Land & Water Resource Management Plan








Rock County Land Conservation Department

October 2019

ACKNOWLEDGEMENTS

The development of Rock County's Land and Water Resource Management Plan, 2019 involved a diverse group of individuals with a wide range of expertise. Their input was critical for the plans development and will continue to be important for achieving the goals of this Plan.

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PLAN SUMMARY

The Rock County Land and Water Resource Management (LWRM) Plan is a state-mandated long range planning document intended to guide the activities of the Land Conservation Department (LCD) in its efforts to protect and improve the natural resources in Rock County. This fourth-generation LWRM plan is an update to the original plan adopted by the County Board in 1999. It has been prepared following the requirements of state administrative rules ATCP 50 and NR 151, as amended in 2018.

Planning Process

LWRM plan is intended to function as a local planning process that assesses natural resource conditions and needs, guides decisions on how to meet water quality goals and conservation objectives, measures progress towards meeting those goals, and makes efficient use of local, state, and federal resources. In this spirit, the process for developing this plan began with the formation of an advisory workgroup. The advisory workgroup met three times providing input on natural resource conditions and needs of the county. Also, the Land Conservation Committee (LCC) reviewed and provided comments on draft document. A public informational meeting and public hearing was held on (Insert Date)

Plan Goals

The advisory workgroup generated a citizen survey of natural resource concerns facing Rock County. The survey played a key role in the development of the LWRM plan by identifying and prioritizing local resource issues of concern. During the initial stages of plan preparation, the citizen survey identified a total of 8 resource issues they felt should be addressed by the LCD. To help set priorities for this plan, these issues were grouped into five general goals. The following list resulted from this process:

1. Protect the quality and quantity of groundwater.
2. Protection of farmlands.
3. Protect the quality of surface water.
4. Improve and protect soil quality for long-term production.
5. Protect and enhance habitat quality.

The LCD used the above goals as a foundation for the development of this plan. Objectives for each goal were primarily developed from issues of concern generated by the agency advisory workgroup. Chapter 7 contains a list of more specific LCD activities planned over the next ten years (2020-2030) to meet each objective. The LCC may request an amendment to this plan prior to its expiration, if warranted.

Nonpoint Pollution Control

Nonpoint source water pollution is the number one reason why the water quality suffers in most surface waters and groundwater in the state of Wisconsin and Rock County. This type of pollution washes off the urban and rural landscapes during rainfall or snowmelt periods and is carried directly to local water resources, usually with no treatment. Wisconsin has been a national leader in addressing this type of pollution since 1979. In 2002, by legislative mandate, the State's nonpoint program was significantly redesigned and the new administrative rules went into effect. In NR 151 the Department of Natural Resources (DNR) identified statewide nonpoint

performance standards and prohibitions intended to protect and improve local water quality. In ATCP 50, the Department of Agricultural Trade and Consumer Protection (DATCP) identifies conservation practices rural landowners must follow to meet the DNR Standards and created the LWRM planning process and grant requirements. One of the requirements for county LWRM plans is to describe procedures that will be used to implement the nonpoint pollution performance standards and prohibitions under NR 151. Counties are named as the primary responsible party to implement the new standards, especially in the rural areas.

State nonpoint standards for rural areas focus on controlling agricultural runoff pollution from crop fields, animal feedlots, manure storage structures, and livestock pastures. The LWRM plan describes a systematic approach that will be used, including an information and education program, file records inventory, landowner contacts, compliance checks, landowner notification, technical assistance, cost sharing, site reevaluation (if necessary), final compliance status notification to landowner and referring non-complying sites to DNR for enforcement.

Urban performance standards focus on controlling erosion from construction sites, managing runoff from streets, roads and other impervious areas, maintaining protective cover between impervious surfaces and lakes, streams and wetlands, infiltrating rainfall and snow melt and managing fertilizer use on large turf areas. The process by which these performance standards are implemented typically relies upon local storm water and erosion control ordinances for new development projects. This is combined with an on-going information and education campaign that targets specific messages to a variety of audiences including engineers, developers, local units of government, and the general public. Implementation of the non-agricultural performance standards represents the portion of the annual workload for the LCD, as shown in Chapter 7.

Conclusion

Measuring the progress of implementing this plan will take place annually as reports are prepared and submitted to various agencies as part of program requirements. In addition, ongoing developments in the county's Land Information System and other database related tracking systems will continue to be refined as the activity items are completed and new workload assignments made for future years. Perhaps a more important standard by which one will be able to judge the success of this plan in future years will be the formation of partnerships related to resource protection. The vision is to implement effective, efficient and dynamic programs designed to protect and improve the natural resources of Rock County for the benefit of all who live and work here, now and in the future.

CHAPTER 1 - PLAN DEVELOPMENT AND PARTICIPATION

Introduction

Locally led natural resource management is an important concept in Wisconsin. State and Federal agencies support the concept that local County agencies may be the best suited to identify and assist with the solutions for natural resource issues within a county. As a result, Chapter 92 of the Wisconsin State Statutes was amended in 1997 to require Counties to develop and implement a Land and Water Resource Management (LWRM) plan. Chapter 92 can be found on-line at http://www.legis.state.wi.us/statutes/Stat0092.pdf .

What is a LWRM Plan?

The LWRM Plan serves as a long-term strategic conservation plan for the Land Conservation Department (LCD) and county residents. The plan provides guidance to the LCD for collaborating efforts with state and federal agencies on natural resource conservation issues and provides guidance for annual work plans for the LCD. It supports applications for conservation grant funds including annual state grants for county staff and support costs. At a minimum, a LWRM plan must describe:

- Water quality and soil erosion conditions throughout the County, Agriculture, Trade and Consumer Protection (ATCP) 50.12(2)(a);
- State and local regulations that the County will use to implement the plan, ATCP 50.12(2)(b);
- Water quality objectives for each water basin, ATCP 50.12(2)(c);
- Key water quality and soil erosion problems areas, ATCP 50.12(2)(d);
- Conservation practices needed to address key water quality and soil erosion problems, ATCP 50.12(2)(e);
- Plan to identify priority farms, ATCP 50.12(2)(f);
- County strategy to encourage voluntary implementation, ATCP 50.12(2)(g);
- Compliance procedures, ATCP 50.12(2)(h);
- Monitoring of progress, ATCP 50.12(2)(j);
- Information and education efforts, ATCP 50.12(2)(k); and,
- Coordination with other conservation agencies, ATCP 50.12(2)(l).

The LCD has elected to go beyond the basic requirements as identified above, as resource conservation spans many disciplines. The LCD believes this plan will best serve the citizens, through a full disclosure of conservation programming as included in the LCD mission.

Rock County Land & Water Resource Management Plans, 1998, 2004 & 2009

Rock County's first LWRM plan was approved in 1999 and implemented from its inception through 2004. This plan was developed prior to the full implementation of the new conservation standards identified in the current WI Administrative Code NR 151. The 1999 Plan described the basic soil and water resource management issues within Rock County and listed associated objectives. It replaced an earlier document entitled the Soil Erosion Control Plan (SECP) for Rock County. The SECP was published in 1986 and primarily addressed soil erosion control issues.

In 2004, the Rock County Land Conservation Committee (LCC) appointed an Advisory Committee (AC) (refer to acknowledgements) to assist the LCD with the task of updating the

LWRM Plan. New information on natural resource conditions was made available from various sources since the initial plan was published. This information is integrated into the 2019 LWRM Plan. As a result, new priorities were identified. Additionally this document incorporates earlier conservation objectives set by the Advisory Committee.

The overall goal in the 2004 and 2009 LWRM plan was to commence with the arduous task of implementing NR 151. The objectives were to begin the implementation of the Agricultural Performance Standards and Manure Management Prohibitions; develop a water quality monitoring program; develop a Memorandum of Understanding with the DNR for the implementation of NR 151; continue with the establishment of conservation buffers through CRP and CREP; and finally develop a tracking system for NR 151 compliance. Implementation strategies included targeting the plan's efforts with the priority Bass Creek watershed, specifically the Stevens and Markham Creek sub-watersheds.

The LCD requested an extension to the 2012 deadline from the State Land and Water Conservation Board for a full plan update. The extension was granted which pushed the need to update the plan until 2019.

A citizen advisory workgroup was convened in 2019. The workgroup has provided assistance to the LCD with the plans' update. New information on natural resource conditions made available from various sources since the 2009 plan was published and has been integrated into this plan.

Implementation strategies for the 2019 – 2029 LWRM Plan include targeting Nitrates in Groundwater. This issue has become very significant in recent past. The Rock County Board of Supervisors appointed a groundwater nitrate workgroup in 2017. This workgroup is charged with developing a comprehensive plan to reduce the occurrence of nitrates in the County's Groundwater Resources. A pilot project commenced in 2018 on the County Farm (located on the northwest corner of Janesville). The data sets generated from the pilot will help understand the relationship between land use activities (cash grain farming) and nitrates found in localized aquifers.

Progress in Implementation

The LCD believes significant progress was made from 2009 through 2019 in accomplishing the specific goals and primary objectives in the plan. This belief comes from the actual number of conservation practices put on the land to address resource issues and concerns identified in the plan. An example of the BMPs implemented can be referenced through the acceptance of Nutrient Management within the county. Currently, 38% of county cropland is covered by NMP (DATCP, 2019). Other conservation practices and other LCD accomplishments are reported annually to the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) and Wisconsin Department of Natural Resources (DNR).

Field observations and modeling, through the transect survey; indicate that soil erosion has not been reduced to tolerable soil loss rates on all crop fields within the County. However, the erosion modeling data suggests that the overall average rates of erosion decreased substantially. Data on soil erosion was updated during the 2009 - 2011 program years. Trends for soil erosion have been captured through the Snap Plus nutrient management plans submitted with Nutrient Management Plans.

Procedures & Processes for a new LWRM plan
The implementation period of the 2009 plan will end in 2019. It is evident that the goals and objectives in the plan were not completely accomplished and will need to be carried forward. New resource issues and concerns have emerged and become new priorities within the county, i.e.; elevated nitrates in the county's aquifer. Also, new state and federal regulations have been enacted, mandating county action, i.e. EQIP, National security act which limits conservation plan exposure. For these reasons, the LCD has chosen to update the existing plan with the new programs that the LCD is responsible for administrating within Rock County. Additionally, guidance for future programming has been included in this document.

Review of Relevant Information
Rock County LCD staff began updating the LWRM plan in the spring of 2019. Staff began collecting and reviewing all existing documents, data, resource inventories and management plans on the natural resources of Rock County and statistics on land use trends. This information came from a wide variety of sources including local, state and federal agencies.

Involvement of DNR Basin Team
In the spring of 2019, a letter was sent from the LCD to the DNR Basin Team Leader. The LCD extended an invitation requesting that Basin Team Leaders or their staff participate in meetings of a Workgroup (AC) for this Plan. Many of the concerns and issues listed in the DNR Basin reports, were incorporated into the 2019 LWRM plan.

Involvement of Wisconsin DATCP Plan Coordinator
The LCD staff communicated with the DATCP Plan Coordinator in May 2019 to discuss the content of the plan and the process to be used in its development. The plan coordinator was contacted several times during plan development to report on the stages of progress.

Involvement of Advisory Committee
Before finalizing the goals, objectives and activities of the plan, an AC was formed to review the concerns and tools and to give further input on concerns and tools that may have been missed. The AC was compromised of local and regional staff from DNR, LCD, Natural Resources Conservation Service (NRCS), UWEX, Public Health, DATCP, Rock County Planning and Development, Producers, and Agricultural Industry Representatives. The AC members met three times during the plan development process - on June 10, July 8, and August 12, 2019. Members were also contacted individually. The LCD staff incorporated many of the concerns and tools from these meetings into the goals, objectives, and activities portion of this plan.

Agency & Public Review of Plan Drafts
The first draft of the Rock County Land and Water Resource Management Plan 2019 was completed and sent to DNR, DATCP, and AC members for review in late August 2019. Comments were sent back to the LCD and incorporated into a second draft of the plan. Copies are available for review at the LCD website. Availability of the copies was announced in all local papers. The final working draft was presented to and reviewed by interested Rock County residents at a noticed public hearing on November 12, 2019. See Appendix I for the public notice of the hearing, hearing minutes and other comments received from the public. Public comments from the hearing were incorporated, when possible, into the final draft.

Approval of Plan
The final draft LWRM plan was approved by DATCP in (insert date) and approved by the Wisconsin Land and Water Board at their (insert date) meeting. Final approval by the Rock County Board occurred on (insert date).

CHAPTER 2 - EXISTING RESOURCE CONDITIONS

Background Information

Understanding the state of the natural resources of Rock County is important for long term conservation planning. The natural physical conditions or geography of the county play an important role in regard to surface water and groundwater quality. Human activity on the landscape, such as agricultural production and land development play a critical role in water quality. This section provides a brief description of the natural setting of the county, its natural resources, and the impacts on these resources.

Population Trends

Rock County's population has changed little in the past 10 years after 12% growth (19,506 people) in the previous 16 years from 1992 to 2008 (Figure 1). In 2018, the County's estimated population was 160,349 (Wisconsin Department of Administration). Growth mainly has been in cities and adjacent towns along the commuter corridors (I-90/39; Hwy 14, Hwy 26, Hwy 59; and I-43). Most of the Rock County population resides in the cities (Beloit, Edgerton, Evansville, Janesville, and Milton), incorporated villages (Clinton, Footville, and Orfordville), and adjacent suburban areas in neighboring towns.

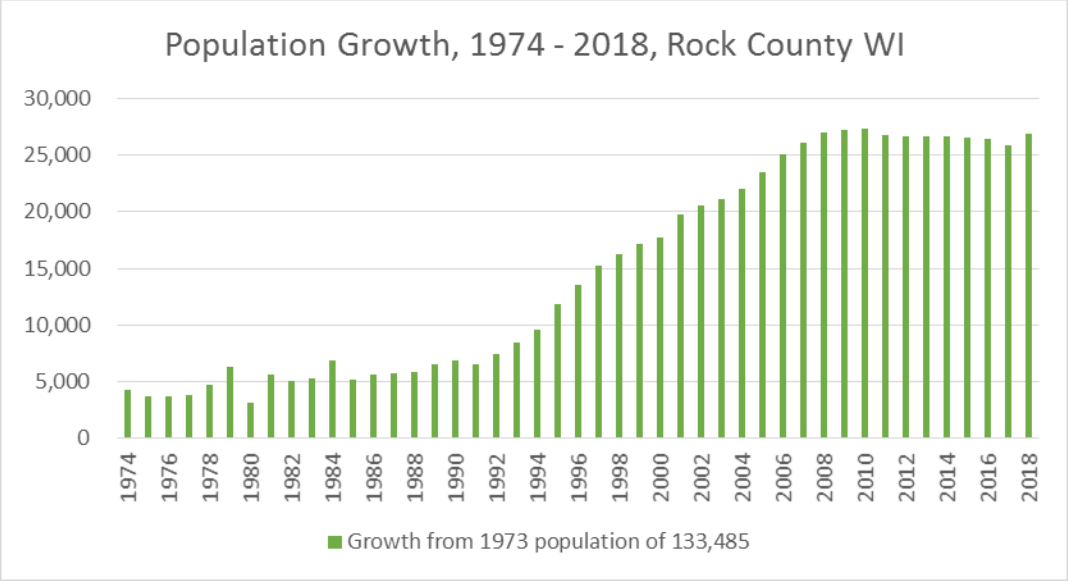


Figure 1. Population growth in Rock County, 1974 - 2018.

In 2017, there were 1,587 farms in Rock County (USDA Census of Ag, 2017) where a farm is defined as "sold or normally would have sold $1,000 or more of agricultural product in a year." The trend from 1987 to 1997 was a decline in total farms. Since 1997, the total number of farms has increased mainly in very small farms (1- 9 acres) and small farms (10 – 49 acres) while small to medium farms (50 – 179 acres) have declined (Figure 2). The number of large and very large farms has stayed about the same. Other forces at work are the real estate markets for ag land and for farmsteads, farm-scaled economics for new or beginning farmers, estate planning, and the situation of heirs.

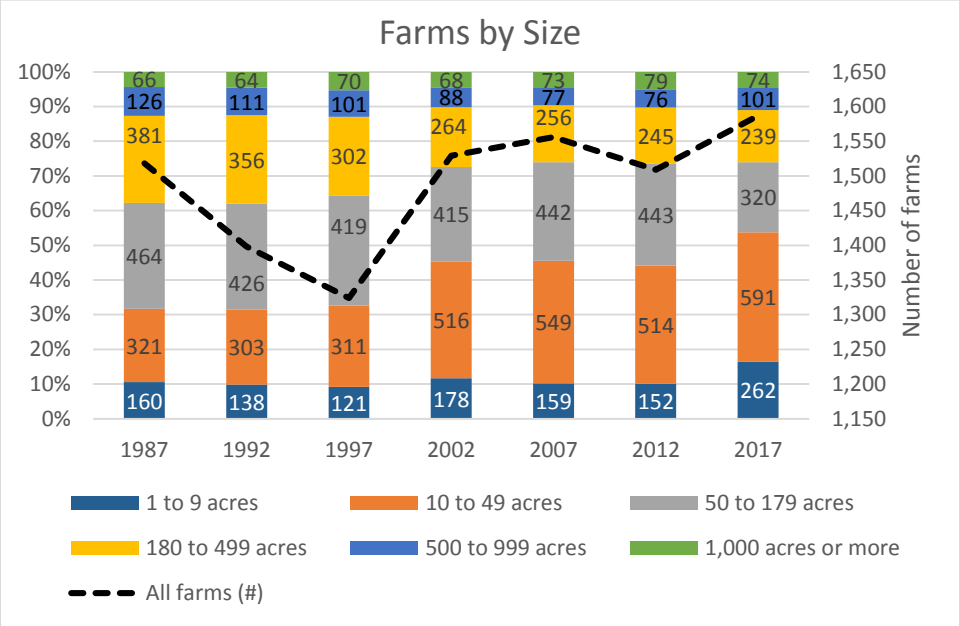


Figure 2. Number of farms in Rock County, 1987 – 2017.

According to the 2017 Census of Ag, there are approximately 2,686 producers in the county of which 63% are men and 37% are women. Their average age is 56 years old (Figure 3) with an average of 25 years farming; 62% have farmed more than 10 years and 38% 10 or fewer years.

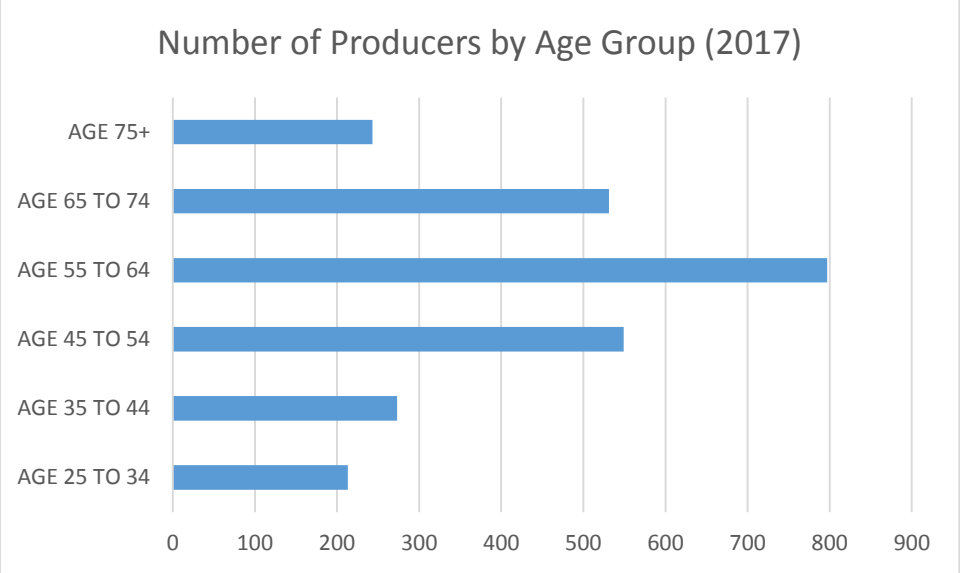


Figure 3. Age groups of Rock County producers. .

Seventy-nine percent of farms in the county have internet access with mobile devices (32%) most common followed by satellite (24%).

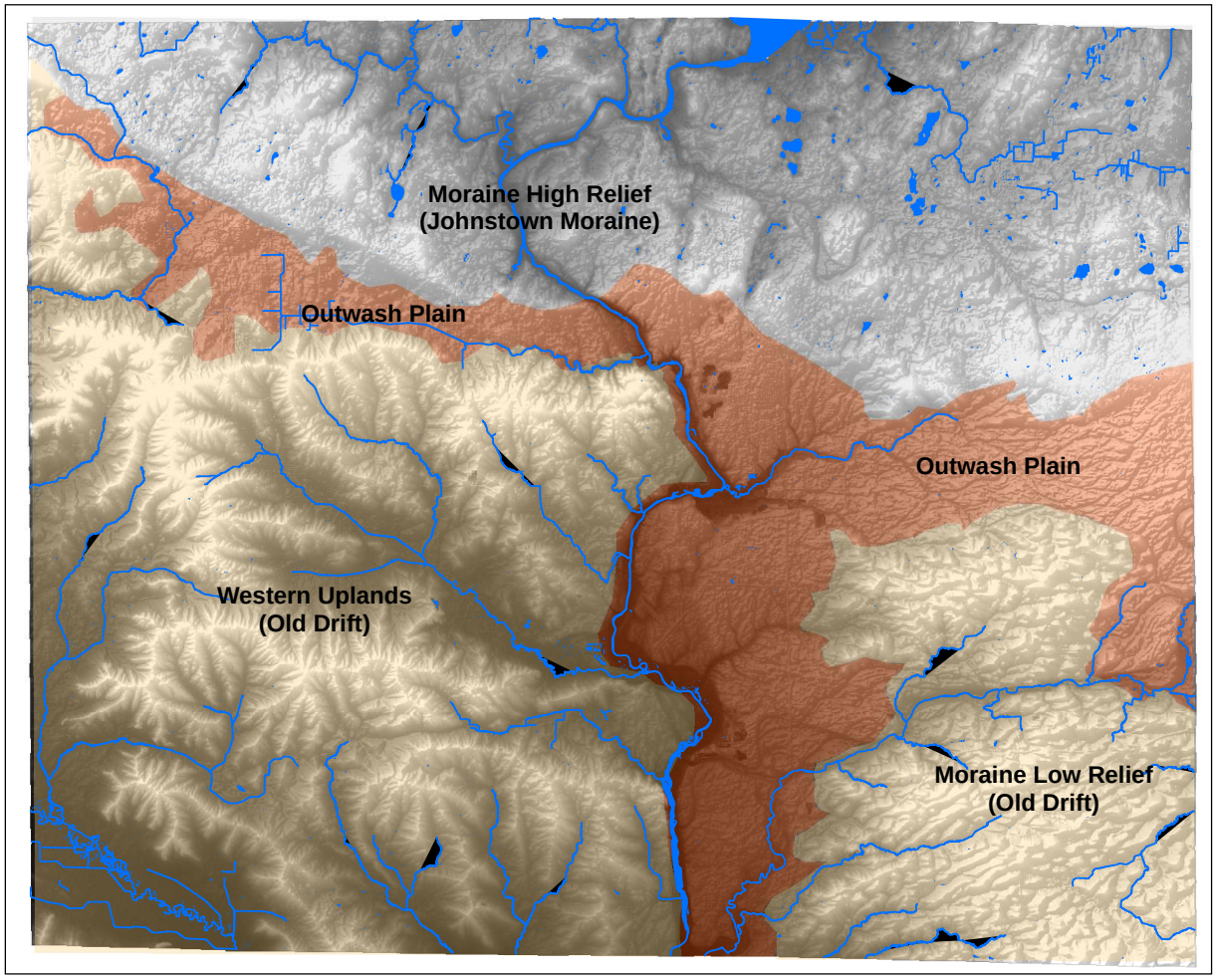
Land Use

Rock County is 721 square miles (461,453 acres). The primary land use in the county is agriculture. In 2017, approximately 75% of county land (353,505 acres) was in farms with 289,945 acres for crops,

and 3,000 acres for grazing. The major crops are corn grain and soybeans. Urban land makes up 43,069 acres. Developed and undeveloped woodlands claim 51,089 acres. Wetlands account for approximately 20,020 acres. Surface waters cover 3,549 acres. As the population of the county continues to grow, more emphasis will need to be placed on protecting natural resources, specifically crop land and soil. Although land use is still predominantly agriculture, urban and suburban development continues to encroach into rural Rock County.

PHYSIOGRAPHY

Rock County can be divided into four physiographic regions (Map 1) all shaped at various times in the last 30,000 years by continental glaciers. As a result, much of the county is covered with sand, silt, clay, and gravel at various depths over sandstone or dolomite. The glacial debris either settled in place when the ice matrix melted or was moved or eroded by water or wind. The material buried the Rock River valley and blocked some older drainage patterns. These regions are the Moraine High Relief, the Outwash Plains, the Moraine Low Relief, and the Western Uplands. Each region is described below.



Map 1. Physiographic regions of Rock County.

Moraine High Relief
The landscape of the northern one-third of the county features the Johnstown End Moraine north of County Road A and recessional moraines north to the county line that mark the edge of the most recent glacial event, the Wisconsin Glacial Episode which ended about 10,000 years ago. This region is characterized by uneven terrain; short steep slopes, an abundance of kettles (closed depressions), extensive wetlands (complexes at Lake Koshkonong, Lima Marsh, Storrs Lake, others), and few headwater streams. Nearly all of the notable impoundments (Lake Koshkonong) and kettle lakes (Storrs Lake, Clear Lake, and Gibbs Lake) in the county are in this region. The scenic steep wooded valleys of the Rock and Yahara Rivers cut through the Johnstown End Moraine north of Janesville.

The Kidder - St. Charles soil association dominates this region (Map 2, area 1). These soils are generally sandy clay silt loam to silty clay loam underlain by sandy loam glacial till or stratified sand and gravel. Soils are deep and well to moderately well-drained. The terrain is rolling hills, short steep slopes, and depressions.

Moraine Low Relief
This area is located in the southeastern part of the county and is distinguished by low relief ground moraines from earlier glacial epochs. The terrain is controlled not only by glacial deposits, but also by areas of shallow bedrock as can be seen at Carver Roehl County Park. Large contiguous areas of low rolling hills have long uniform slopes while other large areas are low, flat, and poorly drained though still farmable. Several headwater streams originate in this region and flow either into Turtle Creek or to the Rock River.

The Pecatonica-Ogle-Durand soil association dominates this area (Map 2, area 5). The soils in this region are primarily silty clay loam to sandy clay loam over sandy loam glacial till. Soils are deep and well to moderately well-drained.

Western Uplands
The Western Uplands in the southwestern part of the county is the oldest landscape in Rock County. It was formed by the early Pleistocene glacial ice sheet more than 30,000 years before present and by differential erosion of sedimentary bedrock. Dendritic drainage patterns and floodplain wetlands and higher relief than the rest of the county, numerous headwater streams define much of this area as do these the wide wet floodplain of the Sugar River at Avon Bottoms.

The fragile Edmund-Rockton-Whalan soil association dominates the uplands of this region (Map 2, area 6). The soils in this region are primarily clay and clay loam over dolomite bedrock. In contrast to the rest of the county, these soils are shallow and only moderately deep. Slopes can be very steep. The lowlands of the wide flat Sugar River valley are Marshan-Gotham-Dickman soil association; somewhat excessively to poorly drained, deep to moderately deep clay loam and loamy sand over sand or stratified sand and gravel.

