find/iron/susceptibility.html>

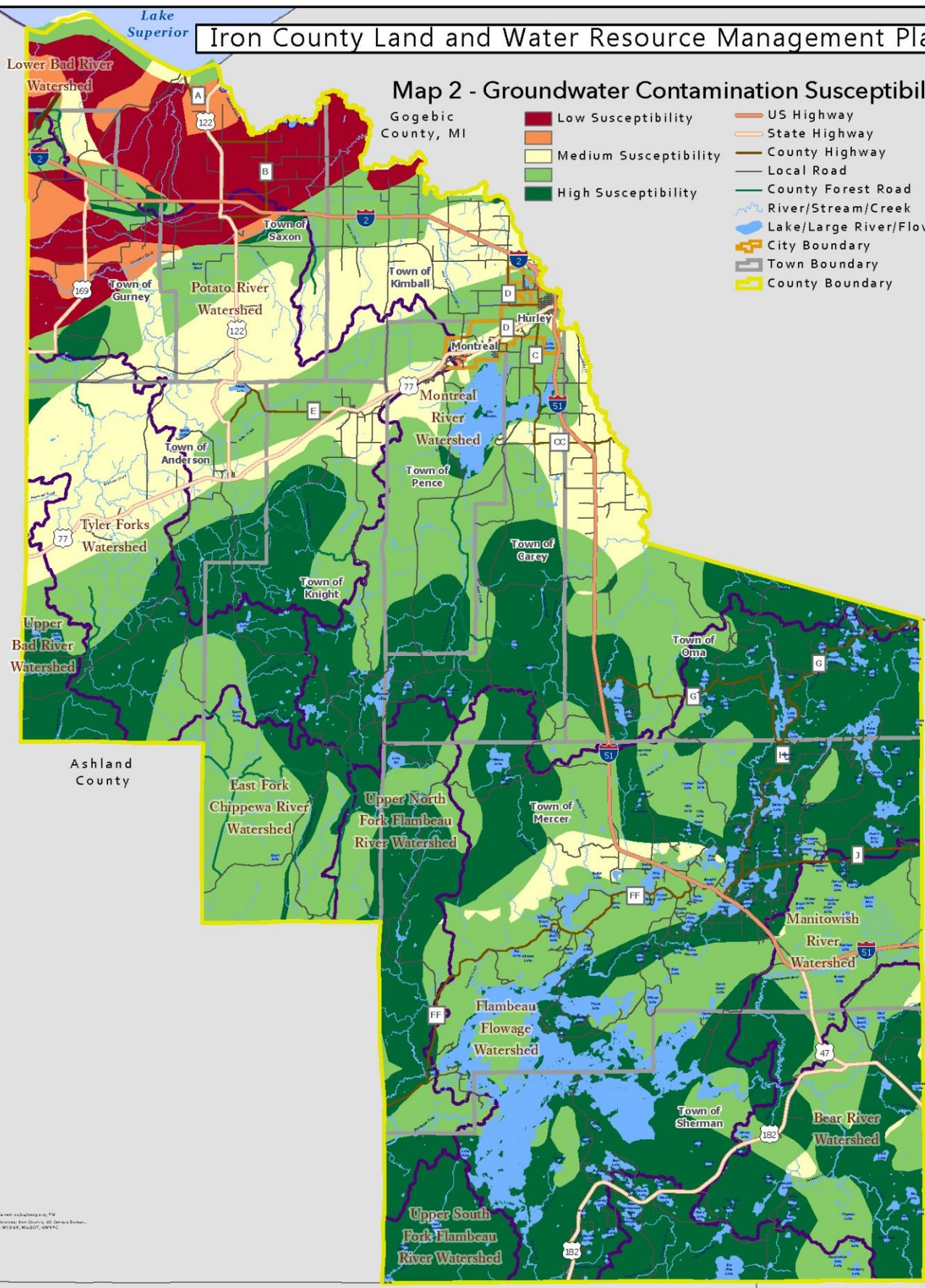
⁵ Wisconsin’s Nonpoint Source Program Management Plan FFY 2016-2020

Iron County Land and Water Resource Management Plan

Map 2 - Groundwater Contamination Susceptibility

Gogebic
County, MI

- Low Susceptibility
- Medium Susceptibility
- High Susceptibility
- US Highway
- State Highway
- County Highway
- Local Road
- County Forest Road
- River/Stream/Creek
- Lake/Large River/Flowage
- City Boundary
- Town Boundary
- County Boundary



Base Source: esri.com
Base Source: Iron County GIS Office
2005, WISPA, WISOT, WISPC

Price County

Vilas County

Surface Water

Lakes, ponds, rivers, streams, and intermittent waterways make up the surface water of Iron County. Within Iron County there are approximately 29,902 acres of surface water (**Map 3**). Water quality in Iron County lakes is generally very good. During periods of high runoff, water quality is impacted by sediment runoff from the red clays found in the northern part of the county.

Nonpoint Source Pollution

Lakes, rivers, and wetlands are impacted by land use practices in the watersheds that drain to them. Most pollutants that enter surface water are carried in runoff from many (nonpoint) sources. Major nonpoint source pollutants are sediment and phosphorus (attached to soil particles) carried in runoff water and nutrients associated with agriculture or fertilizer use and improperly functioning septic systems. Sources of nonpoint source pollution can also contribute bacteria and organic material that reduce oxygen content and impair water quality.

Sources of nonpoint source pollution:

- Road & construction site erosion
- Agricultural & forestry practices
- Lake & stream shore development
- Residential & urban runoff water
- Solid waste disposal & landfill use
- Private sewage treatment facilities

Watersheds

Iron County is located within two drainage basins and eleven major watersheds (**Table 3**). The northern half of the county drains to Lake Superior via five major watersheds and the southern half drains to the Upper Chippewa Basin (Mississippi River) via six major watersheds (**Map 4**). Large watersheds are generally composed of smaller subwatersheds, which define the drainage area for smaller creeks and streams.

Watershed Basin Characteristics

Streams in the Lake Superior watershed generally have higher gradients and extreme flow variations in comparison with those in the Upper Chippewa watershed.

Comparing the North Fork of the Flambeau River and Montreal River watersheds provides insight on the drainage characteristics of the two major basins. The Montreal watershed is an area less than half the size of the North Fork of the Flambeau watershed, yet the maximum recorded discharge is 68% greater. Poor infiltration and higher gradients caused by the topography, red clay soils, and bedrock formations in the Lake Superior watershed contribute to this rapid runoff.⁶

⁶ *Surface Water Resources of Iron County*, DNR, 1970, p. 13-16.

For more information on watersheds in the Lake Superior Basin, the WDNR Lake Superior webpage contains watershed and water quality information for the following Iron County watersheds: Lower Bad River, Montreal River, Potato River, Tyler Forks, and Upper Bad River watersheds. WDNR Lake Superior webpage: <https://dnr.wi.gov/topic/Watersheds/basins/superior/>

For more information on watersheds in the Upper Chippewa River Basin, the WDNR Upper Chippewa River webpage contains watershed and water quality information for the following Iron County watersheds: Bear River, East Fork of the Chippewa River, Flambeau Flowage, Manitowash River, Upper North Fork Flambeau River, and Upper South Fork Flambeau River watersheds. WDNR Upper Chippewa River webpage: <https://dnr.wi.gov/topic/Watersheds/basins/upchip/>

Table 3: Iron County Watershed Descriptions

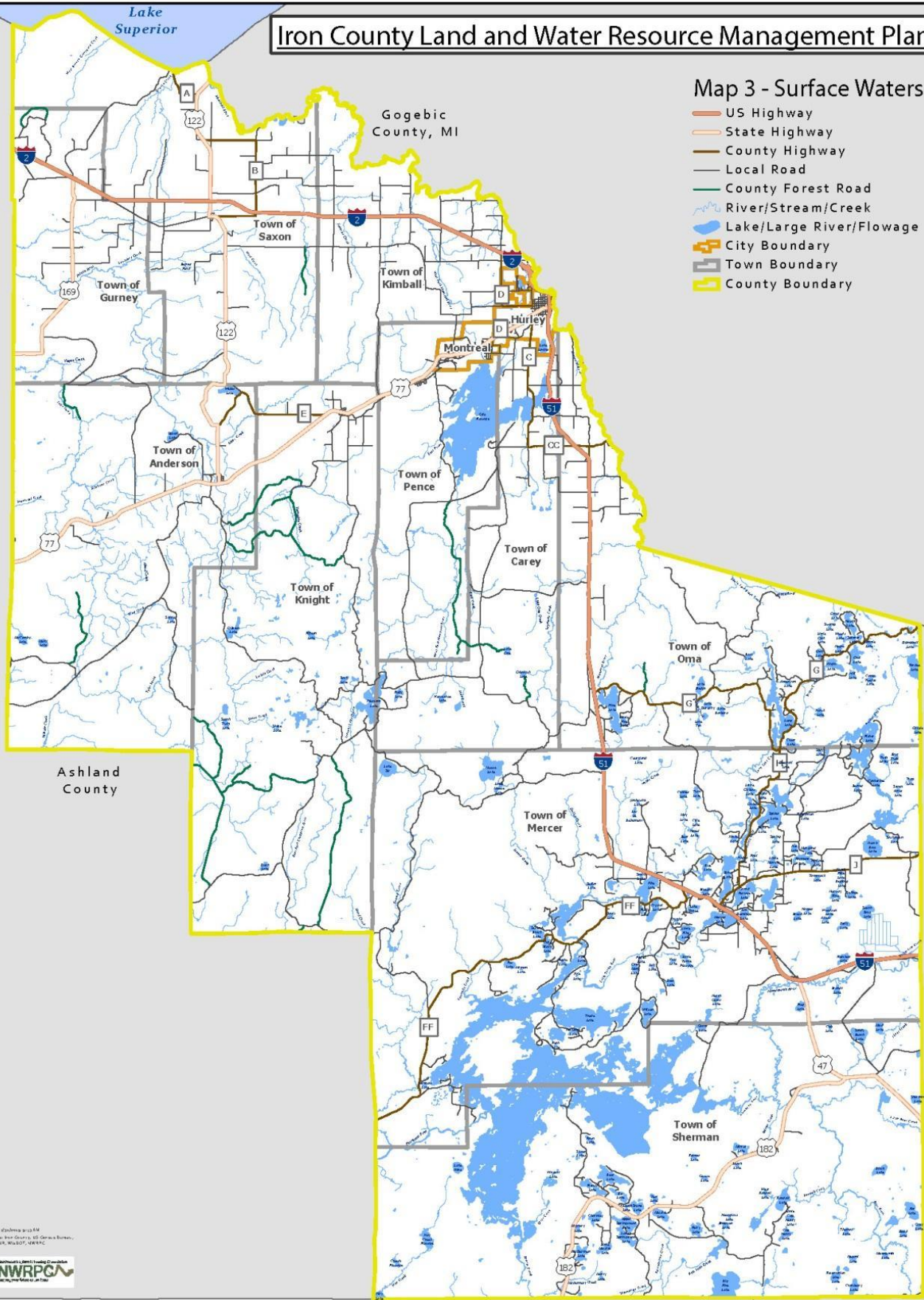
<i>Major Watersheds</i>		Total Watershed		Watershed in Iron County	
		Acres	Square Miles	Acres	Square Miles
Lake Superior	Lower Bad River Watershed	79,308	123.92	579	0.9
	Montreal River	144,807	226.26	136,526	213.3
	Potato River Watershed	89,547	139.92	73,450	114.8
	Tyler Forks Watershed	50,409	78.76	41,239	64.4
	Upper Bad River Watershed	86,198	134.68	8,574	13.4
Upper Chippewa	Bear River Watershed	93,086	145.45	29,423	46.0
	East Fork of the Chippewa River Watershed	195,300	305.16	19,753	30.9
	Flambeau Flowage Watershed	158,196	247.18	136,947	214.0
	Manitowish River Watershed	171,904	268.6	17,997	28.1
	Upper North Fork Flambeau River Watershed	101,257	158.21	28,158	44.0
	Upper South Fork Flambeau River Watershed	178,549	278.98	20,547	32.1

Source: WDNR and NWRPC GIS Analysis

Iron County Land and Water Resource Management Plan

Map 3 - Surface Waters

- US Highway
- State Highway
- County Highway
- Local Road
- County Forest Road
- River/Stream/Creek
- Lake/Large River/Flowage
- City Boundary
- Town Boundary
- County Boundary



Ashland County

Gogebic County, MI

Price County

Vilas County

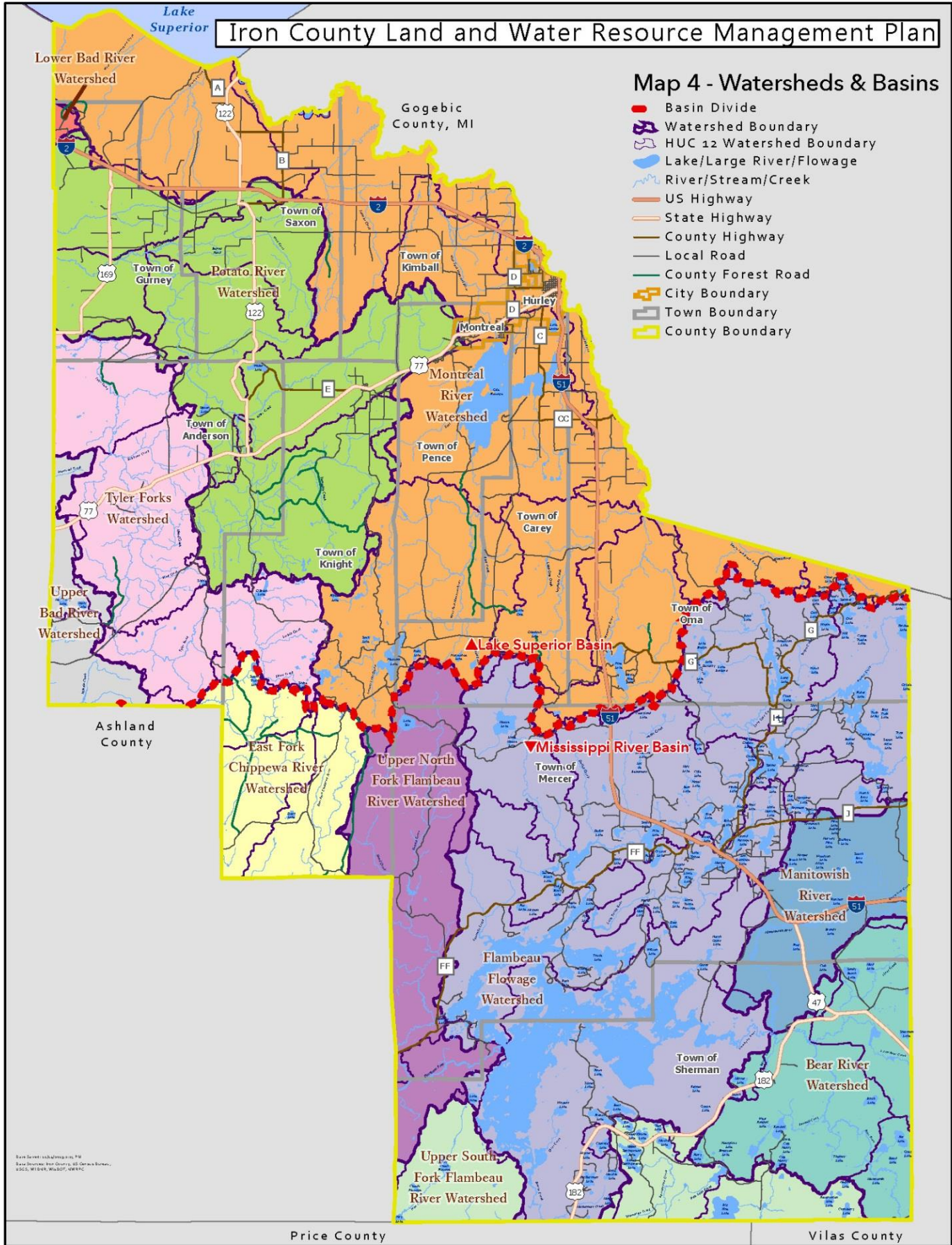
Scale: 1 inch = 10 miles
 Date: 10/15/2010
 Prepared by: NWRPCA



Iron County Land and Water Resource Management Plan

Map 4 - Watersheds & Basins

- Basin Divide
- Watershed Boundary
- HUC 12 Watershed Boundary
- Lake/Large River/Flowage
- ~ River/Stream/Creek
- US Highway
- State Highway
- County Highway
- Local Road
- County Forest Road
- City Boundary
- Town Boundary
- County Boundary



Base Source: USGS National Wetland Inventory
Base Source: Iron County, WI Geographic Information System
©2005, WI DNR, WISDOT, WDFWC

Lake Superior

Lake Superior is the largest, westernmost, and northernmost of the Great Lakes. It has the largest surface area of any freshwater lake in the world. Its drainage basin includes parts of Wisconsin, Michigan, Minnesota and Ontario. Nearly 53% of Iron County's total land area is within the Lake Superior drainage basin. This encompasses the Towns of Saxon, Gurney, Kimball, Pence and portions of Anderson, Knight, Carey, Oma, and Mercer. The county's largest municipality, and county seat, the City of Hurley, is also located within the basin.

The Lake Superior Binational Program created in 1991, developed the Lake Superior Lakewide Action and Management Plan (LAMP) as a management strategy to maintain and restore the physical, chemical and biological integrity of Lake Superior. The LAMP currently guides the implementation of the Zero Discharge Demonstration Program focusing on preventing any new or additional pollutants from entering Lake Superior: <https://www.epa.gov/greatlakes/lake-superior-zero-discharge-demonstration-program-and-critical-chemical-reduction>

The Lake Superior Biodiversity Conservation Strategy completed in 2015 provides a summary of the health of and threats to the biodiversity of Lake Superior. Corresponding regional plans were developed to identify local and regional conservation opportunities and actions that contribute to lake-wide biodiversity goals. The Bad-Montreal regional plan and the Black-Presque Isle and Ontonagon regional plan cover portions of Iron County: <http://www.natureconservancy.ca/en/where-we-work/ontario/our-work/superior-bcs-regional-review.html>

Coastal Resources

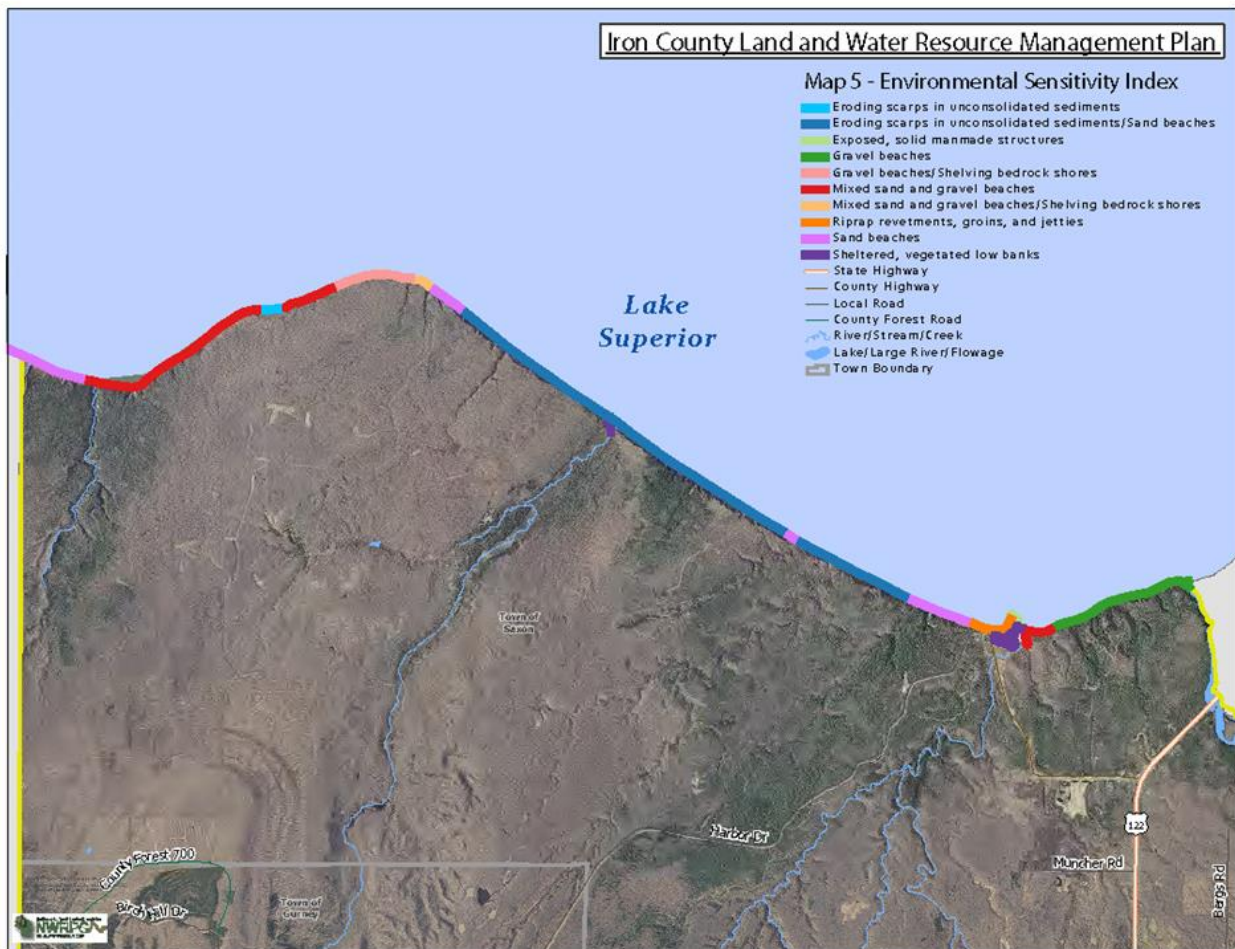
Iron County has approximately 7.5 miles of mainland Lake Superior coastline ranging from high clay bluffs to low, flat marshlands. In many areas, the exposed bluffs are actively eroding due to exposure to the elements and wave action. Land ownership along the coast consists of tribal, Iron County Forest, and private holdings. The 125,000 acre Bad River Reservation occupies 3.6 miles, or nearly half of Iron County's total Lake Superior coastline. Much of the county's coastline is undeveloped, remaining in a primarily forested state. Saxon Harbor is the largest developed area along its coastline.⁷ Land use and development along the Lake Superior coastline is regulated under the Iron County Shoreland Zoning Ordinance. The establishment of building setbacks along coastal bluffs is regulated under the Iron County Land Use Ordinance.

The National Oceanic Atmospheric Administration (NOAA) Environmental Sensitivity Index maps developed for Lake Superior provide a summary of coastal resources at risk of natural disasters. Examples of at-risk resources include biological resources (migratory birds), sensitive shorelines (marshlands), and human-use resources

⁷ Iron County Comprehensive Land Use Plan 2025. op.ct. 5-19

(harbors). The shoreline habitats in order of increasing environmental sensitivity are listed below. Shoreline habitats in **bold** are located in Iron County (**Map 5**).

- 1A - Exposed Rocky Cliffs
- **1B - Exposed, Solid-Man-made Structures**
- **2 - Shelving Bedrock Shores**
- **3 - Eroding Scarps in Unconsolidated Sediments**
- **4 - Sand Beaches**
- **5 - Mixed Sand & Gravel Beaches**
- **6A - Gravel Beaches**
- **6B - Riprap Revetments, Groins, & Jetties**
- 7 - Exposed Flats
- 8A - Sheltered Scarps in Bedrock
- 8B - Sheltered, Solid Man-made Structures
- **9A - Sheltered, Vegetated Low Banks**
- 9B - Sheltered Sand/Mud Flats
- 10A - Fringing Wetlands
- 10B - Extensive Wetlands



Coastal Erosion

Coastal erosion is a natural geologic process that may occur slowly over a period of thousands of years or dramatically as with landslides and severe storms. Coastal erosion is closely linked with lake levels; the higher the water, the greater the wave impacts to the coast. Other factors influencing it include water currents, groundwater flow, freeze/thaw cycles, soil types, bank composition, and shoreline vegetation. Erosion rates are particularly high along clay bluffs, sand plains, and high bluffs composed of till. To protect a structure from this erosion and resulting bluff retreat, it is necessary to have sufficient building setbacks.

In 2012, Northwest Regional Planning Commission and Mickelson completed a shoreline recession rate study that created a safe setback line in Iron and Douglas Counties. The safe setback line is based on characteristics of the bluff and recession rates as well as slope height and angle calculated from LIDAR (Light Detection and Ranging) data. The study included 1,522 samples taken along Iron County's the shoreline with a maximum difference of 120 feet. The average of these lines was 57.9 feet. Using this average and dividing it by the span of 28 years (1991 and 1963), it gives an average setback of 2.07 feet per year. In Iron County, the highest recession rates were found to the west of Saxon Harbor, and are probably due to prevailing winds and wave action.⁸ Project information, including the stability line, is available at: <http://www.nwrpc.com/944/Lake-Superior-Recession-Rate>.

Coastal Flooding

The amount of precipitation falling on the Lake Superior Basin directly affects lake levels. Extreme changes in the water level can be expressed as a drought or flood, which has a tremendous impact on plants and animals living in the region. Coastal flooding can create or exacerbate erosion problems. Conversely, low water levels can expose coastal hazards and create problems for shipping and recreation.

Saxon Harbor

Saxon Harbor, located in Oronto Bay, is an important historic site of the Flambeau Trail used by Native Americans. It was later used by fur traders and the historic city of Ironton. The harbor was established in 1856, serving as a port of the Iron Range. Today, it is the easternmost Harbor of Refuge on Wisconsin's south shore. It supports recreational and navigation interests and provides conservation and environmental outreach for the community. In July of 2016, Saxon Harbor was completely destroyed when a bow echo type storm moved across northern Iron County in one of its worst floods in recorded history. As a result, the landscape was significantly altered and inland and Lake Superior water quality were negatively affected. Estimated flood damage at Saxon Harbor was at least \$10 million. Funding was awarded to rebuild the harbor, and after three years of construction, the harbor reopened on August 30, 2019.

⁸ Lake Superior South Shore Bluff Recession Rate Study

Outstanding and Exceptional Resource Waters

Surface water resources have been evaluated and rated for water quality, fish, wildlife, and aesthetic values by the WDNR. High quality resources are classified as either Outstanding Resource Waters (ORW) or Exceptional Resource Waters (ERW) (Table 4 & Map 6).

