2022 Richland County

Land and Water Resource Management Plan

Acknowledgements

The Richland County Land and Water Resource Management was put together by:

Land Conservation Department

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Land and Zoning Standing Committee

Melissa Luck	Chair
Linda Gentes	Vice-Chair
David Turk	Secretary
Steve Carrow	
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Advisory Committee Members

Doug Duren	Woodland Owner
Rob Sebranek	Dairy and Cash Grain Farmer
Virginia Hatfield	Organic Dairy Farmer
Pete Mathews	Beef and Cash Grain Farmer
Scott Hoffman	Beef Farmer
Brian McGraw	Eagle Town Chair
Deb Lord	Citizen
Tim McDonald	Mead Producer and Apiarist
John Cler	Conservation Congress
Marilyn Loft-Houck	Citizen

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Introduction

In 1996, the concept was proposed that counties use a locally led process to develop plans that emphasis local resource concerns. This concept was promoted by the Wisconsin Land and Water Conservation Association during legislative deliberations in the spring and summer of 1997. County Land and Water Resource Management plans became part of landmark State legislation signed into law in October 1997, part of Wisconsin Act 27.

Richland County has looked at the process as an opportunity to work with county residents to develop a strategy and plan of action to protect the natural resources of Richland County. This is also an opportunity to strengthen landowner participation, improve program effectiveness and increase coordination with other cooperating partners involved with natural resource management.

Richland County developed its first plan in 1999. The plan was updated in 2001 and in 2007. A full plan update and revision was completed in 2012 with a plan review in 2017. The 2012 plan remains in effect until this plan is approved. The work plan has been updated each year to show what is planned to be done in that year and reflect any potential changes in resource needs.

The vision of this plan is "To enhance and/or protect the natural and agricultural integrity of this county for the future, by utilizing sound environmental and economic strategies and practices." The mission of this plan is "To develop the ways and means to implement the vision of this plan."

Planning Process

The Local Advisory Committee met on January 25, 2022. This diverse group came up with 30 different resource concerns. The top six resource concerns were:

- ⇒ Control noxious weeds and invasive species
- ⇒ Grazing cover crops
- ⇒ Include some form of pollinator habitat through all conservation programs
- ⇒ Increase plating of native species of trees, shrubs, grasses and forbs
- ⇒ Improve wildlife habitat
- ⇒ Encourage more marginal land to be enrolled in CRP/CREP

The other resource concerns were:

- ⇒ Reduce soil erosion
- ⇒ Restore streams, where possible, to old channels and connect to floodplain

- ⇒ Reduce nitrate/nitrite contamination of wells
- ⇒ Better management of CRP cover
- ⇒ Better nutrient management for cropland and pastureland
- ⇒ Good manure application management
- ⇒ Loss of habitat along streams (improve fish habitat)
- ⇒ Cost sharing for well abandonment
- ⇒ Fencing
- ⇒ Regulating contour buffer strips to prevent narrowing
- ⇒ Educate landowners about conservation and farming
- ⇒ Slow nutrients reaching streams and other surface water
- ⇒ Reduce barnyard runoff
- ⇒ Improve wildlife health
- ⇒ Improve water quality and use of soil nutrients through grazing and cover crops
- ⇒ Better nutrient management for cropland and pastureland
- ⇒ Forest management for diversity and oak regeneration
- ⇒ Seed drill for native seeds
- ⇒ Green space along some streams for habitat for hiking, fishing access
- ⇒ Use of marginal land for grazing
- ⇒ Improve deer health
- ⇒ Identify areas where water infiltrates and protect from contamination
- ⇒ Design, construct and manage streambank practices and buffer strips so they don't back up water onto crop fields
- ⇒ Install waterways where needed and keep natural grass waterways.

This plan addresses in the objectives most of the concerns that were brought up by the Advisory Committee.

The Technical Committee met on February 21, 2022. This committee was comprised of staff from Land Conservation, Natural Resources Conservation Service, Farm Service Agency, UW-Extension and Department of Natural Resources.

The goals of the 2022 plan are:

- ⇒ Reduce soil erosion
- ⇒ Enhance, maintain and protect the surface water and groundwater quality
- ⇒ Prevent over application of nutrients
- ⇒ Reduce and prevent occurrences of manure spills
- ⇒ Prevent and control the spread of invasive species
- ⇒ Improve the quality of forests

Members of the Land and Zoning Committee (LZC) were given reports on the plan at the regular Land and Zoning meetings. The Draft plan was submitted to the Department of Agriculture, Trade and Consumer Protection (DATCP), Department of Natural Resources (DNR) and Farm Service Agency (FSA) for review in early August. Their comments were incorporated into the plan.

The Advisory Committee was sent a copy of the plan the last week of September to review the plan before it was taken to public hearing. As a requirement of the plan guidelines, a public hearing was held on October 3, 2022 at the Richland County Courthouse during the Land and Zoning Standing Committee and to the Richland County Board of Supervisors October 2022 meeting. The Richland County LCD will submit the plan to the Land and Water Conservation Board (LWCB). The LWCB will review the final plan at their December 5, 2022 meeting for their approval.

County History and Trends

Richland County is located in Southwest Wisconsin in the heart of the unglaciated part of Wisconsin known as the Driftless Area. The southern border of Richland County is the Wisconsin River. Crawford County borders Richland on the West with Vernon County bordering on the West and North and Sauk County bordering on the North and East. There are 16 townships, 5 incorporated villages and 1 city. The county is approximately 620 square miles or 377,170 acres. The City of Richland Center is the county seat.

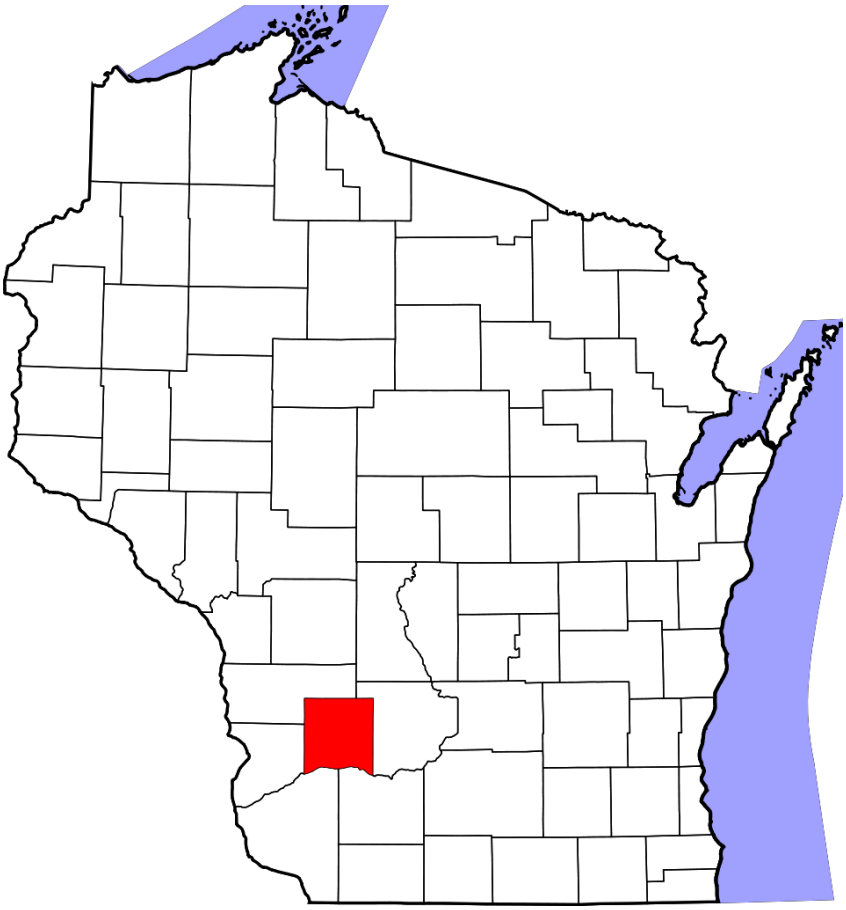


Figure 1: State map

The geology of the county is outcroppings of limestone near or at the top of the bluffs with substratum sandstone. The county consists of steep hillsides, fertile valleys and an abundance of springs. Because of the geology and the springs, Richland County has approximately 268 miles of trout streams with 111 miles of them being Class I trout streams.

The earliest inhabitants were probably the Mound Builders. They built many different types of mounds, many of them located near the Wisconsin River. There is a concentration of these mounds located on land now owned by the Ho-Chunk Nation. Later, the Sauk, Fox, Winnebago and Potawatomi Indians inhabited the county. Historical records show that Black Hawk crossed the county just before he made his last stand at Bad Ax.

The first Europeans who came to the county settled near the Wisconsin River in the area now known as Port Andrews in 1840. According to the 2020 Census Data, the population has grown to the current number of 17,304 residents. The county seat of Richland Center has 5,114 residents. The different ethnic groups that settled in certain areas of the county are still evident today in the names of the people.

The face of Richland County is changing. There are more non-resident landowners, fewer dairy farms, less hay being grown and more cash grain crops being grown. Data from the Wisconsin Agriculture Statistics and Census of Agriculture show a decrease in hay and an increase in corn and soybean acres over a 20-year period.

Table 1. Changes in crop acres

	1997	2002	2007	2012	2017	% change
Hay	63,421	50,799	48,726	39,112	39,931	-37%
Corn	34,243	32,760	34,737	42,270	44,091	+22%
Soybeans	4,834	9,429	8,188	11,936	16,681	+71%

The number of dairy cows and dairy farms have also decreased in that same period as documented by the Wisconsin Agriculture Statistics and Census of Agriculture.

Table 2. Livestock changes

	1997	2002	2007	2012	2017	% change
Dairy Herds	350	249	199	159	118	-66%
Milk Cows	18,686	15,263	15,161	14,800	16,804	-10%

During the Middle Kickapoo River Non-point Watershed project, there was a dramatic decrease in the number of livestock operation in the Richland County portion of the watershed. The inventory done in 1990 showed that there were 40 livestock operations. At the end of the project in 2004, there were less than 10 left.
What does that mean for Richland County? The decrease in cattle, dairy and beef, leads to less hay being grown. The land is still being farmed. The producers are changing to corn and soybean productions. In a county with steep hills and valleys, it means a greater chance for soil erosion and runoff unless conservation practices are used.

The 2017 USDA Census Data shows there were 1,103 farms. The sizes of farms have fluctuated over the years. Many of the farms are getting split and the woods and marginal land sold to non-farmer. The cropland is being bought by larger farming operations.

Table 3. Farm size and type

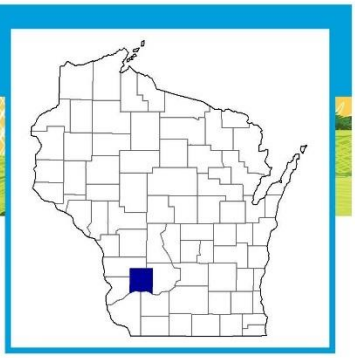
	1997	2002	2007	2012	2017
# Farms	1,032	1,358	1,545	1,260	1,103
Farm Acres	238,266	257,809	253,776	227,833	220,843
Average ac	231	190	164	181	200

Most livestock operations, although growing in size, have not become very large operations. There are currently 1 hog farm and 2 dairy farm in Richland County who have a DNR WPDES CAFO permit for having over 1,000 Animal Units.

Many out-of-area residents have bought their property for hunting and other recreational activities, not necessarily to be farmed. Most of them do not have a farming background. They lack understanding of farming practices and erosion control. This can lead to environmental problems such as excessive erosion when cropland is being rented for cash grain, too many animals on small pastures, erosion from construction sites and erosion from poorly sited driveways.

Land use planning needs to be utilized as well as the county Land and Water Management plan to reduce some of the potential problems. All of the sixteen townships in Richland County as well as Richland County itself have developed comprehensive land use plans. The comprehensive plans are one tool to deal with land use changes. The Land and Water Resource management plan will help with the environmental issues associated with the change in land use.

2017 CENSUS OF AGRICULTURE *County Profile*



Richland County
Wisconsin

Total and Per Farm Overview, 2017 and change since 2012

	2017	% change since 2012
Number of farms	1,103	-12
Land in farms (acres)	220,843	-3
Average size of farm (acres)	200	+11
Total	($)	
Market value of products sold	136,651,000	+18
Government payments	2,493,000	-16
Farm-related income	5,154,000	-21
Total farm production expenses	117,819,000	+26
Net cash farm income	26,479,000	-15
Per farm average	($)	
Market value of products sold	123,891	+35
Government payments (average per farm receiving)	4,460	+19
Farm-related income	8,207	-12
Total farm production expenses	106,817	+44
Net cash farm income	24,006	-3

1 Percent of state agriculture sales

Share of Sales by Type (%)

Crops	22
Livestock, poultry, and products	78

Land in Farms by Use (%) [a]

Cropland	54
Pastureland	14
Woodland	28
Other	5

Acres irrigated: 317
(Z)% of land in farms

Land Use Practices (% of farms)

No till	28
Reduced till	17
Intensive till	12
Cover crop	11

Farms by Value of Sales

	Number	Percent of Total [a]
Less than $2,500	462	42
$2,500 to $4,999	84	8
$5,000 to $9,999	90	8
$10,000 to $24,999	141	13
$25,000 to $49,999	74	7
$50,000 to $99,999	81	7
$100,000 or more	171	16

Farms by Size

	Number	Percent of Total [a]
1 to 9 acres	74	7
10 to 49 acres	269	24
50 to 179 acres	416	38
180 to 499 acres	245	22
500 to 999 acres	66	6
1,000 + acres	33	3

USDA
United States Department of Agriculture
National Agricultural Statistics Service
www.nass.usda.gov/AgCensus

2017 CENSUS OF AGRICULTURE *County Profile*

Market Value of Agricultural Products Sold

	Sales ($1,000)	Rank in State [b]	Counties Producing Item	Rank in U.S. [b]	Counties Producing Item
Total	**136,651**	**38**	**72**	**844**	**3,077**
Crops	**30,686**	**51**	**72**	**1,396**	**3,073**
Grains, oilseeds, dry beans, dry peas	23,683	43	72	1,078	2,916
Tobacco	-	-	6	-	323
Cotton and cottonseed	-	-	-	-	647
Vegetables, melons, potatoes, sweet potatoes	417	53	72	1,025	2,821
Fruits, tree nuts, berries	1,300	19	71	412	2,748
Nursery, greenhouse, floriculture, sod	152	62	71	1,337	2,601
Cultivated Christmas trees, short rotation woody crops	58	34	64	357	1,384
Other crops and hay	5,077	21	72	483	3,040
Livestock, poultry, and products	**105,965**	**29**	**72**	**474**	**3,073**
Poultry and eggs	(D)	(D)	72	(D)	3,007
Cattle and calves	35,344	14	72	434	3,055
Milk from cows	65,422	31	68	126	1,892
Hogs and pigs	(D)	(D)	71	(D)	2,856
Sheep, goats, wool, mohair, milk	477	23	70	350	2,984
Horses, ponies, mules, burros, donkeys	109	34	69	1,384	2,970
Aquaculture	(D)	38	52	(D)	1,251
Other animals and animal products	83	46	70	805	2,878

Total Producers [c]	**1,883**
Sex	
Male	1,195
Female	688
Age	
<35	134
35 – 64	1,104
65 and older	645
Race	
American Indian/Alaska Native	-
Asian	-
Black or African American	-
Native Hawaiian/Pacific Islander	-
White	1,882
More than one race	1
Other characteristics	
Hispanic, Latino, Spanish origin	10
With military service	172
New and beginning farmers	367

Percent of farms that:

Have internet access	**68**
Farm organically	**3**
Sell directly to consumers	**5**
Hire farm labor	**24**
Are family farms	**95**

Top Crops in Acres [d]

Forage (hay/haylage), all	39,931
Corn for grain	35,063
Soybeans for beans	16,681
Corn for silage or greenchop	9,028
Wheat for grain, all	792

Livestock Inventory (Dec 31, 2017)

Broilers and other meat-type chickens	866
Cattle and calves	46,627
Goats	1,065
Hogs and pigs	(D)
Horses and ponies	1,175
Layers	6,649
Pullets	(D)
Sheep and lambs	877
Turkeys	81

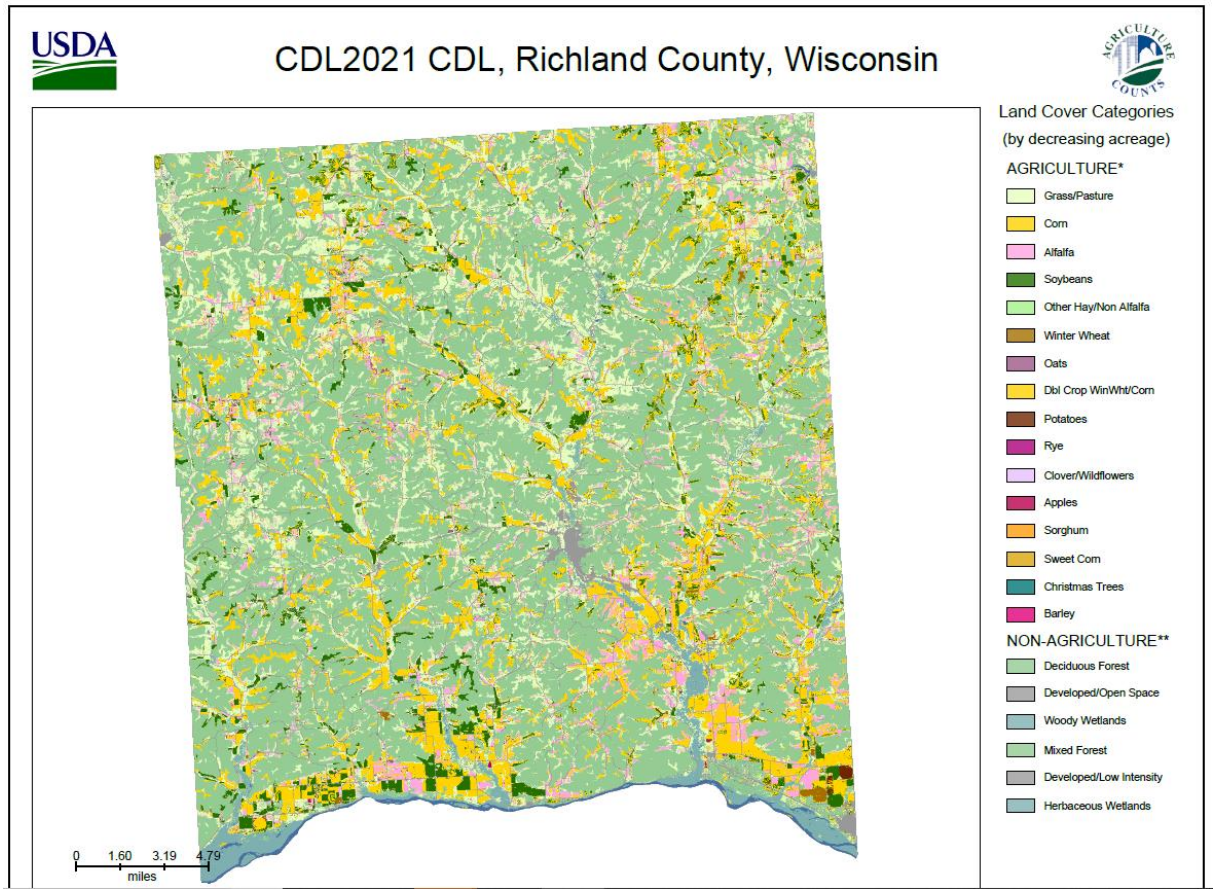
See 2017 Census of Agriculture, U.S. Summary and State Data, for complete footnotes, explanations, definitions, commodity descriptions, and methodology.

[a] May not add to 100% due to rounding. [b] Among counties whose rank can be displayed. [c] Data collected for a maximum of four producers per farm. [d] Crop commodity names may be shortened; see full names at www.nass.usda.gov/go/cropnames.pdf. [e] Position below the line does not indicate rank. (D) Withheld to avoid disclosing data for individual operations. (NA) Not available. (Z) Less than half of the unit shown. (-) Represents zero.

2021 Agricultural Land Use

The 2021 map and land use statistics for Richland County shown in figure R below is from the NRCS Cropscape tool. Cropscape can be used annually by Richland County to track land use/acreage trends over this plan's ten year period.

Figure 2: Land Cover



Agriculture Land Use	Acres
Grass/Pasture	68,307
Corn	45,736
Alfalfa	19,298
Soybeans	15,230
Other Hay/Non Alfalfa	2,701
Winter Wheat	708
Oats	575
Dbl Crop WinWht/Corn	219
Potatoes	195
Barren	134
Rye	75
Clover/Wildflowers	35
Apples	22
Sorghum	19
Sweet Corn	17
Christmas Trees	10
Total	**153,280**

Non-Agriculture Land Use	Acres
Deciduous Forest	182,188
Developed/Open Space	11,982
Woody Wetlands	7,199
Mixed Forest	7,087
Developed/Low Intensity	6,850
Herbaceous Wetlands	3,520
Open Water	1,893
Evergreen Forest	1,475
Developed/Medium Intensity	1,240
Developed/High Intensity	288
Shrubland	154
Total	**223,876**

Source: NRCS Cropscape - https://nassgeodata.gmu.edu/CropScape/

Natural Resource Assessment

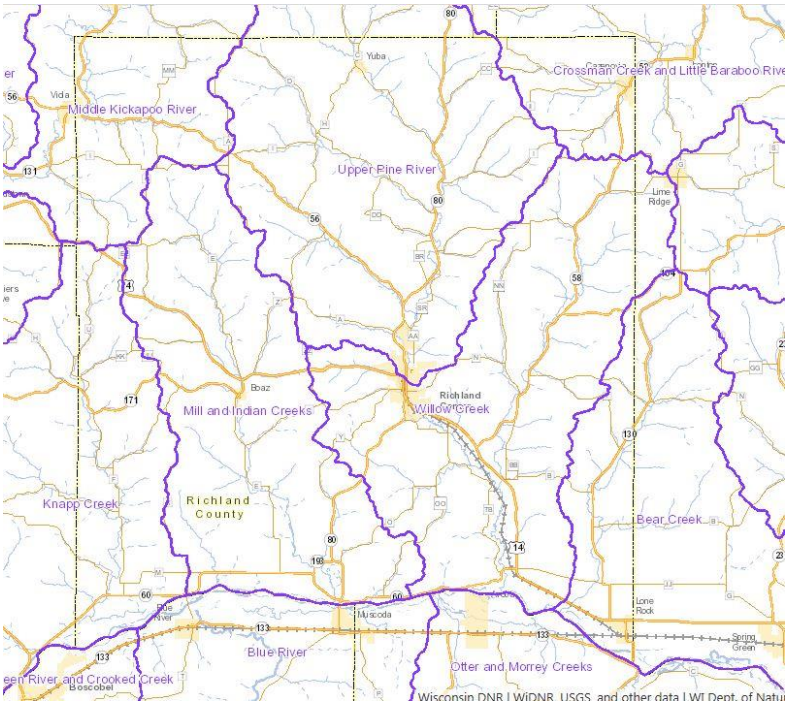
There are many sources that provide information on the condition of the natural resources of Richland County. They are a tool to help agencies and staff target efforts to conserve and protect the natural resources.