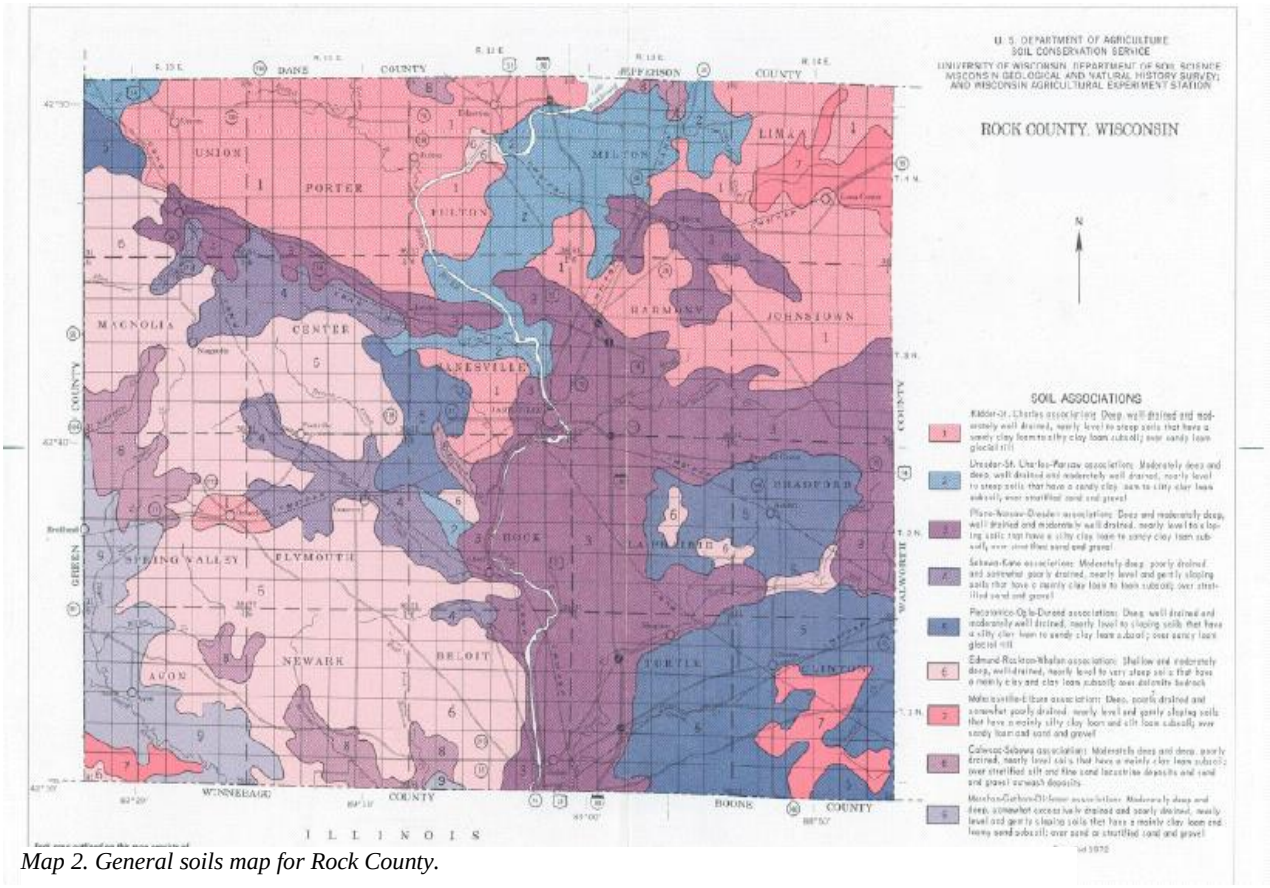
Outwash Plain
Immediately south of the Moraine High Relief region are wide flat Outwash Plains that extend nearly the full width of the county's midsection from east to west and dips south following the Rock River corridor. West of the Rock River and hills of Janesville, the outwash plain's poor natural drainage has been extensively ditched to form the headwaters of Marsh Creek. The plain

east of the Rock River locally referred to as the Rock Prairie, is by contrast, naturally well-drained, deep prairie soils over sand and gravel and is the most highly productive agricultural area of the county. The eastern plain is notable for its lack of surface water. One intermittent stream, Blackhawk Creek, flows from this area and there are no lakes and very few if any natural ponds.

The Outwash Plains are primarily Plano-Warsaw-Dresden soil association, which has silty clay loam to sandy clay loam over stratified sand and gravel (Map 2, area 3). The Sebewa-Kane soil association (Map 2, area 4) is a major part of the western Outwash Plain. The soils in this area are poorly to somewhat poorly drained and moderately deep clay loam to loam over stratified sand and gravel.

SOILS

Soil is most prevalent natural resource in the county. Soil is a critical component of the water cycle and vital nutrient cycles for crops. Soil in good condition retains more water and nutrients in the root zone for crops; filters and cools groundwater that becomes either base flow in streams and lakes or well water; and absorbs a larger share of rainfall than soils in poor condition. Rock County soils have been farmed for about 150 years through a succession of annual and hay crops and intensive tillage. Not until the late 1990s have tillage, planting, and harvesting technology that increased old crop residue on the soil surface become widespread in Rock County, primarily through agronomic advances such as Roundup Ready crops (mainly soybeans) as well as high-residue tillage systems and planters. Adoption of high residue farming tends to be by producer



Map 2. General soils map for Rock County.

and not necessarily by watershed. A driving force in the spread of higher residue systems were 1985 Farm Bill provisions for conservation on Highly Erodible Lands.

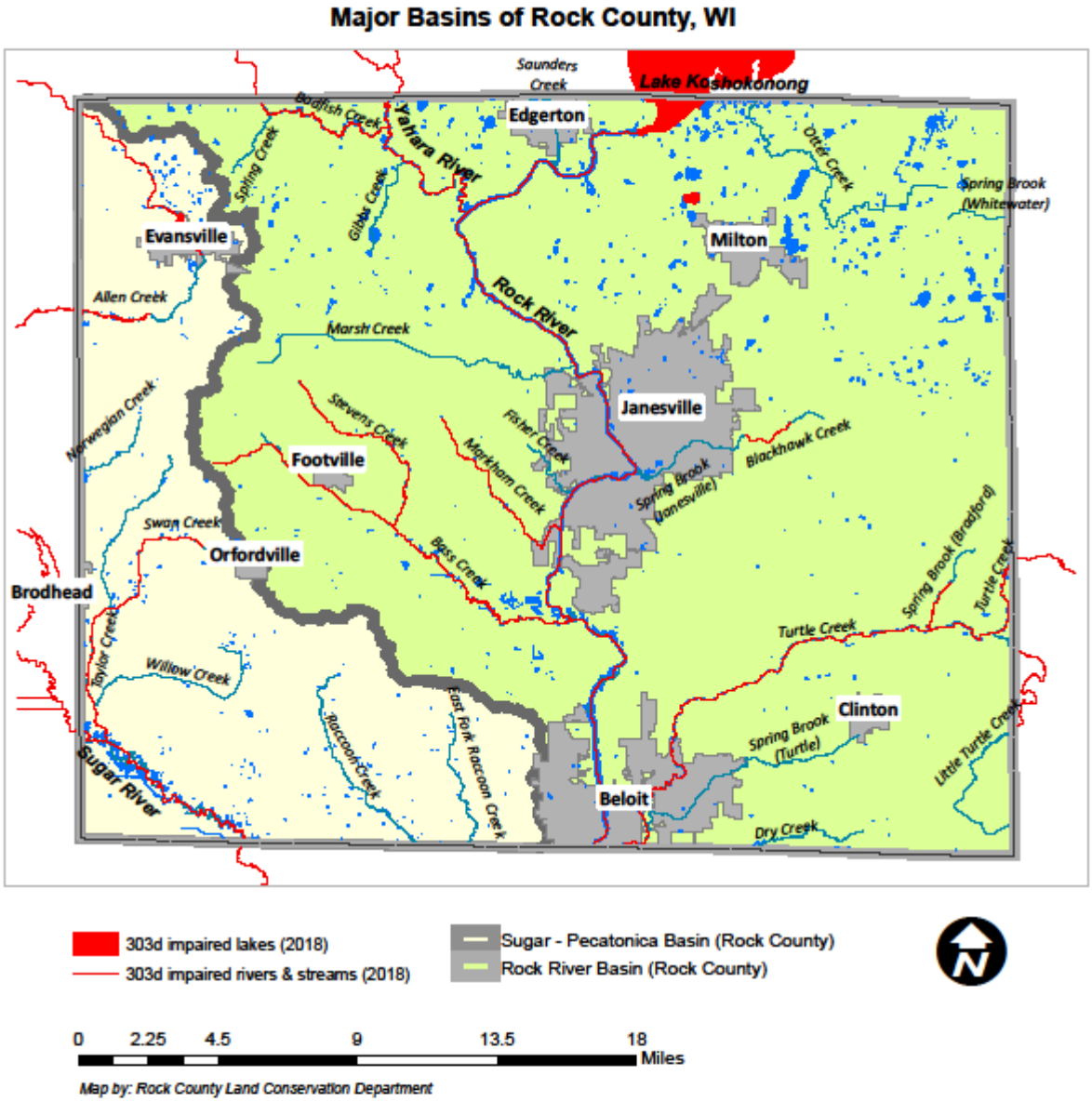
The growth and decomposition cycles in the crop soil ecosystem are important in soil renovation and building natural fertility over the long- and short-terms. The biologically active zones above and below the soil surface is habitat for billions of organisms and infinite interactions. Decomposition is a biological process that in part depends on carbon, nitrogen, moisture, temperature, and oxygen in the soil. When soil is farmed, many things happen; extra oxygen via tillage and extra nitrogen are added which in turn fuels microbes in the breakdown of carbon in organic residues. These are replaced somewhat in crop residue left in the field as roots and debris. Heavy equipment, plowing, frequent traffic, and working wet soils can create zones of compaction or plow layers that restrict water movement and storage throughout the profile.

Landscape position influences soil formation, the risk of soil movement downslope, and the risk of nutrient loss to the environment. On hills and ridges, soil particles are moved down slope by water or blow away. Soil moved by stormwater or snowmelt settles at the bases of slopes or is washed into stream channels, basins, or floodplains. Stable soils in poorly drained, saturated settings become hydric; they are often under existing or former wetlands. The fluctuating water table leaches nutrients from the lower horizons of hydric soils. Because saturation limits oxygen available for decomposition, hydric soils are comprised in varying fractions of partially decomposed organic material.

The seasonal continental climate of the Upper Midwest transitions from frozen winters to hot, relatively dry summers. Each season is about three months long. Spring is the wettest season with snowmelt followed by frequent rains. Fall weather is cool and mostly dry with brief periods of rain. Time accounts for the amount of physical and chemical development, weathering, and movement of soil. The youngest soils in Rock County are found north of the Johnstown End Moraine, followed by the soils located in the Outwash Plains then by the soils of the Moraine Low Relief and finally the soils of the Western Uplands, the oldest in the county.

Together, all these factors over many thousands of years have created soils with unique chemical and physical properties that can be destroyed if not treated with care. Perhaps the most altered forming factor is the change in vegetation from perennial deep-rooted prairie and woodlands to annual crops and the frequency of disturbance.
In regard to water quality, living plants and plant residue protect the surface from erosion and slow surface flow which can increase infiltration. The depth and density of small channels and pores created by plants and other organisms can increase the amount of water a soil can hold.

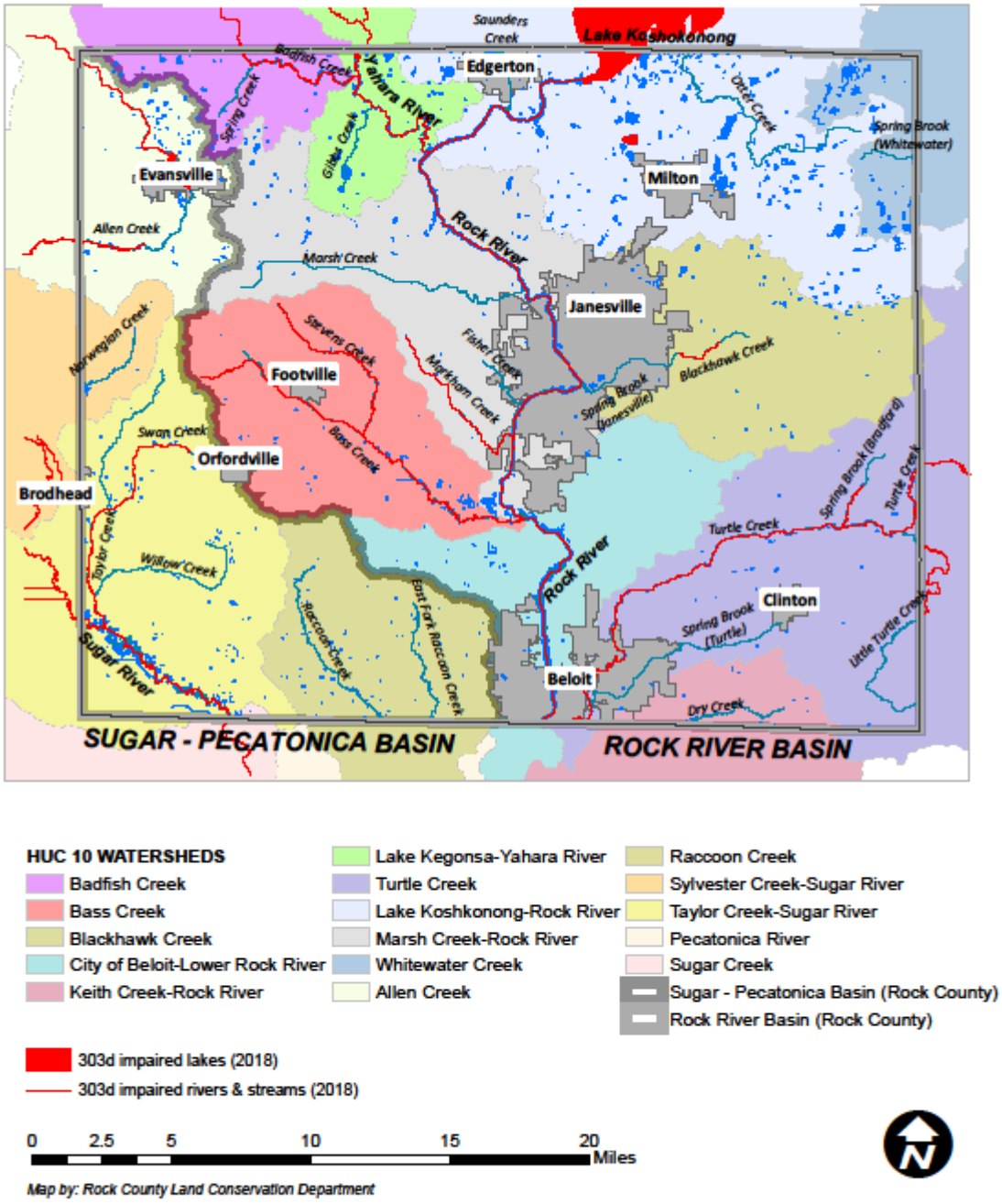
Surface Water Resources
Rock County has 3,549 acres of surface waters or 1% of its total area (Wisconsin DNR). The largest water areas are parts of regional assets such as the Sugar River, the Rock River, and Lake Koshkonong, an impoundment of the Rock River. In all, there are 380 miles of rivers and streams in Rock County.



Map 3. Major basins and surface waters of Rock County.

The county boundary overlays part of two regional (HUC 8) watersheds (Map 3); the Lower Rock River Basin and the Grant-Platte-Sugar-Pecatonica River Basin (referred hereafter as the Sugar-Pecatonica Basin). ("HUC" or Hydrologic Unit Code is a national system for organizing watersheds within larger watersheds.) Nested in these larger basins are all or part of 14 smaller HUC 10 watersheds (Map 4). About three-fourths of the county landscape drains locally to the Rock River, which bisects the county from north to south connecting Lake Koshkonong at the north county line, flowing over the Johnstown End Moraine then along the border of the Outwash Plains on the east and the adjacent Western Uplands, through the major urban areas at Janesville and then Beloit at the Wisconsin – Illinois state line. On a regional scale, Beloit is the approximate midpoint between the Rock River's headwaters (Horicon, Wisconsin) to its confluence with the Mississippi River (Rock Island, Illinois), in all about 320 miles. The Sugar

River joins the Rock River between the Beloit and Rockford, Illinois. In Rock County, the Sugar – Pecatonica Basin is located in the Western Uplands physiographic region.



Map 4. Sub-watersheds (HUC 10) and impaired waters (DNR; listing in Appendix B).

Rock County is home to all or part of three rivers (Rock Yahara, and Sugar) and fifty streams extending a total of 308 miles. The rivers and streams in the Rock River Basin are the Yahara River, Badfish Creek, Saunders Creek, Otter Creek, Blackhawk Creek, Marsh Creek, Markham Creek, Bass Creek, and Turtle Creek. It is important to note that there are five separate streams in the Rock River portion of the county with "Spring" in the name; Spring Creek (Cooksville),

Spring Brook (Lima), Spring Brook (Janesville), Spring Brook (Bradford), and Spring Brook (Beloit). Named streams The Sugar – Pecatonica Basin covers the far western towns and all towns west of the City of Beloit near the stateline. Streams include from the north; Allen Creek, Norwegian Creek, Taylor Creek, Swan Creek, Willow Creek, and two branches of Raccoon Creek.

There are several lakes in the county that are popular for recreation. The largest lake in the region is Lake Koshkonong, an impoundment of the Rock River (Table 1). Only the downstream area around Newville and north of Milton are in Rock County. Other favorite lakes are Gibbs Lake (Fulton area), Storrs Lake (Milton), and Clear Lake (Milton) which area all seepage lakes. Lake Leota, which is above the dam on Allen Creek in Evansville, was dredged in 2008-2009. A very small shallow millpond was retained with the dam restoration on the East Fork of Raccoon Creek. The two small public lakes in Janesville near Rotary Gardens are abandoned gravel pits.

Table 1. Lakes, ponds, and marshes of at least 10 acres in Rock County. .

NAME	TYPE	WATERSHED	NAVIGABLE	Acres in County
Lake Koshkonong	Lake	Lower Koshkonong Creek	Yes	776.6
Clear Lake	Lake	Lower Koshkonong Creek	Yes	87.0
Gibbs Lake	Lake	Yahara River and Lake Kegonsa	Yes	77.9
Storrs Lake	Lake	Lower Koshkonong Creek	Yes	74.2
Lake Leota	Lake	Allen Creek and Middle Sugar River	Yes	37.7
Mud Lake	Pond	Lower Koshkonong Creek	Yes	35.4
Spauldings Pond	Pond	Blackhawk Creek	Yes	27.7
Beckman Mill Pond	Pond	Lower Sugar River	Yes	19.5
Unnamed	Lake	Marsh Creek	Yes	18.1
Kiwanis Pond	Pond	Blackhawk Creek	Yes	14.2
Unnamed	Pond	Lower Sugar River		13.0
Lions Pond	Pond	Blackhawk Creek		12.9
Unnamed	Pond	Lower Koshkonong Creek	Yes	12.8
Willies Pond	Pond	Rock River/Milton	Yes	12.7
Little Gibbs Lake	Lake	Yahara River and Lake Kegonsa	Yes	12.3
Unnamed	Pond	Lower Koshkonong Creek		11.1
Unnamed	Pond	Lower Koshkonong Creek	Yes	10.0
Unnamed	*Marsh*	*Lower Koshkonong Creek*		*150.65*
Grass Lake	*Marsh*	*Lower Koshkonong Creek*	*Yes*	*77.96*
Unnamed	*Marsh*	*Lower Koshkonong Creek*		*74.55*
Unnamed	*Marsh*	*Lower Koshkonong Creek*		*64.98*
Bowers Lake	*Marsh*	*Lower Koshkonong Creek*	*Yes*	*58.36*
Unnamed	*Marsh*	*Whitewater Creek*		*55.54*
Sheepskin Lake	*Marsh*	*Lower Koshkonong Creek*		*48.64*
Muskrat Lake	*Marsh*	*Yahara River and Lake Kegonsa*	*Yes*	*44.7*
Unnamed	*Marsh*	*Whitewater Creek*	*Yes*	*35.47*

NAME	TYPE	WATERSHED	NAVIGABLE	Acres in County
Unnamed	*Marsh*	*Lower Koshkonong Creek*		*24.14*
Unnamed	*Marsh*	*Lower Koshkonong Creek*		*23.61*
Unnamed	*Marsh*	*Lower Koshkonong Creek*	*Yes*	*22.28*
Unnamed	*Marsh*	*Lower Koshkonong Creek*		*21.88*
Unnamed	*Marsh*	*Lower Koshkonong Creek*		*20.5*
Unnamed	*Marsh*	*Lower Koshkonong Creek*	*Yes*	*18.91*
Unnamed	*Marsh*	*Lower Koshkonong Creek*	*Yes*	*18.68*
Unnamed	*Marsh*	*Whitewater Creek*		*17.12*
Unnamed	*Marsh*	*Lower Koshkonong Creek*		*16.07*
Unnamed	*Marsh*	*Whitewater Creek*		*15.41*
Unnamed	*Marsh*	*Bass Creek*		*13.61*
Unnamed	*Marsh*	*Whitewater Creek*		*12.98*
Unnamed	*Marsh*	*Whitewater Creek*		*12.17*
Unnamed	*Marsh*	*Lower Koshkonong Creek*		*11.42*
Unnamed	*Marsh*	*Allen Creek and Middle Sugar River*		*10.16*

A few dams have been removed in the last few decades. These are Turtle Creek at Shopiere, the Yahara River at Stebbinsville and Fulton, Bass Creek at Afton, and Monterey Dam on the Rock River in Janesville (2018). The Rock River is dammed at Indianford forming Lake Koshkonong, the City of Janesville (Centerway), and the City of Beloit.

Surface water expression varies by physiographic region. In the pitted and uneven Johnstown End Moraine, overland drainage is often deranged (streams), isolated (kettles), or occasional (flow only when groundwater is high).

Nearly all naturally occurring lakes and ponds are found in the Moraine High Relief area. Kettle or "seepage" lakes formed in the depressions left by the glaciers. Water levels in seepage lakes are controlled predominantly by groundwater, an outlet if one exists, and surface water runoff to a lesser extent. Seepage lakes can easily become pollution sinks when sediment, nutrients, and other pollutants settle and accumulate in the basin. Well-known seepage lakes are Clear Lake (no outlet), Storrs Lake (Otter Creek), Gibbs Lake (Gibbs Creek), Grass Lake (no outlet), and Bowers Lake (Otter Creek).

According to Wisconsin Administration Code NR 102, "Water Quality Standards for Wisconsin Surface Waters", Rock County's waters have a number of different classifications (or designations) based on the health of the water body. Impaired county surface waters are listed in detail in Appendix B and shown in Map 4. According to the DNR, an Exceptional Resource Water (ERW) is a stream that exhibits the same high quality resource values as Outstanding Waters, but may be impacted by point source pollution or may receive future discharges. These waters may host cold-water communities, commonly known as trout waters or very diversified warm water sport or forage fisheries. Impaired waters are on a list maintained by the DNR according to Section 303(d) of the federal Clean Water Act. This list includes Wisconsin surface waters for which beneficial uses of the water (i.e. drinking, recreation, aquatic habitat, and industrial use are impaired by pollutants.

In 2011, a Total Maximum Daily Load for the Rock River Basin (Map 5) was completed by the Wisconsin DNR and approved by US EPA in response to multiple phosphorus and sediment impaired water listings within the basin. The Rock River TMDL identifies the maximum

Map 5. Rock River TMDL area and sub-watersheds (DNR reach).

amount of phosphorus and sediment that a water body can receive and still meet Water Quality standards. The TMDL report found more than half of the pollutants come from cropland, barnyards, pastures and other agricultural operations: 66.8% total phosphorus and 91.8% sediment.

The Rock River TMDL report calculates the phosphorus and sediment loading from agricultural lands draining to each impaired stream reach or water body in Rock County, and estimates the load reduction necessary to meet clean water goals. The TMDL also identifies sub-basins, not specific fields that are contributing excess phosphorus and sediment to impaired waters - see sub-basin map below. Field scale models, like SnapPlus, can also be used to help agricultural operations determine what practices can help meet TMDL reduction goals. The Rock River TMDL edge of field reduction targets for agricultural lands within Rock County watersheds (Table 2) will be used as Water Quality objectives for this plan; will help prioritize Rock County's soil conservation efforts and provides some metrics for annual work plan reports submitted to DATCP.

Table 2. Rock County - Rock River TMDL Sub-basins: Agricultural Baseline, Edge of Field

TMDL Sub-basin (DNR Reach #, Map 5)	**TMDL Baseline P Loss (lbs/ac/yr)**	**TMDL Percent Reduction**	**TMDL Reduction Target (lbs/ac/yr)**	**HUC 10 Watershed (Map 4)**	**Location in Rock County** (DNR Reaches vary in size and often include areas outside a county boundary.)
59	6	41%	3.5	Whitewater Creek	Far northeast corner of county in town of Lima, mainly of Spring Brook (Lima).
61	6	8%	5.5	Lake Koshkonong – Rock River	Rock River from Newville to Yahara River and from Edgerton to Milton.
69	6	45%	3.3	Lake Kegonsa - Yahara River	Badfish Creek and Yahara River watersheds south of Dane County line, from Evansville to Edgerton.
70	6	29%	4.3	Marsh Creek – Rock River	Rock River between Yahara and Marsh Creek near Riverside Park in Janesville.
71	6	33%	4.0	Marsh Creek – Rock River	Between Evansville and Janesville; entire watershed in Rock County.
72	6	32%	4.1	Blackhawk Creek	Headwaters from Walworth County line to about Hwy 14 on east side of City of Janesville.
73	6	43%	3.4	Blackhawk Creek	Headwaters in Towns of Harmony and La Prairie, downstream half in City of Janesville.
74	6	21%	4.7	Marsh Creek – Rock River	Fisher Creek on west side of City of Janesville; flows directly to Rock River, not a tributary to Marsh Creek.