- **ORW:** Lakes, streams, or flowages having excellent water quality, high recreational and aesthetic value, high quality fishing, and are free from point or nonpoint source pollution.
- **ERW:** Lakes, streams, or flowages with the same resource values as an ORW but may be impacted by point or nonpoint source pollution or have the potential for receiving future wastewater discharge from a small sewer community.⁹

Table 4: ORW and ERW in Iron County

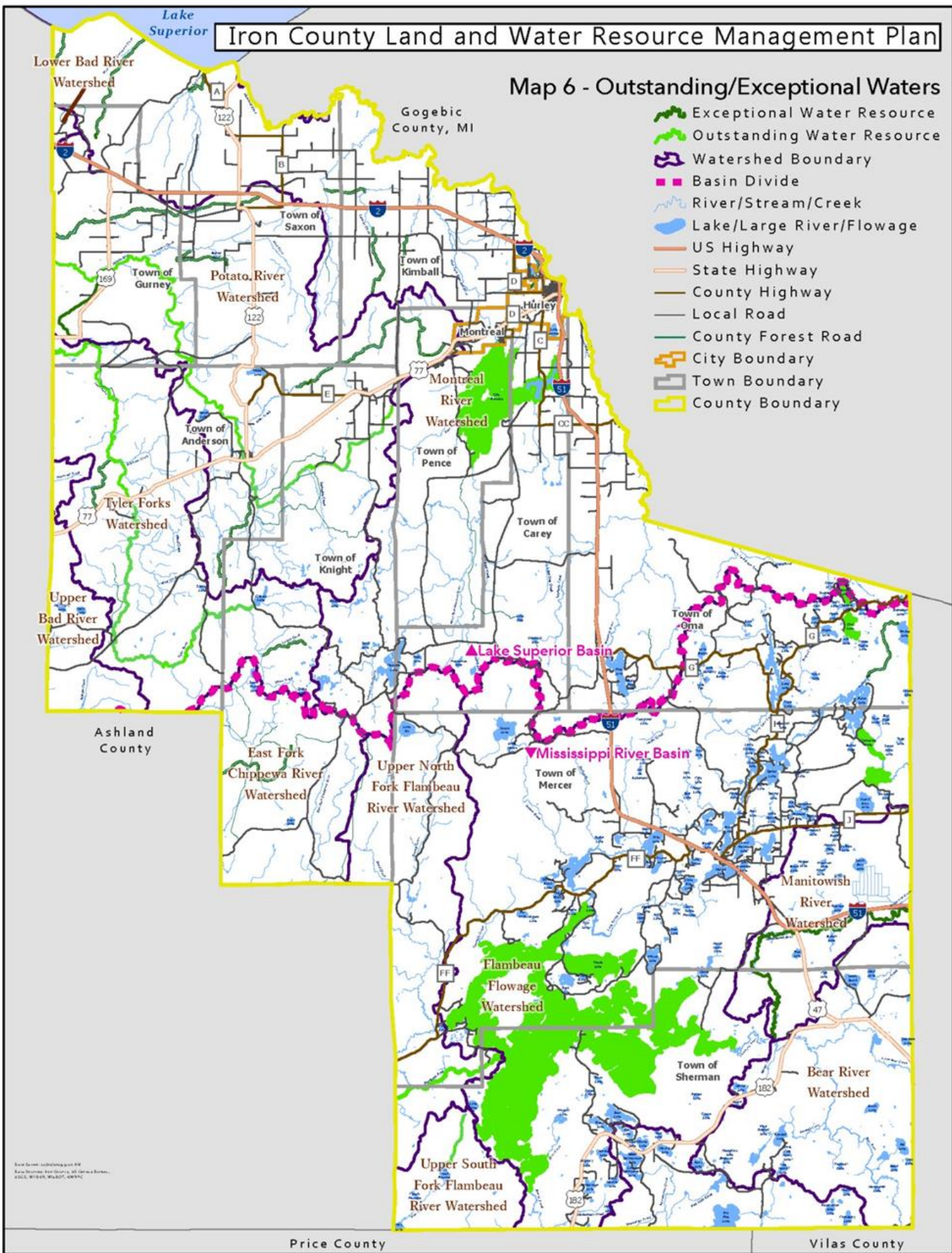
Waterbody Name	Portion Within ORW/ERW Classification	Status
Catherine Lake	All	ORW
Cedar Lake	All	ORW
N Fork Flambeau River	From Turtle-Flambeau Flowage Dam downstream to the Ashland County Line	ORW
Gile Flowage	All	ORW
Hewitt Lake	All	ORW
Owl Lake	All	ORW
Potato River	From origin to Bad River Indian Reservation Boundary	ORW
Trude Lake	All	ORW
Turtle-Flambeau Flowage	All	ORW
Tyler Forks	From origin to Bad River Indian Reservation Boundary	ORW
Alder Creek	Middle of S4 T45N R1E upstream	ERW
Apple Creek	All	ERW
Augustine Creek	All	ERW
Barr Creek	All	ERW
Bell Creek	All	ERW
Flood Creek	S of Rd crossing S7 T46N R2E	ERW
Fourche Creek	All except portion between RR crossings @ T47N R1E S35 SESE & T46N R1E S12 NWNW	ERW
Frieberg Creek	All	ERW
Graveyard Creek	All	ERW
Javorsky Creek	All	ERW
Kaminski Creek	All	ERW
LeClairs Creek	All	ERW
Manitowish River	All	ERW
Oronto Creek	Upstream of CTH A to junction with Spoon Creek	ERW
Pardee Creek	All	ERW
Vaughn Creek	From origin to Bad River Indian Reservation Boundary	ERW

Source: WDNR

⁹ Ibid. 5-13.

Iron County Land and Water Resource Management Plan

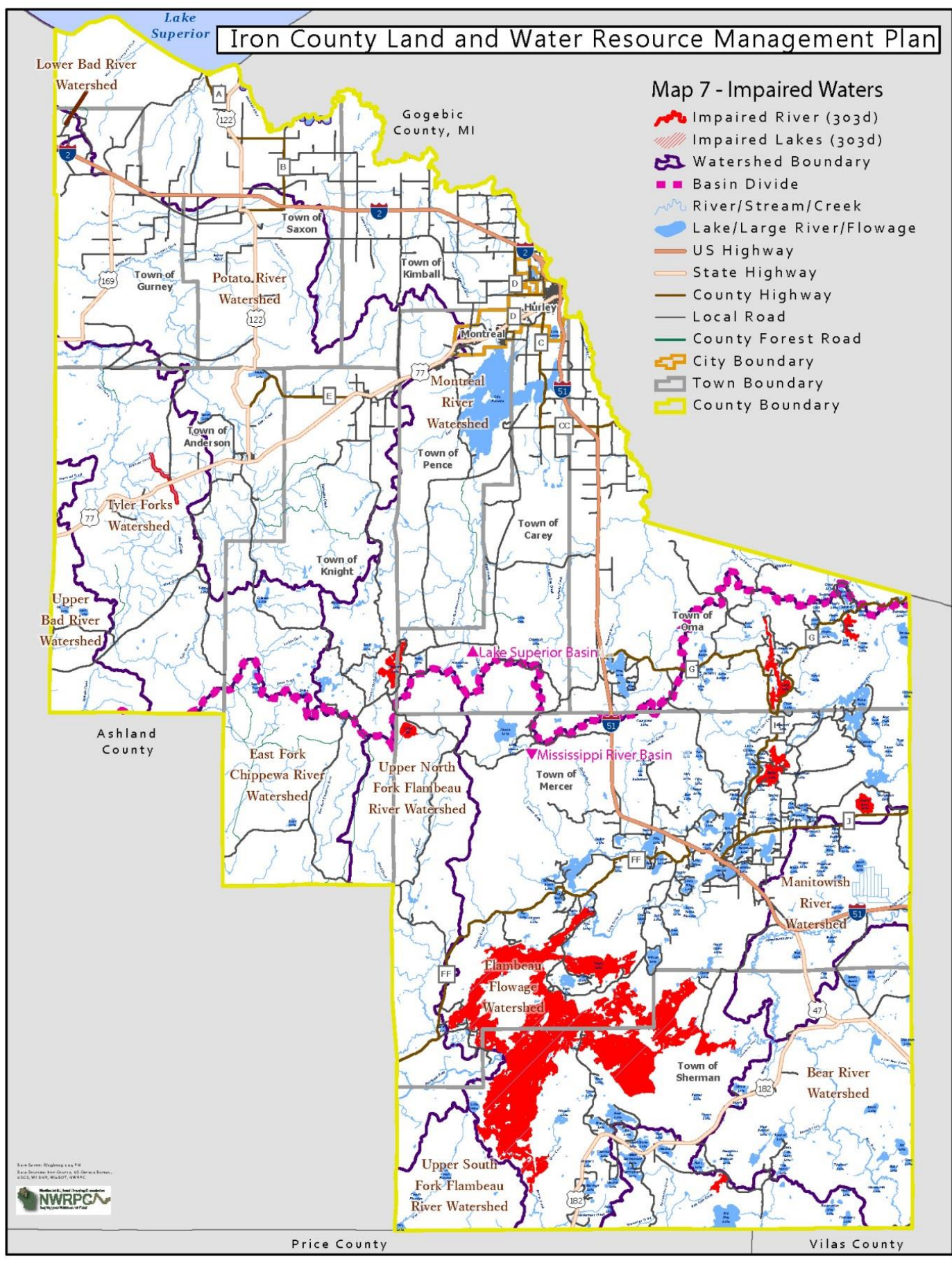
Map 6 - Outstanding/Exceptional Waters



Iron County Land and Water Resource Management Plan

Map 7 - Impaired Waters

-  Impaired River (303d)
-  Impaired Lakes (303d)
-  Watershed Boundary
-  Basin Divide
-  River/Stream/Creek
-  Lake/Large River/Flowage
-  US Highway
-  State Highway
-  County Highway
-  Local Road
-  County Forest Road
-  City Boundary
-  Town Boundary
-  County Boundary



Impaired Waters

Section 303(d) of the federal Clean Water Act requires Wisconsin to update the list of waterbodies not meeting water quality standards every two years. The impaired waters list is updated to reflect waters that are newly added or removed based on new information or changes in water quality status. Waters placed on the list may require the development of Total Maximum Daily Load (TMDL) studies to restore water quality. A TMDL is the maximum amount of a pollutant a waterbody can receive without exceeding water quality standards. As of 2019, Iron County does not have a TMDL approved or under development by WDNR for any impaired waters.

According to the WDNR, there were 11 lakes and 1 stream in Iron County on the 2018 Impaired Waters List as listed in **Table 5 (Map 7)**. Except for the Turtle-Flambeau Flowage, Circle Lily Lake, and Rouse Creek, all impaired waters are due to mercury contaminated fish tissue. Iron County largest surface waterbody, the Turtle-Flambeau Flowage has been listed as impaired for failure to meet the phosphorus water quality standard since 2014. Circle Lily Lake has been listed as impaired for excess algal growth since 2016, and Rouse Creek has been listed as impaired due to a degraded biological community since 2016.

Map 7 shows the impaired waters are located within the Flambeau Flowage, Montreal River, Upper North Fork Flambeau, Bear River and Tyler Forks watersheds. These watersheds do not contain or contain small amounts of agricultural acreage. The Potato and Lower Bad River watersheds contain the most agricultural acreage in Iron County and contain no nutrient, sediment or eutrophication/nuisance algae-based impairments.

Table 5: Impaired Waters List 2018

Lakes					
Waterbody	Community	Pollutant	Source	Impairment	Priority
Bearskull Lake	Sherman	Mercury	AD	Contaminated Fish Tissue	Low
Circle Lily Lake*	Mercer	Unknown Pollutant	PS/NPS	Excess Algal Growth	Low
Island Lake	Knight, Carey	Mercury	AD	Contaminated Fish Tissue	Low
Long Lake	Oma	Mercury	AD	Contaminated Fish Tissue	Low
North Bass Lake	Oma	Mercury	AD	Contaminated Fish Tissue	Low
Owl Lake	Oma	Mercury	AD	Contaminated Fish Tissue	Low
Pine Lake	Oma	Mercury	AD	Contaminated Fish Tissue	Low
Six Lake	Mercer	Mercury	AD	Contaminated Fish Tissue	Low
Spider Lake	Mercer	Mercury	AD	Contaminated Fish Tissue	Low
Trude Lake	Mercer	Mercury	AD	Contaminated Fish Tissue	Low
Turtle-Flambeau Flowage**	Mercer, Sherman	Mercury/ Total Phosphorus	AD/NPS	Contaminated Fish Tissue/Eutrophication, Water Quality Use Restrictions, Excess Algal Growth	Low
Rivers					
Waterbody	Community	Pollutant	Source*	Impairment	Priority
Rouse Creek*	Anderson	Unknown Pollutant	PS/NPS	Degraded Biological Community	Low

Source: WDNR Impaired Waters List, August 2019

AD=Atmospheric Deposition PS=Point Source NPS=Nonpoint Source *TMDL Needed **Natural Conditions

Inland Lakes and Flowages

There are 217 named lakes totaling 28,856 acres and an additional 277 unnamed lakes within the county totaling 1,046 acres. The highest lake densities are generally found in the southern half of the county. Most of the surface water is found in the Towns of Sherman and Mercer (**Table 6**). Along the border of these towns is the Turtle-Flambeau Flowage, the largest surface waterbody in Iron County, and the largest publicly owned water resource in Wisconsin. It is an approximately 14,000-acre reservoir with 212 miles of predominantly wilderness shoreline and a popular recreation destination for fishing and wilderness camping. The 3,138 acre Gile Flowage in northern Iron County is owned by Xcel Energy and managed to supply water for downstream hydroelectric generation. It provides additional wilderness-like recreational opportunities.

There are three types of lakes found in Iron County: spring, seepage, and drainage lakes. Most county lakes are classified as seepage lakes (333), followed by drainage lakes (117), and spring lakes (44). **Table 7** lists the lake types of all Iron County lakes that are 100 acres and larger.

- **Spring Lakes** (groundwater drainage lakes) are fed by groundwater, precipitation, and limited runoff. These lakes have a stream outlet, are usually well buffered against acid rain, and contain low to moderate amounts of nutrients.
- **Seepage Lakes** are fed by precipitation, limited runoff, and groundwater. These lakes do not have a stream outlet and are generally acidic, low in nutrients, and susceptible to acid rain.
- **Drainage Lakes** are fed by streams, precipitation, groundwater, and runoff and are drained by a stream. Nutrient content is usually high, with water exchange happening quite rapidly. Water quality is variable, depending on runoff and human activity in the watershed. Flowages fall within this lake type, but their outflows are regulated by major water control structures.

Table 6: Lake Acreage by Community

Community	Acres
Sherman	11,880.9
Mercer	10,854.5
Pence	2,506.5
Oma	2,078.7
Carey	973.7
Knight	777.1
Anderson	362.6
Saxon	120.3
Kimball	114.2
Gurney	111.2
Hurley	109.0
Montreal	12.3

Source: WDNR

Table 7: Iron County Lakes (100 Acres & Larger)

Name	Community	Surface Acres	Max. Depth Feet	Miles of Shoreline	% Public Shoreline	Private Shoreline	D/SP /S
Flambeau Flowage	Sherman/Mercer	13,545.0	50	211.0	100.00	5	D
Gile Flowage	Pence/Carey	3,384.0	25	26.0	4.57	82	D
Trude	Mercer	754.3	48	6.4	4.00	38	D
Big Pine	Sherman	632.4	22	4.5	0.00	100	D
Fisher	Oma	452.4	25	10.9	0.70	94	D
Long	Oma	373.2	30	11.1	0.00	100	D
Spider	Mercer	360.6	46	8.1	0.47	94	D
Island	Knight/Carey	352.4	17	7.4	0.08	99	D
Pine	Oma	311.9	34	6.4	0.05	99	D
Lake of the Falls	Mercer	302.9	20	6.1	0.00	100	D
Moose	Mercer	269.2	12	4.3	0.00	100	D
Echo	Mercer	219.7	25	3.5	0.08	98	D
Pardee	Oma	206.0	27	3.4	0.00	100	D
Pike	Mercer	194.3	80	3.3	0.00	100	D
Cedar	Mercer	192.6	21	4.4	0.85	81	D
Mercer	Mercer	183.6	24	4.2	0.48	89	D
North Bass	Mercer	179.8	9	2.5	2.50	0	S
Boot	Sherman	177.2	16	3.9	0.00	100	S
Wilson	Mercer	155.0	21	3.3	0.01	100	SP
Lake Six	Mercer	147.4	11	2.2	0.00	100	S
Martha	Mercer	146.3	55	3.4	0.00	100	SP
Grand Portage	Mercer	143.8	31	3.1	0.10	97	D
Upper Springstead	Sherman	126.2	23	2.8	0.00	100	D
Owl	Oma	125.8	38	4.1	0.02	100	D
Rice	Mercer	124.8	20	3.8	0.00	100	D
Sherman	Sherman	123.0	19	-	-	-	-
Virgin	Oma	119.2	45	3.8	0.00	100	D
Catherine	Mercer	117.5	11	4.7	1.96	58	D
Randall	Sherman	114.7	10	2.3	0.85	63	D
Sandy Beach	Sherman	111.7	7	2.2	2.20	0	D
Grant	Mercer/Sherman	107.0	10	2.9	0.00	100	D
Sand	Mercer	101.0	35	2.7	0.00	100	S
Little Pike	Mercer	100.2	19	2.4	0.00	100	SP

Source: Iron County Lakes Classification

Lake Types: D = Drainage Lake S = Seepage Lake SP = Spring Lake

Lake Issues

The following issues were identified in the Iron County Comprehensive Plan. Issues that may cause or contribute to nonpoint source pollution of surface waters are shown with an asterisk (*) and will be a focus of this plan.

Recreational Use/Aesthetics

- Mechanized recreation conflicts
- Pollution from mechanized vehicles*
- Loss of character from overuse and development*

Property Values/Economics

- High costs of shoreland real estate
- Efforts to control density tend to drive property values higher
- Lack of public funds to promote shoreline management

Septic Systems

- Enforcement concerns
- Systems which are failing*
- Establishing sewer and water services
- Providing improvements to sewer and water services
- High cost burden of providing services required and lack of funding available

Water Quality

- Water quality impacts (nonpoint source pollution)*
- Degradation of the shoreline, loss of natural buffers*
- Impervious surface cover*
- Providing incentives to private landowners
- Impacts from outside the local area (atmospheric deposition)
- Lack of comprehensive lake information and data
- Lack of monitoring and funding needed

Public Education

- How to reach people (landowners, lake users, general public)
- Funding to provide education
- Education about cumulative impacts and riparian areas

Planning and Zoning

- A comprehensive strategy to manage lake development
- Resources for enforcement of shoreland laws
- Overpopulation of lakes*
- Impacts of non-lakeshore development on lakes*

Intergovernmental Coordination

- Complex laws
- Different management agencies (County, WDNR)

- Lack of data for decision making

Private Property Rights

- Perception of highly restrictive rules
- Difficulty for land managers and public officials to measure

Wildlife Needs and Human Demands

- Continuing changes and loss of habitat
- Spread of exotic species
- Reduced fish and wildlife populations
- Lack of data

Volunteers and Citizen Monitoring

Volunteer groups, including formal lake and watershed associations and individual property owners assist in the protection and improvement of water quality.

Iron County Lakes and Rivers Alliance, Inc. is a nonprofit organization that formed in 2001 to protect county waters through education and communication. The Superior Rivers Watershed Association (formerly the Bad River Watershed Association) is a nonprofit organization formed in 2002 to involve citizens in assessing, maintaining, and improving watershed integrity. Its coverage area stretches from Red Cliff on the Bayfield peninsula to the Michigan border. Iron County lakes with organized volunteer groups include¹⁰:

Bearskull Lake	Hewitt Lake	
Catherine Lake	Island Lake	Pike Lake
Cedar Lake	Lake of the Falls	Rice Lake
Clear Lake	Little Pike Lake	Spider Lake
Dorothy Lake	Long Lake	Springstead Lake
Echo Lake	Mercer Lake	Turtle-Flambeau Flowage/Trude Lake
Fisher Lake Chain	Lake Michelle	Wilson Lake
Gile Flowage	Pardee Lake	

Volunteer monitoring is encouraged by Iron County to evaluate progress and assess the water quality conditions of surface waters. These efforts build awareness and appreciation for the quality of the county's resources in the resident and non-resident public. **Table 8** is a list of current citizen lake monitoring efforts in Iron County. Additional monitoring efforts include programs such as LoonWatch and invasive species monitoring. Results from these programs will be used where feasible to monitor progress toward maintaining water quality and help determine success of conservation efforts. These and other signs of success will be reported in the annual plan accomplishment report.

¹⁰ The Wisconsin Lake List, <https://www.uwsp.edu/cnr-ap/UWEXLakes/Pages/organizations/lakelist/default.aspx>

Table 8: Iron County Citizen Lake Monitoring Volunteers		
Lake Name	Monitoring Effort	Start, End
AMERICAN LAKE	Secchi	2006
BASS LAKE	Secchi	2010
BEARSKULL LAKE	Secchi & Chemistry	2001, 2015
BOOT LAKE	Secchi & Chemistry	2000, 2015
CAROLINE LAKE	Chemistry	2016 – Present
CEDAR LAKE	Secchi & Chemistry	2004
CHARNLEY LAKE	Secchi & Chemistry	2006 – Present
CIRCLE LILY LAKE	Secchi & Chemistry	1996 – Present
CLEAR LAKE	Secchi & Chemistry	2007 – 2016
CRYSTAL LAKE	Secchi	2006 – 2012
DEER LAKE	Secchi	2009 – Present
DEERTAIL LAKE	Secchi & Chemistry	2003, 2010
ECHO LAKE	Secchi & Chemistry	1992 – Present
FEELY LAKE	Secchi	1998 – 2010
FIRST BLACK LAKE	Secchi & Chemistry	2005 – Present
FISHER LAKE	Secchi	2012 – 2018
FOX LAKE	Secchi & Chemistry	2007 – Present
FRENCH LAKE	Secchi	2015
GILE FLOWAGE	Secchi & Chemistry	1993 – Present
GRAND PORTAGE	Secchi	2002 – Present
HEWITT LAKE	Secchi & Chemistry	2004 – Present
ISLAND LAKE	Secchi & Chemistry	1997 – 200
LAKE EVELYN	Secchi	2010
LAKE OF THE FALLS	Secchi & Chemistry	2004 – Present
LAKE SIX	Secchi & Chemistry	2000 – 2001
LAKE SUPERIOR	Secchi & Chemistry	2007 – 2013
LITTLE MOOSE LAKE	Secchi	2010
LITTLE PIKE LAKE	Secchi & Chemistry	2005 – Present
LITTLE PINE LAKE	Secchi & Chemistry	1999 – Present
LONG LAKE	Secchi & Chemistry	2004 – Present
LOWER SPRINGSTEAD LAKE	Secchi & Chemistry	1998, 2015
MAKI LAKE	Secchi & Chemistry	2017 – Present
MARTHA LAKE	Secchi & Chemistry	2015 – Present
MCCARTHY LAKE	Secchi & Chemistry	2017 – Present
MERCER LAKE	Secchi & Chemistry	2002 – Present
MUSKIE LAKE	Secchi	2015
NORTH BASS LAKE	Secchi & Chemistry	2001
O'BRIEN LAKE	Secchi & Chemistry	2017 – Present
OWL LAKE	Secchi & Chemistry	2003, 2010
PARDEE LAKE	Secchi & Chemistry	1998 – Present
PIKE LAKE	Secchi & Chemistry	2017 – Present
PINE LAKE	Secchi	2011 – Present
RANDALL LAKE	Secchi & Chemistry	2004, 2015
RICE LAKE	Secchi & Chemistry	2009 – Present
SANDY BEACH LAKE	Secchi & Chemistry	2001, 2003
SHERMAN LAKE	Chemistry	1979
SHINE LAKE	Secchi & Chemistry	2012
SPIDER LAKE	Secchi & Chemistry	1998 – Present
STONE LAKE	Secchi	2003 – 2016
TURTLE-FLAMBEAU FLOWAGE – BARABOO LAKE	Secchi & Chemistry	1998 – Present
TURTLE-FLAMBEAU FLOWAGE – BASTINE LAKE	Chemistry	2009
TURTLE-FLAMBEAU FLOWAGE – BIG WATER	Secchi & Chemistry	1998 – Present
TURTLE-FLAMBEAU FLOWAGE – MURRAY'S LANDING	Secchi & Chemistry	2011 – Present
TURTLE-FLAMBEAU FLOWAGE – TOWNLINE LAKE	Secchi & Chemistry	2009 – Present
TURTLE-FLAMBEAU FLOWAGE – TRUDE LAKE	Secchi & Chemistry	2009 – Present
TURTLE FLAMBEAU FLOWAGE – TURTLE RIVER INLET	Secchi & Chemistry	2011 – Present
UPPER SPRINGSTEAD LAKE	Secchi & Chemistry	2015 – Present
UPSON LAKE	Secchi & Chemistry	2017 – Present
WEBER LAKE	Secchi & Chemistry	2013 – Present
WILSON LAKE	Secchi & Chemistry	2012 – Present

Source: Iron County Land and Water Conservation Department

Streams

Iron County has 724 miles of perennial streams that flow year-round and numerous intermittent tributary streams, which only flow during wetter times of the year. Much of the flow in intermittent streams occurs from surface runoff or from recharge due to a high water table.

Northern Rivers Initiative

The Northern Rivers Initiative (NRI) is a WDNR shoreland habitat protection project that provides protection options for northern Wisconsin streams and rivers that have high ecological significance, outstanding natural scenic beauty, or special recreational values. Nearly 1,500 stream segments within 20 counties were evaluated and prioritized based on their individual natural resource, recreational, and cultural values. Stream segments were then ranked based on the following scoring evaluation criteria:

- **Natural Resource Values:** Natural condition of the stream corridor, road density, dam impacts, point source discharge impacts, threatened, endangered and sensitive species, fish community structure and habitat, wildlife, scenic quality
- **Recreational Values:** Fishing, canoeing/kayaking, wildlife viewing, hunting/trapping
- **Cultural Resource Values:** Subsistence harvesting, historic structures & archaeological sites

The NRI can be used to establish local river and watershed protection priorities. NRI identified streams should be targeted for management that will protect their unique characteristics. This may include shoreline acquisition (very limited acres from willing sellers) to volunteer management plans. Local regulations such as shoreland zoning may be appropriate tools for specific streams.¹¹ **Table 9** shows NRI ranked streams in Iron County. The full scoring report for each stream can be found in the WDNR publication: Northern Rivers Initiative: Integrated Ecosystem Management Project for Shoreland Habitat Protection.

- **Segment** identifies the stream portion that was selected and ranked based on specific data and subjective analysis related to the stream's biological integrity, scenic and recreational values, and potential threats.
- **Basin Rank** indicates the stream ranking within a particular basin (Lake Superior or Upper Chippewa). There were 210 identified streams (multiple counties) within the Lake Superior Basin and 301 in the Upper Chippewa Basin.
- **Overall Rank** indicates the stream's relative ranking among the 1,493 streams identified within 20 counties in northern Wisconsin.
- **Total Score** is the sum of the natural resource, recreational and cultural value scores.

¹¹ Ibid. 5-26.

