Buffalo County Land and Water Resource Management Plan 2022-2031

"COMMITTED TO SERVING THE PUBLIC BY PROVIDING LEADERSHIP FOR THE CONSERVATION OF OUR NATURAL RESOURCES."

Prepared by the Buffalo County Land Conservation and Resource Management Department, GIS/Land Information Department, and Mississippi River Regional Planning Commission

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Cooperating Agencies

USDA - Natural Resource Conservation Service

UW Madison Division of Extension

UW Extension Division of Extension Discovery Farms

Wisconsin Department of Natural Resources

USDA - Farm Service Agency

USFWS - U.S. Fish and Wildlife Service

USGS - U.S. Geological Survey

MRRPC - Mississippi River Regional Planning Commission

DATCP – Department of Agriculture, Trade, and Consumer Protection

Partners

Buffalo County Conservation Alliance (BCCA)

Buffalo County Farm Bureau

Beaver Creek Reserve

TU - Trout Unlimited DARE (Driftless Area Restoration Effort)

TU - Clear Waters Chapter

MVC - Mississippi Valley Conservancy

River Alliance

Farmer's Union

Alma Rod & Gun Club

Fountain City Rod & Gun Club

Mondovi Rod & Gun Club

Waumandee Rod & Gun Club

Landmark Conservancy

Pheasants Forever

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Plan Summary, Development, and Public Participation

The Buffalo County Land and Water Resource Management Plan for 2022-2031 is a revision to the 2012-2022 plan. This plan will be used as a tool to guide and coordinate programs and efforts to protect, improve, and restore land and water resources in Buffalo County.

Goals and milestones established in the plan, based on recent resource assessments and public input, will guide conservation strategies from 2022-2026, and will be reviewed after those five years. These goals will also facilitate funding of those activities through local, state, and federal sources.

Major goals include:

- Addressing Erosion
- Nutrient Management/Manure Management
- Habitat Improvement

Buffalo County Land Conservation Department has a great need to incorporate GIS/Asset Management Program (tracking, reporting, analysis, funding, etc...) into a new order of business. Streamlining processes and record keeping into modern technologies is a major goal in the life of this plan.

We will consider beginning development of a nine key element plan for Hutchinson and Elk Creek HUC 12 watersheds, tributaries to the impaired Buffalo River that drains into the Mississippi. This targeted watershed approach will allow us to achieve measurable outcomes and work with landowners engaged and interested in reducing soil erosion, manure management, and improving surface and ground water quality – our other primary plan goals.

Annual work plans will be developed to begin implementation of the goals outlined in the plan. Progress towards reaching goals outlined in this plan will be evaluated, and priorities will be established in subsequent annual work plans. The County will work with DNR and other affiliate agencies to implement monitoring strategies to have measurable outcomes following installation of conservation practices and programs.

Data included in this plan are from existing inventory information from previously prepared documents.

The Land and Water resource management plan contains information on implementation, laws and ordinances involved in management, and the goals, objectives, and actions of the work plan. Components of the plan will be implemented in accordance with various state and county ordinances and regulations including: the county's Animal Waste Storage, non-metallic mining ordinance, shoreland zoning ordinance, states Runoff Management Administrative Code (NR 151)

Plan Development, Requirements, and Public Participation

1997 Wisconsin ACT 27 and 1999 Wisconsin ACT 9 (the 2000-2001 Budget Bill) amended Chapter 92 of the Wisconsin Statutes to create a county Land and Water Resource Management Planning Program. This statutory authority requires each county in Wisconsin to develop a County Land and Water Resource Management (LWRM) plan that has been approved by the WI Department of Agriculture, Trade and Consumer Protection (DATCP). The Land and Water Conservation Board reviews plans and recommends action to DATCP. Plans are approved for a 10-year period, with a review by the board in year 5. The intent of this plan is to foster a locally led, collaborative process intended to address each county's unique natural resources, identify challenges and opportunities associated with their resource base, and establish a plan to help protect, manage, and restore those resources.

In Buffalo County, the LWRM plan is used to guide the land and water resource management efforts of the County, implement strategies to meet NR151 Agricultural Performance Standards and Prohibitions, and secure state, federal and alternative funding sources to implement practices and programs to protect the quality of our natural resources, conserve long-term soil health and productivity, and enhance surface and ground water quality. The county coordinates those efforts with cooperating state and federal conservation partners such as the USDA Natural Resource Conservation Service (NRCS), USDA- Farm Service Agency (FSA), WI- Department of Natural Resources (DNR), DATCP, University of WI-Extension.

The Buffalo County Land Conservation and Resource Management Department (LCRMD) initiated a planning process to revise and update the Buffalo County LWRM Plan by assembling an Ad Hoc Advisory Committee, with technical and citizen advisors, to consider the resource concerns in the county, select targeted watersheds and farms, and develop a work plan an implementation strategy. Targeted focus questions were distributed to the public, presented at Farm Bureau meetings, and mailed to municipalities to solicit public input on resource concerns and conservation programs and needs in the County.

The advisory committee convened twice:

March 3, 2021: review committee roles, plan requirements, previous plan goals and objectives, and update resource concerns.

June 1, 2021: Review focus question responses and prioritize resource concerns, discuss nine key element watershed planning for Elk Creek and Hutchinson HUC 12 watersheds

A public hearing was held for the Buffalo County Land and Water Resource Management Plan on December 13, 2021

Comments on the draft plan were read into the public record and incorporated into the final plan. The plan will be brought to the Buffalo County Board of Supervisors on December 19, 2022, after being presented to the WI Land and Water Conservation Board on December 6th, 2022.

The planning process is intended to build local support and solicit public input through transparent programming and leadership. The plan identifies the current state of the county's natural resources, the resource concerns associated with those resources, the limitations to management and conservation of those resources, and provides an implementation and monitoring strategy to address the natural resource issues. This plan also provides an education and outreach opportunity to inform the public about issues, challenges, and opportunities related to our natural resources.

Priority Farm Strategy: implement performance standards and prohibitions in State Administrative Code NR 151. Priority farms include the following: farms receiving DNR notice of discharge or notice of intent, farms identified as having significant manure management problems, farmers that have cropland erosion in excess of tolerable soil loss (T), farms located within a watershed with a nine-key element plan (when developed), farms within a water quality management area of an impaired water due to sediment or nutrients.

Related Plans and Programs

Buffalo County Comprehensive Land Use Plan

Buffalo County Land Information Plan

Rose Valley Watershed Plan

Waumandee TMDL Watershed Plan

Buffalo County Outdoor Recreation Plan

Hazard Mitigation Plan Update

Farmland Preservation Plan

Transect Survey 2021

Buffalo County Agricultural Lands Preservation Plan

Township Land Use Plans

County Comprehensive Plan

Aquatic Invasive Species Strategic Plan for the Mississippi River and Major Tributaries in La Crosse, Trempealeau, and Buffalo Counties

Zoning

https://www.buffalocounty.com/DocumentCenter/View/2818/Land-Division-Ordiance-FINAL?bidId=

Performance Standards and Prohibitions

State Regulations

ATCP 50: Wisconsin's Soil and Water Resource Management Rule

ATCP 50 is the administrative rule used by the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) to implement state and federal laws. It covers soil and water resource management grants to counties, county resource management planning, conservation compliance for farmland preservation tax credits, local ordinances, nutrient management, and other conservation practices. DATCP cooperates with the Wisconsin Department of Natural Resources, county land conservation committees and other agencies to administer conservation programs.

NR 151

This chapter establishes runoff pollution performance standards for non-agricultural facilities and transportation facilities and performance standards and prohibitions for agricultural facilities and practices designed to achieve water quality standards as required by s. 281.16 (2) and (3), Stats. This chapter also specifies a process for the development and dissemination of department technical standards to implement the non-agricultural performance standards as required by s. 281.16 (2) (b), Stats. If these performance standards and prohibitions do not achieve water quality standards, this chapter specifies how the department may develop targeted performance standards in conformance with s. NR 151.004.

Stormwater Discharge Permit – Wis. Adm. Code NR 216

Under subchapter III of NR 216, Wis. Adm. Code, a notice of intent shall be filed with the DNR by any landowner who disturbs one or more acres of land. This disturbance can create a point source discharge of storm water from the construction site to waters of the state and is therefore regulated by DNR. Agriculture is exempt from this requirement for activities such as planting, growing, cultivating, and harvesting of crops for human or livestock consumption and pasturing or yarding of livestock as well as sod farms and tree nurseries. Agriculture is not exempt from the requirement to

submit a notice of intent for one or more acres of land disturbance for the construction of structures such as barns, manure storage facilities or barnyard runoff control systems. (See s.NR216.42(2)), Wis. Adm. Code.) Furthermore, construction of an agricultural building or facility must follow an erosion control and sediment control plan consistent with s.NR 216.46, Wis. Adm. Code and including meeting the performance standards of s.NR 151.11, Wis. Adm. Code.

An agriculture building or facility is not required to meet the post-construction performance standards of NR 151.12, Wis. Adm. Code., however construction of the building and/or facility must meet the agricultural performance standards and prohibitions under Chapter NR 151.

NR-243 – Concentrated Animal Feeding Operations

Under Chapter NR 243, DNR regulates livestock operations with 1,000 or more animal units. These CAFOs (Concentrated Animal Feeding Operations) require a Wisconsin Pollution Discharge Elimination System (WPDES) permit. A farmer/landowner uses an Animal Unit Calculation worksheet, so they know where their total animal count is. There are currently seven (7) CAFO operations in Buffalo County.

In NR 243.26, DNR can require a WPDES permit for medium and small CAFOs, which is defined as any owner or operator of an animal feeding operation with 300 to 999 animal units before a point source discharge of pollutants to navigable waters at an animal feeding operation occurs by either a man-made ditch, flushing system or other similar man-made device or pollutants are discharged into navigable waters that originate outside of the operation and pass over, across, or through the operation or otherwise come into direct contact with the animals confined at the operation.

In 2006, the Natural Resources Board adopted proposed revisions to NR 243 to meet federal regulatory changes. The changes primarily affect CAFOs and deal with restrictions on manure applications near surface waters and during the winter, phosphorus-based nutrient management requirements, adjustments to animal unit equivalency numbers, additional groundwater protection associated with land applied manure and development of emergency management plans. The revisions to NR 243 were necessary to comply with changes to federal regulations for CAFOs and to improve consistency in implementing the associated WPDES permit program. The NR243 revisions were approved by the WI legislature and have not changed since then.

Buffalo County Land Conservation and Resource Management Department Activities

The following are services provided by this Department that are mandated by Federal Regulations, WI Statutes, local ordinance				
				GRANT
TITLE	DESCRIPTION	MANDATED	STATE STATUTE	PROGRAM

Soil & Water Conservation	Conservation practice technical assistance, survey, design, & install for erosion control and nutrient load reduction.	Yes	Chapter 92, ATCP 50, NR 154, Wis. Adm. Code	DATCP (SWRM)
NR151 Conservation Compliance	Cropland conservation practices to meet state performance standards & prohibitions, reduce sediment and nutrient input into waterways, and reduce cropland erosion.	Yes	NR 151 & 154, Wis. Adm. Code	DATCP & DNR
Farmland Preservation Program	Farmland tax incentive program and inspections to meet state performance standards and prohibitions.	Yes	Chs. 91 & 93, Wis. Stats. & ATCP 49	DATCP
DNR Runoff Mgt: TRM & NOD	Livestock facility conservation practices installed to manage runoff and meet state performance standards and prohibitions.	No	NR 151 & 153 Wis. Adm. Code	DNR
Manure Storage Ordinance	Local ordinance to ensure manure storage structures are constructed and maintained to meet state standards.	Yes	Ch. 92, Wis. Stats.	No
PL-566 Watershed Dams	Maintain watershed & flood control structures owned by Buffalo County	Yes	Ch. 31, Wis. Stats.	DNR
Bluff Prairie Restoration	Promote conservation and restore bluff prairie sites on local properties	No	Ch. 92, Wis. Stats.	CAPX2020 , USFWS
Trout Stream Restoration	Conservation practice to reduce sediment and nutrients into waterways	No	NA	CAPX2020 , TU, EQIP
CREP Easement Program	Conservation buffer easement program with incentive payments	No	Ch. 92, Wis. Stats.	DATCP
Transect Survey	Inventory and document soil erosion conditions in Buffalo County watersheds	No	Ch. 92, Wis. Stats.	No
Woodland Management	Promote tree sale program and logging seed mix to landowners for erosion stabilization and conservation of woodlands	No	Ch. 92, Wis. Stats.	No
Information & Education	Promote conservation activities through outreach and education events, trainings, and publications	No	Ch. 92, Wis. Stats.	No
Non-Metallic Mine Reclamation	Ensure successful reclamation of a mine through plan review, financial	Yes	Ch. 295, Wis. Stats & NR135, Wis. Admin. Code	DNR

	assurance, and compliance monitoring.			

Financial and technical Assistance

Conservation Practices - Cost-Share funding is available to Buffalo County landowners for soil and water conservation practices, including grade stabilization structures (dams), grassed waterways, diversions, nutrient management planning, and manure storage. Contact the Land Conservation and Resource Management Department for details.

Conservation Reserve Enhancement Program (CREP) Provides incentive payments and cost sharing for installing conservation practices along waterways and wetlands. Farmers can enroll land that has a history of crop or pastureland through either a 15-year agreement or perpetual easement to protect waterways and wetlands.

Nutrient Management-- Buffalo County staff are available for nutrient management assistance including nutrient management plan writing, soil sampling, spreading calibration, or technical assistance.

Manure Storage-- A permit is required for any new construction, reconstruction, enlargement, substantial alteration, or abandoned manure storage facility.

Farmland Preservation Program (FPP) The Farmland Preservation Program offers state income tax credits to landowners who practice conservation farming. Buffalo County landowners with agricultural land located in the ANR-40 zoning district may be eligible for the $7.50 tax credit provided the land meets the state's agricultural soil and water conservation standards. The Town of Montana has a newly approved Agricultural Enterprise Area (AEA) that allows for a $5 per acre tax credit following the same protocols as FPP. These farms must have a nutrient management plan and 25% of farms enrolled are inspected every year.

Bluff Prairie Restoration Application - Cost-Share funding is available for restoration of remnant dry bluff prairies on private lands to preserve this valuable ecosystem and

provide habitat for many rare plant and animal species. Interested landowners should complete and sign a "CAPX2020 Buffalo County Bluff Prairie Restoration Request". **There is a $5,000 per project and $10,000 per landowner limit for funds. This funding has been important to landowners looking to restore these habitats on their property. There has been close to $100,000 allocated to landowners in projects since inception, and the funding pot is nearly out.**

Trout Stream Restoration Application - Cost-Share funding is available at $5,000 per stream restoration site for the installation of fish habitat structures and stream bank protection projects. CAPX2020 Buffalo County Trout Stream Restoration Request A public stream access easement held by Buffalo County is required to be recorded allowing public to access stream banks during trout fishing season only. This funding source has allocated almost $100,000 to trout habitat projects on the county but will soon stop as funds are close to running out.

Educational and Outreach Activities: youth education programs, field days, fair events, winter bluff prairie and soil conservation meetings

Environmental Services and Habitat Restoration: tree sales, seed sales, soil and water test kits, bluff prairie restoration, trout stream restoration with FWS and TU partners, water quality sampling.

Resource Assessment

Physical Setting of Buffalo County

Buffalo County is located in west central Wisconsin, with parts of the southern portion within a 30-minute drive of the La Crosse urban area and the northern portion of the same distance from Eau Claire, and also serves as a suburban venue for Winona, Minnesota, across the Mississippi River.

Buffalo County is 28.5 miles east-west at its widest part, and about 40.5 miles north-south at the tallest part. It borders Pepin and Eau Claire Counties to the north and Trempealeau County to the east. The rest of Buffalo County is bordered by the Mississippi River and Minnesota, which cover all the west and south.

i. Buffalo County is located within the unglaciated, Driftless Area of Western Wisconsin. It has a varied topography with high ridges, long narrow valleys, and steep slopes. Bluffs rise above the river bottoms by 500 feet in some areas. The land area of the county is 684.5 square miles, or about 438,061 acres.

ii. The county ranks fortieth (40) in size among the 72 counties in Wisconsin. There are 17 civil townships (see map on page 57); Alma is the county seat. With a total population of 13,126, according to the American Community Survey (ACS) in 2019, density is approximately 19.2 people per square mile, which is about the same as it was 10 years ago (see table 2-1).

Table 2-1 Buffalo County Population and Land Area Data

	Population				*Land Area (Square Miles)*		
Jurisdiction	*2015*	*2019*	*# Change 15-19*	*% Change 15-19*	*Land*	*Water*	*Total*
Alma	290	326	36	12.4%	42.79	0.14	42.93
Belvidere	395	374	-21	-5.3%	33.15	1.4	34.55
Buffalo	766	816	50	6.5%	29.85	4.34	34.19
Canton	292	272	-20	-6.8%	35.81	0	35.81
Cross	356	342	-14	-3.9%	37.68	0.01	37.69

Dover	523	545	22	4.2%	36.21	0	36.21
Gilmanton	369	415	46	12.5%	36.28	0.01	36.29
Glencoe	505	453	-52	-10.3%	44.68	0	44.68
Lincoln	189	225	36	19.0%	36.94	0	36.94
Maxville	383	377	-6	-1.6%	42.03	0.73	42.76
Milton	501	554	53	10.6%	25.05	4.49	29.54
Modena	288	238	-50	-17.4%	36.08	0	36.08
Mondovi	454	444	-10	-2.2%	32.37	0	32.37
Montana	274	303	29	10.6%	47.19	0	47.19
Naples	650	617	-33	-5.1%	35.53	0.02	35.55
Nelson	631	697	66	10.5%	70.66	6.95	77.61
Waumande e	428	409	-19	-4.4%	43.76	0.02	43.78
Town Totals	7,294	7,407	113	1.5%	666.06	18.11	684.17
V. Cochrane	442	392	-50	-11.3%	0.72	0	0.72
V. Nelson	324	340	16	4.9%	1.46	0.02	1.48
C. Alma	678	688	10	1.5%	5.86	1.92	7.78
C. Buffalo City	1,035	875	-160	-15.5%	2.14	3.91	6.05
C. Fountain City	853	821	-32	-3.8%	4.46	1.11	5.57

C. Mondovi	2,693	2,603	-90	-3.3%	3.79	0.03	3.82
City/Village Totals	6,025	5,719	-306	-5.1%	18.43	6.99	25.42
Buffalo County	13,319	13,126	-193	-1.4%	684.49	25.10	709.59
Wisconsin	5,742,117	5,790,716	48,599	0.8%	54,310	11,888	65,498
United States	316,515,021	324,697,795	8,182,774	2.6%	3,537,422	181,272	3,718,694

Source: 1) 2015 & 2019 Population and Housing Units: American Community Survey 5-year estimates

2) Buffalo County and Jurisdictions Land/Water Area, State of Wisconsin Department of Administration, Demographic Services Center

3) Wis. And U.S. Land/Water Area: U.S. Census Bureau, 2010 Census of Population and Housing, Summary Population and Housing Characteristics

Land Use Trends

Real estate assessment records from 2014 to 2020 provide the most current land use information for the County (Table 2-2). In 2020 agricultural land totaled 202,771 acres in addition there were 63,704 acres of agricultural forest land. These two categories combine for a total of 266,475 acres or 57.42 percent of land use in the County. This was followed by Other Land (water areas, exempt lands, etc.), 141,237 – 30.43%; Undeveloped, 27,254 acres – 5.87 percent; Forest, 17,558 – 3.80 percent; Residential, 6,211 – 1.33 percent; Other Real Estate, 3,590 – 0.80 percent; Commercial, 1,101 - 0.24 percent; and Manufacturing, 664 acres – 0.24 percent. Table 2-5. As in almost all Wisconsin Counties, Agricultural assessed lands within Buffalo County continue to

decline. Between 2014 and 2020 agricultural lands decreased by 5,681 acres or 2.72 percent. The Use Value Assessment Law probably contributed to keeping the conversion of farmland on urban fringes to a minimum by assessing the land on its agricultural value and not its residential or commercial value. This reduces property taxes and creates an incentive to maintain farmland and not sell it for other uses, see land use map on page 79.

Table 2-2 Buffalo County Land Use

	2014		*2020*	
	Acres	*% of County*	*Acres*	*% of County*
Residential [(1)]	5,876	1.27	6,211	1.33
Commercial [(1)]	977	0.21	1,101	0.24
Manufacturing [(1)]	801	0.17	664	0.14
Agriculture [(1)]	208,452	44.92	202,771	43.69
Undeveloped [(1)]**	24,816	5.35	27,254	5.87
Agriculture Forest [(1)]****	67,338	14.51	63,704	13.73
Forest [(1)]***	21,250	4.58	17,558	3.80

Other Real Estate [1]	3,622	0.78	3,590	0.80
Other [3]	130,958	28.21	141,237	30.43
County Total [4]	464,090	100	464,090	100

(1) Wisconsin Department of Revenue Division of State and Local Finance - 2014 and 2020 Real Property Equalized Value and Acreage Figures

(2) Total of Residential, Commercial, Manufacturing, Agriculture, Swamp and Waste, and Forest. Figures as recorded by the Department of Revenue for

Real Estate Equalization adjustment purposes.

(3) Includes water areas but excludes the Mississippi River. Also includes tax exempt lands as identified by the Wisconsin Department of Revenue.

These tax-exempt lands include city, village, town, county, state, and federally owned lands as well as: School districts, lake districts, sewer districts,

vocational and technical districts, colleges, universities, forest management lands, some nonprofit organization lands, cemeteries, and shelters.

State Statute 70.11 lists all tax-exempt properties which would be included in this category.

(4) Includes total area of county - both land area and water area but excludes the water area of the Mississippi River. Source: Wisconsin DNR

**Use value law froze ag land values therefore making it necessary to keep a separate figure for ag buildings/sites and improvements.*

***Legislation passed for the 1998 assessment period made a change governing land classification. Land has been reassessed in many cases and moved*

from one classification to the Swamp/Waste Category or Class E. Most likely the land being moved is land that was classed as Ag land but was not

being tilled or planted.

****With the Use Value Assessment of Farmland Law, acres that were previously classed as Forest may have been moved to Agriculture if those acres*

are used as pastureland. One of the benefits of the use value law has been slowing the loss of farmland. Wisconsin Farm Bureau's June 25, 2002

press release said that use value assessment has slowed the annual rate of farmland being diverted to non-ag uses by 23 percent from 1996-2000,

compared to five years before the law went into effect. There are also more acres being enrolled in the Managed Forest Land Program through

the Department of Natural Resources.

*****Effective for 2005 assessment year, 2003 Wisconsin Act 230 amended the definition of "Agricultural Forest". Sec. 70.32(2)(c)1d now defines*

"Agricultural forest as land that is producing or capable of producing commercial forest products.