TMDL Sub-basin (DNR Reach #, Map 5)	TMDL Baseline P Loss (lbs/ac/yr)	TMDL Percent Reduction	TMDL Reduction Target (lbs/ac/yr)	HUC 10 Watershed (Map 4)	Location in Rock County (DNR Reaches vary in size and often include areas outside a county boundary.)
75	6	34%	4.0	Marsh Creek – Rock River	Markham Creek southwest of City of Janesville; flows directly to Rock River, not a tributary to Marsh Creek.
76	6	49%	3.1	Marsh Creek – Rock River	Rock River from Markham Creek to Bass Creek; includes Afton, south side of City of Janesville.
77	6	40%	3.6	Bass Creek	Stevens Creek. North and east of Footville, joins Bass Creek at Hanover.
78	6	33%	4.0	Bass Creek	Mainstem of Bass Creek from Footville – Orfordville and Hanover, joins Rock River at Afton.
79	6	40%	3.6	City of Beloit – Lower Rock River	Rock River from Bass Creek to Illinois state line in City of Beloit. Area east of Rock River in La Prairie has intermittent flow; unnamed perennial stream west of river joins Rock River at Big Hill Park and Town of Beloit wastewater facility.
80	6	49%	3.1	Turtle Creek	Most of this reach is in Walworth County.
81	6	34%	4.0	Turtle Creek	Most of southeast corner of county. Clinton, Bradford, Turtle, east side of City of Beloit; includes Spring Brook (Bradford), Spring Brook (Beloit), and Little Turtle Creek.
83	6	37%	3.8	Lake Koshkonong – Rock River	Most of far northeast corner of county from north Johnstown to Newville; main stream is Otter Creek

Source: WDNR 2011 TMDL report and 2019 WDNR staff communication

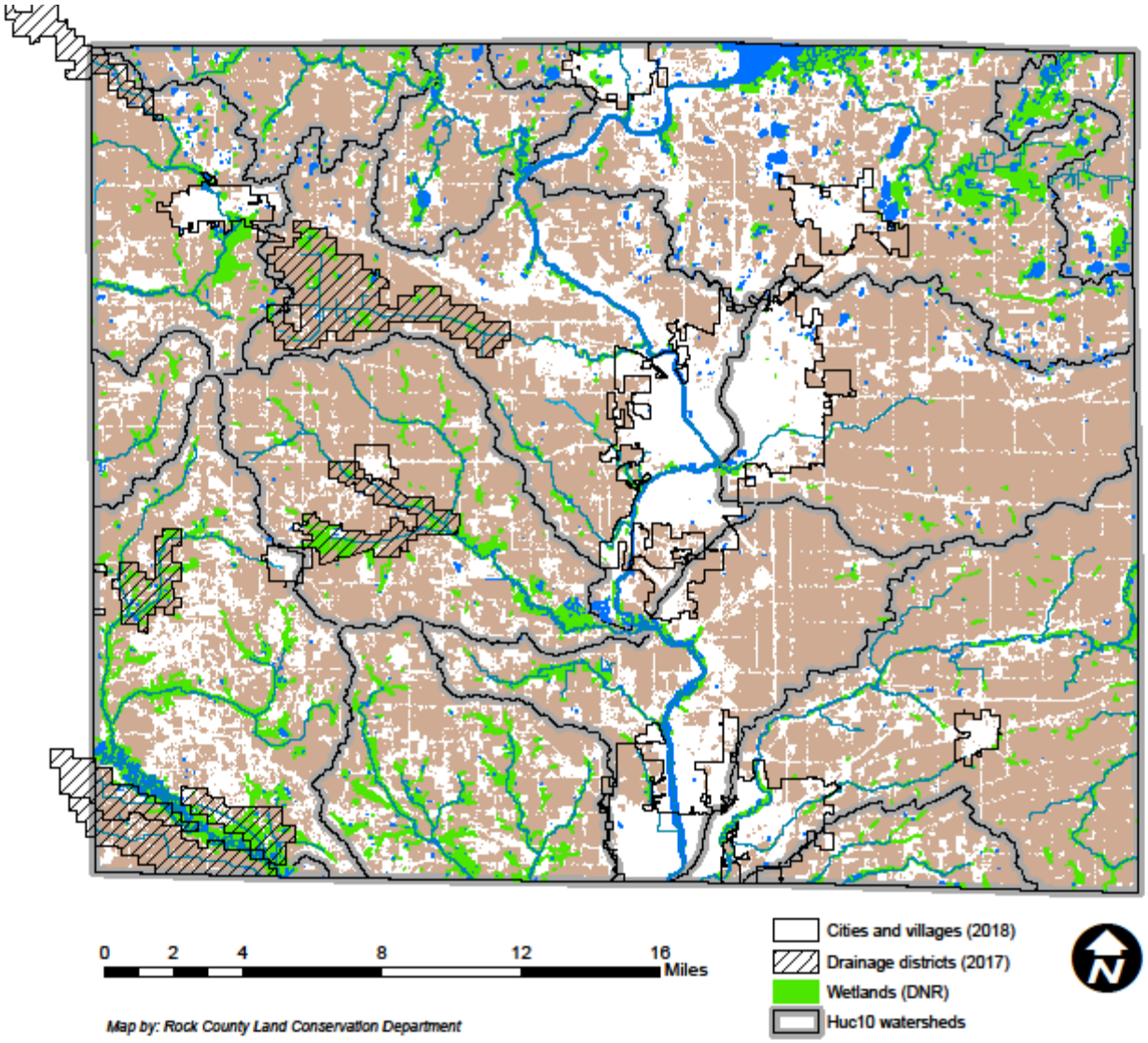
Meeting the TMDL phosphorus and sediment reductions in Rock County will require agricultural operations to meet and stay in compliance with the existing state agricultural performance standards (NR 151 and NR 243) and local regulations.

The Rock River TMDL report and additional information are at https://dnr.wi.gov/topic/TMDLs/RockRiver/

Wetlands

Wetlands comprised a total of 20,020 acres or 4.3% of the county (Map 6). Wetlands support unique flora and fauna. The major wetland type in the county is marsh/emergent vegetation found in poorly drained wetland complexes in the Johnstown End Moraine (Lake Koshkonong

marshes, Storrs Lake/Bowers Lake marsh), abutting Bass Creek from Hanover to Afton, around Avon Bottoms near the Sugar River and downstream from Evansville in the Allen Creek Wildlife Area. The next most common wetland type, although much smaller in overall area, are wooded wetlands. Some examples are the broadleaved floodplain forests along the Rock, Sugar, and Yahara Rivers; the tamarack woods in Lima Marsh, or scattered shrub/scrub wetlands located throughout the county. Major drained wetlands are the headwaters of Marsh Creek, Bass Creek above Hanover, headwaters of Otter Creek near Lima Marsh, and the headwaters of Spring Brook (Lima).



Map 6. Wetlands in Rock County.

Once viewed as wasteland, useful only when drained for agriculture or filled for development, wetlands are now understood to provide substantial and irreplaceable benefits for people and the environment. By filtering pollutants, nutrients, and sediments, wetlands help protect water quality in our lakes, rivers, streams, and wells. By slowly releasing runoff from heavy rains and

snowmelts, wetlands reduce flood damage. Wetlands release cool shallow groundwater via springs and seepage flow into adjacent streams, lakes, and rivers. Wetlands provide essential food and shelter for fish, frogs, turtles, mammals, and waterfowl. Along shorelines, wetlands protect against erosion from waves and currents. Acre for acre, wetlands usually support a greater variety and number of animals than any other biotic community in the area. Wetland can enhance quality of life and outdoor activities such as hunting, fishing, boating, biking, hiking, and birding. Avon Bottoms and the Lake Koshkonong marsh complex are designated Important Bird Areas.

Groundwater

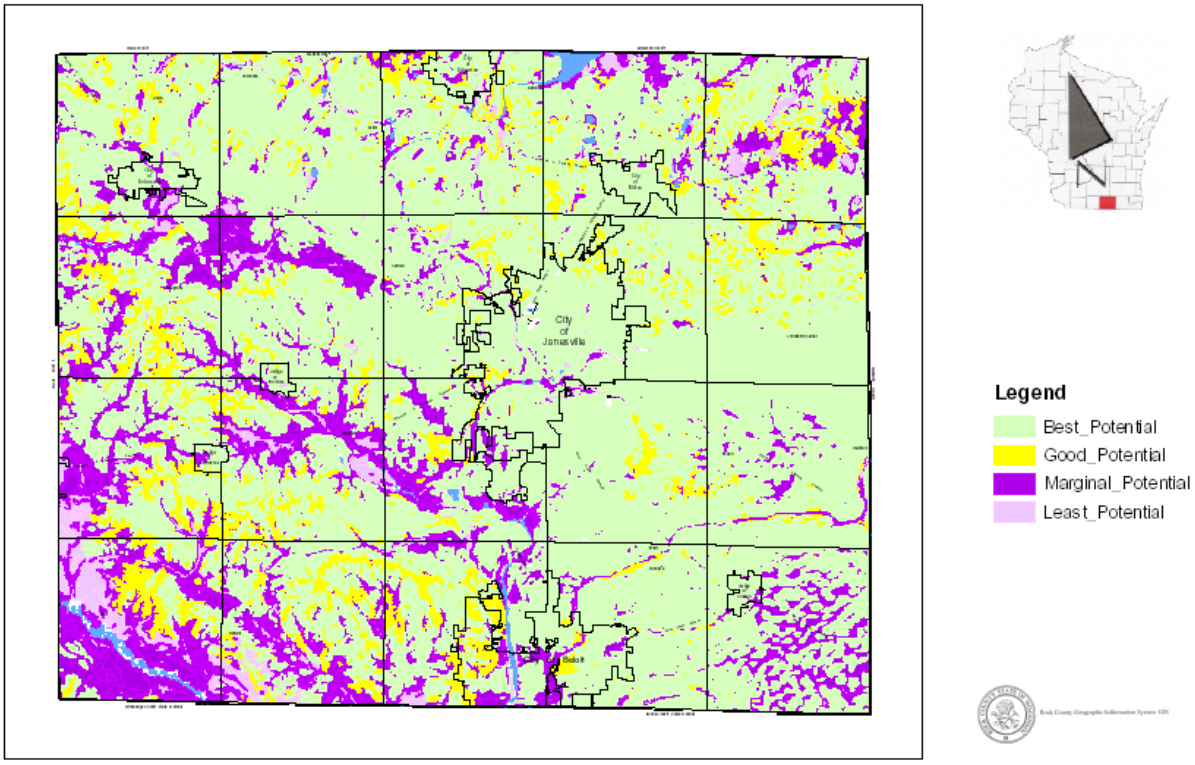
Groundwater is a very important resource in Rock County that must be used wisely for the long-term benefit of county residents, businesses, and visitors. Rock County obtains all of its potable water from private or municipal wells. In addition, numerous high capacity wells exist in the County to serve agricultural and industrial uses. In 2009 Rock County's groundwater usage was estimated at 20 million gallons/day. It is now estimated Rock County uses 26 million gallons of groundwater a day. (USGS statistics estimates).

As reported in *Groundwater Protection Principles and Alternatives for Rock County* (Zaporozec, 1985), the County's aquifers are close to the land surface and limited natural protection makes them vulnerable to pollution. The morphology of soils plays a vital role in the attenuation of pollutants before they reach an aquifer. The most significant soil factors determining the rate of aquifer recharge are slope, depth, texture, and permeability. The textures of most of the county's soils are medium to moderately course, which allows water to move through them easily. However, the soils tend to be relatively deep, 3-5 feet, enabling longer contact time with soil particles. Once through the soil layer, pollutants remain relatively unchanged in the aquifer. A soil's natural defense for aquifer protection is compromised when a potential pollutant is water soluble, such as nitrate-nitrogen. Map 7 illustrates Soil Attenuation Potentials for Rock County.

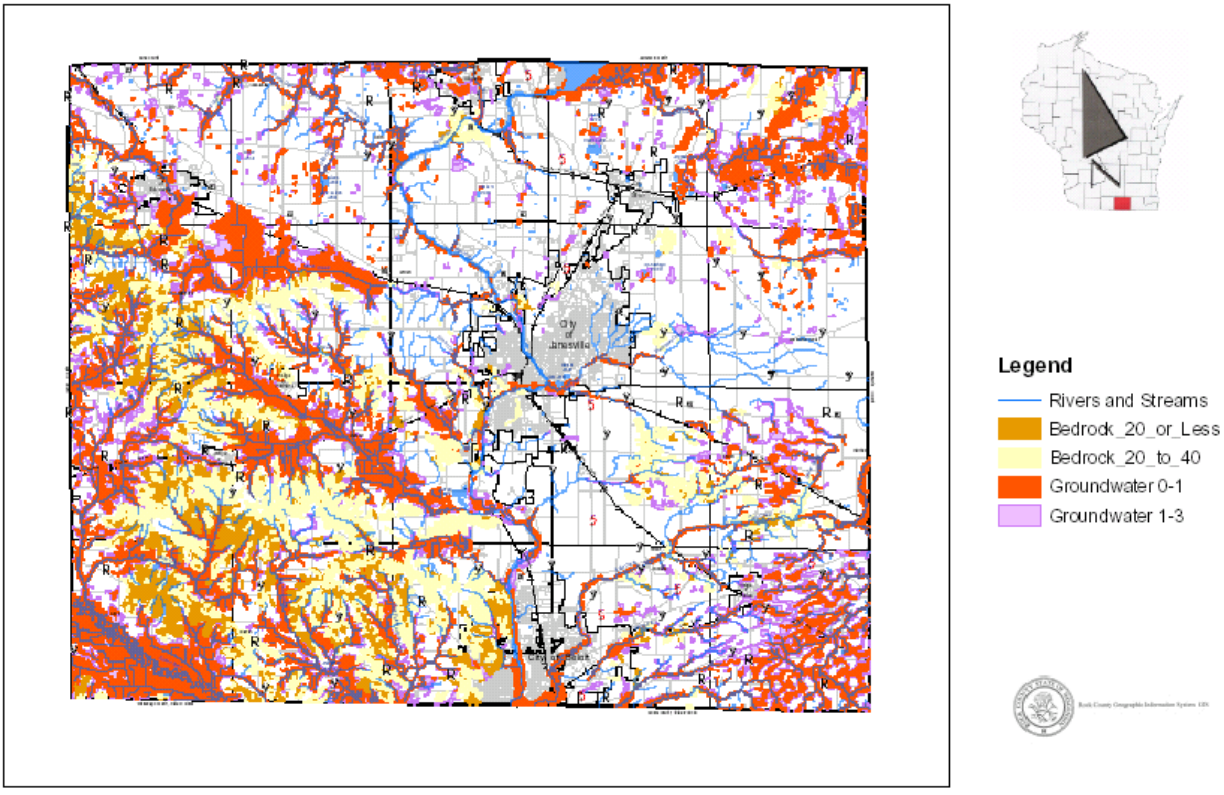
During the last update to this plan (2009) over one-fourth (25%) of private wells tested in Rock County exceed the health enforcement standard of 10 mg/L for nitrate-nitrogen. As of the writing of the update, an additional 5 % of wells tested above the 10 mg/l threshold for safe drinking water. Rock County currently has the highest number of wells testing for Nitrates above the 10 mg/L threshold in the State of Wisconsin, presently at thirty percent (30%), which is more than double the statewide exceedance level of 12% (WGCC 2015).

Nitrates are present naturally in groundwater at low levels (less than 2 mg/L), but are elevated due to leaching of agricultural fertilizers, lawn fertilizers or septic systems. Areas with elevated groundwater (less than 3 feet to surface), shallow soils (less than 40 inches), or shallow soils overlying fractured dolomite bedrock are particularly susceptible to groundwater contamination from nitrates (Map 8). It is estimated that over 4,000 well exceed the ES of 10 mg/L.

Map 7. Soil attenuation potential in Rock County.



Data Source: Groundwater Protection Principals and Alternatives compiled by Rock County Land Conservation Department



Data Sources: Rock County Soil Survey

Map 8. Depth to groundwater and bedrock in Rock County.

Options available to reduce nitrate impacts on the soil surface include nutrient management plans which include split application of nitrogen to corn, nitrogen application timing, conservation crop rotation, cover crops, irrigation well testing and nutrient crediting, well decommissioning, and land preservation. In cases of areas already identified as having high nitrate in the well water, the designation of "special well casement areas" would assist in ensuring that new wells are constructed in a manner as to avoid penetration of high levels of nitrates. An example of these costs is shown below:

The City of Janesville: spent $9,000,000 for a groundwater blending facility; Village of Orfordville spent $273,561 for a new well; Village of Clinton spent $573,970 for a new well; Village of Footville spent $133,597 for a well reconstruction as a direct result of high nitrates and the City of Beloit has replaced a well due to exceedance of the MCL of 10 mg/l. No replacement costs were provided for Beloit.

The second leading cause of unsafe wells in Rock County is bacterial contamination. Of the tests performed every year by the Rock County Health Department for private wells in Rock County, 15% to 30% are positive for bacteria. In most cases, the contamination is related to poor well construction issues, especially the existence of well caps that are not vermin proof. In most cases, bacteria problems are localized to an individual well; however, in some situations, local geology and land use can have a broader impact on bacteria contamination of wells. Annual testing can identify this problem and areas with chronic problems. Designating "special well casement areas" can promote the safe construction of new wells in impacted areas.

Other known sources of groundwater contamination include underground storage tanks, pesticide applications, salvage yards, solid waste disposal sites, pharmaceutical wastes, spills of hazardous substances, and improperly abandoned wells. Programs such as residential and agricultural Clean Sweeps and pharmaceutical drug collection programs assist the community in reducing the potential for contamination of the waters of Rock County.

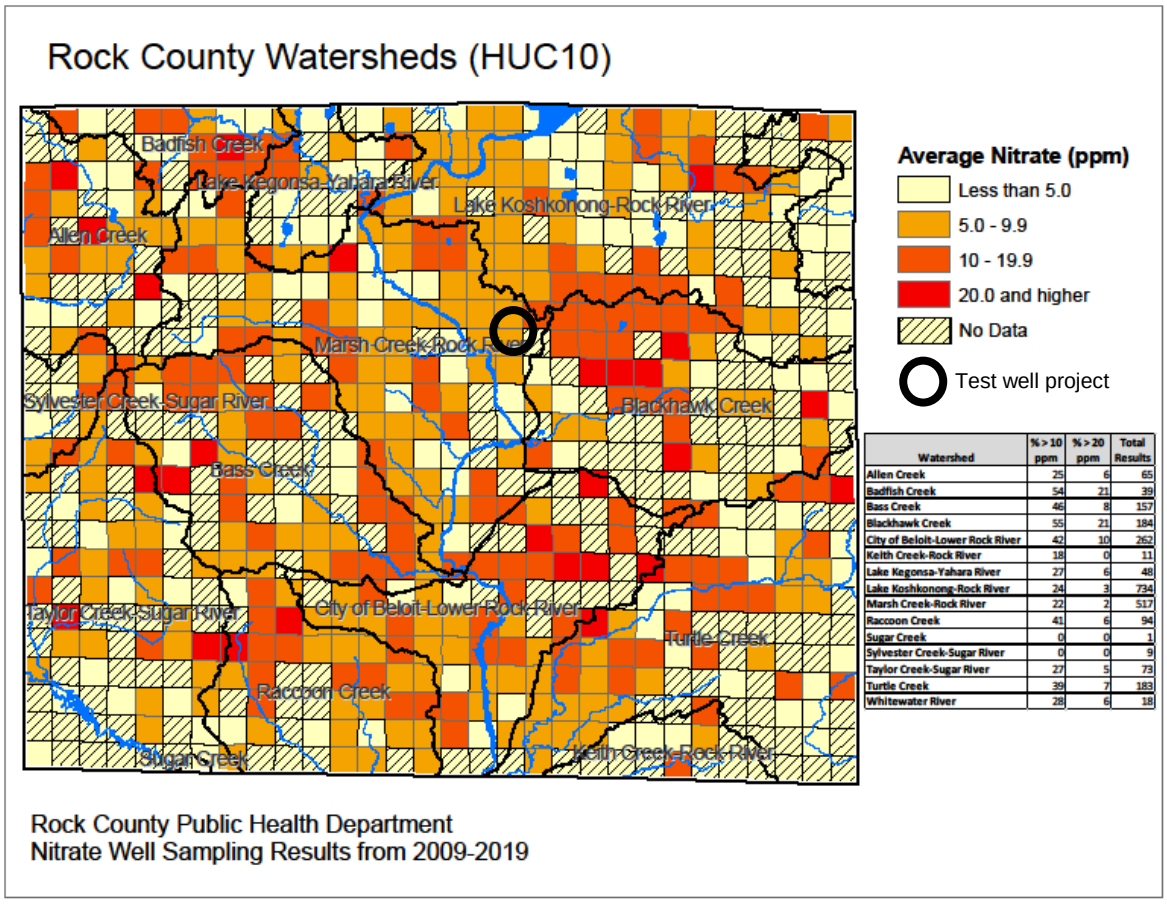
In 1995, it was estimated that there were over 500 wells in Rock County that are no longer in use but have not been properly abandoned (LCD, 1995). An inventory was conducted and 350 wells were identified. Each of these wells were considered a direct conduit for contamination into groundwater. A large scale effort was initiated with over 250 wells closed by 1999. Since the inception of cost sharing for implementing this plan, the LCD continues to close wells at a rate of approximately 10 per year with a total of 100 wells being closed.

Rock County Health Department and LCD has implemented a county well abandonment ordinance along with cost sharing for proper abandonment of these wells. Educating the public about groundwater concerns is essential in reducing negative impacts to the groundwater of Rock County. Well testing programs and interagency coordination of community awareness are needed to prevent further degradation of groundwater.

In 2002, the USGS created a groundwater simulation model that identified zones of contribution for each municipal well in Rock County (Gaffield, 2002). Zones of contribution are land areas for infiltration and recharge to a particular well. Recognizing that it is much easier and less expensive to protect groundwater supplies than remove pollutants, land use controls and land preservation provide an opportunity to protect these identified groundwater contribution areas at

low cost and without interruption of service. Further information on the zones of contribution and well locations within the County can be obtained by contacting the Rock County Health Department.

In 2017, the Rock County Board of Supervisors appointed members to the Rock County Groundwater Nitrate Workgroup as a direct response to elevated nitrates in groundwater. The membership of this group was charged with the following tasks: The mission of the Rock County Groundwater Workgroup is to seek accurate information regarding Rock County's groundwater quality concerns, to understand the resources available to deal with the existing impacts of our groundwater resources, and to provide practical recommendations to the County Board and the community at large through communication and education aimed at improving the County's groundwater quality. The workgroup has functioned in accordance with its mission statement. Since this group's formation, a comprehensive groundwater nitrate study area has been established on the county owed farm. LCD and Public Health staff worked with the Wisconsin Geologic and Natural History Survey to establish the siting of three observation wells. The wells were constructed in 2018 on the outer perimeter of the farm to collect groundwater



Watershed	% > 10 ppm	% > 20 ppm	Total Results
Allen Creek	25	6	65
Badfish Creek	54	21	39
Bass Creek	46	8	157
Blackhawk Creek	55	21	184
City of Beloit-Lower Rock River	42	10	262
Keith Creek-Rock River	18	0	11
Lake Kegonsa-Yahara River	27	6	48
Lake Koshkonong-Rock River	24	3	734
Marsh Creek-Rock River	22	2	517
Raccoon Creek	41	6	94
Sugar Creek	0	0	1
Sylvester Creek-Sugar River	0	0	9
Taylor Creek-Sugar River	27	5	73
Turtle Creek	39	7	183
Whitewater River	28	6	18

Map 9. Nitrate well sampling results from 2009 - 2019.

samples so nitrate test maybe conducted. Public Health staff pull samples and run said nitrate tests. Also, as part of the groundwater nitrate well monitoring network, three public wells have been tested on the same day. Two of said wells are sited on privately owned business property and one is located in a county park. The six wells have been tested on a regular schedule. As part

of the study area, modifications to the County's farmland lease were implemented to require specific BMPs that are known to help protect drinking water quality. The first year where required BMPs and well test are being conducted simultaneously is 2019. The future will tell if the BMPs are reducing available nitrates from entering the groundwater.

Another effort under way is the development of a producer led watershed group in the southeastern sector of the county. This effort along with a county led groundwater nitrate initiative will work to reduce nitrates from entering the groundwater system. If our efforts are productive in this sector of the county, outreach will commence for the development of additional producer led watershed groups.

The Rock County Public Health Department mapped their records of wells tested for Nitrates at the section level so no one well can be identified (Map 9).

Assessment of Soil and Water Resource Conditions
This section provides a review of the current soil and water resource conditions within Rock County. Soil erosion and sediment delivery will be reviewed first followed by water quality conditions.

Soil Erosion, Sediment Delivery, and Agriculture Trends
Management of soils is a major concern in Rock County. Soil erosion and deposition degrade water quality and long-term soil productivity. Erosion and deposition can occur within the boundaries of a field and not have impacts on the surface water resources. If the sediment is released to a surface water resource, it can have far reaching negative economic and environmental effects. Capacity of road and drainage ditches is reduced by sediment that needs to be cleared out. Fertile topsoil and nutrients are washed away. Gullies need to be repaired. Habitat for fish and prey insects is buried or washed away.

In soil conservation planning for farms, the soil loss tolerance ("T") is the maximum soil loss allowed per year for a soil to sustain long-term fertility and is expressed tons/acre/year. It is associated with loss of soil via sheet flow from slopes within a field. "T" has been calculated over the years using a progression of recognized models from USLE then RUSLE, followed by RUSLE 2 in current use. Soil loss models factor in soil type, slope length, percent slope, climate, tillage, crop rotation, and any conservation practices. Most cropped soils in Rock County have "T" values of 4 to 5 tons/acre/year except in the Western Uplands where the hilly cropland can range from 1 up to 5 tons/acre/year.

Rock County LCD has conducted periodic agricultural soil erosion inventories using the transect survey protocol and using the same transect. The transect surveys assessed factors in crop rotation, residue after planting, soil type, slope, and slope length at approximately 1600 fields across the county at over 800 stops each 0.5 mile apart. Rock County conducted its first survey in 1986 and produced the *Rock County Erosion Control Plan* (1986) as a guide for the LCD to prioritize erosion and sediment control efforts. The 1999 survey showed that progress had been made in reducing in-field soil erosion (Table 3). Survey data from 2011 is derived from transect surveys conducted in spring 2009, 2010, and 2011 (Appendix C). This most recent data shows further gains in soil loss (erosion) control in most watersheds.

Table 3. Soil loss estimates for Rock County.

Watershed Name - (DNR ID #, see Appendix D for map)	**1986 (USLE)**	**1999 (RUSLE)**	**2011 (RUSLE 2)**
Lower Rock River Basin			
LR01: Turtle Creek	6.4	3.2	2.7
LR02: Blackhawk Creek	4.1	2.4	2
LR03: Bass Creek	7.5	3.0	2.4
LR04: Rock River/Milton	6.2	2.3	2.3
LR05: Marsh Creek	4.1	3.3	1.8
LR06: Yahara River/Lake Kegonsa	6.0	3.3	2.7
LR07: Badfish Creek	9.0	3.2	3.2
LR11: Lower Koshkonong	7.8	2.4	2.5
LR14: Whitewater Creek	7.6	2.7	3
Sugar-Pecatonica Rivers Basin			
SP11: Lower Sugar River	6.0	2.5	2.2
SP12: Lower Middle Sugar	5.6	2.3	1.5
SP13: Allen Creek and Middle Sugar River	6.3	1.9	2.3
Countywide average soil loss	**6.4**	**2.7**	**2.4**

In fall 2015, NRCS released revised "T" values that reflect the newest soil research and higher resolution soils data. In Rock County, the changes further reduced already low "T" soils mainly in the Western Uplands and in Edmund-Rockton-Whalan soil association where shallow to bedrock soils on longer, steep slopes are common.

Farming in Rock County has changed over the past generation. Most cropland is planted to cash corn grain and soybeans. The most common tillage implements in the county are chisel plows and "one-pass" systems that often include several tools on one unit such as coulters, disks, cultivator shovels, tines, and rolling baskets. No-till and strip-till are also common notably for Round-Up Ready soybeans. Moldboard plows are rare. Tougher plant stalks and other agronomic trends over the past two decades have led to more persistent and more abundant residue for farmers to plant through. The accumulation and carryover of plant debris has led to more sophisticated residue management tools on harvesters, tillage equipment, and planters to cut and move residue and avoid clogging equipment.

Precision farming, computers, smart phones, GPS, electronics technology on field equipment are increasingly being used by producers in the county to analyze fields, yields, and needs. Yield monitors, GPS soil sampling, GIS mapping services in the office and in tractors and implements, widely available cellular data services, auto-drive, SnapPlus nutrient management software are a few common local examples. Adoption of technology may be slowed by high cost and user factors such as experience with computers and software.

More landowners are renting their land, which forces operators renting several farms to further economize to save per acre costs and time during a limited planting season. In 2007, approximately 60% of the 943 farms in FPP (35 or more acres) were rented. Of producers renting FPP farms, 19 producers each rented five to nine farms and nine producers each rented

over 10 farms. This often means larger equipment, fewer trips, and consolidating fields, among other measures. However, as more acres are replaced with minimum tillage and no-till systems, soil erosion rates on these acres will decrease.

A major change in the past 10 years has been nutrient management implementation using state and federal conservation programs. Plans compute nutrient needs and soil phosphorus losses. Plans are written using SnapPlus software, which integrates soil test results, RUSLE 2 soil loss model (crops, tillage, climate, slope length and percent), manure production, WI Phosphorus Index, and crop nutrient needs based on UW recommendations. The goal is for farmers to make the most efficient use of nutrients for growing crops and reduce losses to surface and ground water.