Water Resources

Surface Waters and Watersheds

Richland County consists of seven watersheds which all drain to the Wisconsin River. These watersheds are the Middle Kickapoo River, Mill Creek, Pine River, Crossman Creek/Little Baraboo, Knapp Creek, Willow Creek and Bear Creek.

Figure 3: Watershed Map



In July 2002, the DNR released the State of the Lower Wisconsin River Basin Report. The report describes each sub-watershed, listing the concerns, Exceptional Resource Waters (ERW), Outstanding Resource Waters (ORW), Class I and Class II trout streams and recommendations for each watershed. Many of the sub-watersheds have had some monitoring completed by DNR since 2014. A few of the streams have had changes in trout stream classification.

The basin plan for the Bear Creek Watershed was updated in August 2010. The complete copy can be found at: http://dnr.wi.gov/water/basin/lowerwis/wtplans/lw14/LW14_WTPLAN.PDF. A Total

Maximum Daily Load report for the Little Willow Watershed was released on July 30, 2008.
A project report by Jean Unmuth, DNR Water Resource Specialist was completed in 2012 for Ash Creek. A copy of this report is on file at the Richland County Land Conservation Department.

Waters designated as Exceptional Resource Waters and Outstanding Resource Waters are surface waters which provide outstanding recreational opportunities, support valuable fisheries, have unique hydrologic or geologic features, have unique environmental settings and are not significantly impacted by human activities. The difference between the two water designations is that waters designated ORW do not have any point sources discharging directly to the water.

Table 4: Outstanding and Exceptional Resource Waters

Official Waterbody Name	ORW/ ERW		Official Waterbody Name	ORW/ ERW		Official Waterbody Name	ORW/ ERW
Babb Hollow Creek	ERW		Higgins Creek	ERW		Ryan Hollow Creek	ERW
Bufton Hollow Creek	ERW		Hood Hollow Creek	ERW		Smith Hollow Creek	ERW
Camp Creek	ORW		Hoover Hollow Creek	ERW		South Bear Creek	ERW
Coulter Hollow Creek	ERW		Jacquish Hollow Creek	ERW		West Branch Mill Creek	ERW
East Branch Mill Creek	ERW		Kepler Br	ERW		Wheat Hollow Creek	ERW
Elk Creek	ORW		Long Lake	ERW		Willow Creek	ERW
Fancy Creek	ERW		Lost Hollow Creek	ERW		Wisconsin River	ERW

Fox Hollow Creek	ERW		Marshall Creek	ERW			
Gault Hollow Creek	ERW		Melancthon Creek	ERW			
Grinsell Br	ERW		Mill Creek	ERW			
Hanzel Creek	ERW		Miller Br	ERW			
Happy Hollow Creek	ERW		Pine Valley Creek	ERW			

Class I trout streams are high quality trout waters that have significant natural reproduction to sustain populations of wild trout at or near carry capacity. No stocking is required. Class II trout streams may have some natural reproduction, but not enough to utilize available food and space. Stocking is required to maintain a desirable sport fishery.

The **Middle Kickapoo River Watershed** is located in central Vernon County, south central Monroe County and northwestern Richland County. The concerns and issues for the watershed are:

⇒ Non-point source pollution.
⇒ Proliferation of spring fed ponds

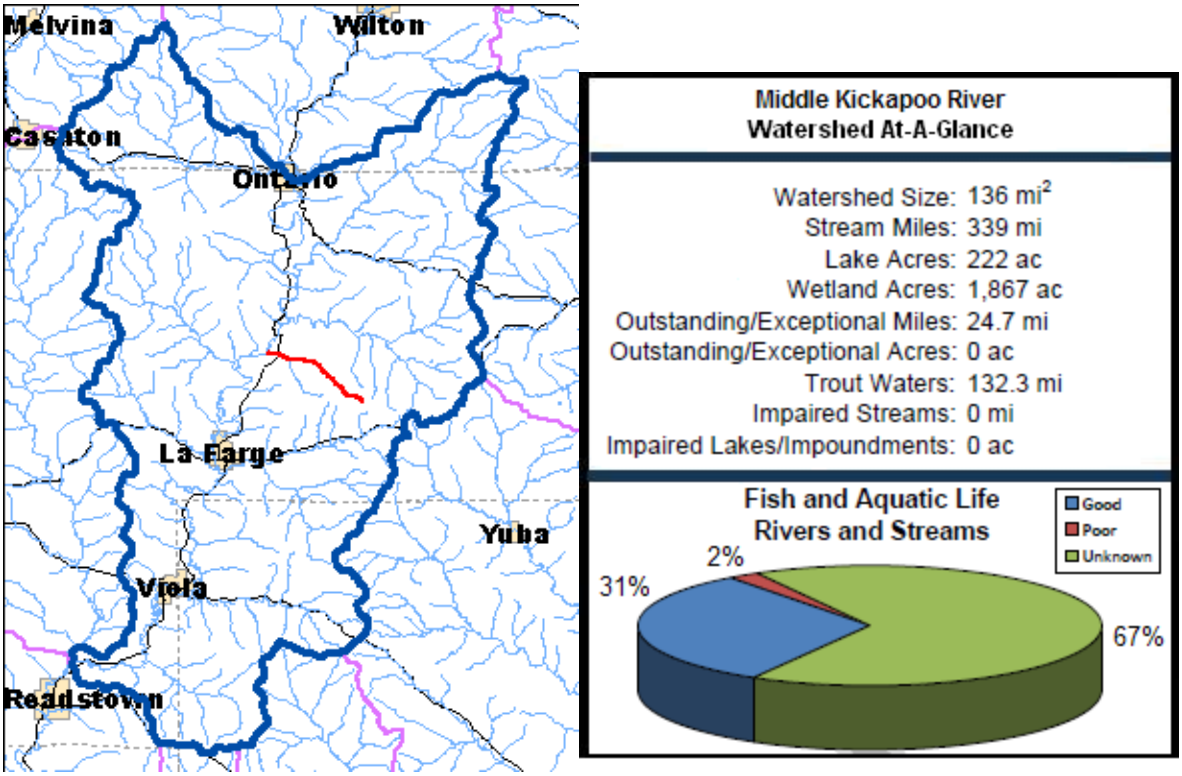


Figure 6 – Middle Kickapoo Source: www.dnr.wisconsin.gov/top/Watershed/basins/lowerwis

Table 5: Middle Kickapoo water condition (Richland County portion)

OFFICIAL NAME	START MILE	END MILE	LAST MONITORED YEAR	WATER CONDITION	TROUT CLASS
Bufton Hollow Creek	0	2.78	2015	Good	CLASS I
Camp Creek	0	8.28	2020	Good	CLASS I
Chadwick Hollow Creek	0	0.57	2012	Unknown	
Chadwick Hollow Creek	0.57	2.59		Unknown	CLASS II
Elk Creek	0	1.91	2016	Excellent	CLASS I
Elk Creek	1.91	6.2	2016	Good	CLASS I
Goose Creek	0	3.41	2018	Good	CLASS II
Hoke Creek	0	2.11	2015	Good	CLASS I
Middle Bear Creek	0	2.17	2015	Good	CLASS III
Middle Bear Creek	2.17	3.64	1995	Unknown	CLASS II
South Bear Creek	0	2.49	2015	Good	CLASS II
South Bear Creek	2.49	4.43	2015	Good	CLASS II
South Bear Creek	4.43	6.46		Unknown	CLASS II
Welker Hollow Creek	0	2	2016	Unknown	

The **Mill and Indian Creek Watershed** is located in central Richland County. Most of the streams in the watershed flow into Mill Creek which flows into the Wisconsin River near Muscoda. Indian Creek flows directly into the Wisconsin River. The concerns and issues are:

⇒ Non-point source pollution
⇒ Stream channelization and diversion
⇒ Atrazine

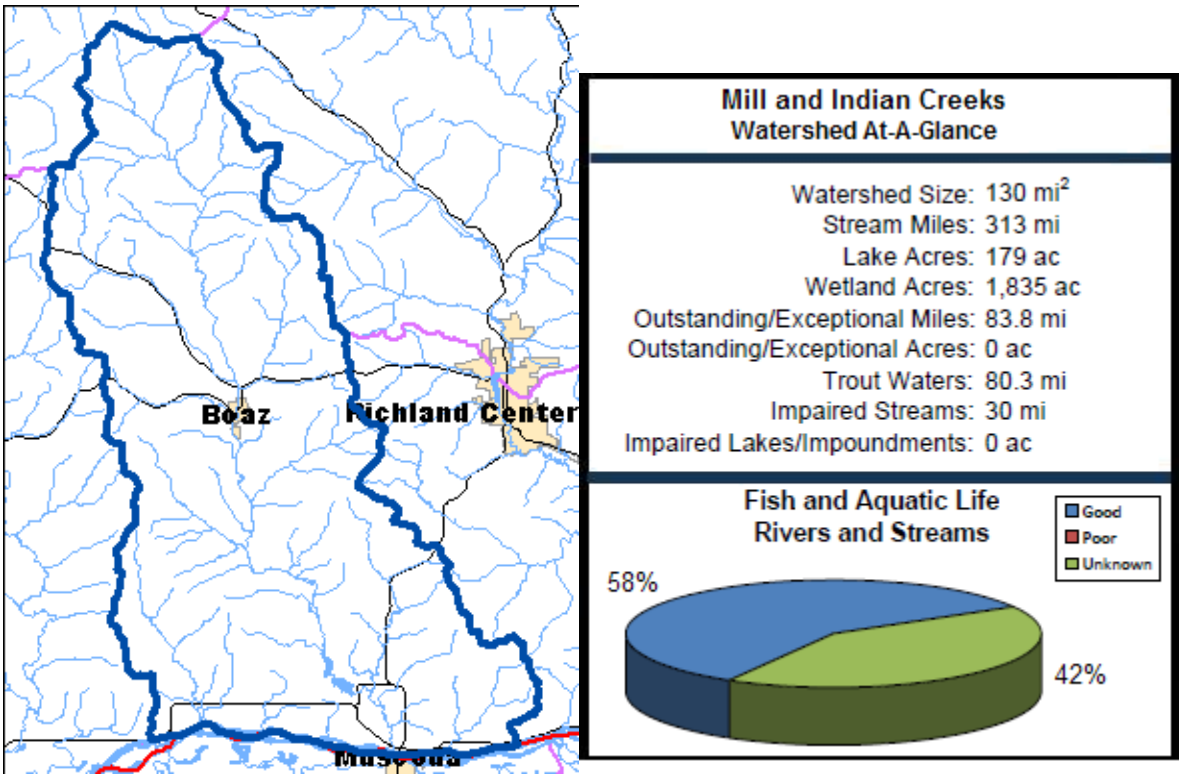


Figure 7- Mill Creek Source: www.dnr.wisconsin.gov/top/Watershed/basins/lowerwis

Table 6: Mill and Indian Creek water conditions

OFFICIAL NAME	START MILE	END MILE	LAST MONITORED YEAR	WATER CONDITION	TROUT CLASS
Babb Hollow Creek	0	3.04	2015	Good	CLASS I
Balmoral Pond			2016	Suspected Poor	
Byrds Creek	0	7.3	2019	Unknown	CLASS II
Core Hollow Creek	0	3.39	2015	Fair	CLASS II
Core Hollow Creek	3.39	4.65		Unknown	CLASS II
Coulter Hollow Creek	0	2.62	2015	Good	CLASS I
Dieter Hollow Creek	0	2.77	2021	Fair	CLASS I
Dieter Hollow Creek	2.77	5	2015	Excellent	CLASS I

East Branch Mill Creek	0	5.41	2015	Excellent	CLASS I
Fox Hollow Creek	0	4.6	2015	Unknown	CLASS I
Gault Hollow Creek	0	1		Unknown	
Higgins Creek	0	2.95	2015	Good	CLASS II
Hood Hollow Creek	0	2.3	2004	Good	CLASS I
Hoosier Hollow Creek	0	5	2015	Good	CLASS II
Hoosier Hollow Creek	5	6.73	1996	Unknown	CLASS II
Indian Creek	0	3.85	2015	Poor	
John Hill Creek	0	2.71	2019	Good	CLASS II
Kepler Br	0	2.84	2015	Excellent	CLASS I
Mill Creek	0	15.45	2015	Poor	
Mill Creek	15.44	29.72	2019	Fair	CLASS I
Miller Br	0	2.43	2004	Good	CLASS II
Miller Hollow Creek	0	2		Unknown	
Pine Valley Creek	0	2.75	2015	Good	CLASS I
Ryan Hollow Creek	0	2.85	2015	Good	CLASS I
West Branch Mill Creek	0	8.85	2019	Good	CLASS I

The **Upper Pine River Watershed** lies mostly in north central Richland County with a small portion in northeastern Vernon County. Melancthon Creek was delisted as a 303(d) water in 2008. Work was completed in that sub-watershed to reduce soil erosion, stabilize stream banks and restore trout habitat through a Targeted Resource Management grant in 2008. In the 1940's, the wetlands along Fancy Creek were ditched. Eventually, Fancy Creek started flowing through the ditch and has become deeply entrenched and unless there is a very heavy storm event, it is not connected to the flood plain. There are 2 landowners where Fancy Creek enters the Pine River that are working with county, state and federal agencies to return Fancy Creek to its old meanders and connected it back to the flood plain. The concerns and issues listed in the 2002 Basin plan are:

⇒ Non-point source pollution
⇒ Stream channelization

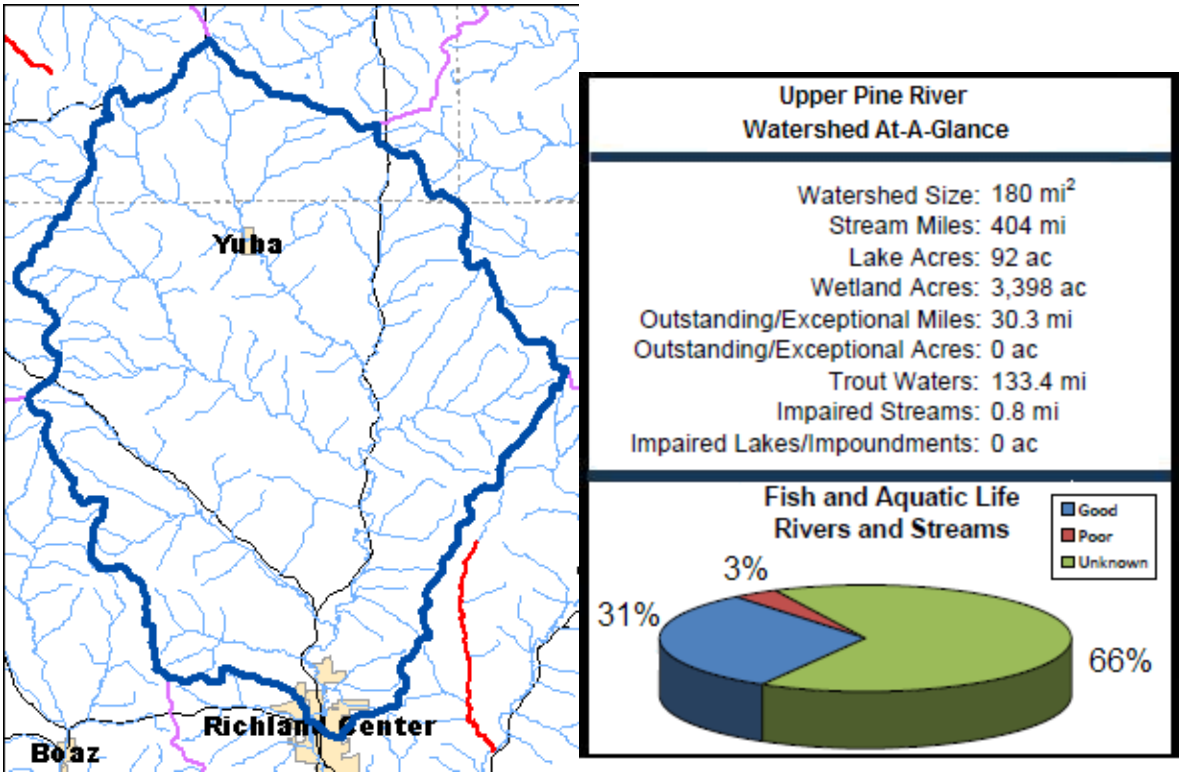


Figure 8- Upper Pine River Source: www.dnr.wisconsin.gov/top/Watershed/basins/lowerwis

Table 7: Upper Pine River water conditions (Richland County portion)

OFFICIAL_NAME	START MILE	END MILE	LAST MONITORED YEAR	WATER CONDITION	TROUT CLASS
Basswood Creek	0	2.04	2015	Good	CLASS II
Basswood Creek	2.04	3.85		Unknown	
Champion Valley Creek	0	1.24	2015	Unknown	CLASS II
Champion Valley Creek	1.24	6.44	2015	Good	CLASS III
Cherry Valley Creek	0	3.58	2015	Fair	
Fancy Creek	0	5.07	2015	Excellent	CLASS II
Fancy Creek	5.07	9.52	2015	Excellent	CLASS I
Fancy Creek	9.52	11.37	2019	Excellent	CLASS I
Fancy Creek	11.37	13.16	2015	Good	
Gault Hollow Creek	0	2.19	2015	Good	CLASS II
Gault Hollow Creek	2.19	5.73	2015	Good	CLASS I
Greenwood Valley Creek	0	0.5		Unknown	CLASS II
Greenwood Valley Creek	0.5	5.69	2015	Good	CLASS III
Grinsell Br	0	2.88	2015	Excellent	CLASS I
Hanzel Creek	0	3.24	2015	Unknown	CLASS I

Hawkins Creek	0	5.4	2015	Good	CLASS II
Hawkins Creek	5.4	6.65		Unknown	CLASS II
Horse Creek	0	6.11	2015	Unknown	CLASS II
Hynek Hollow Creek	0	1.72	2015	Excellent	CLASS II
Hynek Hollow Creek	1.72	2.93		Unknown	CLASS II
Indian Creek	0	2.68	2015	Excellent	CLASS II
Johnston Creek	0	3.02		Unknown	CLASS II
Lebansky Creek	0	2		Unknown	
Marshall Creek	0	3.78	2015	Good	CLASS I
Melancthon Creek	0	3.97	2019	Excellent	CLASS I
Melancthon Creek	3.97	6.76	2015	Good	CLASS I
Melancthon Creek	6.76	7.59	2019	Fair	CLASS I
Melancthon Creek	7.59	8.28		Excellent	CLASS I
Norman Valley Creek	0	0.5		Unknown	
North Buck Creek	0	2		Unknown	
Pine River	0	22.35	2021	Poor	
Pine River	22.35	47.68	2021	Excellent	CLASS II
Pine River	47.68	52.16	2015	Good	
Richardson Hollow Creek	0	1.88		Unknown	
Simpson Hollow Creek	0	4		Unknown	
Soules Creek	0	0.57	2015	Good	CLASS II
Soules Creek	0.57	5.64	2015	Excellent	
South Branch Marshall Creek	0	1.88	2015	Good	CLASS I
South Buck Creek	0	3		Unknown	
West Branch Marshall Creek	0	4.1	2015	Good	CLASS I
West Branch Pine River	0	11.62	2019	Excellent	CLASS II
West Branch Pine River	11.62	12.8	2015	Good	CLASS II
West Branch Pine River	14.4	16.38		Unknown	

The **Crossman Creek/Little Baraboo River Watershed** in located in northwestern Sauk County, southern Juneau County, northeastern Richland County and northeastern Vernon County. The concerns and issues as listed in the 2002 Basin plan are:

⇒ Non-point source pollution
⇒ Atrazine
⇒ Hydrologic modification

⇒ High phosphorus levels in lakes leading to eutrophication and algae blooms

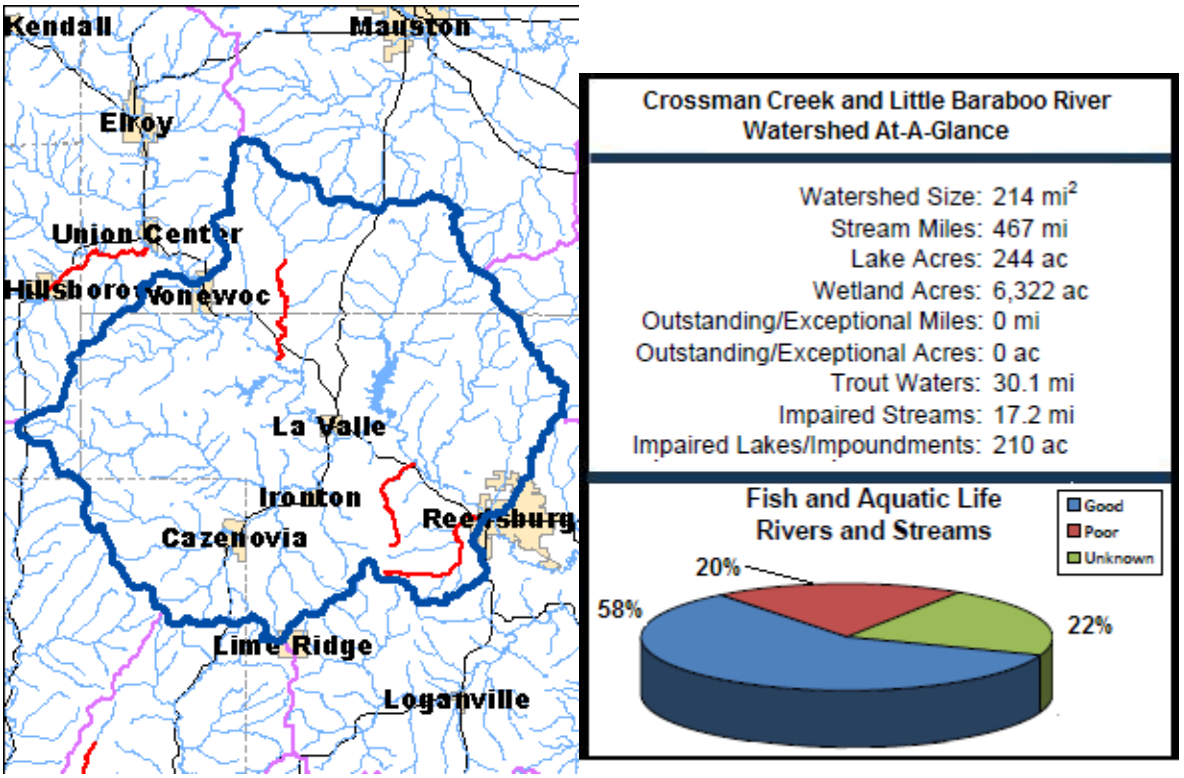


Figure 8- Little Baraboo Source: www.dnr.wisconsin.gov/top/Watershed/basins/lowerwis