Forestry

Total Forestland in Buffalo County is 168,000 acres or 48% of the county. There are no County, State or National Forest lands located in Buffalo County. The forest lands (woodland) in Buffalo County are all privately owned.

Of the acres of forestland in the county, nearly half (~ 75,600 acres) are enrolled in the Managed Forest Tax Program. Only ~1,189 of the Managed Forest Tax Law acres are open to the public for such activities such as fishing, hunting, cross country skiing and sightseeing.

State Parks

Located along the lazy Mississippi River north of Fountain City, the 322-acre Merrick State Park is popular with anglers and boaters. The marshy backwaters are home for egrets, herons, muskrats, and otters. A wooden stairway provides access to the river.

At Merrick State Park you can enjoy camping, canoeing, hike, and snowshoeing on miles of trails, fishing, watch and photograph spring and fall migrations of waterfowl and eagles and occasional naturalist programs, sponsored by the TURTLES. The park has picnic areas along the Mississippi River. One near the lower boat launch is open to leashed pets. Three shelters throughout the park are reservable.

TURTLES is a non-profit organization that raises money for special programs and provides volunteers to help you enjoy your stay at the park.

State Wildlife Areas

Public lands managed by the Wisconsin Department of Natural Resources provide many opportunities and public spaces for you and your family to hunt, fish, trap, hike, canoe, or watch or photograph wildlife. All wildlife areas are managed to sustain the wildlife and natural communities found on the properties and to provide a full range of traditional outdoor recreational uses. DNR State Wildlife Areas will provide you with the outdoor adventure you can only find in Wisconsin.

Three State Wildlife Areas are located in Buffalo County: Big Swamp, Tiffany Wildlife and Whitman Dam. They are explained in more detail in the following paragraphs.

Big Swamp Wildlife Area. Acquisition of this property began in 1956 with the goal of protecting winter pheasant cover for pheasants. The Big Swamp WMA has since grown to 844 acres in size. Management on the property is limited as much of the acreage consists of tamarack swamp and lowlands, although there is a mix of upland hardwoods on the property.

Recreational opportunities in Big Swamp Wildlife Area include of hunting (rabbits, squirrels, deer), trapping, hiking wildlife viewing and bird watching.

The property is located 5 miles west of Mondovi south on Highway 10. Currently access is only available from County Highway A on the south side of the property.

Tiffany Wildlife Area. Tiffany Wildlife Area has a diversity and abundance of wildlife on more than 13,000 acres. The area contains one of the state's largest, continuous bottomland hardwood forests. Timber harvests help maintain aspen and oak in a diverse pattern of size and age classes. This variety in woodland composition and structure provide food and shelter for a wide variety of wildlife including deer, ruffed grouse, and beaver. Dead trees with dens are left to provide wildlife homes. Oaks with superior potential for producing accords are preserved to provide nutritious high energy wildlife food.

DNR staff periodically mow and use controlled burning to maintain meadow and grassland habitat at Tiffany Wildlife Area for waterfowl nesting cover and a number of other upland birds. Burning also maintains native prairie and savannah plants that existed before white settlement.

Beaver dams on sloughs and old river meanders create a maze of ponds and wetlands. Hand-made wood duck houses dot wetland habitat to help maintain these birds.

Recreational opportunities in the Tiffany Wildlife Area include hunting (deer, ruffed grouse, turkey, squirrel, waterfowl), trapping (beaver and otter are protected from trapping in an 8,000-acre closed area), hiking (trails not marked), cross country skiing (trails not marked), berry picking, canoeing, rafting, camping ({by permit only} primitive camping only, no developed sites), wildlife viewing and bird watching.

The property is located 45 minutes south of Eau Claire and 90 minutes north of La Crosse, along the Chippewa River between Nelson and Durand on the west side of Highway 25 and mostly north of State Highway 35. About 1/6 of the property lies west of the Chippewa River in Pepin County. The rest lies east of the Chippewa River in Buffalo County.

Whitman Dam Wildlife Area. The Whitman Wildlife Area was established in 1965 through a donation of 1,257 acres of land made to the State of Wisconsin by John Latsch in 1919. Whitman Dam Wildlife now is an area of 2,253 acres. Latsch donated

the land to be used by citizens of Wisconsin for outdoor recreational activities. In 1936 the US Corps of Engineers installed Lock and Dam #5 which tied into the north end of the Whitman Dam Wildlife Area. Since the construction of the dam three culverts have been installed that allow water to flow through the wildlife area. Management on the property is limited to boundary posting and fish and wildlife population surveys.

Recreational opportunities in the Whitman Dam Wildlife Area include hunting (rabbits, squirrels, deer, ducks, geese, and turkey), trapping, hiking, wildlife viewing and bird watching.

The property is located 3 miles southeast of Cochrane across the main river channel from Merrick State Park. Access available from Merrick State Park or at the end of Whitman Dam Road west of Kamrowski road. The property consists of floodplain forest and marshland.

Buffalo County lies in two separate basins as defined by the DNR. The north-western part of the county, the Bear Creek Watershed, lies in the Lower Chippewa River Basin and the balance of the land in the county lies in the Black-Buffalo-Trempealeau Basin. Basin plans have been written to provide information about the existing natural resources of each basin and measures that can be taken to preserve and enhance those resources. The “State of the Lower Chippewa River Basin” plan was published in 2001, and the “State of the Black-Buffalo-Trempealeau Basin” plan was published in 2002. There was a different approach to how each of the plans was written, so the information available may be different for each of those areas of the county.

The Lower Chippewa River Basin includes the northwest most part of the county and all of the Bear Creek Watershed. The Black-Buffalo-Trempealeau Basin includes the balance of Buffalo County. Information from these plans indicates that in stream sedimentation, scouring, causing loss of habitat is the greatest threat to the water quality in Buffalo County Streams. There are a few streams that are impacted by nonpoint source pollution from barnyard runoff.

Water & Wildlife Resources

Water

There are twenty-two named and unnamed lakes in the county, all small and shallow totaling 358 acres. Of the named lakes, Mirror Lake in Mondovi, is the largest with 44 acres. One-half of the lakes have maximum depths of less than five feet.

There are 16,064 acres of water, which include 165 miles of trout streams in the county (Table 2-3). All or part of 33 streams are classified as trout streams and are stocked with brook or brown trout. Trout habitat in most Buffalo County streams is marginal due to silt or sand covered bottoms. Some natural reproduction occurs, but trout populations are largely maintained by stocking adult-sized fish. There are no Class I

streams in Buffalo County. The map on page 64 of this plan shows the water bodies in Buffalo County.

Table 2-3 Buffalo County Trout Streams

Local waterbody name	Miles	Trout class
Armour Creek	3.79	II
Center Creek	4.35	II
Danuser Creek	7.07	II
Eagle Creek	5.60	II
Eagle Creek	8.47	II
Elk Creek	3.32	II
Elk Creek, South Fork	13.2	II
Little Bear Creek	8.82	II
Little Waumandee Creek	11.0	II
Little Waumandee Creek	10.1	II
Newton Valley Creek (Shoe Creek)	4.27	II
North Branch Little Bear Creek	5.40	II
North Branch Little Bear Creek	1.39	II
Rossman Creek	3.66	II
Spring Creek	2.88	II
Tamarack Creek	3.05	II

Tamarack Creek	3.83	II
Unnamed-Botana Valley Creek	6.16	II
Unnamed-Newton Valley Creek	4.27	II
Unnamed Cr T24n R12w S5 (5-9)	3.27	II
Unnamed-Weisenbeck Valley Creek	5.15	II
Total Class II miles	**119.05**	
Bear Creek	2.50	III
Cooke Valley Creek	2.80	III
Doelle Creek	5.07	III
Harvey Creek	2.36	III
Harvey Creek	1.45	III
Kilness Creek	4.05	III
Peeso Creek	0.72	III
Peeso Creek	8.44	III
South Fork Elk Creek	5.06	III
Sport Valley Creek	3.44	III
Unnamed-Owen Valley Ck. Trib	2.16	III
Waumandee Creek	6.92	III
Total Class III miles	**44.97**	
Total Miles	**165.02**	

Source: Wisconsin Department of Natural Resources 2020

"*The DNR has collected a vast amount of biological and chemical information from Buffalo County streams during the last 5 to 10 years. This information is useful in assessing the health or condition of streams and targeting both watershed and in-stream management activities within the county. For instance, the majority of the 50 plus stations assessed for fish community health using the DNR fish index of biological integrity (fish IBI) are rated as fair, good, or excellent condition. However, the fish IBI do show fair to poor fish community conditions within the Little Bear sub-watershed (northwestern part of the county). This may be a watershed where watershed and in-stream conservation practices could be implemented with expected improvement in the fish IBIs. The DNR has also assessed the water quality of many streams within the county, focusing on primary water quality pollutants like total phosphorus and suspended solids (turbidity). In general, Buffalo County has relatively high in-stream phosphorus conditions that can often exceed the new, 2010 state standards of 0.075 mg/l (75 ug/l). In portions of the county where streams have high phosphorus concentration like the Lower Buffalo watershed, nutrient management planning should be promoted as a way to minimize additional input of phosphorus to Wisconsin waters." (Helsel)*

303d Streams – TMDL. Buffalo County currently has (13) thirteen streams on the Wisconsin's 303(d) Impaired Waters List: Bear Creek, Bohris Valley Creek, Botana Valley Creek, Buffalo River, Harvey Creek, Little Bear Creek, Little Waumandee Creek, Swinns Valley Creek, Trempealeau River, Waumandee Creek, Weiland Valley Creek, Wolf Valley Creek, and Yeager Valley Creek

Section 330(d) of the federal Clean Water Act requires states to develop a list of impaired waters (303(d) list"). A water is considered impaired if a) the current water quality does not meet the numeric or narrative criteria in a water quality standard or b) the designated use that is described in Wisconsin Administrative Code is not achieved. A documented methodology describes the approach used to list waters as impaired. The 303(d) Impaired Waters List is updated every two years, see map page 65.

Wisconsin is required to develop TMDLs, Total Maximum Daily Loads, for water on the 303(d) list. A TMDL is a quantitative analysis of the amount of a particular pollutant or load a stream or lake can allow before exceeding water quality standards. A TMDL can be used to implement water quality standards.

TMDLs have been created for the 13 streams on the 303(d) list in Buffalo County. TMDL for sediment addresses sedimentation and degraded habitat impairments conditions in the upper 7 miles of Eagle Creek, and the entire length of each of the other

6 streams. All of the streams currently support a warm water forage fishery (WWFF) with potential to support a coldwater fishery (COLD III), with exception of Eagle Creek, which has potential to support a coldwater (COLD II) sport fishery.

Buffalo County Impaired Waters – 2020

Official Name (Click for Details)	Local Name (Click for Map)	Start Mile	End Mile	Water Type	County	Pollutant	Impairment	Status
Harvey Creek	Harvey Creek	7.09	10.68	River	Buffalo, Pepin	Unknown Pollutant	NA	Pollutant Removed - 2020
Unnamed	Botana Valley Creek	0.00	6.16	River	Buffalo	Unknown Pollutant	Degraded Biological Community	303d Listed
Harvey Creek	Harvey Creek	5.64	7.09	River	Buffalo	Unknown Pollutant	Degraded Biological Community	303d Listed
Unnamed	Swinns Valley Creek	0.00	8.49	River	Buffalo	Total Phosphorus	High Phosphorus Levels	303d Listed
Lake Pepin	Lake Pepin			Lake	Buffalo, Pepin, Pierce	Total Phosphorus	High Phosphorus Levels	303d Listed
Harvey Creek	Harvey Creek	7.09	10.68	River	Buffalo, Pepin	Total Phosphorus	High Phosphorus Levels	303d Listed
Buffalo River	Buffalo River	29.82	42.36	River	Buffalo, Trempealeau	Total Phosphorus	Degraded Biological Community, High Phosphorus Levels	303d Listed
Unnamed	Bohris Valley Creek	0.00	5.00	River	Buffalo	Total Phosphorus	Impairment Unknown	303d Listed
Harvey Creek	Harvey Creek	0.00	3.28	River	Buffalo	Total Phosphorus	High Phosphorus Levels	303d Listed
Little Waumandee Creek	Little Waumandee Creek	0.00	11.00	River	Buffalo	Total Phosphorus	Impairment Unknown	303d Listed
Waumandee Creek	Waumandee Creek	0.00	12.38	River	Buffalo	Total Phosphorus	High Phosphorus Levels	303d Listed
Trempealeau River	Trempealeau River	0.00	31.28	River	Buffalo, Trempealeau	Total Phosphorus	High Phosphorus Levels	303d Listed
Bear Creek	Bear Creek	7.50	10.00	River	Buffalo, Pepin	Total Phosphorus	Impairment Unknown	303d Listed
Little Bear Creek	Little Bear Creek	0.00	4.35	River	Buffalo	Total Phosphorus	Impairment Unknown	303d Listed

Official Name (Click for Details)	Local Name (Click for Map)	Start Mile	End Mile	Water Type	County	Pollutant	Impairment	Status
Mississippi River	Mississippi (Reach 2) Buffalo-Whitewater - Chippewa River to LD 6 (lower Pool 4 to Pool 6)	714.20	763.40	River	Buffalo, La Crosse, Pepin, Trempealeau	Total Phosphorus	Impairment Unknown	303d Listed
Buffalo River	Buffalo River	0.00	29.82	River	Buffalo	Total Phosphorus	Degraded Biological Community, High Phosphorus Levels	303d Listed
Bear Creek	Bear Creek	10.00	16.63	River	Buffalo	Total Phosphorus	Impairment Unknown	303d Listed
Eagle Creek	Eagle Creek	9.09	17.56	River	Buffalo	Sediment/Total Suspended Solids	NA	Water Delisted -2012
Unnamed	Jahns Valley Creek	0.00	7.71	River	Buffalo	Sediment/Total Suspended Solids	Degraded Habitat	TMDL Approved
Unnamed	Irish Valley Creek	0.00	7.89	River	Buffalo	Sediment/Total Suspended Solids	Degraded Habitat	TMDL Approved
Unnamed	Cochrane Ditch (Rose Valley Cr)	6.50	10.06	River	Buffalo	Sediment/Total Suspended Solids	Degraded Habitat	TMDL Approved
Unnamed	Joos Valley Creek	0.00	7.44	River	Buffalo	Sediment/Total Suspended Solids	NA	Water Delisted -2012
Unnamed	Yeager Valley Creek	0.00	4.43	River	Buffalo	Sediment/Total Suspended Solids	Degraded Habitat	303d Listed
Unnamed	Wolf Valley Creek	0.00	2.70	River	Buffalo	Sediment/Total Suspended Solids	Degraded Habitat	303d Listed
Little Bear Creek	Little Bear Creek	0.00	4.35	River	Buffalo	Sediment/Total Suspended Solids	NA	Water Delisted - 2002
Unnamed	Weiland Valley Creek	0.00	3.22	River	Buffalo	Sediment/Total Suspended Solids	Elevated Water Temperature	TMDL Approved
Unnamed	Buell Valley Creek	0.00	2.32	River	Buffalo	Sediment/Total Suspended Solids	Degraded Habitat	TMDL Approved

Official Name (Click for Details)	Local Name (Click for Map)	Start Mile	End Mile	Water Type	County	Pollutant	Impairment	Status
Unnamed	Cochrane Ditch (Rose Valley Cr)	0.00	6.50	River	Buffalo	Sediment/Total Suspended Solids	Degraded Habitat	TMDL Approved
Unnamed	Swinns Valley Creek	0.00	8.49	River	Buffalo	Sediment/Total Suspended Solids	Degraded Habitat	TMDL Approved
Mississippi River	Mississippi (Reach 2) Buffalo-Whitewater - Chippewa River to LD 6 (lower Pool 4 to Pool 6)	714.20	763.40	River	Buffalo, La Crosse, Pepin, Trempealeau	PFOS	PFOS Contaminated Fish Tissue	303d Listed
Mississippi River	Mississippi (Reach 2) Buffalo-Whitewater - Chippewa River to LD 6 (lower Pool 4 to Pool 6)	714.20	763.40	River	Buffalo, La Crosse, Pepin, Trempealeau	PCBs	Impairment Unknown, PCBs Contaminated Fish Tissue	303d Listed
Chippewa River	Chippewa River	0.00	20.73	River	Buffalo, Pepin	PCBs	PCBs Contaminated Fish Tissue	303d Listed
Trempealeau River	Trempealeau River	0.00	31.28	River	Buffalo, Trempealeau	Mercury	Mercury Contaminated Fish Tissue	303d Listed
Mississippi River	Mississippi (Reach 2) Buffalo-Whitewater - Chippewa River to LD 6 (lower Pool 4 to Pool 6)	714.20	763.40	River	Buffalo, La Crosse, Pepin, Trempealeau	Mercury	Impairment Unknown	303d Listed
Chippewa River	Chippewa River	0.00	20.73	River	Buffalo, Pepin	Mercury	NA	Pollutant Removed - 20008

Source: DNR Impaired Waters Search Tool - https://dnr.wi.gov/water/impairedSearch.aspx

Sediment TMDL for Eagle Creek and Joos Valley Creek report states that both the Eagle Creek and Joos Valley Creek are severely limited by excessive sediment load, elevated water temperatures and habitat unsuitable to support a cold-water fishery. The degraded habitat in both streams can be characterized as stream banks trampled by cattle, little overhanging vegetation, and loose sediment over sandy, unstable substrate. As a result, much of the length of the streams is wide and shallow; not the narrow and deep cross-section characteristic of a healthy coldwater stream in the driftless area of the state. Elevated water temperatures will be indirectly addressed by reducing sedimentation and improving overall stream habitat conditions.

The extensive sedimentation occurs year-round. Undoubtedly, the amount of sediment reaches Eagle Creek and Joos Valley Creek through major rainfall and snowmelt runoff events through the year. However, most of the sediment enters during spring runoff and intense summer rainstorms. Considerable sediment also enters the stream from eroding stream banks during runoff events. The best management practices to achieve the load allocation are selected and designed to function for 10-year or 25-year, 24-hour design storms, providing substantial control for the major rainfall events.

Preliminary implementation results in the headwaters of Eagle Creek show early stages of the restoration of the brook trout fishery, including natural reproduction, from limiting cattle access to the stream and stabilizing trampled and eroding streambanks. This is due in part of the significant reduction of cattle numbers in the Eagle Creek and Joos Valley Creek Sub-watersheds.

TMDLs for Sediment Impaired Streams in the Waumandee Creek Watershed report (which is the balance of the 303(d) streams in Buffalo County (except Swinns Valley Creek, {where there is no TMDL report}), also states that these streams are severely limited by excessive sediment load, elevated water temperatures and habitat unsuitable to support a coldwater fishery. The degraded habitat in both streams can be characterized as stream banks trampled by cattle, little overhanging vegetation, and loose sediment over sandy, unstable substrate.

The excessive sedimentation is a year-round situation. There is no seasonal variation in the sedimentation to these streams. Sediment is a “conservative” pollutant and does not degrade over time or during different critical periods of the year. Undoubtedly, the amount of sediment reaching the streams through major rainfall and snowmelt runoff events varies throughout the year. However, most of the sediment enters during the spring runoff and intense summer rainstorms. Considerable sediment also enters the streams from eroding streambanks during runoff events. The best management practices to achieve the load allocation are selected and designed to function for 10-year or 25-year, 24-hour design storms, providing substantial control for the major rainfall events.

Monitoring of the streams in this TMDL report since the 1998 listing has shown signs of habitat improvement and may be obtaining its potential use as Class III trout fisheries. The following table provides available data to show an increase in fish counts following completion of conservation practices completed during the Waumandee Creek Priority Watershed Project.

Subwatershed		**Brook Trout**	
		1989	**2001**
Buell Valley Creek		0	27
Irish Valley Creek			
	County RD E (Bork Property	0	6*
	County RD E (upstream of bridge)	0	0
	Private Drive	0	na
	Private Drive Symitcek property)	0	52
Jahns Valley Creek		7 brown trout out of 25 fish total	
Weiland Valley Creek (above Hayes Valley Road)		0	87**
Weiland Valley Creek (below Hayes Valley Road)			0***

* Most likely stocked
**suggests the stream currently supports a Cold II fishery
***is impacted by cattle pasturing, bank erosion and feedlot runoff. Suggests the entire stream has potential to support a Cold II fishery if nonpoint sources are controlled. This is the site of several conservation practices that have been installed over the last (3) three years that has brought this farm up to the state standards.

Delisted Waters in Wisconsin. When a water has been restored so that Water Quality standards are now met, the water is removed from the state's list of Impaired Waters. Each water has its own story – of degradation, discovery, restoration, monitoring and removal from the list.

See the Wisconsin DNR Web site for the complete TMDL reports for 303(d) streams in Buffalo County.

Wildlife

Buffalo County hosts an abundant array of wildlife species. Large woodlands host the whitetail deer, for which Buffalo County is well known. These woodlands also host several game species such as wild turkeys, ruffed grouse, and woodcock. Varying habitats from bluff prairies to valley floors provide a very diverse set of habitats, containing habitat specialists and generalists alike.

Some habitats are shrinking and need protection. When the habitat disappears, so does the habitat specialists that utilize it. Bluff prairies and oak savannahs are examples of habitats that are being severely threatened by brush and exotic invasive species encroachment. A high level of attention must be paid to shrinking, degrading, and disappearing habitats into the future to let all wildlife that use it thrive into the future. Woodlands also need attention because without maintenance, they too will shift into an undesirable state, leading to a maple cohort and a reduction of mast producing trees such as oak, which are vital to wildlife.

Soils, Topography, and Drainage

Soils of Buffalo County

The soil survey currently being used in Buffalo County was published in 1962. A digital form of the 1962 Buffalo County Soil Survey is available through Web Soil Survey. Web Soil Survey (WSS) provides soil data and information produced by the National Cooperative Soil Survey. It is operated by the USDA Natural Resources Conservation Service (NRCS) and provides access to the largest natural resource information system in the world. NRCS has soil maps and data available online for more than 95 percent of the nation's counties and anticipates having 100 percent in the near future. The site is updated and maintained online as the single authoritative source of soil survey information.

The 1962 soil survey showed eight different general soil associations of the county. The map on page 78 of this plan shows the soil associations of the county. These soil associations are as follows:

1. Silty soils of the rolling uplands and steep stony and rocky land: Dubuque, Fayette, steep stony and rocky land.
2. Loamy soils of the rolling to hilly sandstone uplands: Gale, Hixton
3. Sandy soils of the rolling to hilly sandstone uplands: Boone, Hixton
4. Sandy soils of the stream terraces: Sparta, Plainfield
5. Silty soils of stream terraces: Bertrand, Richwood
6. Loamy terrace soils underlain by sand on stream terraces: Meridian, Tell
7. Wet organic and mineral soils of bottomlands: Peat and Muck, Ettrick, Wallkill
8. Soils of overflow bottom lands: Loamy, alluvial, Marsh.