With few short-term benefits to producers prior to 2010, adoption of nutrient management was slow and typically permit-driven. Beginning in 2010, the state started the five-year implementation of nutrient management into the Farmland Preservation (FP) state income tax credit for landowners and changed the credit to a flat per acre rate with no maximum credit on FP zoned land (most of enrolled land in Rock County changed to $7.50/acre). At the same time, DATCP and USDA NRCS offered cost-sharing to producers to develop plans with an agronomist. Farmers could also learn how to write plans. Incentives now existed to cover the added costs for extensive soil sampling, lab costs, and a certified agronomist to write the plan. In addition, producers renting land could figure in the value of the credit to landowners. In 2018, at least 34% of the cropland in the Rock County has a current nutrient management plan with most through enrollment in FP. In 2009, Rock County farmers sent 6,800 soil samples to UW for testing which in 2010 increased to 11,916 and was up to 15,889 samples by 2014. The median soil test phosphorus in county samples decreased from 45 ppm in 2001 to 31 ppm in 2014 (UW Soil Labs).

Coordination with Water Quality Management Plans
Two basins are located in Rock County: Lower Rock River Basin and the Sugar Pecatonica River Basin (Map 3). The DNR's water quality management plans identify areas of water quality concern and proposed management objectives for the water resources of each basin. The plans focus on issues that require a comprehensive and collaborative management approach from DNR, other public agencies, and private citizens. They include background information and management objectives that were identified for each stream, river, lake, and groundwater. Specific objectives were identified for each watershed within the basin and were considered in the development of the LWRM work plan.

Lower Rock River Basin - Surface water and groundwater

The Lower Rock River is one of two basins in Rock County. Agriculture is the predominant land use in the basin; however, urbanization is increasing. The agricultural land in this watershed has been determined to be some of the most productive agricultural land in the State of Wisconsin. Activities associated with increasing field productivity and increasing the productive land base have created many water quality problems. Stream channelization and draining and/or altering of wetlands increased the volume of runoff and decreased the time to move runoff from fields. The high volume of storm water carrying soil particles, nutrients, and

pesticides rapidly enters streams causing excessive bank erosion, sedimentation in slack areas, and flooding downstream as outlets are overwhelmed.

The source of all of the potable water or drinking water for this basin is derived from the underlying aquifer. Groundwater quality is reduced by non-point source pollution such as excessive use of nitrogen for crop production, improper lawn fertilization, abandoned wells, and improperly functioning septic systems. This basin has two prohibition areas for the application of Atrazine based on the detectable levels in water samples (> 3ppb)**.** The groundwater susceptibility modeling by DNR is based on five physical resource characteristics: depth to bedrock, bedrock type, soil characteristics, surface deposits, and depth to water table. Nitrate monitoring of well water by Rock County Public Health has increased in the last ten years. This basin has the highest frequency of well water tests that exceed the 10 mg/L Enforcement Level in Rock County.

The following sections describe the Rock River's main stem in Rock County and the contributing HUC 10 subwatersheds and waters that drain to the Rock River. For land cover by HUC 10 watershed, see Appendix E.

Rock River

Thirty-six miles of the Rock River flows through the middle of Rock County. The Rock River is the major water feature in the county and the waterbody to which most of the county landscape drains. It flows through the middle of the three most populous municipalities in the county; City of Janesville at 63,570, City of Beloit at 36,683, and the Town of Beloit at 7,613 (2018). The river's scenic shores are mostly wooded and developed for rural homes, urban use, city parks, and regional trail systems. A few major public areas along the Rock River are:

- City of Janesville: Riverside, Traxler, Dawson Field, and Monterey Parks; Town Square festival area;
- Town of Beloit: Preservation, Armstrong Eddy;
- City of Beloit: Big Hill, Wooten, Riverside Parks and Riverside festival area;
- County: Indianford, Happy Hollow;
- Regional: Ice Age Trail, Peace Trail, Rock River National Water Trail.

The Rock River is a key part of downtown re-vitalization projects in the City of Beloit and the City of Janesville. Within sight of the river are Beloit College, University of Wisconsin - Whitewater at Rock County, two public schools, and one nature center (another is less than half a mile south of the state line. The Rock Aqua Jays waterski club hosts competitions and twice-weekly shows on the river at Traxler Park from Memorial Day to Labor Day.

The river is popular for recreational motor boating and fishing. There are at least 10 public boat ramps on the Rock River in Rock County. The Rock River National Water Trail was established in 2010. Primary gamefish are channel catfish, flathead catfish, northern pike, sauger, and walleye. Muskellunge, largemouth and smallmouth bass are also present in low abundance (DNR Fisheries staff, 2019). Rough fish include bigmouth buffalo, bowfin, common carp, freshwater drum, redhorse, and white bass. Walleye is the most sought after species in the

system. On the Rock County segments of the Rock River, the DNR Index of Biological Integrity (IBI) scores calculated from surveys of fish and other aquatic fauna range from fair to good.

There are three industrial and six municipal outfalls into the river (2019). Municipal outfalls are Consolidated Koshkonong Sanitary District, City of Milton, City of Edgerton, City of Janesville, Town of Beloit, and City of Beloit. Several cities have partnered to form the Rock River Stormwater Group to meet educational outreach as part of their individual MS-4 permits from DNR.

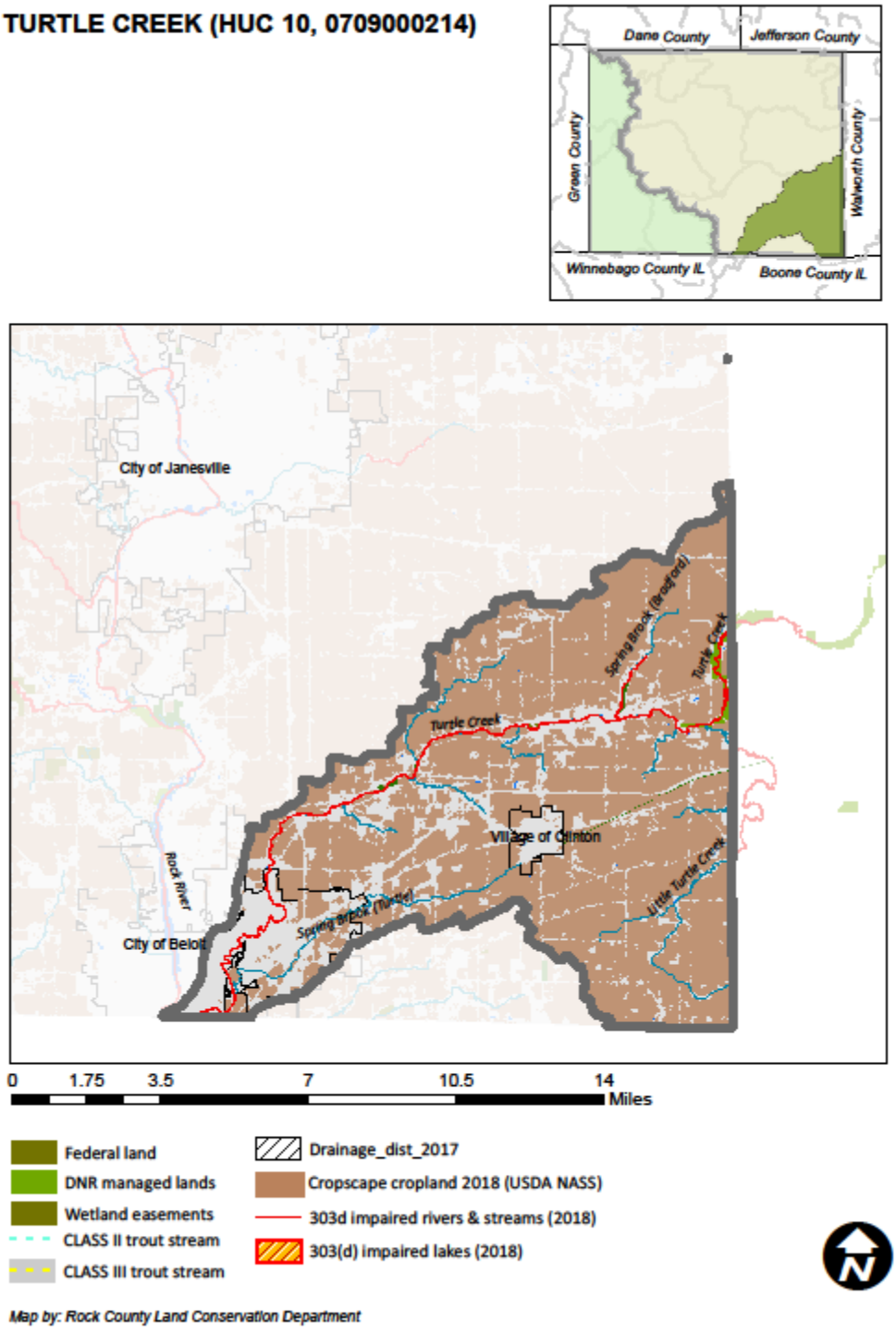
The entire length of the river in Rock County has degraded habitat, an impairment caused by sediment and total suspended solids in addition to low dissolved oxygen caused in part by high total phosphorus. TMDL for the Rock River Basin in Wisconsin was approved in 2011. Major changes in the past 10 years include the shut-down and removal of the coal-fired power plant on shore land in the Town of Beloit (replaced with natural gas power plant) and the removal the Monterey Dam in the City of Janesville. There are active USGS gaging stations at Newville and at Afton.

The HUC 10 subwatersheds in the following narratives are part of the larger Rock River Basin. It is important to note that there are five separate streams in the Rock River portion of the county with "Spring" in the name; Spring Creek (Cooksville), Spring Brook (Lima), Spring Brook (Janesville), Spring Brook (Bradford), and Spring Brook (Beloit).

Turtle Creek Watershed (HUC 10, 0709000214)
The lower 36% (57,424 acres) of the larger Turtle Creek Watershed (MAP 10) (159,303 acres) occupies southeastern Rock County. Most of this watershed is in Walworth County to the east. There are two unique streams in this watershed named Spring Brook; hereafter they are designated by location - Bradford or Beloit. Agriculture is the predominant land use at approximately 71% of the land base or about 40,712 acres. Approximately 21,381 acres or 71% of the agricultural base is enrolled in the Wisconsin Farmland Preservation Program. Landowners in this watershed have a high frequency of participation in the Wisconsin Conservation Reserve Enhancement Program (CREP).

The main channel of this Turtle Creek flows through Beloit prior to the confluence with the Rock River. This watershed was selected as a priority watershed project under the Wisconsin Nonpoint Source Pollution Abatement Program in 1982. The project was closed in 1994. The Village of Clinton and the eastern section of the City of Beloit are located in this watershed. The Village of Clinton Waste Water Treatment facility is permitted to discharge treated waste water into Spring Brook (Beloit) under the WPDES permit system. The City of Beloit discharges into the main branch of the Rock River near the state line. There are two active automated USGS gaging stations on Turtle Creek at Carver Rock Rd and in the City of Beloit at the Hwy 51 bridge. The National Weather Service operated a manual gaging station at County Road S for a few years between 2010 and 2018.

Surface Water Resources
Streams of priority for the Rock County Land Conservation Department within this watershed include: Little Turtle Creek; Spring Brook (Bradford); and Turtle Creek.



Map 10. Turtle Creek watershed..

Little Turtle Creek is a warm water stream originating in southwest Walworth County, flowing into Rock County and then north. The stream swings back east into Walworth County were it meanders north again and then flows back into Rock County for a short distance before reaching Turtle Creek. The Rock County portion of this stream is designated by WDNR as an Exceptional Resource Water. Access is available from 2 town roads and 3 county road crossings,

and from Turtle Creek. This stream is managed as a warm water forage fishery. The stream supports the gravel chub and slender madtom, two species on the state threatened and endangered species list. Little Turtle Creek is too shallow to provide habitat for game fish. Most of Little Turtle Creek's 12 miles have been ditched for drainage of the surrounding farm lands, resulting historically in habitat deterioration, increased water temperatures, high turbidity, sedimentation, infilling of deep pool habitat, and excessive nutrient and fecal bacteria concentrations. Presently the creek is on the Wisconsin 2018 303(d) list which rates the TMDL Priority as low and states there are point and nonpoint sources of pollution with Total Phosphorus being the pollutant.

Spring Brook (Bradford) is a four-mile-long spring and seepage creek that rises in eastern Rock County 1.5 miles west of the Rock-Walworth county line and flows southerly at a medium gradient through the Carver-Roehl County Park to its confluence with Turtle Creek. The flow is greatly reduced in dry years. The creek is designated by WDNR as an Exceptional Resource Water. Access is available from a small county park and two bridge crossings. The warm water fishery is composed of forage species only. Historically, high fecal Streptococcus bacteria counts have been detected in the stream due to streambank pasturing upstream in the flat terrain of the creek's headwaters adjacent to dairy farm operations. Follow-up E. coli testing conducted by the Rock County Health Department after 2012 found high rates in several contributing flows not associated with the most visible livestock sites.

The 2018 assessments of Spring Brook (Bradford) showed impairment by phosphorus; new total phosphorus sample data exceeded the 2018 WisCALM listing criteria for the Fish and Aquatic Life use. However, no biological data (i.e. no macroinvertebrate or fish Index of Biotic Integrity (IBI) scores) were available to assess biological impairment. Based on the most updated information, the creek is listed on the Wisconsin 2018 303(d) list which rates the TMDL Priority as low. From July 2011 until June 2012, Rock County LCD and DNR conducted a baseline nutrient monitoring in response to local concern preceding the construction of a dairy CAFO. Water samples were collected twice a month for June, July, August, September, March, April, May and once a month for October, November, and December. Rock County Health Department monitors E. coli in Spring Brook (Bradford) at the county park as part of its seasonal beach monitoring program.

The other Spring Brook (Beloit) in this watershed arises on the southwest side of the Village of Clinton and flows southwest into the City of Beloit, through Leeson Park and joins Turtle Creek near Colley Road. There are three permitted facilities on it – the Village of Clinton wastewater treatment facility at its headwaters, a CAFO, and an industrial permit in Beloit. The upper half of the watershed is crop and livestock agriculture and the lower half is new urban development and interstate corridor in the City of Beloit. Preliminary baseline monitoring at Leeson Park near the confluence with Turtle Creek indicates high total phosphorus (2017, 2019 pending). Few assessments are available for this stream.

Turtle Creek, the second largest stream in Rock County, originates in Walworth County, enters Rock County at Fairfield and flows southwest to the Rock River, joining just below the state line in Beloit. The creek is designated by WDNR as an Exceptional Resource Water. Approximately 2 miles of the stream runs through the Turtle Creek Wildlife Area which is public hunting and fishing grounds in Rock County. There is also a town park and a city park located on the stream.

Spring flow in both Rock and Walworth Counties maintain open water the year round in the wildlife area which supports waterfowl, pheasants and big game hunting. Access is available at the wildlife area, county parks, town launches, and the City of Beloit park and trail system. Turtle Creek is known and managed for smallmouth bass; additional game fish species which occur in varying numbers include walleyes, black crappies, rock bass, northern pike, and channel catfish. The latter two species are concentrated in the lower reaches of the river. Carp are abundant at times, along with redhorse, suckers, and forage species. Turtle Creek has significant diversity of native mussels in the area. Turtle Creek is one of the better streams in southern Wisconsin for quiet water canoeing, kayaking, and tubing in the deeper downstream stretches.

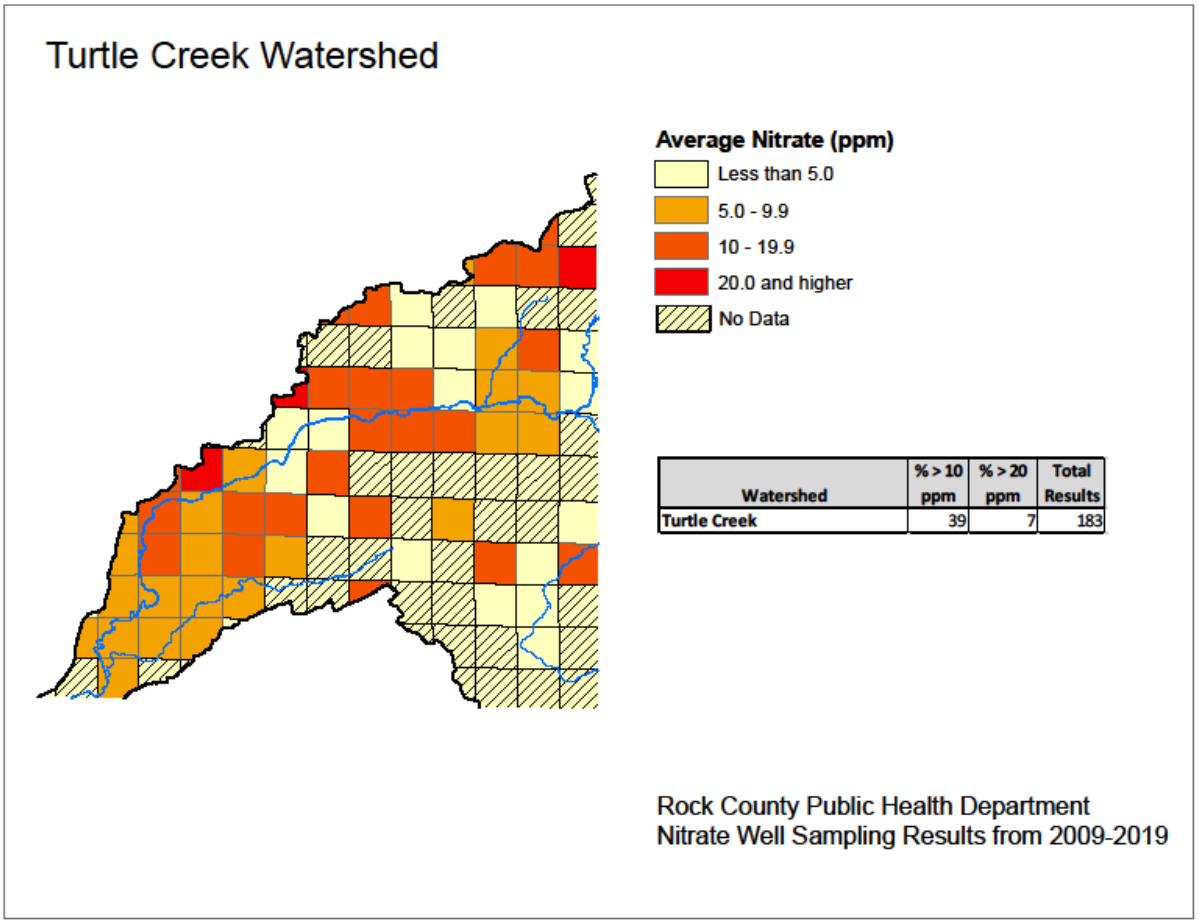
The stream was assessed during the 2018 listing cycle; new total phosphorus sample data exceed 2018 WisCALM listing criteria for the Fish and Aquatic Life use, however, available biological data do not indicate impairment. New fish and existing macroinvertebrate sample data were assessed, however, no macroinvertebrate or fish Index of Biotic Integrity (IBI) scored in the "poor" condition category. New temperature sample data exceed 2018 WisCALM listing criteria for the Fish and Aquatic Life use. Presently the creek is on the Wisconsin 2018 303(d) list which rates the TMDL Priority as low and states there are point and nonpoint sources of pollution with Total Phosphorus being the pollutant.

There are no lakes of priority for the Rock County Land Conservation Department within the Turtle Creek Watershed.

Groundwater Resources
DNR has rated this watershed as having a high-medium susceptibility for groundwater contamination. Protection of the groundwater is limited. A high rating is due to the depth to groundwater and the soil characteristics present. An important issue is of the presence of the City of Beloit Wellhead Zone of Contribution in this unincorporated area of the watershed.

This watershed is susceptible to high nitrates in well water. Rock County Public Health Department estimates that 39% of the wells tested for nitrates in this watershed exceeded 10 mg/L. Of those wells tested over 10 mg/L, 7% tested over 20 mg/L (Map 11)

Conclusions
This watershed has been identified by the Rock County Groundwater Nitrate Workgroup as a high priority area for the implementation of a groundwater nitrate project. The project will work to reduce nitrates from entering this watershed aquifer. As part of the effort, UWEX will assist with the development of a Producer Led Watershed group for this area. Also, the Turtle Creek Watershed will be a high priority for surface water quality efforts during the groundwater project timeline.



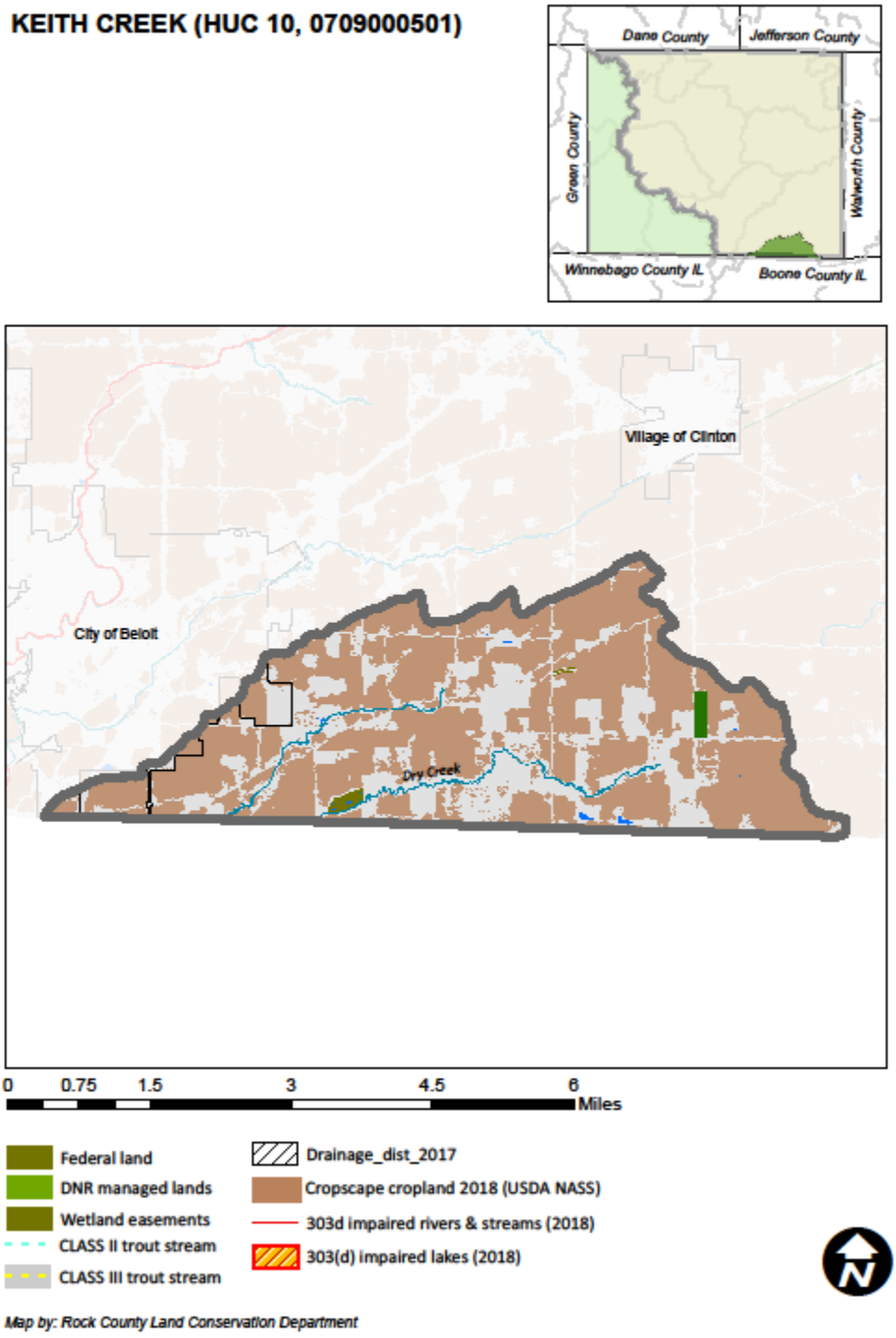
Map 11. Turtle Creek groundwater nitrates.

Keith Creek (HUC 10, 0709000501)

Prior to the updating this plan in 2019, this watershed was considered part of the Turtle Creek Watershed. The Keith Creek Watershed is located in the southeastern section of Rock County and is approximately 233 square miles (149,313 acres) (Map 12). The uppermost 11 square miles (4%) of this watershed is located in Rock County, or 8,896 acres. The majority of this watershed (96%) is located in Illinois to the south. Agricultural is the predominant land use, composing approximately 70% of the land base located in Rock County or 6,247 acres. Approximately 2,120 acres or 34% of the agricultural base is enrolled in the Wisconsin Farmland Preservation Program. Landowners in this watershed have a high frequency of participation in the Wisconsin Conservation Reserve Enhancement Program (CREP).

Surface Water Resources

This watershed has always been consider part of the Turtle Creek Watershed. Since it division from the aforesaid watershed very little information is available. Dry Creek is a cold water



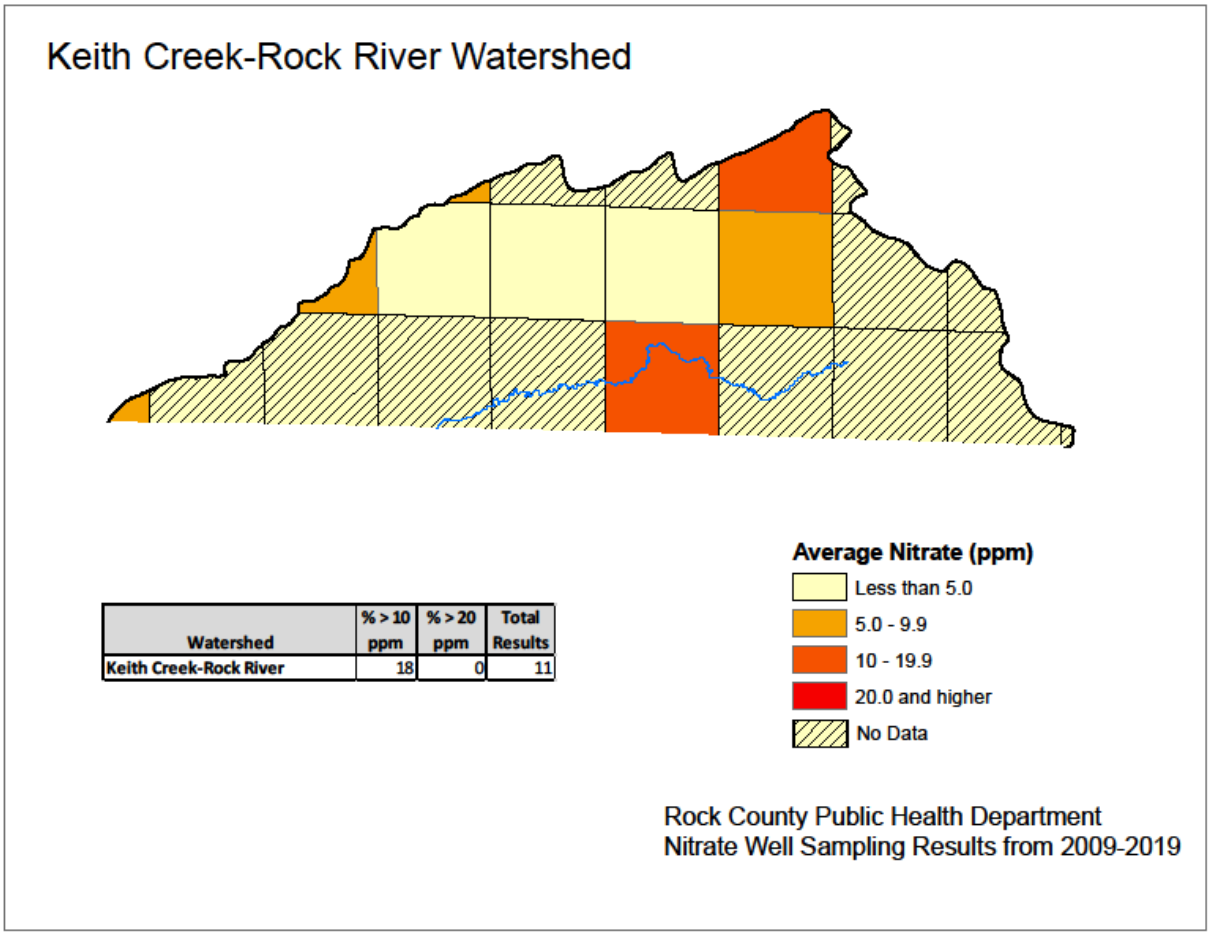
Map 12. Keith Creek watershed.

stream, 8 miles long, flowing southwesterly in the southern part of the Rock County and into Illinois. Access is available from two town road bridges. The fishery consists of forage species

only. Rock River Snapshot Initiative 2017 sampled the stream for aquatic invasive species resulting in none found. WDNR rates the general condition of the stream as unknown.