Table 8: Crossman Creek/Little Baraboo conditions (Richland County portion)

OFFICIAL_NAME	START MILE	END MILE	LAST MONITORED YEAR	WATER CONDITION	TROUT CLASS
Bauer Valley Creek	0	5.43	2015	Good	CLASS II
Cazenovia Br	0	0.66	2015	Poor	
Cazenovia Br	0.66	2.67	2015	Good	
Cazenovia Br	2.67	7.68	2015	Good	CLASS I
Cazenovia Br	7.68	10.89	2015	Fair	
Jones Valley Creek	0	1		Unknown	
Lee Lake			2013	Good	
Little Baraboo River	0	11.93	2018	Poor	
Little Baraboo River	11.93	16.78	2018	Excellent	CLASS II
Little Baraboo River	16.78	19.79		Unknown	
McGlynn Creek	0	3	2017	Good	CLASS II
McGlynn Creek	3	4.82	2015	Good	CLASS II

The **Knapp Creek Watershed** is located in western Richland County and eastern Crawford County. The concerns and issues for Knapp Creek are:

⇒ Non-point source pollution
⇒ Stream channelization
⇒ Atrazine

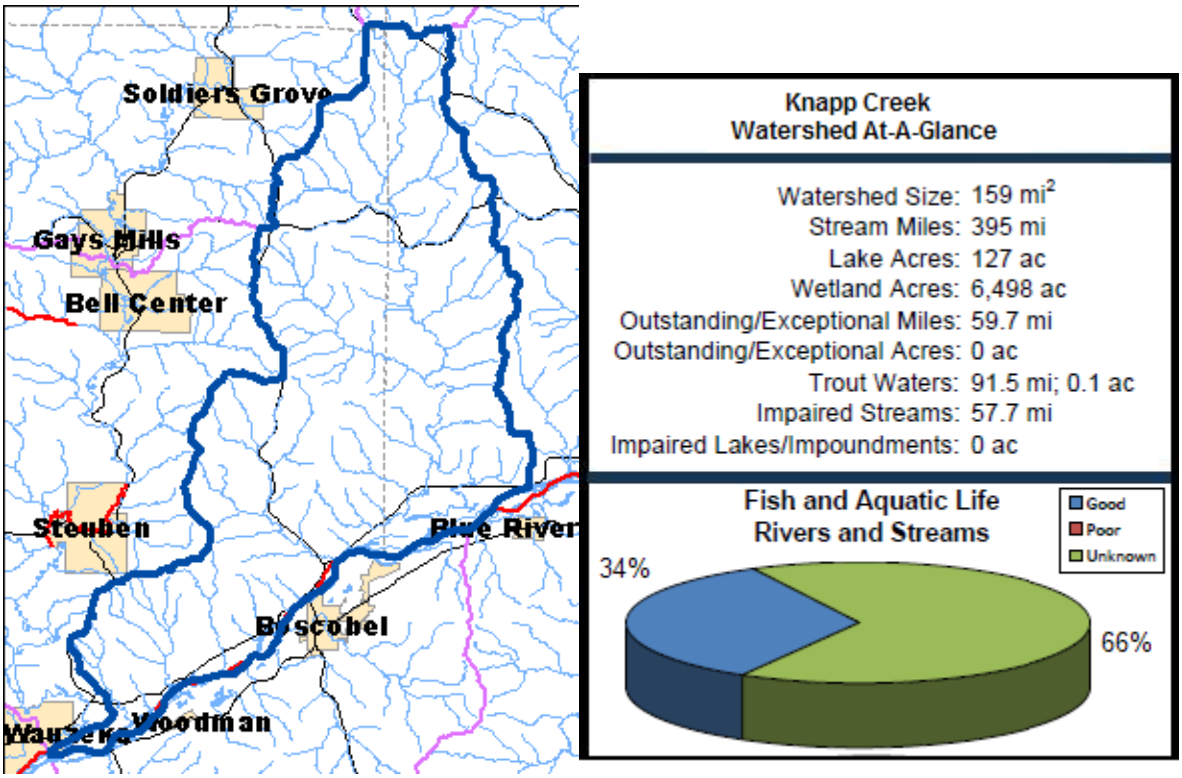


Figure 9- Knapp Creek Source: www.dnr.wisconsin.gov/top/Watershed/basins/lowerwis

Table 9: Knapp Creek water condition (Richland County portion)

OFFICIAL_NAME	START MILE	END MILE	LAST MONITORED YEAR	WATER CONDITION	TROUT CLASS
Beebe Hollow Creek	0	3.76		Unknown	CLASS II
Chitwood Hollow Creek	0	1.85		Unknown	CLASS II
Garner Lake			2014	Unknown	
Hall Bottom Creek	0	4.34	2021	Unknown	CLASS I
Jimtown Br	0	3.66	2015	Good	CLASS I
Long Hollow Creek	0	1		Unknown	
Lower Lake			2016	Fair	
McKinney Hollow Creek	0	1		Unknown	

O'Connor Br	0	1.2	2015	Good	CLASS II
Taylor Hollow Creek	0	2		Unknown	

The **Willow Creek Watershed** is located in the eastern portion of Richland County with a small portion of the watershed in western Sauk County. It includes the lower part of the Pine River from Brush Creek in Richland Center to the Wisconsin River. The concerns and issues listed in the Basin Plan are:

⇒ Non-point source pollution
⇒ Atrazine

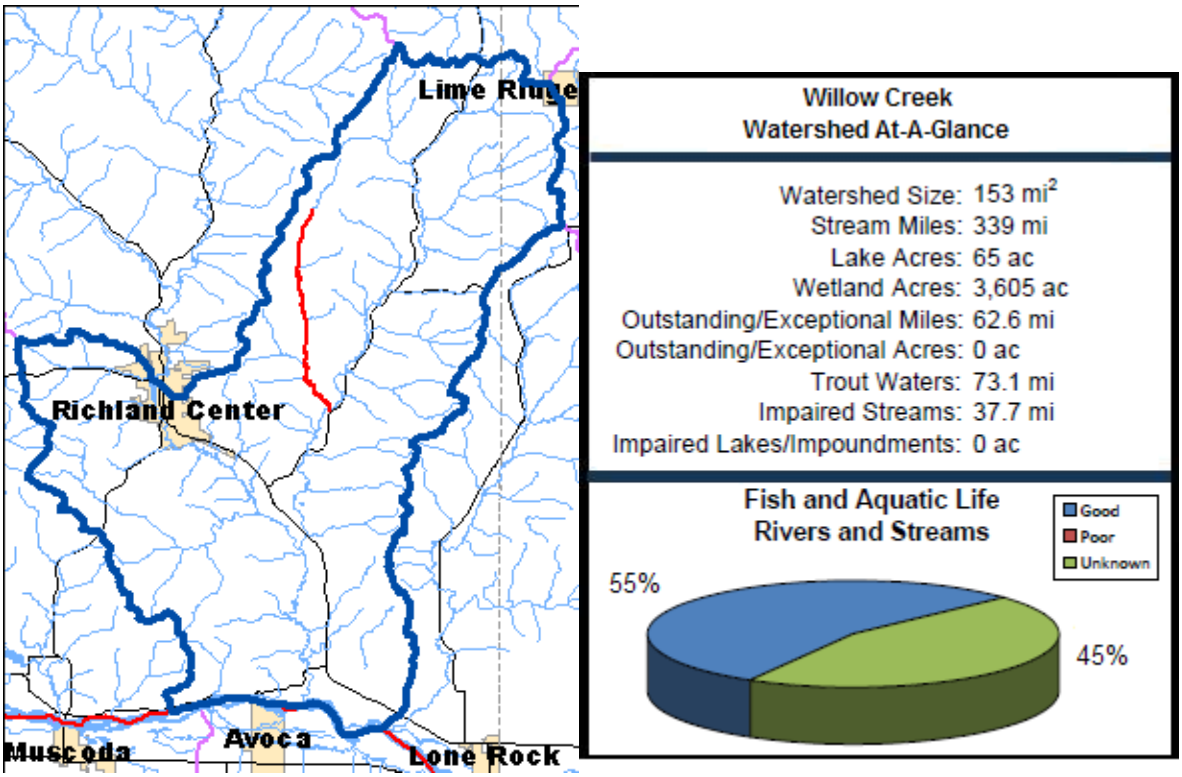


Figure 10- Willow Creek Source: www.dnr.wisconsin.gov/top/Watershed/basins/lowerwis

Table 10: Willow Creek water conditions (Richland County portion)

OFFICIAL_NAME	START MILE	END MILE	LAST MONITORED YEAR	WATER CONDITION	TROUT CLASS
Ash Creek	0	9.85	2016	Good	CLASS I
Brush Creek	0	4.04	2020	Good	CLASS II
Center Creek	0	2	2015	Poor	
Center Creek	2	2.57		Unknown	
Durst Hollow Creek	0	2		Unknown	

Happy Hollow Creek	0	4.42	2015	Unknown	CLASS I
Hell Hollow Creek	0	3		Unknown	
Jacquish Hollow Creek	0	2.16	2003	Unknown	CLASS II
Little Willow Creek	0	7.73	2017	Poor	CLASS II
Little Willow Creek	7.74	9.65	2015	Good	CLASS II
Lost Hollow Creek	0	2.69	2015	Good	CLASS I
Misslich Creek	0	2.31		Unknown	CLASS II
Nebraska Hollow Creek	0	2		Unknown	
Pier Spring Creek	0	1.62	2015	Excellent	CLASS II
Pine River	0	22.35	2021	Poor	
Richland Center Millpond			1999	Unknown	
Robin Hollow Creek	0	2		Unknown	
Rocky Br	0	2		Unknown	
Rocky Br	2	2.52		Unknown	
School Section Hollow Creek	0	3		Unknown	
Smith Hollow Creek	0	3.38	2015	Good	CLASS I
Smith Hollow Creek	3.38	5.07		Unknown	CLASS II
Snake Creek	0	3		Unknown	
Spring Creek	0	3		Unknown	
Spring Creek	3	3.66		Unknown	
Wheat Hollow Creek	0	2.99	2015	Good	CLASS I
Willow Creek	0	4.55	2015	Good	
Willow Creek	4.55	7.98	2016	Good	CLASS I
Willow Creek	7.99	20.26	2020	Fair	CLASS I
Willow Creek	20.25	24.82	2016	Good	CLASS I
Willow Creek	24.82	27.1	2015	Unknown	CLASS I

The Bear Creek Watershed lies in southeastern Richland County and southwestern Sauk County. The watershed priorities and goals listed in the 2010 Watershed Plan are:

⇒ Priorities

- Identify, restore and preserve high quality fisheries in the watershed
- Protect riverine habitat especially in sloughs and backwaters of the Wisconsin River
- Protect ORW/ERW waters and trout waters

- Restore stream habitat, hydrology and morphology throughout the watershed to recover from damage incurred in the 2008 flooding events
- Conduct monitoring to sufficiently understand and abate water quality standards impairments in the watershed
- Set priorities for Little Bear Creek restoration work to eventually remove the water from the impaired waters list

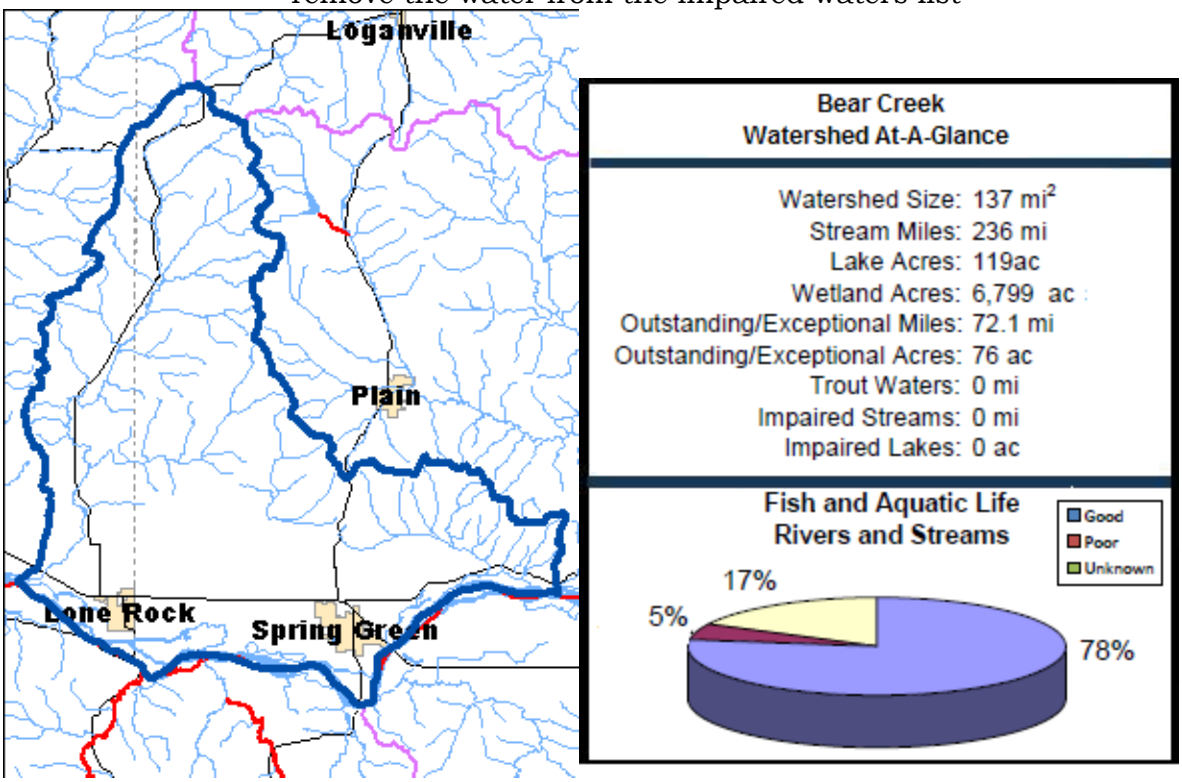


Figure 11- Bear Creek Source: www.dnr.wisconsin.gov/top/Watershed/basins/lowerwis

Table 11: Bear Creek water conditions (Richland County portion)

OFFICIAL NAME	START MILE	END MILE	LAST MONITORED YEAR	WATER CONDITION	TROUT CLASS
Bear Creek	0	8.2	2019	Poor	
Bear Creek	8.21	18.25	2013	Unknown	CLASS II
Bear Creek	18.25	18.54	2018	Good	CLASS II
Bear Creek	18.54	26.78	2020	Good	CLASS I
Cruson Slough			2012	Good	
Cruson Slough			2013	Unknown	
Four Springs Hollow Creek	0	2.87		Good	
Little Bear Creek	0	6.77	2021	Poor	
Little Bear Creek	6.77	8.72	2015	Unknown	

Long Lake			2021	Fair	
Pumpkin Hollow Creek	0	2.67	2015	Unknown	
Smith Lake			2020	Unknown	

There are several waterbodies that have been identified with impaired waters by the Wisconsin Department of Natural Resources (DNR). As of 2022, DNR has identified that all impaired waters are currently a low priority for completing a Total Maximum Daily Load report. Cropland and Livestock practices, such as nutrient management, conservation tillage/residue management, contour farming, cover crops, grassed waterways, stream bank protection from unlimited animal access, water diversions and manure waste collection systems can help can reduce phosphorus, sediment and other nutrient or bacteria pollutants in these respective watersheds should be a priority as funding sources allow/become available.

Table 12: Impaired Waters

Waterbody Name	Cycle Listed	Source	Pollutant/Cause (WDNR & EPA)	Impairment (WDNR)	Observed Effect (EPA)	TMDL Priority
Bear Creek	2012	NPS	Total Phosphorus	High Phosphorus Levels	Organic Enrichment	Low
Center Creek	2016	NPS	Unknown Pollutant*	Degraded Biological Community	Biological Integrity	Low
Indian Creek	2018	NPS	Unknown Pollutant*	Elevated Water Temperature	Temperature	Low
Kickapoo River	2012	PS/NPS	Total Phosphorus	Impairment Unknown	Organic Enrichment	Low
Little Bear Creek	2010	NPS	Sediment/Total Suspended Solids	Elevated Water Temperature, Degraded Habitat	Temperature, Physical Substrate Habitat Alterations	Low

Little Bear Creek	2010	NPS	Total Phosphorus	Degraded Biological Community	Biological Integrity	Low
Little Willow Creek	2016	NPS	Total Phosphorus	Impairment Unknown	Organic Enrichment	Low
Little Willow Creek	2016	NPS	Unknown Pollutant*	Elevated Water Temperature	Temperature	Low
Mill Creek	2014	PS/NPS	Total Phosphorus	Impairment Unknown	Organic Enrichment	Low
Pine River	2014	PS/NPS	Total Phosphorus	Impairment Unknown	Organic Enrichment	Low

Little Willow Creek Sediment TMDL – 2008

The Little Willow Creek TMDL report, located entirely within Richland County, was completed by DNR and approved by the US EPA in September 2008. Little Willow Creek was selected for TMDL development after the DNR placed the entire 8 miles of Little Willow Creek on the state's 303(d) impaired waters list in 1996 due to degraded habitat caused by excessive sedimentation. The Clean Water Act and US EPA regulations require that each state develop TMDLs for waters on the Section 303(d) list.

This Little Willow Creek TMDL identifies in-stream habitat was impaired by excessive sedimentation and phosphorus due to historical channelization in the upstream segments causing an imbalanced stream system. DNR monitoring of the Little Turtle Creek in 2018 and 2020 confirmed this stream's remains impaired from phosphorus, sediment pollutants as well as temperature. The goal of this TMDL is to reduce sediment loads to Little Willow Creek to a level that narrative water quality standards will be met and biological communities in the stream will be restored to their potential.

This TMDL estimates total existing sediment load to Little Willow Creek from streambank erosion calculations is approximately 11.8 tons per day. The target sediment load for the eroding streambanks is 1.3 tons/day for an overall reduction of 89% in Little Willow Creek. A target recession rate of 0.05 ft/yr was used to establish the TMDL. The target recession rate of 0.05 ft/yr is in the high end of the "slight" erosion category as defined in the NRCS Streambank Erosion Survey Protocols.

The TMDL report states that once the streambanks are stabilized, Little Willow Creek will display more naturally occurring erosion characteristics consistent with a balanced stream system. See NRCS Table 6 and TMDL watershed map below.

The Little Willow Creek Sediment TMDL report findings and analysis can be used by Richland County, in collaboration with Wisconsin DNR nonpoint staff, to complete a more detailed inventory of the watershed's cropland and livestock nonpoint agricultural operations, existing best management practices and how they may meet/not meet one or more 151 performance standards and prohibitions. This TMDL report can also be used. Using the TMDL report and coordinating with DNR staff in this manner can help Richland county not only meet its ATCP 50.12 priority farm and NR 151 implementation strategy requirements, but also meet its ten-year LW plan goals, objectives and action items related to soil erosion, nutrient management and water quality.

Figure 512: NRCS Streambank Categories

Table 6. Erosion Categories of the NRCS Streambank Erosion Survey.

Lateral Recession Rate	Category	Description
0.01-0.05	Slight	Some bare bank but active erosion not readily apparent. Some rills but no vegetative overhang. No exposed tree roots.
0.06-0.2	Moderate	Bank is predominantly bare with some rills and vegetative overhang. Some exposed tree roots but no slumps or slips.
0.3-0.5	Severe	Bank is bare with rills and severe vegetative overhang. Many exposed tree roots and some fallen trees and slumps or slips. Some changes in cultural features such as fence corners missing and realignment of roads or trails. Channel cross section becomes U-shaped as opposed to V-shaped.
0.5+	Very Severe	Bank is bare with gullies and severe vegetative overhang. Many fallen trees, drains, and culverts eroding out and changes in cultural features as above. Massive slips or washouts common. Channel cross section is U-shaped and stream course may be meandering.

APPENDIX A
WATERSHED MAP

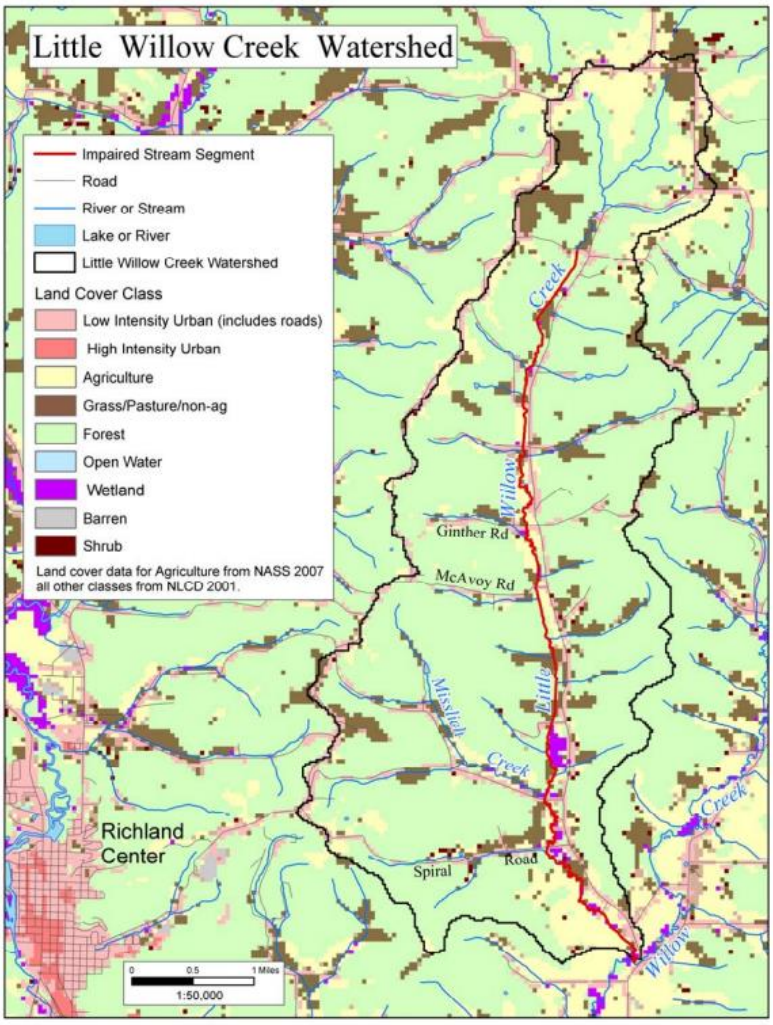


Figure 13 Little Willow Map-
Source: https://dnr.wi.gov/water/wsSWIMSDocument.ashx?documentSeqNo=29382688

Wisconsin River TMDL – 2019

The Wisconsin TMDL was completed and approved by the US EPA on April 26, 2019. This TMDL identifies the total amount of phosphorus that can be discharged into the river, its tributaries and reservoirs, and still meet water quality standards. Under existing conditions (2017-2022), many reservoirs and tributaries in the Wisconsin River basin do not meet water quality standards due to excess pollutant loads, meaning they are not suitable for their designated uses, such as fishing, wildlife habitat, and/or recreational activities such as boating and swimming. The TMDL study includes a portion of NE Richland County and provides a strategic framework and will help prioritize resources for water quality improvements throughout the basin (https://dnr.wisconsin.gov/topic/TMDLs/WisconsinRiver/index.html).