Fayette-Dubuque Association

As the largest and most uniform association in the county, the principal upland soils are Dubuque and Fayette. Down soils are also extensive. These silt-loam soils are underlain by dolomitic limestone or materials weathered from limestone and were formed under forest (Fayette and Dubuque) or prairie (Downs).

This association has the largest acreage of soils under cultivation and in pasture or trees. Although highly productive, these soils are susceptible to water erosion unless managed properly. This association is 35.6% of the soil in the county.

Gale-Hixton Association

Found mainly in the northeastern part of the county, this association consists of rolling and hilly soils underlain by sandstone. Both are forest soils; the Gale series formed in loess over sandstone, while the Hixton soils formed from materials weathered form sandstone.

The soils of this association do not have the moisture hold capacity or productivity of the Fayette-Dubuque soils and are less erosive. This association accounts for only 8.5% of the soil in the county.

Boone-Hixton Association

This association is found mainly on the sandstone uplands of northern Buffalo County and is formed of materials weathered form sandstone. The narrow stream bottoms within the association are alluvial lands, which are too wet or subject to frequent flooding for cultivation.

These sandy soils are low in moisture-holding capacity, low in fertility, and are subject to both wind and water erosion.

Sparta-Plainfield Association

The soils in this association are nearly level to rolling soils formed in sand that were stream transported. Most of the soils are on the stream terraces throughout the county. Although the terraces in this association are not as high above the floodplain as other stream terraces in the county, they have rather steep, well-defined escarpments. Soils of this association are generally droughty, low in productivity, and subject to severe wind erosion. Soils on escarpments are subject to sever gullying if not protected.

Bertrand-Richwood Association

This association consists of deep, silty soils, mainly on nearly level to sloping benches or terraces along streams. The soils range from well to poorly drained.

Most of the soils in this association are highly productive, occur in fairly large areas and generally have mild relief. Some soils on bottom lands require drainage or protection from flooding. Soils with the steepest slopes are subject to water erosion or severe gullying.

Meridian-Tell Association

Soils of this association consist mainly of nearly level to sloping, loamy soils on stream terraces, chiefly along the Buffalo River. They vary from moderately to well drained.

These soils are subject to water erosion, gullying and slumping, and as a result, a large amount of sediment has been deposited in the valleys and terraces below.

Peat and Muck-Ettrick-Wallkill Association

These soils occur on flats or in depressions along streams and are poorly drained. While they are subject to flooding, they are highly productive if drained and well managed.

Topography

Buffalo County is located within the unglaciated, Driftless Area of Western Wisconsin. It has a varied topography with high ridges, long narrow valleys, and steep slopes. Bluffs rise above the river bottoms by 500 feet in some areas. The land area of the county is 734.2 square miles, or about 469,881 acres.

Exotic/Invasive Species

Invasive species are non-native plants, animals, and pathogens whose introductions are likely to cause economic or environmental harm or harm to human health. Invasive species can alter ecological relationships among native species and can affect ecosystem function and structure. A majority of aquatic invasive monitoring in Buffalo

County has been done by the Beaver Creek Reserve with assistance from concerned citizens. Buffalo County recognizes that invasive species are a threat and has dedicated staff time and resources to address this concern. Buffalo County will continue to collaborate with partners, such as River Alliance of Wisconsin, La Crosse Area Aquatic Species Partnership, Beaver Creek Reserve, and USFWS into the future for addressing invasive species concerns. A strategic plan was written by the River Alliance of Wisconsin that covers the Buffalo, Trempealeau, and La Crosse areas for the Mississippi River and major tributaries and can be found here: Aquatic Invasive Species - River Alliance of WI (wisconsinrivers.org)

The following is a list of invasives that are having a significant impact on county habitats
Garlic Mustard
Common Buckthorn
Japanese Barbery
Honeysuckle
Purple Loosestrife
Eurasian Water Milfoil
Curley Leaf Pondweed
Black Locust
Spotted Knapweed
Crown vetch
Wild parsnip
Emerald Ash Borer
Spongy Moth
Bighead Carp
Rusty Crayfish
Zebra Muscle
Chinese Mystery Snail

Climate and Precipitation

While the causes of climate change continue to be debated, there is evidence that our climate is changing. Acknowledging the host of concerns related to increasing temperatures and precipitation may have more noticeable impacts locally. According to the US Environmental Protection Agency, in the Midwest US, temperatures have risen 2 degrees since the early 1900s. Annual rainfall average is increasing, with the last decade having a 3.6% increase over the prior decade. Projected change in greater than 2-inch rain events will increase between 3 - 4 days per decade, meaning that large storms become more frequent, with heavier precipitation. The impacts vary widely from increased flooding, increased soil erosion, and stormwater runoff, as well as increased concern for groundwater contamination and drinking water supplies. Increases in precipitation may also increase the recharge of groundwater which could result in groundwater flooding or a rising water table. A rising water table can result in groundwater contamination. Climate change is and will continue to have an impact on

our public health, groundwater, surface water, and air quality. Current land uses and potential land use changes need to be considered for their potential impact to a changing climate as well as the management strategies to manage the effects of a changing climate. Climate adaptability needs to be at the forefront in the lens of conservation. Changing climates means a changing approach to how we use land and conserve its well-being. Alternate approaches that better hold up to climate change need to be adopted to maintain profitability and sustainability into the future.

Water Resource Assessments

Watershed Plans/Discussions

Buffalo County Land Conservation Department is initiating new processes to evaluate and analyze individual watersheds. GIS/asset management and analysis will hold the information and organize all data into a user friendly and more streamlined model for future use. Collaboration with the GIS department will be critical for future endeavors.

Buffalo County is located in two separate DNR Water Basins. The Bear Creek Watershed in the north-western part of Buffalo County is located in the Lower Chippewa River Basin and the balance of the county is located in the Black-Buffalo-Trempealeau Basin. There are six major watersheds in the county. The following is a description of the main watersheds in Buffalo County. See map page 62.

Bear Creek Watershed. The Bear Creek Watershed is a tremendously agricultural area combined with great natural and considerable potential for further development of wildlife habitat. The Bear Creek Watershed has steep topography with limestone-based bedrock. This formation is subject to groundwater contamination.

Several streams and the Chippewa River are predominant features in the watershed. There are 44miles of streams and 2 lakes (21.3 acres). Ground water is the sole sources of drinking water in the watershed. The Class II trout fishery is threatened by sedimentation, nutrient loading, and increased water temperatures. Periodic flooding has an effect on in-stream habitat.

57% of the watershed is forested acres. The forest resources have statewide economic importance as a source of wood products and as a foundation for the recreation industry of the area. There are 9,742 acres under state DNR control (Tiffany Wildlife Area). An additional 4,600 acres are under control of the US Fish and Wildlife Service.

The Bear Creek Watershed is a very popular recreation area. The Tiffany Wildlife Area borders the entire northwest side of the watershed along the Chippewa River. There are 4.4 miles of Class III trout streams and 4.0 miles of Class II trout streams. This area is extensively used for small and large game hunting, bird watching, fishing, hiking camping and other outdoor activities. It is a very popular area for visitors from outside the county and state for numerous outdoor activities.

Lower Buffalo River Watershed. The Lower Buffalo River Watershed is located in the central part of Buffalo County and contains over 270 miles of land that drains directly into the Mississippi River. There are 29 named and 43 unnamed streams in Buffalo County, which make up a total of 250 miles of streams. The Lower Buffalo River Watershed is divided into (9) nine sub-watersheds.

Because of the diversion during the glacial period, this watershed now flows through two distinctly different geographic areas. The upper part of the watershed is characterized by broad valleys and narrow, short-crested ridges. The lower part, in contrast, is characterized by deep valleys. The largest source of pollution to the streams, where information is available in this watershed is nonpoint sources of pollution. Other sources include streambank pasturing and streambank erosion. The impact that this pollution has on the streams in this watershed is in-stream sedimentation which is very typical of all streams in Buffalo County.

The Buffalo River being the largest waterbody in this watershed which has water capable of supporting a community of warm water sport fish or serving as a spawning area for warm water sport fish. There are also aquatic endangered, threatened, or special concern species found in the Buffalo River. There are no waterbodies on the DNR's 303(d) list of impaired waters that are located in the Lower Buffalo River Watershed. The nonpoint sources ranking for the Buffalo River is high.

Upper Buffalo River Watershed. Only a small part of the Upper Buffalo River Watershed is located in Buffalo County. The watershed contains a total of 194 square miles and is located in the counties of Buffalo, Eau Claire, Jackson, and the largest part of the watershed is in Trempealeau County. There are 16 named and 52 unnamed streams in this watershed and only 2 of the named streams are located in Buffalo County with one of them being the Buffalo River, which stretches the whole length of this watershed and into the Lower Buffalo River Watershed.

The Buffalo River in the Upper Buffalo River Watershed suffers from non-point source pollution which causes in-stream sedimentation. Implementation of management practices could enhance the overall ecological health of the biological community. The Buffalo River is not on Wisconsin's 303(d) list of impaired water and has an overall medium non-point source ranking.

Session Valley Creek is the only other creek in the Upper Buffalo River Watershed that is located in Buffalo County. Session Valley Creek is not on Wisconsin's 303(d) list of impaired water. This creek has not been assessed and there is no individual nonpoint source rank for Session Valley Creek.

Waumandee Creek Watershed. The Waumandee Creek Watershed drains 204 square miles of land in Buffalo County and is characterized by steep topography, narrow valleys, and numerous streams. Surface water drains to the Mississippi River by direct runoff or via Waumandee Creek and its tributaries. The Waumandee Creek Watershed is divided into 13 sub-watersheds.

Land use in the watershed is mainly agriculture with a small population. Most of the population lies on farmsteads outside the incorporated areas. There is a trend of land use change that has been occurring in this watershed and other parts of the county where large tracts are being split into many small parcels for single family housing. This change in the rural landscape can potentially have a negative effect on natural resources.

Streams throughout the watershed suffer from moderate to severe streambank erosion and extensive channelization has occurred in some portions. Streams that were at one time cold, clear, and lined with gravel riffles (conditions favorable for trout reproduction) have become blanketed with deposits of silt, sand and much. Elevated streambeds and increased runoff have resulted in downstream flooding and the loss of stream-side lands. It is suspected that the loss of streambank cover and stream-side vegetation have raised in-stream temperatures and have caused dissolved oxygen levels to fall.

The Waumandee Creek Watershed was selected by the Wisconsin DNR as a Priority Watershed Project in 1990 to receive funds for administration and cost share for individual landowners in the watershed to construct best management practices to reduce soil erosion and improve water quality. The watershed project ended with the last of practice construction in 2001. Buffalo County signed 247 cost share agreements and provided $3.7 25 million dollars to private landowners during the project. Eight (8) streams in the Waumandee Creek Watershed are identified as 303(d) impaired waters.

Middle Trempealeau River. The Middle Trempealeau River Watershed is a 220 square mile drainage area located in the central portion of Trempealeau County, with only 16% or 36 square miles of this watershed located in the eastern part of Buffalo County. There are 16 sub-watersheds that drain surface waters to the Trempealeau River, with only four of those in Buffalo County.

The watershed is located in a geographic area of narrow, steeply sided, wooded ridges and rolling valleys. The steep topography of the area is characterized with wooded slope and agricultural croplands in the valleys. Sixty three percent (63%) of the area is in agriculture land use, 23% is woodland and the remainder is developed wetlands. Most of the streams are considered cold water streams and some contain populations of trout. Sixty-two percent (62%) of the residents live in the four municipalities, which are all located in Trempealeau County and only 38% live in the townships. Trends in population indicate no significant growth has occurred in these areas and in some cases, there is a slight decline in overall populations for rural agricultural areas in Wisconsin.

Sources of pollution to the streams in the Middle Trempealeau River Watershed are primarily from agricultural land and the major sources of water pollution are upland, streambank and gully erosion and barnyard runoff.

The Middle Trempealeau River Watershed was selected by the Wisconsin DNR as a Priority Watershed Project in 1992 to receive funding for administration and cost share funds for individual landowners in the watershed to construct best management

practices to reduce soil erosion and improve water quality. The watershed project ended in 2004, with the last conservation practice construction in 2005. Thirty (30) cost share agreements were signed, and approximately $550,000.00 dollars were spent to complete conservation practice construction during the project.

There is (1) one 303(d) stream (Swinns Valley Creek) located in Buffalo County that is part of the Middle Trempealeau River Watershed. There currently is no TMDL report for this creek, however the source of pollution to this stream is from cropland erosion and it impacts sedimentation to the stream and in-stream habitat. There are an additional 2 streams located in Trempealeau County in the Middle Trempealeau River Watershed that are on the 303(d) list of Wisconsin Impaired Water, Tappen Coulee Creek and Welch Coulee Creek.

Lower Trempealeau River Watershed. The Lower Trempealeau River Watershed is located in the southernmost part of Buffalo County, with a total of 177 square miles and most of that located in Trempealeau County.

The Lower Trempealeau River Watershed has 11 named and 46 unnamed streams, 3 of which are in Buffalo County, Doelle Creek, Heuer Valley Creek, and Keller Creek. Very little data is available for these streams. Doelle Creek is 4 miles long and has the potential for some natural reproduction. It currently has no natural reproduction and requires annual stocking of legal-size fish to provide sport fishing. Non-point source pollution is Doelle Creek's major source of pollution from in-stream sedimentation and scouring. This creek is not listed on the DNRs impaired waters list and has not received a priority ranking for individual nonpoint source pollution.

Heuer and Keller Creek are also on the DNRs 303(d) list of impaired waters, and they also have not received a priority ranking for individual nonpoint source pollution. No additional information is available for these streams.

Lakes

There are twenty-two named and unnamed lakes in the county, most of which are impoundments, and all small and shallow totaling 358 acres. Of the named lakes, Mirror Lake in Mondovi, is the largest with 44 acres. One-half of the lakes have maximum depths of less than five feet.

Streams

There are 8,390 acres of water, which include 73 miles of trout streams in the county. All or part of 21 streams are classified as trout streams and are stocked with brook or brown trout. Trout habitat in most Buffalo County streams is marginal due to silt or sand covered bottoms. Some natural reproduction occurs, but trout populations are largely maintained by stocking adult-sized fish. There are no Class I streams in Buffalo County. The map on page 64 of this plan shows the water bodies in Buffalo County.

Groundwater

Buffalo County residents rely entirely on groundwater for drinking water. A map of groundwater susceptibility can be seen on page 69. The rural population depends on shallower, less protected aquifers than the urban population served by public water supplies. Most groundwater in the state is consumed by residential users for such needs as drinking water, cleaning, and sanitary purposes. Industry is the next largest groundwater consumer, followed by irrigation.

Water distribution is governed by the hydrologic or water cycle, which is kept in motion by solar energy and gravity. As rain falls to earth, some flows downhill as runoff to water bodies. Some evaporates; plants take up some. The rest trickles down through surface soil and rock. This water becomes groundwater. Groundwater is discharged into surface water bodies such as wetlands, lakes, and streams – the low places where groundwater meets the land surface. When there is development, large areas are paved over. This decreases in the area within a watershed where rain can infiltrate to the groundwater. The result is increased over land flow to surface water bodies. Flooding, increased sedimentation of streambeds, increased stream temperature and degradation of steam habitat will result. (State of the Lower Chippewa River Basin, 2001)

The potential for groundwater contamination is determined by land use practices applied to an area in conjunction with the physical setting. The “physical setting” of an area includes, but is not limited to, soil, type and thickness, presence of glacial sediments such as sand and gravel, depth to bedrock, depth to groundwater, and topography. (State of the Lower Chippewa River Basin, 2001)

All watersheds in the state were ranked for groundwater contamination by the Drinking and Groundwater Section of the WDNR in 2000. A score of 20 or more is considered medium. At 30 or greater, the score is considered high for groundwater contamination potential. Watersheds that scored high (above 30) had a large percentage of rural or heavy urban land use coverage.

Groundwater Ranking:	**Score**
Watershed	
Bear Creek	30.49
Lower Buffalo River	32.56
Waumandee Creek	27.96
Middle Trempealeau River	46.82
Lower Trempealeau	23.69

Conservation Structures

Overall

PL-566 Structures (Currently inspect 12)

The Watershed Protection and Flood Prevention Program is commonly known as the PL-566 Watershed Program. This program provides technical and assistance to state and local governments and tribes through the USDA – Natural Resource Conservation Service (NRCS) to reduce flooding, control gully erosion, create fish and wildlife habitat, develop recreation and rural water supplies, and better manage land in the watershed.

There are 12 PL-566 structures in Buffalo County. Six (6) of them are in the Alma-Mill Creek Watershed, two (2) in Garden Valley. Page 76 shows the location of these structures.

Following construction of these structures Operation and Maintenance became the responsibility of Buffalo County and the Land Conservation Department in particular. Operation and maintenance, turned over from NRCS, requires future funding and anticipated workload. These structures require an annual inspection by the Buffalo County LCD and subsequent repairs and/or maintenance. They also require a professional engineer inspection every 10 years as required by the Wisconsin Department of Natural Resources. The structures are to be maintained as sod grass, so they need to be periodically mowed and all weeds and woody vegetation need to be controlled as seen fit following the annual inspection by the LCD.

CCC Structures

The Civilian Conservation Corps (1933-1942) was established to relieve unemployment during the Great Depression by the U.S. government. They were tasked with building conservation projects and did several in Buffalo County. There are approximately 140 flood control structures built throughout the county, with ownership falling to the landowner. The Buffalo County LCD cost shares with landowners for repairs of facilities.

Farmland Preservation Program & Conservation

Buffalo County has adopted a certified farmland preservation zoning ordinance which covers portions of the towns of Alma, Belvidere, Cross, Dover, Glencoe, Modena, Mondovi, Nelson, and Naples. Through this ordinance, landowners with land zoned in the Agricultural/Natural Resource-40 (ANR-40) Zoning district may be eligible to participate in the farmland preservation program. Landowners that participate in the program in an area zoned for farmland preservation may be eligible for a $7.50/acre tax credit. The Towns of Buffalo, Canton, Gilmanton, Lincoln, Maxville, and Milton, Montana and Waumandee. These towns may pursue farmland preservation zoning certification at a later date through general zoning (county or town) if they wish to participate in the program through zoning at a later date. The towns of Montana and Waumandee opted out the revised county Zoning Ordinance in 2018. Landowners in areas planned for farmland preservation can apply to become an Agriculture Enterprise Area which then will allow farmers to enroll into a farmland preservation agreement. An AEA can be an alternative or compliment to lands zoned for farmland preservation. The Town of Montana is an example of a Township that petitioned for an Agricultural Enterprise Area- the Montana Society for Responsible Land Use AEA was designated on January 1, 2022. Landowners in the AEA boundary may apply for farmland preservation agreements. Landowners that participate in the program through lands covered by a farmland preservation agreement in the AEA may be eligible to claim a $5.00/acre tax

credit. Landowners would need to meet the same requirements. The following Tax Credits rates are listed below.

•$5.00 per acre for landowners with a farmland preservation agreement signed after July 1, 2009, and located in an agricultural enterprise area, or for landowners who have modified an agreement signed before July 1, 2009.

•$7.50 per acre for landowners in an area zoned for farmland preservation.

•$10.00 per acre for landowners in an area zoned for farmland preservation and in an agricultural enterprise area, with a farmland preservation agreement signed after July 1, 2009.
Buffalo County currently has 6,383 acres enrolled in Farmland Preservation.

Montana Society for Responsible Land Use

The newly passed AEA includes the majority of the Town of Montana. The Town is very rural and depends almost exclusively on agriculture for economic activity. A majority of the non-farm businesses are associated with agriculture. The Town is located on the eastern edge of Buffalo County and is part of the Driftless area of Wisconsin. The farmland is very productive, but a high percentage of the land is highly erodible. There is increasing interest throughout the Town to improve the quality of woodland as woodland makes up over 50% of the land area.

People in the Town of Montana are a true community that will study issues and alternatives, thus the name Montana Society for Responsible Land Use. A society is a group of people who study and debate new ways of doing things together to make their community better. This describes the people within the Town of Montana perfectly.

The Town was settled by primarily German and Swiss farmers who immigrated to the area. The population of the Town in the 2010 Census was 206 people, changing very little over time, and predicted to change very little in the future. It is possible that the population could increase as several large employers are located close to the Town. Ashley Furniture and Pilgrim's Pride Poultry are both within 10 miles of the Town and employ thousands of people. Low-cost land for building could encourage people to construct homes in the Town.

The Montana Society for Responsible Land Use was approved by the Buffalo County Board and DATCP in October of 2021. Landowners within the Township of Montana are now able to sign up for a Farmland Preservation agreement. The next step would be the promotion of the AEA to the Landowners with the Township of Montana.

Non-Metallic Mining Ordinance

Buffalo County recognizes the importance and need for non-metallic mining operations and recognizes the importance of proper reclamation to those sites once mining has

ceased. The ordinance is administered by the Zoning Department in Buffalo County. A map of mines is located on page 68.

Manure Storage Ordinance

Buffalo County recognizes the need to regulate the location, design, construction, alteration, closure, and use of manure storage facilities. Buffalo County approved their initial Manure Storage Ordinance in March 1994. In a response to the DNR Runoff rules/NR 151 performance standards and prohibitions, passed in October of 2002, the Land Conservation Department and Land Conservation Committee updated the ordinance to implement those rules/standards through the ordinance. The revision and update to the Buffalo County Manure Storage Ordinance was approved by resolution by the Buffalo County Board of Supervisors in August 2007 and is administered by the Buffalo County Land Conservation Department. Updates to the ordinance include the agricultural performance standards and prohibitions as spelled out in ATCP 50. It also included any updates and/or revisions to Natural Resource Conservation Service (NRCS) standards and specifications that are referenced in the ordinance. The purpose of the Buffalo County Manure Storage Ordinance is to regulate the location, design, construction, installation, alteration, closure and use of manure storage facilities and the land application of wastes from those facilities. NR 151 can only be enforced in this ordinance as it applies to manure storage facilities and land application of manure nutrients according to a nutrient management plan.

Buffalo County realizes the ordinance needs a new version. The County will work with the public and all partners to update the ordinance in the next three years to capture new rules and regulations, leading to better water quality and a better way to deal with resource concerns.

Goals, Objectives, Actions

Plan Goals

Three main goals were identified as the focus of this ten year land and water resource management plan. Those were to address soil erosion, nutrient management/manure management, and wildlife and fish habitat improvement.