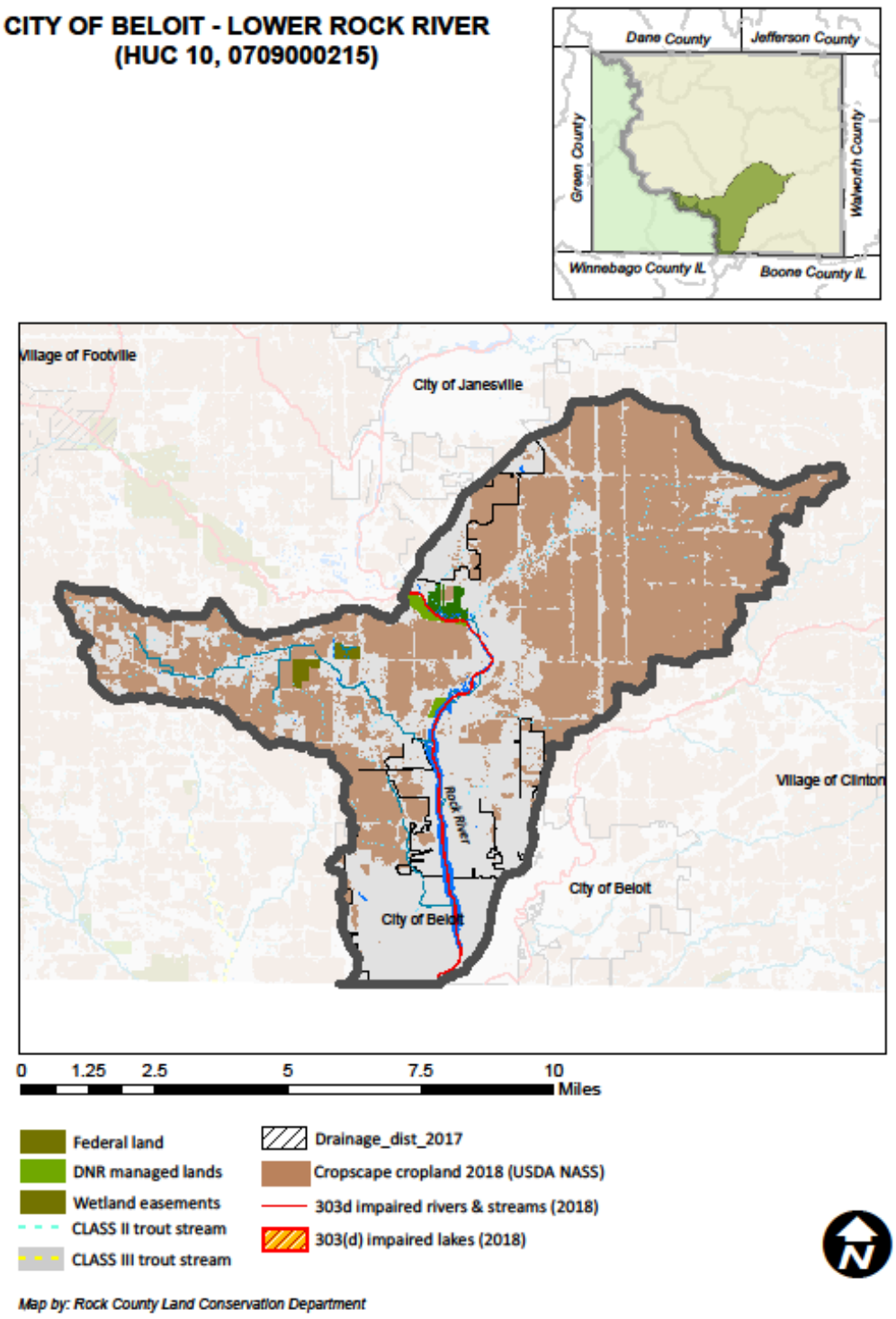
Groundwater Resources
This watershed is susceptible to high nitrates in well water. Rock County Public Health Department estimates that 18% of the wells tested for nitrates in this watershed exceeded 10 mg/L. Of those wells tested over 10 mg/L, 0% tested over 20 mg/L (Map 13).

This watershed has been identified by the Rock County Groundwater Nitrate Workgroup as a high priority area for the implementation of a groundwater nitrate project. The project will work to reduce nitrates from entering this watershed aquifer.



Map 13. Keith Creek groundwater nitrates.

City of Beloit – Lower Rock River (HUC 10, 0709000215)
The City of Beloit – Lower Rock River Watershed is located in the southcentral section of Rock County and is approximately 70 square miles (41,718 acres). The 100% of this watershed is located in Rock County. Agricultural is the predominant land use, composing approximately 48% of the land base or 20,032 acres. Approximately 7,086 acres or 38% of the agricultural base is enrolled in the Wisconsin Farmland Preservation Program. Landowners in this watershed have a low frequency of participation in the Wisconsin Conservation Reserve Enhancement Program (CREP).



Map 14. City of Beloit - Lower Rock River watershed.

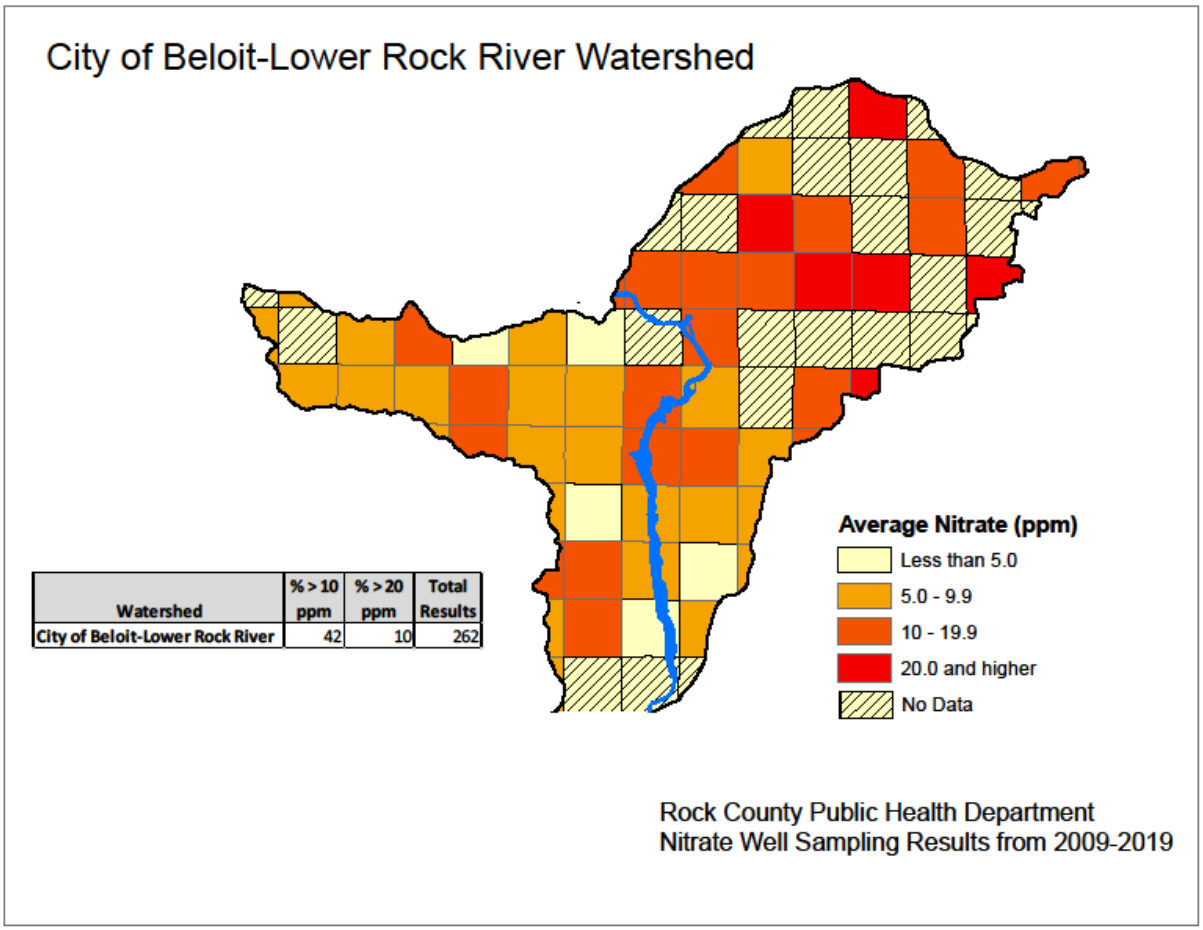
Agriculture is very intensive in this area where numerous vegetable crops are grown. Mint is also grown in this watershed. Mint is known to be a crop that is heavily reliant on nitrogen fertilizers. It is estimated that over 100 center pivot irrigation systems are present in this watershed.

Surface Water Resources

This newly established watershed was developed as a result of a subdivision from the southern parts of the Blackhawk and Bass Creek watersheds further combined into this watershed (Map 14 and Appendix D). The stream that drains the area east of the Rock River, is considered an intermittent stream that only flows during extremely heavy rains or snow melt events or when ground water is high. No data exists on this stream. The unnamed perennial stream that drains the area west of the Rock River and north of the City of Beloit has been monitored (2011, 2017) but has not been assessed by DNR.

Groundwater Resources

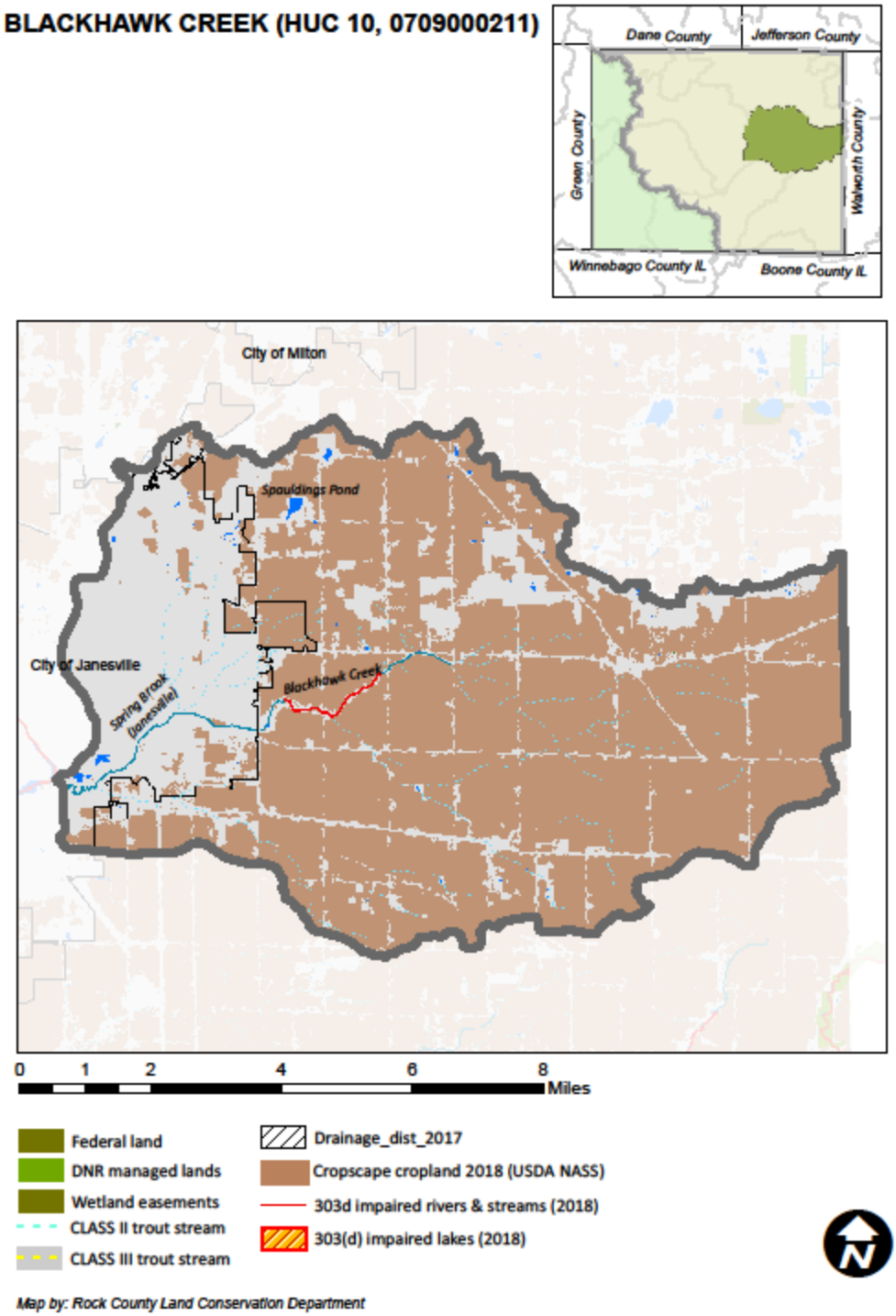
This watershed is susceptible to high nitrates in well water. Rock County Public Health Department estimates that 42% of the wells tested for nitrates in this watershed exceeded 10 mg/L. Of those wells tested over 10 mg/L, 10% tested over 20 mg/L (Map 15).



Map 15. City of Beloit - Lower Rock River groundwater nitrates.

This watershed has the 4th highest frequency of wells exceeding the 10mg/L but has the third highest frequency of wells exceeding 20 mg/L. This eastern part of this watershed has been identified by the Rock County Groundwater Nitrate Workgroup as a high priority area for the implementation of a groundwater nitrate project. The project will work to reduce nitrates from entering this watershed aquifer. As part of the effort, UWEX will assist with the development of a Producer Led Watershed group for this area.

Blackhawk Creek Watershed (HUC 10, 0709000211)
This watershed is located in the eastern midsection of the County and is approximately 70 square miles (44,718 acres). Nearly all (99%) of this watershed is located in Rock County (Map 16).



Map 16. Blackhawk Creek watershed.

Agricultural is the predominant land use in the upper part of the watershed, composing approximately 67% of the land base or 29,666 acres. Approximately 19% of this watershed is located in the City of Janesville. Approximately acres or 52% of the agricultural base or 15,446 acres are enrolled in the Wisconsin Farmland Preservation Program. Landowners in this watershed have a low frequency of participation, due to eligibility issues, in the Wisconsin Conservation Reserve Enhancement Program (CREP). Also, the Rock County PACE Program is very active in protecting farmland in this watershed due to urbanization around the City of Janesville, which is occurring at a very rapid rate. Sedimentation and urban runoff are the major threats to this watershed.

Surface Water Resources
This watershed is also home to four small lakes; Janesville Gravel Pit, Lions Park, Sheepskin Lake, and Spaulding Pond. Janesville Gravel Pit and the Lions Park are former quarries in the City of Janesville. Sheepskin Lake and Spaulding Pond are very shallow and need further studies to identify impacts.

Blackhawk Creek is a 6.8 mile cold water stream that drains a large portion of east central Rock County. The creek enters Spring Brook (Janesville). The entire stream corridor is part of the City of Janesville parks and green belt system. Blackhawk Creek has been on the State of Wisconsin 303(d) impaired waters list since April 1, 1998, listed as impaired for sediment/total suspended solids coming from nonpoint sources creating degraded habitat and turbidity. This water was assessed during the 2018 listing cycle; new biological (macroinvertebrate and fish Index of Biotic Integrity (IBI) scores) sample data were clearly below 2018 WisCALM listing thresholds for the Fish and Aquatic Life use. It should be noted that this creek is variably intermittent and has flashy flow particularly in the urban sections. Blackhawk Creek is monitored through the Citizen Based Stream Monitoring Program, from 2008 through the present day. Samples taken at State Highway 14 (Agriculture Runoff) in 2009-2011 indicated generally good water quality conditions and "fair" conditions for macroinvertebrates. 2016 samples collected at Highway 14 indicate total phosphorus levels did not exceed state standards while in 2018 samples collected at Wright Road showed total phosphorus levels exceeding state standards. WDNR rates the general condition of the stream as poor. The main channel of the stream is susceptible to running dry during droughts, only conveying winter and spring runoff. During wet years the channel runs year round

Kiwanis Pond is a 15.2 acre spring and seepage fed lake located in the southeast area of the City of Janesville. The lake has a maximum depth of 37 feet with a sand/gravel bottom. The trophic status is mesotrophic and the water is currently considered impaired. The lake is owned by the City of Janesville who manages it for fishing and swimming. There is a boat launch along with designated, accessible parking and ADA accessible boarding dock/fishing platform. Major fish species include bluegills, crappies, largemouth bass, and trout. There is no adjoining wetland but migrating waterfowl are occasionally observed. Hunting is not allowed. Aquatic invasive species of concern are the Chinese Mystery Snail and Curly-Leaf Pondweed. Satellite Lake Clarity Monitoring started in 2012 and was last monitored in 2017. Samples taken in late summer and early fall show a range of clarity depths on average between 9 to 13 feet deep. Lions Park Pond, is a 12.34 acre spring and seepage fed abandoned gravel pit located in the southeast area of the City of Janesville. The lake has a maximum depth of 18 feet with a sand/gravel bottom and the trophic status is mesotrophic. The lake is owned by the City of

Janesville who manages it for fishing and swimming. There is a boat launch along with park facilities with a swimming beach. Major fish species include bass and pan fish in one section and trout in a smaller portion of the pond which is isolated by a small dam. Aquatic invasive species of concern is Curly-Leaf Pondweed. High fertility and algae are management problems. Satellite Lake Clarity Monitoring started in 2014 and was last monitored in 2017. Samples taken in late summer and early fall show a range of clarity depths on average between 5 to 10 feet deep. Lions Park Pond - Parker Beach has been monitored for E. coli since 2014 and was assessed for the 2018 listing cycle; E. coli data sample data were clearly below the 2018 WisCALM listing thresholds for the Recreation use. This beach has been meeting this designated use and is not considered impaired.

Spaulding's Pond is a 25 acre spring and seepage fed lake located northeast of the City of Janesville. The lake has a maximum depth of 12 feet with a muck/sand/gravel bottom and the trophic status is eutrophic. Unimproved public access is by way of a town road at the southern end of the lake. Development includes eight dwellings and a Y.M.C.A. camp on the east shore. Largemouth bass pan fish and northern pike are present with an over-population of pan fish being a recurring management problem. Only 1 acre of wetland adjoins the lake and very few waterfowl are attracted to the area. Aquatic invasive species of concern are Eurasian water-milfoil and Phragmites. Water temperature, pH and clarity have been monitored since 2017. Camp Rotamer Beach at Spalding Pond was assessed for the 2018 listing cycle; E. coli data sample data were clearly below the 2018 WisCALM listing thresholds for the Recreation use. This water was meeting its designated uses and not considered impaired. Water temperature, pH and clarity along with levels of E. coli have been monitored since 2016.

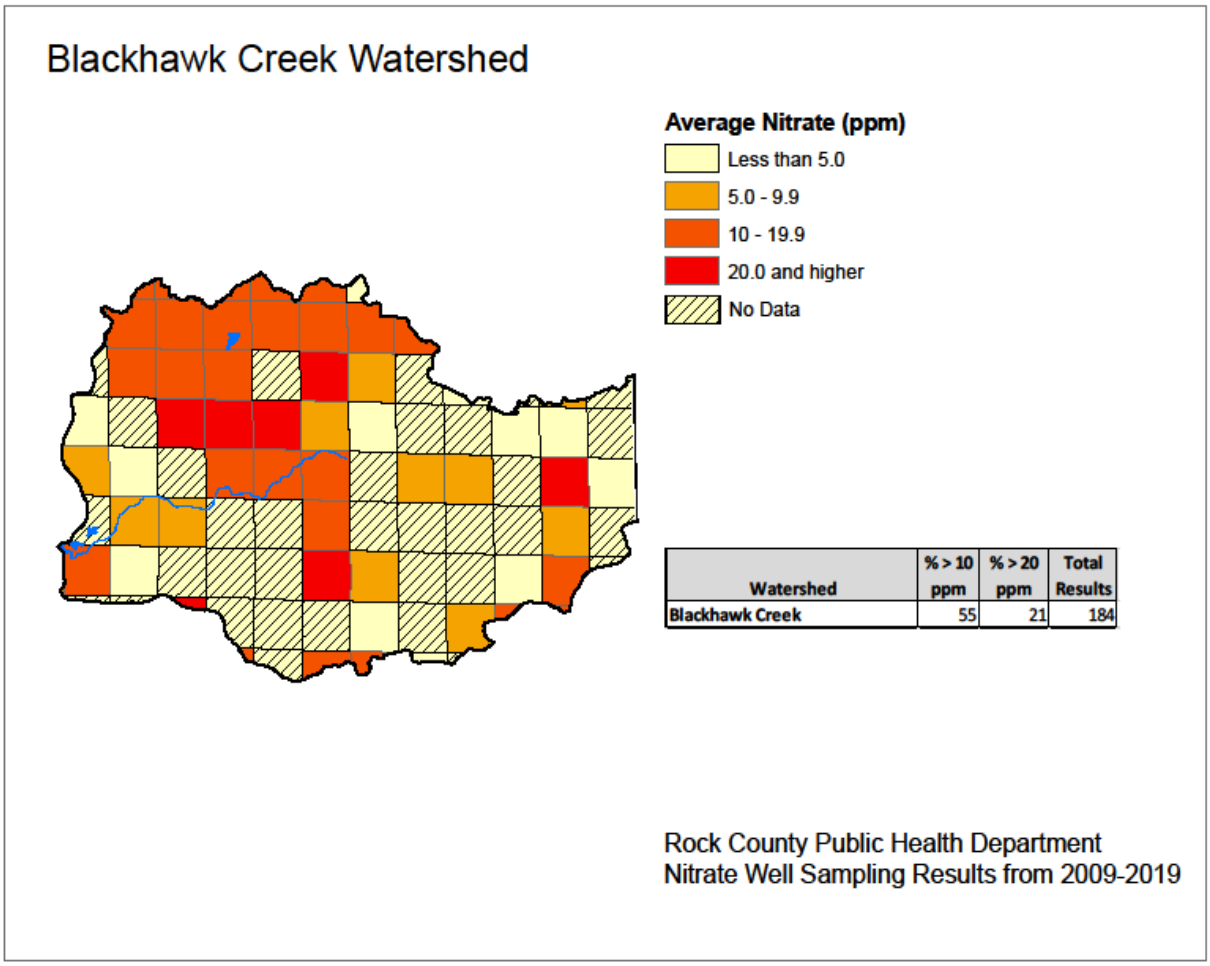
Groundwater Resources

This watershed has a medium susceptibility for groundwater contamination based on the DNR groundwater susceptibility modeling. An important issue is the presence of a Wellhead Zone of Contribution for the City of Janesville in this unincorporated area of the watershed.

This watershed is susceptible to high nitrates in well water. Rock County Public Health Department estimates that 55% of the wells tested for nitrates in this watershed exceeded 10 mg/L. Of those wells tested over 10 mg/L, 21% tested over 20 mg/L (Map 17). Also, numerous well tests have a high frequency of coliform bacteria present.

Conclusions:

This watershed has been identified by the Rock County Groundwater Nitrate Workgroup as a high priority area for the implementation of a groundwater nitrate project. The project will work to reduce nitrates from entering this watershed aquifer. As part of the effort, UWEX will assist with the development of a Producer Led Watershed group for this area. This area will also be a high priority for a surface water project area in the near future.



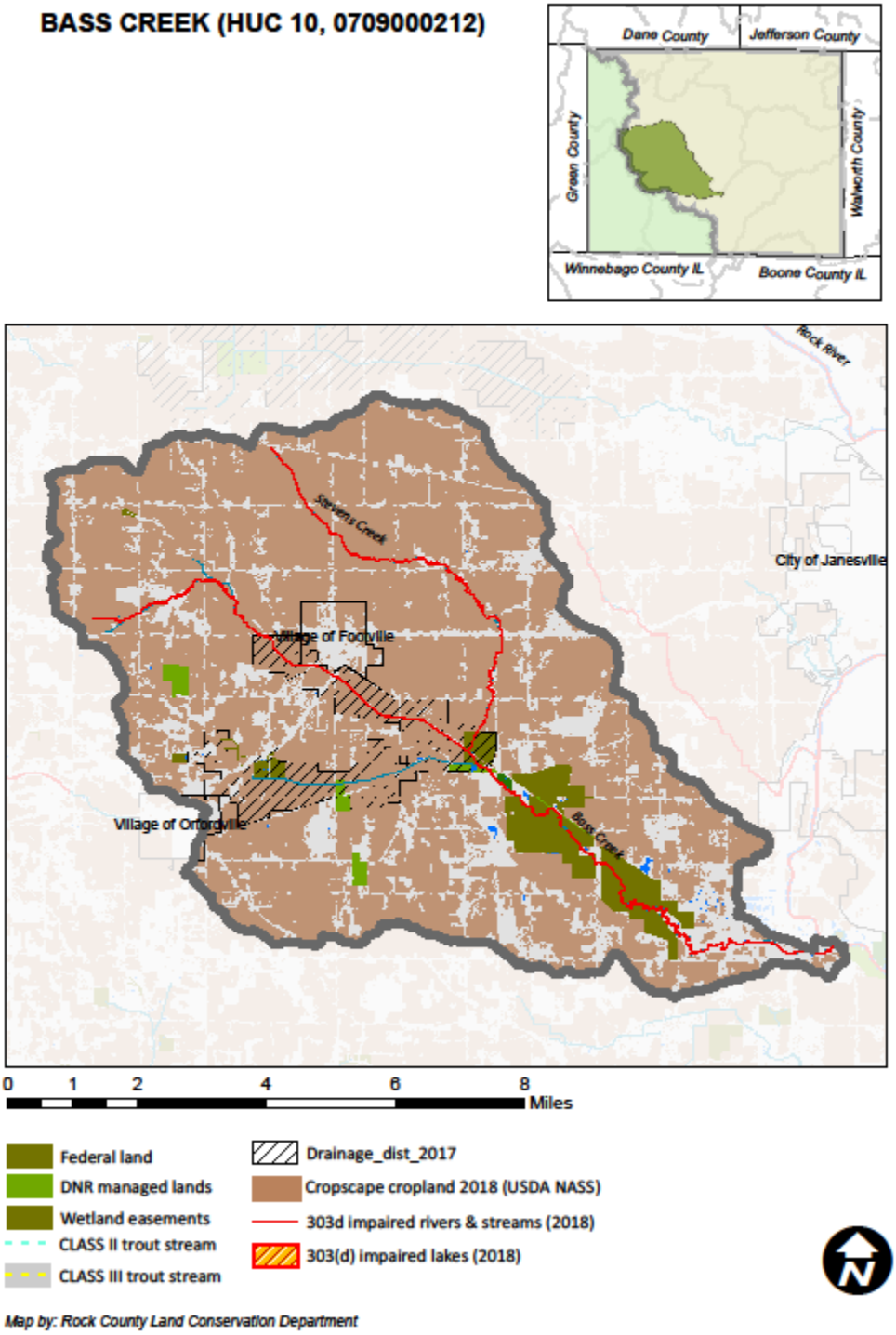
Map 17. Blackhawk Creek groundwater nitrates.