Table 9: NRI Stream Ranking and Scoring

Stream	Segment	Basin Rank (201)	Overall Rank (1,493)	Total Score	Basin	Community
Alder Creek	Middle of T45N,R1E,S4 upstream	40	252	58.55	LS	Anderson, Knight
Alder Creek	Downstream to middle of T45N,R1E,S4	45	284	57.55	LS	Kimball, Knight
Apple Creek	All	87	690	47.17	LS	Anderson, Knight
Ballou Creek	MaCarthy Lake to Ash-Iron border	76	589	49.64	LS	Anderson
Barr Creek	All	146	1166	35.97	LS	Gurney
Bell Creek	All	96	769	45.43	LS	Saxon
Boomer Creek	All	34	215	60.28	LS	Kimball, Saxon
Flood Creek	S of Rd crossing T 46N, R2E, S7	125	978	40.68	LS	Kimball
Flood Creek	N of Rd crossing T 46N, R2E, S7	80	619	49.01	LS	Kimball
Fourche Creek	N of RR crossing	94	747	45.89	LS	Kimball, Saxon
Fourche Creek	Between RR cr.	149	1184	35.37	LS	Kimball
Fourche Creek	S of RR crossing	150	1188	35.3	LS	Kimball
Friberg Creek	All	123	972	40.85	LS	Gurney, Saxon
Graveyard Creek	All	49	313	56.73	LS	Gurney, Saxon
Javorsky Creek	All	107	860	43.31	LS	Anderson
Kaminski Creek	All	132	1049	38.97	LS	Kimball, Hurley
Laymans Creek	All	26	152	63.68	LS	Carey, Oma
LeClair Creek	All	74	566	50.23	LS	Knight
Montreal River	Origin to Business Hwy 2	54	333	55.95	LS	Oma, Hurley
Montreal River	to Lake Superior	58	391	54.54	LS	Saxon, Kimball
Oronto Creek	Upstream of CTH A to junction with Spoon Ck	66	498	51.81	LS	Saxon
Oronto Creek	Origin to Spoon Ck	47	287	57.38	LS	Gurney, Saxon
Potato River	All	15	84	68.66	LS	Anderson, Gurney, Knight
Tyler Forks	All	6	31	74.19	LS	Anderson, Gurney, Knight
Unnamed (T45N,R2E,S33)	All	104	843	43.64	LS	Pence
Vaughn Creek	All	86	685	47.31	LS	Gurney, Saxon
W. Fork Montreal River	All	59	392	54.52	LS	Carey, Pence, Montreal, Kimball
Augustine Creek	Above Augustine Lake Rd	117	642	48.44	UC	Knight
Bear River	All	16	51	71.75	UC	Sherman
E fork Chippewa River	Origin to T42N, R01E,S17-18 line	79	436	48.46	UC	Knight
Flambeau River	T-F Flowage to Upper Park Falls	7	27	74.86	UC	Sherman, Mercer
Flambeau River	T-F Flowage to County line	162	868	43	UC	Sherman

Stream Name	Ranking	Score	UC	UC	UC	UC
Hay Creek	All	99	529	50.92	UC	Sherman
Little Turtle River	All	91	484	52.25	UC	Mercer
Magee Creek	All	93	508	51.48	UC	Anderson, Knight
Manitowish River	Rest Lake Dam to T-F Flowage	18	55	71.43	UC	Sherman, Mercer
Pardee Creek	All	119	658	47.95	UC	Oma
Springstead Creek	All	101	557	50.31	UC	Sherman
Swamp Creek	All	63	302	57.08	UC	Carey, Mercer
Turtle River	All	39	196	61.13	UC	Oma, Mercer

Source: WDNR

Shorelands

Shorelands are areas adjacent to surface water within 1,000 feet of the ordinary high water mark (OHWM) of a lake or pond and areas within 300 feet of the OHWM of a river or stream on the landward edge of the floodplain, whichever distance is greater.

The State of Wisconsin requires counties to adopt and enforce minimum protection through shoreland zoning. The Iron County Shoreline Zoning Ordinance was revised in 2009 to create a “Shoreland Buffer Protection Area” within 35 feet of the OHWM. No filling, grading, or excavating is allowed in this area. In 2016 the Shoreland Zoning Ordinance was revised to comply with the new shoreland provisions enacted under the 2015-2017 biennial budget (Wisconsin Act 55), which restricted counties from imposing standards more restrictive than the state shoreland standards. This terminated the Lake Classification Zoning and generally decreased structure setbacks. Act 55 does not prohibit counties from enacting shoreland zoning ordinances that regulate matters that are not regulated by NR 115, such as coastal bluff erosion setback standards.

Wetlands

In 1978 the Wisconsin legislature defined wetlands as areas where water is at, near, or above the land surface long enough to be capable of supporting aquatic life or hydrophytic (water-loving) vegetation and has soils indicative of wet conditions. Some of the more prominent types of wetlands found in Wisconsin include:

- **Aquatic Bed:** Plants growing entirely on or in a water body no deeper than 6 inches. Plants may include pondweed, duckweed, lotus, and water lilies.
- **Marshes:** Characterized by standing water and dominated by cattails, bulrushes, pickerelweed, lake sedges, and/or giant bur-reed.
- **Sedge or "Wet" Meadows:** Have saturated soils rather than standing water, more often than not. Sedges, grasses, and reeds are dominant but may also contain blue flag iris, marsh milkweed, mint, and several species of goldenrod and aster.

Name	Approximate Acres
Emergent/Wet Meadow	2,915.9
Flats/Unvegetated Wet Soil	3.3
Forested	109,894.6
Scrub/Shrub	37,418.1
Total	150,301.1

Source: WDNR-WWI

- **Scrub/Shrub:** Bogs and alder thickets are characterized by woody shrubs and small trees such as tag alder, bog birch, willow, and dogwood.
- **Forested:** Characterized by trees twenty feet or more in height such as tamarack, white cedar, black spruce, elm, black ash, green ash, and silver maple.

The Wisconsin Wetland Inventory (WWI), completed in 1985, defined all Iron County wetland areas larger than two acres. According to the WWI, 31.8% of Iron County is classified as wetland. This is approximately 2.8% of all wetlands in the state. Forested wetlands are the most prominent wetland. They include bogs and forested floodplain complexes containing tamarack, white cedar, black spruce, black ash, green ash, and silver maple. They are well distributed throughout the southern portion of the county and are especially common along river and stream corridors. Scrub/shrub wetlands are less common. These include bogs and alder thickets characterized by woody shrubs and small trees such as tag alder, bog birch, willow, and dogwood. Emergent/wet meadow and aquatic bed wetlands comprise smaller portions of the county’s overall wetland base (**Table 10**). Most Iron County wetlands are found in the Towns of Mercer and Sherman (**Table 11**) which are within the Flambeau watershed (**Map 4**).

Table 11: Wetlands by Community

Community	Acres
Mercer	40,632.1
Sherman	34,268.2
Knight	20,684.1
Anderson	13,684.2
Oma	13,132.9
Carey	11,647.1
Pence	6,128.5
Saxon	4,119.2
Kimball	3,405.9
Gurney	2,122.3
Hurley	213.1
Montreal	120.0

Source: WDNR

Wetlands in Iron County are regulated under the Iron County Shoreland Zoning Ordinance (Shoreland-Wetland District). This district is comprised of shorelands designated as wetlands on the Wisconsin Wetland Inventory maps.

Invasive Species

Invasive plants, animals, and pathogens are taking a toll on Wisconsin’s lakes, rivers, and landscapes. The Iron County Land and Water Conservation Department has made it a priority to work with citizens and partners to prevent the introduction and slow the spread of invasive species. Through educational outreach, strategic planning, and active management, we are protecting our environment and economy from invasive species.

The invasive species listed below are of concern to Iron County, but are not meant as an all-inclusive listing of all prevention and management goals. **Map 8** indicates all invasive species that the LWCD has identified in Iron County. For more information about invasive species: <https://dnr.wi.gov/topic/invasives/>.

Aquatic Invasive Species

Aquatic invasive species (AIS) pose a threat to surface water resources. They degrade native habitats, out-compete native species, impede recreational opportunities, and

impact local tourist-based businesses such as resorts and taverns. Iron County with its 495 lakes, 222 named streams, and 7 miles of Lake Superior shoreline, along with extensive wetlands, rivers and streams, make the perfect environment for invasive species to invade. Therefore, prevention and control of AIS is a high priority. Based on location, access, and threat, the following are species of concern for Iron County:

AIS in **bold** have been documented in Iron County inland waters. AIS with an asterisk (*) have been documented in Lake Superior.

AIS of Concern:

- **Banded & Chinese Mystery snail** (*Cipangopaludina chinensis* & *Viviparus georgianus*)
- **Curly-leaf Pondweed** (*Potamogeton crispus*)
- **Eurasian Watermilfoil** (*Myriophyllum spicatum*)
- **Freshwater Jellyfish** (*Craspedacusta sowerbyi*)
- Non-native Phragmites (*Phragmites australis*)*
- **Purple Loosestrife** (*Lythrum salicaria*)
- Rainbow Smelt (*Osmerus mordax*)*
- Round Goby (*Neogobius melanostromus*)*
- **Rusty Crayfish** (*Orconectes rusticus*)
- **Spiny Waterflea** (*Bythotrephes cederstroemi*)
- **Yellow Iris** (*Iris pseudacorus*)
- Zebra Mussel (*Dreissena polymorpha*)*

Terrestrial Invasive Species

Terrestrial invasive species are equally damaging to habitat, native species, and recreation. Invasive terrestrial plants and animals have potentially devastating consequences to forest, farm and wetland ecosystems if their presence is ignored. Like AIS, terrestrial invasive species management is prioritized based on location, access, and threat.

Terrestrial invasive species in **bold** have been documented in Iron County.

Terrestrial Invasive Species of Concern:

- **Asiatic/Amur Honeysuckle** (*Lonicera maackii*)
- **Common/Glossy Buckthorn** (*Rhamnus cathartica* and *R. frangula*)
- Emerald Ash Borer (*Agrilus planipennis*)
- **European Swamp Thistle** (*Cirsium palustre*)
- **Garlic Mustard** (*Alliaria petiolata*)
- **Giant, Japanese, & Bohemian Knotweed** (*Reynoutria sachalinensis*, *Polygonum cuspidatum*, *Reynoutria x bohemica*)
- **Giant Hogweed** (*Heracleum mantegazzianum*)
- **Gypsy Moth** (*Lymantria dispar*)

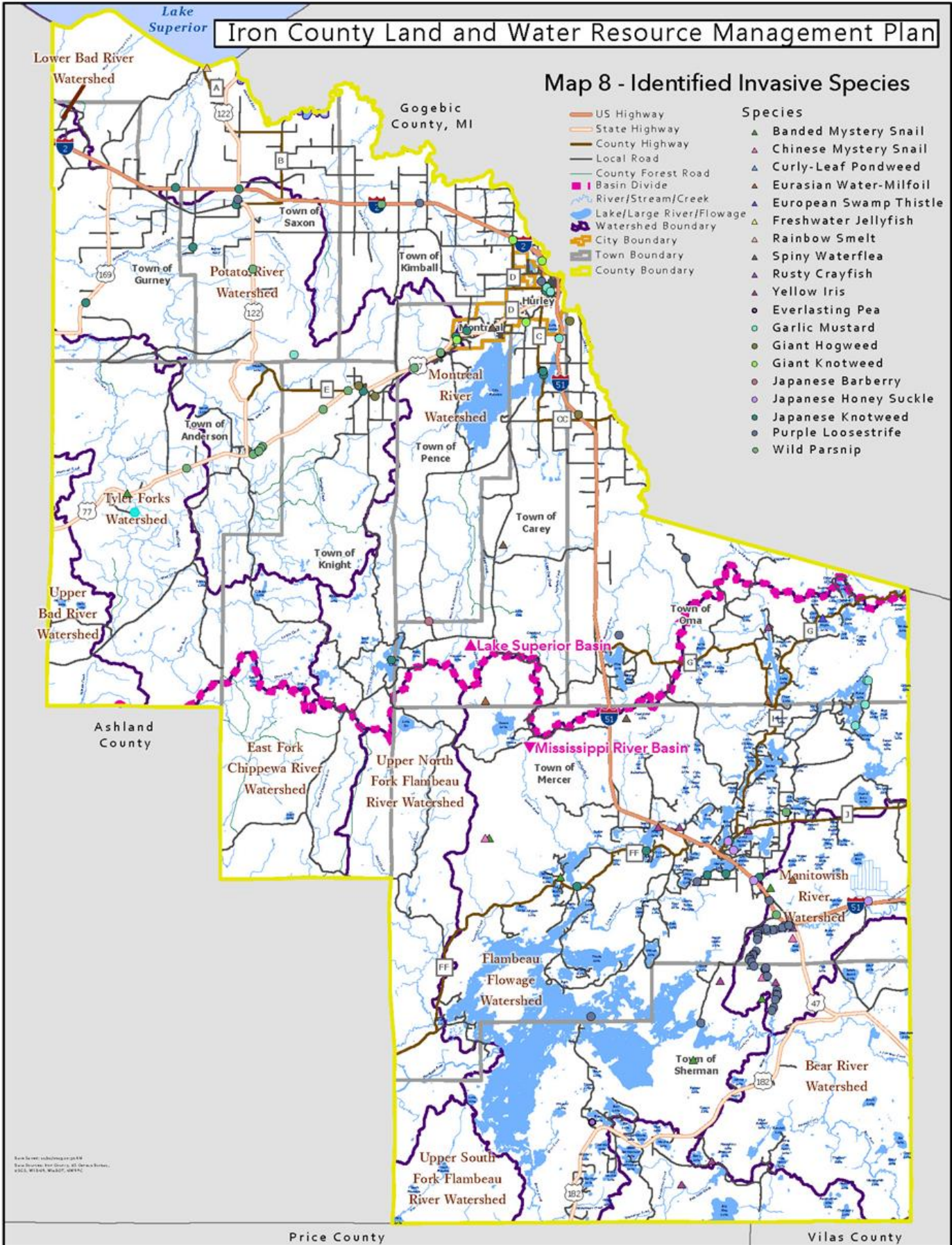
- Invasive Earthworms (*Amyntas*, *Acanthodrilidae*, *Lumbricidae*, *Megascoelidae spp*)
- Japanese Barberry (*Berberis thunbergii*)
- Leafy Spurge (*Euphorbia esula* & *Euphorbia cyparissias*)
- Reed Canary Grass (*Phalaris arundinacea*)
- Spotted Knapweed (*Centaurea maculosa*)
- Wild Parsnip (*Pastinaca sativa*)

Northwoods Cooperative Weed Management Area (NCWMA)

The NCWMA is a collaboration of federal, state, tribal, and local agency staff working on controlling and preventing the spread of terrestrial and aquatic invasive species in Iron, Ashland, Bayfield, and Douglas Counties. Iron County has been an active partner of the NCWMA since 2007. The Cooperative organizes several field days throughout the summer across the four counties to implement invasive species control activities. Treatment species of control in Iron County include but are not limited to purple loosestrife, knotweed (giant, Japanese, and Bohemian), garlic mustard, wild parsnip, and giant hogweed.

Iron County Land and Water Resource Management Plan

Map 8 - Identified Invasive Species



- US Highway
- State Highway
- County Highway
- Local Road
- County Forest Road
- Basin Divide
- River/Stream/Creek
- Lake/Large River/Flowage
- Watershed Boundary
- City Boundary
- Town Boundary
- County Boundary

- Species**
- ▲ Banded Mystery Snail
 - ▲ Chinese Mystery Snail
 - ▲ Curly-Leaf Pondweed
 - ▲ Eurasian Water-Milfoil
 - ▲ European Swamp Thistle
 - ▲ Freshwater Jellyfish
 - ▲ Rainbow Smelt
 - ▲ Spiny Waterflea
 - ▲ Rusty Crayfish
 - ▲ Yellow Iris
 - Everlasting Pea
 - Garlic Mustard
 - Giant Hogweed
 - Giant Knotweed
 - Japanese Barberry
 - Japanese Honey Suckle
 - Japanese Knotweed
 - Purple Loosestrife
 - Wild Parsnip

Map 8 was created using GIS software. Data sources include USGS, Wisconsin DNR, and other local agencies.

Rare, Threatened, Endangered Species and Natural Communities

Wisconsin's Natural Heritage Inventory Program (NHI) locates and documents rare species and natural communities, including state and federal endangered and threatened species. The NHI is the most up-to-date and comprehensive database on the occurrences of rare species and natural communities available and is exempt from the Wisconsin Open Records Law due to the vulnerable nature of these sensitive resources. Wisconsin law prohibits the taking, transport, possessing, or selling of any plant or animal listed as endangered. In Wisconsin, these include species that are listed on the NHI. Federal law also prohibits the taking, direct killing or other use activities that may be detrimental to endangered species. The US Fish and Wildlife Service maintains the Federal Register of endangered plants and animals.¹²

There has been no comprehensive endangered resource surveys completed in Iron County, although the WDNR has completed localized rare plant and animal species and habitat surveys that identified some new rare species and habitats. As a result, NHI data may be incomplete. It is known that at least three plant species of special concern are found in the Turtle-Flambeau Flowage's patterned bog community.¹³ The Turtle-Flambeau Flowage is also home to the largest concentration of bald eagles, osprey, and loon breeding pairs in Wisconsin. Merlins and a black tern colony are also present on the flowage.

The Wisconsin NHI working list is revised as new information about species becomes available. Determination of specific locations in Iron County requires coordination between the county and WDNR. **Table 12** lists known rare, threatened, and endangered species and natural communities in Iron County. Protection categories as designated by the WDNR: END=Endangered; THR=Threatened; SC=Special Concern. WDNR and federal regulations regarding special concern species range from full protection to no protection. Special concern species are those species to focus attention on before they become threatened or endangered. The current categories and their respective levels of protection are: SC/P=Fully protected; SC/N=No laws regulating use, possession, or harvesting; SC/H=Take regulated by establishment of open closed seasons; SC/FL=Federally protected as endangered or threatened, but not so designated by WDNR; SC/M=Fully protected by federal and state laws under the Migratory Bird Act.

¹² Ibid, 5-36.

¹³ *Turtle-Flambeau Scenic Waters Area Master Plan & Environmental Assessment*, WI Department of Natural Resources, March 1995.

Table 12: Iron County NHI Data

Common Name	WI Status	Common Name	WI Status
Community Complexes		Rare Birds (Continued)	
Patterned Peatland		Black-Backed Woodpecker	SC/M
Herbaceous Communities		Boreal Chickadee	SC/M
Emergent Marsh		Ruby-Crowned Kinglet	SC/M
Submergent Marsh		Rare Butterflies & Moths	
Northern Sedge Meadow		West Virginia White	SC/N
Open Bog		Rare Caddisflies	
Poor Fen		A Humpless Casemaker Caddisfly	SC/N
Shrub Communities		A Caddisfly	SC/N
Muskeg		Rare Dragonflies & Damselflies	
Shrub-Carr		Mottled Darner	SC/N
Northern Forests		Rare Fishes	
Black Spruce Swamp		Lake Sturgeon	SC/H
Boreal Forest		Pugnose Shiner	THR
Mesic Cedar Forest		Rare Grasshoppers & Allies	
Northern Dry Forest		Scudder's Short-Winged Grasshopper	SC/N
Northern Dry-Mesic Forest		Rare Lichens	
Northern Hardwood Swamp		Naked Kidney Lichen	SC
Northern Mesic Forest		Fringed Rosette Lichen	SC
Northern Tamarack Swamp		Rare Mammals	
Northern Wet Forest		Gray Wolf	SC/FL
Northern Wet-Mesic Forest		Big Brown Bat	THR
Primary Habitats - Bedrock Dependent		Northern Flying Squirrel	SC/P
Moist Cliff		American Marten	END
Lakes & Ponds		Little Brown Bat	THR
Ephemeral Pond		Northern Long-Eared Bat	THR
Lake-Deep, Soft, Seepage		Woodland Jumping Mouse	SC/N
Lake-Deep, Very Soft, Seepage		Rare Mussels & Clams	
Lake-Shallow, Soft, Drainage		Elktoe	SC/P
Lake-Shallow, Soft, Seepage		Eastern Elliptio	SC/P
Lake-Soft Bog		Rare Plants	
Lake-Spring		Ram's Head Lady's Slipper	THR
Springs & Streams		Linear-Leaved Sundew	THR
Stream-Fast, Hard, Warm		Male Fern	SC
Stream-Slow, Hard, Cold		Robbins' Spike-Rush	SC
Stream- Slow, Hard, Warm		Russet Cotton-Grass	SC
Miscellaneous Elements		Swamp Bedstraw	SC
Bat Hibernaculum	SC	Giant Rattlesnake Plantain	SC
Rare Aquatic & Terrestrial Snails		Broad-Leaved Twayblade	THR
Appalachian Pillar	SC/N	Smith's Melic Grass	END
Cherrytone Drop	THR	Large-Leaved Sandwort	END
Boreal Top	SC/N	Pale Beardtongue	SC
Rare Beetles		Pale Green Orchid	THR
A Predacious Diving Beetle	SC/N	Algae-Leaved Pondweed	THR
Rare Birds		Vasey's Pondweed	SC
Northern Goshawk	SC/M	Brown Beak-Rush	SC
LeConte's Sparrow	SC/M	Northeastern Bladderwort	SC
American Bittern	SC/M	Oregon Woodsia	SC
Swainson's Thrush	SC/M	Rare Reptiles	
Henslow's Sparrow	THR	Wood Turtle	SOC
Black Tern	END	Rare Stoneflies	
Olive-Sided Flycatcher	SC/M	A Perlodid Stonefly	SC/N
Spruce Grouse	THR	Source: WDNR Last Revised 4/19/2019	
Canada Jay	SC/M		

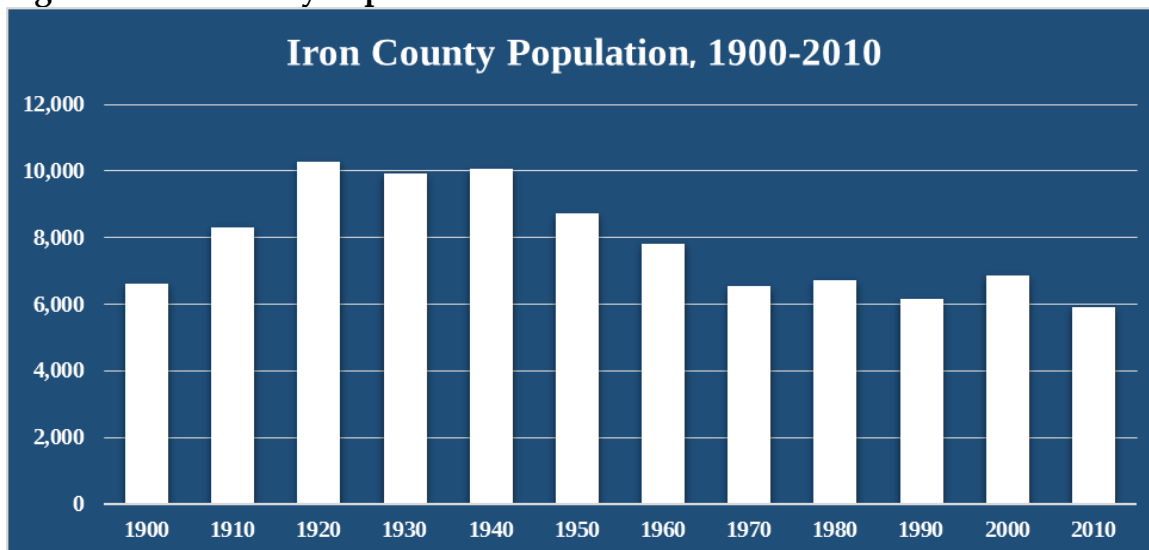
Cultural Resources

Cultural and historic sites and features are important county resources. These resources provide a critical link between the present and the past. Conservation planning on individual sites should address cultural resources to assure continued preservation of historic features, archeological sites, and linkages with soil and water resources¹⁴. More detailed information about these cultural resources can be found in the Wisconsin Architecture & History database hosted by the Wisconsin Historical Society: <http://www.wisconsinhistory.org/ahi/>.

Population and Housing

Since the creation of Iron County from Ashland and Oneida Counties in 1893, the county's population has fluctuated with changing economic conditions (**Figure 1**). The population peaked in the 1920s and again in the 1940s, reflecting the boom in the mining industry. By the late 1960s, most mining had ceased, and many residents had moved out of the county to find work in other locations. The population steadily declined through the 1970s, slightly rebounding in 1980 before reaching a historical low of 5,916 in 2010. Factors contributing to the county's population decline include an aging population, declining birth rates, out-migration, and low recruitment of new residents.

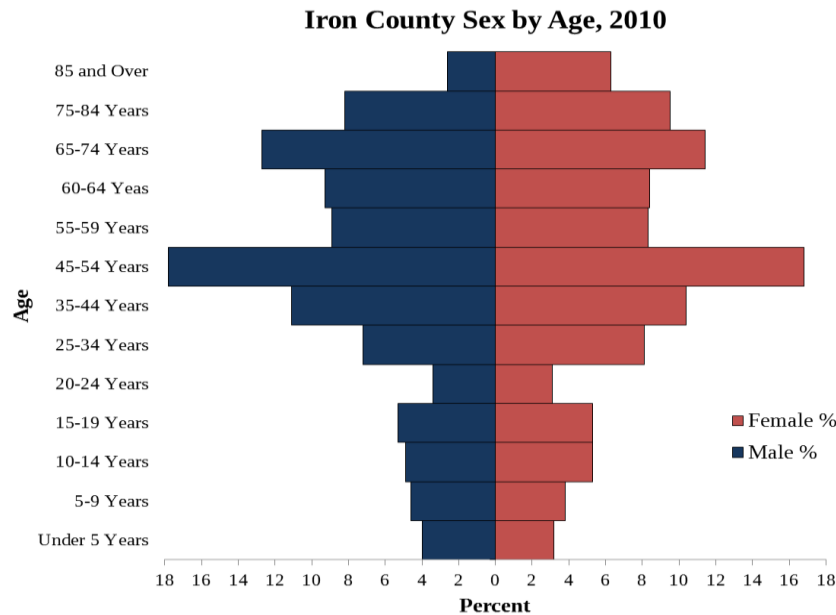
Figure 1: Iron County Population 1900-2010



The population distribution of Iron County residents across age classes is reflective of many rural counties in northern Wisconsin. As depicted in **Figure 2**, sex by age shows a top-heavy structure, indicative of an aging population. A classical pyramidal shape is indicative of a young, rapidly growing population.

¹⁴ Iron County Comprehensive Land Use Plan 2025, op.cit, 5-46-5-47

Figure 2: Iron County Population Pyramid



Iron County has 663 millennials (ages 25-39). The national average for an area this size is 1,167. Retirement risk is high in Iron County. The national average for an area this size is 1,643 people 55 or older, while there are 2,856 in Iron County. Despite a declining population, total housing units in Iron County have increased by 18%, with a 36% increase in seasonal, recreational or occasional use housing units (Table 13). Also indicative of growth is the trend in housing and development data from the Iron County Zoning Department. Zoning data from 2008 to 2018 indicates a general upward trend in growth, with its peak in 2016 (Table 15).