The TMDL divides up the basin into over 337 discrete sub-basins; each one having a specific phosphorus reduction goal to improve water quality. The NE corner of Richland county falls within the Wisconsin River TMDL subbasin 310 and is located in Crossman Creek/Little Baraboo watershed. This sub-basin has one of the highest annual agricultural nonpoint source loading rates in the entire baraboo basin (12,491 lbs/P/yr and 0.8lbs/P/ac/yr). Subbasin 310/Crossman Creek has a specific cropland edge of field phosphorus reduction goal of 74% (see figures X, Y and Z below).

Figure 14

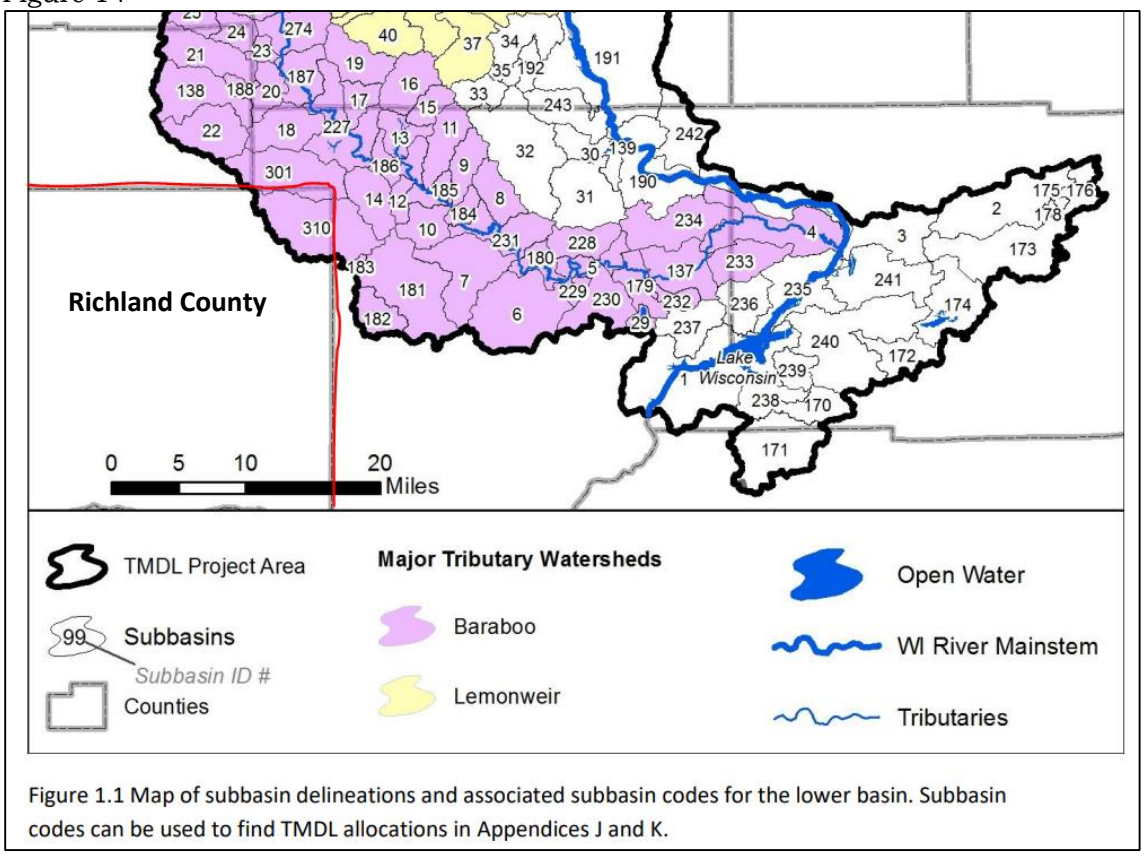
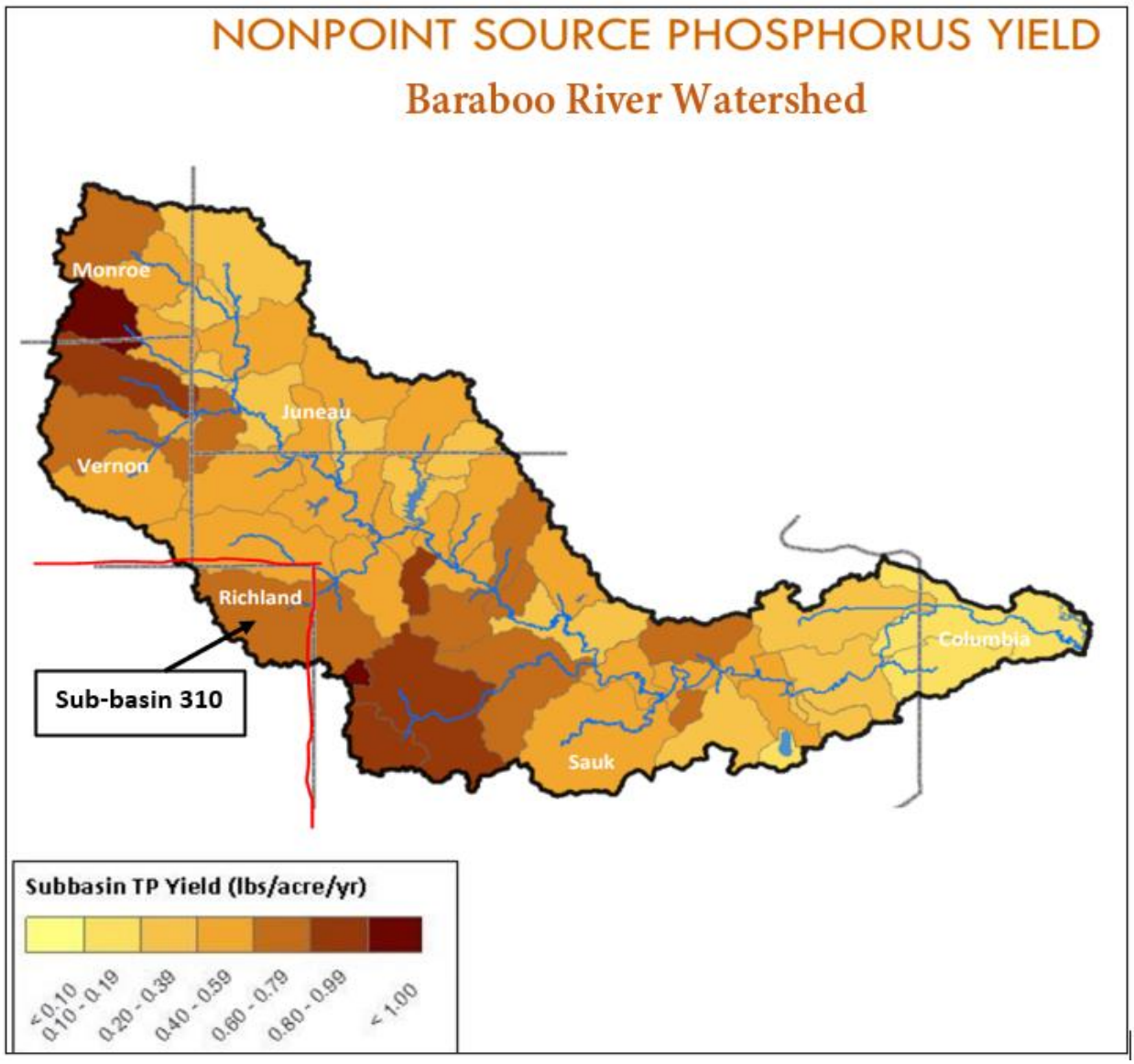


Figure 1.1 Map of subbasin delineations and associated subbasin codes for the lower basin. Subbasin codes can be used to find TMDL allocations in Appendices J and K.

Source: Wisconsin River TMDL, Appendix N

Figure 14



Source: WI River TMDL, Appendix A, Tributary Information and Charts

Table 13: Crossman Creek/Little Baraboo Sub-basin

Table 1.1 Agricultural total phosphorus (TP) targets by TMDL subbasin. TP Targets are shown both for the TMDL under existing criteria and the recommended site-specific criteria (SSC). Subbasin codes are associated with those shown in the subbasin maps in Figures 1.1-1.4. Values designated with a dash ("-") indicate Subbasins lacking sufficient soils information for adequate analysis.

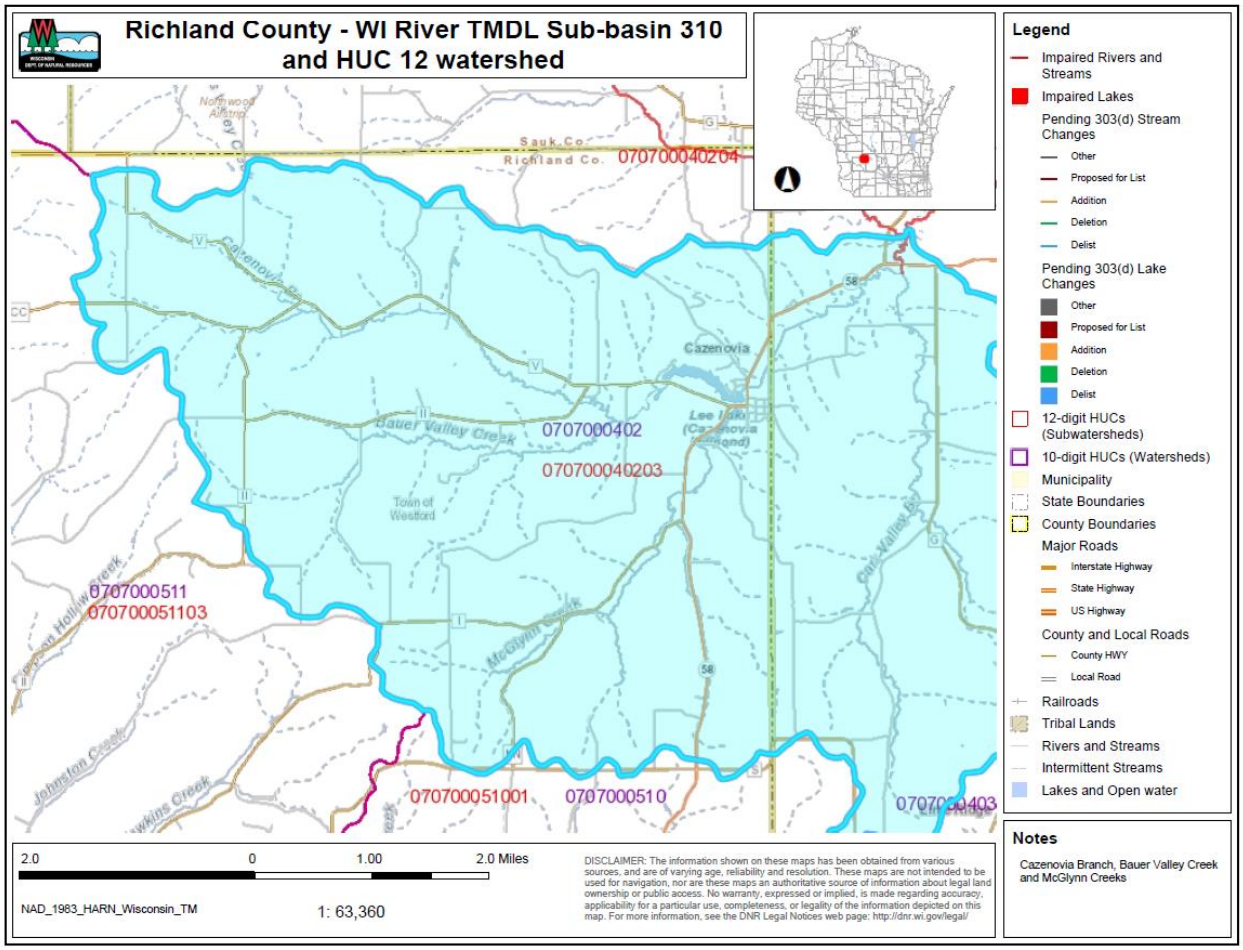
Subbasin	Baseline TP (lb./acre/yr.)	Translated TMDL Allocations			
		Current Criteria		Recommended SSC	
		Reduction	TP Target (lb./acre/yr.)	Reduction	TP Target (lb./acre/yr.)
288	3.0	79%	0.6	63%	1.1
289	2.8	79%	0.6	63%	1.0
290	5.1	79%	1.1	63%	1.9
291	3.4	79%	0.7	63%	1.3
292	3.6	79%	0.7	63%	1.3
293	2.7	79%	0.6	63%	1.0
294	2.4	79%	0.5	63%	0.9
295	2.6	79%	0.5	63%	0.9
296	2.4	79%	0.5	63%	0.9
297	2.9	79%	0.6	63%	1.1
298	2.8	79%	0.6	63%	1.0
299	3.4	79%	0.7	63%	1.2
300	0.5	79%	0.1	63%	0.2
301	4.7	71%	1.4	71%	1.4
302	0.4	0%	0.4	63%	0.1
303	2.3	77%	0.5	77%	0.5
304	1.0	64%	0.3	64%	0.3
305	1.3	0%	1.3	63%	0.5
306	0.6	0%	0.6	63%	0.2
307	2.0	78%	0.4	78%	0.4
308	2.0	79%	0.4	63%	0.7
309	3.4	79%	0.7	63%	1.2
310	4.9	74%	1.3	74%	1.3
311	0.9	0%	0.9	63%	0.3
312	2.1	17%	1.7	63%	0.8

Source: WI River TMDL, Appendix N

Wisconsin River sub-basin 310 aligns with the Cazenovia Branch HUC 12 watershed. This HUC 12 watershed contains three main tributary streams: Cazenovia Branch, Bauer Valley and McGlynn Creeks. This same HUC 12 watershed was identified within the Wisconsin Buffer Initiative report with a ranking of 43 out of 452 total watersheds for showing a response/improvement in water quality and aquatic habitat after adoption of conservation system practices. See Figures V and W below.

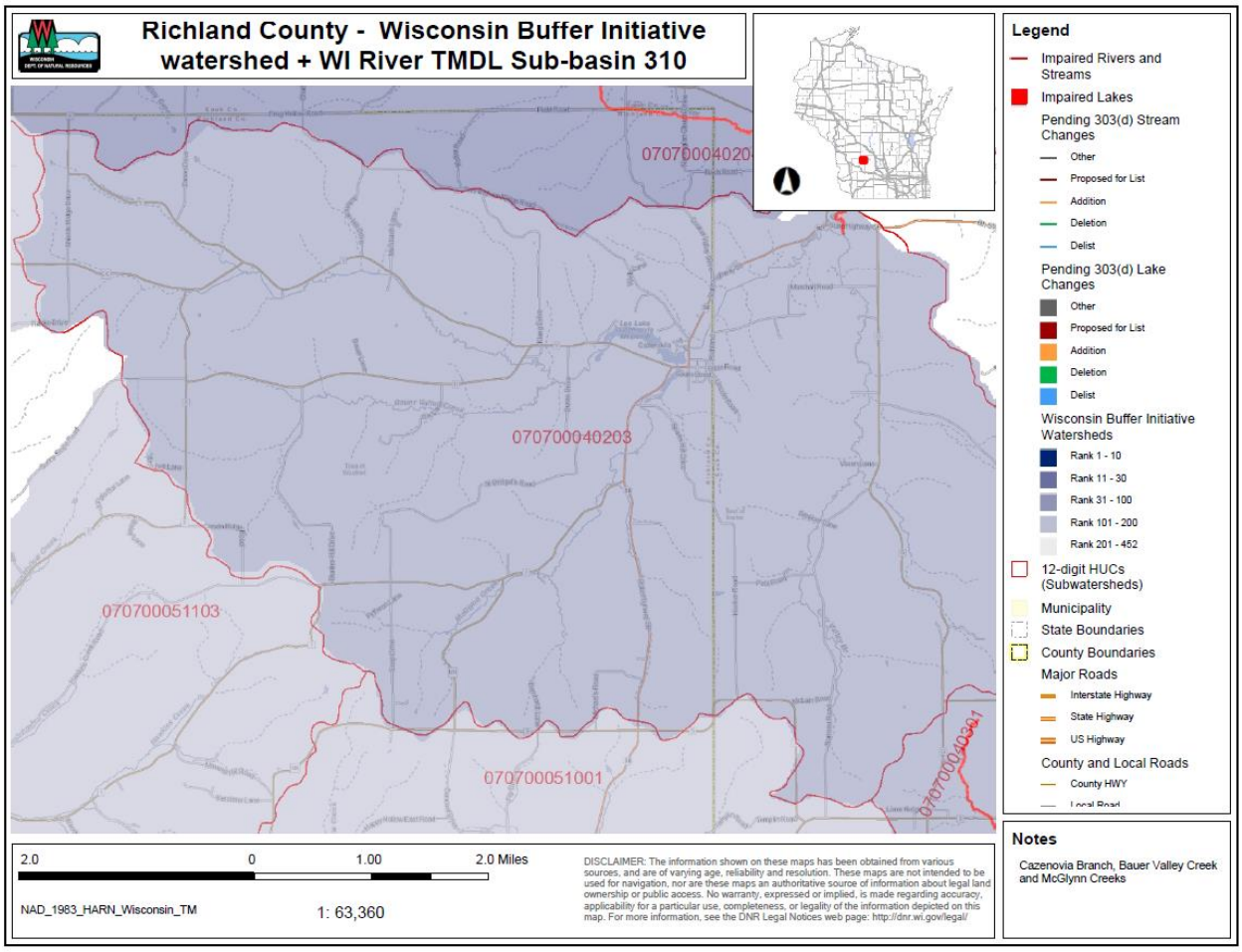
The Wisconsin Buffer Initiative, was a collaborative effort between a diverse group of Wisconsin citizens and UW-Madison scientists in 2005 to develop recommendations for the Wisconsin DNR on how riparian buffers can be part of a larger conservation system to address agricultural nonpoint source pollution.

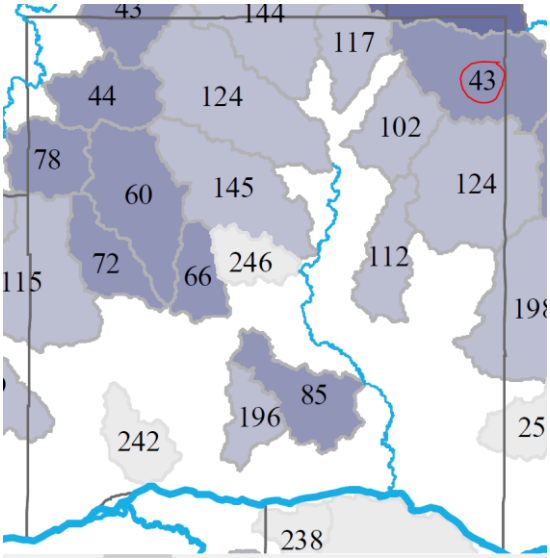
Figure 15



Source: Wisconsin DNR Surface Water Data Viewer

Figure 16


Richland County - Wisconsin Buffer Initiative watershed + WI River TMDL Sub-basin 310
07070004020
070700040203
070700051103
070700051001
Legend
Impaired Rivers and Streams
Impaired Lakes
Pending 303(d) Stream Changes
Other
Proposed for List
Addition
Deletion
Delist
Pending 303(d) Lake Changes
Other
Proposed for List
Addition
Deletion
Delist
Wisconsin Buffer Initiative Watersheds
Rank 1 - 10
Rank 11 - 30
Rank 31 - 100
Rank 101 - 200
Rank 201 - 452
12-digit HUCs (Subwatersheds)
Municipality
State Boundaries
County Boundaries
Major Roads
Interstate Highway
State Highway
US Highway
County and Local Roads
County HWY
Local Road
2.0
0
1.00
2.0 Miles
NAD_1983_HARN_Wisconsin_TM
1: 63,360
DISCLAIMER: The information shown on these maps has been obtained from various sources, and are of varying age, reliability and resolution. These maps are not intended to be used for navigation, nor are these maps an authoritative source of information about legal land ownership or public access. No warranty, expressed or implied, is made regarding accuracy, applicability for a particular use, completeness, or legality of the information depicted on this map. For more information, see the DNR Legal Notices web page: http://dnr.wi.gov/legal/
Notes
Cazenovia Branch, Bauer Valley Creek and McGlynn Creeks


43
144
117
44
124
43
102
78
60
145
124
72
66
246
112
115
85
196
242
25
238

Source: Wisconsin DNR Surface Water Data Viewer
The Wisconsin River TMDL report findings and associated DNR watershed data/ analysis shown above, can be used by Richland County, in collaboration with Wisconsin DNR staff, to complete a more detailed inventory of the watershed – to identify the extent and types of cropland and livestock agricultural operations, existing best management practices and how many farms or acres meet/not meet one or more 151 performance standards and prohibitions.

Using this information (and coordinating with DNR staff) can help Richland county LCD focus its soil and water conservation efforts to not only meet ATCP 50.12 priority farm and NR 151 implementation strategy requirements, but also meet this plans goals, objectives and action items related to soil erosion, nutrient management and water quality.

Non-Point Source Pollution and Priority Watershed Plans
Non-point source pollution is an ongoing problem in every watershed in Richland county that is causing or contributing to impaired waters.From 1980-2000,. two of the watersheds (Crossman Creek and Middle Kickapoo River) were part of the Department of Natural Resources Priority Watershed program. The Crossman Creek/Little Baraboo River plan began in 1985 and was completed in 1994 and the Middle Kickapoo River began in 1990 and was completed in 2004. Both plans expired in 2009 or 2014 and are no longer active.

These watershed plans are housed at the Richland County Land Conservation Department and can also be found using DNR's Water Condition Viewer (https://dnr.wisconsin.gov/topic/SurfaceWater/wcv) Inventories of agricultural and other land uses, soils and management practices were completed in both watersheds. Although the goals for both watershed plans are different, the same types of nonpoint pollution problems were found. They are soil erosion, sedimentation and phosphorus loading primarily from agricultural cropland and livestock operations.

The goals for the Crossman Creek/Little Baraboo River were:

- ⇒ Reduce phosphorus by 57% from 563 inventoried barnyards
- ⇒ Reduce soil loss by 41% on fields eroding over 4 T/Ac/Yr.
- ⇒ Reduce stream bank erosion by 59% on all 14 streams
- ⇒ Control manure application by 60% on all fields with slopes greater than 6% or prone to flooding

A final report was completed in January 1999. The accomplishments were:

- ⇒ Reduction of phosphorus runoff by 62% on 211 barnyards
- ⇒ Reduced soil loss by 53% from an average of 13.2 T/Ac/Yr. down to 6.2 T/Ac/Yr.
- ⇒ Reduced stream bank erosion by 55%
- ⇒ Controlled spreading on critical acres by 68%

The goals for the Middle Kickapoo River Watershed were:

- ⇒ 60% reduction in phosphorus from barnyards in high management sub watersheds
- ⇒ 50% reduction in phosphorus from barnyards in moderate management watersheds
- ⇒ 50% reduction in the total sediment reaching streams from the combination of upland field erosion, stream bank erosion and gully erosion.