Objective – Reduce Soil Erosion

- **Reduce Gully Erosion**

  o Survey and Design Grade Stabilization Structures on a voluntary basis where cost share funds are provided

o Survey and Design Grade Stabilization Structures on a voluntary basis where no cost share funds are provided

o Identify high priority/critical sites for compliance

o Complete farm visits with landowners to correct priority gully erosion sites using ATCP 50 conservation practices; consult with DNR staff as necessary

- **Reduce Sheet & Rill and Ephemeral Erosion**

  o Complete Conservation Plans

  o Complete one-on-one farm visits with landowners to correct sheet, rill and gully erosion sites using ATCP 50 conservation practices; consult with DNR staff as necessary

  o Survey and design waterway systems on a voluntary basis with cost share funding

  o Survey and design waterway systems on a voluntary basis with no cost share funding

  o Identify high priority/critical sites for compliance

  o Complete Transect Survey

  o Complete cross-compliance spot checks with NRCS

- **Reduce Streambank Erosion**

  o Survey and design streambank protection practices on a voluntary basis with cost share funding

  o Identify high priority/critical sites for compliance

  o Complete one-on-one farm visits with landowners to correct priority streambank erosion sites using ATCP 50 conservation practices; consult with DNR staff as necessary

Objective – Increase Nutrient and Manure Management Plans

- Manure Spills

  o Provide awareness on the need for liquid manure haulers to complete and keep with their hauling equipment, a “Response Guide for Manure Spills and Run-off.

- Soil Sampling

  o Encourage soil sampling on a regular basis where there is no cost share funds for a formal nutrient management plan

- Manure Storage

o Complete farm visits and work cooperatively with landowner installing manure storage for compliance with the Buffalo County Manure Storage Ordinance and NR 151 standards and prohibitions

- Manure Spreader Calibration

  o Encourage farmers to have their manure spreaders calibrated

- Manure Spreading

  o Promote Nutrient Management Planning by holding farmer training for nutrient management plan writing

  o Encourage landowners to write their own nutrient management plans

  o Provide spreading restriction maps to landowners and explain how helpful they are when using a nutrient management plan

  o Use DATCP funding and collaborate with DATCP or DNR staff to promote and cost share Nutrient Management plans

- Barnyard Runoff

  o Identify high priority/critical barnyard sites for compliance

  o Identify alternatives to solve barnyard runoff

  o Complete one-on-one farm visits with landowners to correct priority barnyards using ATCP 50 conservation practices; consult with DNR staff as necessary

  o Survey and design barnyard runoff control practices on a voluntary basis with or without cost share funding

  o Survey and design roof runoff system on a voluntary basis with no cost share funding

- Survey and design clean water diversions on a voluntary basis with no cost share funding

  o Assist landowners with proper placement of manure stacks for compliance

Objective - Habitat Improvement

Terrestrial

- Improve wildlife habitat across the county by utilizing available data and technology such as precision ag to identify ways to increase the quality habitats. Outreach to landowners and conduct site visits to start conversations about the habitat and farming interface.
- Encourage crop rotation, cover crops, perennial buffer strips, and reduced tillage or no-till.

- Reduced tillage or no-till provide wildlife more food in the fall and winter in the form of crop residue.
- Improve shrinking critical habitats such as bluff prairies and oak savannahs
- Promote perennial grass cover or alternative cropping practices such as hazelnuts or other crops in non-productive field areas
- Encourage landowners to maintain healthy and responsible forest management practices.

Aquatic

- Improve aquatic habitats in streams
- Reduce sediment and nutrients into waters of the state
- Educate landowners on the importance of healthy aquatic environments and how they can help

Priority Farms and Critical Sites

Critical sites and Priority Farms were discussed with the Local Advisory Committee. These sites and farms are those that (not in any specific order):

- Farms in watersheds draining to DNR listed Impaired Water (303(d))
- Farms that have significant manure management problems
- Soil Erosion exceeding “T” (tolerable soil loss)
- Cropping on slopes greater than 12% (and where soil erosion exceeds “T”)
- Barnyard Runoff from feedlot
- Winter spreading on restricted fields (based on the DATCP spreading restriction maps)
- Complaints (anonymous or other)

Significant runoff and manure management problems will be those sites that contribute more than 15 pounds of phosphorus per year from a barnyard or feedlot.
For the priority farm and critical sites, LCD staff will conduct a site visit with the landowner and complete a “Farmstead/Cropping Assessment to determine NR 151 compliance status, which is the same form that is used for site visits on a voluntary basis. This assessment will be discussed with the landowner. Information from this site visit will be documented and shared with the DNR NPS regional coordinator. If a landowner is willing to work with the LCD on a voluntary basis, the LCD will use the “Landowner Commitment Form to Install Conservation Practices” and use the voluntary strategy as described above to address the resource concerns.

Non-Compliance Strategy When a determination has been made that a livestock facility is not in compliance with a livestock performance standards or prohibition or croplands are not in compliance with a cropland performance standard and the landowner is unwilling to cooperate with the LCD voluntarily, the regional runoff coordinator will make a determination of cost share eligibility. If it is determined that the landowner/operator is eligible for cost sharing, a letter will be sent to the landowner by certified mail from the LCD office and coordinated with the Basin Leader or his/her

designee. The letter will include a description of the violation and a determination as to which conservation practice(s) or other corrective measures that are needed to comply with performance standards that are eligible for cost sharing. This letter will include an offer for cost sharing and provide or coordinate the provision for technical assistance. The letter will explain possible consequences if the landowner/operator fails to comply with the provisions of the notice. A compliance period will need to be established between the landowner/operator, LCD staff and coordinated with the regional runoff coordinator as provided in NR151. The procedure for notification or noncompliance when no eligible costs are involved is much the same as when cost share is required, however the compliance provisions in NR151 may be less. The LCD staff intend to secure cost share funds for eligible conservation practices as needed and provide technical assistance for design and implementation of those conservation practices. We will also provide technical assistance in those areas where no cost share is available within the guidelines of service that we can provide to landowners/operators as employees of the county conservation office.

Appeals Process for Landowner/Operator Determinations

Any person aggrieved by a decision of the Buffalo County LCD office may file a written appeal of the decision with the Buffalo County Land Conservation Committee (LCC), P.O. Box 88, Alma, WI 54610, within 30 days of the date of the letter to the landowner/operator of the DNR's decision. The appeal will be heard by the LCC, no later than 60 days of the date of appeal request.

Enforcement

Enforcement of actions associated with NR151 will be coordinated with the DNR regional runoff coordinator. If a landowner/operator refuses technical and/or financial assistance and continues to remain in non-compliance with the state performance standards, the LCD office will forward all compliance information to the Regional Runoff Coordinator. The DNR will provide notice to the landowner/operator and the LCD office prior to initiating enforcement action. Notification is not required if the site is imminent threat to public health or fish or aquatic life pursuant to NR151.09.

Budget

Buffalo County Land Conservation Department identified the reduction of soil erosion as an objective in their plan. Certain conservation practices were identified that will be used in implementation. The DATCP SWRM cost share grant funds, typically fund conservation practices that will reduce soil erosion. The DNR TRM cost share grant program is used to fund barnyard runoff control systems, manure storage facilities and other resource concerns relating to animal waste and manure management. 2010 is the first year that the LCD received cost share funding from DATCP for nutrient management planning.

The LCD office works directly with the NRCS office and when a landowner is looking for cost share funds and contacts the LCD office, we encourage them to apply for funds through the federal EQIP as well.

Budget costs associated with the implementation of the Buffalo County Land and Water Resource Management Plan are broken down into categories and are based on the

individual actions in the annual workplan and where direct costs can be associated with an action. The annual workplan was written based on the equivalent hours for 3-full time staff in the Land Conservation Department office and a minimum of $60,000 of DATCP cost share grant funds and the continuation of the DNR Targeted Runoff Management (TRM) Grant Program.

Work Plan & Implementation Strategy

This plan reflects a strategy for implementation of the NR151 performance standards to assure landowners are in compliance with the state mandated regulations. The following table identifies the performance standards that will need to be implemented and the table on pages 80-81 identifies the best management practices that may be used to achieve compliance.

The Agricultural Performance Standards and Prohibitions are identified as follows:

NR 151 Agricultural Performance Standards

- Control cropland erosion to meet tolerable rates
- Tillage setback from waterbody in agricultural field
- Build, modify, or abandon manure storage facilities to accepted standards
- Divert clean runoff away from livestock and manure storage areas located near streams, rivers, lakes, or areas of susceptible to groundwater
- Apply manure and other fertilizers according to an approved NRCS 590 (2015) nutrient management plan
- Phosphorus index shall average 6 or less on croplands, pastures and winter grazing areas over the accounting period and not exceed 12 in any individual year within the accounting period

- Manure Management Prohibitions
- No overflow of manure storage facilities
- No unconfined manure piles near waterbodies
- No direct runoff from feedlots or stored manure into state waters
- No streambanks or shorelines trampled by livestock where it prevents maintenance of sod or self-sustaining vegetative cover

Voluntary Strategy

Land Conservation Department will work primarily with landowners on a voluntary basis. The LCD staff will respond to daily contacts from landowners seeking technical and cost share assistance. Landowners that contact our office on a voluntary basis will be given priority for site visits and technical assistance. During the site visit, LCD staff will identify the best way to address the resource concerns, which may include the installation of a conservation practice. The “Farmstead/Cropping Assessment Checklist” form will be used to determine the status of compliance with NR 151 performance standards and prohibitions. “Landowner Commitment to Install Conservation Practices” form will be used to determine their eligibility for cost share funding and necessary corrective

measures, including cost estimates. It will also serve as a tool for landowners to tentatively commit funds as the necessary match to a cost share grant. All compliance information will be kept and maintained by the LCD.

Nine Key Elements (9KE) Plans

Buffalo County will work with partners towards developing one or more 9 Key Element watershed-based plans for watersheds over the next five years. This planning will be crucial for identifying priority areas and targeting approaches within a geographic watershed to address agricultural runoff problems and to help meet the goals, objectives of this LW plan.

Annual Work Plans

Annual work plans will be developed to set performance benchmarks and track adoption of conservation practices that help meet this plan's goals and objectives and also implement the NR 151 performance standards and prohibitions. These plans will help guide the focus and direction of the Buffalo County LCD staff and its adherence for implementing state and local regulations to the landscape

Regulations for Plan Implementation

State and Local Regulations

All regulations are referenced above, p.9

Agricultural Performance Standards and Prohibitions Implementation

Use the State Agricultural Performance Standards and Prohibition Laws to Secure Conservation Improvements.

- Increase Farmer Awareness of State Agricultural Performance Standards and Prohibitions; focus on priority farms and critical sites
  - o Complete farm visits on a voluntary basis
  - o Complete farm visits for issues of non-compliance
- Help Farmers Identify Where Compliance Has Been Achieved; focus on priority farms and critical sites
  - o Complete farm visits on a voluntary basis
  - o Complete farm visits for issues of non-compliance
  - o Document compliance in letters to landowners.
  - o Review compliance letters with DNR staff, as necessary
- Work With Priority Farms or Critical Sites That Do Not Meet Compliance
  - o Complete farm visits for issues of non-compliance
  - o Discuss with landowners non-compliance and explain the law so they better understand their responsibilities and opportunities available for compliance
  - o As necessary, collaborate with DNR staff on priority farms and non-compliance letters

Monitoring and Evaluation

Buffalo County will continue to submit annual reporting on all activities. We currently keep track of all activities using Excel, but we are in the process of getting data management in GIS. This will allow geolocation of practices and watershed analysis through technology. With all practices in conservation and non-metallic mining housed in GIS, reporting and responding to changes in conditions will be much easier to adapt to, prepare for, and present to stakeholders.

Using Models (STEPL, SnapPlus, RUSLE2)

Buffalo County will continue to utilize all available models to assist in development of nutrient management plans and measure pollutant reductions from cropland-based conservation practices at the field, farm, or watershed scale.

SnapPlus is a Nutrient Management Planning software program designed for the preparation of nutrient management plans in accordance with Wisconsin's Nutrient Management Standard Code 590. SnapPlus will calculate:

- Crop nutrient (N, P2O5, K2O) recommendations for all fields on a farm taking into account legume N and manure nutrient credits consistent with University of Wisconsin recommendations
- A RUSLE2-based soil loss assessment that will allow producers to determine whether fields that receive fertilizer or manure applications meet tolerable soil loss (T) requirements.
- A rotational Phosphorus Index value for all fields as required for using the P Index for phosphorus management.
- A rotational P balance for using soil test P as the criteria for phosphorus management.

RUSLE2:

- RUSLE2 is used to evaluate potential erosion rates at specific sites as well as guide conservation and erosion control planning. RUSLE2 uses factors that represent the effects of climate (erosivity, precipitation, and temperature), soil erodibility, topography, cover-management, and support practices to compute soil erosion. Conservation planning concepts must be understood and implemented into the RUSLE2 program in order for this program to work effectively.

Spreadsheet Tool for Estimating Pollutant Loads (STEPL)

- Beginning with the CY 2015 TRM and NOD grant awards, grantees have been required to provide modelled pollutant load reduction estimates (phosphorus, nitrogen, and sediment, as applicable) to the DNR as part of their project evaluation strategy in the reimbursement request/final report.

Grantees will have the flexibility to select and use an appropriate model to calculate those load reductions. One of the models that EPA offers, and the DNR is subsequently offering to grantees, is STEPL. Buffalo County will likely partner/consult with WDNR Nonpoint Source staff to complete STEPL modeling.

Tracking and Outcomes

Buffalo County needs a modernization of asset management and record keeping to successfully implement this plan. Accordingly, we will be working with the GIS department on a new system of tying all practices into GIS over the next five years. This will provide real time and geo-referenced data for use in tracking practices, budgets, outcomes, and evaluations of practices. This will be a major effort but will align Buffalo with the newest technology and ability to succeed. Currently, there are struggles with paper copies, spreadsheets, and disorganization. This new effort will streamline all inefficiencies and put us on a clean path to the future. With a small staff, Buffalo County needs to utilize all efficiencies to complete all the work that needs to be completed. The use of tablets instead of paper, drones instead of handheld GPS, and internet capabilities while in the field will be of great assistance for the future plans of the County.

Farmland Preservation and tracking

Farmland Preservation is tracked in MS Access database. Compliance with the program needs to be done every 4 years per landowner, as that is how long soil samples are good for according to the nutrient management plan. After the 4-year timeline, the farm needs to be inspected and have another Certificate of Compliance issued. However, farms can be inspected in shorter time intervals, depending on need.

Information and Education Strategy

Implementation Team/Partners

Buffalo County LCD will collaborate with all partners to implement the plan going forward. Getting everyone together and collaborating on all issues and topics will provide the best outcome into the future. Buffalo County LCD has limited staff so reliance on partners is crucial to getting work done and moving the needle on conservation practices and outcomes.

Information and Education Goals

Buffalo County LCD will utilize technologies such as GIS, databases, and models to assist the public and raise awareness for conservation. But much work is needed to update the entire department into new technology to assist the department and the public going forward. Buffalo County will keep doing outreach and education to landowners and producers to spread the word on conservation and keep progressing the idea of conservation into the minds of the residents. The Buffalo LCD will continue

to work with the area schools on promotion of conservation agriculture. Education is crucial to develop trust and adaptation into new ways of thinking and caring for the land.

Social Media

Buffalo County LCD will continue to use social media platforms such as Facebook and others that are deemed necessary to inform our followers of the latest developments and happenings in the Buffalo County conservation world.

Partners in Management

DATCP, NRCS, DNR, USGS, USFWS, FSA, other County Departments such as zoning, health department, and GIS.

Appendix/Tables

Acronyms

Buffalo County LCD Acronyms and Initials

(Updated February 2020)

AEA – Agricultural Enterprise Area

AIS – Aquatic Invasive Species

ATCP – (WI Administrative Code) Agriculture, Trade and Consumer Protection

BMPs – Best Management Practices

BOD – Board of Directors

CAFO – Concentrated Animal Feeding Operation

CCA – Certified Crop Adviser

CEUs – Continuing Education Units

CRP – Conservation Reserve Program

CREP – Conservation Reserve Enhancement Program

CSP – Conservation Stewardship Program (formerly Conservation Security Program)

DATCP – Department of Agriculture, Trade and Consumer Protection

DC – (USDA-NRCS) District Conservationist

DNR – Department of Natural Resources

EPA – Environmental Protection Agency

EQIP – Environmental Quality Incentive Program

FPP – Farmland Preservation Program

FSA – Farm Service Agency

GIS – Geographic Information Systems

GLRI – Great Lakes Restoration Initiative

GPR – General Purpose Revenue

HUC – Hydrologic Unit Code

LWCB – Land and Water Conservation Board (State of Wisconsin)

L(W)CC – Land (and Water) Conservation Committee

L(W)CD – Land (and Water) Conservation Department

LWRM(P) – Land and Water Resource Management (Plan)

MDV – Multi-discharger Variance

MFL – Managed Forest Law

MRBI – Mississippi River Basin Initiative

MS4 – Municipal Storm Sewer System

NACD – National Association of Conservation Districts

9KE – (EPA) Nine Key Element Plan

NM – Nutrient Management

NMFE – Nutrient Management Farmer Education

NOD – Notice of Discharge

NOI – Notice of Intent

NON – Notice of Noncompliance

NPS – Nonpoint Source Pollution

NPM – Nutrient & Pest Management

NR – WI Administrative Code: Natural Resources

NRCS – USDA Natural Resources Conservation Service

PDHs – (Engineering) Professional Development Hours

PIC – WI Land+Water's Professional Improvement Committee

PWS – Public Water System

RC&D – Resource Conservation and Development

RCPP – Regional Conservation Partnership Program

SEG – Segregated funding or appropriation

SITCOM – State Interagency Training Committee

SNAP PLUS – Soil Nutrient Application Planner

SOC – Standards Oversight Council

SWIMS – Surface Water Integrated Monitoring System

SWQMA – Surface Water Quality Management Area

SWRM – Soil and Water Resource Management Program

“T” – Tolerable Soil Loss

TMDL – Total Maximum Daily Load

TRM – Targeted Runoff Management

TSS – Total Suspended Solids

UNPS – Urban Nonpoint Source & Stormwater Management

USDA – United States Department of Agriculture

USFWS – United States Fish and Wildlife Service

USFS – United States Forest Service

USGS – United States Geological Society

UWEX – University of Wisconsin – Extension

WAAE – Wisconsin Association of Agricultural Educators

WAEE – Wisconsin Association of Environmental Educators

WCA – Wisconsin Counties Association

WGNHS – Wisconsin Geologic & Natural History Survey

WHIP – Wildlife Habitat Incentives Program

WICCI – Wisconsin Initiative on Climate Change Impacts

WPDES – Wastewater (Wisconsin) Pollutant Discharge Elimination System (Permit Program)

WRP – Wetlands Reserve Program

WSTC – Wisconsin State Technical Committee

WTCAC – Wisconsin Tribal Conservation Advisory Council

WWOA – Wisconsin Woodland Owners Association

Cost-Share Practices identified in Wisconsin Administrative Code ATCP 50

https://docs.legis.wisconsin.gov/code/admin_code/atcp/020/50

ATCP 50.62 Manure storage systems.

ATCP 50.63 Manure storage system closure.

ATCP 50.64 Barnyard runoff control systems.

ATCP 50.65 Access Road.

ATCP 50.66 Trails and walkways.

ATCP 50.67 Contour farming.

ATCP 50.68 Cover crop.

ATCP 50.69 Critical area stabilization.

ATCP 50.70 Diversions.

ATCP 50.705 Feed storage runoff control systems.

ATCP 50.71 Field windbreaks.

ATCP 50.72 Filter strips.

ATCP 50.73 Grade stabilization structures.

ATCP 50.75 Livestock fencing.

ATCP 50.76 Livestock watering facilities.

ATCP 50.77 Milking center waste control systems.

ATCP 50.78 Nutrient management.

ATCP 50.79 Pesticide management.

ATCP 50.80 Prescribed grazing.

ATCP 50.81 Relocating or abandoning animal feeding operations.

ATCP 50.82 Residue management.

ATCP 50.83 Riparian buffers.

ATCP 50.84 Roofs.

ATCP 50.85 Roof runoff systems.

ATCP 50.86 Sediment basins.

ATCP 50.87 Sinkhole treatment.

ATCP 50.88 Streambank or shoreline protection.

ATCP 50.885 Stream Crossing.

ATCP 50.89 Stripcropping.

ATCP 50.90 Subsurface drains.

ATCP 50.91 Terrace systems.

ATCP 50.92 Underground outlets.

ATCP 50.93 Waste transfer systems.

ATCP 50.94 Wastewater treatment strips.

ATCP 50.95 Water and sediment control basins.

ATCP 50.96 Waterway systems.

ATCP 50.97 Well decommissioning.

ATCP 50.98 Wetland development or restoration.

Buffalo County Cost Share Landowner Interest Form

Buffalo County Land Conservation Department (LCD)
Application and Certification for Cost-Sharing

Cost share funding is requested for the installation of the following planned conservation practice(s). If practices are not installed within the next (2) two construction seasons, this application will be dismissed. As the landowner, I will commit the necessary cost share financial resources for calendar year:_____.

Name			
Address	**City**	**State**	**Zip**
Phone	**Email**		

Applicants must consent to a NR 151 agricultural runoff management inventory on the property in which cost sharing is being requested. All NR 151 agricultural performance standards and prohibition violations must be properly addressed prior to receiving voluntary cost sharing for the requested practice.

Practice Location

Tax Parcel(s):		**Coordinates:**	
Township	**T_____N**	**R_____W**	**Section(s)**

The Buffalo County Land Conservation Department will review applications and consider cost sharing assistance for practices on a continuous basis. Ranking of practices will be consistent with the current Buffalo County Land and Water Resource Management Plan. Actual ranking criteria used may be subject to change to address work plan priorities as approved by the Land Conservation Committee.

Best Management Practice(s)	Total Cost Estimate	Cost Sharing Not to Exceed	Landowner Share Estimate (70%, 50% or Flat Rate)

I agree to maintain the conservation practice throughout its normal life span as long as the land is under my control following the cost share maintenance agreement. For any SEG funding, the landowner agrees to remain in compliance with the nutrient management standard (NR 151.07) for as long as the land is farmed. Failure to maintain the conservation practice shall be cause for repayment of cost-share funds. I further agree to participate in an NR151 agricultural performance standards and prohibitions evaluation and maintain compliance with the NR151 agricultural performance standards and prohibitions on the land in which cost sharing is being requested.

Applicant Signature	**Date**

Buffalo County Cost Share Field Screening Sheet

Buffalo County Land Conservation Department (LCD)
Conservation Practice Cost-Share Screening and Inventory

Landowner Name		Inspection Date	
Address	City	State	Zip
Contact Information:			

Practice Location:

Tax Parcel(s)			
Township:	T N	R W	Section
Coordinates (Lat/Long):			

Applicants must consent to a NR 151 agricultural runoff management screening on the property in which cost sharing is being requested. All NR 151 agricultural performance standards and prohibition violations must be properly addressed prior to receiving voluntary cost sharing for the requested practice.

NR 151 agricultural runoff management status

Yes☐ No☐ **NR 151.02** All cropland and pastures meet tolerable soil erosion ("T") levels.