Table 13: Historical Population 1950-2010

Municipality	1950	1960	1970	1980	1990	2000	2010	Absolute Change 1950-2010	Percent Change 1950-2010
Towns									
Town of Anderson	122	110	92	91	69	61	58	-64	-52.5%
Town of Carey	273	221	194	179	175	191	163	-110	-40.3%
Town of Gurney	161	129	135	153	143	158	159	-2	-1.2%
Town of Kimball	607	514	468	499	513	540	498	-109	-18.0%
Town of Knight	518	417	324	294	265	284	211	-307	-59.3%
Town of Mercer	974	1,048	1,003	1,425	1,325	1,732	1,407	+433	+44.5%
Town of Oma	396	317	265	298	260	355	289	-107	-27.0%
Town of Pence	371	314	234	191	181	198	163	-208	-56.1%
Town of Saxon	655	483	371	362	335	350	324	-331	-50.5%
Town of Sherman	164	153	152	336	267	336	290	+126	+76.8%
Cities									
City of Hurley	3,034	2,763	2,418	2,015	1,782	1,818	1,547	-1,487	-49.0%
City of Montreal	1,439	1,361	877	887	838	838	807	-601	-41.8%
Iron County	8,714	7,830	6,533	6,730	6,153	6,861	5,916	-2,798	-32.1%

Source: US Census Bureau, 1950, 1960, 1970, 1980, 1990, 2000, 2010

Table 14: Housing Stock 1980-2010

Iron County	1980	1990	2000	2010	Percent Change
Total Housing Units	5,098	5,243	5,706	5,999	+18%
Total Occupied Housing Units (Households)	2,664	2,602	3,083	2,822	+6%
Owner-Occupied Units	2,070	2,061	2,489	2,271	+10%
Renter Occupied Units	594	541	594	551	-7%
Vacant Units	432	696	464	454	+5%
Seasonal, Rec, or Occasional Use Units	2,002	1,945	2,159	2,723	+36%
Average Household Size	2.48	2.32	2.19	2.17	-13%

Source: US Census Bureau, 1980, 1990, 2000, 2010

Table 15: Housing and Development Trends

Growth Indicators	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Land Use Permits	34	29	28	26	22	20	29	28	25	27	30	298
Residential Additions	41	37	34	36	50	36	28	36	39	30	35	402
Sanitary Permits	53	53	57	53	59	57	50	73	131	107	82	775
Conditional Use Hearing	18	33	31	22	27	22	26	27	38	24	31	299
Rezone Petitions	4	6	1	5	4	10	12	11	12	13	10	88
Total	150	158	151	142	162	145	145	175	245	201	188	1,862

Source: Iron County Planning & Zoning Department

Population and Housing Projections

Projections for Iron County from 2005 to 2030 indicate Iron County will experience a slow decline in population over the next 25 years. Since 1980 the County experienced around an 18% increase in total housing units as seen in **Table 14**. Projections suggest continued modest growth in housing units for the county to the year 2025.¹⁵ Based on the listed growth indicators in **Table 15**, there was a 25.3% increase in housing and development between 2008 and 2018.

¹⁵ Ibid 1-6

Economic Characteristics

Between 2014 and 2019, job growth in Iron County increased by about 2%, with 1,899 jobs in 2014 and 1,928 jobs in 2019 (**Table 16**). The Government industry employed the highest number of residents, but also saw a 1% decrease in jobs between 2014 and 2019. Health Care and Social Assistance employed the second largest number of residents, and saw a 44% increase in employment between 2014 and 2019.

Table 16: Employment by Industry

Industry	2014 Jobs	2019 Jobs	2014-2019 Change	2014-2019 % Change
Government	354	350	(4)	(1%)
Health Care and Social Assistance	235	338	103	44%
Accommodation and Food Services	243	249	6	2%
Construction	194	236	42	22%
Retail Trade	254	217	(37)	(15%)
Manufacturing	176	184	8	5%
Professional, Scientific, and Technical Services	48	55	7	15%
Arts, Entertainment, and Recreation	44	42	(2)	(5%)
Wholesale Trade	52	41	(11)	(21%)
Other Services (except Public Administration)	52	38	(14)	(27%)
Finance and Insurance	34	35	1	3%
Administrative and Support and Waste Management and Remediation Services	28	35	7	25%
Real Estate and Rental and Leasing	81	32	(49)	(60%)
Agriculture, Forestry, Fishing and Hunting	28	32	4	14%
Transportation and Warehousing	40	25	(15)	(38%)
Information	13	12	(1)	(8%)
Educational Services	<10	<10	Insf. Data	Insf. Data
Management of Companies and Enterprises	<10	<10	Insf. Data	Insf. Data
Mining, Quarrying, and Oil and Gas Extraction	18	0	(18)	(100%)
Utilities	0	0	0	0%
Unclassified Industry	0	0	0	0%
Total	1,899	1,928	29	2%

Source: Emsi Q4 2019 Data Set

Annual average wages earned by workers in Iron County in 2017 fell short of the statewide average for all industry sectors. As shown in **Table 17**, employees in the

Government industry earned the highest annual wage at \$60,872, followed by the Health Care and Social Assistance industry with an average annual wage of \$41,628.

Gross Regional Product (GRP) is a measure of the size of a region's economy. GRP is defined as the market value of all final goods and services produced within a metropolitan area in a given period of time.

Table 17: Annual Average Wages by Industry

Industry	Average Earnings	2018 GRP
Government	\$60,872	\$22,940,686
Health Care and Social Assistance	\$41,628	\$15,099,533
Accommodation and Food Services	\$17,550	\$8,855,624
Construction	\$43,417	\$13,921,312
Retail Trade	\$27,189	\$11,683,680
Manufacturing	\$44,367	\$13,266,863
Professional, Scientific, and Technical Services	\$42,769	\$4,033,200
Arts, Entertainment, and Recreation	\$47,880	\$8,664,453
Wholesale Trade	\$40,968	\$8,242,187
Other Services (except Public Administration)	\$24,893	\$2,024,756
Finance and Insurance	\$47,937	\$4,382,531
Administrative and Support and Waste Management and Remediation Services	\$32,756	\$1,743,309
Real Estate and Rental and Leasing	\$35,311	\$5,634,717
Agriculture, Forestry, Fishing and Hunting	\$43,189	\$3,574,235
Transportation and Warehousing	\$59,859	\$2,699,709
Information	\$39,176	\$2,728,955
Educational Services	Insf. Data	\$93,101
Management of Companies and Enterprises	Insf. Data	\$107,709
Mining, Quarrying, and Oil and Gas Extraction	\$0	\$1,586,256
Utilities	\$0	\$571,837
Unclassified Industry	\$0	Insf. Data
Total	\$40,711	

Source: Emsi Q4 2019 Data Set

Land Use & Management

Land use in Iron County is predominantly rural. Much of the county outside of the Hurley-Montreal urban area has very low density development. The outlying lands are characterized by large tracts of forestland and other natural areas with isolated residential development. Several small unincorporated communities are located throughout the county. The dominant land use category, Woodland/Other Natural Areas, includes nearly 97% of county lands. Large tract landowners such as Iron County, the State of Wisconsin, and industrial forest companies play a major role in land use and management. **Table 18** shows existing land use. **Map 8** shows geographic distribution of general ownership.

Table 18: Existing Land Use Categories

Category	Acres	Percent
Abandoned Commercial	2	<0.01%
Agriculture	7,999	1.56%
Commercial	173	0.03%
Communication/Utilities	6	<0.01%
Governmental/Institutional	100	0.02%
Industrial	266	0.05%
Open Space	3,073	0.60%
Parks & Recreation	414	0.08%
Residential	1,446	0.28%
Urban	3,558	0.69%
Woodlands/Other Natural Areas	496,505	96.68%
Total	513,542	100.0%

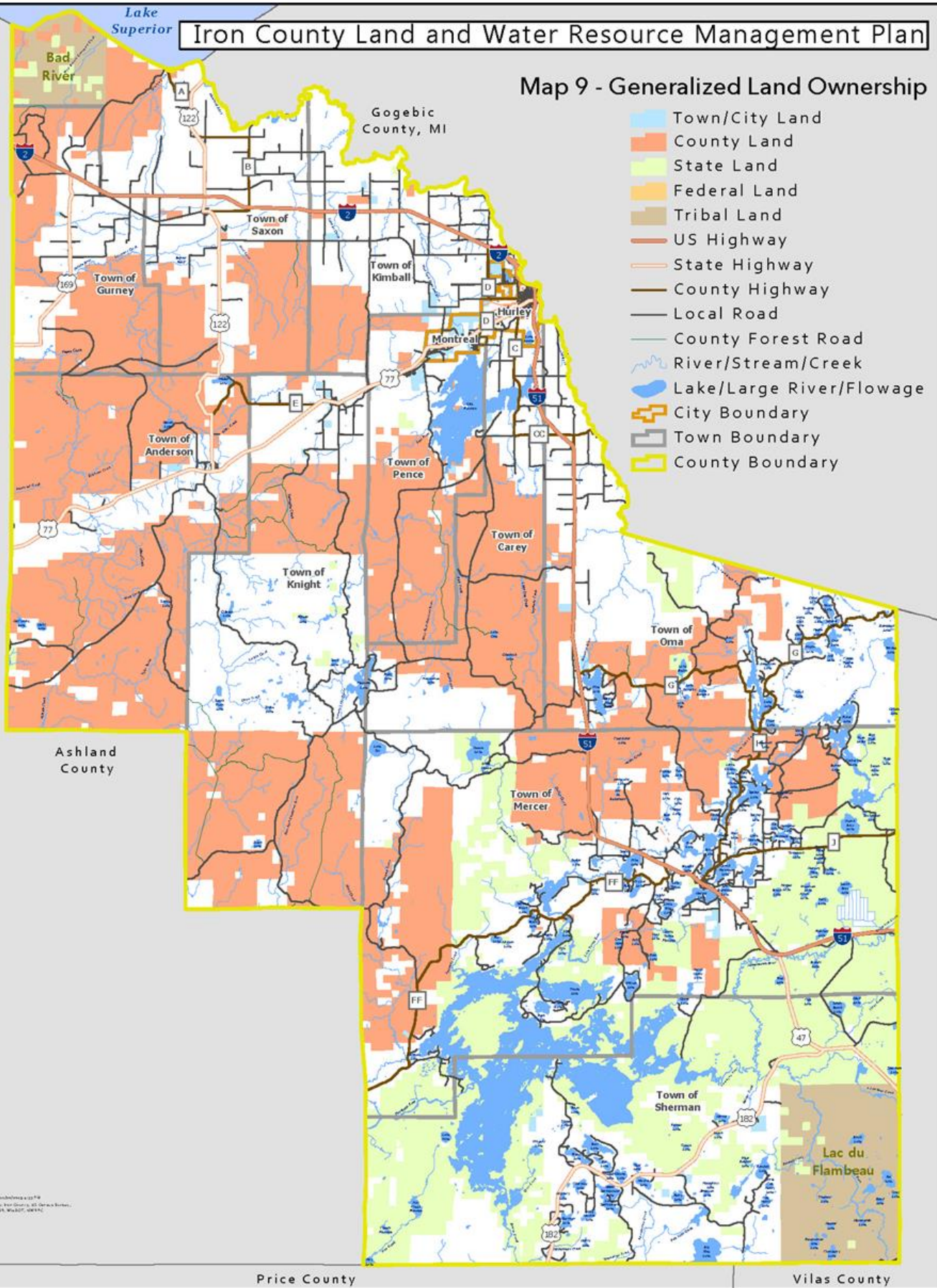
Source: NWRPC, Iron County

Woodlands

The Woodland category includes private and public forestlands as well as natural areas, reserves, and other habitat and wildlife management areas (**Map 10**). Forests provide diverse plant and animal habitat, sustainable economic benefits, and opportunities for recreation. A growing trend and concern across northern Wisconsin, including Iron County, is fragmentation, or parceling of private forestlands. Forestry's influence on the landscape and the relationship between ownership and cover type is demonstrated in **Maps 9 and 10**.

Iron County Land and Water Resource Management Plan

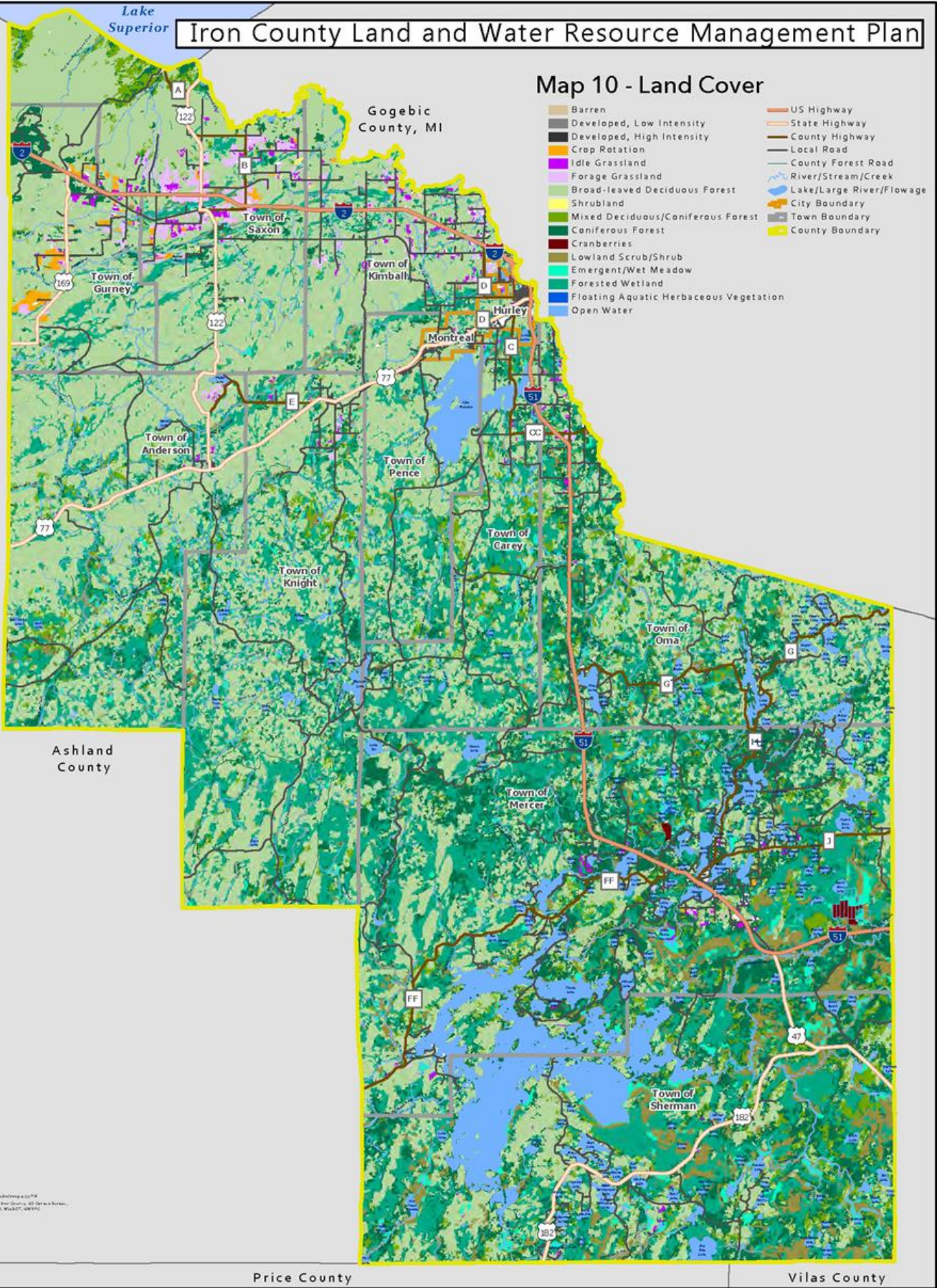
Map 9 - Generalized Land Ownership



Scale: 1:50,000
 Date: 10/15/2010
 Author: [illegible]
 [illegible]

Iron County Land and Water Resource Management Plan

Map 10 - Land Cover



Base Source: esri.com 4/12/18
 Base Source: Iron County, MI Geospatial Bureau
 2018, 2019, 2020, 2021

Recreation

Iron County is a vacationland destination and ranks 65th in the state for traveler spending.¹⁶ Businesses that cater to tourism, such as motels, resorts, campgrounds, B&Bs, and retail stores complement the many area attractions that include miles of ATV, snowmobile, bike, and cross-country ski trails, ski hills, parks, golf courses, historic sites, Lake Superior, and the county's many lakes, rivers, and waterfalls.

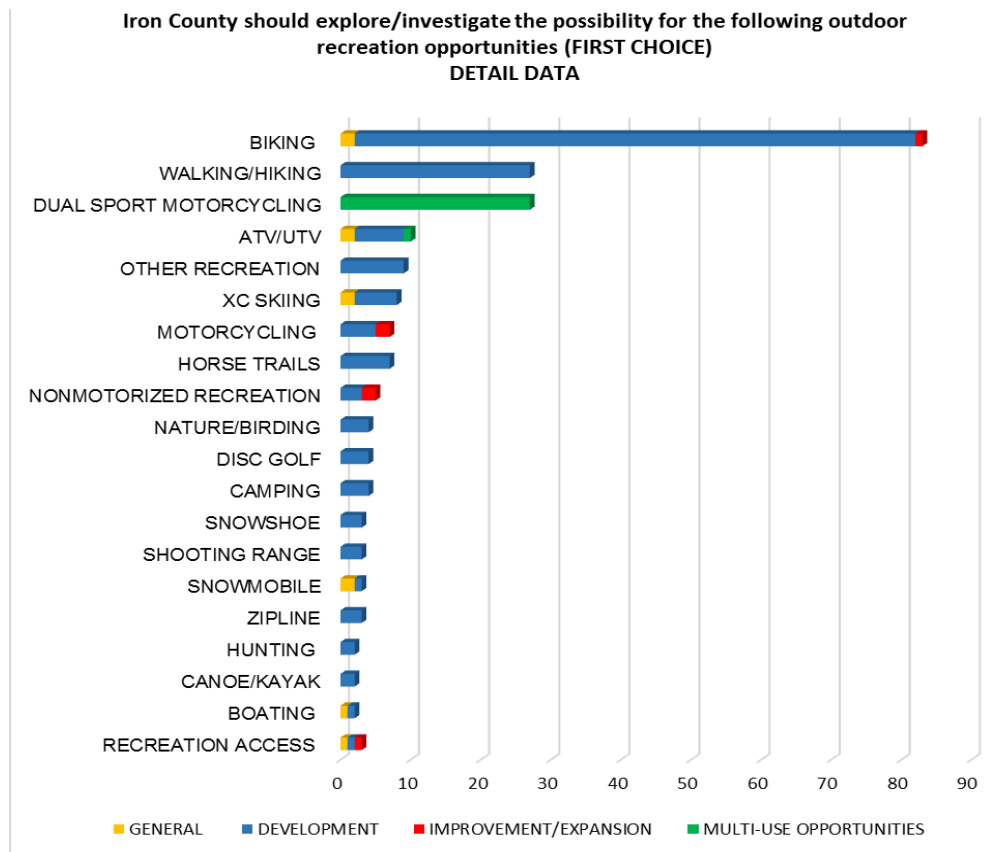
According to the Wisconsin Department of Tourism, traveler spending statewide is increasing, reaching an estimated \$13.3 billion in 2018. Direct visitor spending in Iron County was \$20.8 million. Total business sales related to recreation and tourism were \$29.1 million, while the total labor income was \$5.0 million. The total impact of tourism extends far into the county, making a contribution to schools and local governments with generated state and local tax revenue of \$2.4 million.

Iron County recreation land use consists of parks, trails, campgrounds, athletic fields, golf courses and other public recreational and/or picnic areas. Traditional "parks" with playground equipment and recreation facilities are more commonly found in the Cities of Montreal and Hurley. Throughout Iron County there are approximately 414 acres of land classified as Parks and Recreation. These lands are found in the Towns of Anderson, Mercer, Saxon, Pence, Kimball, and Gurney.

The Iron County outdoor recreation planning process survey documented public support for various types of recreational development. Citizens were asked to respond to the statement "Iron County should explore/investigate the possibility for the following outdoor recreation opportunities." Biking and walking/hiking ranked highest in the survey (**Figure 3**).

¹⁶ Wisconsin Department of Tourism, 2018

Figure 3: Iron County Outdoor Recreation Opportunities Survey Results



Agriculture

Agricultural activity has historically been located within the northern tier along the Lake Superior clay plain in Saxon, Kimball, and Gurney, which are located in the Potato River and Lower Bad River watersheds (Map 4). Today, the county’s primary agricultural use areas are in the same general locations as these areas have the most productive soils and a longer average growing season due to the climate effect of Lake Superior.

Trends

Iron County agricultural activities began in the 1880s and peaked in the 1930s. The post-depression era saw a steady decline in the number and acreage of farms, as many of the lands once used for production discontinued. The U.S. Department of Agriculture estimated there were 90 farms and 21,000 acres of farmland in 1972. By 2017, this figure dropped to 49 farms and 9,200 acres of farmland. The predominating crop in the county is hay, a crop reasonably well suited to the soils of the Lake Superior clay plain. The number of dairy cows in Iron County has decreased with the loss of small family farms, once so common across Wisconsin. In 1959, there were 1,057 dairy cows, and by 2017, this number had decreased to 4 herds of an undisclosed number of dairy cows, due to the limited number of operations in Iron County.

Agriculturally assessed land has been on a general decline in Iron County, with slight fluctuations in the 2000s and 2010s (**Table 19**). Agricultural assessment statistics can be found in the Land Use Element of the Iron County Comprehensive Plan.

Table 19: Agricultural Land Assessments in Acres 1980-2018

	1980	1983	1986	1989	1992	1995	1998	2001	2003	2006	2009	2012	2015	2018
Anderson	90	90	90	90	84	84	0	0	0	0	0	0	0	0
Carey	34	226	225	246	233	229	55	17	0	0	0	0	0	0
Gurney	3,032	3,015	2,995	3,002	3,010	2,996	1,787	1,537	1,490	1,310	1,368	1,395	1,355	1,315
Kimball	2,769	2,710	2,630	1,520	1,520	1,570	547	550	694	603	900	924	939	937
Knight	521	461	461	532	532	507	122	185	200	200	185	185	185	185
Mercer	N/A	1396	N/A	414	414	461	34	34	34	56	56	56	56	56
Oma	538	539	N/A	524	494	494	369	179	167	179	199	199	194	173
Pence	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saxon	7,233	6,714	6,059	6,562	6,336	6,232	3,397	3,337	3,292	3,426	3,553	3,859	3,819	3,832
Sherman	118	118	118	118	118	0	0	0	0	70	59	59	59	59
Hurley	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Montreal	0	367	327	362	342	342	0	0	346	0	0	0	0	0
Iron County	14,335	15,636	12,905	13,370	13,083	12,915	6,311	5,839	6,223	5,844	6,320	6,677	6,607	6,557

Source: WDOR Statement of Assessments

Current agricultural operations are located within northern watersheds of the county that are generally most suitable for these uses. Some berry farming does occur in the Lake Superior microclimate region of Iron County. Specialty crops, including honey, maple syrup, wild rice, pine boughs (wreaths), and farm to market agricultural products are important sources of supplemental income.

Crops

A crop is a cultivated plant that is grown as food, especially a grain, fruit or vegetable. The majority of crop production in Iron County is hay, which is typically used for animal forage. Due to the limited number of operations present in Iron County, some crop production statistics are not disclosed by DATCP.

Total Cropland (Farms)	48
Total Cropland (Acres)	5,377
Harvested Cropland (Farms)	47
Harvest Cropland (Acres)	4,443

Source: Census of Agriculture, 2017

Hay Harvested	2,051 acres
Hay Production	5,555 tons

Source: Census of Agriculture, 2017

Dairy

Dairy operations are establishments for the storage, processing, and distribution of milk and milk products. Due to the limited number of operations present in Iron County, dairy production statistics are not disclosed by DATCP.

Milk Cows (Farms)	4
Milk Cows (Numbers)	ND

Source: Census of Agriculture, 2017

ND=No Data

Livestock

Livestock include horses, cattle, sheep, pigs or other animals that are kept, raised and used by people. Due to the limited number of operations present in Iron County, some livestock production statistics are not disclosed by DATCP.

Cattle and Calves Inventory (Farms)	15
Cattle and Calves Inventory (Number)	2,334
Cattle and Calves Sold (Farms)	11
Cattle and Calves Sold (Number)	531
Beef Cows (Farms)	14
Beef Cows (Numbers)	ND
Hogs and Pigs Inventory (Farms)	1
Hogs and Pigs Inventory (Number)	ND
Hogs and Pigs Sold (Farms)	1
Hogs and Pigs Sold (Number)	ND

Source: Census of Agriculture, 2017

ND=No Data

Specialty Crops

Specialty crops are defined as fruits and vegetables, tree nuts, dried fruits, and horticulture and nursery crops, including floriculture. There are many plants that are specialty crops when cultivated but some are also collected from wild populations. These crops are in acres: barley 1-25 acres, hay 2,051 acres, oats 1-25 acres, and vegetables 1-5 acres. Berries, cranberries, wild rice, and maple syrup are also harvested as a specialty crop, though no statistical data exists to indicate quantity produced or harvested.¹⁷

Iron County's Agricultural (A-1) zoning district is intended to provide for the continuation of general farming and related activities in those areas best suited for such

¹⁷ Iron County Farmland Preservation Plan

development and to prevent the untimely and uneconomical scattering of residential, commercial, or industrial development into such areas.

Iron County's Agricultural (A-2) zoning district is intended to provide for large tracts that may remain in general agricultural use. The Iron County Zoning Ordinance was amended in 2017 to include concentrated animal feeding operations (CAFOs) to the list of uses authorized by conditional permit. CAFOs are animal feeding operations with 1,000 animal units or more. The WDNR may also designate a smaller-scale operation (fewer than 1,000 animal units) as a CAFO if it has pollutant discharges to navigable waters or contaminates a well. NR 243 governs standards associated with CAFOs and establishes permit requirements under Wisconsin Pollution Discharge Elimination System (WPDES) permits. CAFO WPDES permits ensure large-scale producers use proper planning, nutrient management, and structure/system construction. There is one proposed CAFO in Iron County. Kretschmar Farms has applied for a CAFO WPDES permit, but as of October 2019, it has not been issued by the WDNR.

Iron County agricultural use comprises nearly 8,000 acres of land. By 2025 it is expected that it will decline to about 3,800 acres, due to continued natural attrition of farming operations. As a result many of the Towns have created future land use plans to reflect this prediction. For example, the Town of Carey has approximately 2,500 acres of land zoned Agricultural. Their future land use plan calls for the majority of that land to be change to a rural residential zoning district or forestry. Their future land use plan has no agricultural zoning in it. Almost all of the towns have planned for a decrease in agricultural zoning.¹⁸

The Farmland Preservation Program was converted to the Working Lands Initiative in 2009 and is available for Iron County farmers (see **Voluntary Conservation Measures** section).

¹⁸ Iron County Zoning

Chapter 3. Federal, State, & Local Soil and Water Regulations

Federal Regulations

The Environmental Protection Agency (EPA) is responsible for “Protecting human health and safeguarding the natural environment - air, water, and land – upon which life depends.” The EPA administers a number of major environmental laws including the Farm Bill, Clean Air Act, Clean Water Act, Pollution Prevention Act, and National Environmental Policy Act. The EPA also defines minimum standards for categories of water bodies and uses (swimming, drinking water, etc.). DNR and DATCP administer EPA programs for the state of Wisconsin and turn over implementation of many of these programs to county land conservation committees and their staff.