The final report for the Middle Kickapoo was completed in 2006. There was a reduction in phosphorus loading from barnyards in Richland County due to the fact that many of the livestock operations are no longer in business. There were 40 barnyards in the original inventory. As of 2006, there were less than 10 active livestock operations in the watershed. The Middle Kickapoo plan expired in 2014.

The conservation practices funded by these two priority watershed-based plans were not required to be maintained in perpetuity; accordingly many funded barnyard, soil erosion and manure management practices likely ceased within ten years of plan adoption and are not present in 2022. Completing another inventory agricultural operations, land use and existing best management practices - and how they may meet one or more 151 performance standards and prohibitions - within these two watersheds may help Richland County, with support from Wisconsin DNR, answer these questions and help meet this ten-year LW plan goals, objectives and action items related to soil erosion, nutrient management and water quality.

Upper Pine River Watershed Project and Delisting of Impaired Water

The Upper Pine River watershed lies mostly in north central Richland County with a small portion in Vernon County. Streams in the watershed have a high gradient and water quality is generally good. Nearly all of the streams in the watershed are cold water streams and can support trout and other cold water species. Like other watersheds in the Lower Wisconsin Basin, agriculture is the dominant land use in the watershed. Portions of the Pine River Watershed, includingMelancthon Creek, were monitored in 2001-03 by a group called PRISTINE (Pine River Study and Information Network).

Melancthon Creek is a major tributary to the Pine River and flows through Vernon and Richland counties. The entire stream has been designated as Exceptional Resource Water (ERW) and supports some natural reproduction of Brook and Brown Trout. In 1998, the upper segment from Highway 80 crossing at the limit of Richland and Vernon Co. to the headwaters was designated as impaired water by the DNR and added to the 303(d) list due to habitat degradation caused by sediment input. The existing use of the impaired segment was warm water forage fish and did not meet the designated use (trout stream Class I). Site visits to Melancthon Creek for water quality

monitoring in 2006 and 2007 showed that the exposed cropland/streambank soil was minimal and abundant riparian vegetation was present.

The Department of Natural Resources conducted water quality monitoring on a monthly basis in 2006 (from May to October) and 2007 (in March, and from June to August). Water samples for total suspended solid (TSS) analysis were collected and surface water temperature and pH were measured. Fish and macroinvertabrate surveys were also performed. The results obtained from the fish survey were used to determine the Index of Biotic Integrity (IBI), assess the overall stream conditions, and partially assess watershed land use conditions.

Richland County received a Targeted Resource Management Grant for Melancthon Creek in 2007. The focus of the TRM grant was to cost-share installation of erosion control best management practices (BMPs) to reduce sediment delivery and sedimentation along Melancthon Creek, including measures to prevent unlimited livestock access to waters of the state. After practices were installed, monitoring showed good water quality and DNR removed the creek from the impaired waters list in 2008.

Melancthon Creek (miles 3.97-6.76) was assessed again during the 2018 listing cycle by Wisconsin DNR. New biological (fish Index of Biotic Integrity (IBI) scores) sample data were found to be clearly below the 2018 WisCALM listing thresholds for the Fish and Aquatic Life use. This creek is currently meeting this designated use and is not considered impaired.

This successful watershed-based effort offers a model approach that Richland county may repeat over the next ten years, in collaboration with DNR, in other nutrient or aquatic habitat impaired watersheds (e.g., TMDL watersheds).

Groundwater

Richland County has approximately 4,175 private wells. Although wells should be tested every 1-2 years for pollutants, such as nitrate or bacteria, most people do not test their wells. Richland, Crawford and Vernon counties conducted a private well study to ascertain if there the extent of nitrates and E. Coli contamination in drinking water wells in each county. These counties have similar topography and bedrock. The Driftless Area Water Study (DAWS) was conducted in October 2020 and April 2021 with the samples being sent to UW-Stevens Point Center of Watershed Science and Education.

Richland County sent out letters to 400 randomly selected landowners each time asking if they would be interested in having their well tested for free. The goal was to test 85 wells each time and that the well samples in each of the counties would be collected on the same day. In Richland County, there were 79 wells tested in October 2020 and 68 in April 2021.

Wisconsin's groundwater standard for Nitrate is 10 mg/L is. Nitrate levels at or above 10 mg/L can pose health risks if consumed by infants, pregnant women and women trying to become pregnant. Routine coliform bacteria testing of wells can also be used as an indication of whether a well is capable of producing sanitary or bacteria safe water. The presence of E. coli in a water sample is conclusive evidence of fecal contamination in the well. Source tracking was not conducted as part of this project so the sources of E. coli are not known. The results of the 2020 and 2021 well testing in Richland County are as follows:

Table 13: Well study results

	October 2020		April 2021	
Nitrate mg/L	**Number**	**%**	**Number**	**%**
None Detected	13	16%	14	21
<= 2.0	32	41%	24	35%
2.1- 5.0	15	19%	14	21%
5.1-10.0	8	10%	10	15%
10.1- 20.0	8	10%	5	7%
>20.0	3	4%	1	1%
Average Nitrate	4 mg/L		3.4 mg/L	
Coliform Bacteria	25	32%	2	3%
E. Coli Positives	1	1.3%	1	1.5%
Total Samples	79		68	

More wells will need to be tested to gain a better understanding of the specific areas of concern. However, the study results show areas of Richland county that the groundwater may be more susceptible for nitrate contamination. At this time the source of the E. coli (livestock or human) is unknown. Maps showing well study results and groundwater contamination susceptibility can be found in Appendix B. This information can be used to help focus Richland County's priority farm and NR 151 implementation strategies - to meet ATCP 50.12 requirements and this plan's groundwater protection/water quality goals and objectives.

Soil Resources

In 2022, soil erosion from cropland and unlimited animal access to streambanks continues to be an issue in Richland County. As the need for hay decreases, the cropland is planted to row crops such as corn and soybeans, which receives annual tillage before planting and after harvest and leaves the field exposed to rainfall and snowmelt runoff. Without proper conservation practices on cropland to protect the soil, such as no-till, grassed waterways, cover crops and contour buffers, more soil erosion will occur and some of the soil will be delivered, via channelized flow and runoff, to downgradient surface waters. Because cropland soils also contain phosphorus (attached to soil particles), soil erosion can also lead to cropland phosphorus reaching surface waters. Unlimited animal access to streams and

streambanks in concentrated areas can also result in significant soil erosion of bank(s) and increased sediment loss/loading into stream channel.

From 1999-2007, Richland County Land Conservation Department conducted a transect survey. This survey was a tool to see how much and where soil loss is occurring. It's been several years since this survey was completed. The results are shown in the tables below.

Table 14. County-wide average

Year	Average
1999	3.6
2000	2.5
2001	3
2002	3.6
2004	3.3
2006	3.4
2007	3.5

T*able 15. Two year comparison by watershed*

	2004		2007	
Watershed	**Soil Loss**	**%<= T**	**Soil Loss**	**%<=T**
Middle Kickapoo	3.1	79%	3.9	73%
Knapp	2.3	80%	Unknown	
Mill & Indian	4.4	71%	Unknown	
Willow	3.5	73%	4.1	71%
Upper Pine	2.6	85%	2.9	79%
Bear	4	77%	4.5	64%
Crossman/Lt Baraboo	3.6	79%	3.4	80%

Soil types, with specific and unique characteristics, directly influence appropriate land uses. Richland County's soil survey was updated and made available in 2001. Fifty-five different soil types are found throughout Richland County. During the soil survey update nine newly describe soils were found in Richland County. The Richland County Land Conservation Department extensively uses the soils information. The updated soil survey information can be found on-line at:
http://websoilsurvey.nrcs.usda.gov/app/ .
In addition to soil information, the Wisconsin DNR has developed the Erosion Vulnerability Assessment for Agricultural Lands (EVAAL) toolset to assist counties and other watershed managers in prioritizing areas within a watershed that may be vulnerable to water erosion (and thus increased nutrient export), which may contribute to downstream surface water quality problems. EVAAL evaluates locations

of relative vulnerability to sheet, rill and gully erosion using information about topography, soils, rainfall and land cover. his It helps watershed managers prioritize and focus field-scale data collection efforts, thus saving time and money while increasing the probability of locating fields with high sediment and nutrient export for implementation of best management practices (BMPs) - https://dnr.wisconsin.gov/topic/Nonpoint/EVAAL.html.

To help meet this ten year plan soil erosion and water quality goals and objectives, Richland County may partner with Wisconsin DNR NPS and WQ staff in the next 5 years to use EVAAL within selected HUC 12 size watersheds (that may align with watersheds subject to an approved TMDL or phosphorus/sediment impaired watersheds). DNR staff has partnered with several counties to offer technical assistance with using EVAAL to help prioritize their soil and water conservation programs, cost sharing and NR 151 compliance efforts in a cost effective/efficient manner. The EVAAL tool has helped some counties in the state report to DATCP how they are meeting their land and water plan soil erosion and water quality goals and objectives.

Forest Resources

Forested land comprises about 170,000 acres or approximately 45% of the land area in Richland County. The acreage by forest type is as follows:

Pine/Spruce	10,000
Oak	71,000
Central Hardwoods	27,500
Northern Hardwoods	50,500
Aspen	1,800
Other	9,000

Although most of the wooded acreage in Richland County is privately owned, the type of private ownership in Richland County continues to change. Historically, most of the woods were large tracts owned by farmers and used for grazing cattle, firewood, and the occasional commercial harvest. In recent years, woodlands have become smaller in size due to fragmentation and the number of owners has increased. New landowners are buying properties mainly for recreational use (hunting, camping, etc.), aesthetic purposes, wildlife habitat or building a home or cabin. Forest fragmentation will continue to make it more difficult to manage forests on a large scale and will cause a greater need for cooperation between adjoining landowners when it comes to management. The demand for wood products in Richland County will likely continue, due to the high quality of timber produced and the species mix that is present in the county.

The Managed Forest Law program is widely used and accepted within the county as a means to gain valuable long-term forestland management. Approximately 68,000

acres or 40% of the forested acreage in Richland County is currently enrolled in the program. The use of management plans on these acres has resulted in improved forest health and an overall improvement in the woodlands through the use of sound silviculture practices and the exclusion of grazing and pasturing in these areas.

There are many insects and disease that impact forest health in Richland County. Emerald Ash Borer (EAB) and oak wilt are two major concerns. EAB is widespread in Richland County and signs of mortality, i.e., woodpecker damage or branch dieback are easy to spot in almost every forest with ash trees. While EAB only affects ash trees, it is expected to kill more than 99% of them. Insecticide treatments can prevent infection in individual trees but aren't practical on a larger scale. The opportunity to salvage any potential timber value is increasingly limited. Within a few years, most of Richland County's ash resource will be dead and other non-ash species will begin to take its place. Oak wilt is also an issue in Richland County, although less widespread than EAB. Oak wilt is caused by a fungus and is introduced to a tree by beetles that carry the spore to fresh wounds. Once a tree is infected, the disease spreads to other nearby oak trees through interconnected roots. The disease is a particularly serious problem for species in the red oak group, while white oaks demonstrate some tolerance to the disease. To prevent this disease, cutting and pruning trees in areas with oak should be avoided from April 1st – July 15th.

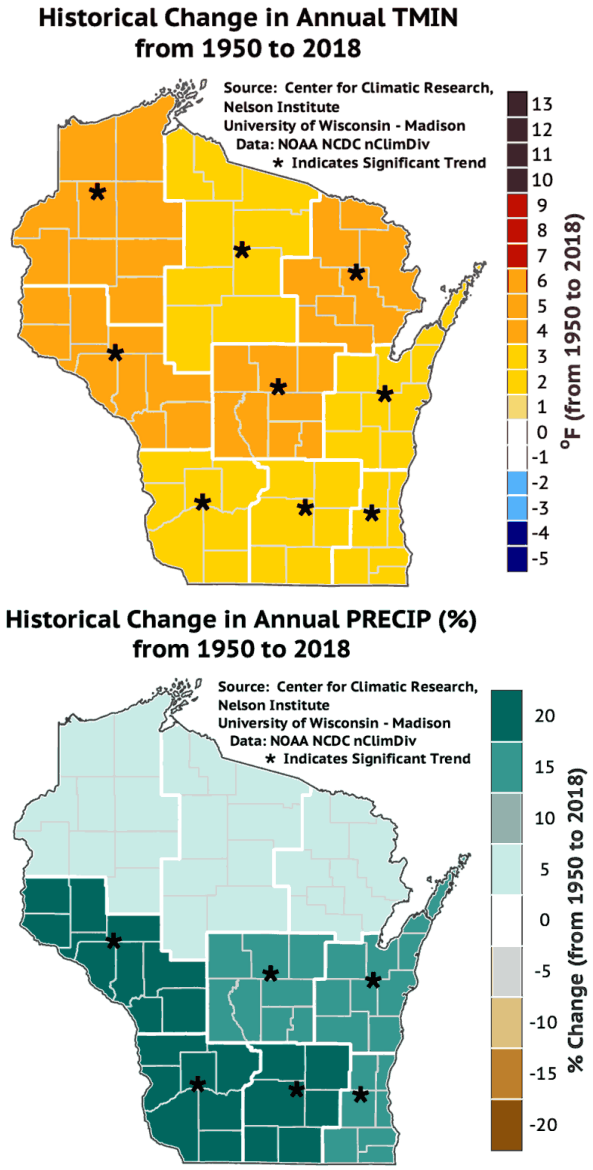
The forest resource in Richland County has changed and will continue to change over time. These changes are due in part to natural forest succession but are also heavily influenced by humans and past land management. Early documentation shows that most of Richland County was a closed-canopy, northern hardwoods (mostly sugar maple) forest prior to European settlement. After decades of timber harvesting, farming, and grazing activities, Richland County forests were drastically decreased. Aerial photos from the 1930's depict a very open landscape, with far less wooded areas than we have today. Since the 1930's, the number of forested acres has increased again. As the woods grew back, forest changed to a predominately oak forest type. Today, many of the oak forest are being replaced by northern hardwoods again. Sugar maple is a shade-tolerant, climax species. Without large-scale natural disturbance or sustainable timber harvesting that mimics it, (i.e., clear cutting, overstory removal, etc.), this trend will continue. *(Information provided by Juli Van Cleve, WDNR Forester-Richland County.)*

Climate

The Wisconsin Imitative on Climate Change Impacts (WICCI) release a comprehensive report detailing the science behind climate change, the anticipated impacts, adaption strategies and educational resources on the subject. The following maps show the historical changes in mean annual temperature and annual precipitation from 1950-2018. In Southwest Wisconsin, the mean annual temperature has increased 3 degrees Fahrenheit and annual precipitation has increased 20%. The effects of these changes can be seen in Richland County. There have been more frequent large flood events causing damage to cropland, crops roads and other infrastructure.

Temperature changes have also begun to affect growing degree days and winter snow cover. Continued changes in precipitation and temperature may affect agricultural profitability,, cold-water fisheries, water quality, forestry, plant communities, soil conservation, water resources stormwater, wildlife, and human health.

Figure 16



Changes in climate and extreme weather are increasing challenges for agriculture locally, nationally and globally. Many of these impacts are predicted to continue, or increase, in the next 50 years. The Northern Institute of Applied Climate Science (NIACS), housed at Michigan Technological University, has developed tools to assist

agriculture producers and other to respond to extreme and uncertain conditions. Some response strategies include: improving soil health thru reduced tillage and living cover, reducing soil erosion, enhance landscape connectivity, diversify crop or livestock species. There are many tools in the adaption work book developed by NIACS workbook found at: https://adaptationworkbook.org/niacs-strategies/ag. Some of these response strategies will be incorporated into Richland County's soil conservation programs and efforts over the next ten years.

Recent flood events have shown that having streams and rivers connected to their floodplain and associated wetlands are important in preventing flood damage. In the 1940's, the wetlands along Fancy Creek were ditched. Eventually, Fancy Creek started flowing through the ditch and has become deeply entrenched and unless there is a very heavy storm event, it is not connected to the flood plain. There are 2 landowners where Fancy Creek enters the Pine River that are working with city, county, state and federal agencies to return Fancy Creek to its old meanders and connected it back to the flood plain. Richland County Land Conservation Department has been part of these discussions.

Goals and Objectives

This section details the goals and objectives of the Land and Water plan. These goals and objectives will guide the work of the Richland County Land Conservation Department (LCD) for at least five years and may continue for this ten-year plan. Development of definable and measurable action plans under each goal gives direction to the LCD, partnering agencies, conservation groups and local citizens as they work together to solve the local concerns and problems related to the natural resources of Richland County.

The Technical Committee developed the goals, objectives and action plans with the resource concerns brought forth by the Advisory Committee in mind. They also used information from the townships' comprehensive plans and the Lower Wisconsin Basin plan to develop the goals and objectives.

The Advisory Committee resource concerns were broken down into six areas: Water Quality, Soil Erosion, Nutrient & Manure Management, Invasive Species, and Forestry. These cover the range of concerns that were brought forth.

Soil Erosion

Richland County has experience significant erosion through history as seen by the thin topsoil layer on ridges. The topography makes managing soil erosion difficult. The county average tolerable soil loss limit is 4 tons/acre/year. In some selected watersheds, the tolerable soil loss rate is less than 4/tons/acre/year.

Richland County has seen an increase in the amount of corn and soybeans acres grown and a decrease in the amount of hay acres. One of the reasons for the decrease in hay is fewer dairy farms in the county. Land is also being sold to non-farmers, many of whom are not aware or concerned with soil erosion with the production of row crops. There is concerns that much of the County is now being planted to corn and soybeans. If proper conservation practices are not used, soil erosion rates and severity, will increase. Climate change will likely increase rainfall frequency and intensity and cause additional soil erosion.

The following are a list of goals, objectives and action plans.

Goal: Reduce soil erosion

Objective: Reduce soil erosion from crop fields

- Assist producers in installing contour strips and contour buffer strips
- Encourage producers to use cover crops after harvest and reduce tillage frequency or intensity
- Host a cover crop field day

- Encourage participation in Conservation Reserve Program and the Conservation Reserve Enhancement Program
- Implement the NR 151 performance standards of farming all cropland to tolerable soil loss rates and having a NRCS 590 nutrient management plan on priority farms/cropland; collaborate with DNR, as necessary
- Work with producers to prevent the narrowing of buffer strips
- Focus soil conservation efforts within watersheds with nutrient/sediment impairments or a TMDL

Objective: Educate landowners on reducing soil erosion

- Develop a list of soil health focused best management practices
- Educate producers and landowners about importance of using no-till, contour buffers and grassed waterways to reduce soil erosion and increase farm profitability
- Implement the NR 151.02performance standard of farming to "T"; collaborate with DNR as necessary
- Focus meeting "T" on all cropland within select watersheds
- Create social media and website posts with information and opportunities to prevent soil erosion
- Provide a connection between experienced and in-experienced landowners on reducing soil erosion
- Focus education and conservation efforts within watersheds with nutrient/sediment impairments or a TMDL

Objective: Prevent and reduce gully erosion

- Install waterways where needed and keep natural grass waterways
- Maintain PL-566 structures to prevent erosion during spring runoff and large rain events
- Provide technical assistance to install, repair and maintain practices for gully erosion
- Focus gully erosion efforts within watersheds with nutrient/sediment impairments or a TMDL

Objective: Reduce soil erosion from marginal crop fields and pastureland

- Assist landowners and producers in converting marginal cropland to rotational grazing
- Plant marginal cropland to cover crops
- Rotationally graze cover crops
- Focus soil conservation efforts within watersheds with nutrient/sediment impairments or a TMDL

Objective: Prevent and reduce stream bank erosion and enhance stream quality

- Promote and assist landowners and producers with rotational grazing along streams

- Provide technical assistance/cost sharing to install stream crossings, streambank protection and other practices
- Work with partners to provide assistance to landowners with stream issues
- Implement the NR 151.08 performance standard to maintain adequate vegetation on pastured streambanks on priority farms/pastures; collaborate with DNR as necessary
- Implement the NR 151.03 tillage setback performance standard – which requires using a tillage setback to prevent tillage operations from destroying stream banks and depositing soil directly in surface waters – on priority farms; collaborate with DNR as necessary
- Design, construct and manage stream bank practices and buffer strips so water does not back up onto crop fields
- Include habitat, where possible, when doing stream work
- Encourage pollinator plant species when seeding stream improvements
- Focus stream bank erosion efforts within watersheds with nutrient/sediment impairments or a TMDL

Water Quality

Richland County has an abundant source of high-quality surface groundwater resources that needs to be protected. The groundwater can be polluted from several sources. These are sinkholes, wells, failing septic systems, leaking manure storage units, quarries and underground storage tanks. There have been some wells that have high levels of nitrates and atrazine detected.

Richland County also has many miles of Class I trout streams which need to be protected and improved to maintain this status. There are many other streams that can and should be improved by reducing the non-point pollution to the streams. As shown in the Natural Resource Assessment section of the plan, non-point pollution is a problem in all of the watersheds in Richland County.

The following are a list of goals, objectives and action plans.