Bass Creek Watershed (HUC 10, 0709000212)
This watershed is located in the western midsection of the County and is approximately 65 square miles (41,676 acres). Agricultural is the predominant land use, composing approximately 76% of the land base or 31,840 acres. Approximately 6,906 acres or 21% of the agricultural base is enrolled in the Wisconsin Farmland Preservation Program. The upper reach of the main stem of the creek is a registered drainage district. Landowners in this watershed have the highest frequency of participation in the Wisconsin Conservation Reserve Enhancement Program (CREP).

The villages of Orfordville and Footville are located in the watershed. The Village of Footville Waste Water Treatment facility and the Plymouth Sanitary District are permitted to discharge treated waste water to this stream under the WPDES permit system. The Village of Orfordville is permitted to discharge treated waste water to Swan Creek located in the Taylor Creek-Sugar River Watershed.

Surface Water Resources

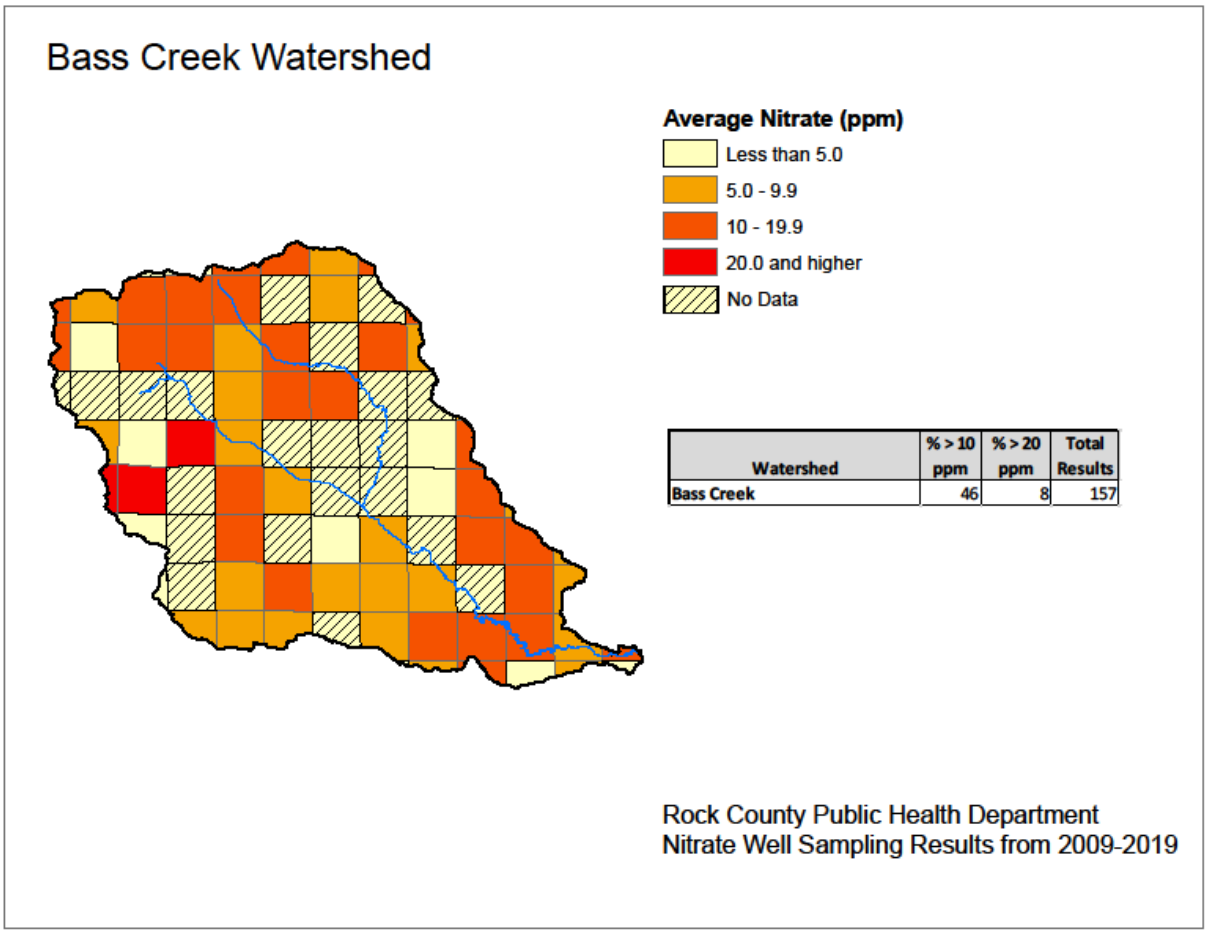
Bass Creek is an 18-mile warm water stream, originating in west-central Rock County, flowing southeasterly and entering the Rock River near Afton. Much of the middle and upper portions of the creek have been ditched and straightened. While nearly all adjacent wetlands from Hanover to Afton have been restored through the WRP. Bass Creek has been designated an Exceptional Resource Water under the state's anti-degradation program as it supports the redfin



Map 18. Bass Creek watershed.

shiner, a fish on the state's threatened and endangered species list. Stream access is possible from nine bridge crossings. Bass Creek fishery consists of forage fish, smallmouth bass, northern pike, and carp. This water was assessed during the 2014 listing cycle; total phosphorus sample data exceed 2014 WisCALM listing criteria for the Fish and Aquatic Life use, however, available biological data do not indicate impairment. The 2016 assessments showed continued impairment by phosphorus; total phosphorus sample data exceed 2016 WisCALM listing criteria for the Fish and Aquatic Life use, however, available biological data do not indicate impairment. Water temperature, dissolved oxygen and clarity have been monitored since 2017. Bass Creek was placed on the 303(d) impaired waters list for total phosphorus in 2014 with point and nonpoint sources phosphorus. WDNR rates the general condition of the stream as poor.

Stevens Creek is an 8.4 miles warm water stream rising north of Footville, then flowing south to enter Bass Creek at Hanover. The stream is very turbid and its flow sluggish in its lower reaches. Access is available from two town roads, two country roads and one state highway crossing. The fishery consists of forage fish although fisheries managers believe the stream could sustain a trout fishery if protected. Citizen Based Monitoring Program gathered water quality data between 2008 and 2011. Stevens Creek has been on the state 303(d) impaired waters list since 1998 for Total Suspended Solids and Sediments from nonpoint sources. This water was assessed during the 2018 listing cycle; temperature sample data does not exceed 2018



Map 19. Bass Creek groundwater nitrates.

WisCALM listing criteria for the Fish and Aquatic Life use; however, available biological data do not indicate impairment. WDNR rates the general condition of the stream as poor.

Groundwater Resources
This watershed has a high susceptibility for groundwater contamination based on the DNR groundwater susceptibility modeling. Protection of the groundwater is limited. The high rating is due to the depth to groundwater (< 3feet), the soil characteristics, bedrock type (fractured dolomite) and surficial deposits present. This watershed has the highest frequency of well tests with high nitrate-nitrate (>10ppm) and coliform bacteria. One Atrazine prohibition area, as defined by DATCP, exists in this watershed.

This watershed is susceptible to high nitrates in well water (Map 19). Rock County Public Health Department estimates that 46% of the wells tested for nitrates in this watershed exceeded 10 mg/L. Of those wells tested over 10 mg/L, 8% tested over 20 mg/L. Also, numerous well tests have a high frequency of coliform bacteria present.

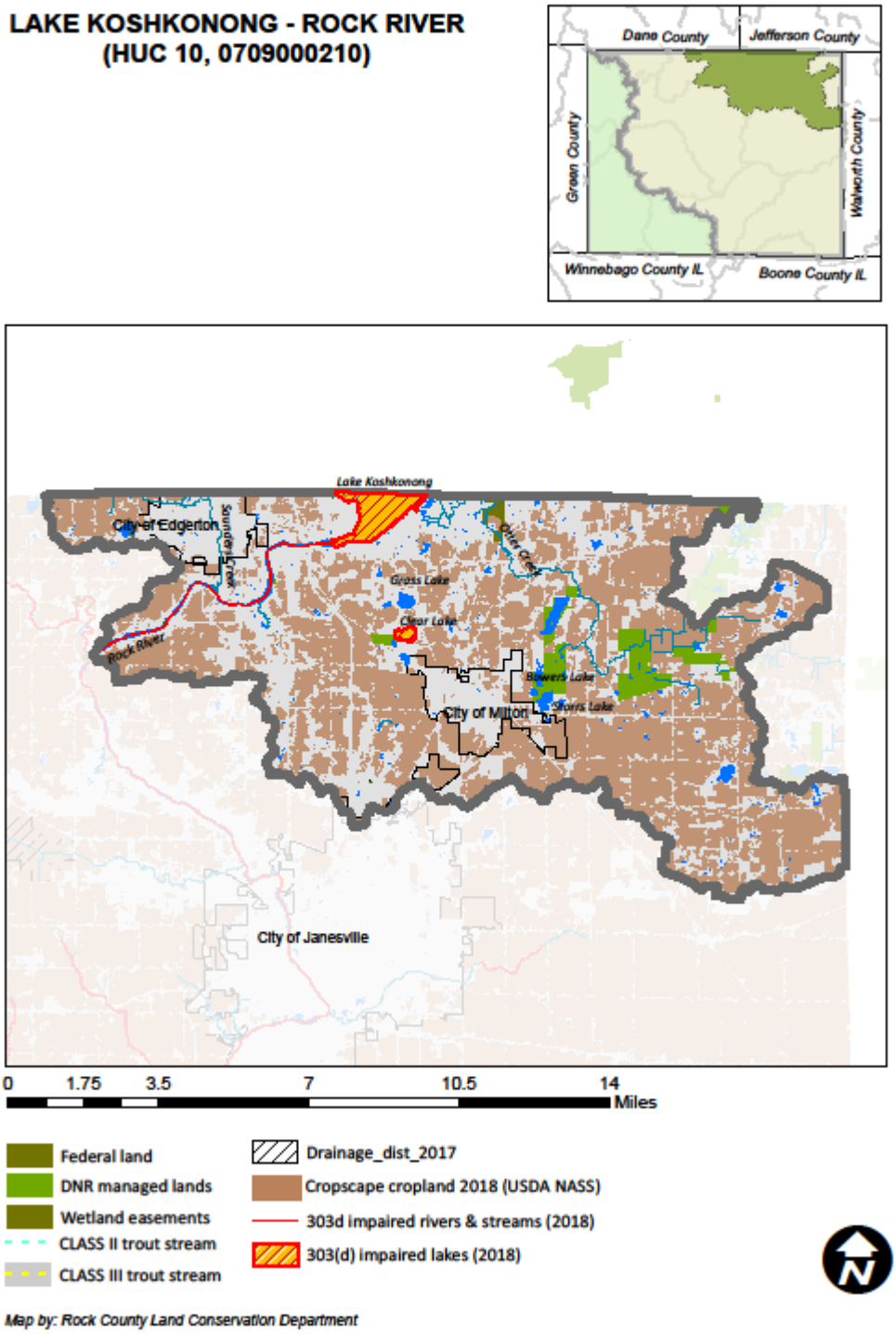
Lake Koshkonong – Rock River (HUC 10, 0709000210)
This watershed is located in the northeastern midsection of the County and is approximately 229 square miles or 146,280 acres (Map 20). Approximately 45% (66,091 acres) of this watershed is in Rock County. Agricultural is the predominant land use, composing approximately 51% of the land base or 33,806 acres. Approximately 8,378 acres or 25% of the agricultural base is enrolled in the Wisconsin Farmland Preservation Program. Landowners in this watershed have a low frequency of participation in the Wisconsin Conservation Reserve Enhancement Program (CREP).

Much of this watershed is internally drained due to its uneven topography and location in the Moraine High Relief area. This watershed has extensive conversion of rural land use, primarily agriculture to urban land uses in the recent past.

Two cities, Edgerton and Milton are located in the watershed. The City of Edgerton's Waste Water Treatment facility is permitted to discharge treated waste water directly to the Rock River under the WPDES permit system. The City of Milton Waste Water Treatment facility is permitted to discharge treated waste water to Rock River. Also present is the Consolidated Koshkonong Sanitary District, which discharges treated waste water directly to the Rock River under the WPDES permit system.

Surface Water Resources
Otter Creek, 15.3 miles in length, is a warm water stream originating in the Town of Lima, meandering northwesterly and entering Lake Koshkonong in Jefferson County. Portions of its upper reaches in Rock County have been ditched and straightened. Many wetland areas have been altered to provide more crop production lands; this is evident within the headwaters of the watershed. Access is available from five town roads and three county highway crossings. Forage species dominate the fishery, but suckers, carp, northern pike, largemouth bass and pan fish inhabit the stream in varying numbers. Otter Creek flows through portions of Storrs Lake and Lima Marsh State Wildlife Areas. These areas have good spring and fall waterfowl migrations as well as nongame birds. Water quality was monitored during the years 2009 and 2016 with no negative results. Pathogen Monitoring occurred 2017 to 2019 with no negative

results. Otter Creek was assessed during the 2018 listing cycle; new biological (macroinvertebrate and fish Index of Biotic Integrity (IBI) scores) and temperature sample data were clearly below the 2018 WisCALM listing thresholds for the Fish and Aquatic Life use. This water was meeting this designated use and was not considered impaired.



Map 20. Lake Koshkonong - Rock River watershed.

Bowers Lake is an 8.0 acre drainage lake located on the Storr's Lake public hunting area east of the City of Milton. The lake has a gravel and muck bottom and is classified as eutrophic. Waterfowl use the area for nesting and migration. The fishery includes pan fish, bullheads and forage species. No invasive species have been identified. Satellite Lake Clarity Monitoring started in 2011 and was last monitored in 2017. Samples taken in late summer and early fall show a range of clarity depths on average between 2 to 5 feet deep. Citizen Lake Monitoring collected water quality data in 2013 and found no negative results.

Storrs Lake is a 20-acre mesotrophic deep headwater lake. It is one of the clearest lakes in the county and one of the deepest at 20 feet. Depth and area vary with wet or dry years since about half the lake is shallow DNR rates the lake as excellent for fishing and swimming uses. It is surrounded by natural shoreline that is private on the south half and public on the north half as the Storrs Lake State Wildlife Area. Public access is at the DNR boat launch.

Clear Lake is a 77 acre seepage and spring-fed lake located northwest of the City of Milton. The lake has a sand/gravel/muck bottom and the trophic status is eutrophic. There is a subdivision and campground serviced by septic systems. Access is possible using WDNR land via a boat landing. Clear Lake Association manages the lake for fishing and swimming. The fish population consists of northern pike, largemouth bass, bluegills, black crappies, pumpkinseeds, bullheads and forage species. Satellite Lake Clarity Monitoring started in 2015 and was last monitored in 2017. Samples taken in late summer and early fall show a range of clarity depths on average between 2 to 3 feet deep. Clear Lake Blackhawk Drive Pier Beach was assessed for the 2018 listing cycle; E. coli data sample data were clearly below the 2018 WisCALM listing thresholds for the Recreation use. This beach was meeting this designated use and was not considered impaired. Clear Lake was placed on the impaired waters list for total phosphorus in 2014. The 2016 assessments showed continued excess algal growth; chlorophyll-a sample data exceed 2016 WisCALM listing thresholds for the Recreation use, however, total phosphorus did not. Total phosphorus and chlorophyll data did not exceed Fish and Aquatic Life listing thresholds. The 2018 assessment showed continued impairment by phosphorus; new total phosphorus and chlorophyll-a sample data exceeded the 2018 WisCALM listing thresholds for the Recreation use and Fish and Aquatic Life use.

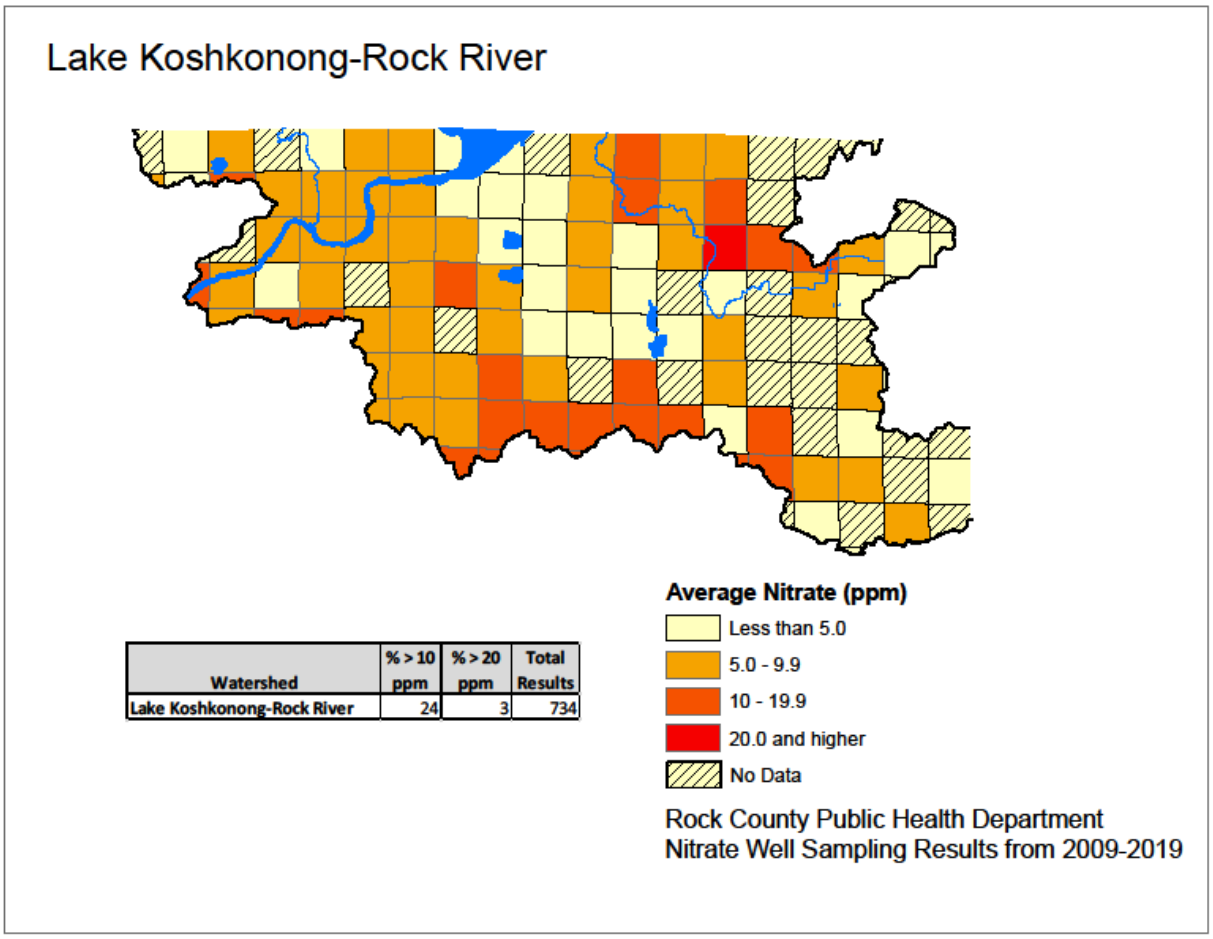
Grass Lake is a 70 acre natural lake located between Edgerton and the City of Milton. The lake has a sand/gravel/muck bottom and the Trophic Status is eutrophic. The area is attractive to migrating and nesting waterfowl and usually produces good hunting. Satellite Lake Clarity Monitoring started in 2010 and was last monitored in 2013. Samples taken in late summer and early fall show a range of clarity depths on average between 2 to 4 feet deep. The lake is currently not considered impaired.

Lake Koshkonong is a large shallow hypereutrophic marsh lake created by the dam on the Rock River at Indianford. Of the lake's 10,595 acres, only the lower 776 acres are in Rock County and mainly in the Town of Milton and Town of Fulton with Newville at the center of the recreational and camping activities. Maximum depth is 7 ft and most of the lake is about 5 ft deep. Dominant bottom type is muck with some sand. The lake has high total phosphorus, high turbidity, high sediment/total suspended solids. These factors cause impaired or degraded aquatic habitat and low dissolved oxygen. The combination of abundant common carp, the lake's large open exposure to winds, and shallow depths are conducive to re-suspending

sediments. Parts of the lake shore merge with extensive wetland complexes. The fishery is stocked in most years with walleye and northern pike and occasionally with muskellunge.

Groundwater Resources
This watershed has a high-medium susceptibility for groundwater contamination based on the DNR groundwater susceptibility modeling. Protection of the groundwater is limited due to the depth to groundwater and surficial deposits present. An important issue is the presence of one Wellhead Zone of Contribution for the City of Janesville in this unincorporated area of the watershed. Two Atrazine prohibition areas, as defined by DATCP, exist in this watershed,

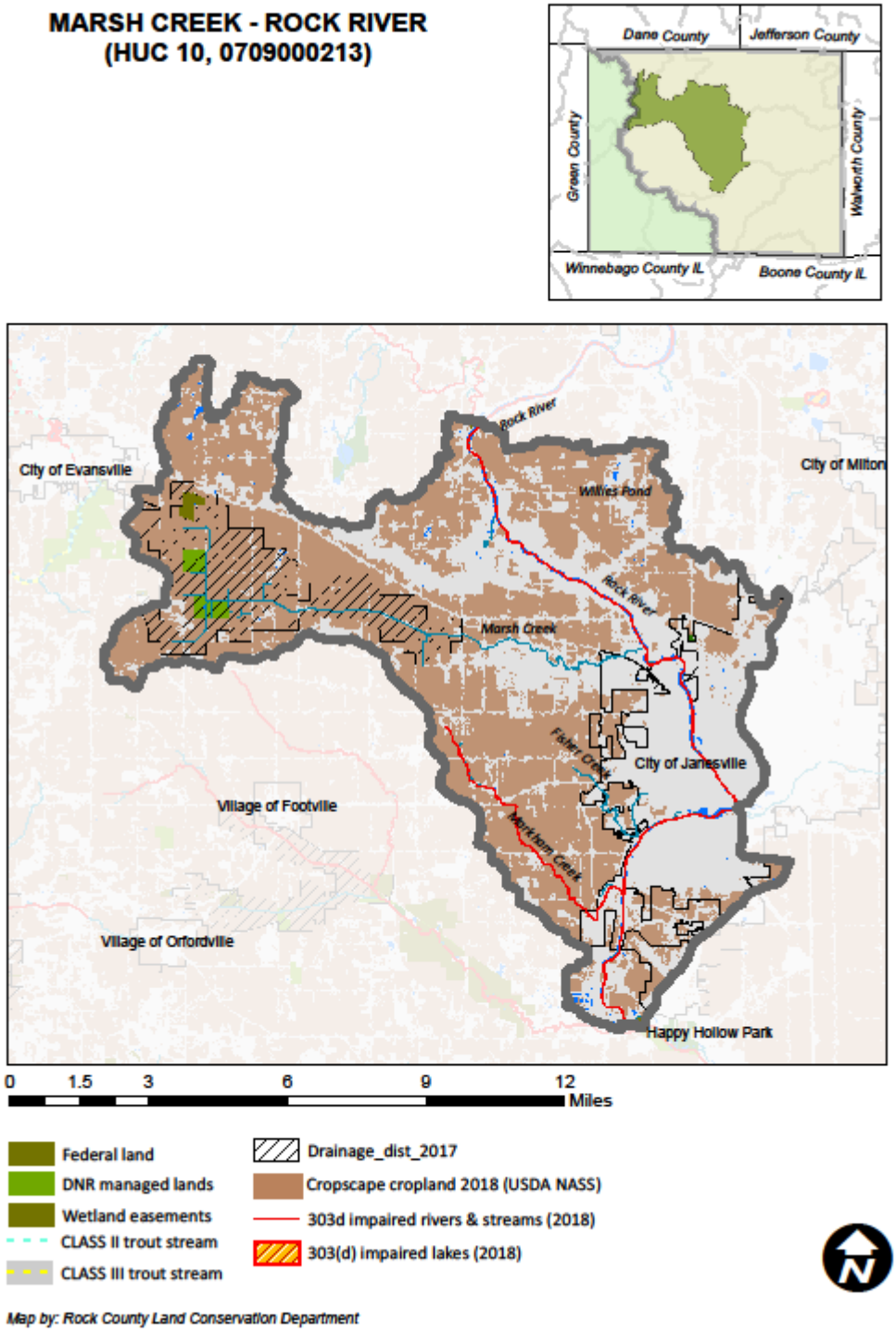
This watershed is susceptible to high nitrates in well water. Rock County Public Health Department estimates that 24% of the wells tested for nitrates in this watershed exceeded 10 mg/L. Of those wells tested over 10 mg/L, 3% tested over 20 mg/L. Also, numerous well tests have a high frequency of coliform bacteria present.



Map 21. Lake Koshkonong - Rock River groundwater nitrates.

Marsh Creek – Rock River (HUC 10, 0709000213)

This watershed is located in the northwestern midsection (Outwash Plain) of the County, and is approximately 97 square miles (62,211 acres). This watershed is 100% contained in Rock County (Map 22). Agricultural is the predominant land use, composing approximately 54% of the land base or 33,629 acres. Approximately 11,783 acres or 35% of the agricultural base is enrolled in the Wisconsin Farmland Preservation Program. Landowners in this watershed have a



Map 22. Marsh Creek watershed.

mid-level frequency of participation in the Wisconsin Conservation Reserve Enhancement Program (CREP). The upper reaches of the main stem of March Creek is a registered drainage district. The south eastern section of this watershed is under urbanization pressures from Janesville.

Surface Water Resources

Fisher Creek is a 5 mile warm water tributary of the Rock River, entering just south of Janesville. Forage fish dominate although a few northern pike and bass may migrate a short MAP 2-22
distance from the Rock River. Access is available from Rockport Park and from Janesville Bike Trail System. Water quality was monitored during the years 1997, 1980, 1981, 2016 to 2018 with no negative results. WDNR rates the general condition of the stream as good.

Markham Creek is a 5 mile stream located in west central Rock County that flows southeast before reaching the Lower Rock River near Janesville, Wisconsin. Most of the headwaters of this stream has been straightened, resulting in loss of habitat. Access is available from the Rock River and four town roads which cross the stream. Markham Creek is designated as having the potential to support a warm water sport fishery for its entire length, but is currently supporting a warm water forage fishery. Markham Creek was placed on the impaired waters list for total suspended solids (TSS) and degraded habitat in 1998. The TMDL for TSS and degraded habitat was approved in 2011. This water was assessed during the 2018 listing cycle; new total phosphorus and biological (macroinvertebrate and fish Index of Biotic Integrity (IBI) scores) sample data were clearly below the 2018 WisCALM listing thresholds for the Fish and Aquatic Life use. This water is still considered impaired and WDNR rates the general condition of the stream as poor.

Marsh Creek is a 15 mile warm water stream starting east of Evansville and flowing eastward, entering the Rock River north of Janesville. Much of the middle and upper reaches of the creek are ditched wetlands converted to agricultural production lands, as a result, habitat has been degraded. Access is available from the Janesville Schools Outdoor Lab/Cooks Arboretum, and the Ice Age Trail. The fishery is composed primarily of forage species although lower portions of the stream support a few smallmouth bass and northern pike. Water quality was monitored during the years 1997, 1998, 2012, 2014, 2016 to 2019. WDNR rates the creek's general condition of the upper 7 miles of stream as good while the remaining lower portion is rated fair.

Afton Gravel Pits, are a collection of 15 small deep-water seepage ponds with gravel bottoms, equaling 3 acres located in the southeast portion of the watershed. There is no public access to these waters, they are surrounded by private lands. There are no monitoring activities.