State Regulations

DNR and DATCP are charged with responsibilities related to soil and water resources in the State of Wisconsin. Statutes and administrative codes developed to protect the waters of the state include:

Wisconsin Statutes:

- Protection of public forests
- Fish & game
- Navigable waters
- Sale, handling, and use of pesticides
- Water, sewage, refuse, mining & air
- Solid waste

Administrative Rules:

- Pesticide use/control
- Endangered and threatened resources
- Water quality standards for wetlands
- Water quality standards for surface waters
- WI Shoreland Management Program
- Floodplain, shoreland, & wetland protection
- Discharge of hazardous substances
- Stormwater management

NR 151 Runoff Management Performance Standards and Prohibitions

In 1998, the Animal Waste Advisory (AWAC) developed four general guidance animal waste prohibitions. The prohibitions were considered the basic animal waste guidelines needed to protect water quality. The WDNR developed NR 151 beginning with the basic prohibitions developed by AWAC. This rule (NR 151) is part of eight WDNR rules that address runoff pollution, the major cause of polluted waters in Wisconsin and the United States. NR 151 went into effect on October 1, 2002 (revised 2010 and 2018). It

established the statewide agricultural performance standards and prohibitions, and the non-agricultural performance standards to reduce runoff and protect water quality. The Wisconsin Department of Agriculture, Trade & Consumer Protection (DATCP) Administrative Rule ATCP 50 identifies conservation practices that must be followed to meet performance standards in NR 151. The standards are located at https://docs.legis.wisconsin.gov/code/admin_code/nr/100/151. In general, NR 151 includes the following:

- **Subchapter I: General Provisions**
- **Subchapter II: Agricultural Performance Standards and Prohibitions**
- **Subchapter III: Non-Agricultural Performance Standards**
- **Subchapter IV: Transportation Facility Performance Standards**
- **Subchapter V: Technical Standards Development Process for Non-Agricultural Performance Standards**

NR 154 Best Management Practices and Cost-Share Conditions (mirrored in ATCP 50)

A companion rule, NR 154 of Wisconsin's Runoff Management Program is an important tool for implementing NR 151. DATCP administers ATCP 50 and assists the counties with implementation of this rule. Iron County's implementation strategy of these standards is covered in Chapter 5.

The following standards have been incorporated into the implementation section of the Iron County Land & Water Resource Management Plan. Statewide program rules, to be implemented through the LWRM Plan include:

- **NR 102** Water Quality Standards for Wisconsin Surface Waters
- **NR 115** Wisconsin's Shoreland Protection Program
- **NR 120** Priority Watershed and Priority Lake Program
- **NR 151** Runoff Management Performance Standards and Prohibitions
 - Subchapter I: General Provisions
 - Subchapter II: Agricultural Performance Standards and Prohibitions
 - Subchapter III: Non-Agricultural Performance Standards
 - Subchapter IV: Transportation Facility Performance Standards
 - Subchapter V: Technical Standards Development Process for Non-Agricultural Performance Standards
- **NR 152** Model Ordinances for Construction Site Erosion Control and Stormwater Management
- **NR 153** Targeted Runoff Management Grant Program
- **NR 154** Best Management Practices and Cost-Share Conditions
- **NR 155** Urban Nonpoint Source Water Pollution and Stormwater Management Grants Program
- **NR 216** Storm Water Discharge Permits
- **NR 243** Animal Feeding Operations

- ATCP 50 Soil and Water Resource Management Program

County Regulations & Ordinances

Iron County has relatively few regulations relating to soil and water resource management. The county currently relies on state and federal regulations, as well as voluntary best management practices for the protection of soil and water resources. Iron County ordinances can be viewed online: <http://www.co.iron.wi.gov/>.

Local regulations/ordinances currently in place for the protection of soil and water resources include the following:

- Iron County Floodplain Ordinance
- Iron County Land Use Ordinance
- Iron County Metallic Mining PUD Ordinance
- Iron County Non-Metallic Mining Ordinance
- Iron County Shoreland Zoning Ordinance
- Iron County Subdivision Ordinance

Land use activities in the county are regulated by the Iron County Zoning Ordinance, which was originally adopted by the Iron County Board of Supervisors on January 21, 1971. All of the towns in Iron County are comprehensively zoned. Incorporated communities (Hurley and Montreal) have statutory authority to develop and enforce their own zoning ordinances. The purpose of the Iron County Zoning Ordinance is to promote and protect the public health, safety, and welfare by:

- Guiding orderly development, growth, and expansion.
- Protecting forests, lakes, and other environmentally sensitive areas.
- Protecting natural beauty and enhancing recreational opportunities.
- Preventing conflicts between different land uses.

Voluntary Conservation Measures

Working Lands Initiative

The Working Lands Initiative is a 2009 update to Wisconsin's 30-year-old Farmland Preservation Program. It is a cooperative state and local government and private effort to save farmland, protect the environment, and minimize land-use conflicts. The program creates new incentives and tools for local communities and landowners to protect farmland. Key aspects of the program include:

1. Preserving agricultural lands on which the future of Wisconsin farming depends.
2. Minimizing land use conflicts that threaten agricultural enterprises.

3. Providing enhanced, simplified tax incentives for farmers to keep land in agricultural use, and adopt soil and water conservation practices.
4. Maintaining the legitimate rights and prerogatives of landowners.
5. Recognizing current agricultural practices, infrastructure needs, and land use realities.
6. Providing new tools that will allow farmers to supplement income and realize tax savings, while protecting farmland.
7. Providing greater predictability and certainty to facilitate farm investment decisions.
8. Focusing and coordinating agricultural preservation and development efforts.

Tax Credits

The Wisconsin Working Lands Initiative provides participating landowners with an opportunity to claim farmland preservation tax credits. The tax credits are income tax credits that are applied against tax liability. Landowners must be residents of Wisconsin and must meet other eligibility criteria to claim the credit, including compliance with state soil and water conservation standards. Under farmland preservation zoning, county and local governments may update or adopt local ordinances for protection of farmland. While it is not required that these ordinances be certified, certification is required in order for landowners to claim farmland tax credits. In addition to being covered by a certified farmland zoning ordinance, farmers seeking tax credits must also have received at least \$6,000 in gross farm revenue in the past year, or \$18,000 in gross farm revenue in the past three years. Landowners must be residents of Wisconsin and must meet other eligibility criteria to claim the credit, including compliance with state soil and water conservation standards. Iron County updated its farmland preservation plan in 2017. The following year, the county will need to seek re-certification of its farmland zoning ordinance in order to maintain farmer eligibility for the tax credit program.

Agricultural Enterprise Areas

Designation of an agricultural enterprise area (AEA) is a tool that the local community can use to help promote the future viability of existing agricultural and agriculture-related land use. Once an area is officially designated as an AEA, eligible farmers owning land within the area may enter into a farmland preservation agreement with the state. This enables the landowners to receive tax credits in exchange for agreeing to keep their farm in agricultural use for at least 15 years. Any existing farmland preservation agreements will remain in effect until they expire.

Agriculture Conservation Easements

WLI established a new program to provide 50% of the cost of purchasing agricultural conservation easements, including transaction costs. Through the Purchase of Agriculture Conservation Easements (PACE) program, the state will provide funding to

cooperating local governments or non-profit organizations to purchase easements from willing landowners. Land with an agricultural conservation easement cannot be developed for any purpose that would prevent its use for agriculture. Easements are permanent and run with the land. This means the farmer may sell the land, but the easement remains in place and is binding on subsequent landowners.

Iron County is responsible for ensuring participants in these programs are compliant with current state soil and water conservation standards and prohibitions. The county is required to check compliance every four years through the procedures outlined earlier in this chapter.

Cost-Share Assistance

The Iron County LWCD provides cost-share funding assistance to landowners installing best management practices through its Soil and Water Management Program. DATCP also has SEG funding to implement nutrient management and other “soft” practices which may be needed for compliance with nutrient management requirements. LWCD staff will inform landowners of cost-share funding availability.

Landowners must enter into a cost-share agreement with the LWCD to receive financial assistance. Cost-share agreements are binding documents that secure funds for installing best management practices. Administration of cost-share assistance is the responsibility of the Iron County LWCD. The LWCD maintains participating landowner files in accordance with approved methods and practices for accounting and record keeping. The LWCD is also responsible for the monitoring of best management practices installed with cost-share assistance to ensure proper operation and maintenance during the expected life of the practice.

Identification of Concerns

The public involvement processes for the Iron County Comprehensive Plan, the initial development of the Land and Water Resource Management Plan, and subsequent updates to the Land and Water Resource Management Plan provide citizen advisory committees and workgroups with information about the natural resource concerns of permanent and seasonal residents of Iron County.

Table 20 lists all conservation practices listed in ATCP 50. The table indicates whether bonding funds may be used for the installation of the practice or activity.

Table 20: Revenue Sources for Cost-Sharing

Practice or Activity	ATCP 50 Reference	Funding Source	Unit of Measurement
Land taken out of agricultural production. (List on cost-share contract the practice to be installed or the eligible existing practice.)	50.08(3)	Bonding	Acres
Riparian land taken out of agricultural production (List on cost-share contract the practice to be installed or the eligible existing practice.)	50.08(4) 50.41(1)	Bonding	Acres
Manure storage systems.	50.62	Bonding	#
Manure storage closure.	50.63	Bonding	#
Barnyard runoff control systems. (Specify components)	50.64	Bonding	#
Access road.	50.65	Bonding	Linear Ft.
Trail and walkways.	50.66	Bonding	Linear Ft.
Contour farming.	50.67	GPR	Acres
Cover crop.	50.68	GPR	Acres
Critical area stabilization.	50.69	Bonding	#
Diversions.	50.7	Bonding	Linear Ft.
Feed storage runoff control systems.	50.705	Bonding	#
Field windbreaks.	50.71	Bonding	Linear Ft.
Filter strips.	50.72	Bonding	Acres
Grade stabilization structures.	50.73	Bonding	#
Livestock fencing.	50.75	Bonding	Linear Ft.
Livestock watering facilities.	50.76	Bonding	#
Milking center waste control systems.	50.77	Bonding	#
Nutrient management.	50.78	GPR	Acres
Pesticide management.	50.79	GPR	#
Prescribed grazing.	50.80		
a. Management plan		GPR	#
b. Fencing (Not permanent)		GPR	Linear Ft.
c. Fencing (Permanent)		Bonding	Linear Ft.
d. Establish permanent pastures (Seeding)	50.81	Bonding	Acres
Relocating or abandoning animal feeding operations.	50.81	Bonding	#
Residue management.	50.82	GPR	Acres
Riparian buffers.	50.83		

Practice or Activity	ATCP 50 Reference	Funding Source	Unit of Measurement
a. Installation (Including land out of production)		Bonding	Acres
b. Maintenance		GPR	Acres
Roofs.	50.84	Bonding	#
Roof runoff systems.	50.85	Bonding	#
Sediment basins.	50.86	Bonding	#
Sinkhole treatment.	50.87	Bonding	#
Streambank or shoreline protection.	50.88	Bonding	Linear Ft.
Stream crossing	50.885	Bonding	Linear Ft.
Stripcropping.	50.89	GPR	Acres
Subsurface drains.	50.9	Bonding	#
Terrace systems.	50.91	Bonding	Linear Ft.
Underground outlets.	50.92	Bonding	#
Water transfer systems.	50.93	Bonding	#
Wastewater treatment strips.	50.94	Bonding	Linear Ft.
Water and sediment control basins.	50.95	Bonding	#
Waterway systems.	50.96	Bonding	Acres
Well decommissioning.	50.97	Bonding	#
Wetland development or restoration.	50.98	Bonding	Acres
Engineering services provided in connection with a completed cost-share practice for which bond revenue may be used (Also refer to 50.40(7)).	50.34(4)	Bonding	
Other cost-effective practices with DATCP's written approval	50.40(3)(a)	GPR	

Conclusion

Chapter 3 is intended to provide readers with background information about the federal, state, and local soil and water regulations, standards, and prohibitions designed to help manage these resources.

The public meetings for this plan indicated that coordination between local technical, educational, and regulatory agencies is critically important to addressing land and water conservation issues in Iron County. The public meetings also indicated a need for elected officials to implement ideas and directions that citizens and resource managers have identified as important for the protection of resources in Iron County.

The Wisconsin legislature changed Chapter 92 of the Wisconsin Statutes to include Land and Water Resource Management Plans in order to empower local governments to lead resource management efforts in their counties. Local leadership, citizen input, and coordination of land and water resource management agencies and organizations will significantly improve conservation activities at the local level.

Chapter 5 includes implementation plans (**Tables 21, 22, and 23**) to outline Iron County Land Conservation Committee and Land and Water Conservation Department activities. This strategy will help to focus limited resources on resource management priorities, to identify where additional resources are needed, and to implement a more focused approach to land and water resource management in Iron County.

Chapter 4. Goals, Objectives, and Activities

Development of Goals, Objectives, and Activities

The local advisory committee developed goals, objectives, and activities for this plan by considering existing resource inventories and management plans, state mandates, and concerns and recommendations from county residents and natural resource professionals. The local advisory committee used the information to develop a comprehensive strategy for addressing land and water issues for Iron County.

A series of goals, objectives, and activities were developed for each focus and are defined as:

- **Goals** outline broad directions that the county wishes to pursue to protect resources.
- **Objectives** provide more specific direction on the programs or projects that are needed to implement each goal.
- **Activities** describe specific measures that the county will take to implement programs or projects listed under each objective.

The goals, objectives, and activities listed in this plan provides the work plan for the Land Conservation Committee and the Land and Water Conservation Department. This outline also provides essential budgeting information for the Land and Water Conservation Department, Iron County, and funding agencies. Although the Iron County Land and Water Management Plan is developed to serve for a ten-year period.

State and federal agencies that manage natural resources in Iron County are encouraged to use this information when performing resource management activities. Other municipalities and nonprofit groups are also encouraged to use this plan to guide their work and decision-making in the county.

Landowners are also encouraged to use information in this plan to manage resources on their private lands. Their actions will largely determine whether the County's land and water resources are improved or degraded. Each citizen plays a major role in the wise management of our natural water resources. Working together, public agencies, organizations, and private citizens can positively affect the land and water resources of Iron County.

Statewide Goals

Cropland Soil Erosion

The concept of whole farm planning is being used to address sheet, rill, and gully erosion on cropland on a farm-by-farm basis through the Iron County Land and Water Conservation Department. Although long hay rotations generally prevent concerns over soil and phosphorus loss in the region, conservation planning efforts are served on a request basis and through existing programs. Due to the limited number of farming operations, there are currently no Farmland Preservation Program participants in Iron County.

Animal Waste Control

Iron County will work to implement NR 151 Agricultural Performance Standards and Prohibitions through education and voluntary conservation planning. Animal waste and nutrient management will be handled on new farm operations through the concept of whole farm conservation planning. The County will assist the WDNR with NR 151 and NR 243 when requested. NR 243 is the performance standard for Concentrated Animal Feeding Operations (CAFOs). For the most current information on NR 243: https://docs.legis.wisconsin.gov/code/admin_code/nr/200/243. A Wisconsin animal feeding operation with 1,000 animal units or more is a large CAFO. The WDNR may designate a smaller-scale animal feeding operation (fewer than 1,000 animal units) as a CAFO if it has pollutant discharges to navigable water or contaminates a well. The WDNR is responsible for issuing CAFO permits and for NR 243 compliance. Technical assistance and funding to assist with NR 151 and NR 243 investigations may be available from the LWCD.

Land & Water Resource Management Plan Goals & Activities

*Note: These goals/activities were revised based on concerns and issues identified by the local advisory committee. Activities in **bold** are identified as priorities.*

Goal 1: Increase public's level of environmental knowledge and stewardship.

Objectives and Activities

- A. Educate the public about the importance of riparian buffers and maintenance of shoreland habitat.
 1. **Distribute shoreland information, restoration guides, and native plant nursery lists to shoreland owners and lake citizens.**
 2. **Present programs on shoreland best management practices, erosion control techniques, and importance of littoral and upland native plants.**
 3. **Disseminate shoreland information through news articles, handouts, LWCD website/Facebook page, and other media.**
 4. Promote responsible use of herbicides and phosphorus-free fertilizer to protect water quality.
 5. **Promote shoreland restoration through LWCD plant sale.**
 6. Offer tour for elected officials of habitat restoration sites.

- B. Work with local students and citizens to provide educational opportunities that build awareness of conservation and foster responsible actions.
 1. **Present 2+ education programs annually to lake/river groups.**
 2. Develop articles on water quality.
 3. Present education programs to advocate for the importance of wetlands.
 4. Provide information on stormwater retention.
 5. **Conduct programs for local schools on Envirothon, the Conservation and Speaking Contest, water-related programs, etc.**
 6. **Coordinate WLWCA Youth Conservation Camp annually.**
 7. Sponsor students annually to attend WLWCA Conservation Camp.
 8. Conduct program to Zoning and elected officials about economic and ecological benefits of healthy water resources.
 9. Promote education about forest management and best management practices for water quality.

- C. Educate the public about how land use affects groundwater quality and quantity.
 1. Provide groundwater education on land use and climate change to the public.
 2. Identify groundwater recharge areas and educate the public about safe land management practices.
 3. **Offer groundwater education program to local schools.**

- D. Promote education to the public on well water testing.
 - 1. Assist health department with home drinking water and nitrate screening tests of private wells for chemicals.
 - 2. Host workshop about UWSP well water testing results.

- E. Provide education and outreach to build awareness of aquatic and terrestrial invasive species.
 - 1. **Train citizens and volunteer groups to verify aquatic and terrestrial invasive species.**
 - 2. **Coordinate CBCW and Citizen Lake Monitoring workshops.**
 - 3. Support workshop to train town/county road crews about BMPs for invasives.
 - 4. Provide information to foresters, loggers, bait shops, anglers, and landowners on the impacts of terrestrial invasive species on woodland habitat.
 - 5. **Update and maintain information on the LWCD website.**

Goal 2: Protect and enhance surface water and groundwater quality.

Objectives and Activities

- A. Encourage shoreland protection and lake management planning activities.
 - 1. Encourage lake/river groups to develop management plans.

- B. Promote monitoring and data collection.
 - 1. **Encourage ICLRA, lake groups, and students to collect WQ data for Self-Help and Citizen-Based Monitoring.**
 - 2. Assist lake, stream and wetland monitoring groups with expertise in data collection and reporting efforts to support climate change data recording.
 - 3. Identify lakes in need of WQ data.
 - 4. **Coordinate Woods and Waters Project to collect data on water quality, loon reproduction and riparian plants.**
 - 5. **Conduct Shoreland Habitat Assessment Surveys.**
 - 6. Expand River Water Quality Monitoring (WAV) Program.

- C. Protect water quality by reducing soil erosion and stormwater runoff, including reduction of impervious surfaces.
 - 1. **Provide technical assistance and cost-share to landowners for erosion concerns or stormwater runoff issues.**
 - 2. **Provide assistance and promote best management practices for water quality to municipalities, highway department, forestry, private landowners, etc.**
 - 3. Compile strategies from resources on stormwater, invasive species, and forestry issues related to climate change.

4. Support Zoning Department review of erosion control plans when needed to ensure compliance.
 5. Distribute construction best management practices and erosion control information.
 6. Coordinate LWCD water quality protection activities with the Lake Superior LAMP. (https://www.epa.gov/sites/production/files/2016-10/documents/lake_superior_lamp_2015-2019.pdf)
- D. Identify priority fish passage barriers and failing culverts with natural resource impacts.
1. **Coordinate with partners to identify failing culverts/fish barriers.**
 2. Provide technical and financial assistance to restore fish barriers at critical road crossings.
 3. Encourage participation at workshops for towns, highway, and forestry on proper culvert sizing/placement.
 4. **Promote stream health through stream restorations.**
- E. Monitor groundwater quality throughout the county.
1. Coordinate with UWSP Groundwater Center to monitor groundwater concerns in the county.
- F. Promote proper well abandonment program.
1. Promote proper well abandonment and provide cost-share to decommission an abandoned well.
- G. Promote the importance of wetlands for water quality and flood control
1. Provide wetland delineations.
 2. Promote wetland restorations.

Goal 3: Promote sustainable land use practices.

Objectives and Activities

- A. Implement practices that restore & protect degraded habitat by working with private landowners & local partners.
1. **Promote maintenance and establishment of riparian habitat and erosion control practices.**
 2. **Assist Zoning with development of shoreland mitigation plans so they are in compliance with NR 115.**
 3. **Develop and promote a Pollinator Program.**
- B. Promote monitoring & data collection.
1. **Job check restorations/mitigations annually to monitor maintenance and recovery of buffer vegetation.**

- C. Reduce nutrient inputs and promote compliance with NR 151 standards.
 - 1. Distribute NR 151 agricultural performance standards information to interested landowners.
 - 2. Coordinate nutrient management education workshop and certified farmer training course; and hold annual workday to update plans.
 - 3. **Utilize cost-share funds to encourage compliance with NR 151 for producers.**
 - 4. Track NR 151 compliance annually on all nutrient management plans.

- D. Preserve agricultural lands, promote rotational grazing, and protect croplands from wildlife damage.
 - 1. Promote Working Lands Initiative and other agricultural tax-incentive programs.
 - 2. Provide information on rotational grazing.
 - 3. Contract with WDNR to coordinate landowner abatement practices and wildlife damage compensation.
 - 4. Contract with WDNR to administer deer donation program in Iron County.

- E. Encourage sustainable forest management practices at the private and county level.
 - 1. **Coordinate Woods Project teaching sustainable forestry practices while studying the American marten.**

- F. Collaborate with external partners to share information, project costs, & natural resource planning strategies.
 - 1. **Encourage inventory of logging trails/hunting access to identify resource concerns.**
 - 2. **Promote proper logging trail abandonment and runoff management on public lands.**
 - 3. **Participate in the Regional Pollinator Group.**
 - 4. Explore implementation of shoreline recession rate study and incorporation into county zoning ordinances.

Goal 4: Mitigate invasive species impacts.

Objectives and Activities

- A. Promote monitoring and data collection.
 - 1. **Conduct early detection AIS surveys.**
 - 2. Conduct long-term spiny waterflea study.

- B. Monitor and document invasive species throughout the county.
 - 1. Develop, install, and maintain AIS signage at designated boat landings.
 - 2. Encourage citizen lake monitors to report monitoring results in SWIMS database.

3. **Utilize GIS to map aquatic and terrestrial infestations with the county.**
 4. Develop annual AIS report for township and/or county board.
 5. Encourage volunteers to monitor for terrestrial plants and animals.
- C. Coordinate implementation of aquatic & terrestrial invasive species prevention & control.
1. Seek additional funding to maintain AIS education, prevention and control programs.
 2. **Provide technical/financial assistance on workdays to control/remove invasive species.**
- D. Collaborate with external partners to share information, project costs, & natural resource planning strategies.
1. **Attend regular meetings with NCWMA, USFS, DNR, UW-Madison Extension, GLIFWC, and other partners to plan projects and field days to control invasive species.**
 2. Encourage BMPs for recreation trails to prevent spread of invasive species.
 3. Assist as requested with development of grants/projects for data collection of aquatic plants, invasive species, climate monitoring, self-help monitoring, etc.

Goal 5: Maintain a well-trained professional staff.

Objectives and Activities

- A. Promote staff participation in regional and state conservation groups/organizations.
1. **Support, serve, and assist state and regional boards and planning committees.**
 2. **Support Iron County staff as coordinator for the Northwest Area Land Conservation Association.**
- B. Support professional development.
1. **Encourage staff attendance at conferences, trainings, and workshops to further their education.**

Chapter 5. Plan Implementation

Iron County Role in Plan Implementation

The Land Conservation Committee (LCC) is responsible for oversight of the Land and Water Resource Management Plan and prioritization of implementation of the plan. Land & Water Conservation Department (LWCD) staff are responsible for plan implementation. Other County departments are encouraged to assist in implementation of the plan through their daily work. Other agencies and organizations are also encouraged to use the plan when performing resource management activities in Iron County.

Due to staff and funding limitations, the LCC and LWCD rely on support from other agencies and organizations to assist with plan implementation. **Table 24** includes roles for the county in plan implementation and encourages other agencies and organizations to coordinate land and water conservation efforts in Iron County.

In order to clarify intended lead and supporting roles, implementation plan tables that follow, outline roles for agencies and organizations. Efforts by the LCC and LWCD staff will need to be made to encourage other agencies to participate in the implementation of this plan.

Other Agencies and Institutions Role in Plan Implementation

Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) has oversight authority for Land and Water Resource Management Plans. They also provide funding for implementation of the plan and annually distribute grant applications to counties.

The WDNR, USDA-NRCS, FSA, and other agencies will play a critical part in this plan's implementation. Although few WDNR staff are located in the area, the nature of the many planned activities require collaborative relationships between WDNR and county staff. Funding for projects identified in the plan may also be needed from existing programs.

Examples include the following activities:

- Implementation of NR 151 agricultural and non-agricultural performance standards
- Permitting for stabilization of lake and river frontage
- Permitting for town road crossings, other stabilization methods (USGS research)
- Forestry related goals of the plan such as Access Management Plan for County Forest
- Training and program assistance for Conservation Reserve Enhancement Program

- Funding for Lake/River Planning and Protection
- Funding for development of Lake Superior interpretation curriculum
- Funding for research to be conducted on new stabilization methods or geomorphic assessments proposed as part of an overall watershed study
- Water quality monitoring and assessment results

For the Lake Superior Basin, a process was developed to identify partner priorities including the DNR's Lake Superior Basin Partnership and other groups. Partner priorities are listed in the Volunteers and Citizen Monitoring section of Chapter 2. Resource managers are also encouraged to use the information in the plan in their daily resource management activities.

Iron County NR 151 Implementation Strategy

Iron County has not pursued county-led regulation at this time due to the limited number of farming operations in the county as well as limited LWCD staff and resources to implement a regulatory program. Although there is support for regulating large noncompliant operations, the LCC and LWCD agree that voluntary efforts, education, one-on-one meetings with farm operators, and collaboration with WDNR should serve as a starting point for a NR 151 implementation strategy.

If a complaint is received by the LWCD regarding compliance, it was agreed that all cases, including documentation and existing landowner information, are to be referred to the WDNR. (*A method for documentation will be developed to eliminate legal concerns over shared record keeping.*) All components of the WDNR's "Implementation Strategy for NR151" were considered to identify and prioritize Iron County's strategy to implement NR 151. The "Implementation Strategy for NR 151" is located at:

<https://dnr.wi.gov/topic/nonpoint/documents/strategy151.pdf>

The Iron County LCC decided to divide agricultural and non-agricultural nonpoint pollution reduction strategies for the County into two tiers in order to best prioritize limited resources and focus on education and voluntary compliance:

- **Tier I** - Develop political support and LWCD staff expertise for NR 151 implementation, beginning the process by providing assistance to WDNR, but limiting the scope of enforcement related activities by the LWCD.
- **Tier II** - Evaluate expansion of county LWCD activities annually to determine those activities not currently selected for implementation, including those related to enforcement of standards.

Tier I & II activities reflect the current Iron County LCC decisions about Agricultural and Non-Agricultural strategies for the County and are outlined in **Tables 18 & 19**.

Agricultural Performance Standards and Prohibitions Implementation

There is no manure storage or handling ordinance in Iron County. Consequently, these prohibitions are not enforced through local ordinances. Enforcement potential does exist through NR 243; <https://dnr.wi.gov/topic/AgBusiness/CAFO/WPDESNR243.html>. Traditionally, the LWCD has assumed the role of technical provider for these projects and in return has received an estimated 10% of cost of conservation practice construction for their services.