Goal: Enhance, maintain, and protect surface water and ground water quality

Objective: Reduce agricultural and other sources of pollution to surface water

- Assist landowners with installation of buffer strips along streams and wetlands including Conservation Reserve Enhancement Program
- Promote and assist with rotational grazing along streams
- Provide technical assistance to landowner with stream bank protection to reduce sediment and nutrients from entering surface water
- Maintain Ash Creek Community Forest to demonstrate stream bank practices

- Implement performance standard reducing runoff of manure from cropland and barnyards within 300 feet of a surface water Educate landowners on potential sources of contaminants in groundwater
- Implement the NR 151.08 performance standard that prohibits runoff of manure from cropland and barnyards to surface waters, particularly areas within 300 feet of a surface water.
- Work with sanitary districts on reducing phosphorus entering surface water
- Assist landowners with development/adoption of 590 Nutrient Management Plans; collaborate with DNR as necessary Implement the NR 151.07 nutrient management performance standard; collaborate with DNR as necessary
- Implement the NR 151.04 phosphorus index performance standard on priority farms/cropland; collaborate with DNR as necessary
- Implement the NR 151.06 clean water diversion performance standard on priority farms; collaborate with DNR as necessary
- Implement the NR 151.08 manure management prohibitions on priority farms; collaborate with DNR as necessary Enforce the manure storage ordinance
- Collaborate with Wisconsin DNR staff to complete an inventory of pollution sources, identify critical areas and model pollutant loads within one or two HUC 12 size watersheds in the county
- Focus water quality protection efforts within watersheds with nutrient/sediment impairments or a TMDL

Objective: Reduce sources of pollution to ground water

- Educate landowners on potential sources of contaminants in groundwater
- Enforce manure storage ordinance
- Assist landowners with proper well abandonment
- Assist producers in reducing nitrogen leaching in areas shown through the 2019-20 well study that have high nitrate levels and/or high groundwater contamination susceptibility
- Identify areas of water infiltration and protect from contamination
- Assist landowners with proper manure storage abandonment
- Educate landowners on potential sources of contaminants in groundwater
- Implement the NR 151.07 nutrient management performance standard on priority farms/cropland; collaborate with DNR as necessary
- Implement the NR 151.08 manure management prohibitions on priority farms/cropland; collaborate with DNR as necessary

Objective: Monitor surface and ground water quality

- Conduct a follow up drinking water well study
- Evaluate grant/volunteer opportunities to complete surface water monitoring with DNR staff in select HUC 12 size watersheds.
- Collaborate with DNR staff to complete surface water monitoring in select HUC 12 size watersheds

Objective: Educate landowners on surface and ground water quality

- Educate landowners on potential sources of contaminants in groundwater
- Develop a list of best management practices
- Educate landowners on potential sources of contaminants in groundwater
- Provide a connection between experienced and in-experienced landowners on protecting and improving water quality
- Create social media and website posts with information and opportunities to improve water quality
- Focus education efforts on surface water quality within watersheds with nutrient/sediment impairments or a TMDL

Nutrient and Manure Management

Proper nutrient management is important to protect water quality and aquatic resources. Whether a person is fertilizing their garden or a farmer his/her field, nutrient management is a tool that needs to be utilized. Improper application of manure and purchased fertilizer can cause groundwater or surface water pollution

This problem is both urban and rural. The over application of nutrients per acre is greater for lawns and gardens than for cropland. There are just more acres of cropland than lawns and gardens. Richland County wants to address both segments of the population.

Nitrate levels over 10.0 mg/L have been detected in wells in Richland County. An amount over 10.0mg/L violates state groundwater quality standards. At this level, it is recommended that infants and pregnant women not consume the water because the nitrate interferes with the ability of blood to carry oxygen. High nitrates may also be an indication that other contaminants are present in the drinking water. High nitrate concentrations in the drinking water have also been linked to spontaneous abortions in livestock.

Manure is an important source of nutrients for plant growth if it is handled and managed correctly. When it is spread at the wrong time (i.e. before snow melt or before a runoff event), or at the wrong rate, the applied manure can run off the field and into nearby streams, which leads to increased nutrient and bacteria levels in the stream. Manure application/runoff near or adjacent to drinking water wells can also cause bacterial contamination of wells. Accordingly, proper manure management (i.e., timing, rates, placement and methods) is needed to protect water quality and public health.

The following are a list of goals, objectives and action plans.

Goal: Prevent over application of nutrients

Objective: Educate landowners and producers on proper nutrient and manure management

- Offer farmer training workshops on developing nutrient management plans
- Promote soil sampling and testing
- Provide information to producers on where, when and how much manure to apply on crop fields
- Create social media and website posts with information and opportunities to water quality
- Provide a connection between experienced and in-experienced landowners on nutrient and manure management
- Implement the NR 151.07 nutrient management performance standard; collaborate with DNR as necessary
- Implement the NR 151.08 manure management prohibitions; collaborate with DNR as necessary Focus nutrient management education efforts within watersheds with nutrient/sediment impairments or a TMDL

Goal: Reduce and prevent occurrences of manure runoff events

Objective: Prevent manure runoff events

- Provide timely information via social media and website when not to spread manure
- Provide a connection between experienced and in-experienced landowners on nutrient and manure management
- Implement the NR 151.07 nutrient management performance standard; collaborate with DNR as necessary
- Implement the NR 151.08 manure management prohibitions; collaborate with DNR as necessary Focus nutrient management education efforts within watersheds with nutrient/sediment impairments or a TMDL

Goal: Regulate manure storage and livestock siting

Objective: Update ordinances concerning manure management and livestock siting

- Update manure storage ordinance
- Update livestock siting ordinance
- Update GIS website to show location of manure storage permits
- Enforce the manure storage ordinance
- Implement the NR 151.08 manure management prohibitions; collaborate with DNR as necessary
- Focus manure storage and livestock siting efforts within watersheds with nutrient/sediment impairments or a TMDL

Invasive Species

Richland County, like many places in the state, has a number of invasive species threatening our native ecosystems. Plants like multi-flora rose, autumn olive, honeysuckle, garlic mustard, wild parsnip and purple loosestrife can be seen across the landscape. Some, like honeysuckle and purple loosestrife, were brought here for ornamental reasons. Others, like autumn olive and multi-flora rose, were once promoted for their habitat benefits. These plants instead have taken over the landscape. Some efforts have been made to control these invasive species, both, mechanically and chemically.

One of the newer invasive species in Richland County is Japanese knotweed. This species spreads most effectively by rhizomes and is found along streams and in wetlands. Most of the largest populations are along Willow Creek and the Pine River. A rapid response grant was used to treat the Willow Creek population on private property. The knotweed at that site was controlled for several years. The site will be inspected to see if the population is still under control.

In 2021, Richland County applied for a Lake Monitoring Protection Network grant to detect and prevent the spread of aquatic invasive species. This is a yearly grant that Richland County plans to continue applying for. Some of the eligible items include conducting watercraft inspections, education, volunteer training, early detection, and constructing and installing boot brush stations. Early detection is very important in trying to contain a potential invasive species and prevent it from spreading. Another essential tool is watercraft inspections like Clean Boats Clean Water at boat landings and launches. In Richland County, these are located on the Wisconsin River and Pine River. The Wisconsin River is popular with anglers, kayakers, canoers and waterfowl hunters. The pine River has, in recent years, become more popular with kayakers. Educating watercraft owners and users on how to inspect their watercraft and trailers to prevent the transportation of plants on other invasive species. Also educating anglers to empty all live wells, coolers, etc at the landing and dispose of excess bait properly as not to spread invasives to other bodies of water. Boat brush stations on key access points to trout streams can slow the spread of invasive species that are trapped in the mud and treads of waders. Educating the youth about invasive species and recruiting volunteers to assist with watercraft inspection and early detection will make people more aware.

Effort has been made within the County to improve the habitat for native species. Conservation groups such as Trout Unlimited, Pheasants Forever and National Wild Turkey Federations have promoted the use of native species in conservation work. Some of these groups have worked with Land Conservation Department, Natural Resources Conservation Service and Department of Natural Resources on specific projects and tools to improve habitat. More work needs to be done to promote native species in Richland County.

The following are a list of goals, objectives and action plans.

Goal: Prevent and control the spread of invasive species

Objective: Preventing and controlling the spread of invasive species

- Identify locations of newly identified species
- Apply for grant to control small sites as needed
- Encourage Conservation Reserve Program participants to control invasive species with proper control techniques and timing of control
- Work with landowners to plant natives, including pollinator plants
- Work with landowners to control noxious weeds
- Inventory invasive sites
- Work with the Department of Natural Resources and UW-Extension to educate landowners to prevent the spread of invasive species
- Assisting landowners in finding drills to plant native species
- Apply for the Land and Monitoring Network grant
- Educate the public on identifying and controlling invasive species
- Complete Clean Boats Clean Water
- Educate high school students on invasives

Forests

Forestry is a very important land use in Richland County. Approximately 45% of the County is forested. The forests in the County provide wood products such as lumber and firewood as well as being important for wildlife, food source and water infiltration. Threats to the forests are insects, disease, grazing and overharvesting of timber. If the forests are not properly managed, erosion can occur such as erosion of forest roads.

The following are a list of goals, objectives and action plans.

Goal: Improve the quality of forests

Objective: Educate landowners on proper forestry management

- Refer landowners to DNR foresters
- Use Ash Creek Community for as an education site for forestry
- Encourage landowners to plant native tree and shrub species
- Sell native tree and shrub species
- Encourage landowners to work with the DNR foresters on forestry management to increase diversity and natural oak regeneration
- Encourage landowners to plant trees
- Encourage landowners to not pasture their woods.

Tools and Strategies

The land and water resource management plan is a ten-year strategic plan for Richland County. The plan was developed to guide the Richland County Land Conservation Department and the Land and Zoning Standing Committee. Some of the activities are led by other organizations and county departments. A work plan to implement the plan activities will be created annually. Development of the work plan will be completed in conjunction with local, state and federal partners as well as the Land and Zoning Standing Committee members. A review of work plan accomplishments with partners and Land and Zoning Standing Committee will be conducted prior to creation of the next year's plan. There are many groups and agencies that are involved with resource conservation in Richland County. Carrying out the provisions of this county land and water resource management plan will require the cooperation of many individuals and organizations.

Many tools and strategies are available to implement the Land and Water Resource Management Plan. The actions that will be used to implement the goals and objectives in this plan can be placed in one of six categories of tools and strategies. The categories include:

- ⇒ Information and Education
- ⇒ Performance Standards and Regulations
- ⇒ Conservation Practices
- ⇒ Incentives
- ⇒ Targeting
- ⇒ Partnerships and Programs

These tools and strategies are ways the Land Conservation Department and their partners could address resource issues and concerns. These same tools and strategies will be used by Richland County to implement the State Performance Standards and Prohibitions for agriculture runoff.

Information and Education

The Richland County Land and Zoning Committee (LZC) and Department (LCD) believe that public information and education on natural resource concerns and conservation practices is the preferred method to prevent and solve natural resource problems. Voluntary compliance with NR 151 standards and regulations is preferable to using the NR 151.090 and 151.095enforcement procedures. Efforts have been made and will continue to be made to inform all producers and the rest of the public about standards and prohibitions and what needs to be done to reach compliance.

Education must be user friendly and geared to the audience. The concern is how to reach the audience, especially those who do not live in Richland County. The Land

Conservation Department currently has a website
https://landconservation.co.richland.wi.us/
and a Facebook page. Periodically, they are updated as new information is available

Richland County will be involving the local media in our education efforts. The local radio station has a regular morning show which has been used in the past and will continue to be used as a means of disseminating information on programs and regulation. The local newspaper is another media source that can be used in this effort.

Besides radio and the newspaper, the producers and other local residents will be reached through workshops, meetings, mailings and one-on-one work. These are the easiest ways to reach the local people.

For those in Farmland Preservation Program, the compliance monitoring and self-compliance forms have been good sources of disseminating information on the performance standards and prohibitions. After receiving the self-compliance form, most landowners call or stop into the Land Conservation Department and ask the Land Conservation staff questions. The most common questions are concerning the nutrient management requirement.

Richland County will continue to provide educational material and displays at events like the Richland County Fair. This information reaches a wide audience including producers and other rural and urban residents.

Children are another important audience to reach. If they are taught earlier, as adults they will have a better understanding of what to do. The Richland County LCD and Department have sponsored Conservation Field Days for area sixth graders. These kids spend a day on Ash Creek Community Forest learning about land use management, forestry, soils, wildlife, conservation practices, prairies and water quality. The Richland Center High School FFA has worked with the LCD on several projects concerning natural resources. The best way to teach children is through hands on activities.

The hardest segment of the population to reach is the absentee landowners. They live all over the United States and other countries. Local media efforts do not reach them unless they happen to be in the county. Richland County has been using the County website and Facebook to reach these individuals. One of the best ways to reach the absentee landowners is through the realtors at the time of the property purchase. The Land Conservation Department, Farm Service Agency, Natural Resources Conservation Service and DNR Forestry Office are continually trying to inform realtors of the requirements of the programs. For most buyers, the realtors are the first people they talk to about the land and if the realtors have the correct information, there are fewer problems down the road.

The County has a Land Information website which includes a public map site. We are now tracking who is in compliance on this website and, although the general public

does not have access to the compliance information at this time, Land Conservation staff can access the site and inform potential landowners on the compliance status of their farm or a farm they are interested in purchasing. Hopefully, within the next 5 years this layer will be available to the public.

Education is an important tool in improving the condition of the natural resources. It is mentioned under every resource category. The education components will need to be evaluated and improvements made where necessary.

Performance Standards and Regulations

Many farmers voluntarily install conservation practices on their farms. They see the value not only to their farming operations but also to the environment with improvement in water quality, wildlife habitat and reduction in soil erosion. The Richland County LZC and LCD would prefer landowners voluntarily comply with NR 151 regulations rather than enforcement actions. Cost-share dollars will still find priority with landowners looking to voluntarily implement Best Management Practices on their land and meet NR 151 agricultural performance standards and prohibitions. Richland County will continue to offer voluntary cost-sharing as program funds and priorities become available.

NR 151- State Agriculture Performance Standards and Prohibitions

Wisconsin's rules to control polluted runoff from farms, as well as other sources, went into effect October 1, 2002. The State legislature passed the rules to help protect Wisconsin's lakes, streams and groundwater.

The DNR Administrative Rule NR 151 set performance standards and prohibitions for all cropland and livestock agricultural farms/operators. It It also set performance standards to control construction site erosion, manage runoff from streets and roads and manage fertilizer use on large turf areas.

DATCP Administrative Rule ATCP 50 identifies conservation practices that farmers must follow to meet performance standards and prohibitions in NR 151. ATCP 50 also sets out the requirements for nutrient management plans.

Below are the NR 151 agricultural performance standards and prohibitions. A Surface Water Quality Management Area (SWQMA) is the area within 300 feet of a stream, 1000 feet of a lake or in areas susceptible to groundwater contamination

- ⇒ All cropped fields and pastures shall meet the tolerable (T) soil erosion rate established for that soil
- ⇒ No tillage operation may be conducted within 5 feet of the top of the channel of surface waters. The area can be expanded to 20 feet in order to address soil erosion and stream bank integrity.

- ⇒ Annually develop and follow a Nutrient Management plan that meets Natural Resources Conservation Service (NRCS) Standard 590 on cropland. On pastureland if It receives mechanical applications of nutrients and/or is stocked at >1 animal unit per acres during gazing season.
- ⇒ Croplands, pastures, and winter grazing areas shall average a phosphorus index of 6 or less over the accounting period and may not exceed a phosphorus index of 12 in any individual year within the accounting period
- ⇒ All new or substantially altered manure storage facilities shall be constructed, maintained or abandoned in accordance with accepted standards. Failing and leaking existing facilities posing an imminent threat to public health or fish and aquatic life or violate groundwater standards shall be upgraded or replaced
- ⇒ Manure storage facilities must be properly abandoned according to NRCS Standard 360 if the facility has had no manure added within the last 2 years
- ⇒ There may be no significant discharge of process wastewater to waters of the state
- ⇒ Runoff from agricultural buildings and fields shall be diverted away from feedlots, manure storage areas and barnyards located within water quality management areas
- ⇒ Manure management prohibitions
    - No overflow of manure storage structures
    - No unconfined manure piles in a water quality management area
    - No direct runoff from feedlots or stored manure into state waters
    - No unlimited livestock access to waters of the state in locations where high concentrations of animals prevent the maintenance of adequate or self-sustaining vegetative cover

What does this mean to Richland County and the Land Conservation Department (LCD)? The Land Conservation Department will have the primary responsibility for the implementation of the NR 151 agricultural performance standards and prohibitions. DNR staff, as necessary, will assist with NR 151 implementation. The major transition found in NR 151 is that it truly moves the majority of non-point source water quality work in Wisconsin from a mostly voluntary program to a program based largely on landowner participation through the option of regulation. NR 151 lays the foundation for minimal expectations/standards for all cropland and livestock operations within the agricultural landscape.

The agriculture performance standards and prohibitions found in NR 151 require 70% cost-sharing be offered to change an existing cropland practice or livestock facility to bring them into compliance with the new standards. The opportunity exists for an increase to 90% cost-sharing if economic hardship is proven.

The cost-sharing requirement applies to sites not found in compliance prior to October 1, 2002. For those in Farmland Preservation, cost-sharing is not required to comply

with the performance standards and prohibitions. That does not mean that cost-sharing will not be offered. Farmers who are in compliance on or after that date do not have a right to cost-sharing if they later fall out of compliance. Farmers who establish new facilities may be eligible for cost-sharing, but cost-sharing is not required for compliance. Those farms covered under a Wisconsin Pollution Discharge Elimination System (WPDES) permit (1000 + animal units) are not eligible for state cost-sharing to meet performance standards and prohibitions required under their permit.

Richland county recognizes inventorying and tracking are important components of NR 151 implementation. As stated earlier, this work will be done as county staff time allows. Farmland Preservation participants will be checked during status reviews. Other priorities will be those farms with a complaint and those where it is seen to have a potential problem, especially if within 300 feet of a stream. On-site farm visits will be completed. The on-site visit will include one-on-one discussion with the landowner about the performance standards and prohibitions and which ones the landowner complies with. Options to bring the farm in compliance will also be discussed. Richland County is using a compliance form developed by the Wisconsin Department of Agriculture, Trade and Consumer Protection. The number, frequency and location of the on-site farm visits will strongly hinge on the current and future level of staff funding and resources that will be available.

Richland County LCD has a GIS layer available to visually tract who is in compliance. The GIS system was enacted in 2018. This layer is part of the County's Land Records system. Data is being added every year. Within the next 5 years, the Compliance layer should be available for the public. The other layer that will be added with the next 10 year is the manure storage permits.

The next step will be to notify landowners, by letter, what standards and prohibitions they are or are not in compliance with as of that date. The LZC and LCD would then make an offer of cost-sharing to bring the farm into compliance.

If information and education, incentives and programs and partnerships do not bring about compliance, the LZC and LCD will take enforcement action. The Richland County LZC will take the lead role in the implementation of NR 151. The LCD will be working in close cooperation with DNR and other agencies towards a practical implementation process that serves all involved.

Richland County does not have any ordinances in place, nor will it in the near future, to enforce the agricultural performance standards and prohibitions, aside from provisions in the 2008 manure storage and livestock siting licensing ordinances and on lands claiming tax credits under the Farmland Preservation Program. Richland County may work with DNR to develop a Memorandum of Understanding for the enforcement of the agricultural performance standards and prohibitions in certain cases.

Richland County Land Conservation Department's ability to implement the NR 151 performance standards and prohibitions is dependent, in part, on the LCD receiving adequate funds to cover both staff and cost-sharing resources. It is anticipated that the DNR and DATCP will be the major financial resources Richland County will look to for partnership in this process. DATCP allocates funding for both staff and cost sharing as part of having a ATCP 50.12 compliant Land and Water Resources Management Plan. An ATCP 50.12 requirement for all Land and Water plans is to have and implement a priority farm and NR 151 implementation strategy. Collaboration with DNR, as necessary, may be needed to sustain or increase Richland County's NR 151 implementation and compliance efforts.

NR 216 - Stormwater Discharge Permits

Agriculture is **not** exempt from the requirement to submit a notice of intent (NOI) for one or more acres of land disturbance for the construction of structures such as barns, manure storage facilities or barnyard runoff control systems. Construction of an agricultural building or facility must follow an erosion and sediment control plan consistent with s. NR 216.46, Wis. Adm. Code, including meeting the performance standards of s. NR 151.11, Wis. Adm. Code. Agriculture is exempt from this requirement for activities such as planting, growing, cultivating and harvesting crops for human or livestock consumption and pasturing of livestock as well as for sod farms and tree nurseries. NR 216 establishes the criteria and procedure for issuance of storm water discharge permits to limit the discharge of pollutants carried by storm water runoff into waters of the state.

County Regulations

Manure Storage Ordinance
This ordinance is administered by the LZC and LCD. It regulates the construction or alterations of manure storage facilities that are 3,500 cubic feet or 30 days storage, whichever is smaller. Landowners are required to obtain a permit before construction. The permit requires the design and installation of the facility meets NRCS Technical Standards. It also requires that a nutrient management plan be developed and submitted before the permit is issued. The original ordinance was enacted in October 1, 1999. The nutrient management plan required was nitrogen based. New state standards require nutrient management with phosphorus being the limiting factor. The ordinance was revised in 2008 to meet the new requirement and to require a nutrient management plan as long as the manure storage structure exists. The LZC and LCD will use this regulation to reduce polluted runoff delivery to ground and surface water and meet applicable NR 151 performance standards and prohibitions The ordinance needs to be updated within the next 5 years to reflect all, not just some, NR 151 performance standards.
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Livestock Siting Licensing Ordinance
This ordinance was enacted in 2009. This ordinance regulates new and expanding livestock operations with more than 500 animal units. Operators are required to

obtain a license before building or expanding and must meet certain performance standards and prohibitions related to animal waste handling and storage, nutrient management and runoff management. For existing operation at or expanding to 1000 + animal units or new operations 500+ animal units, odor control is also a requirement. The ordinance is enforced by the LZC and LCD instead of Zoning, so it is effective county-wide. Currently, only 11 of 16 townships in the county are county zoned. The LZC and LCD uses this regulation to reduce polluted runoff and sediment delivery to ground and surface water and to obtain compliance with the performance standards and prohibitions for agricultural runoff in NR 151. The ordinance needs to be updated within the next 5 years.

Conservation Practices

Conservation practices are constructed practices or land management techniques that will reduce or prevent soil erosion and polluted runoff or reduce/eliminate runoff that reaches surface and ground waters.

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) is responsible for developing and maintaining the list of cost-share practices to implement the NR 151 performance standards and prohibitions. A listing and description of those practices can be found in ATCP 50. They are as follows:

Access Roads
Animal Trails & Walkways
Barnyard Runoff Systems
Contour Farming
Cover Crop & Green Manure
Critical Area Stabilization
Diversions
Field Windbreaks
Filter Strips
Grade Stabilization Structures
Heavy Use Protection
Land Out of Production (Cropland)
Livestock Fencing
Livestock Watering Facilities
Manure Storage Closure
Manure Storage System
Milk house Waste System
Nutrient and Pesticide Management
Residue Management
Riparian Buffers
Riparian Land Out of Production
Roofs
Roof Runoff Systems
Sediment Basins
Sinkhole Treatment
Streambank & Shoreline Protection
Strip Cropping
Subsurface Drains
Terrace Systems
Underground Outlet
Waste Transfer Systems
Wastewater Treatment Strips
Waterway Systems
Well Decommissioning
Wetland Restoration

The USDA-NRCS Technical Standards contain the specifications for the design, construction, implementation and maintenance of these practices. Copies of the USDA-NRCS Technical Standards can be viewed on-line at https://efotg.sc.egov.usda.gov/#/state/WI/documents/section=4

The Richland County LCD will promote the installation and use of many of the conservation practices listed above for both livestock and cropland farm operations. The LCD will also assist county landowners with the design, installation and maintenance of the conservation practices by providing technical assistance and expertise.

Incentives

There are many ways to try to convince landowners to install conservation practices on their property. Incentives can play a significant role in obtaining voluntary compliance with performance standards and prohibitions. Incentives are usually monetary, but can also be in the form of public recognition.