Yes☐ No☐ **Gully Standard** All areas of concentrated flow, located within the managed crop area, shall be treated or managed to prevent channelized rill and gully erosion. Circle any practices that apply:

Conservation Crop Rotation	Reduced or No-Till	Grazing Plan
Contour Farming	Strip Cropping	CRP/CREP
Cover Crop	Permanent or Perennial Vegetation	

Yes☐ No☐ **NR 151.03** Tillage setbacks of 20 feet from the stream bank must be maintained with adequate vegetation to protect stream bank stability & prevent deposition of soil into surface water.

Yes☐ No☐ **NR 151.07** All crop and livestock producers must have a 590 Nutrient Management Plan (NMP) designed to managing the amount, placement, and timing of plant nutrients to obtain optimum rates and minimize the risk of surface and groundwater pollution. Farmers may apply for SEG funds to complete a 590 NMP and soil testing.

Date of 590 NM Plan update: _____

Date of Certified Soil testing: _____ Soil Test Lab: _____

Yes☐ No☐ **NR 151.04** All crop and livestock producers must be in compliance with the Phosphorus Index (PI) for any cropland, pasture, or winter grazing area. An average PI of 6 or less, not to exceed a PI of 12 in any year within the accounting period is required. A Nutrient Management Plan calculates PI.

The following section applies only to those landowners who raise, feed, or house livestock. *Circle if N/A*

Yes ☐ No ☐ **NR 151.055** No significant discharge of process wastewater to waters of the state.

Yes ☐ No ☐ **NR 151.06** Runoff shall be diverted away from contacting feedlot, manure storage areas, and barnyard areas within water quality management areas (WQMA).

Yes ☐ No ☐ **NR 151.08** Maintenance is performed on manure storage facilities to prevent overflow.

Yes ☐ No ☐ **NR 151.08** Unconfined manure piles are not located in Water Quality Management Area. A Water Quality Management Area is area within the 1000 feet of the ordinary high-water mark of navigable waters that consist of a lake and the area within 300 feet of the ordinary high-water mark of navigable waters that consist of a river or stream. This also includes sites that are susceptible to groundwater contamination or has the potential to be a direct conduit for contamination to reach groundwater.

Yes ☐ No ☐ **NR 151.08** No direct runoff from a feedlot or stored manure into waters of the state.

Yes ☐ No ☐ **NR 151.08** Limit livestock access to waters of the state to maintain streambank cover.

The following section applies only to those landowners with manure storage facilities. *Circle if N/A*

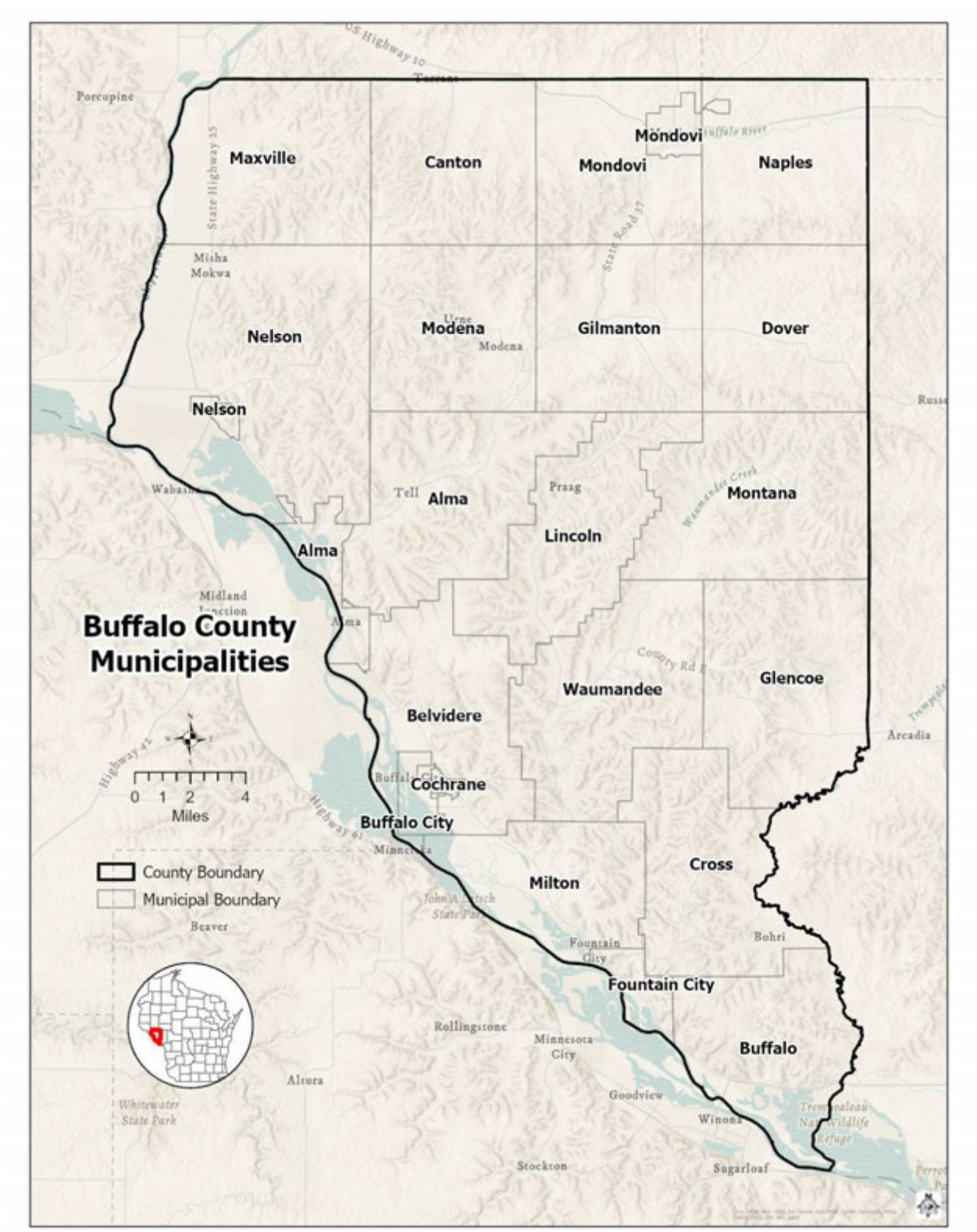
Yes ☐ No ☐ **NR 151.05** All new or substantially altered *(after 10/01/2002)* manure storage facilities should be designed, constructed, and maintained following NRCS Standards to prevent leaking & overflow.

Yes ☐ No ☐ **NR 151.05** Closure of a sub-standard manure storage facility shall occur when manure has not been added or removed from the facility for a period of 24 months & the operation is discontinued.

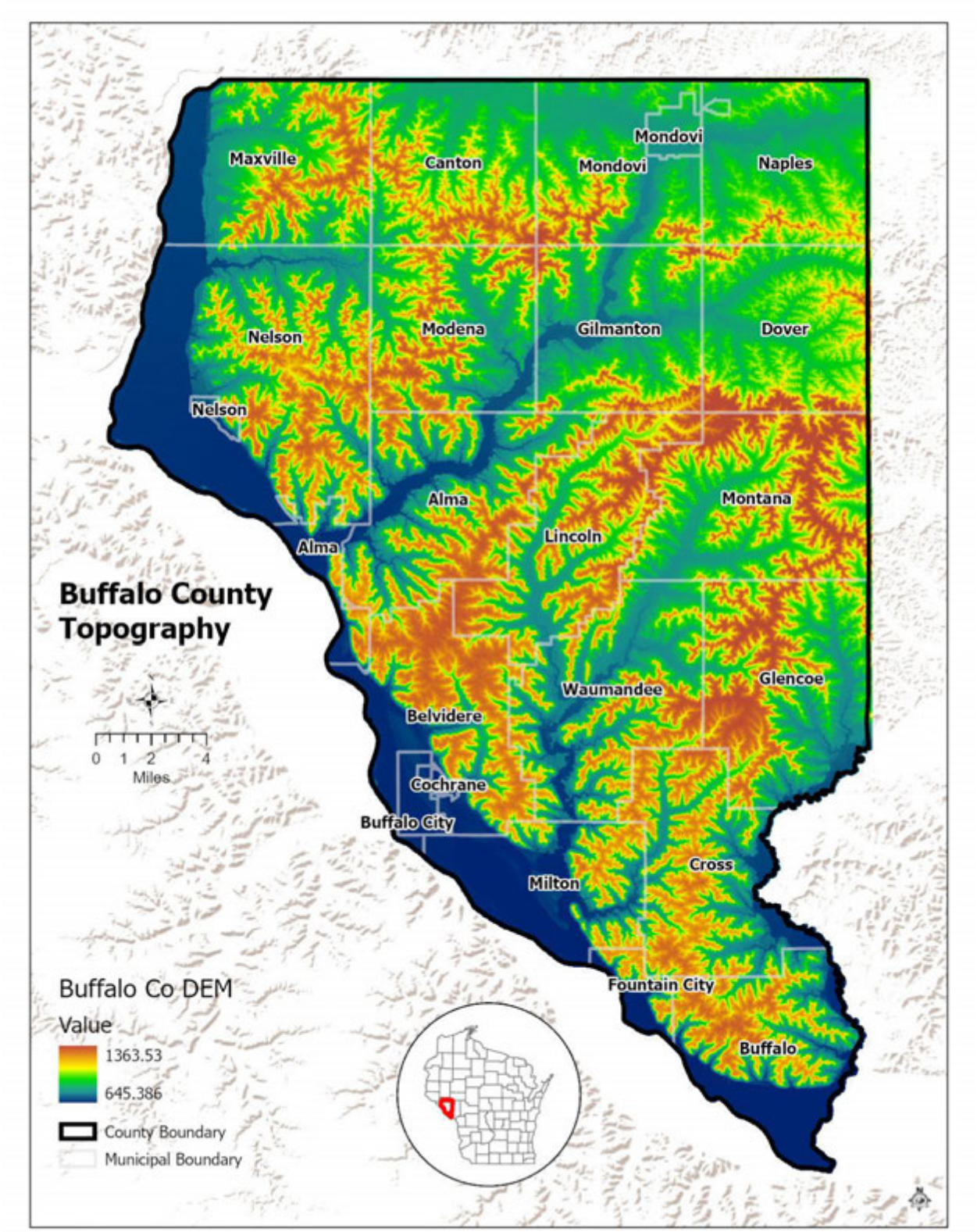
Yes ☐ No ☐ **NR 151.05** Any existing manure storage facility that poses an imminent threat to public health, fish, aquatic life, or groundwater shall be upgraded, replaced, or abandoned.

Proposed Practices & Site Visit Notes:

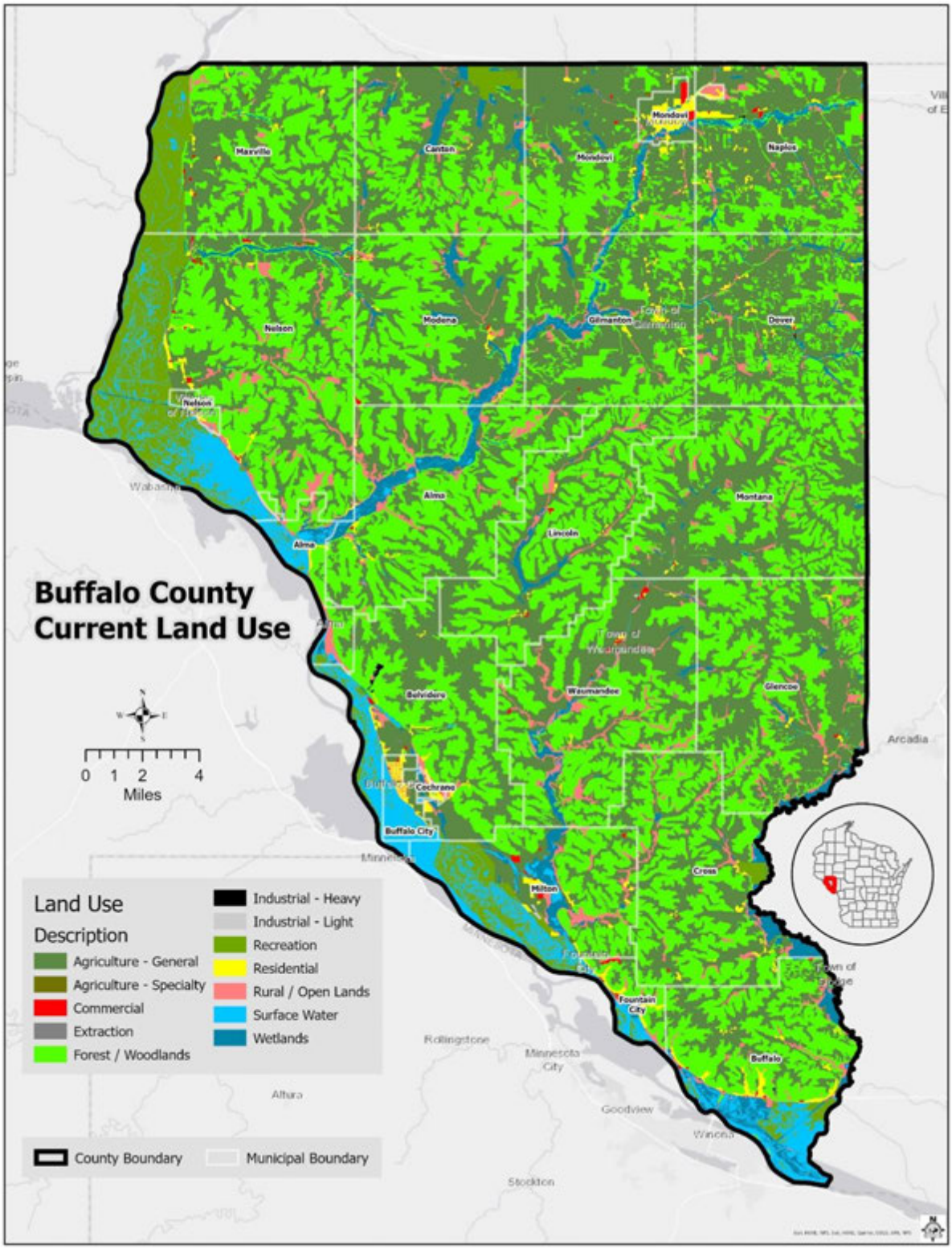
Municipalities



Topography

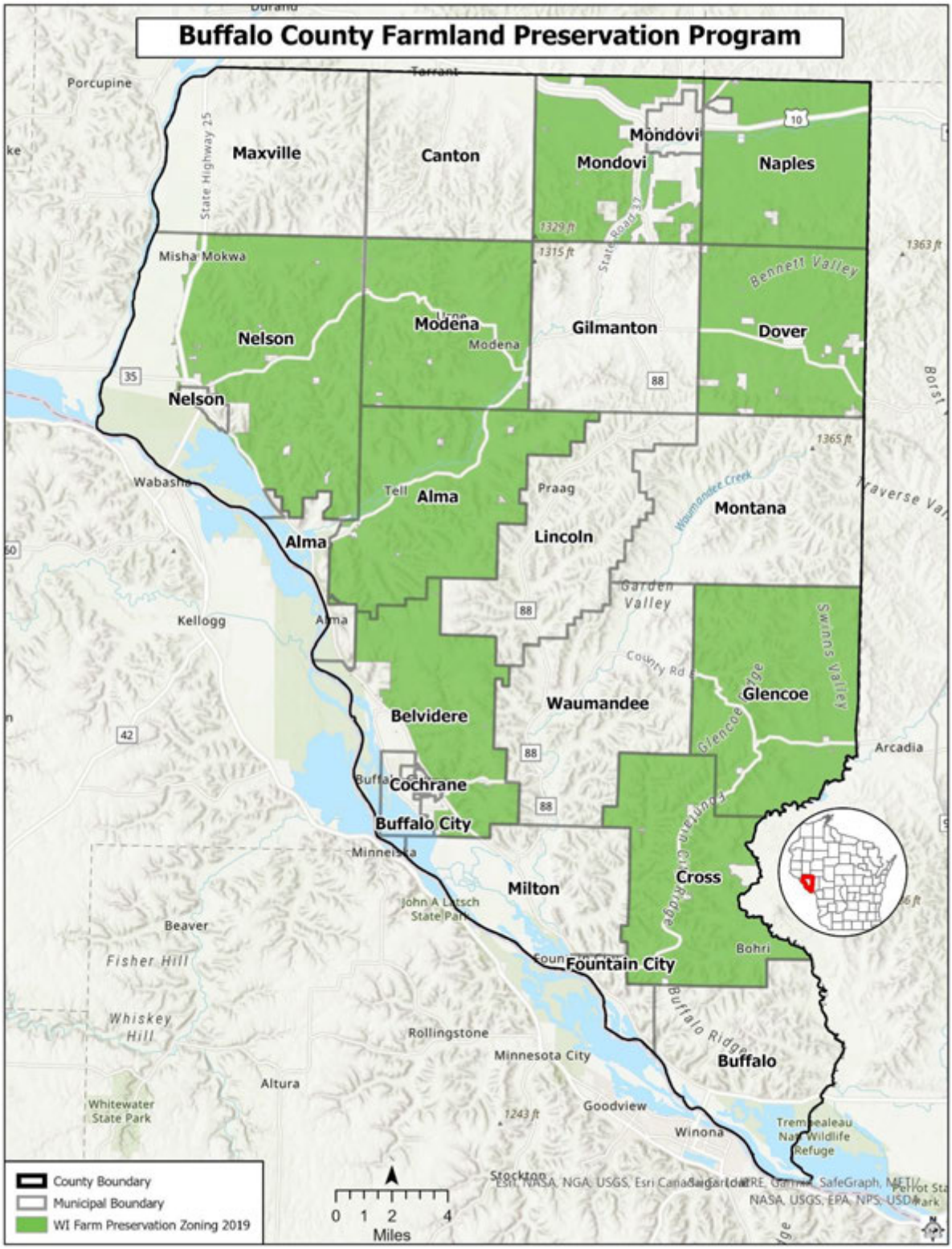

Buffalo County
Topography
0 1 2 4
Miles
Buffalo Co DEM
Value
1363.53
645.386
County Boundary
Municipal Boundary
Maxville
Canton
Mondovi
Mondovi
Naples
Nelson
Modena
Gilmanton
Dover
Nelson
Alma
Montana
Alma
Lincoln
Waumandee
Glencoe
Belvidere
Cochrane
Buffalo City
Cross
Milton
Fountain City
Buffalo

Land Use

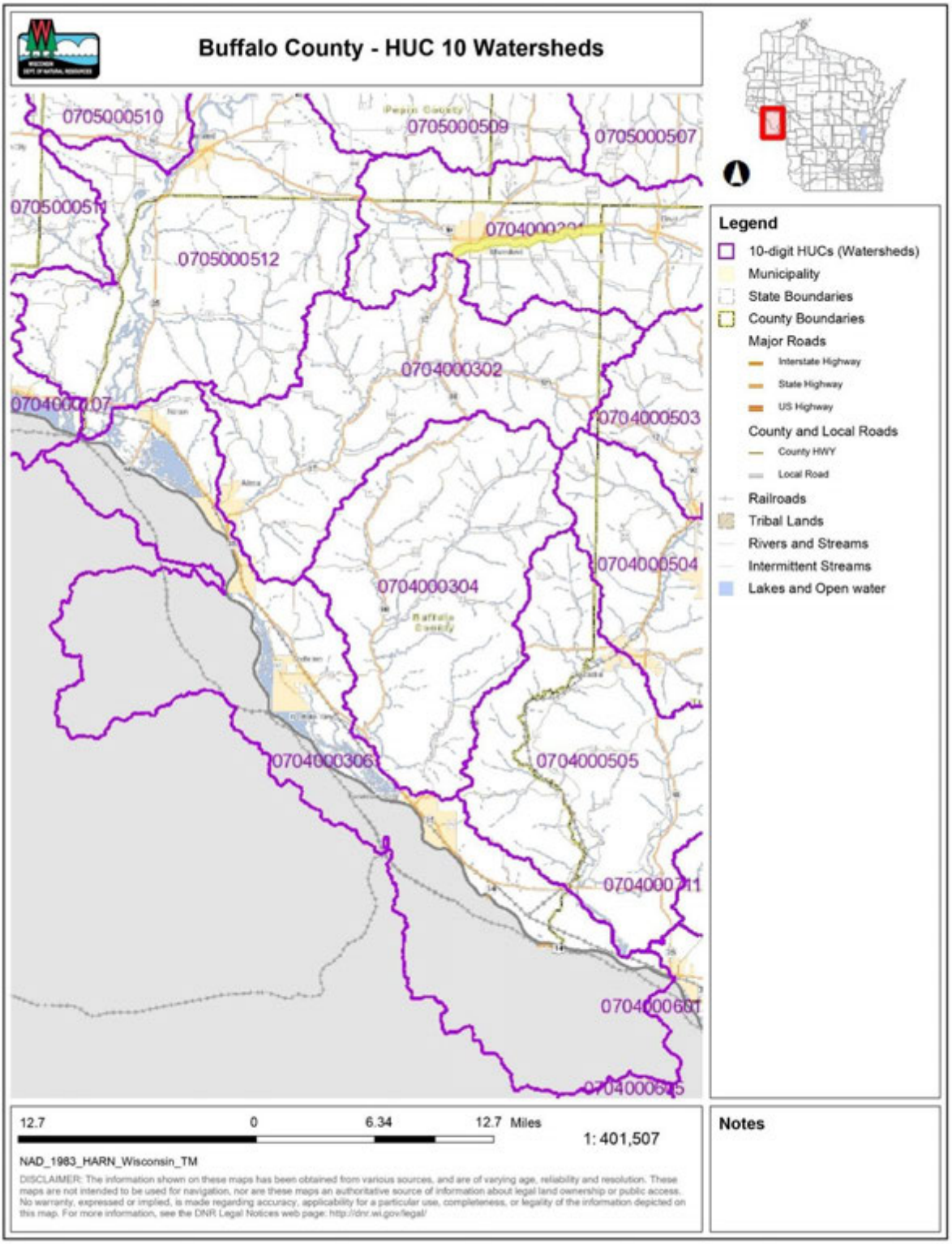

Buffalo County
Current Land Use
0 1 2 4
Miles
Land Use
Description
Agriculture - General
Agriculture - Specialty
Commercial
Extraction
Forest / Woodlands
Industrial - Heavy
Industrial - Light
Recreation
Residential
Rural / Open Lands
Surface Water
Wetlands
County Boundary
Municipal Boundary
Marville
Canton
Mondovi
Naplos
Nelson
Modena
Gilmanton
Dover
Alma
Montana
Lincoln
Belvidere
Waumandee
Glencoe
Arcadia
Cochrane
Buffalo City
Cross
Milton
Fountain City
Buffalo
Rollingstone
Minnesota City
Alma
Goodview
Winona
Stockton