The LCC adopted the following Agricultural Performance Standards and Prohibitions:

ADOPTED AGRICULTURAL PERFORMANCE STANDARDS AND PROHIBITIONS

Agricultural Performance Standards

For farmers who grow agricultural crops:

- a) Farmers growing agricultural crops must meet "T" (tolerable soil loss) on cropped fields.
- b) Agricultural producers must follow a nutrient management plan designed to limit entry of nutrients into waters of the state.

For farmers who raise, feed, or house livestock:

- a) Allow no direct runoff from feedlots or stored manure into state waters.
- b) Limit livestock access to waters of the state where high concentrations of animals prevent the maintenance of adequate sod cover.
- c) Agricultural producers must follow a nutrient management plan when applying or contracting to apply manure to limit entry of nutrients into waters of the state.

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

- a) Maintain a structure to prevent overflow, leakage and structural failure.
- b) Repair or upgrade a failing or leaking structure that poses an imminent health threat, or violates groundwater standards.
- c) Meet technical standards for newly constructed or altered structure.
- d) Close an existing structure according to accepted standards.

For farmers with land in a water quality management area:

(300' of a stream, 1000' of a lake or areas susceptible to groundwater contamination)

- a) Do not stack manure in unconfined piles.
- b) Divert clean water away from feedlots, manure storage areas and barnyards in this area.

Animal Waste Prohibitions

- No overflow of manure storage structures
- No unconfined manure piles in a water quality management area. 1,000 feet up-hill from sinkholes, or less than 3 feet to groundwater or bedrock.
- No direct runoff from a feedlot with stored manure into waters of the state.
- No unlimited access by livestock to waters of the state in a location where high concentrations of animals prevent the maintenance of adequate sod cover.

Table 21 outlines Iron County’s Agricultural Performance Standards and Prohibitions implementation plan which capitalizes on education and voluntary compliance. The LCC identified lack of staff and a limited number of farming operations in Iron County as factors that reduce the need for NR 151 enforcement and reporting. The LCC believes the benefits of NR 151 can be achieved through education, voluntary efforts and providing funding and technical assistance as necessary and as funding allows.

Priority Projects

Iron County implements Agricultural Performance Standards and Prohibitions, on approximately 1,300 cropland acres through voluntary conservation practices, education, and technical and cost-share assistance. Projects are ranked based on the impacts posed to resource concerns when adequate cost-share funding is not available. Projects are ranked for agricultural, shoreland stabilization and additional nonpoint source pollution. Projects are often generated through educational contacts.

Due to the low numbers of farms in Iron County (<10), all active agricultural operations are considered a priority for assistance. The LCC believes the active agricultural operations are complying with NR 151 performance standards and prohibitions.

Criteria for priority for cost-share and technical assistance:

1. Distance from a Water Quality Management Area (Within 1,000 feet of a lake or flowage or within 300 feet of a navigable stream.).
2. Distance from outstanding or exceptional resource waters, or impaired waters.
3. Distance from a lake, stream, or impoundment; proximity and slope to a lake, stream, or impoundment.
4. Land located in a management unit identified as impacting watershed health (high potential for excess runoff volumes/velocities).
5. Livestock facilities with potential evidence of performance standards violations (staff observations or complaints).
6. High potential for groundwater contamination such as high groundwater table and/or highly permeable soils.
7. Livestock producers without nutrient management plans.
8. Crop producers without nutrient management plans.

Additional criteria:

1. Multiple funding sources
2. Cost effectiveness
3. Habitat impacts
 - a. Shoreland values restored
 - b. Fish passage
 - c. Frequency of flooding/failure
4. Willingness to participate as demonstration site
5. Engineering limitations

Table 21: Agricultural Performance Standards and Prohibitions Implementation Plan

Category	Selected for Current Implementation Program Y (YES) or N (NO)	Tier 1 Activities Recommended and Selected	Tier 2 Activities Recommended for Future Evaluation
Information & Education	Y	<ul style="list-style-type: none"> • Other: provide information on the prohibitions to all farmers, producers, hobby farms, etc. 	
Compliance Monitoring	Y	<ul style="list-style-type: none"> • Conduct on site evaluations. <ol style="list-style-type: none"> a. Monitor compliance on all Nutrient Management Plans. 	
Landowner Notification * <i>NOTE: Any landowner who does not agree with LWCD's compliance determination will be allowed to contest the findings at the next regularly scheduled LCC meeting.</i>	Y	<ul style="list-style-type: none"> • Prepare and issue "NR 151 Status Report" to owners. The report must convey the following at a minimum: <ol style="list-style-type: none"> a. Current status of compliance. b. Corrective measures and rough cost estimates. c. Status of eligibility for cost-share funds. d. Grant funding sources & technical assistance. e. Explanation of conditions that apply if public cost-share funds are used. f. Signature lines indicating "agreement" or "disagreement" with report findings. g. Appeal process and procedures. h. A copy of performance standards and prohibitions and technical design standards. 	<ul style="list-style-type: none"> • If necessary, provide assistance to DNR to issue a landowner notification per NR 151.09(5-6) and/or 151.095(6-7).
Funding & Technical Assistance **	Y	<ul style="list-style-type: none"> • Secure funding and technical assistance using a voluntary approach. <ol style="list-style-type: none"> a. Receive request for cost-share and/or technical assistance. b. Confirm cost-share grant eligibility and 	

Table 21: Agricultural Performance Standards and Prohibitions Implementation Plan			
Category	Selected for Current Implementation Program Y (YES) or N (NO)	Tier 1 Activities Recommended and Selected	Tier 2 Activities Recommended for Future Evaluation
		<p>availability of technical assistance and cost-share.</p> <p>c. Develop cost-share agreement.</p>	
Administer Funding/ Technical Assistance/Re-evaluate Parcel	Y	<ul style="list-style-type: none"> • If cost-share is involved, finalize and execute cost-share agreement. • Provide technical services and oversight: <ul style="list-style-type: none"> a. Conservation plan assistance. b. Design assistance. c. Construction oversight. d. Evaluate and certify project installation. • Post-installation compliance inspection. <ul style="list-style-type: none"> a. If compliant, update “NR 151 Status Report” and issue “Letter of NR 151 Compliance.” <p>If non-compliant, seek non-regulatory remedies or initiate enforcement action.</p>	
Enforcement	Y	<ul style="list-style-type: none"> • All cases shall be referred to the Department of Natural Resources Northern Region Nonpoint Source Coordinator. 	
Monitoring	Y	<ul style="list-style-type: none"> • Conduct periodic evaluations. • Respond to public complaints. • Ensure owners are made aware of compliance. 	
Reporting ***	Y	<ul style="list-style-type: none"> • Maintain office records. • Report timeframes, financial and staff resources needed to complete site evaluations. • Maintain record of costs of corrective 	

Table 21: Agricultural Performance Standards and Prohibitions Implementation Plan			
Category	Selected for Current Implementation Program Y (YES) or N (NO)	Tier 1 Activities Recommended and Selected	Tier 2 Activities Recommended for Future Evaluation
		measures. <ul style="list-style-type: none"> • Other reports required under ATCP 50. • Annual reports to the County Board & DATCP. 	

Landowner notifications will be reserved as an option only if problems arise with a particular landowner or if complaints are received. Otherwise, a voluntary approach to compliance to these standards and prohibitions will be used. **The LCC recommends that the LWCD determine the level of inspection needed to ensure compliance. *The LCC recommends that the LWCD do the minimum amount of required reporting.*

Non-Agricultural Performance Standards Implementation

The LCC determined that the State of Wisconsin requirements and enforcement of the Non-Agricultural Performance Standards are adequate in Iron County. The LCC determined that LWCD management would need to make these determinations based on workload and whether the LWCD will have time to assist other agencies in implementing the Non-Agricultural Performance Standards. The LWCD will continue to provide plan review and technical recommendations to partner agencies and departments as time permits. Priority will be given to landowners and other county departments. Staff training and abilities will also be identified and will be used as a secondary means of determining where priorities will be placed.

The LCC adopted the following Non-Agricultural Performance Standards:

Adopted Non-Agricultural Performance Standards
<p><u>Non-Agricultural Standards</u></p> <p>For new construction and redevelopment on sites of 1 acre or more:</p> <ul style="list-style-type: none">a) Implement an erosion and sediment control plan using Best management Practices (BMPs) to control sediment runoff.
<p>For most sites covered by construction site erosion control plan:</p> <ul style="list-style-type: none">a) Implement a written stormwater management plan to control runoff pollution. These plans shall conform to standards for total suspended solids in runoff, peak discharge rates, infiltration, protective areas, fueling and vehicle maintenance areas, timing and location.
<p>For developed urban areas (population densities of 1000 or more people per square mile):</p> <ul style="list-style-type: none">a) Implement a storm water management plan that includes public education, leaf and grass management where appropriate, nutrient application on municipally-owned land according to an application schedule and detection and elimination of discharges.b) Permitted municipalities shall meet additional control requirements for reduction in total suspended solids.
<p>For non-municipal property covering 5 or more acres of turf or other pervious surface:</p> <ul style="list-style-type: none">a) Apply nutrient in accordance with a nutrient management schedule.
<p>For transportation facilities:</p> <ul style="list-style-type: none">a) Implement erosion and sediment control plans during construction and management plans for runoff after construction.

Table 22 outlines Iron County's implementation plan for Non-Agricultural Performance Standards.

Table 22: Non-Agricultural Performance Standards Implementation Plan

Category	Selected for LCC Implementation Program Y (YES) or N (NO)	Tier 1 Activities Recommended and Selected	Tier 2 Activities Recommended for Future Evaluation
New Construction / Redevelopment on 1 acre sites or more	Y	<ul style="list-style-type: none"> • Participate in voluntary cooperative agreements: <ul style="list-style-type: none"> a. Assist County Zoning with plan review. b. Assist City Zoning with plan review. c. Assist Town Zoning with plan review. d. Assist DNR Water Regulation plan review. e. Assist DNR Foresters with access road plan review and site evaluations. f. Assist County Recreation Department with trail plan review and site evaluations. g. Assist County Forest Department with access road plan review and site evaluations. h. Assist Town Boards with road construction & maintenance plan review. i. Other: Assist County Zoning with shoreland mitigation cases. 	
Construction Sites with Erosion Control Plan	N		<ul style="list-style-type: none"> • Implement a written stormwater management plan to control runoff pollution. These plans shall conform to standards for total suspended solids in runoff, peak discharge rates, infiltration, protective areas, fueling and vehicle maintenance areas, timing and location. • Stormwater management planning should be left up to the DNR. • LWCD will focus on continued education by offering workshops for the Towns.

Table 22: Non-Agricultural Performance Standards Implementation Plan

Category	Selected for LCC Implementation Program Y (YES) or N (NO)	Tier 1 Activities Recommended and Selected	Tier 2 Activities Recommended for Future Evaluation
Non-municipal Property (5 acres+) of Turf or Other Pervious Surface	Y	<ul style="list-style-type: none"> • Other: Assist “if requested” otherwise continue on an “as needed” basis. 	
Transportation Facilities	Y	<ul style="list-style-type: none"> • Continue “as is” or “as needed.” • Provide education opportunities. 	

Land and Water Quality Initiatives Implementation

The Land and Water Quality Initiatives Implementation Plan (**Table 23**) outlines, in order of priority, specific goals, objectives and activities, required staff time per year, implementation cost, lead and supporting agency/organization roles, and measurable outcomes.

Strategies to Meet the Goals, Objectives, and Activities

Strategies capitalize on education, technical assistance, and collaboration to accomplish specific objectives and activities listed for each goal.

- **Education** - The LWCD will coordinate educational activities such as workshops, newsletters, releases and targeted mailings, videos, public informational booths and demonstrations with other natural resource educational agencies and institutions. When possible, these events will be performed and offered basin-wide in order to minimize duplication and maximize the audience. Grant writing and administration may be necessary when additional funding outside of the county is needed. The LWRM Plan information and education strategy is outlined in **Appendix A**. In the information and education strategy, target audiences and key messages are identified, and the recommended activities to deliver those messages are listed.
- **Technical Assistance** - The LWCD will provide technical assistance in sediment and erosion control, stormwater management, shore and buffer habitat restoration, animal waste management, wetland restoration, access road design and construction, mined land reclamation and many additional practices that are included in the NRCS and DATCP Technical Guide. In some cases, assistance will be needed from DATCP and NRCS engineers, civil engineering technicians, or outside engineering firms. Grant writing and administration may be necessary when additional funding outside of the county is needed.
- **Collaboration** - The LCC/LWCD will need to review the LWRM Plan annually to determine the status of plan implementation. The LWCD (staff) role will be to develop and improve relationships with local, state, and federal agencies and organizations and coordinate activities, funding and staff in order to reduce duplication of efforts and develop the best programs possible. Grant writing and administration may be necessary when additional funding is needed.

Accomplishment Tracking

The Land and Water Quality Initiatives Implementation Plan (**Table 23**) includes annual measurable outcomes for each activity as a strategy to track accomplishments.

Table 23: Land and Water Quality Initiatives Implementation Plan

Goal 1: Increase public’s level of environmental knowledge and stewardship.

Objective A: Educate the public about the importance of riparian buffers & maintenance of shoreland habitat.				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
1. Distribute shoreland information, restoration guides, native plant nursery lists to shoreland owners and lake citizens.	10	\$350	LWCD	<ul style="list-style-type: none"> • Distribute information annually. • Correspond with Zoning office. • Distribute information to new riparian owners.
2. Present programs on shoreland best management practices, erosion control techniques, and importance of littoral and upland native plants.	20	\$700	LWCD	<ul style="list-style-type: none"> • Present 2+ annual programs.
3. Disseminate shoreland information through news articles, handouts, LWCD website/Facebook page, and other media.	20	\$700	LWCD	<ul style="list-style-type: none"> • Publish 2 articles in lake association newsletters. • Update information on LWCD website. • Publish 1+article annually to local newspapers.
4. Promote responsible use of herbicides and phosphorous-free fertilizer to protect water quality.	5	\$175	LWCD UW-Madison Extension	<ul style="list-style-type: none"> • Provide information as opportunities arise. • Include information on website.

Goal 1: Increase public's level of environmental knowledge and stewardship.

Objective A: Educate the public about the importance of riparian buffers & maintenance of shoreland habitat. (Continued)				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
5. Promote shoreland restoration through LWCD plant sale.	150	\$5,250	LWCD	<ul style="list-style-type: none"> • Distribute 200+ native plant sale brochures. • Target 2,000+ native plants sold annually.
6. Offer tour for elected officials of habitat restoration sites.	20	\$700	LWCD	<ul style="list-style-type: none"> • Offer tour of restoration sites as requested.
Objective B: Work with local students & citizens to provide educational opportunities that build awareness of conservation & foster responsible actions.				
1. Present 2+ education programs annually to lake/river groups.	20	\$700	LWCD	<ul style="list-style-type: none"> • Conduct 2+ education programs.
2. Develop articles on water quality.	10	\$350	LWCD	<ul style="list-style-type: none"> • Publish 2+ articles in lake association newsletters. • Update information on LWCD website/Facebook page.
3. Present education programs to advocate for the importance of wetlands.	10	\$350	LWCD Zoning	<ul style="list-style-type: none"> • Provide education as needed.
4. Provide information on stormwater retention.	10	\$350	LWCD UW-Madison Extension	<ul style="list-style-type: none"> • Provide technical assistance. • Provide information on the LWCD website.
5. Conduct programs for local schools on Envirothon, the Conservation Poster & Speaking Contest, water related programs, etc.	100	\$3,500	LWCD Hurley School Mercer School	<ul style="list-style-type: none"> • Support Envirothon team for state competition. • Provide 20 training /informational meetings. • Present 2 programs for Poster & Speaking Contest with 20+ entries.

Goal 1: Increase public's level of environmental knowledge and stewardship.

Objective B: Work with local students & citizens to provide educational opportunities that build awareness of conservation & foster responsible actions. (Continued)				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
6. Coordinate WLWCA Youth Conservation Camp annually.	200	\$7,000	LWCD WI Land+Water	<ul style="list-style-type: none"> • Coordinate Conservation Camp for 25 high school students from around the state.
7. Sponsor students annually to attend WLWCA Conservation Camp.	10	\$350	LWCD	<ul style="list-style-type: none"> • Seek Iron County youth to attend camp. • Sponsor Iron County students.
8. Conduct program to zoning and elected officials about economic and ecological benefits of healthy water resources.	5	\$175	LWCD Zoning Towns	<ul style="list-style-type: none"> • Conduct programs for Zoning /County/Town boards as requested.
9. Promote education about forest management & best management practices for water quality.	10	\$350	DNR NRCS LWCD ICF	<ul style="list-style-type: none"> • Provide brochures and outreach as necessary.
Objective C: Educate the public about how land use affects groundwater quality and quantity.				
1. Provide groundwater education on land use and climate change to the public.	20	\$700	LWCD	<ul style="list-style-type: none"> • Provide public programs as requested. • Provide education articles as needed. • Maintain information on county website.

Goal 1: Increase public's level of environmental knowledge and stewardship.

Objective C: Educate the public about how land use affects groundwater quality and quantity. (Continued)				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
2. Identify groundwater recharge areas and educate the public about safe land management practices.	10	\$350	UWSP LWCD	<ul style="list-style-type: none"> • Coordinate with UW Stevens Point on groundwater program. • Educate the public through presentations.
3. Offer groundwater education program to local schools.	10	\$350	LWCD Hurley School Mercer School	<ul style="list-style-type: none"> • Conduct one groundwater program at 2 schools.
Objective D: Promote education to the public on well water testing.				
1. Assist health department with home drinking water and nitrate screening tests of private wells for chemicals.	40	\$1,400	Health Dept. LWCD	<ul style="list-style-type: none"> • Provide 1 workshop every other year. • Sample 10 private drinking water wells every other year. • Coordinate w/UWSP on groundwater program. • Host workshop on test results as necessary.
2. Host workshop about UWSP well water testing results.	10	\$350	UWSP Health Dept. LWCD	<ul style="list-style-type: none"> • Coordinate with UWSP on groundwater program. • Host workshop on test results as necessary.

Goal 1: Increase public's level of environmental knowledge and stewardship.

Objective E: Provide education & outreach to build awareness of aquatic & terrestrial invasive species.				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
1. Train citizens and volunteer groups to identify aquatic and terrestrial invasive species.	30	\$1,050	LWCD DNR	<ul style="list-style-type: none"> Coordinate programs to train individuals annually.
2. Coordinate CBCW and Citizen Lake Monitoring workshops.	30	\$1,050	LWCD DNR	<ul style="list-style-type: none"> Coordinate CBCW/CLM workshops annually.
3. Support workshop to train town/county road crews about BMPs for invasives.	40	\$1,400	NCWMA LWCD	<ul style="list-style-type: none"> Support workshop for road crews.
4. Provide information to foresters, loggers, baitshops, anglers and landowners on impacts of terrestrial invasives on woodland habitat.	20	\$700	LWCD DNR	<ul style="list-style-type: none"> Distribute brochures & resource materials annually. Keep website up to date.
5. Update and maintain information on the LWCD website.	30	\$1,050	LWCD	<ul style="list-style-type: none"> Update education articles quarterly & post events.

Goal 2: Protect and enhance surface water and groundwater quality.

Objective A: Encourage shoreland protection & lake management planning activities.				
1. Encourage lake/river groups to develop management plans.	20	\$700	LWCD DNR Lake Associations	<ul style="list-style-type: none"> Assist groups in planning process as requested.

Goal 2: Protect and enhance surface water and groundwater quality.

Objective B: Promote monitoring & data collection.				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
1. Encourage ICLRA, lake groups, and students to collect WQ data for Self-Help & Citizen-Based Monitoring.	100	\$3,500	LWCD Lake Associations	<ul style="list-style-type: none"> • Assist school & lake groups with data collection/reporting. • Monitor 5 lakes.
2. Assist lake, stream and wetland monitoring groups with expertise in data collection and reporting efforts to support climate change data recording.	80	\$2,800	LWCD	<ul style="list-style-type: none"> • Assist school & lake groups with data collection & reporting. • Monitor 5 lakes.
3. Identify lakes in need of WQ data.	20	\$700	LWCD DNR	<ul style="list-style-type: none"> • Maintain CLM volunteer database.
4. Coordinate Woods and Waters Project to collect data on water quality, loon reproduction and riparian plants.	120	\$4,200	LWCD Hurley School Mercer School	<ul style="list-style-type: none"> • Coordinate 6 field days.
5. Conduct Shoreland Habitat Assessment Surveys.	200	\$3,500	LWCD WDNR Zoning	<ul style="list-style-type: none"> • 1-2 lakes annually.
6. Expand River Water Quality Monitoring (WAV) Program.	100	\$3,500	LWCD DNR	<ul style="list-style-type: none"> • Coordinate volunteers to conduct stream monitoring. • Conduct WQ monitoring.

Goal 2: Protect and enhance surface water and groundwater quality.

Objective C: Protect water quality by reducing soil erosion & stormwater runoff, including reduction of impervious surfaces.				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
1. Provide technical assistance and cost-share to landowners for erosion concerns or stormwater runoff issues.	150	\$5,250	LWCD DATCP NRCS	<ul style="list-style-type: none"> Implement 3+ conservation practices annually.
2. Provide assistance and promote best management practices for water quality to municipalities, highway department, forestry, private landowners, etc.	20	\$700	LWCD NRCS	<ul style="list-style-type: none"> Support provided as requested.
3. Compile strategies from resources on stormwater, invasive species, and forestry issues related to climate change.	20	\$700	LWCD	<ul style="list-style-type: none"> Seek training on stormwater, invasive species, & forestry concerns related to climate change.
4. Support Zoning Department review of erosion control plans when needed to ensure compliance.	10	\$350	Zoning LWCD	<ul style="list-style-type: none"> Review plans as needed.
5. Distribute Construction Site Best Management Practices and erosion control information.	5	\$175	Zoning LWCD	<ul style="list-style-type: none"> Provide Zoning with erosion control best management practices.
6. Coordinate LWCD water quality protection activities with the Lake Superior LAMP.	40	\$1,400	LWCD	<ul style="list-style-type: none"> Provide educational signage at Saxon Harbor on bioswales and restoration work.

Goal 2: Protect and enhance surface and groundwater quality.

Objective D: Identify priority fish passage barriers and failing culverts with natural resource impacts.				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
1. Coordinate with partners to identify failing culverts /fish barriers.	40	\$1,400	LWCD USFWS WDNR NRCS	<ul style="list-style-type: none"> • Provide outreach to towns on culvert replacement. • Identify one fish barrier to replace annually.
2. Provide technical and financial assistance to restore fish barriers at critical road crossings.	150	\$5,250	LWCD DATCP NRCS	<ul style="list-style-type: none"> • Assist road manager with road crossing/ fish barrier restoration as needed.
3. Encourage participation at workshops for towns, highway and forestry on property culvert sizing/ placement.	40	\$1,400	LWCD UW-Madison Extension WDNR	<ul style="list-style-type: none"> • Support education workshops.
4. Promote stream health through stream restorations.	300	\$10,500	LWCD DATCP	<ul style="list-style-type: none"> • Provide technical assistance & cost-share for stream projects as needed.
Objective E: Monitor groundwater quality throughout the county.				
1. Coordinate w/UWSP Ground water Center to monitor groundwater concerns in the county.	40	\$1,400	UWSP Health Dept. LWCD	<ul style="list-style-type: none"> • Coordinate groundwater monitoring program.
Objective F: Promote proper well abandonment program.				
1. Promote proper well abandonment and provide cost share to decommission an abandoned well.	10	\$350	LWCD NRCS DNR	<ul style="list-style-type: none"> • Promote well abandonment through education & media. • Provide cost-share for well decommission.

Goal 2: Protect and enhance surface and groundwater quality.

Objective G: Promote the importance of wetlands for water quality and flood control.				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
1. Provide wetland delineations.	100	\$3,500	LWCD	<ul style="list-style-type: none"> Wetland delineations as requested/able.
2. Promote wetland restorations.	40	\$1,400	LWCD	<ul style="list-style-type: none"> Assist in wetland scrapes and restoration.

Goal 3: Promote sustainable land use practices.

Objective A: Implement practices that restore & protect degraded habitat by working with private landowners & local partners.				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
1. Promote maintenance and establishment of riparian habitat and erosion control practices.	410	\$14,350	LWCD	<ul style="list-style-type: none"> Fund 4+ projects annually. Utilize state funds for projects. Assist in installation of riparian restoration.
2. Assist Zoning with development of shoreland mitigation plans so they are in compliance with NR 115.	100	\$3,500	LWCD Zoning	<ul style="list-style-type: none"> Develop mitigation plans annually for zoning.
3. Develop and promote a Pollinator Program.	100	\$3,500	LWCD	<ul style="list-style-type: none"> Incorporate pollinator gardens in shoreline restorations. Promote pollinator gardens through the native plant sale.

Goal 3: Promote sustainable land use practices.

Objective B: Promote monitoring and data collection.				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
1. Job check restorations/mitigations annually to monitor maintenance and recovery of buffer vegetation.	20	\$700	LWCD	<ul style="list-style-type: none"> Review 5 projects annually for maintenance.
Objective C: Reduce nutrient inputs & promote compliance with NR 151 Standards.				
1. Distribute NR 151 agricultural performance standards information to interested landowners.	5	\$175	LWCD UW-Madison Extension NRCS	<ul style="list-style-type: none"> Distribute brochures & information as necessary.
2. Coordinate nutrient management education workshop & certified farmer training course; and hold annual workday to update plans.	20	\$700	LWCD DATCP DNR	<ul style="list-style-type: none"> Assist coordination of one annual workshop. Coordinate one annual plan update meeting.
3. Utilize cost-share funds to encourage compliance with NR 151 for producers.	80	\$2,800	LWCD NRCS	<ul style="list-style-type: none"> Implement practices as needed for compliance.
4. Track NR 151 compliance annually on all nutrient management plans.	20	\$700	NRCS LWCD	<ul style="list-style-type: none"> Review NM plans annually & field checks.

Goal 3: Promote sustainable land use practices.

Objective D: Preserve agricultural lands, promote rotational grazing & protect croplands from wildlife damage.				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
1. Promote Working Lands Initiative and other agricultural tax-incentive programs.	40	\$1,400	LWCD NRCS	<ul style="list-style-type: none"> Promote programs for eligible landowners. Update website as needed.
2. Provide information on rotational grazing.	20	\$700	NRCS LWCD	<ul style="list-style-type: none"> Update website as needed.
3. Contract with WDNR to coordinate landowner abatement practices and wildlife damage compensation.	100	\$3,500	DNR LWCD	<ul style="list-style-type: none"> Administer wildlife damage program.
4. Contract with WDNR to administer deer donation program in Iron County.	50	\$1,750	DNR	<ul style="list-style-type: none"> Support deer donation program.
Objective E: Encourage sustainable forest management practices at the private & county level.				
1. Coordinate Woods Project teaching sustainable forestry practices while studying the American marten.	200	\$7,000	LWCD ICF GLIFWC DNR	<ul style="list-style-type: none"> Host field outings; 12 annually. Provide information to private landowners on managing forests for wildlife. Present data to public, annual presentation/annual report Submit media releases - 3+ annually.

Goal 3: Promote sustainable land use practices.