- ⇒ Monetary incentives can help defray the costs of installing conservation practices, some of which are very expensive. Monetary and/or cost share incentives are often connected with participation in Federal, State and Local programs. In addition to helping improve and protect the natural resources, the monetary incentives contribute to the economic growth and health of Richland County. Local contractors install the practice, buying supplies locally. The LCD will use monetary incentives to further the goals and objectives of this plan and to gain compliance with the NR 151 performance standards and prohibitions. Examples of monetary incentives are:
- ⇒ Tax Credit- Farmland Preservation Program
- ⇒ Cost Sharing- Land and Water Resource Management, Environmental Quality Incentives Program, Targeted Resource Management Grant, Wisconsin Forest Landowner Grant Program
- ⇒ Rental Payments- Conservation Reserve Program, Conservation Reserve Enhancement Program

Another form of incentives is public recognition. Richland County LZC and LCD have and will continue to use the following to promote conservation:

- ⇒ Website- Before and After Pictures
- ⇒ Displays- Before and After Pictures
- ⇒ The Richland County LZC and LCD will continue to search for new programs and grant funds to provide incentives for county landowners.

Targeting and Priority Farm Strategy

Limited staffing resources and funding for conservation practices limit the types and scope of actions the Richland County LCD can perform annually to meet this plans

goals, objectives and action items. To be the most efficient, the LCD will target their actions and resources to critical areas in the County (see rankings below).

All farms in the county will need to be reviewed, over time, to ensure compliance with the NR 151 standards and prohibitions, regardless of whether they are in programs that require compliance. Office records and documents such as conservation plans, cost-share agreements and animal waste storage facility permits will be used as part of the review process. Digital aerial photography, farmer interviews and in-field investigations of all sites will also be used. Compliance or noncompliance of each farm with each NR 151 performance standard and prohibition will be recorded by Richland County staff on a standard form and will be tracked with a computer spreadsheet. Results of the NR 151 compliance reviews will be reported to DATCP annually during regular progress reporting. Consultation with DNR staff will also completed, as necessary, on NR 151 implementation and compliance tracking efforts.

Farms will be chosen for review on compliance with one or more of the NR 151 standards and prohibitions using the priority ranking below. The department decided not to list specific landowners in the plan at this time.

1. 303(d) & TMDL watersheds (e.g., Little Bear & Little Willow creeks, Wisconsin River TMDL sub-basin 310)
2. Farmland Preservation (Working Lands Initiative) Participants who are found in non-compliance.
3. Farms within Surface Water Quality Management Areas (1000 feet of lakes and 300 feet of streams) that are known to be or found to be in significant noncompliance with the standards and prohibitions that impact surface water
4. Other farms that are known to be or found to be in significant noncompliance with performance standards and prohibitions
5. Farms whose operators request a review or need one for program participation or a permit/license application
6. Land, that through survey data, monitoring or visual inventory, show a need for water quality improvement or soil loss reduction
7. Other farms within Surface Water Quality Management Areas
8. Farms in areas that have higher susceptibility for nitrate leaching into groundwater
9. Prioritize sub-watersheds to be evaluated based on highest soil erosion rates as determined by conservation partner agency survey data and department staff knowledge of resource concerns.
10. Encourage voluntary participation in on-farm resource evaluations and cost sharing program for agricultural conservation practices.
11. Implement most cost-effective practices as a high priority.
12. Evaluate parcels receiving cost sharing from DATCP or DNR grant.
13. Evaluate all parcels owned by a landowner applying for a Richland County Manure Storage Ordinance permit.

14. Coordinate DATCP funding for conservation practices to meet the agricultural performance standards with other cost share opportunities such as the Federal EQIP (Environmental Quality Incentives Program).
15. Evaluate all performance standards at one time for a farm/site with an on-site visit.
16. Document compliant parcels through a landowner compliance status and track parcels using a GIS database (contingent on available staff time)
17. Watersheds where other partners are assessing natural resource conditions or targeting their own efforts to improve water quality

New critical areas may be created as a result of new resource inventories or modeling efforts.

Partnerships and Programs

There are many agencies and organizations in Richland County working to protect the natural resources. Each has their own mission and programs, but they all work toward a common goal to preserve the environment for future generations. None of the agencies and organizations have large enough staffs to carry out the workloads. Everybody has and will continue to work together to successfully implement the goals and objectives in this plan.

The Land Conservation Department will be the main agency to implement the Land and Water Resource Management (LWRM) Plan. The department provides technical assistance to landowners, financial assistance through state programs and education opportunities in cooperation with other agencies. Other responsibilities include implementation of the performance standards and prohibitions, farm plan status reviews and enforcement of the Manure Storage and Livestock Siting Licensing Ordinance.

The University of Wisconsin-Extension County Agents provide technical assistance and educational opportunities for Richland County landowners. They coordinate many of the educational activities and will assist in many of the educational activities to implement this plan.

The USDA-Natural Resources Conservation Service provides technical and financial assistance to land owners involved in Federal programs. Some of the resource concerns they focus on are soil erosion, water quality and nutrient management. NRCS has and will continue to be involved with the educational programs for landowners.

The USDA-Farm Service Agency provides financial assistance to landowners and manages many of the farm bill programs. They have been and will continue to be involved with some of the educational programs.

The DNR Forestry personnel provide technical assistance to landowners on forestry health, timber stand quality and quantity, and water quality and soil erosion in forested areas. They also assist landowners with timber sales and sign-ups for forestry programs and cost-sharing.

The Department of Agriculture, Trade and Consumer Protection (DATCP)provides technical and financial assistance to landowners through the county. Conservation practices are installed with their assistance.

The Richland County Zoning Department is the county department that issues permits and enforces land use ordinances such as Shoreline Ordinance, Floodplain Ordinance, Non-metallic Mining Ordinance, Zoning Ordinance, Subdivision Ordinance, etc. Richland County's Comprehensive Land Use Plan is also administered by this department.

Different Trout Unlimited Chapters have assisted the county with stream bank protection projects in the past. They have provided voluntary labor in building L.U.N.K.E.R.S. and sometimes have provided funds to assist landowners in paying for projects along streams with DNR fishing easements.

Many of the partners have specific programs that offer cost-sharing or annual payments to improve and protect the natural resources. The programs will assist Richland County in implementing the Land and Water Resource Management plan including the performance standards and prohibitions. The programs are:

Conservation Reserve Program (CRP)
This federal, USDA program provides annual rental payments for taking environmentally sensitive cropland out of production for 10 to 15 years. This land is usually highly erodible. The land must be planted and maintained in vegetative cover consisting of certain mixtures of trees, shrubs, forbs and/or grass species. Cost-sharing incentives and technical assistance are provided for planting and maintenance.

Conservation Reserve Enhancement Program (CREP)
This joint federal, state and local program provides annual rental payments up to 15 years for taking cropland and marginal pasture adjacent to surface water out of production. A strip of land adjacent to the stream must be planted and maintained in vegetative cover consisting of certain mixture of trees, forbs and/or grass species. This land is highly sensitive and, by putting land into this program, there is less sediment and nutrient getting into the streams. Cost-sharing incentives and technical assistance are provided for planting and maintenance of the vegetative strips. Landowners also receive an upfront, lump sum payment for enrolling in the program, with the amount of payment dependent on whether they enroll the program for 15 years or permanently.

Environmental Quality Incentives Program (EQIP)

This federal, NRCS, program provide technical assistance and cost-sharing to farm operators to install conservation practices to reduce soil erosion and polluted runoff delivery to ground and surface waters. Farmers compete annually for the limited funds. The LZC and LCD are members of the USDA Local Work Group that prioritizes resource concerns for this program.

Farmland Preservation Program (FPP)
This state program provides tax relief to farmland owners for maintaining their land in an agricultural use. This program is part of the Working Lands Initiative (WLI). Those participants in zoned townships must be in compliance with the Agricultural Performance Standards to remain eligible. The landowners in unzoned townships with existing agreements must be in compliance with the standard in place at the time of their agreement. Agricultural Enterprise Area (AEA) may be developed in any area of the county (zoned or unzoned) and landowners may sign new agreements in those areas if they are in zoned or unzoned townships.

LWRM Plan Implementation Cost-sharing Program
This cost-sharing program is administered by the LCD and Wisconsin DATCP. DATCP annually provides funds for landowners to cost-share the installation of conservation practices that are needed to accomplish the goals and objectives of the County's LWRM plan. The cost-share funds can be used throughout the County but are often targeted to certain areas or resource concerns.

Managed Forest Law
This DNR program provides a reduction in property taxes to woodland owners if they enroll their woodland into it for 25 to 30 years and develop and follow a forestry management plan. Technical assistance to develop the plans is provided by private consulting foresters and reviewed by DNR foresters. Woodlands cover must cover at least 10 contiguous acres to be eligible. Any sites with erosion problems are noted in the plan.

Targeted Resource Management (TRM) Grants
These competitive grants from DNR can be used to cost-share conservation practices for controlling polluted runoff from urban and agricultural sources. Grant funds must be utilized in one to two years and are limited to $150,000.

Wetland Reserve Program (WRP)
This federal, USDA program, provides cost-share payments for restoring wetlands that have been previously altered for cropping. Landowners may enroll land for differing periods in time from 10 years to permanently. Percent cost sharing for restoration costs depend on the length of period or enrollment. A lump sum is paid for permanent or 30 year enrollment.

Wildlife Habitat Incentive Program (WHIP)
This federal, USDA program, provides cost-sharing payment to landowners for developing or improving fish and wildlife habitat on almost all types of land including cropland, woodlands, pastures and streams. Practices used for development and

improvement of habitat include native plant community establishments, fencing of livestock out of sensitive areas and in-stream structures for fish.

Wisconsin Forest Landowner Grant Program (WFLGP)
This DNR program provides cost-sharing on conservation practices to private landowners for protecting and enhancement of their forested land, prairies and waters. This program allows qualified landowners to be reimbursed up to 65% of the cost of eligible practices. Practices must be identified in the landowner's Forest Stewardship Plan (except if applying for plan development) to be eligible for cost-sharing.

USDA Program Cross Compliance
Many USDA programs require that participants comply with a higher level of conservation standards to maintain eligibility for the program and to receive incentives from it. The LZC works cooperatively with NRCS to provide program participants technical assistance in installing and maintaining conservation practices to meet these higher standards.

Wisconsin Pollution Discharge Elimination System (WPDES) Permit
This program, administered by the DNR, requires new and expanding large livestock operations of over 1,000 animal units (equivalent to 714 mature dairy cows) to obtain a State permit to operate. In order to obtain a permit, the operation must meet certain performance standards and prohibitions to prevent pollutant discharges to waters of the state. Permits can also be required for smaller operations that discharge significant amount of pollutants. Permit requirements are prescribed in section NR 216 of the Wisconsin Administrative Code.

Conclusion

All of the tools and strategies listed in this section will assist the County and its residents in achieving the goals and objectives in this plan. Not every tool and strategy will be used for every goal and objective, the use of a combination of them should help landowners adopt many of the necessary conservation practices to achieve them.

Monitoring and Evaluation

Richland County LCD can use several tools to evaluate and assess changes. In April of each year, the LCD completes and submits a progress report to the DNR and DATCP. The Transect Survey, done yearly, can track crop erosion trends. The LCD has been tracking compliance with the performance standards and prohibitions by computer. The GIS layer has been created and is updated periodically throughout the year. It is not available to the public at this time, but hopefully it will in the next 5 years. The ability to inventory and track using GIS will prove to be the most valuable management tool Richland County has to evaluate the overall status of resource needs in the county. Having this layer available along with the DNR surface water data viewer will enable agencies and partners to plan stream evaluation and monitoring activities. Within the next 10 years, the plan is to have a GIS layer for the manure storage permits. This layer would document the location, date of installation, type of structure, etc..

Evaluation of the number of nutrient management plans completed or number of farm plans reviewed are all items that can be measured and used in evaluation of the effectiveness of the plans. But such counting does not provide an accurate indication of improvements in water quality. Just because someone has completed a nutrient management plan does not mean the plan is being applied correctly. The effect of conservation practices on the environment is not possible to see in the stream in a few short years (e.g. 5 years). Long term water quality monitoring must be done to show progress.

There are several monitoring stations located in Richland County. The DNR Surface Water Viewer which has maps of all of those locations as well as other pertinent information. A copy of this map is located in Appendix B.

The Department of Natural Resources (DNR) will continue baseline surveys of streams in the county to assess general condition and identify problem streams or watersheds. This includes sampling water chemistry, surveying fish and habitat. In addition, the department will continue to monitor waters on the 303(d) list of impaired waters to determine if they are meeting state water quality standards and their designated uses as described by Wisconsin Administrative Code. Streams will also be monitored to determine if they should be placed on the impaired waters list, which is submitted to the Environmental Protection Agency on a biennial basis. For water bodies placed on the impaired waters list, the department will develop Total Maximum Daily Load (TMDL) studies. Long term trend monitoring will continue on the Wisconsin River for analyzing trends and general water quality conditions. *(Information provided by Jean Unmuth, DNR Water Biologist)*

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Richland County submits annual reports to the DNR and DATCP showing what the LCD has done including what has been accomplishments in compliance with the State Agriculture Performance Standards and Prohibitions.

Richland County will consult with DNR, UW-Extension and USDA-Natural Resources Conservation Service to complete inventories for monitoring and evaluations for progress in meeting the goals of this plan

Appendix A- Definitions and Acronyms

BMPs Best Management Practices
CREP Conservation Reserve Enhancement Program
CRP Conservation Reserve Program
DATCP Department of Agriculture, Trade and Consumer Protection
DC District Conservationist
DNR Department of Natural Resources
EQIP Environmental Quality Incentives Programs
FSA Farm Service Agency
GIS Geographic Information System
I&E Information and Education
LWCB Land and Water Conservation Board
LCD Land Conservation Department
LZC Land and Zoning Committee
LWRM Land and Water Resource Management
MOU Memorandum of Understanding
NPS Nonpoint Source Pollution
NOD Notice of Discharge
NPM Nutrient & Pest Management
NRCS Natural Resources Conservation Service
PL-566 Public Law-566
RC&D Resource Conservation and Development
RCRE Richland Center Renewable Energy
RCWWTP Richland Center Wastewater Treatment Plant
SWRM Soil and Water Resource Management Program
"T" Tolerable Soil Loss
USDA United States Department of Agriculture
USGS United States Geological Society
UWEX University of Wisconsin-Extension
WALCE Wisconsin Association of Land Conservation Employees
WCA Wisconsin Counties Association
WDAC Wildlife Damage Abatement & Claims Program
WFLGP Wisconsin Forest Landowner Grant Program
WI Land+ Wisconsin Land + Water Association
WHIP Wildlife Habitat Incentives Program
WRP Wetlands Reserve Program

Definitions

303(d) Waters:
A list submitted to the U.S. Environmental Protection Agency, which identifies waters that do not meet water quality standards for specific substances or the designated use. This list is required under the Clean Water Act and determined by the Wisconsin DNR

Basin Water Quality Management Plans:
A plan to document water quality conditions in a drainage basin and make recommendations to protect and improve basin water quality. Each Wisconsin basin must have a plan prepared for it, according to Section 208 of the Clean Water Act.

Best Management Practice (BMP):
The most effective, practical measures to control non-point sources of pollutants that run off from land surfaces.

Class I Trout Stream:
High Quality trout waters that have significant natural reproduction to sustain populations of wild trout at or near carry capacity.

Class II Trout Stream:
Streams that may have some natural reproduction, but not enough to utilize available food and space. Stocking is required to maintain a desirable sport fishery.

Erosion:
The wearing away of land or soil by wind or water.

Exceptional Resource Waters:
Surface waters which provide outstanding recreational opportunities, support valuable fisheries, have unique hydrologic or geologic features, have unique environmental settings and are not significantly impacted by human activities. These waters may have point sources discharging directly to the water.

Geographic Information System (GIS):
A computer system used to organize data geospatially by mapping and creating layers of information that are geographically in place. Allows users to visualize data for analysis and decision making.

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

Non-point Source Pollution:

Pollution whose sources cannot be traced to a single point such as a municipal or industrial wastewater treatment plant discharge pipe. Non-point 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.

NR 151:
State Administrative code that establishes runoff pollution performance standards for non-agricultural facilities and transportation facilities and performance standards and prohibitions for agricultural facilities.

Nutrient Management Plan:
A guidance document that provides fertilizer and manure spreading recommendations for crop fields based upon soil test results and crop needs. Plans are sometimes referred to as NRCS 590 plans for the Natural Resources conservation Service standard that guides the plan preparations.

Outstanding Resource Waters:
Surface waters which provide outstanding recreational opportunities, support valuable fisheries, have unique hydrologic or geologic features, have unique environmental settings and are not significantly impacted by human activities. These waters do not have point sources discharging directly to the water.

Performance Standards:
The land management activities or threshold levels necessary to reduce or eliminate negative effects on land and water resources.

Point Source Pollution:
Sources of pollution that have direct discharges, usually from a pipe or outfall.

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

Prohibitions:
Land management activities that are not allowed by local or state regulatory process.

Riparian:
Belonging, living 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.

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

Tolerable Soil Loss (T):
The tolerable soil loss rate in tons per acre per year, 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 economically and indefinitely (ATCP 50.01(16)).

Total Maximum Daily Loads (TMDL):
The maximum amount of a pollutant that can be discharged into a stream without causing a violation of water quality standards.

Variance:
Government permission for a delay or exception in the application of a given law, ordinance or regulation.

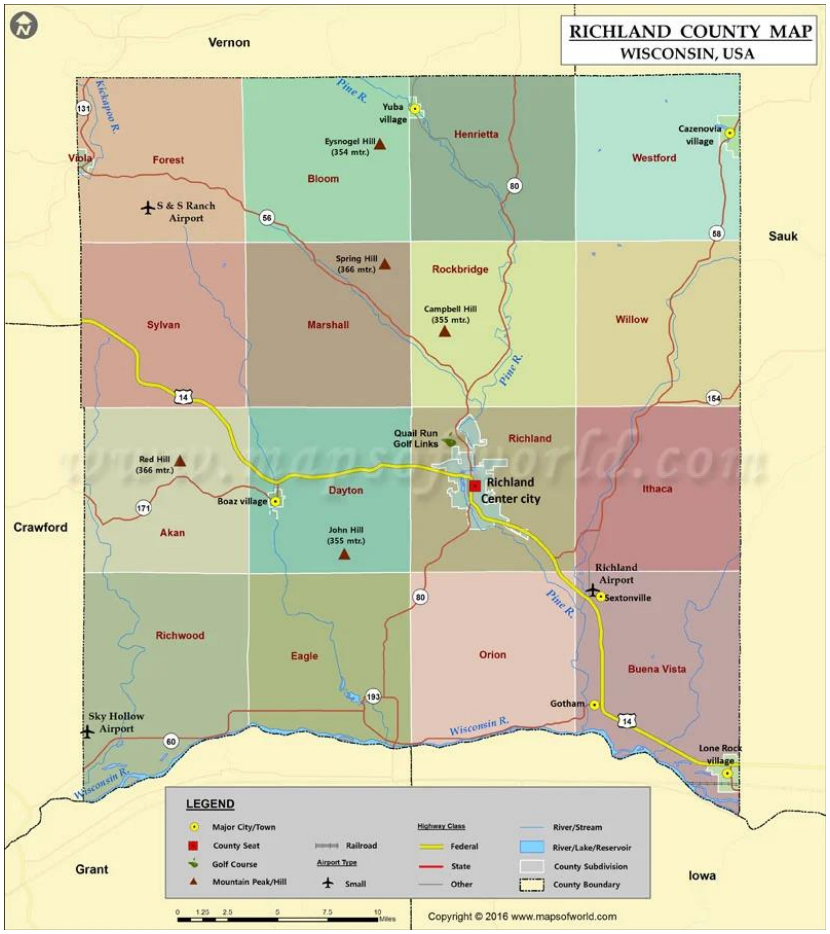
Water Quality Management Area (WMQA):
An area defined as being within 1000 feet of a lake or 300 feet of a stream, river or tributary.

Watershed:
The land area that drains into a lake or river.

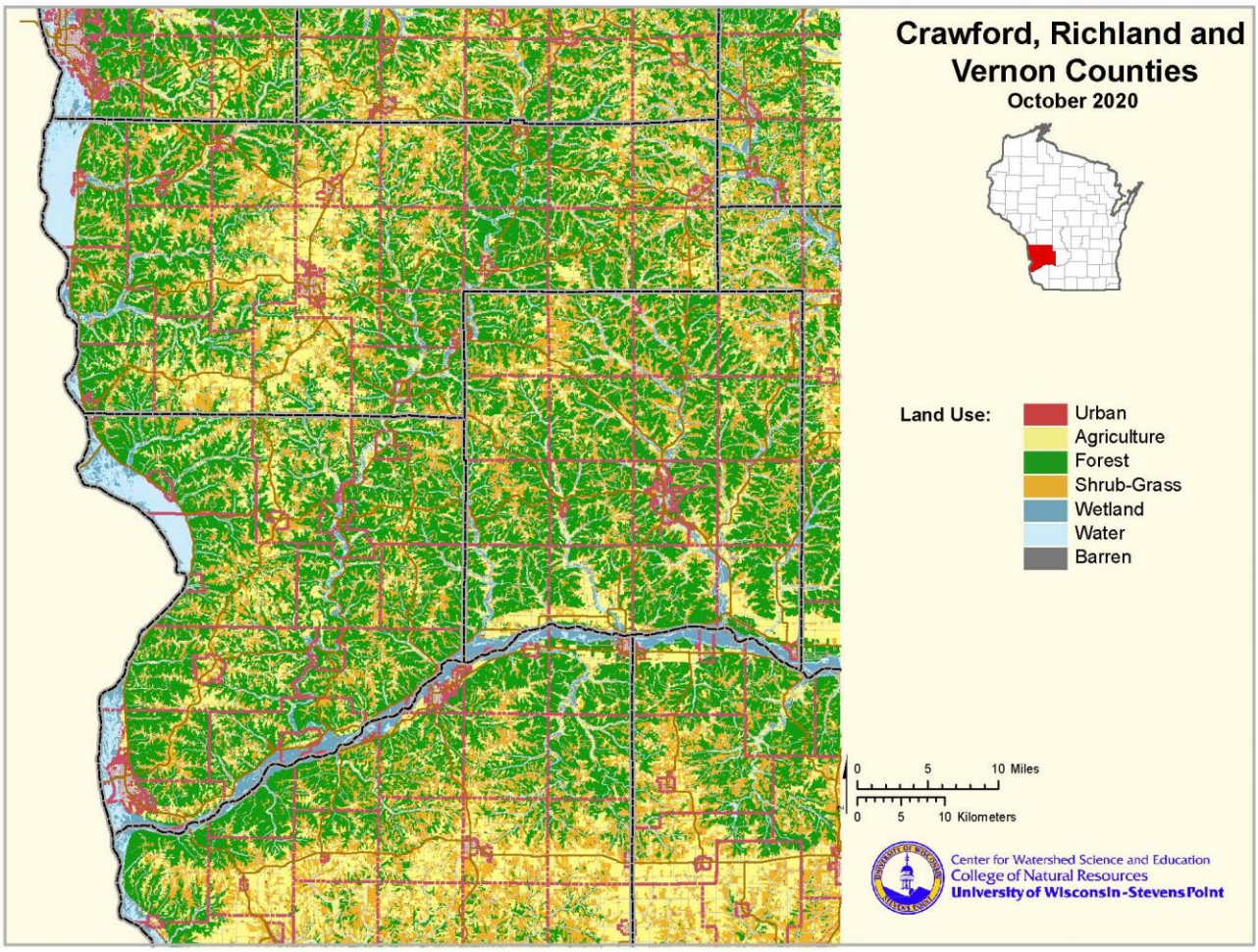
Wetlands:
Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support a variety of vegetative or aquatic life. Wetland vegetation requires saturated or seasonally saturated soil conditions for growth and reproduction.