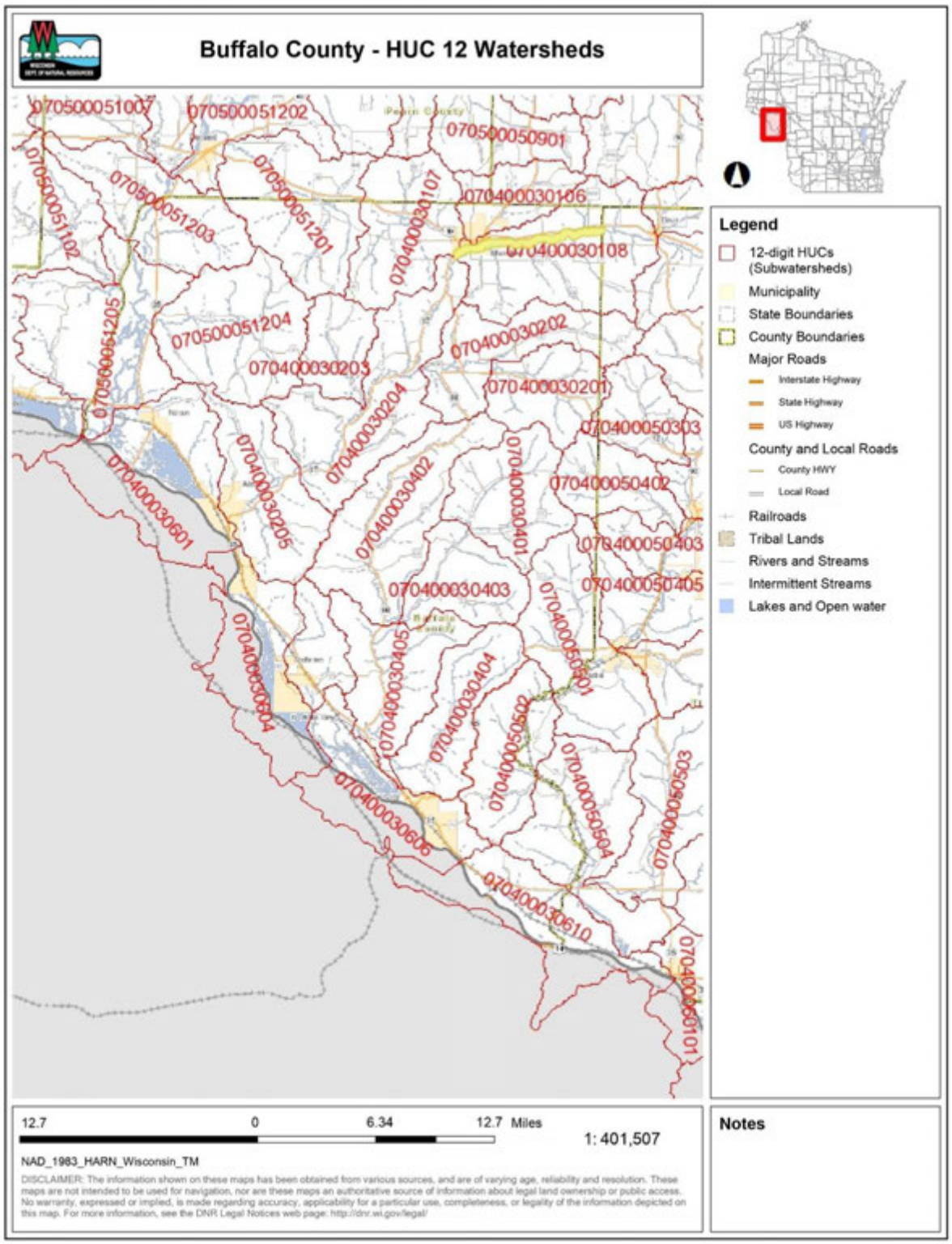
Prime Soil Classifications

Farmland Preservation Program

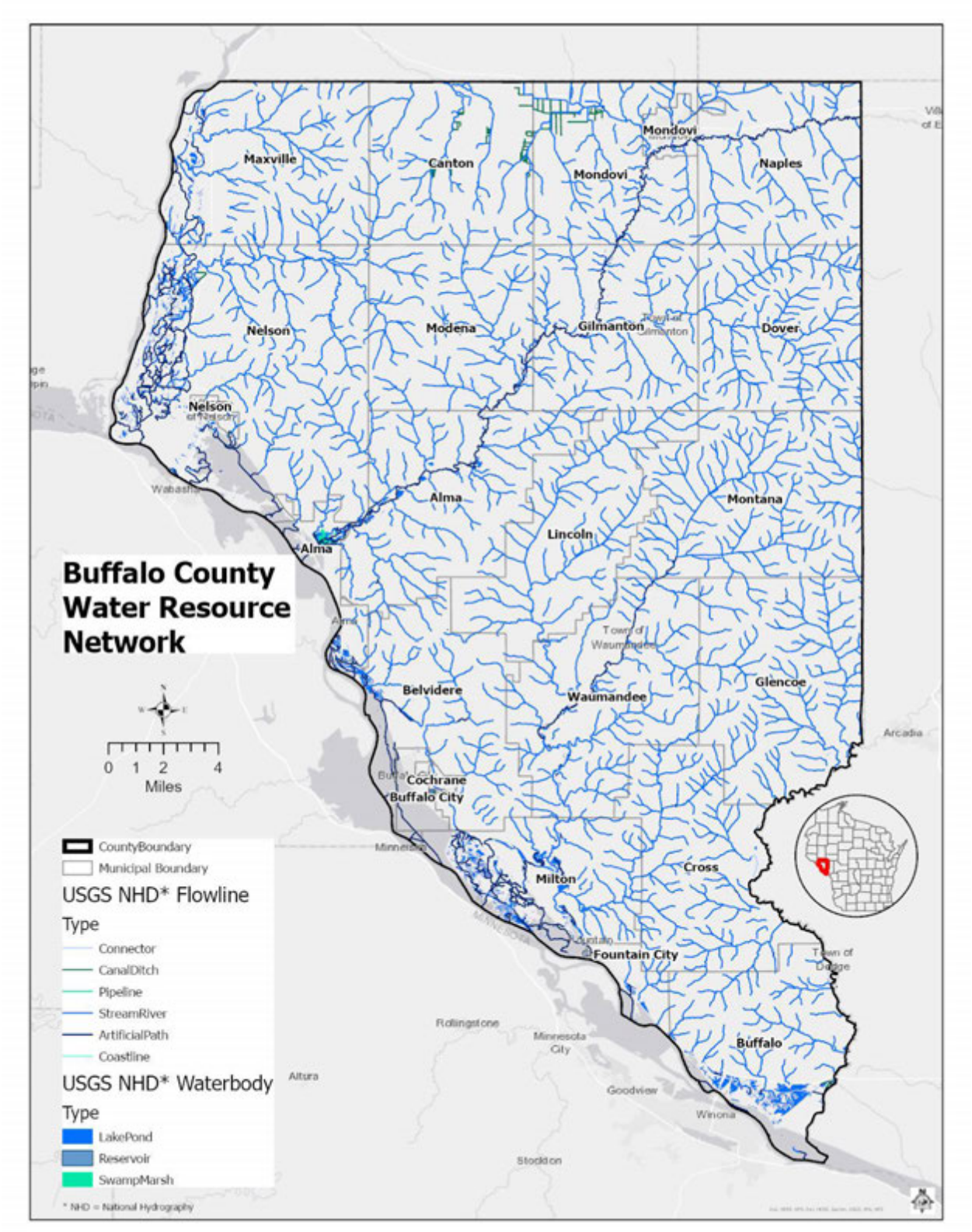


River Watersheds = HUC 10 & 12

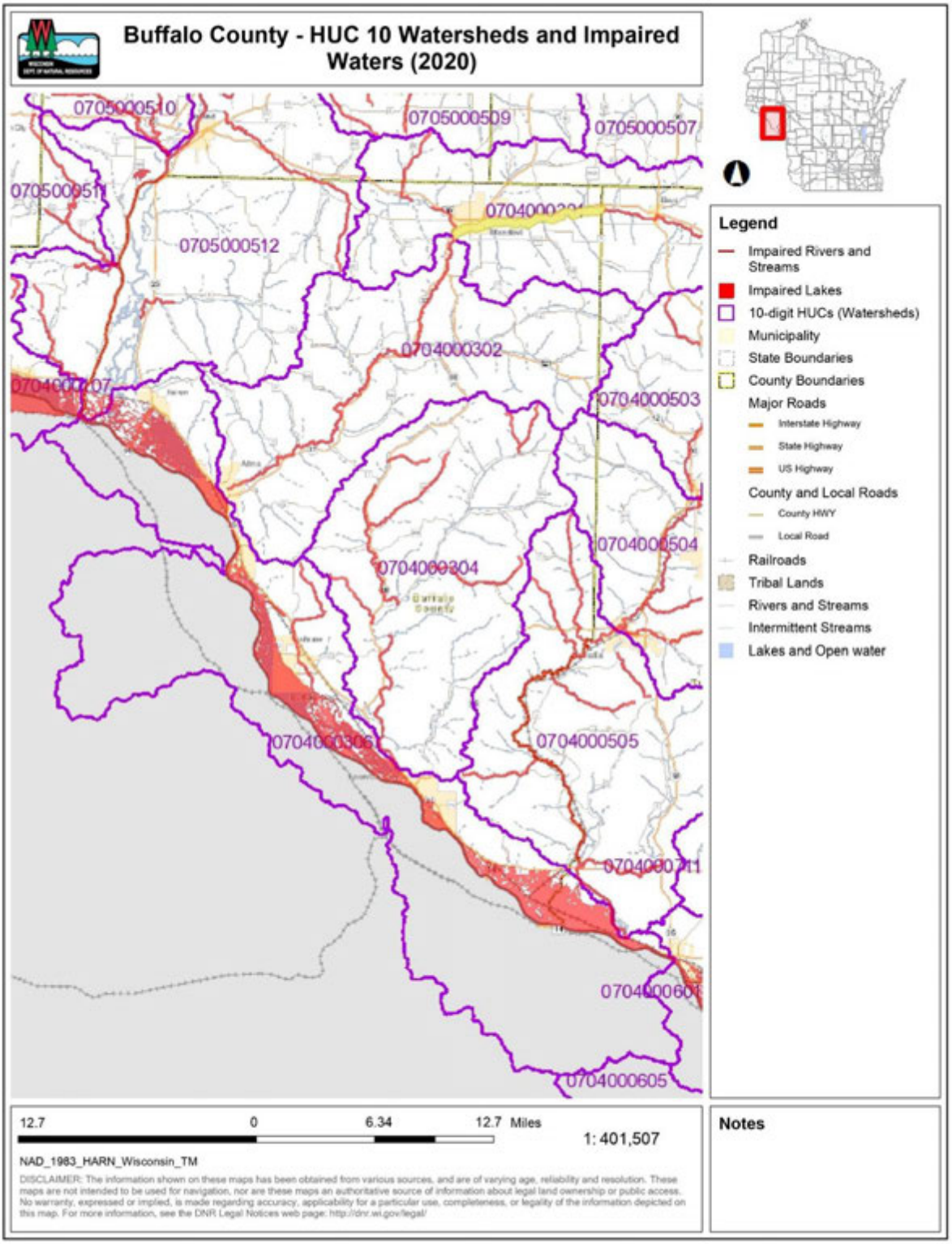


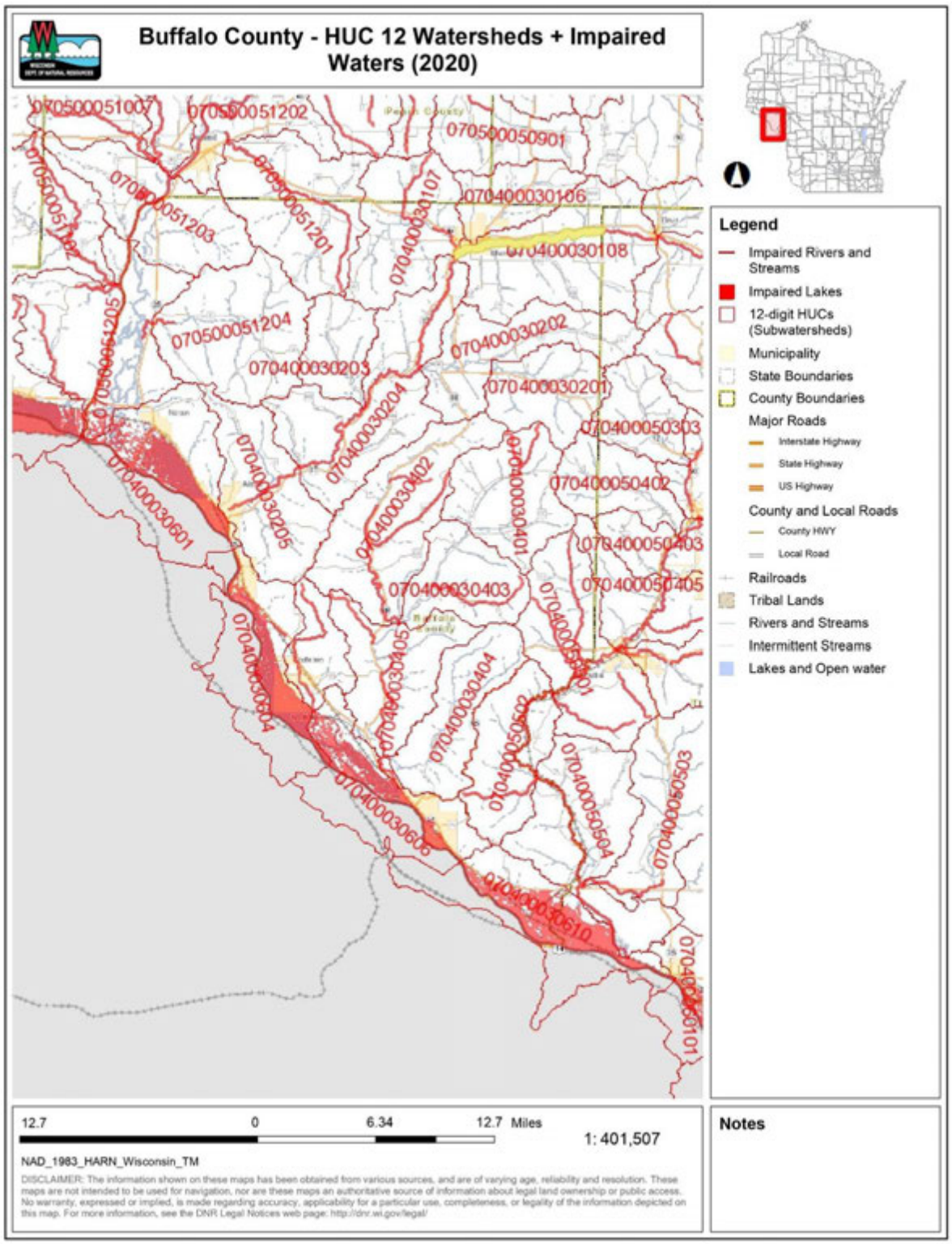

Buffalo County - HUC 12 Watersheds
070500051007
070500051202
070500050901
070500051102
070500051203
070500051201
070400030107
070400030106
070400030108
070500051205
070500051204
070400030203
070400030202
070400030204
070400030201
070400050303
070400030205
070400030402
070400030401
070400050402
070400030601
070400050403
070400030403
070400050405
070400030405
070400050502
070400030404
070400050501
070400030604
070400050503
070400050504
070400030606
070400030610
070400030101
Legend
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
Railroads
Tribal Lands
Rivers and Streams
Intermittent Streams
Lakes and Open water
12.7
0
6.34
12.7 Miles
1: 401,507
NAD_1983_HARN_Wisconsin_TM
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

Water Resources



Impaired and Exceptional Waters (No “Exceptional” Waters in Buffalo County)




Buffalo County - HUC 12 Watersheds + Impaired Waters (2020)
070500051007
070500051202
070500050901
070500051201
070400030107
070400030106
070400030108
070500051203
070500051204
070400030202
070400030203
070400030201
070400030204
070400050303
070400030205
070400030402
070400050402
070400030601
070400030401
070400050403
070400030403
070400050405
070400030405
070400030404
070400050502
070400050503
070400030604
070400030605
070400050504
070400030610
070400050501
Legend
Impaired Rivers and Streams
Impaired Lakes
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
Railroads
Tribal Lands
Rivers and Streams
Intermittent Streams
Lakes and Open water
12.7
0
6.34
12.7 Miles
1: 401,507
NAD_1983_HARN_Wisconsin_TM
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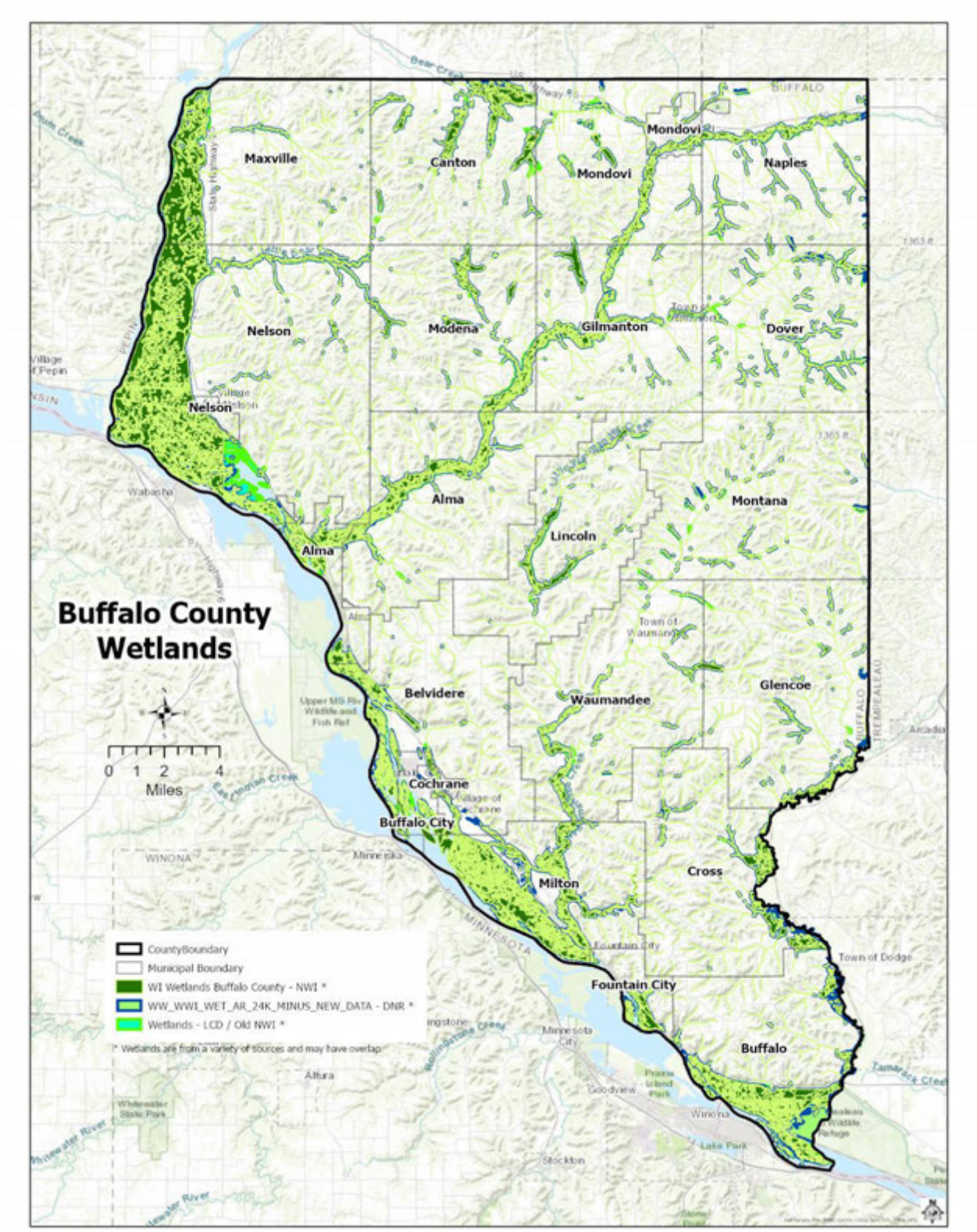
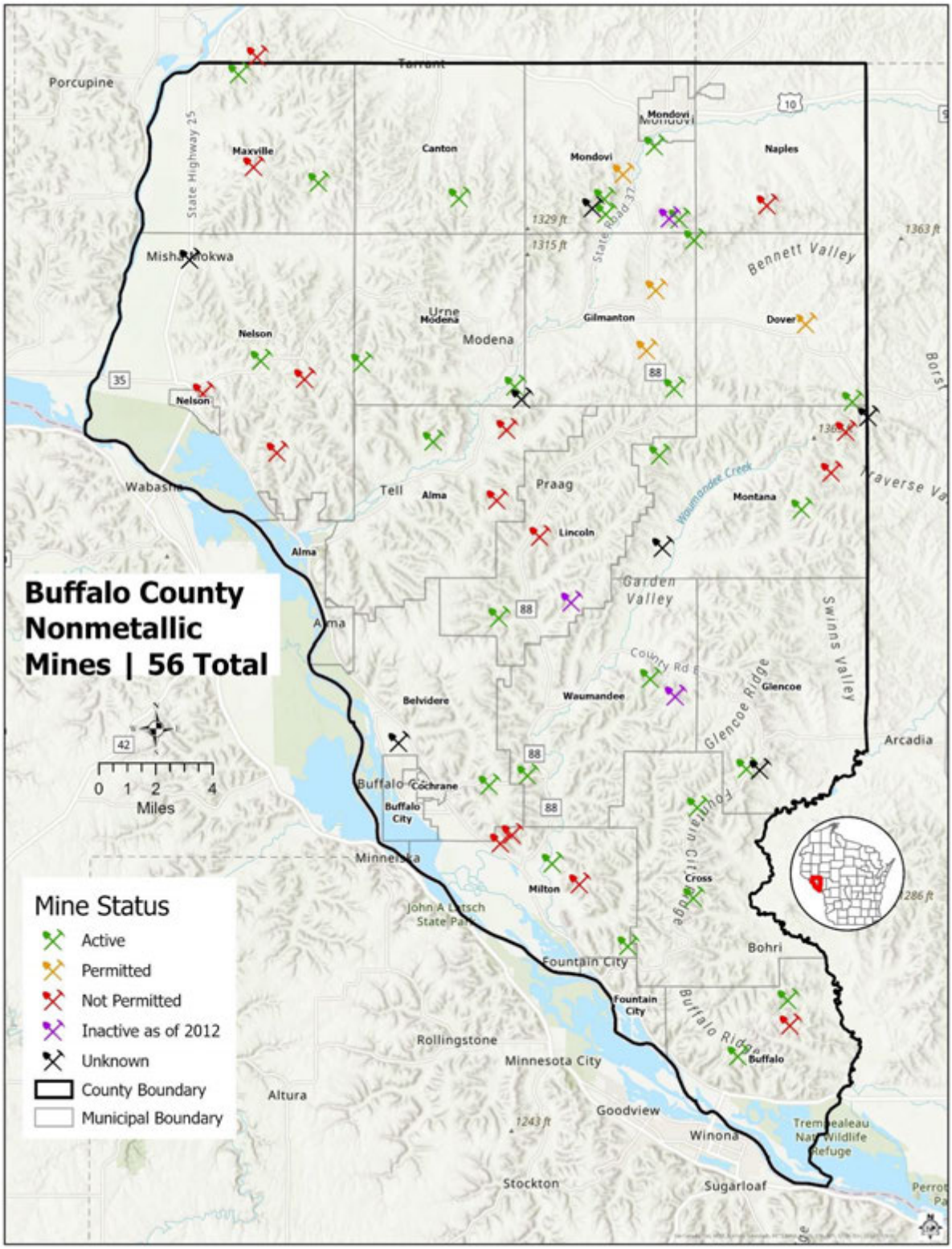
Notes