Objective F: Collaborate with external partners to share information, project costs, & natural resource planning strategies.				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
1. Encourage inventory of logging trails/hunting access to identify resource concerns.	20	\$700	ICF LWCD	<ul style="list-style-type: none"> • Provide recommendations as necessary.
2. Promote proper logging trail abandonment and runoff management on public lands.	10	\$350	ICF LWCD WDNR	<ul style="list-style-type: none"> • Provide recommendations as necessary.
3. Participate in the Regional Pollinator Group.	20	\$700	NWCPP LWCD	<ul style="list-style-type: none"> • Attend meetings. • Promote goals and objectives of the NWCPP. • Support NWCPP as requested.
4. Explore implementation of shoreline recession rate study and incorporation into county zoning ordinances.	40	\$1,400	LWCD Zoning	<ul style="list-style-type: none"> • Assist Zoning Department with development and adoption of ordinance incorporating shoreline recession rate study.

Goal 4: Mitigate invasive species impacts.

Objective A: Promote monitoring and data collection.				
1. Conduct early Detection AIS surveys.	100	\$350	LWCD	<ul style="list-style-type: none"> • Survey 1-2 lakes annually using early detection methods.
2. Conduct long-term spiny waterflea study.	20	\$700	LWCD WDNR CFL	<ul style="list-style-type: none"> • Monthly SWF tows June-Oct.

Goal 4: Mitigate invasive species impacts.

Objective B: Monitor & document invasive species throughout the county.				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
1. Develop, install, and maintain AIS signage at designated boat landings.	40	\$1,400	LWCD	<ul style="list-style-type: none"> • Inventory/Post landing signs/posts as necessary.
2. Encourage Citizen Lake Monitoring volunteers to report monitoring results in SWIMS database.	30	\$1,225	LWCD	<ul style="list-style-type: none"> • Report data annually into WDNR SWIMS database.
3. Utilize GIS to map aquatic and terrestrial infestations within the county.	80	\$2,800	LWCD	<ul style="list-style-type: none"> • Further develop & maintain GIS database.
4. Develop annual AIS report for township and/or county board.	80	\$2,800	LWCD	<ul style="list-style-type: none"> • Provide annual report on website.
5. Encourage volunteers to monitor for terrestrial plants and animals.	150	\$5,250	LWCD	<ul style="list-style-type: none"> • Hold annual treatment/control field day.
Objective C: Coordinate implementation of aquatic & terrestrial invasive species prevention & control.				
1. Seek additional funding to maintain AIS education, prevention and control programs.	40	\$1,400	LWCD Xcel	<ul style="list-style-type: none"> • Seek additional funding sources to fund continuation of the invasive program.
2. Provide technical/financial assistance on workdays to control/remove invasive species.	100	\$3,500	NCWMA NRCS LWCD	<ul style="list-style-type: none"> • Provide assistance through workdays.

Goal 4: Mitigate invasive species impacts.

Objective D: Collaborate with external partners to share information, project costs, & natural resource planning strategies.				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
1. Attend regular meetings with NCWMA, USFS, DNR, UW-Madison Extension, GLIFWC and other partners to plan projects & field days to control invasive species.	80	\$2,800	LWCD	<ul style="list-style-type: none"> Maintain relationships with partners to protect Iron County's resources from invasive species.
2. Encourage BMPs for recreation trails to prevent the spread of invasive species.	20	\$700	LWCD ICF ICORE	<ul style="list-style-type: none"> Distribute BMP brochures as requested.
3. Assist as requested with development of grants/projects for data collection of aquatic plants, invasive species, climate monitoring, self-help monitoring, etc.	10	\$350	LWCD	<ul style="list-style-type: none"> Assist one public interest group annually with grant development.

Goal 5: Maintain a well-trained professional staff

Objective A: Promote staff participation in regional & state conservation groups/organizations.				
1. Support, serve, and assist state and regional boards and planning committees.	40	\$1,400	WI LAND+WATER LWCD	<ul style="list-style-type: none"> Serve on regional/state boards as able.
2. Support Iron Co staff as coordinator for the Northwest Area Land Conservation Association.	70	\$2,500	LWCD NWLWCA	<ul style="list-style-type: none"> Serve as the NW Area Coordinator.

Goal 5: Maintain a well-trained professional staff

Objective B: Support professional development				
Activity (Highest priorities in BOLD)	Staff Hours/Year	Staff Cost	Lead Agency/ Support Agency	Measurable Outcomes
1. Encourage staff attendance at conferences, trainings and workshops to further their education.	150	\$5,250	LWCD	<ul style="list-style-type: none"> Attend 2+ conferences and workshops per year.

Partnerships and Collaboration

Partner agencies and organizations are an integral component to the success of the plan. Partners participated in the development of the plan and supporting partners are identified in the work plan to increase collaboration in the face of limited funds and local staff. Additional partners may become involved as a result of an increased awareness of the goals of the LWRM Plan and the mission of the LWCD. It is also anticipated that additional partners such as school groups, lake groups, townships, and other associations or agencies may become involved in the plan's implementation.

Ashland, Bayfield, Douglas, & Vilas Counties
Bad River Natural Resources Department
Farm Service Agency
Great Lakes Commission
Great Lakes Indian Fish & Wildlife Commission
Iron County Economic Development Council
Iron County Forestry & Parks Department
Iron County Health Department
Iron County Lakes and Rivers Alliance
Iron County Land & Zoning Department
Iron County Register of Deeds
Lake Superior Basin Partnership Team
Lake Superior Binational Program
Lake Superior Collaborative
Michigan Soil & Water Conservation
Natural Resources Conservation Service
National Estuarine Research Reserve
National Oceanic & Atmospheric Agency
Northern Great Lakes Visitor Center
North Lakeland Discovery Center
Northwest Land & Water Conservation Association
School Districts
Sigurd Olson Environmental Institute
Superior Rivers Watershed Association
University of Wisconsin-Extension
US Geological Survey - Water Resources
Wisconsin Coastal Management Program
Wisconsin Department of Agriculture, Trade, &
Consumer Protection
Wisconsin Department of Natural Resources
Wisconsin Geological & Natural History Survey
Wisconsin Land+Water Conservation Association
Wisconsin Sea Grant
Wisconsin Wetlands Association

*There are only two tragedies in life:
One is not getting what you want...
and the other is getting it."
- Oscar Wilde*

Monitoring and Assessment

Monitoring and assessment are important to evaluate the progress toward accomplishing plan goals and objectives. The Clean Water Act, State of Wisconsin law, and associated rules mandate monitoring of surface waters. The collection and dissemination of information is also essential in educating and increasing public awareness of environmental issues.

WDNR monitoring programs are implemented to achieve a comprehensive understanding of surface waters. These include ambient or baseline monitoring, special project monitoring, long-term trend monitoring, and total maximum daily loads. The WDNR assembled a monitoring strategy that describes the need for various chemical, physical, habitat, and biological monitoring data.

Recommendations related to the availability of baseline data from which to recognize problems as they develop include the following:

- WDNR recommendations from the Water Quality Management (WQM) Plans for Upper Chippewa and Lake Superior Basins (**Appendix C**) should be followed. While these plans have not been updated since the late 1990's, their issues and recommendations still hold value today. Additional resources should be invested in these efforts by the agency.
- WDNR and Iron County should continue to support lake and river groups in their efforts to pursue water quality management projects.
- WDNR and Iron County should initiate a joint coordinated monitoring program (surface and groundwater) to build baseline information where it is needed.
- WDNR and Iron County should continue to encourage and support citizen lake monitoring.
- WDNR and Iron County should involve school groups in monitoring program efforts to the extent practicable to promote public understanding.

Ongoing Water Quality Monitoring

The following is a partial list of monitoring programs in Iron County:

Resource	Program	Agency/Group
Groundwater (Limited)	Drinking Water Testing	Health Dept., DNR
Lakes	Citizen Lake Monitoring	Lake Volunteers, DNR
Lakes	Purple Loosestrife Monitoring	Lake Volunteers, DNR
Lakes	Clean Boats, Clean Waters	Lake Volunteers, UW-Madison Extension
Lakes	DNR Lake Planning Grants	Lake Groups
Lakes/Streams	Chemical Measurements	DNR, Lake Groups, SRWA
Lakes/Streams	Biological Assessments	DNR, SRWA
Streams	Habitat Assessments	DNR, SRWA
Wildlife	LoonWatch	Lake Volunteers, SOEI

Staffing and Funding Needs

Estimated staffing and funding needed to implement all goals, objectives, and activities identified by the advisory committee are listed in **Table 24**.

Fiscal Year	Existing Staff or Contract Time (Hours)	Estimated Staff Time Needed for Implementation (Hours)	Staff or Contract Shortfall (Hours)	Estimated Cost for Full Plan Implementation
2021	3,680	4,710	1,030	\$189,020.00
2022	3,672	4,710	1,038	\$190,340.00
2023	3,664	4,710	1,046	\$191,660.00
2024	3,656	4,710	1,054	\$192,980.00
2025	3,648	4,710	1,062	\$194,300.00
TOTAL	18,320	23,550	5,230	\$958,300.00

Work planning will determine the amount of funding needed annually for plan implementation. Funding is not available to implement all of the activities outlined in Chapter 5. Funding, available from various sources, often dictates work planning. A combination of private, local, state, and federal sources will be sought to implement the plan priorities. Some funding sources are listed in the work plan next to each activity. **Appendix B** contains an expanded list of potential funding sources.

Consistency and flexibility are key ingredients to the success of the soil and water resource program.

Iron County is working hard to build a successful Land and Water Resource Management Program. Although local residents recognize the value of soil and water resource management, they are limited in the local dollars they can contribute. Factors that should be considered when measuring local commitment include the following:

- Low tax base - large acreage of public lands
- Low numbers of residents
- Geographic scope of the county
- Lack of perceived threat (pristine nature of resources)

Local residents, staff, and elected officials must communicate and use their influence to help structure the development of state and federal grant programs in order to address the diversity of issues throughout Wisconsin.

Plan Evaluation

Many of the goals of the plan reflect the need to change attitudes or increase visibility in order to build a more effective program. The overall goal of the LWRM Plan is to map a course of action to reduce sources of nonpoint pollution entering Iron County waters and to better the health of the watershed basins in Wisconsin.

Plan evaluation is important as it assesses whether goals, objectives, and activities are being accomplished. Each activity of the work plan contains measurable outcomes that can be evaluated annually for year-end accomplishment reporting. Measures of success are relatively straightforward for most objectives. However, evaluating the success of information and education poses special challenges. Without an extensive investment of time and money, it is difficult to measure if an educational technique is effective. The measurable outcomes are listed in the Land and Water Quality Initiatives Implementation Plan in Chapter 5. The following evaluation tools will also be used to assess Iron County's plan effectiveness:

- Annual report to DATCP and the Iron County Board of Supervisors.
- The LWCD staff will review plan progress quarterly and provide updates to the committee.
- A fall planning meeting will provide an opportunity for the LCC and staff to meet to discuss progress and determine the next fiscal year's projects.
- Workshop evaluations.
- Annual conservation practice and engineering field review.

Using any or all of these simple evaluation tools will provide the LWCD and LCC the information they need to identify strengths and weaknesses to improve program delivery throughout Iron County.

Recommendations for Local, State and Federal Agencies

County Agencies

LAND CONSERVATION COMMITTEE

- Maintain association with Ashland, Bayfield, and Vilas Counties.
- Ask yourselves how to better implement land and water programs.

PLANNING & ZONING

- LWCD should continue to provide support for water quality related projects.
- LWCD should assist Zoning with projects that will improve water quality.

UNIVERSITY OF WISCONSIN-MADISON EXTENSION

- Include UW-Madison Extension in items mentioned under *Planning & Zoning*.

State Agencies

DEPARTMENT OF AGRICULTURE, TRADE & CONSUMER PROTECTION

- DATCP should continue to show a presence in Northern Wisconsin and assist LCCs in implementing their programs through increased funding and support.

DEPARTMENT OF NATURAL RESOURCES

- Continue to build protection programs for northern Wisconsin waters.
- Provide staff assistance to educate local officials and assist in grant applications for protection and implementation funding.
- Increase the nonpoint and water quality staffing in northwest Wisconsin.

Federal Agencies

NATURAL RESOURCES CONSERVATION SERVICE & FARM SERVICE AGENCY

- Support Conservation Reserve Enhancement Program implementation.
- Continue providing technical assistance for non-agricultural conservation practices.
- Continue providing technical assistance for agricultural waste storage, sediment basins and filter strips.
- Increase assistance and training for LWCD staff.
- Complete soil mapping and maintain assistance for soils information requests.

FISH & WILDLIFE SERVICE

- Continue providing funding for fish passage and habitat restoration.
- Provide technical and grant writing assistance to local officials for fish and wildlife restoration and enhancement activities.
- Continue collaboration on watershed based nonpoint source pollution projects.

Chapter 6. Conclusion

Local leadership in natural resource management is a vital component to successfully managing and protecting our natural resources. Wisconsin's Land and Water Conservation Departments provide a critical link between the citizens living and using natural resources and state and federal agencies working to protect these resources.

Land and Water Resource Management Plans are intended to reflect local resource management needs identified through a public process and to be flexible and easily implemented from the local level. Iron County continues to work hard to build its Land and Water Resource Management Program. Although local residents recognize the value of soil and water resource management, they are limited in the local dollars they can contribute. Their implementation relies on a coordinated approach from supporting agencies, and adequate, consistent, flexible state funding policies.

The Iron County Land and Water Resource Management Plan provides the county ability to address natural resources issues and concerns. It also fosters an informed and active public to act responsibly to protect its soil and water resources for future generations.

We abuse the land because we regard it as a commodity belonging to us. When we see the land as a community to which we belong, we may begin to use it with love and respect.

-Aldo Leopold

References

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Appendix A: Information and Education

Information and education are critical to the success of the Iron County Land and Water Resource Management Plan. Activities in **bold** are identified as priorities.

Environmental Knowledge and Stewardship Education Strategy

Goal

Increase the public's level of environmental knowledge and stewardship.

Audience

Lake property owners, Lake groups, Realtors, General public, Students, Elected officials, County board, Zoning committee, Landscapers, Nurseries, Consultants, News media

Messages

Technical assistance for sediment and erosion control is available.

Sensitive areas should be protected.

Wetland/lake/river frontage provides important wildlife habitat.

What are water quality benefits of buffers?

You can protect your lake's water quality.

Activities

Distribute shoreland information, restoration guides & native plant nursery lists to new shoreland owners and interested lake citizens.

Present programs on shoreland BMPs, erosion control techniques, & importance of native plants.

Disseminate shoreland information via news articles, handouts, website/Facebook, and other media.

Promote responsible use of herbicides & phosphorus-free fertilizer to protect water quality.

Promote shoreland restoration through LWCD plant sale.

Offer tour for elected officials of habitat restoration sites.

Present 2+ education programs annually to lake/river groups.

Develop articles on water quality.

Present education program to advocate for the importance of wetlands.

Provide information on stormwater retention.

Conduct programs for schools on Envirothon, Conservation Poster & Speaking Contest, etc.

Coordinate WLWCA Youth Conservation Camp annually.

Sponsor students annually to attend WLWCA Conservation Camp.

Conduct programs to Zoning & elected officials on benefits of healthy water resources.

Promote education about forest management & BMPs for water quality.

Provide groundwater education on land use & climate change to the public.

Identify groundwater recharge areas & educate about safe land management practices.

Offer groundwater education programs to local schools.

Environmental Knowledge and Stewardship Education Strategy (Continued)

Activities (Continued)

Assist health department with home drinking water tests and nitrate screening of private wells for chemicals.

Host workshop about UW Stevens Point well water testing results.

Train citizens & volunteer groups to identify aquatic & terrestrial invasive species.

Coordinate CBCW & citizen lake monitoring workshops.

Support workshop to train town/county road crews about BMPs for invasives.

Provide information to foresters, loggers, bait shops, anglers, & landowners on the impacts of terrestrial invasives on woodland habitat.

Update and maintain information on the LWCD website.

Surface Water and Groundwater Education Strategy

Goal

Protect and enhance surface water and groundwater quality

Audience

Students, Teachers, Lake property owners, Private well owners, Lake groups, Realtors, Elected officials, County board, General public, Zoning, Nurseries, Landscapers, Consultants, News media

Messages

Good stewardship promotes clean lakes and a good quality of life.

Natural beauty of lakes and rivers sells Iron County real estate.

Native aquatic communities provide fish and wildlife habitat.

Properly sized and placed culverts reduced road costs and maintenance.

Impermeable surface should be minimized.

Pesticide and fertilizer use should be minimized near lakes and streams.

Drinking water tests are available through public health services.

Daily activities and land use affect groundwater quality.

Iron County groundwater is sensitive due to geologic conditions.

It is easy and more cost-effective to protect groundwater.

Technical assistance is available for well abandonment.

What are the threats of groundwater decontamination?

Activities

Encourage lake/river groups to develop management plans.

Encourage ICLRA, lake groups, & students to collect WQ data for Self-Help & Citizen-based monitoring.

Assist lake, stream & wetland monitors with data collection & reporting efforts to support climate change data recording.

Surface Water and Groundwater Education Strategy (Continued)

Activities (Continued)

Identify lakes in need of WQ data.

Coordinate Woods and Waters Project to collect data on WQ, loon reproduction, & riparian plants.

Conduct shoreland habitat assessment surveys.

Expand River Water Quality Monitoring (WAV) Program.

Provide technical and cost-share assistance for erosion control or stormwater runoff issues.

Provide assistance & promote WQ BMPs to municipalities, highway, forestry, private landowners, etc.

Compile strategies from resources on stormwater, invasive species, & forestry issues related to climate change.

Support Zoning Department review of erosion control plans when needed to ensure compliance.

Distribute construction site BMPs & erosion control information.

Coordinate LWCD water quality protection activities with the Lake Superior LAMP.

Coordinate with partners to identify failing culverts/fish barriers.

Provide technical & financial assistance to restore fish barriers at critical road crossings.

Encourage participation at workshops for towns, hwy, and forestry on proper culvert sizing/placement.

Promote stream health through stream restorations.

Coordinate with UWSP Groundwater Center to monitor groundwater concerns in the county.

Promote proper well abandonment & provide cost-share to decommission an abandoned well.

Provide wetland delineations.

Promote wetland restorations.

Sustainable Land Use Practices Education Strategy

Goal

Promote sustainable land use practices.

Audience

Students, Property owners, Foresters, Farmers, Elected officials, County board, General public, Town and County road crews, News media

Messages

Best management practices can reduce erosion from construction.

Sediment from building/ road construction can damage the environment.

Agricultural performance standards regulate farms in Iron County.

Cost sharing is available for agricultural and forest conservation practices.

Proper handling of animal waste reduces impacts to water resources.

Cost savings may be shown from proper manure management.

Sustainable Land Use Practices Education Strategy (Continued)

Messages (Continued)

Large blocks public owned land are important for biological diversity.
Good water quality yields higher shoreland property value.

Activities

Promote maintenance and establishment of riparian habitat and erosion control practices.
Assist Zoning with development of shoreland mitigation plans so they are in compliance with NR 115.

Develop and promote a Pollinator Program.

Job check restorations/mitigations annually to monitor maintenance & recovery of buffer vegetation.

Distribute NR 151 agricultural performance standards information to interested landowners.
Coordinate nutrient management education workshop & certified farmer training course;
& hold annual workday to update plans.

Utilize cost-share funds to encourage compliance with NR 151 for producers.

Track NR 151 compliance annually on all nutrient management plans.

Promote Working Lands Initiative and other agricultural tax-incentive programs.

Provide information on rotational grazing.

Contract with WDNR to coordinate landowner abatement practices & wildlife damage compensation.

Contract with WDNR to administer deer donation program in Iron County.

Coordinate Woods Project teaching sustainable forestry practices while studying the American marten.

Encourage inventory of logging trails/hunting access to identify resource concerns.

Promote proper logging trail abandonment & runoff management on public lands.

Participate in the Regional Pollinator Group.

Explore implementation of shoreline recession rate study & incorporation into county zoning ordinances.

Invasive Species Education Strategy

Goal

Mitigate invasive species impacts.

Audience

Students, Property owners, Foresters, Farmers, Elected officials, County board, General public, Town and County Road crews, News media

Messages

Purple loosestrife and other invasive species can be identified and eradicated.

Invasive species degrade natural resources and impact fish and wildlife.

Invasive Species Education Strategy (Continued)

Messages (Continued)

Invasive species degrade natural resources and impact fish and wildlife.

Prevention is cheaper than control and management.

Native plantings can help prevent invasive species from moving in.

Best management can help prevent the spread of invasive species.

Education is a great tool to prevent the spread of invasive species.

Activities

Conduct early detection AIS surveys.

Conduct long-term spiny waterflea study.

Develop, install, & maintain AIS signage at designated boat landings.

Encourage Citizen Lake Monitoring volunteers to report monitoring results in SWIMS database.

Utilize GIS to map aquatic & terrestrial infestations within the county.

Develop annual AIS report for township and/or county board.

Encourage volunteers to monitor for terrestrial plants & animals.

Seek additional funding to maintain AIS education, prevention, & control programs.

Provide technical/financial assistance on workdays to control/remove invasive species.

Attend regular meetings with NCWMA, USFS, DNR, UWEX, GLIFWC & other partners to plan projects & field days to control invasive species.

Encourage BMPs for recreation trails to prevent the spread of invasive species.

Assist as requested with development of grants/projects for data collection of aquatic plants, invasive species, climate monitoring, self-help monitoring, etc.

Appendix B: Potential Funding Sources

Department of Administration (DOA) Coastal Management Program Grants -

Provides funding to enhance and restore coastal resources.

Department of Agriculture, Trade & Consumer Protection (DATCP) Land and Water Resource Management (LWRM) Implementation Grants -

Provides funding to keep with the goals of the County LWRM plan. Source is principally bonding.

Environmental Quality Incentive Program (EQIP) - NRCS program promotes conservation practice installation to prevent and correct soil erosion and water quality problems.

Farmland Preservation Program - LCC administered program provides minimum tax credit to promote agricultural land preservation.

Forestry Education Grant Program - Targets public school education, promotes growth of a comprehensive mix of forestry education resources available to Wisconsin teachers.

Forest Stewardship Program - Encourages private nonindustrial forest landowners to consider all resources in the management of their forest lands.

Great Lakes Basin Program - Seeks to improve Great Lakes water quality by promoting erosion and sediment control and sound land-use through information/education, demonstration grants, technical assistance and coalition building in the Great Lakes states.

River Protection Grant Program - Fosters partnerships between DNR, nonprofit groups, UWEX, and local units of government to promote stewardship of rivers to protect against riverine pollution and habitat degradation.

Lake Planning/Protection/Classification - Promotes lake planning and protection: includes funding for lake classification, ordinance work, and lake planning projects.

Land and Water Education Grant Program - Promotes innovative education or conservation practice assessment programs targeted at agricultural producers in Wisconsin. Proposals should serve as models for improving natural resource conservation program delivery at the local, regional, or state level.

North American Wetland Conservation Act - Superior Coastal Wetland Initiative Phase I, a local grant to provide nonpoint pollution reduction technical assistance through the LWCD a land acquisition through Bad River Reservation, DNR & USFWS.

Trout Unlimited Chapters – Promote trout habitat restoration or protection projects.

US Fish and Wildlife Service – Provides cost sharing to eligible wetland restoration projects (projects are judged locally by “wetland team”).

Wetland Reserve Program/Conservation Reserve Program – NRCS Programs promote wetland protection & reduced tillage on HEL land.

Wisconsin Geological and Natural History Survey – Targeted groundwater protection projects based on statewide priorities.

Private Funding Sources

Association of Consulting Foresters
Ducks Unlimited
Iron County Sportsman’s Club
Pheasants Forever
Trout Unlimited
Wisconsin Waterfowlers’ Association
Forest Industry Assistance
Individual Contributions
Lake Organizations
Private Foundations
Volunteer Hours
Wisconsin Forest Products Council
Wisconsin Tree Farm Commission
Wisconsin Woodland Owners Association

Local Government Funding Sources

Iron County Departments
Iron County Towns

State Government Funding Sources

Cooperative Educational Services Administration
Lakes Planning/Lakes Protection Grants
Lakes Protection Grants
Priority Watershed Program
River and Stream Planning and Protection Grants
Segregated Funds (general license)
Stewardship Grants
Targeted Runoff Management
Trout Stamp (Inland)
Wisconsin Department of Natural Resources
Wisconsin Forest Landowner Grants

Appendix C: Related Resource Plan Recommendations

A concerted effort has been made throughout the revision of the Iron County Land and Water Resource Management Plan to integrate adjoining management plans, soil erosion and water quality goals, and concerns identified through land use surveys and other planning initiatives. Many of these plans share the goals of the LWRMP. Some of those are as follows:

- ✓ *DNR Water Quality Management Plans - Upper Chippewa & Lake Superior Basins*
 - ✓ *Iron County Comprehensive Forest Plan*
 - ✓ *Iron County Comprehensive Plan*
 - ✓ *Iron County Farmland Preservation Plan*
 - ✓ *Lake Superior Lakewide Action and Management Plan*
 - ✓ *USDA Forest Service - Forest Management Plan*
 - ✓ *Red Clay Project Report*
 - ✓ *Bad River Tribal Integrated Resource Management Plan*
 - ✓ *Lac du Flambeau Tribal Integrated Resource Management Plan*
 - ✓ *Turtle-Flambeau Scenic Waters Area Master Plan & Environmental Assessment*
 - ✓ *Northern Highland-American Legion State Forest: Master Plan*
 - ✓ *Northern Initiatives Shorelands Report*
 - ✓ *Joint Counties' Economic Development Plan*
 - ✓ *Northern Great Lakes Visitor Center - Education Plan*
 - ✓ *Wisconsin's Nonpoint Source Program Management Plan*
-
- ✓ *Mercer Land Use Plan / Future's Survey*
 - ✓ *Town of Sherman Land Use Survey*
 - ✓ *Town of Kimball Town Survey*
 - ✓ *Town of Knight Community Planning Survey*
 - ✓ *Island Lake Survey*

A brief discussion of some of those water quality and resource planning goals and issues follows:

WATER QUALITY MANAGEMENT PLANS

Water Quality Management (WQM) Plans outline recommendations for actions that agencies (local, state, and federal), organizations, communities, counties, and industries need to take to improve, protect and enhance water resources of a basin. WQM Plans are required by Section 208 of the Federal Clean Water Act.

The recommended actions outlined in each WQM Plan are a result of an analysis of available water quality data and other information by the WDNR. Since many areas of each basin lacked current data, one of the major goals for each plan is to conduct water quality monitoring.

WQM Plan basin-wide recommendations and goals that relate to or compliment the goals of the Iron County Land and Water Resource Management Plan are summarized below. While these plans are from the late 1990's, their issues and recommendations still hold value today.

UPPER CHIPPEWA RIVER BASIN WATER QUALITY MANAGEMENT PLAN

The Upper Chippewa River Basin Water Quality Management Plan was completed by the WDNR in 1996. The Upper Chippewa River Basin spans the 4,680 square mile drainage area of the Chippewa River down to the Holcombe Flowage. The basin has 4,051 rivers and streams. 25% of them are unnamed, and many of the 379 named rivers and streams are less than 5 miles long.