Appendix B- Maps

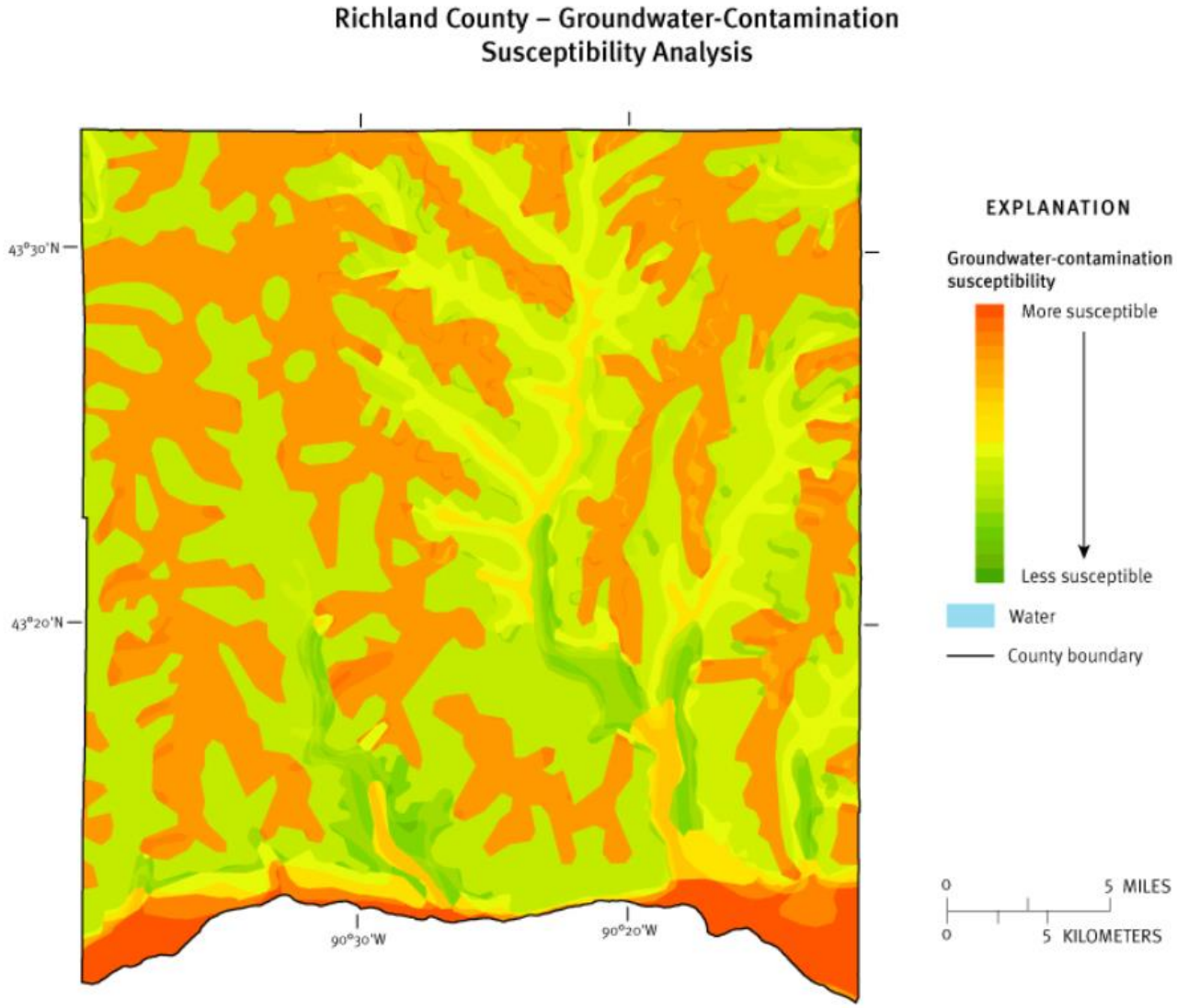
Richland County Municipalities



Land Use


Crawford, Richland and Vernon Counties
October 2020
Land Use:
Urban
Agriculture
Forest
Shrub-Grass
Wetland
Water
Barren
0 5 10 Miles
0 5 10 Kilometers
Center for Watershed Science and Education
College of Natural Resources
University of Wisconsin-Stevens Point

Groundwater Contamination Susceptibility



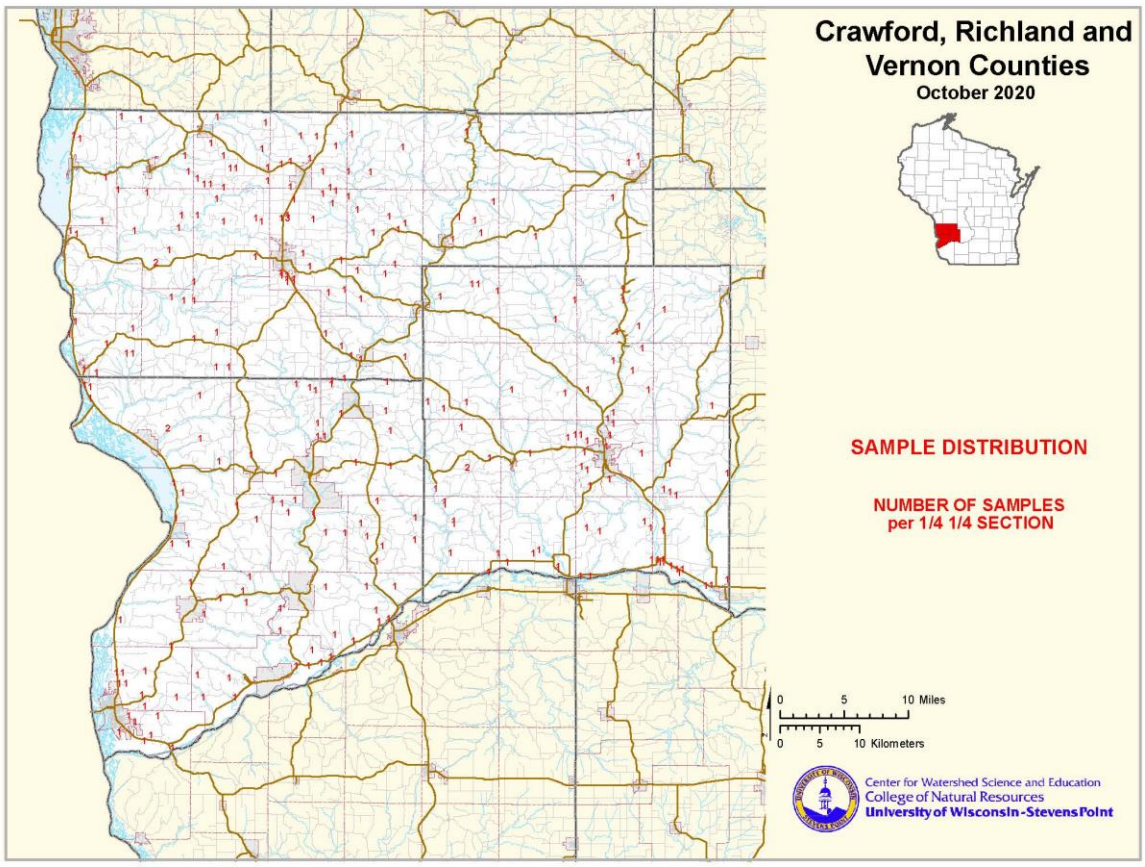
This groundwater-contamination susceptibility map is a composite of five resource characteristic maps, each of which was derived from generalized statewide information at small scales, and cannot be used for any site-specific purposes.

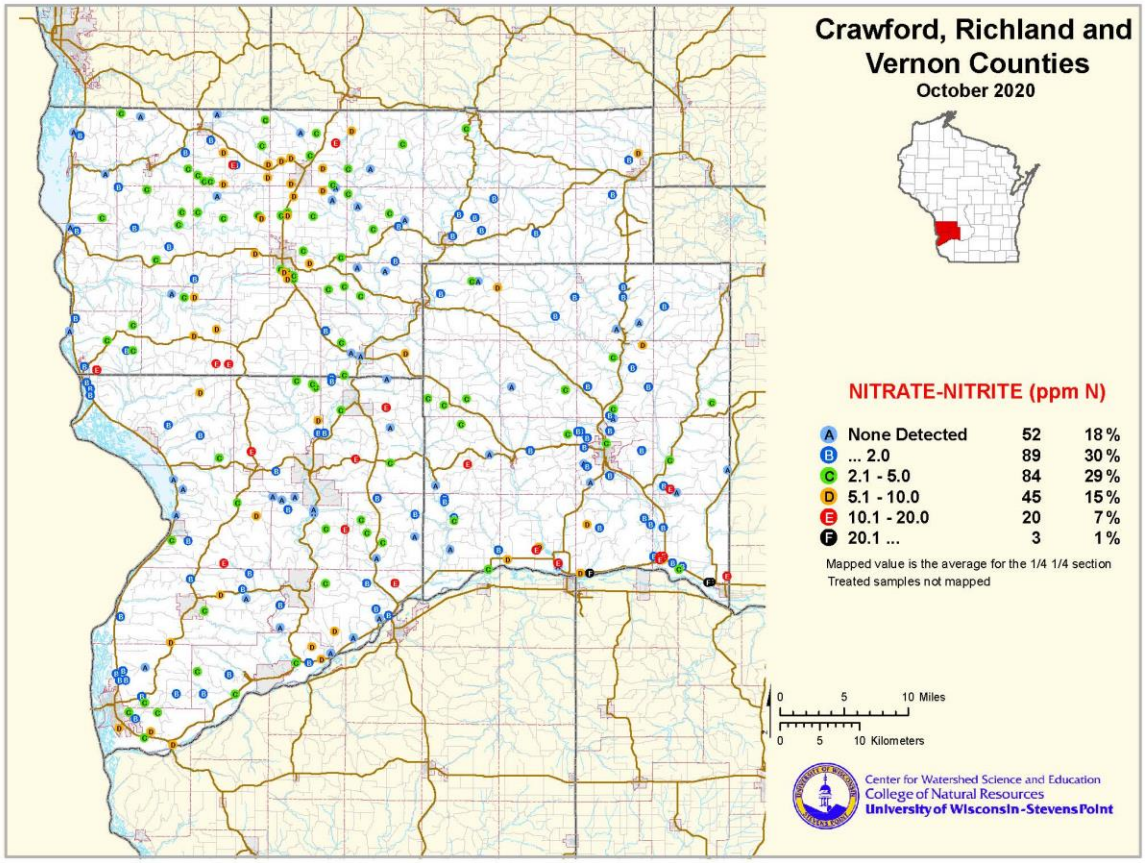
Map source: Schmidt, R.R., 1987, Groundwater contamination susceptibility map and evaluation: Wisconsin Department of Natural Resources, Wisconsin's Groundwater Management Plan Report 5, PUBL-WR-177-87, 27 p.

Figure created for the "Protecting Wisconsin's Groundwater Through Comprehensive Planning" web site, 2007, *http://wi.water.usgs.gov/gwcomp/*

Source: https://wi.water.usgs.gov/gwcomp/find/richland/susceptibility.html

Well test maps




Crawford, Richland and Vernon Counties
October 2020
NITRATE-NITRITE (ppm N)
A None Detected 52 18%
B ... 2.0 89 30%
C 2.1 - 5.0 84 29%
D 5.1 - 10.0 45 15%
E 10.1 - 20.0 20 7%
F 20.1 ... 3 1%
Mapped value is the average for the 1/4 1/4 section
Treated samples not mapped
0 5 10 Miles
0 5 10 Kilometers
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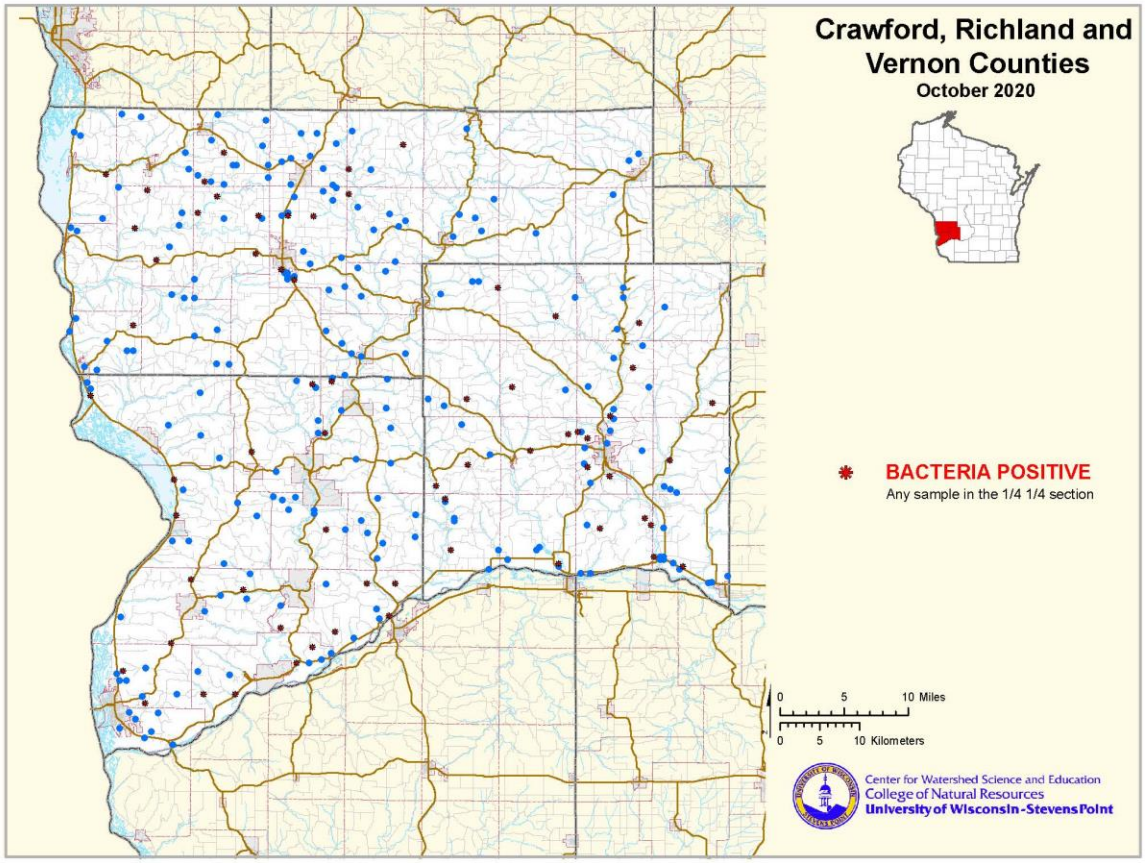
University of Wisconsin-Stevens Point


Crawford, Richland and Vernon Counties
October 2020
BACTERIA POSITIVE
Any sample in the 1/4 1/4 section
0 5 10 Miles
0 5 10 Kilometers
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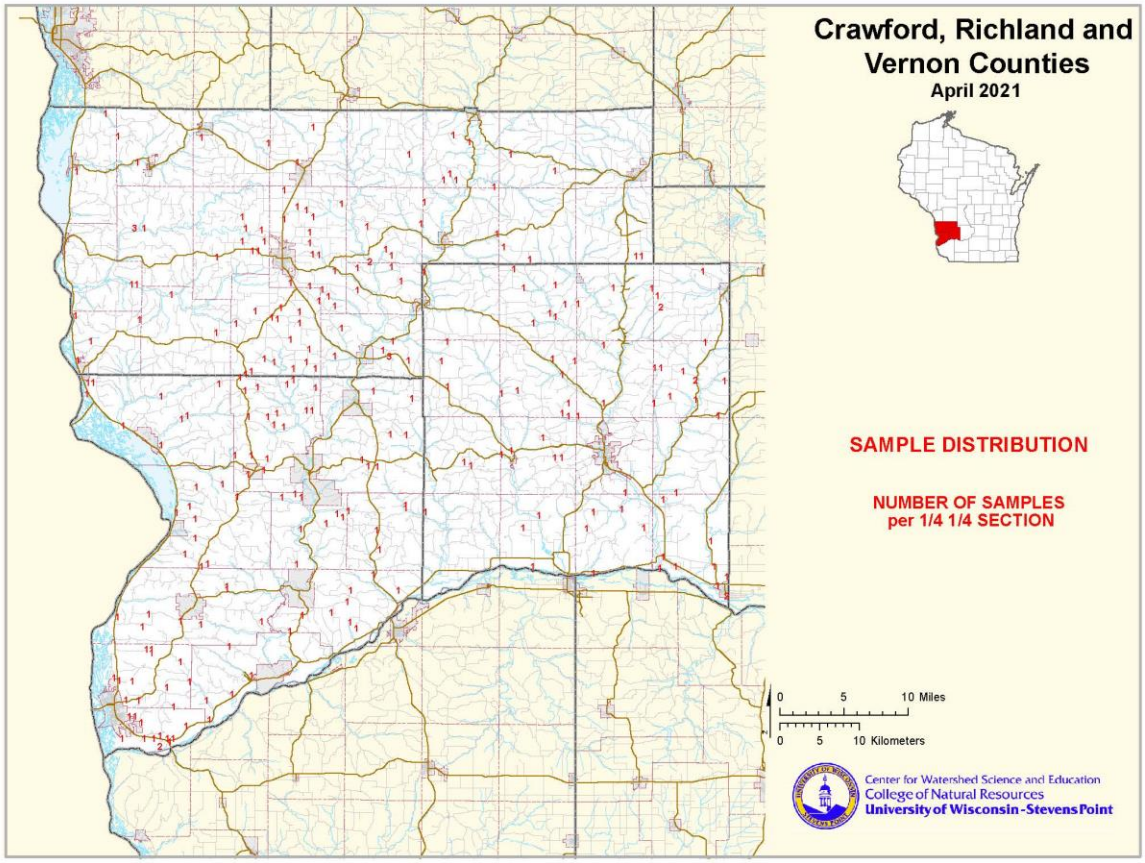
Crawford, Richland and
Vernon Counties
April 2021
SAMPLE DISTRIBUTION
NUMBER OF SAMPLES
per 1/4 1/4 SECTION
0 5 10 Miles
0 5 10 Kilometers
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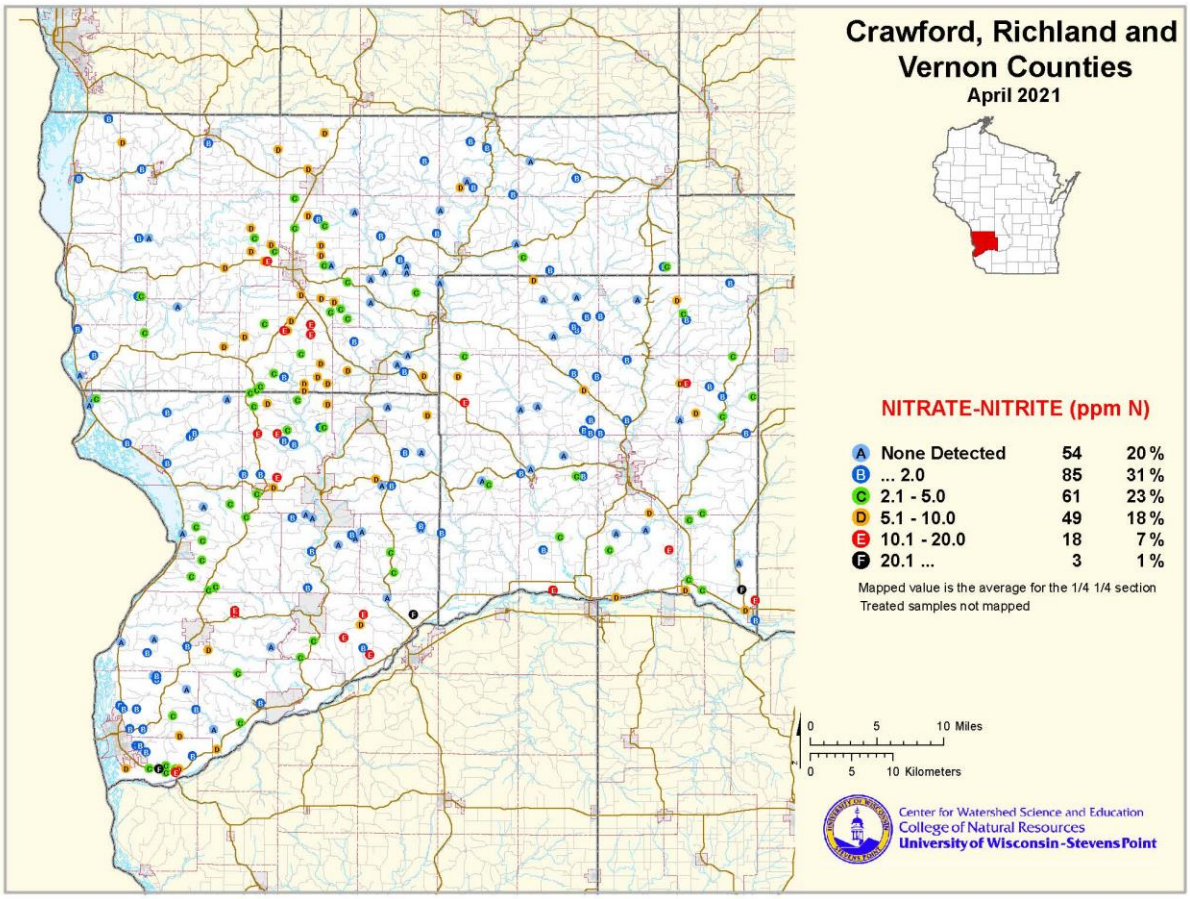
Crawford, Richland and Vernon Counties
April 2021
NITRATE-NITRITE (ppm N)
A None Detected 54 20 %
B ... 2.0 85 31 %
C 2.1 - 5.0 61 23 %
D 5.1 - 10.0 49 18 %
E 10.1 - 20.0 18 7 %
F 20.1 ... 3 1 %
Mapped value is the average for the 1/4 1/4 section
Treated samples not mapped
0 5 10 Miles
0 5 10 Kilometers
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DNR Monitoring Stations