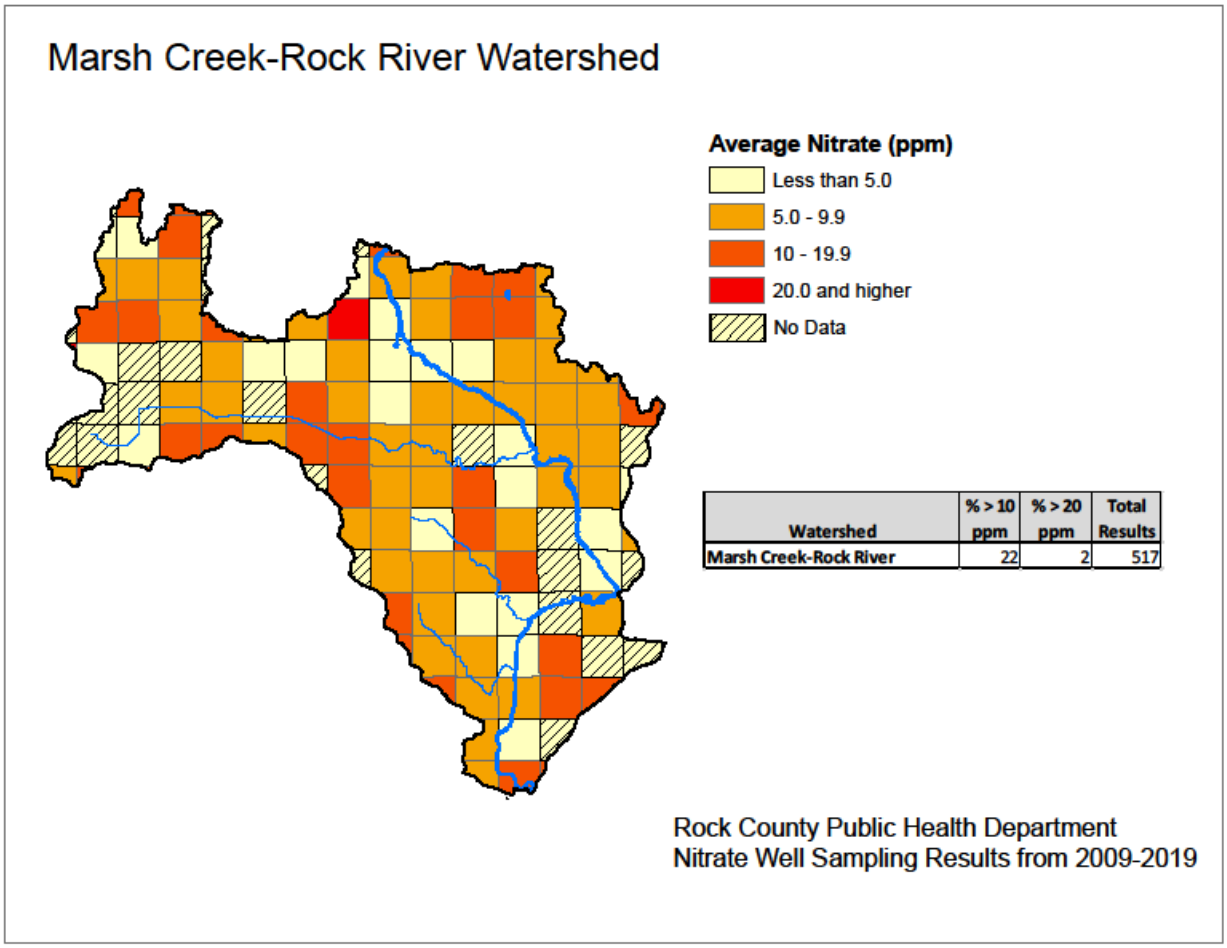
Willes Pond is an 11.5 acre drainage lake located south of Indianford. The maximum depth is 14 feet and the bottom is sand/muck. There is no public access. The lake has been privately stocked and largemouth bass and bluegills constitute the major fishery. It is eutrophic and there are no aquatic invasive species concerns. The water is not considered impaired.

Groundwater Resources

This watershed has a high-medium susceptibility for groundwater contamination based on the DNR groundwater susceptibility modeling. Protection of the groundwater is limited; the high-

medium rating is due to the depth to groundwater, soil characteristics, and surficial deposits present.

This watershed is susceptible to high nitrates in well water. Rock County Public Health Department estimates that 22% of the wells tested for nitrates in this watershed exceeded 10 mg/L. Of those wells tested over 10 mg/L, 2% tested over 20 mg/L. Also, numerous well tests have a high frequency of coliform bacteria present (Map 2-23).



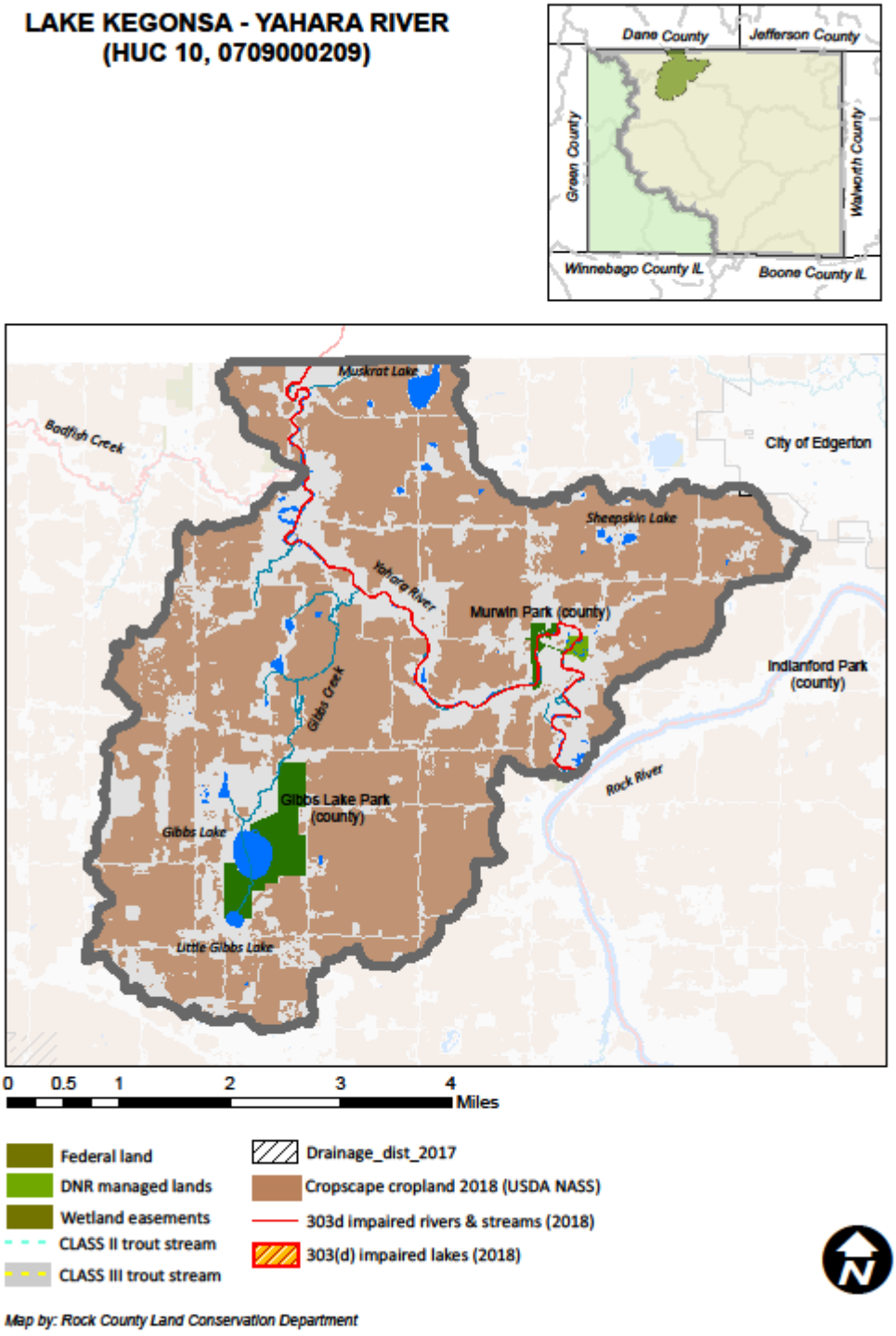
Map 23. Marsh Creek groundwater nitrates.

Lake Kegonsa-Yahara River (HUC 10, 0709000209)

The lower portion of this watershed, approximately 126 square miles (80,756 acres) of which approximately 21 square miles (13,599 acres) is located in Rock County (Map 24). This watershed is located in Moraine High Relief area of the county. (Map 2-15). Agricultural is the predominant land use, composing approximately 72% of the land base (9,741 acres). Approximately 4,288 acres or 44% of the agricultural base is enrolled in the Wisconsin Farmland Preservation Program. Landowners in this watershed have the high frequency of participation in the Wisconsin Conservation Reserve Enhancement Program (CREP). This watershed is a portion of the Adaptive Management Program supported by the Yahara WINs partnership for reducing phosphorus runoff from agricultural lands.

Surface Water Resources

Gibbs Creek, a small seepage fed warm water stream approximately 4 miles long, flows north from its headwaters in Little Gibbs Lake, through Gibbs Lake, to the Yahara River. Access is possible from the Yahara River and Gibbs Lake County Park. The fishery is dominated by forage species, which often migrate between Gibbs and Little Gibbs Lakes. Commonly found



Map 24. Lake Kegonsa - Yahara River watershed.

fish species in the creek include central mudminnow, common carp, fathead minnow, creek chub, white sucker, black bullhead, brook stickleback, and bluegill. WDNR rates the general condition of the stream as unknown.

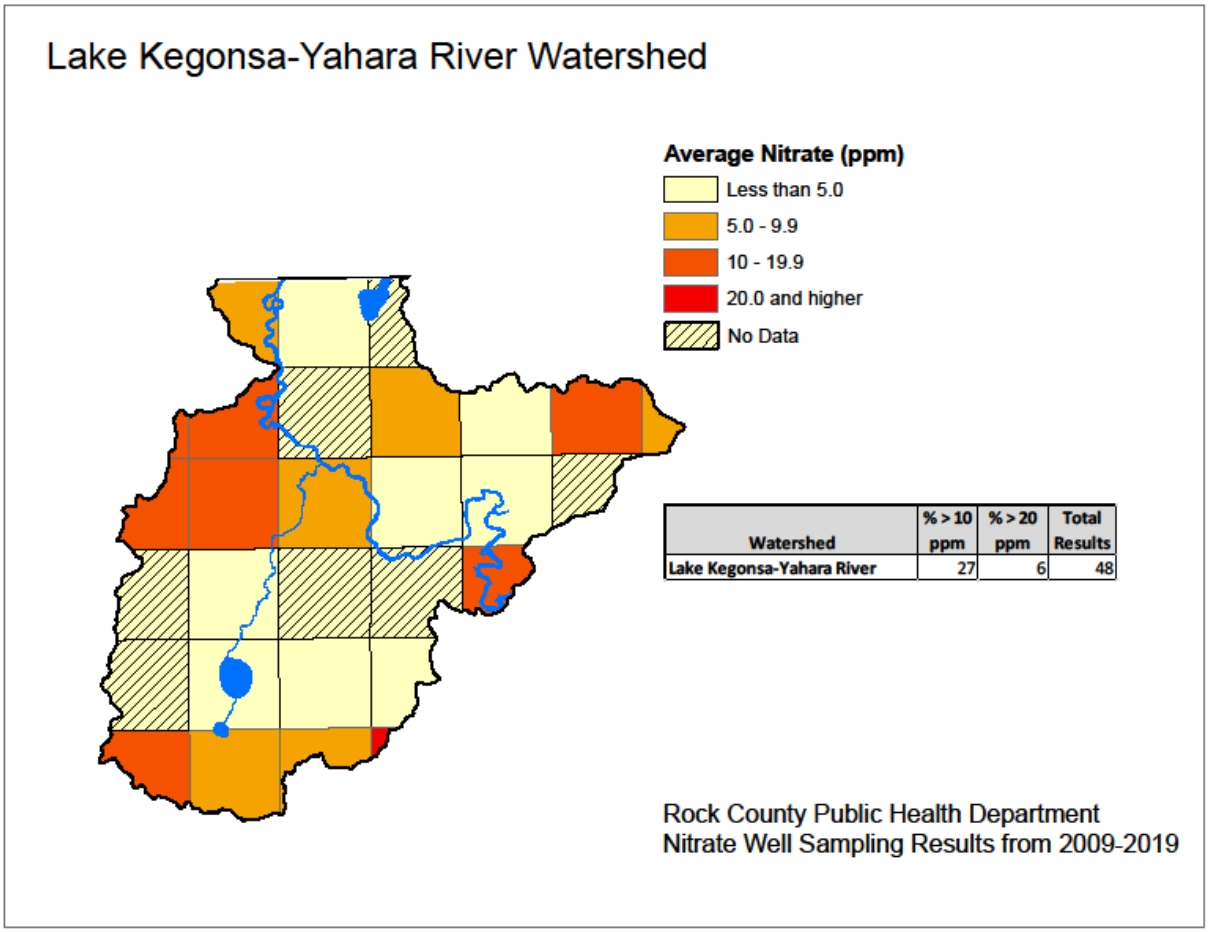
The Yahara River is nearly 40 miles in length with 23 miles in the Lake Kegonsa – Yahara River watershed. The stretch of the Yahara River in this watershed flows from the dam at Lake Waubesa and ends at the river s confluence with the Rock River. Approximately 9 miles of the river in this watershed resides in Rock County starting at the confluence with the Rock River to the Dane-Rock county line. Dams at Fulton and Stebbinsville were removed improving water quality and the fishery. Murwin Park, Hwy 59 Bridge, and Stebbinsville Rd. are main accesses for recreation and are walk-in or carry-in only. There is an automated USGS gaging station at Hwy 59. The river also supports a diverse warm water sport fishery of approximately forty-eight species, containing most of the species common to the Madison lakes. Monitoring activities for water quality data were completed in 1977, 1980, 1981, 2003, 2007, 2011, and 2019. The Yahara River receives effluent from wastewater treatment plants in the City of Stoughton and Madison Metropolitan Sewerage District via the Badfish Creek. The greatest water quality problem in Rock County's stretch of the Yahara is rural non-point source pollution. Water is impaired due to one or more pollutants and associated impacts. Yahara River has been on the states 303(d) impaired waters list since 1998 for total suspended solids and total phosphorus. This water was assessed during the 2014 listing cycle; total phosphorus sample data exceeded 2014 WisCALM listing criteria for the Fish and Aquatic Life use, however, available biological data did not indicate impairment. This water was assessed during the 2016 listing cycle; total phosphorus sample data exceeded 2016 WisCALM listing criteria for the Fish and Aquatic Life use, however, available biological data did not indicate impairment. WDNR rates the general condition of the stream as poor.

Gibbs Lake, located between Evansville and Edgerton, is a small, hard water, drainage lake which outlets through Gibbs Creek to the Yahara River. It has a surface area of 72 acres, a maximum depth of 20 feet with a sand/gravel/muck bottom. A small dam was constructed in the 1960's to control water levels. The lake's Trophic Status is eutrophic. Gibbs Lake County Park surrounds two-thirds of the lake and provides access including a boat ramp. Gibbs Lake is a pan fish fishery and commonly found species include northern pike, common carp, golden shiner, white sucker, black bullhead, yellow bullhead, brown bullhead, green sunfish, pumpkinseed, bluegill, largemouth bass, yellow perch, walleye, and black crappie. The lake is used by migrating and nesting waterfowl. Nuisance aquatic plant growth and algae problems are a concern. Invasive species monitoring occurred in 2014 and 2018 resulting in Eurasian watermilfoil identified as a species of concern. Satellite Lake Clarity Monitoring started in 2014 and was last monitored in 2017. Samples taken in late summer and early fall show a range of clarity depths on average between 4 to 7 feet deep. Gibbs Lake has been monitored for E. coli in 2018 and 2019 with no negative results.

Little Gibbs Lake located upstream of Gibbs Lake, is a hard water, seepage lake with a surface area of 11.2 acres and a maximum depth of 8 feet and outlets through an undefined channel to Gibbs Lake. The lake's Trophic Status is eutrophic. There is a lack of public access to the lake. The shoreline of the lake is comprised of mostly shrubby wetlands and is used by migratory and nesting waterfowl. Fish species commonly found in this lake include bullhead, pumpkinseed, bluegill, and northern pike. Satellite Lake Clarity Monitoring started in 2011 and was last

monitored in 2017. Samples taken in late summer and early fall show a range of clarity depths on average between 2 to 5 feet deep. Curly-leaf pondweed is an aquatic species of concern.

Groundwater Resources
This watershed has a medium susceptibility for groundwater contamination based on the DNR groundwater susceptibility modeling. Protection of the groundwater is limited, hence a medium rating. Depth to groundwater is greater than 3 feet, soil characteristics have high attenuation properties, and surficial deposits tend to be deep and unsorted. It should be noted that this watershed has a very low frequency of high nitrate-nitrite well tests.

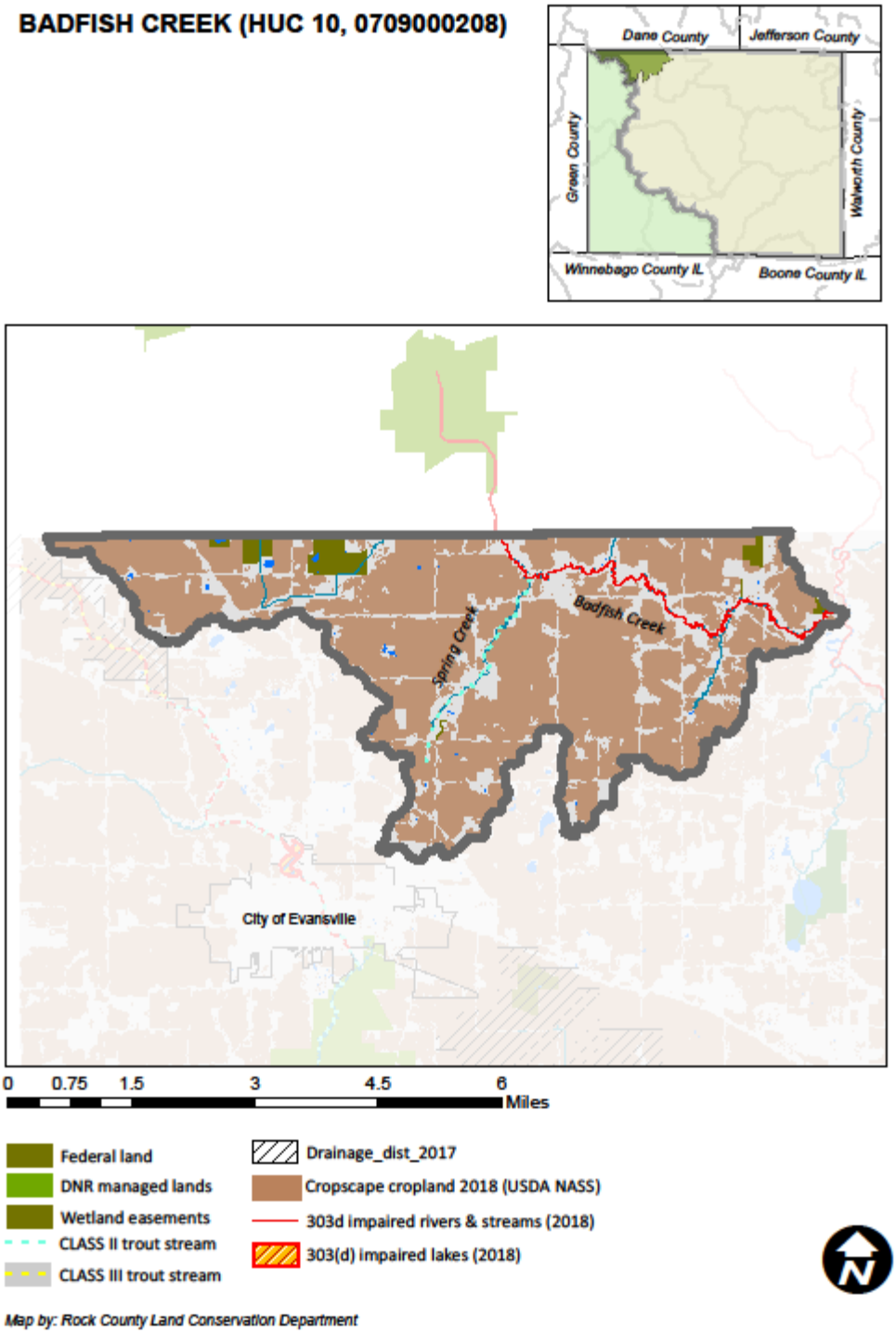


Map 25. Lake Kegonsa - Yahara River groundwater nitrates.

This watershed is susceptible to high nitrates in well water. Rock County Public Health Department estimates that 27% of the wells tested for nitrates in this watershed exceeded 10 mg/L. Of those wells tested over 10 mg/L, 6% tested over 20 mg/L. Also, numerous well tests have a high frequency of coliform bacteria present.

Badfish Creek (HUC 10, 0709000208)
This watershed is approximately 85 square miles in size and is located in the northwestern corner of Rock County (Moraine High Relief). Only the lower 19 square miles of this watershed is located in the Rock County. Agriculture is the primary land use in Rock County's portion of this watershed. Approximately 77% (9,386 acres) of the land base is in production, of which 43%

(2,365 acres) are enrolled in the Wisconsin Farmland Preservation Program. Landowners in this watershed have a high frequency of participation in the Wisconsin Conservation Reserve Enhancement Program (CREP). Currently this Watershed is a component of the Yahara WINs project, seeking to implement best management practices on agricultural land to reduce phosphorus runoff into the greater Yahara River Watershed. Landowners have expressed great interest in participation in the program.



Map 26. Badfish Creek watershed.

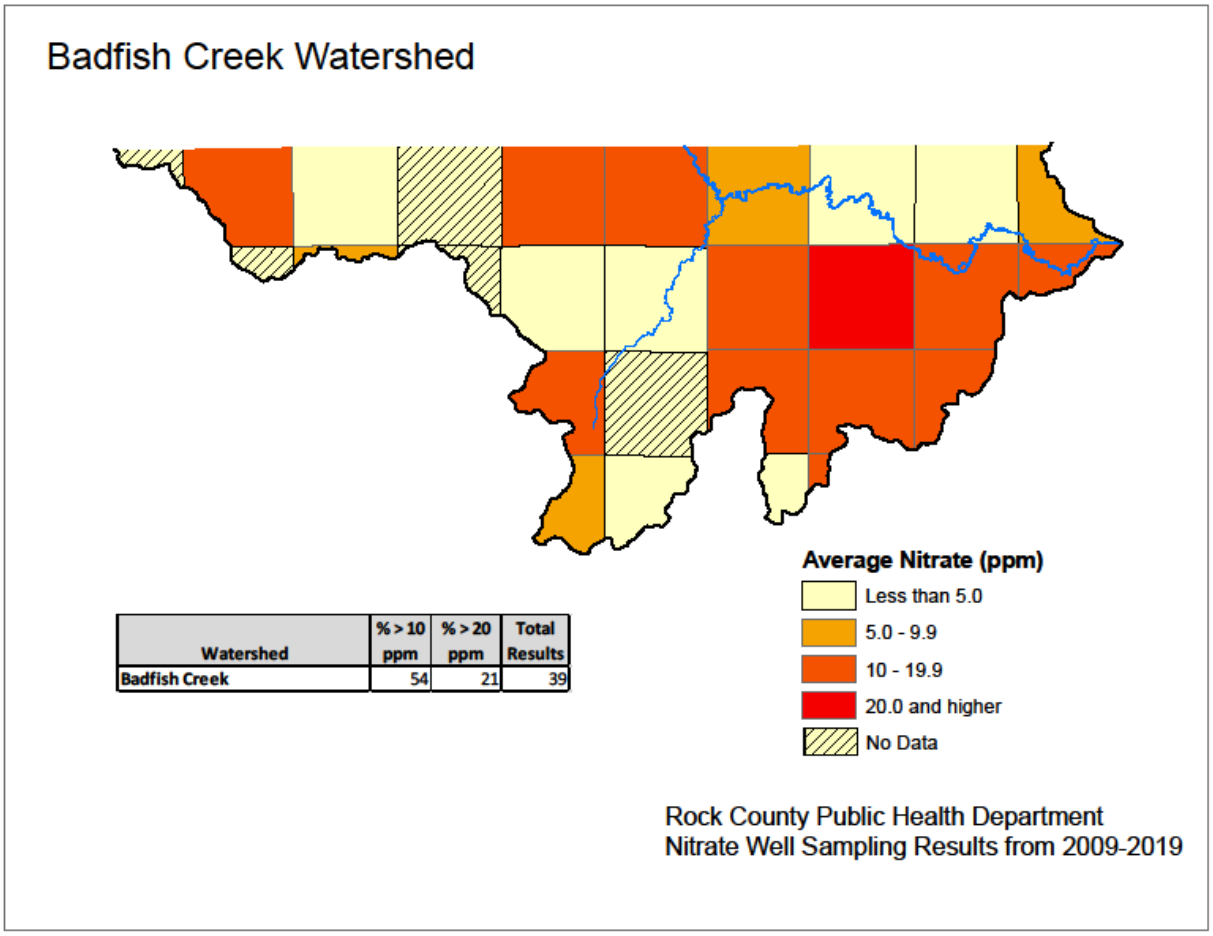
The Cities of Madison and Oregon Waste Water Treatment facilities are permitted to discharge treated waste water to this stream under the WPDES permit system.

Surface Water Resources
Badfish Creek is 12 miles in length overall. A warm-water stream formed by the confluence of its Oregon and Rutland Branches, the stream originates in the Dane County, enters Rock County near Cooksville, then flows easterly to the Yahara River. Nearly 100 percent of the creek's entire length in Dane County has been ditched, straightened and widened. In Rock County, the stream's natural morphology has been preserved. Access is possible by navigable water at the outlet and from four bridge crossings. The fishery has forage and rough species, northern pike, bass and trout. This stream has become very popular for canoeing and kayaking. Surveys conducted in the 1980s showed fair macroinverbrate values, with improvements indicated in the 1990s up through 2002. This water was assessed during the 2012 listing cycle, and total phosphorus sample data exceed 2012 WisCALM listing criteria for the fish and aquatic life use. This water was assessed during the 2014 listing cycle; total phosphorus sample data exceed 2014 WisCALM listing criteria for the Fish and Aquatic Life use, however, available biological data did not indicate impairment. This water was assessed during the 2018 listing cycle; temperature sample data does not exceed 2018 WisCALM listing criteria for the Fish and Aquatic Life use; however, available biological data does not indicate impairment. This water is on the state 303(d) impaired waters list due to levels of Total Phosphorus exceeding state standards and impaired PCBs in contaminated sediment. Total Phosphorus comes from point and nonpoint sources. WDNR rates the general condition of the stream as poor.

Spring Creek is a small spring-fed cold water stream with a length of 3 miles originating northeast of Evansville and flowing in a northeasterly direction to Badfish Creek. Access is available from one town road and two state highway crossings. Spring Creek is considered a Class II Trout Stream. In 2018, Citizen Based Monitoring collected data which showed the stream to be within state water quality standards. WDNR rates the general condition of the stream as fair.

Groundwater Resources
This watershed has a high-medium susceptibility for groundwater contamination based on the DNR groundwater susceptibility modeling. Protection of the groundwater is limited and hence a medium rating. Depth to groundwater is greater than 3 feet, soil characteristics have high attenuation properties, and surficial deposits tend to be deep and unsorted. It should be noted that this watershed has a very low frequency of high nitrate-nitrite well tests.