Water quality data is available for only a small number of water bodies in the basin. Much of this information was gathered for special purposes, such as point source discharge projects or Federal Energy Regulatory Commission (FERC) hydropower facility re-licensing. Fish population surveys exist for additional streams, but much of this information dates back to the 1960s.

Much of this basin consists of forest and wetland, with the southern portion of the basin tending toward agricultural land uses. Hydropower is a significant use of water resources in the Upper Chippewa and Flambeau rivers.

Basinwide Resource Issues

- ❖ Polluted runoff
- ❖ Contaminated biota (plant and animal life)
- ❖ Sediment quality
- ❖ Loss of shoreline habitat due to development
- ❖ Aquatic habitat in streams, impoundments and wetlands
- ❖ Endangered resources

Basinwide Recommendations

- ❖ Setbacks
- ❖ Shoreline erosion control
- ❖ Riparian habitat protection
- ❖ Identify foam in the Upper Chippewa Basin
- ❖ Purple loosestrife control
- ❖ Protect wetland habitat along Chippewa and Flambeau Rivers

Information and Education Recommendation

- ❖ Develop shoreline management education materials to prevent impacts to water resources

LAKE SUPERIOR BASIN WATER QUALITY MANAGEMENT PLAN

The Lake Superior Basin Water Quality Management Plan was completed by the WDNR in 1999. Wisconsin's Lake Superior Basin area includes all the shoreline to Lake Superior and all tributary watersheds that drain to the lake from Wisconsin. Water quality in this region is generally very good. Localized impacts from municipal and industrial wastewater discharges have had a significant effect on water quality. Nonpoint source (NPS) pollution such as stream bank and shoreline erosion is impacting many areas, causing turbidity and sedimentation of streambeds. Other examples of nonpoint pollution are pollution from storm water drains, runoff from farm fields, sedimentation from logging sites and construction site erosion.

Basin-wide Resource Issues

- ❖ Point source pollution management
- ❖ Lake management
- ❖ Toxic pollution management
- ❖ Nonpoint source (NPS) pollution management
- ❖ Surface water monitoring and assessment needs

Basin-wide Recommendations

- ❖ Water quality monitoring
- ❖ Evaluate and protect wetlands
- ❖ Assist county and municipal administrators in enforcement of shoreland and wetland zoning
- ❖ Protect existing water in Class I lakes
- ❖ Assist local authorities in development of standards for Lake Superior shoreline aesthetic and buffer zones

Information and Education Recommendation

- ❖ Develop shoreline management education materials to prevent impacts to water resources

LAKE SUPERIOR LAKEWIDE ACTION AND MANAGEMENT PLAN

Iron County is included in two of 20 plans of the Lake Superior Lakewide Action and Management Plan (LAMP) Biodiversity Conservation Strategies (BCS) completed in 2015. Regional plans respond to local conservation efforts while meeting lakewide biodiversity goals.

Plan Objectives

- ❖ Maintain deepwater and offshore waters in good ecological condition.
- ❖ Maintain nearshore zone and reefs in good ecological condition.
- ❖ Maintain embayments and inshore areas in good ecological condition.
- ❖ Maintain coastal wetlands in good ecological condition.
- ❖ Maintain islands in good ecological condition.

- ❖ Maintain coastal terrestrial habitats in good ecological condition.
- ❖ Maintain tributaries and watersheds in good ecological condition.
- ❖ Achieve zero release (from within the Lake Superior Basin) of 9 persistent bioaccumulative toxic substances.
- ❖ Protect the Lake Superior Basin from contamination resulting from additional substances of concern (pharmaceuticals, microplastics, and nutrients).

Lake Superior BCS: Bad River-Montreal - Extends east from Ashland to the Wisconsin/Michigan boundary. Includes the Bad River Reservation and the Penoque-Gogebic Range.

Plan Issues

- ❖ Non-native invasive species
- ❖ Mining in the Penoque-Gogebic Range could impact headwaters in the Bad River Watershed
- ❖ Impaired waterbodies
- ❖ Excessive sediments
- ❖ Erosion and sedimentation
- ❖ Majority of soils poorly suited for field crops
- ❖ Nutrients from septic systems and agriculture
- ❖ Hydroelectric power production activities associated with the Gile Flowage

Black-Presque Isle and Ontonagon - Extends from just west of the mouth of the Montreal River to the community of Ontonagon in the east. The majority of the land-base is in Michigan, however the southernmost portion extends into Wisconsin and includes a small portion of Iron County.

Plan Issues

- ❖ Impaired waterbodies
- ❖ Forest fragmentation

TYLER FORKS WATERSHED PLAN

The WDNR completed the Tyler Forks Watershed Plan in 2015.

Tyler Forks Watershed is a sub watershed within the Bad River Watershed. The watershed drains 78 square miles of land originating at Shine Lake in the Township of Knight, south of Upson, Wisconsin. Shine Creek is joined by the outflow of O'Brien Lake and becomes Tyler Forks. As the low volume river flows north, west, and then southwest toward Mellen it receives the waters of tributary creeks such as Mead, Erickson, Rouse, Dunn and Javorsky. Finally, Tyler joins the Bad River within Copper Falls State Park. The Bad ultimately flows to Lake Superior through the Bad River Indian Reservation and Odanah, Wisconsin.

Plan Issues

- ❖ Potential runoff/erosion from land management activities
- ❖ Protection of high quality resources in watershed

Plan Recommendations

- ❖ Restore wetlands to prevent altered food webs, a loss of biodiversity, and a poorly functioning ecosystem.
- ❖ Study the effectiveness of best management practices in forestry areas with steep slopes
- ❖ Write up and incorporate results of the macroinvertebrate study into the WATERS data system.
- ❖ Conduct follow up monitoring for Tyler Forks, Mud Creek, Javorsky Creek, and Bull Gus Creek.

IRON COUNTY COMPREHENSIVE FOREST PLAN

The Iron County Board approved the 15 Year Iron County Forestry & Parks Comprehensive Plan on November 27, 2006.

Plan Issues

- ❖ Protection of water resources
- ❖ Reduce erosion associated with logging activities
- ❖ Loss of wetland

Plan Goals

- ❖ Protection of water resources will be consistent with *Wisconsin Forestry Best Management Practices for Water Quality*
- ❖ Adopt *Wisconsin Forestry Best Management Practices for Water Quality*
- ❖ Develop access management plan to protect sensitive areas
- ❖ To preserve, protect and manage wetlands

IRON COUNTY FARMLAND PRESERVATION PLAN

The Iron County Board adopted a resolution on December 23, 1982¹⁹ requesting state funds to prepare a countywide Farmland Preservation Plan under the Wisconsin Farmland Preservation Act. The Farmland Preservation Plan was updated in 2017. The intent of each plan is to protect each county's farmland from potential development and to help guide future development. Producers enrolled in the state program are eligible for tax relief in return for developing a soil and water conservation plan for their farm.

¹⁹(Iron County Resolution# 1488)

Goal Statement

- ❖ Maintain the operational efficiency of Iron County's agricultural areas for current and future generations.

Objectives

- ❖ Increase awareness of the importance of protecting the viability of agriculture in Iron County
- ❖ Actively pursue concepts and programs which could allow farmers and farmland owners an opportunity to secure financial benefits for the preservation of farmland.
- ❖ Support land use practices which minimize the potential for conflicts between agricultural and non-agricultural uses.
- ❖ Direct non-agricultural development to planned growth areas as identified in the Iron County Comprehensive Plan.
- ❖ Encourage and support the use of Best Management Practices to minimize erosion and groundwater and surface water contamination.
- ❖ Allow for the development, enhancement and expansion of creative and specialty forms of agriculture.
- ❖ Support local farmers markets. Expand opportunities for marketing and selling locally-produced products.
- ❖ Work with communities to identify agricultural preservation areas.
- ❖ Direct future wetland mitigation banking activities away from productive agricultural lands.
- ❖ Support the use of farmland preservation programs (such as farmland preservation easements) to encourage the retention of large tracts of productive agricultural land.
- ❖ Support policies, programs and actions which encourage youth retention and attracting new residents to the area.
- ❖ Encourage and support the use of Wisconsin's Forest Tax Law programs to retain productive, working forestlands.
- ❖ Utilize the farmland preservation plan, the iron County Comprehensive Plan and the development review process to increase housing density in areas other than farmland preservation areas.

IRON COUNTY COMPREHENSIVE PLAN

The Iron County Board adopted the current Iron County Comprehensive Plan in 2016.

Plan Issues

- ❖ Land use planning
- ❖ Critical area erosion control
- ❖ Preservation of cultural, historical, and quality of life values
- ❖ Lake Superior Basin protection
- ❖ Economic income
- ❖ Natural resource protection
- ❖ Identification and protection of sensitive/critical habitats
- ❖ Recreation

Plan Goals

All items identified as plan issues addressed through a variety of related activities. Many of the issues identified in this plan continue to be priority concerns.

TURTLE-FLAMBEAU SCENIC WATERS AREA MASTER PLAN

The Turtle-Flambeau Flowage Scenic Waters Area Master Plan was developed over a two-year period through a series of citizen and public outreach efforts. The final document was approved on March 23, 1995 and outlines a goal statement, six objectives, and management strategies.

Goal Statement

To preserve the scenic qualities of the Turtle-Flambeau Scenic Waters Area; protect plant and wildlife communities, especially endangered and threatened species; provide interpretive and educational information; and accommodate compatible recreational opportunities for the general public.

Objectives

- ❖ Protect, maintain and enhance the “wild” and undeveloped scenic shore.
- ❖ Protect, maintain and enhance wildlife populations, with particular emphasis on rare, endangered and threatened species found in the TFSWA.
- ❖ Inventory, conserve, and maintain those areas containing unique biotic communities.
- ❖ Maintain a quality fishery and fishing opportunities for the many anglers who visit the flowage annually.
- ❖ Maintain or enhance facilities for the diversity of outdoor recreational opportunities which are available on the flowage, including boating, canoeing, camping, hunting, trapping, nature observation, and snowmobiling.

INTEGRATED RESOURCE MANAGEMENT PLAN FOR THE BAD RIVER RESERVATION

The Bad River Band of Lake Superior Chippewa Indians adopted the IRMP on July 2, 2001. The goal of the Bad River IRMP is to maintain and improve the health of ecosystems within the Reservation for the next seven generations, while providing resources at a sustainable level of harvest.

Plan Issues

- ❖ Altered hydrologic characteristics from early logging have accelerated erosion of Reservation soils; soil suitability for construction projects, housing, and forestry practices.
- ❖ Low permeability of red clay soils.
- ❖ Lack of mining policies.
- ❖ Sludge site and leaking underground storage tanks potential for groundwater contamination.
- ❖ Lack of surface water quality data.
- ❖ Lack of protection for air quality.
- ❖ Transportation of toxic materials over US Highway 2 and degrading railroad tracks.
- ❖ Nonpoint source pollution from road construction and improvement projects.
- ❖ ATV impacts to Reservation soils & unauthorized trail use contributing to soil erosion and disturbing sensitive wildlife species.
- ❖ Destruction of potential archeological sites and “traditional use” areas.
- ❖ Loss of wetland habitat; endangered and threatened resources.
- ❖ Forestry concerns including soil erosion, sustainability, fire suppression.
- ❖ Wildlife sustainability and biological diversity.

Plan Goals

- ❖ Protect pristine waters and improve water quality impacted by point & nonpoint source pollution.
- ❖ Discourage pesticide/herbicide use and encourage biological controls
- ❖ Protect and improve air quality.
- ❖ Protect natural resources from transportation-related and recreation based degradation.
- ❖ Identify & protect significant cultural resources.
- ❖ Maintain vegetation diversity; work to improve landscape diversity; promote sustainable harvest.
- ❖ Conserve wetlands; restore degraded wetlands.
- ❖ Maintain diversity of forest types while protecting and improving water quality for all resources.
- ❖ Maintain, restore, and enhance native fish communities.
- ❖ Maintain diverse plant and animal communities through ecosystem management strategies, including threatened and endangered resources.

INTEGRATED RESOURCE MANAGEMENT PLAN FOR THE LAC DU FLAMBEAU RESERVATION

The Lac du Flambeau Tribe completed an IRMP in 2008 to guide the management of tribal land. The plan covers the period through 2023.

Plan Goals

- ❖ Enhance, protect, and conserve fish, wildlife, & habitats.
- ❖ Improve harvesting and resource use opportunities for tribal members.
- ❖ Maintain clean surface water, ground water, and air.
- ❖ Develop policy and plans for mineral use.
- ❖ Increase economic and job opportunities for tribal members.
- ❖ Develop tourism and improve tourism related facilities.
- ❖ Educate the public about Indian history, culture, and traditional practices.
- ❖ Identify and protect culturally significant sites.
- ❖ Increase and manage for an even flow of forest products, income, and jobs.
- ❖ Integrate wildlife, visual, and timber practices.
- ❖ Increase and consolidate tribal land ownership.
- ❖ Increase current and future tribal revenues.
- ❖ Recurring strategies throughout the plan's selected alternatives included:
 - Collect and analyze more resource information.
 - Preserve sensitive resources.
 - Promote cooperation and integration between resource managers.
 - Resource managers will develop resource specific implementation plans.
 - Provide opportunities for resource use by tribal members.
 - Increase economic benefits through conservation of resources.

Appendix D: Glossary of Terms

ALGAE: A group of aquatic photosynthetic organisms give off oxygen during the day as a product of photosynthesis and consume oxygen during the night as a result of respiration. Therefore, algae affect the oxygen content of water. Nutrient-enriched water increases algae growth.

ALLUVIUM: Clay, silt, sand, gravel, or similar detrital material deposited by running water.

ANIMAL WASTE MANAGEMENT: A group of practices including barnyard runoff management, nutrient management, and manure storage facilities designed to minimize the effects of animal manure on surface and groundwater resources.

AREA-WIDE WATER QUALITY MANAGEMENT PLANS (208 PLANS): A plan to document water quality conditions in a drainage basin and make recommendations to protect and improve basin water quality required in Wisconsin pursuant to Section 208 of the Clean Water Act.

AQUATIC: Pertaining to, living in, or adapted to water.

AQUIFER: A water-bearing stratus of permeable rock, sand, or gravel.

AREA-WIDE WATER QUALITY MANAGEMENT PLANS (208 PLANS): A plan to document water quality conditions in a drainage basin and make recommendations to protect and improve basin water quality. Each basin in Wisconsin must have a plan prepared for it, according to Section 208 of the Clean Water Act.

BASIN PLAN: See Area-wide Water Quality Management Plan.

BEST MANAGEMENT PRACTICES (BMPs): The most effective, practical measures to control nonpoint sources of pollutants that run off from land surfaces.

BIO-ACCUMULATION: The process whereby substances (such as heavy metals) build up in the tissues of higher order organisms.

BUFFER STRIPS: Strips of grass, shrubs, trees, and other vegetation between disturbed areas and a stream, lake, or wetland.

CONCENTRATED ANIMAL FEEDING OPERATION (CAFO): An animal feeding operation with 1,000 animal units or more. WDNR may designate a smaller-scale CAFO (fewer than 1,000 animal units) if it has pollutant discharges to navigable waters or contaminates a well.

CLUSTER DEVELOPMENT: Grouping homes on part of a property while maintaining a large amount of open space on the remaining land.

CONTAMINANTS: Impure, tainted, or polluted materials.

CONSERVATION EASEMENT: A legal document that restricts the use of land to farming, open space, or wildlife habitat. A landowner may sell or donate an easement to a government agency or a private land trust.

COST-EFFECTIVE: A level of treatment or management with the greatest incremental benefit for the money spent.

CONSERVATION RESERVE ENHANCEMENT PROGRAM (CREP): A conservation program to provide additional incentive to farmers in the Lake Superior region to re-vegetate riparian buffers along coastal waterways, and to limit animal access to these waterways through fencing practices.

ECOSYSTEM: The interacting system of a biological community and its non-living surroundings.

ENVIRONMENTAL PROTECTION AGENCY (EPA): The federal agency responsible for enforcing federal environmental regulations. The Environmental Protection Agency delegates some of its responsibilities for water, air, and solid waste pollution control to state agencies.

EROSION: The wearing away of the land surface by wind or water.

EUTROPHIC: Refers to a nutrient-rich lake. Large amounts of algae and aquatic vegetation characterize a eutrophic lake (see also "Oligotrophic" and "Mesotrophic").

EUTROPHICATION: The process of nutrient enrichment of a lake leading to increased production of aquatic organisms. Eutrophication can be accelerated by human activity such as agriculture and improper waste disposal.

FECAL COLIFORM: A group of bacteria used to indicate the presence of other bacteria that cause disease. The number of coliform is particularly important when water is used for drinking and swimming.

FOOD CHAIN: A sequence of organisms where each uses the next as a food source.

GROUNDWATER: Underground water-bearing areas generally within the boundaries of a watershed, which fill internal passageways of porous geologic formations (aquifers) with water that flows in response to gravity and pressure. Often used as the source of water for communities and industries.

HABITAT: The place or type of site where a plant or animal naturally lives and grows.

HERBICIDE: A type of pesticide that is specifically designed to kill plants ("weed killer"); can also be toxic to other organisms.

LITTORAL: The shore of a water body and the land contiguous to that shore.

MACROPHYTE: A rooted aquatic plant.

MESOTROPHIC: Refers to a moderately fertile nutrient level of a lake between the "Oligotrophic" and "Eutrophic" levels. (See also "Eutrophic" and "Oligotrophic".)

MINERALIZATION: The process whereby minerals or other inorganic substances become are incorporated into something (i.e. groundwater).

MILLIGRAMS PER LITER (mg/l): A measure of the concentration of substance in water. For most pollution measurements, this is the equivalent of "parts per million" (ppm).

MITIGATION: The effort to lessen the damages from a particular project through modifying a project, providing alternatives, compensating for losses, or replacing lost values.

NONPOINT SOURCE POLLUTION (NPS): Pollution whose sources cannot be traced to a single point such as a municipal or industrial wastewater treatment plant discharge pipe. Nonpoint sources include eroding farmland and construction sites, urban streets, and barnyards. Pollutants from these sources reach water bodies in runoff, which can best be controlled by proper land management.

NUTRIENTS: Chemical substances that provide food for growth and development of plants and animals.

NUTRIENT MANAGEMENT PLAN: A guidance document that provides fertilizer and manure spreading recommendations for crop fields based upon soil test results and crop needs. Sometimes referred to as NRCS 590 plans for the Natural Resources Conservation Service Standard that guides their preparation.

OLIGOTROPHIC: Refers to an unproductive and nutrient-poor lake. Such lakes typically have very clear water. (See also "Eutrophic" and "Mesotrophic".)

ORDINARY HIGH WATER MARK: The point on the bank or shore up to which the water leaves a distinct mark on the shore or bank from its presence, wave action, or flow. The mark may be indicated by erosion, destruction of or change in vegetation, or another easily recognizable characteristic.

PESTICIDE: Any chemical agent used to control specific organisms, such as insecticides, herbicides, fungicides, etc.

PERFORMANCE STANDARDS: Land management activities or threshold levels necessary to reduce or eliminate negative effects on land and water resources.

PHOSPHORUS: A nutrient that, when reaching lakes in excess amounts, can lead to over-fertile conditions and algae blooms.

POINT SOURCE POLLUTION: Sources of pollution that have discrete discharges, usually from a pipe or outfall.

POLLUTION: The presence of materials or energy whose nature, location, or quantity produces undesired environmental effects.

PRIORITY WATERSHED: A drainage area selected to receive state money to help pay the cost of controlling nonpoint source pollution.

PRODUCTIVITY: A measure of the amount of living matter which is supported by an environment over a specific period of time. Often described in terms of algae production for a lake.

PUBLIC PARTICIPATION: The active involvement of interested and affected citizens in governmental decision-making.

PURCHASE OF DEVELOPMENT RIGHTS: The voluntary sale of the rights to develop a piece of property by the landowner to a government agency or a land trust. The sale price is determined by an appraisal. The land is restricted to farming or open space.

REDUCED TILLAGE: Planting row crops while only slightly disturbing the soil. With reduced tillage, a protective layer of plant residue stays on the surface and erosion rates decrease.

RIPARIAN: Belonging or relating to the bank of a lake, river, or stream.

RIPRAP: Broken rock, cobbles, or boulders placed on the bank of a stream to protect it against erosion.

RUNOFF: Water from rain, snowmelt, or irrigation that flows over the ground surface and returns to streams and lakes. Runoff can collect pollutants from air or land and carry them to receiving waters.

SECCHI DISC: A disc shaped water quality instrument used to measure water clarity.

SEDIMENT: Soil particles suspended in and carried by water as a result of erosion.

SEPTIC SYSTEM: Sewage treatment and disposal for homes not connected to sewer lines. Usually the system includes a tank and drain field. Solids settle to the bottom of the tank. Liquid percolates through the drain field.

SHORELAND BUFFER ZONE: That area of land adjacent to the water of a lake, river, stream, pond, or wetland that provides a "buffering" affect by filtering sediments and nutrients carried by runoff water before they reach surface water.

STORM SEWERS: A system of sewers built to collect and transport rain and snow runoff; a storm drain. In areas that have separated sewers, such stormwater is not mixed with sanitary sewage.

TOLERABLE SOIL LOSS: The tolerable soil loss rate, commonly referred to as "T", is the maximum average annual rate of soil erosion for each soil type that will permit a high level of crop productivity to be sustained and indefinitely (ATCP 50.01(16)).

TERRESTRIAL: Living in or growing on the land (as opposed to aquatic).

TOTAL MAXIMUM DAILY LOAD (TMDL): A regulatory term in the U.S. Clean Water Act, describing a plan for restoring impaired waters that identifies the maximum amount of a pollutant that a waterbody can receive while still meeting water quality standards.

TROPHIC STATUS: Means of classifying lakes and describing lake processes in terms of productivity of the system.

TURBIDITY: The degree to which water loses its transparency due to the presence of suspended solids.

UNIFORM DWELLING CODE: A statewide building code enforced in communities larger than 2500 residents, specifying requirements for electrical, heating, ventilation, fire, structural, plumbing, construction site erosion, and other construction related practices

UNIVERSITY OF WISCONSIN-MADISON EXTENSION: Extension works alongside the people of Wisconsin to deliver practical educational programs - on the farm, in schools and throughout urban and rural communities.

VARIANCE: Government permission for a delay or exception in the application of a given law, ordinance, or regulation. Also, see water quality standard variance.

WASTE: Unwanted materials left over from manufacturing processes; refuse from places of human or animal habitation.

WATER QUALITY CRITERIA: A measure of the physical, chemical, or biological characteristics of a water body necessary to protect and maintain different water uses (fish and aquatic life, swimming, etc.).

WATER QUALITY STANDARDS: The legal basis and determination of the use of a water body and the water quality criteria; physical, chemical, or biological characteristics of a water body that must be met to make it suitable for the specified use.

WATER QUALITY STANDARD VARIANCE: When natural conditions of a water body preclude meeting all conditions necessary to maintain full fish and aquatic life and swimming, a variance may be granted.

WATERSHED: The land area that drains into a lake or stream.

WETLANDS: Areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a variety of vegetative or aquatic life. Wetland vegetation requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas.

WISCONSIN ADMINISTRATIVE CODE: The set of rules written and used by state agencies to implement state statutes. Administrative codes are subject to public hearing and have the force of law.

WISCONSIN NONPOINT SOURCE WATER POLLUTION ABATEMENT GRANT PROGRAM: A state cost-share program established by the legislature in 1978 to help pay the costs of controlling nonpoint source pollution. Also known as the nonpoint source element of the Wisconsin Fund or the Priority Watershed Program.

Appendix E: List of Commonly Used Acronyms

BIA	Bureau of Indian Affairs
BMP	Best Management Practice
CAC	Citizen Advisory Committee
CAFO	Concentrated Animal Feeding Operation
CNNF	Chequamegon-Nicolet National Forest
COMM	Wisconsin Department of Commerce
CRP	Federal Conservation Reserve Program
CREP	Conservation Reserve Enhancement Program
DATCP	Wisconsin Department of Agriculture, Trade & Consumer Protection
DNR	Wisconsin Department of Natural Resources
EQIP	Environmental Quality Incentives Program (USDA)
EPA	U.S. Environmental Protection Agency
ERW	Exceptional Resource Waters
FPP	Wisconsin Farmland Preservation Program
FSA	Farm Service Agency (United States Department of Agriculture)
GIS	Geographic Information System
GLIFWC	Great Lakes Indian Fish & Wildlife Commission
GMU	Geographic Management Unit
GPR	General Purpose Revenue
HEL	Highly Erodible Land
ICEDZ	Iron County Economic Development Zone
ICHD	Iron County Health Department
ICLRA	Iron County Lakes and Rivers Alliance
I&E	Information and Education
IRMP	Integrated Resource Management Plan
LCC	Land Conservation Committee
LIB	Wisconsin Land Information Board
LIC	Wisconsin Land Information Committee
LWCB	Land and Water Conservation Board
LWCD	Land and Water Conservation Department
LWRM	Land and Water Resource Management (plan)
NAWCA	North American Waterfowl Conservation Act
NPM	Nutrient and Pest Management
NRCS	Natural Resources Conservation Service
NCWMA	Northwoods Cooperative Weed Management Area
NWRPC	Northwest Regional Planning Commission
ORW	Outstanding Resource Waters
SIP	Stewardship Incentive Program
SWRM	Soil & Water Resource Management (DATCP)
SRWA	Superior Rivers Watershed Association
USFWS	United States Fish and Wildlife Service
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WEEB	Wisconsin Environmental Education Board
WGNHS	Wisconsin Geological and Natural History Survey
WHIP	Wildlife Habitat Incentives Program
WI Land+Water	Wisconsin Land+Water Conservation Association
WPDES	Wisconsin Pollutant Discharge Elimination System (permit system)
WRP	Wetland Reserve Program
WWA	Wisconsin Wetland Association
WWOA	Wisconsin Woodland Owners Association

Appendix F: Department and Agency Contacts

Iron County Departments

Iron County Forestry Department
607 3rd Ave N, Suite 2
Hurley, WI 54534
Phone: (715) 561-2697

Iron County Health Department
502 Copper St, Suite 2
Hurley, WI 54534
Phone: (715) 561-2191

Iron County Clerk
300 Taconite St, Suite 101
Hurley, WI 54534
Phone: (715) 561-3375

Iron County UW-Extension
300 Taconite St, Suite 118
Hurley, WI 54534
Phone: (715) 561-2695

Iron County Land and Zoning
300 Taconite, Suite 115
Hurley, WI 54534
Phone: (715) 561-5414

Wisconsin State Agencies

Department of Agriculture,
Trade, & Consumer Protection
2811 Agriculture Drive
P.O. Box 8911
Madison, WI 53708-8911
Phone: (608) 224-5013

Department of Natural Resources
875 4th Avenue
Park Falls, WI 54552
Phone: (715) 762-1342

U.S. Federal Agencies

Bureau of Indian Affairs
615 Main Street West
Ashland, WI 54806
Phone: (715) 682-4527

Natural Resources
Conservation Service
2014 3rd Street West
Ashland, WI 54806
Phone: (715) 682-9117

U.S. Geological Survey
2800 Lake Shore Drive
Ashland, WI 54806
Phone: (715) 682-6163