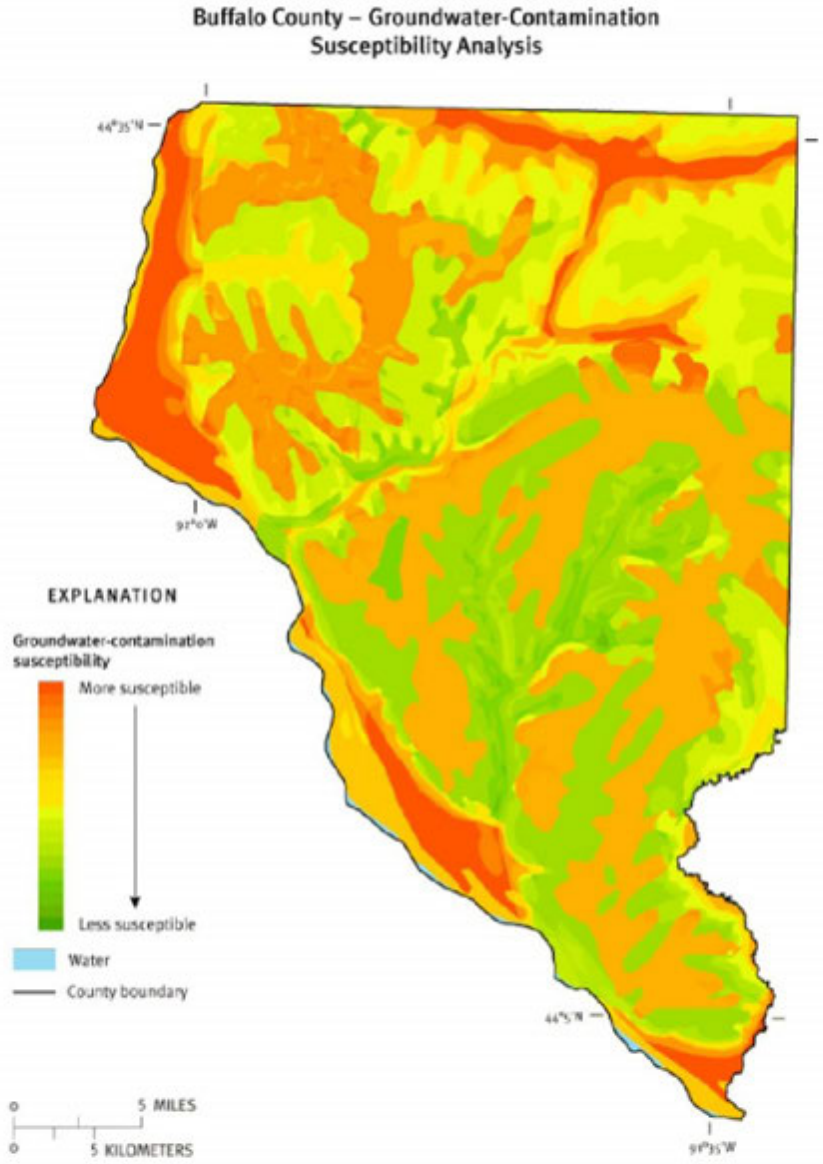
Wetlands


Buffalo County
Wetlands
0 1 2 4
Miles
CountyBoundary
Municipal Boundary
WI Wetlands Buffalo County - NWI *
WW_WWI_WET_AR_24K_MINUS_NEW_DATA - DNR *
Wetlands - LCD / Old NWI *
* Wetlands are from a variety of sources and may have overlap
Maxville
Canton
Mondovi
Naples
Nelson
Modena
Gilmanton
Dover
Alma
Montana
Lincoln
Belvidere
Waumandee
Glencoe
Cochrane
Buffalo City
Milton
Cross
Fountain City
Buffalo
Town of Dodge
Altura
Stockton
WINONA
MINNESOTA

Nonmetallic Mining Reclamation Permits



Groundwater Susceptibility Analysis



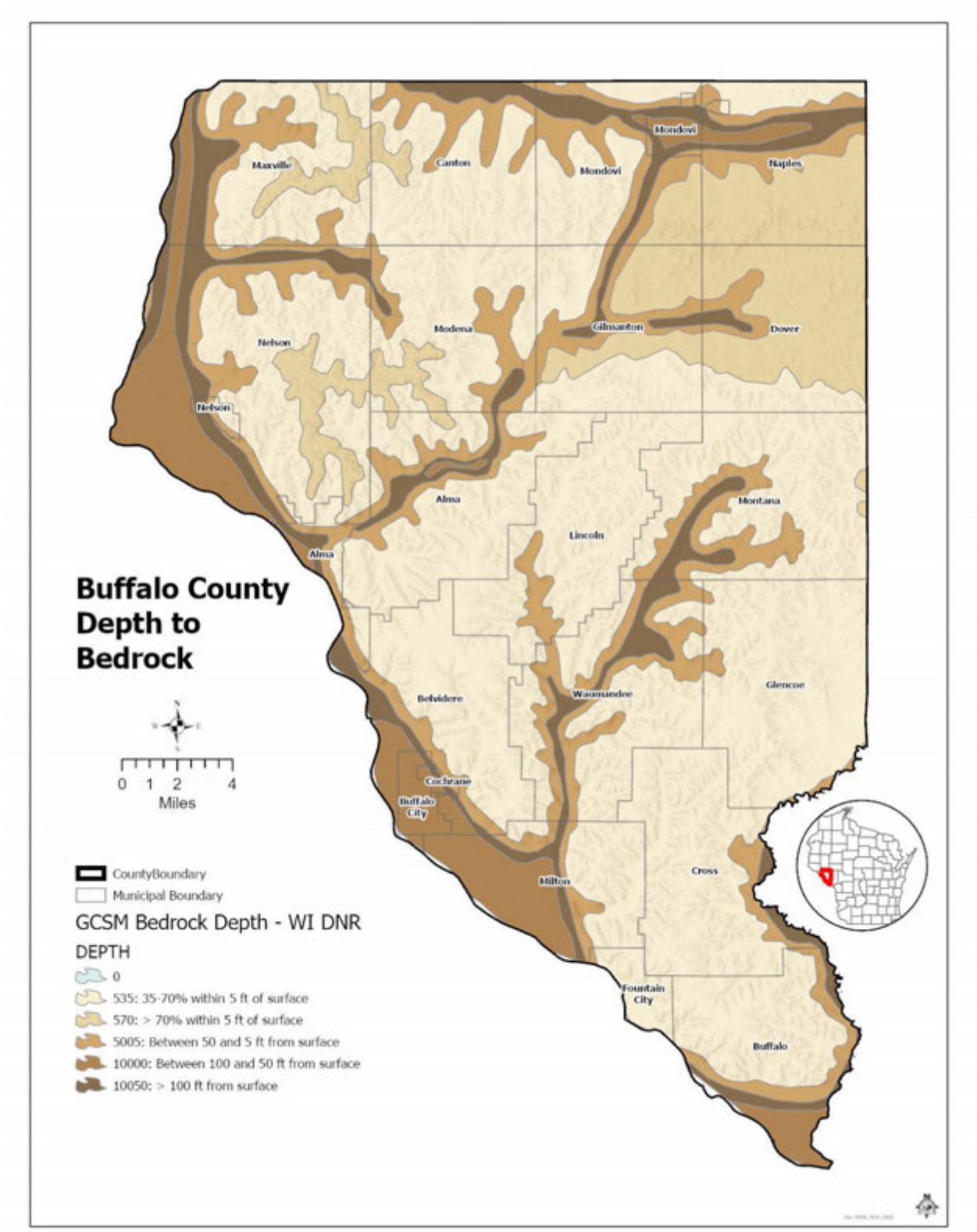
This groundwater-contamination susceptibility map is a composite of five resource characteristic maps, each of which was derived from generalized statewide information at small scales, and cannot be used for any site-specific purposes.

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.

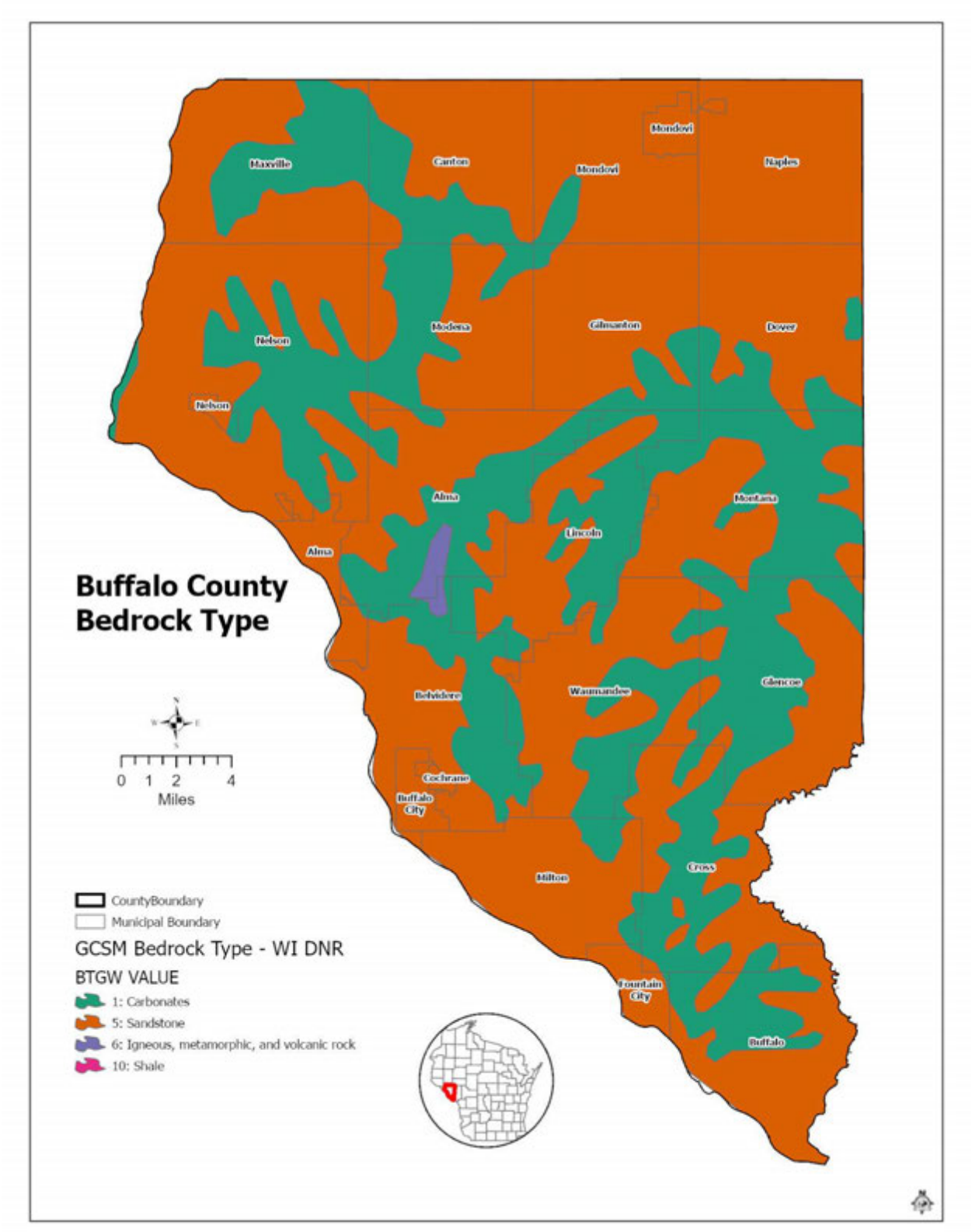
Figure created for the "Protecting Wisconsin's Groundwater Through Comprehensive Planning" web site, 2007, *http://wi.water.usgs.gov/gwcomp/*

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

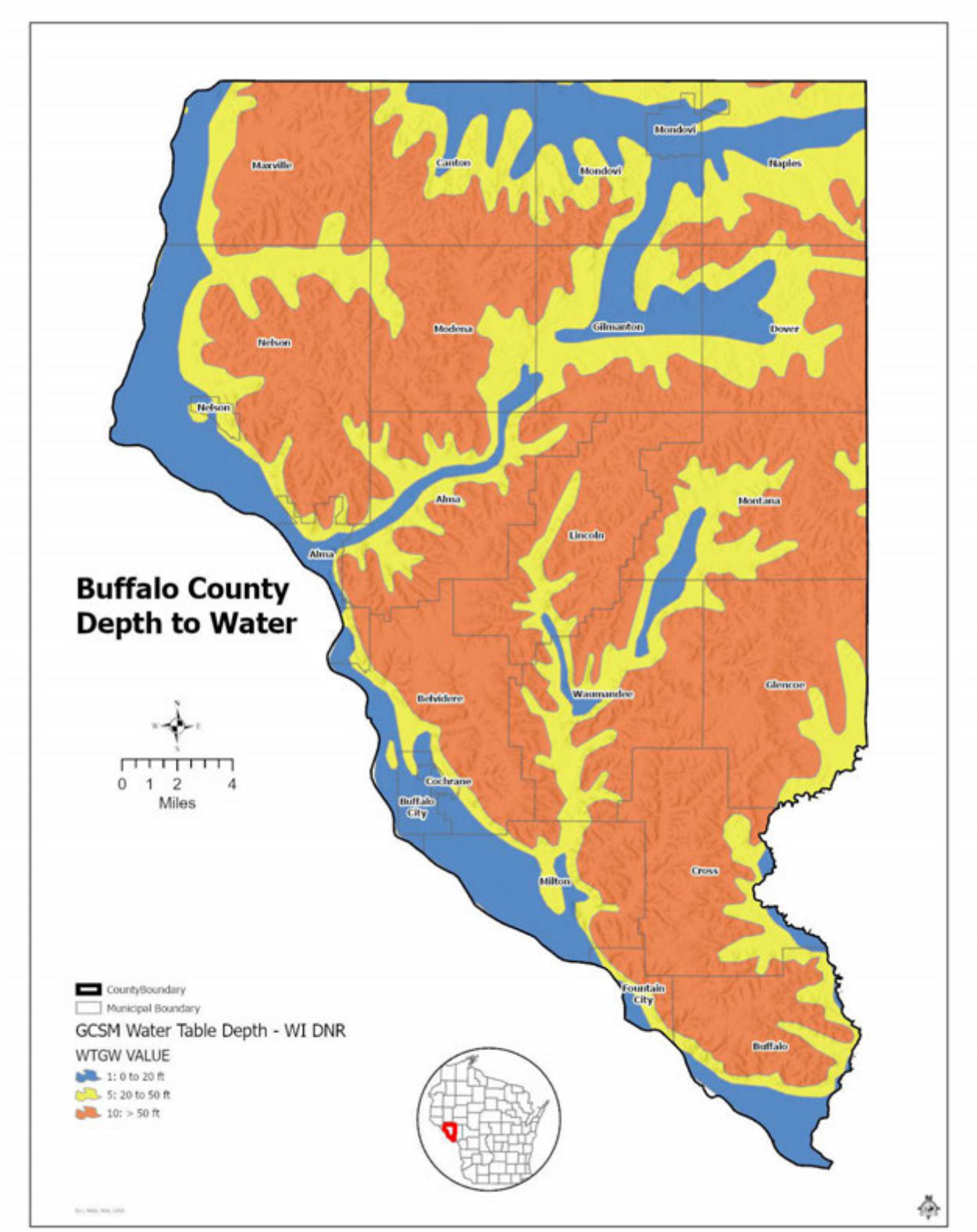
Depth to Bedrock



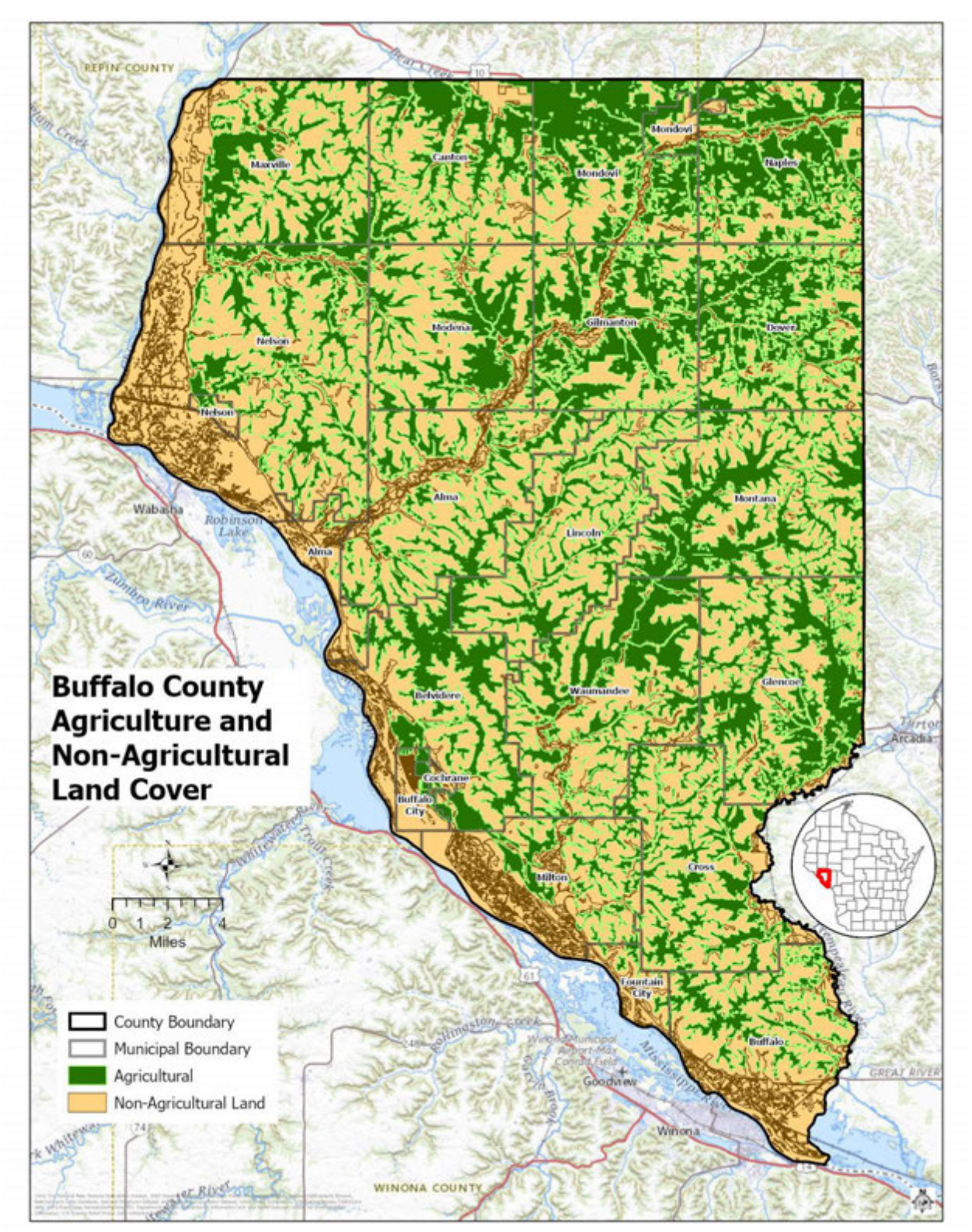
Bedrock Type



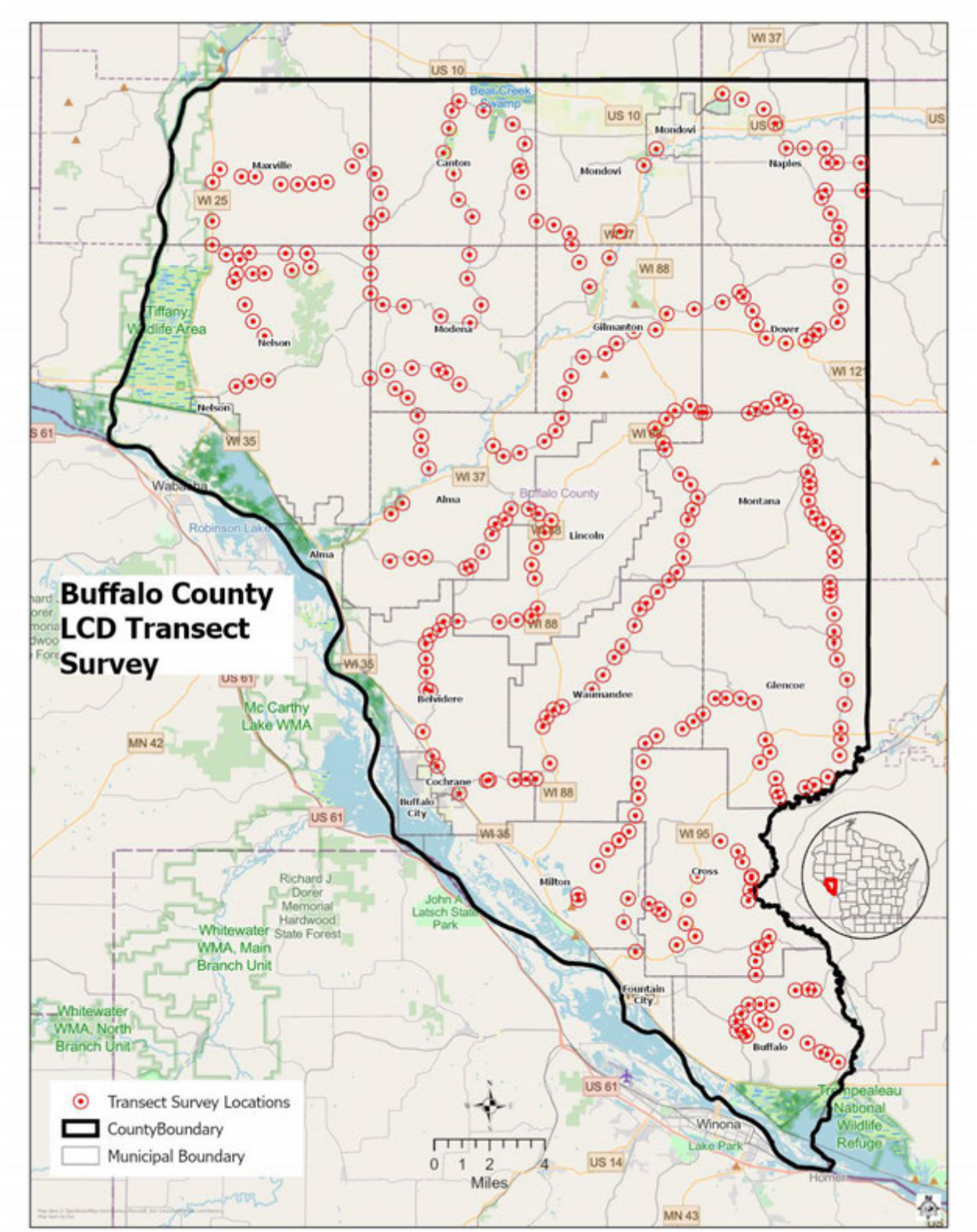
Depth to Water



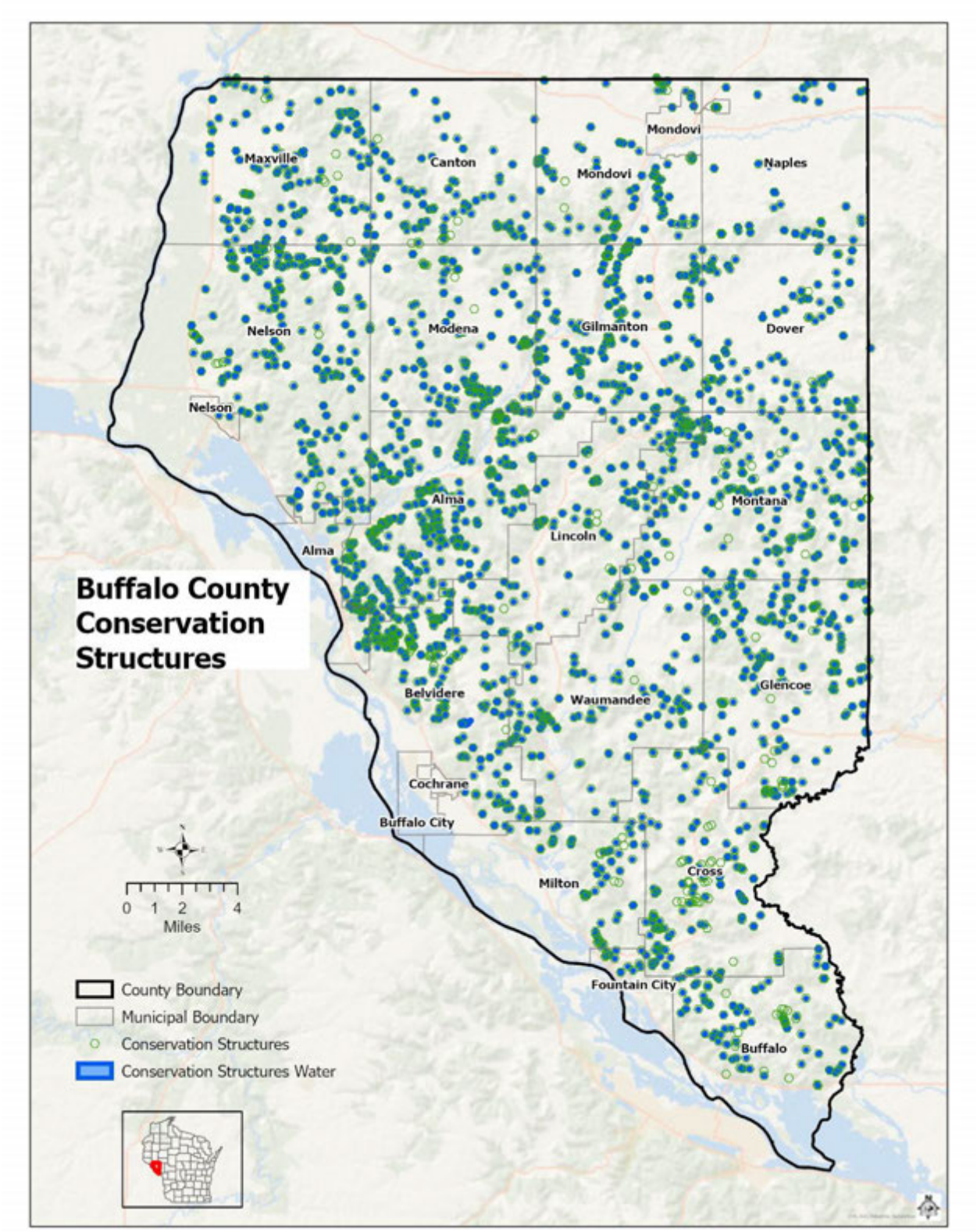
Agriculture and Non-Agriculture Land Cover



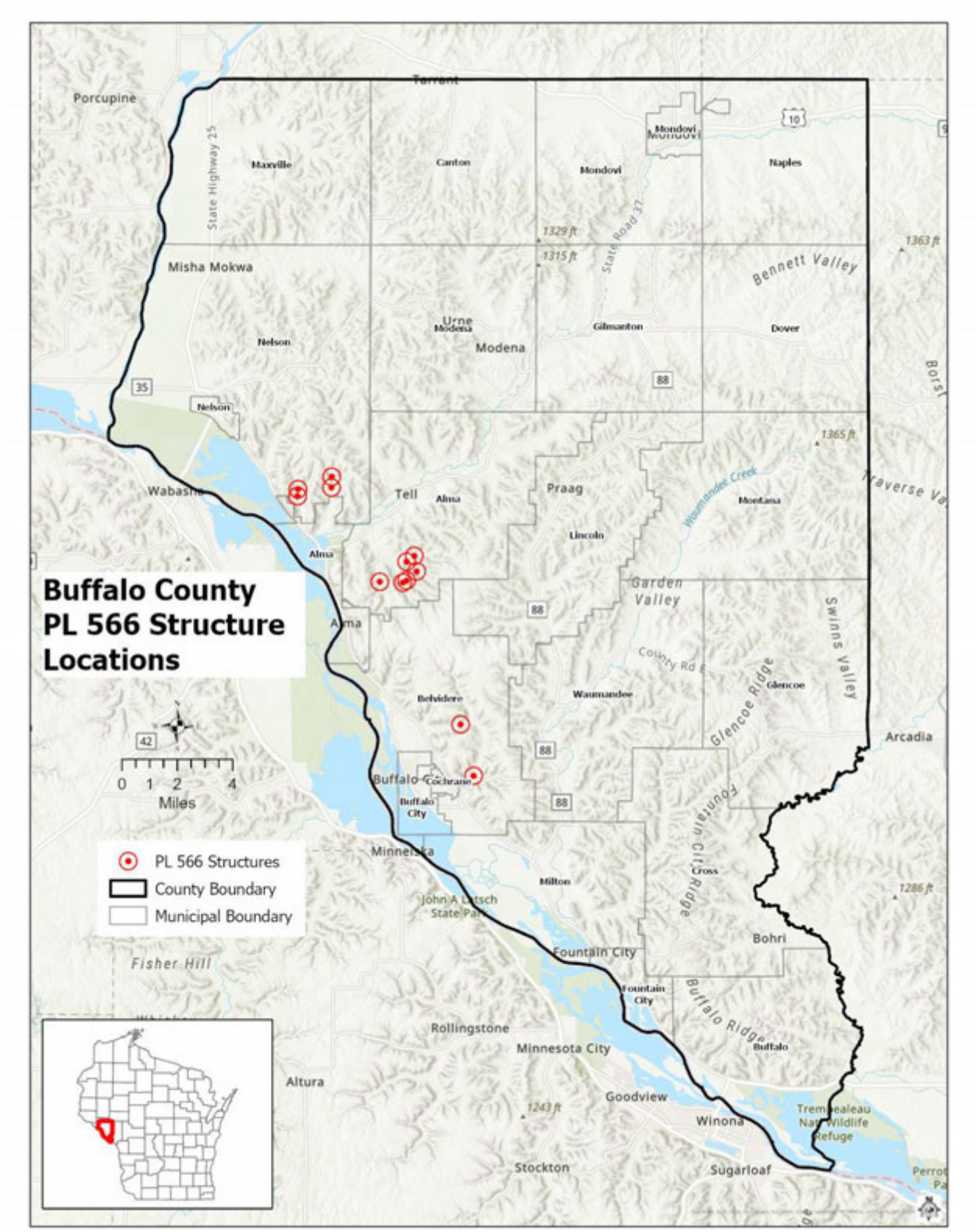
Transect Survey



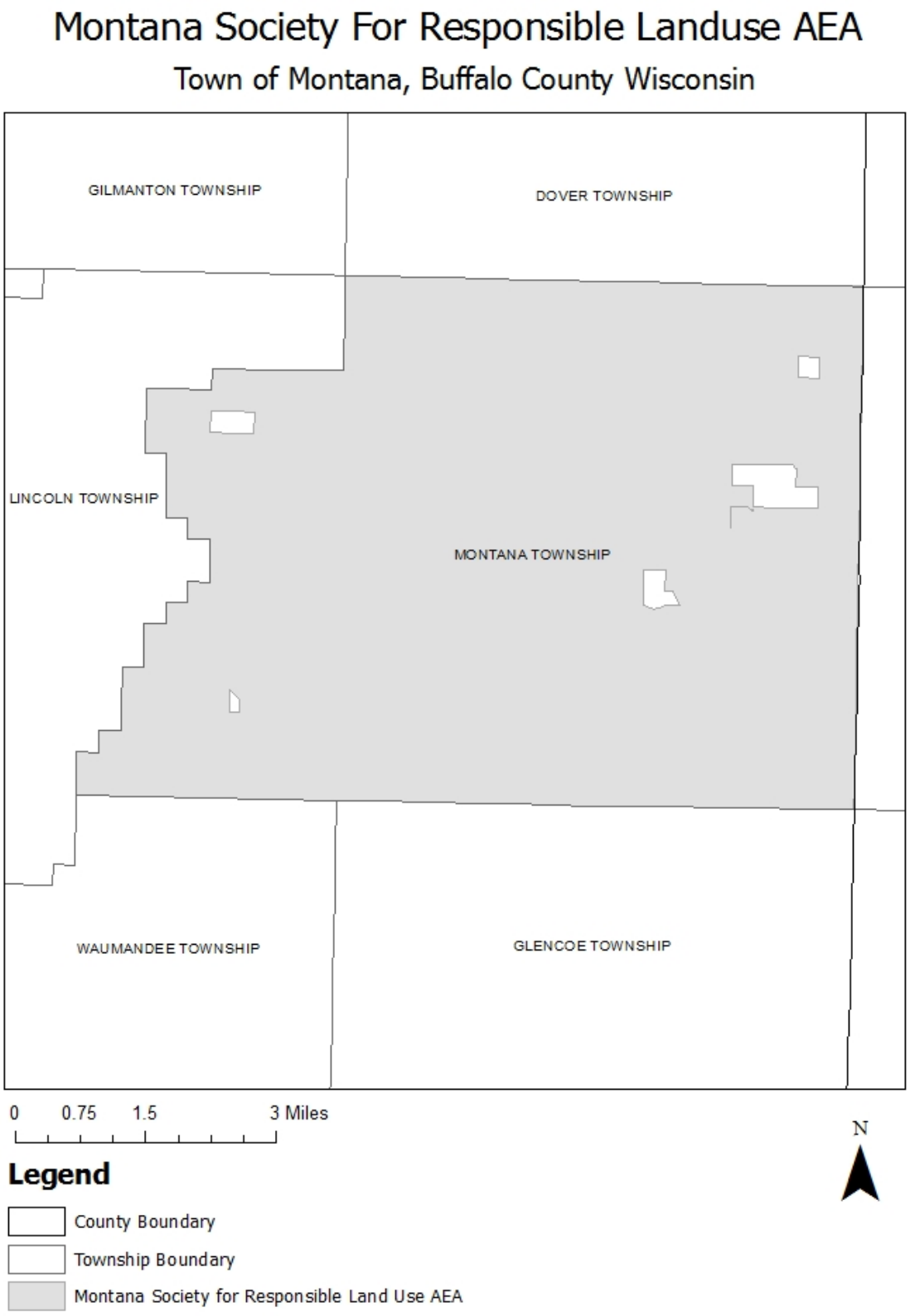
Conservation Structures Map



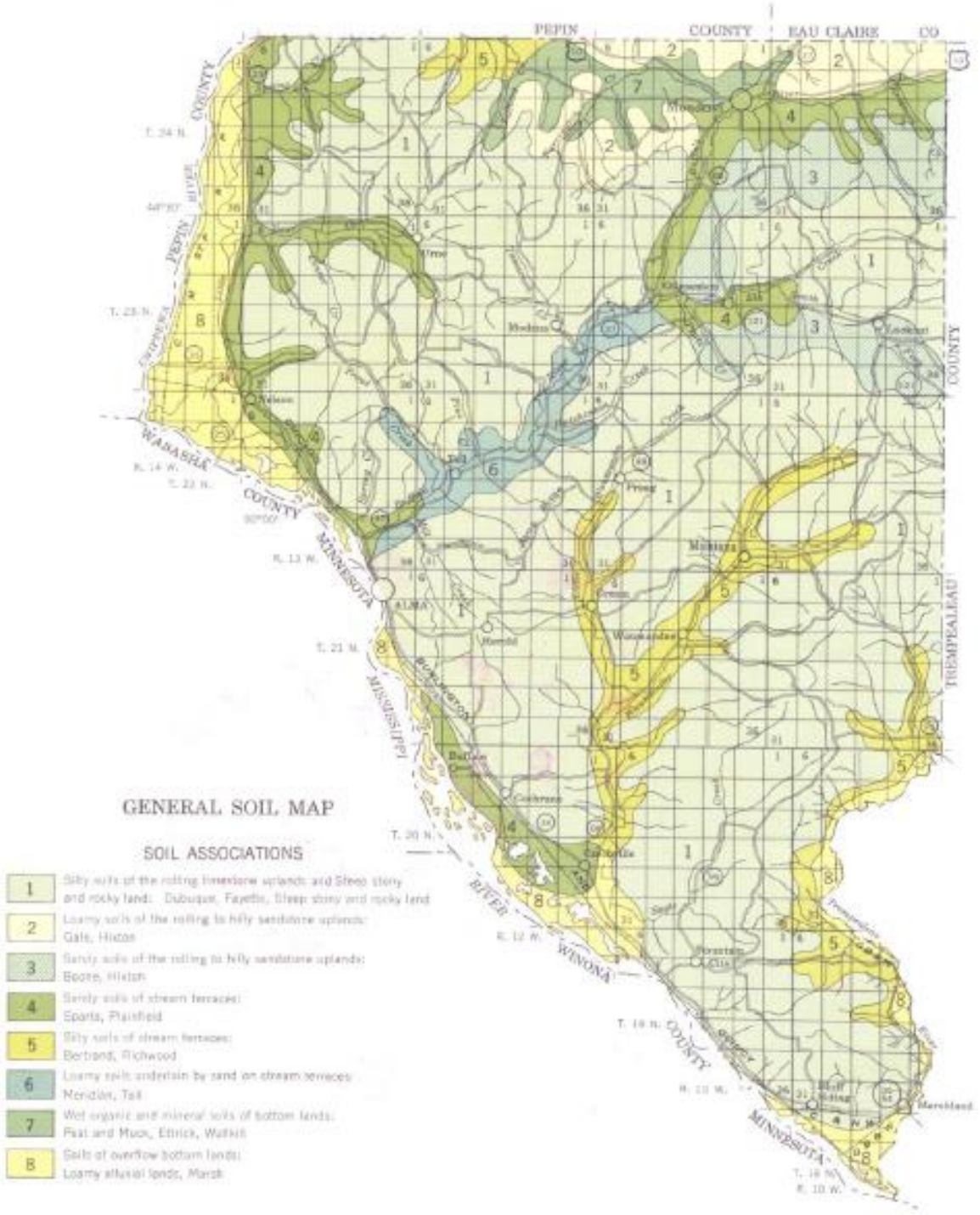
PL 566 Structure Locations



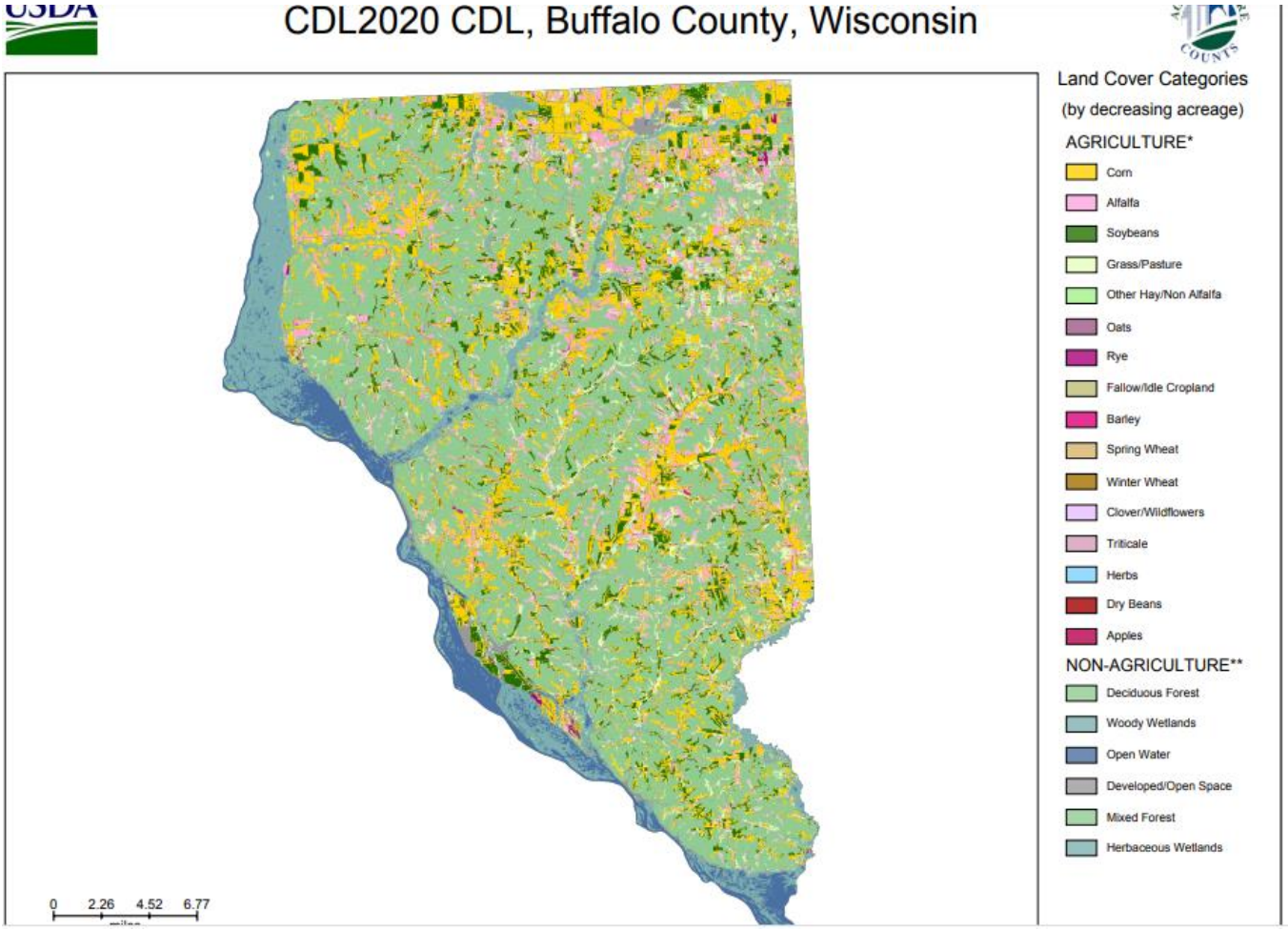
Agricultural Enterprise Area (AEA)



Soil Associations Map of Buffalo County



Buffalo County Land Cover map



Cost-Share Practice/Funding Source Table

Practice or Activity	ATCP 50 Reference	Funding Source	Units of Measurement
Land taken out of agricultural production (list on cost-share contract the practice to be installed or the eligible existing practice)	50.08(3)	Bonding	Acres
Riparian land taken out of agricultural production (list on cost-share contract the practice to be installed or the eligible existing practice)	50.08(4), 50.42(1)	Bonding	Acres
Manure storage systems	50.62	Bonding	Number installed (#)
Manure storage closure	50.63	Bonding	#
Barnyard runoff control systems (specify components)	50.64	Bonding	#
Access road or cattle crossing	50.65	Bonding	Linear Ft.
Animal trails and walkways	50.66	Bonding	Linear Ft.
Contour farming	50.67	GPR	Acres
Cover and green manure crop	50.68	GPR	Acres
Critical area stabilization	50.69	Bonding	#
Diversions	50.70	Bonding	Linear Ft.
Field windbreaks	50.71	Bonding	Linear Ft.
Filter strips	50.72	Bonding	Acres
Grade stabilization structures	50.73	Bonding	#
Heavy use area protection	50.74	Bonding	Acres
Livestock fencing	50.75	Bonding	Linear Ft.
Livestock watering facility	50.76	Bonding	#
Milking center waste control system	50.77	Bonding	#
Nutrient management	50.78	GPR	Acres
Pesticide management	50.79	GPR	#
Prescribed grazing	50.80		
a. Management plan		GPR	#
b. Fencing (not permanent)		GPR	Linear Ft.
c. Fencing (permanent)		Bonding	Linear Ft.
d. Establish permanent pasture (seeding)		Bonding	Acres
Relocating or abandoning animal feeding operations	50.81	Bonding	#
Residue management	50.82	GPR	Acres
Riparian buffers	50.83		
a. Installation (including land out of production		Bonding	Acres
b. Maintenance		GPR	Acres
Roofs	50.84	Bonding	#
Roof runoff systems	50.85	Bonding	#
Sediment basins	50.86	Bonding	#
Sinkhole treatment	50.87	Bonding	#
Streambank and shoreline protection	50.88	Bonding	Linear Ft.
Strip-cropping	50.89	GPR	Acres
Subsurface drains	50.90	Bonding	#

Terrace systems	50.91	Bonding	Linear Ft.
Underground outlet	50.92	Bonding	#
Waste transfer systems	50.93	Bonding	#
Wastewater treatment strips	50.94	Bonding	Linear Ft.
Water and sediment control basins	50.95	Bonding	#
Waterway systems	50.96	Bonding	Acres
Well decommissioning	50.97	Bonding	#
Wetland restoration	50.98	Bonding	Acres
Engineering Services provided in connection with a completed cost-share practice for which bond revenue may be used (also refer to 50.40(7)).	50.34(4)	Bonding	
Other cost-effective practices with DATCP's written approval			