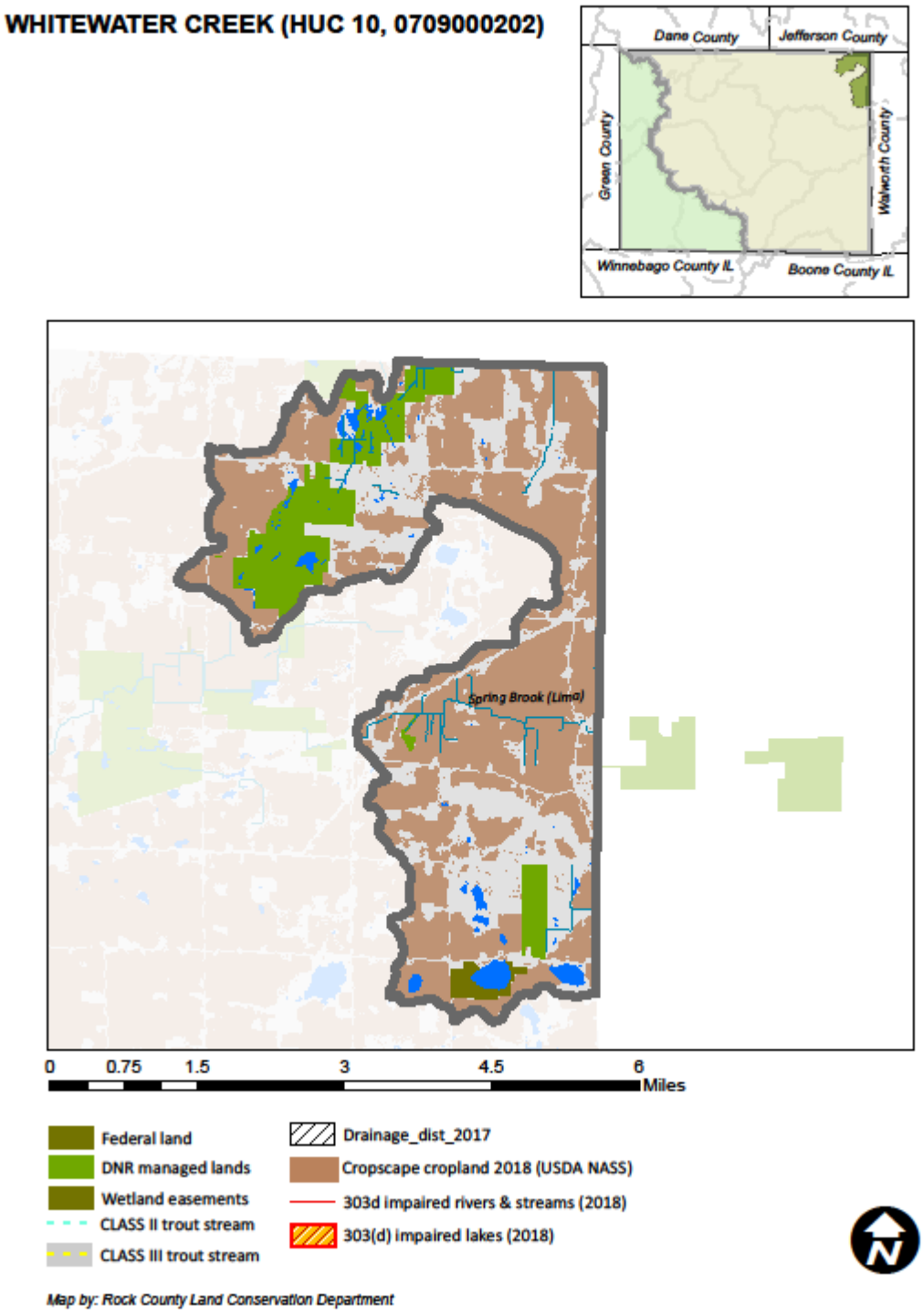
This watershed is susceptible to high nitrates in well water. Rock County Public Health Department estimates that 54% of the wells tested for nitrates in this watershed exceeded 10 mg/L. Of those wells tested over 10 mg/L, 21% tested over 20 mg/L. Also, numerous well tests have a high frequency of coliform bacteria present.



Map 27. Badfish Creek groundwater nitrates.

Whitewater Creek (HUC 10, 0709000202)
This watershed is approximately 71 (45,722 acres) square miles in size and is located in the most northeastern corner of the County (Moraine High Relief) (Map 28). Approximately 15 square miles (9,841 acres) of the upper portion of the watershed is located in Rock County. Agriculture is the primary land use in Rock County's portion of this watershed. Approximately 77% (9,386 acres) of the land base is in production, of which 32% (1,872 acres) are enrolled in the Wisconsin Farmland Preservation Program. Landowners in this watershed have a high frequency of participation in the Wisconsin Conservation Reserve Enhancement Program (CREP).

Surface Water Resources
Spring Brook (Lima) is an 8 mile seepage fed stream originating near Lima Center and flowing east into Walworth County were it empties into Cravath Lake, City of Whitewater. The stream is ditched along much of its length**.**. The stream supports forage fish species only. WDNR rates the general condition of the stream as good.



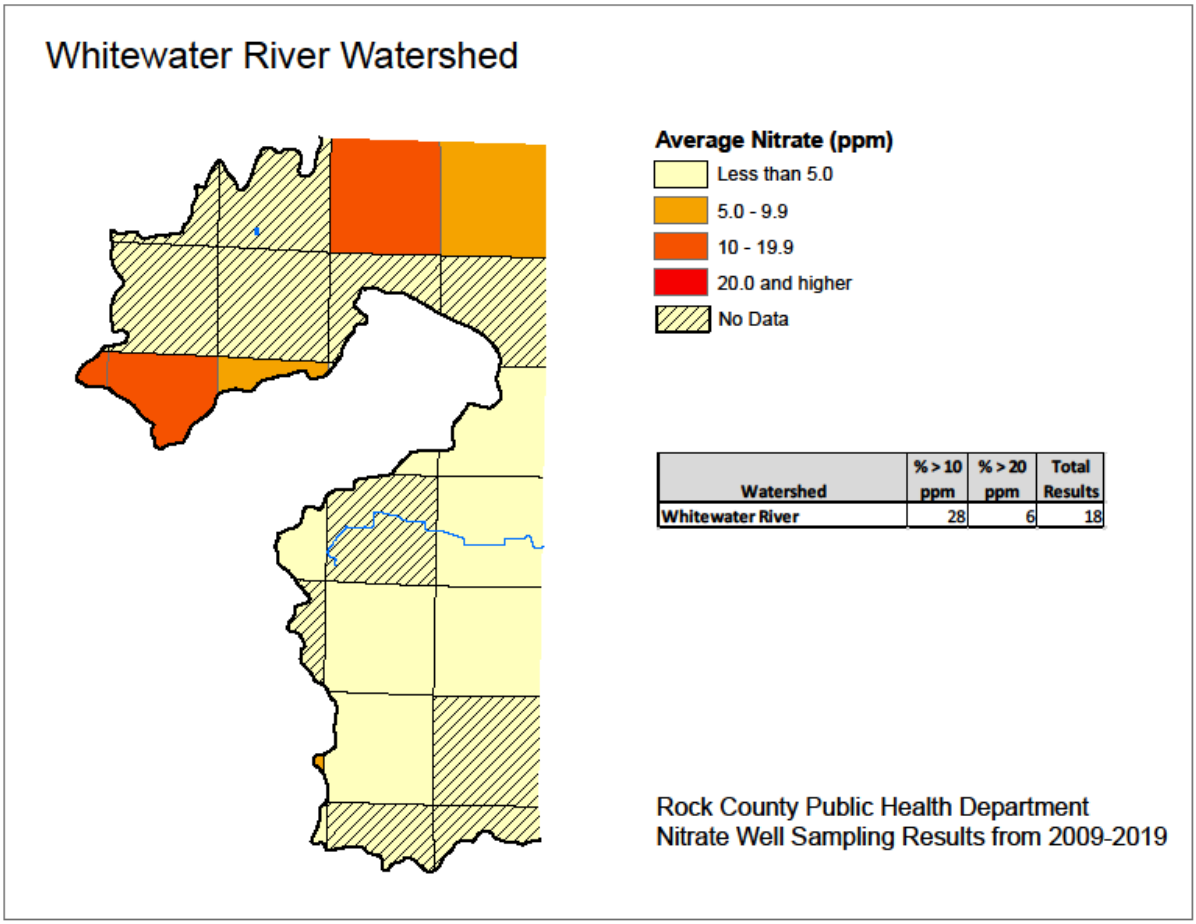
Map 28. Whitewater Creek watershed.

Groundwater Resources

This watershed has a medium susceptibility for groundwater contamination based on the DNR groundwater susceptibility modeling. Protection of the groundwater is limited, hence a medium rating. Depth to groundwater is greater than 3 feet, soil characteristics have high attenuation

properties, and surficial deposits tend to be deep and unsorted. It should be noted that this watershed has a very low frequency of high nitrate-nitrite well tests.

This watershed is susceptible to high nitrates in well water. Rock County Public Health Department estimates that 28% of the wells tested for nitrates in this watershed exceeded 10 mg/L. Of those wells tested over 10 mg/L, 6% tested over 20 mg/L (Map 29). Also, numerous well tests have a high frequency of coliform bacteria present.



Watershed	% > 10 ppm	% > 20 ppm	Total Results
Whitewater River	28	6	18

Map 29. Whitewater Creek groundwater nitrates.

Sugar-Pecatonica Rivers Basin –Surface water and groundwater

One of two basins in Rock County, the Sugar-Pecatonica is in the western one-third of the County. Most of the basin is in Green, Iowa, Lafayette, and Dane Counties. Like the Lower Rock River, agriculture is the dominant land use in this basin and is the primary source of nonpoint source pollution leading to water quality degradation. Orfordville, Brodhead, and Evansville are the only three incorporated urban areas in the Rock County portion of the basin.

Resource Concerns and Assessment: Water in the basin is listed as fair to good according to the Sugar-Pecatonica Water Quality Management Plan. About 260 miles of streams are classified as the basin a valuable recreational fishing area. Over 700 miles of streams in the basin are not yet

classified. Much of the nonpoint source pollution problems are the same as in the Lower Rock River Basin. Rock County's portion of this basin has three streams that are listed as Exceptional Resource Waters (ERWs); Raccoon Creek, Norwegian Creek, and Allen Creek.

Sugar River

The 10-mile section of the Sugar River in Rock County is near the lower end of the watershed. It is free-flowing from the dam in Brodhead to the confluence with the Pecatonica River near Shirland, Illinois. It flows through rural far southwestern Town of Avon and is buffered by 3,042 acres of the Avon Bottoms State Wildlife Area and Avon Bottoms State Natural Areas, which is mostly floodplain forest then herbaceous wetland. The area is sparsely populated with no urban development or permitted outfalls. Over 3,000 acres of former crop land in the river corridor was retired or restored to wetland through state (CREP) and federal (WRP) private land easement programs since 2000 and after the floods in 2008 - 2010. Some of these lands have since transferred to the state wildlife area. All of part of three drainage districts fill the nearly all the wide, low valley adjacent to Avon Bottoms and empty into the Sugar River; they are #8 Drainage District, Avon Drainage District, and Stokes Drainage District. The main contributing streams in Rock County are Taylor Creek and its upstream tributaries Swan and Willow Creeks and several unnamed drainage ditches in the drainage districts.

Recreation is mainly fishing, hunting, trapping, birding, and paddling. The river is known for channel catfish; northern pike, smallmouth bass, black crappie, white crappie, brown bullhead, and black bullhead. There are three access points; a carry-in at County Road T and county park ramps at Hwy 81 and Nelson Road. Boaters using the river from County Road T at the Green – Rock County line downstream to the Illinois border can expect frequent obstacles, obstructions, and bends; multiple channels; and low clearance road bridges (DNR Sugar River Planning Group).

Although the main stem of the Sugar River in Rock County is above the state standards for total phosphorus, aquatic life assessments do not indicate impairment at this time.

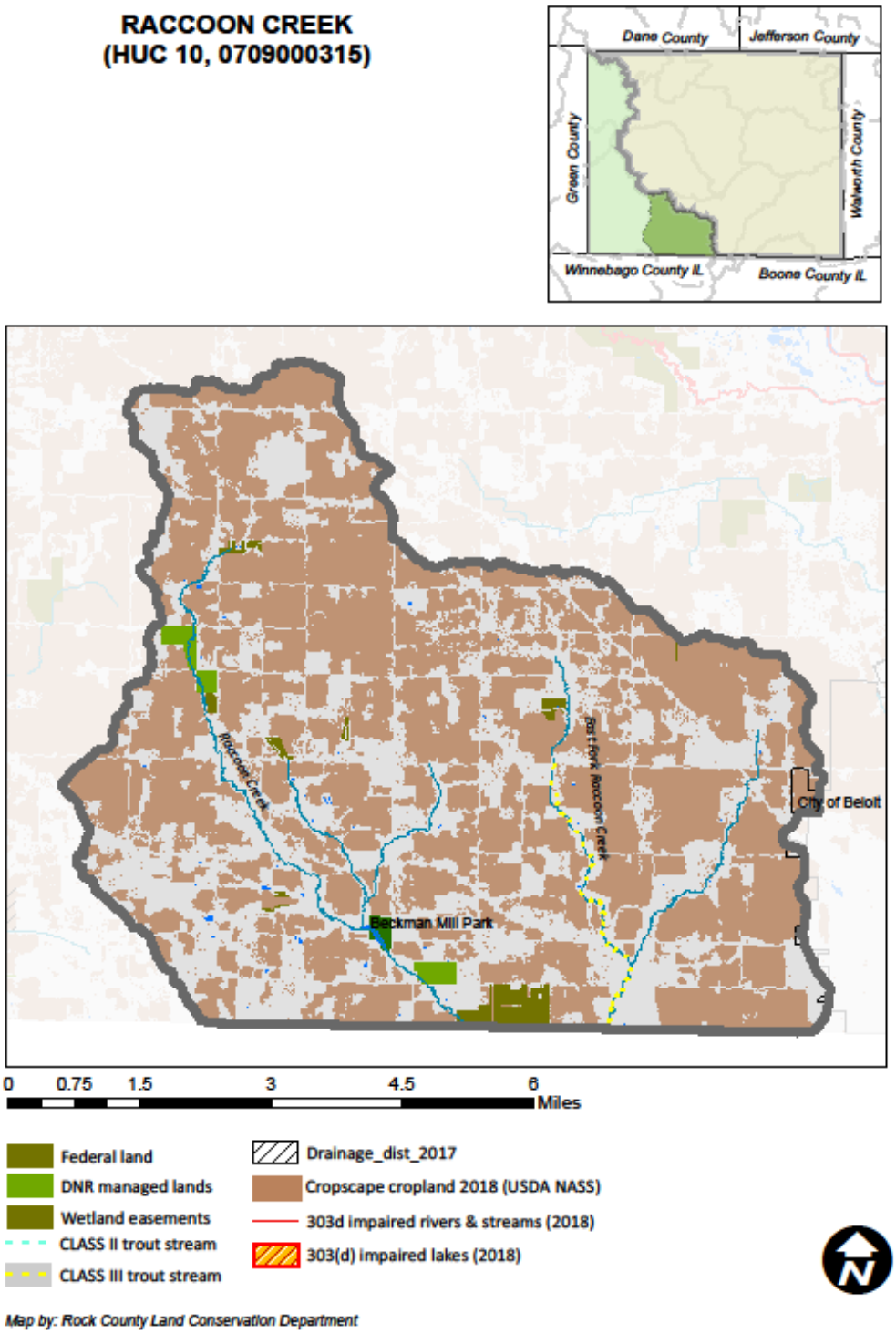
Raccoon Creek (HUC 10, 0709000315)

This watershed is approximately 65 square miles. Agriculture is the dominant land use in this watershed. Only the upper 47 square miles (73%) of this watershed is located in the Rock County. Agriculture is the primary land use in Rock County's portion of this watershed. Approximately 77% (17,939 acres) of the land base is in production, of which 2% (394 acres) are enrolled in the Wisconsin Farmland Preservation Program. It must be noted at this point that the Town of Newark did not update their zoning ordinance to comply with the Wisconsin Farmland Preservation Program, making landowners in this town ineligible for the FP state income tax credit beginning in 2014. Landowners in this watershed have a high frequency of participation in the Wisconsin Conservation Reserve Enhancement Program (CREP). The installation of agricultural erosion control practices promoted by the NRCS and LCD has resulted in a general decrease in the sediment delivered to surface waters in this watershed.

Surface Water Resources

Raccoon Creek is a roughly spring fed stream 15 miles long and is comprised of two main spring-fed branches. East Fork Raccoon Creek begins in the Town of Beloit while the western

fork, known only as Raccoon Creek, begins in the Town of Newark. The two forks of Raccoon Creek flow south into Winnebago County, Illinois where they join and then flow to the

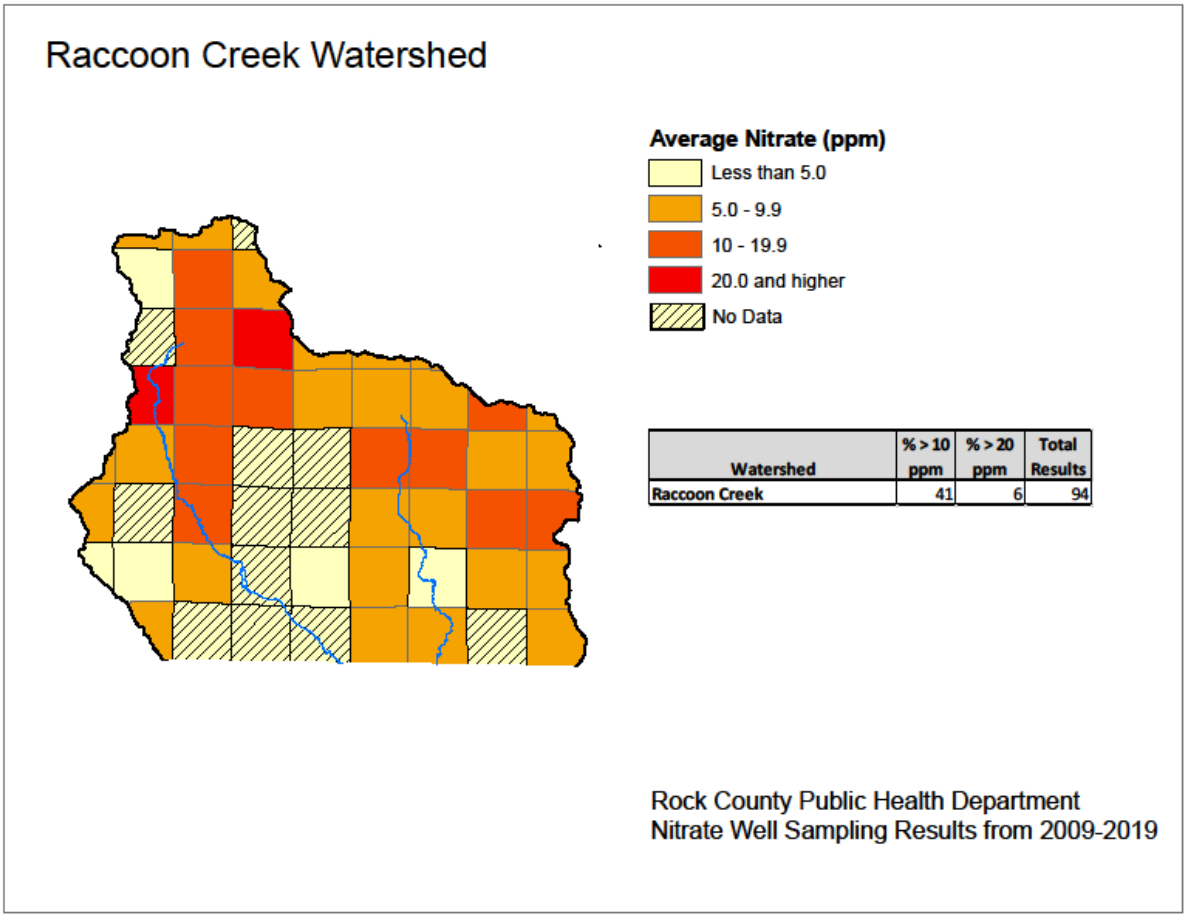


Map 30. Raccoon Creek watershed.

Pecatonica River. The stream is dammed at Beckman Mill County Park. About one-third mile of the stream borders a 75 acre public hunting grounds. Raccoon Creek is designated as Exceptional Resource Waters (ERW). Access is available from six town roads, one state

highway and Beckman Mill County Park. Fish population consists of carp, suckers and forage species. Water quality was monitored during the years 1994, 2011, 2015, 2016 to 2018 with no negative results reported by the WDNR. Raccoon Creek was assessed during the 2018 listing cycle; new biological (macroinvertebrate and fish Index of Biotic Integrity (IBI) scores) and temperature sample data were clearly below the 2018 WisCALM listing thresholds for the Fish and Aquatic Life use. This water is meeting this designated use and is not considered impaired. WDNR rates the general condition of the stream as good.

Both stream corridors, east and west forks, are buffered with extensive high quality wetlands. In addition, the East Fork of Raccoon Creek is a cold stream stocked with brook trout fingerlings by the DNR. Surveys conducted since 2002 show good carryover of brook trout populations as well as a diversity of forage fish. The stream is classified as Trout Water and Exceptional Resource Water. East Fork Raccoon Creek was assessed during the 2018 listing cycle; new biological (fish or macroinvertebrate Index of Biotic Integrity (IBI) scores) and temperature sample data were clearly below the 2018 WisCALM listing thresholds for the Fish and Aquatic Life use. This water was meeting the designated use and the WDNR rates the general condition of the stream as good.



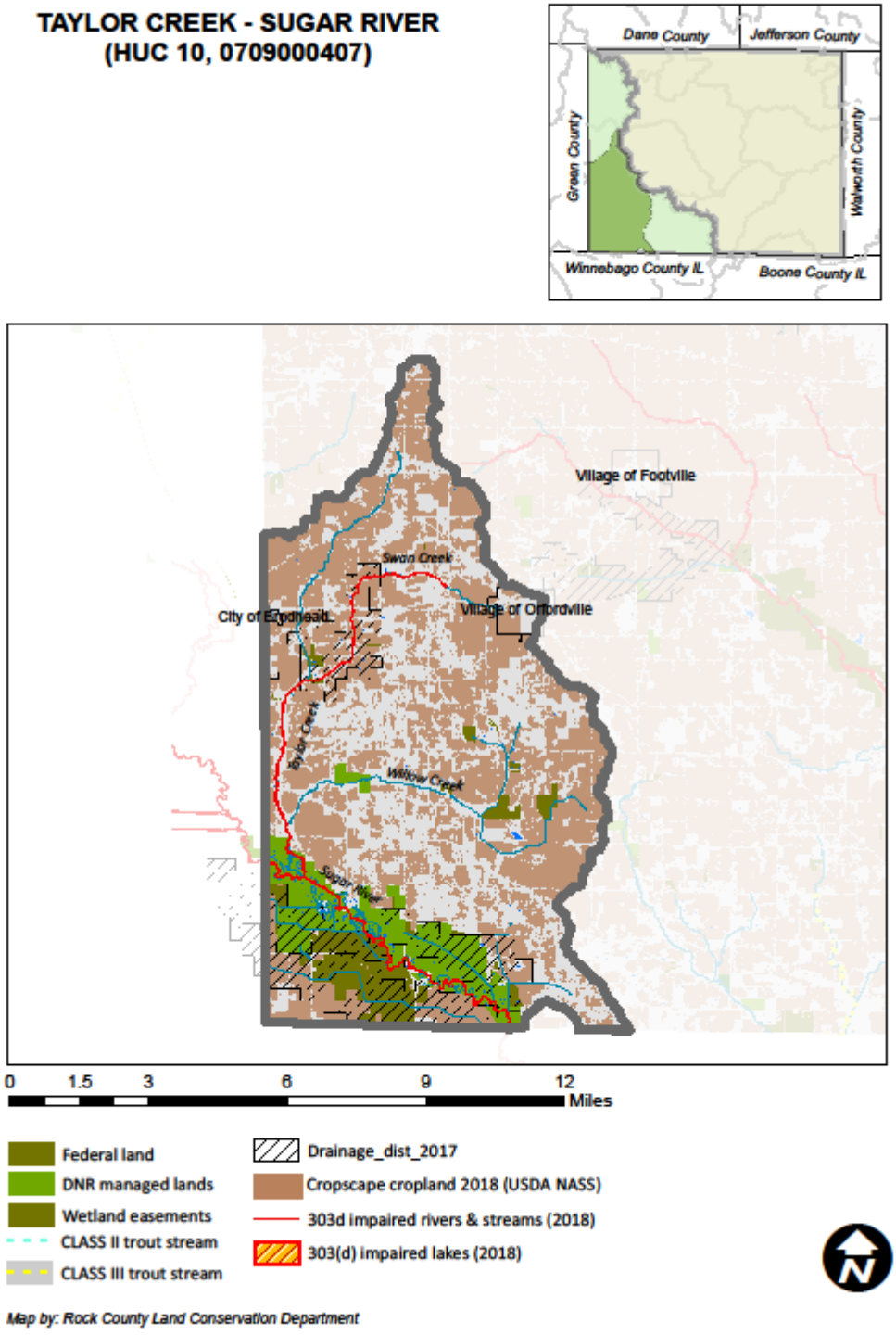
Map 31. Raccoon Creek groundwater nitrates.

Groundwater Resources
This watershed has a medium susceptibility for groundwater contamination based on the DNR groundwater susceptibility modeling. Protection of the groundwater resource is limited due the following attributes; depth to groundwater is less than 3 feet, soil characteristics have medium attenuation properties, and surficial deposits present tend to be shallow. It should be noted this watershed has two Atrazine Prohibition Areas, as defined by DATCP.

This watershed is susceptible to high nitrates in well water. Rock County Public Health Department estimates that 41% of the wells tested for nitrates in this watershed exceeded 10 mg/L. Of those wells tested over 10 mg/L, 6% tested over 20 mg/L (Map 31).

Taylor Creek – Sugar River (HUC 10, 0709000407)
This watershed is approximately 127 square miles in size and is located in the southeastern corner of Rock County (Western Uplands). Approximately 77% (49,251 acres) of the land base of this watershed is located in Rock County (Map 32). Agriculture is the primary land use in Rock County's portion of this watershed. Approximately 66% (29,666 acres) of the land base is in production, of which 52% (15,446 acres) are enrolled in the Wisconsin Farmland Preservation Program. Landowners in this watershed have a low frequency of participation in the Wisconsin Conservation Reserve Enhancement Program (CREP). Landowners in this watershed have a high frequency participating in the Wetland Reserve Program. Currently, this Watershed is a component of the Lower Sugar River Watershed Association and the Farmers of the Sugar River Producer-Led Watershed group.

Surface Water Resources
Rising in west central Rock County, Taylor Creek is a 13-mile warm water stream that flows southward to the Sugar River. The stream has been ditched throughout much of its length. Approximately 3/4 mile of the stream flows through the Avon Bottoms Wildlife Area. Access is available from six county and five town roads, and two state highway crossings. The lower 6 miles of the stream supports a warm water sport fishery - largemouth and smallmouth bass, and northern pike as well as a variety of pan fish and warm water forage species. The upper half of the stream is a warm water forage fishery. This stream is impacted by beaver dams. Taylor Creek from the confluence with Swan Creek down to its mouth was assessed during the 2016 listing cycle; total phosphorus sample data exceeded 2016 WisCALM listing criteria for the Fish and Aquatic Life use, however, available biological data do not indicate impairment. Total Phosphorus comes from point and nonpoint sources. Temperature data met 2016 WisCALM listing criteria for the Fish and Aquatic Life use. Taylor Creek was placed on the Wisconsin 303(d) Impaired Waters List in 2016. Taylor Creek was assessed during the 2018 listing cycle; new biological (macroinvertebrate Index of Biotic Integrity (IBI) scores) sample data were clearly below the 2018 WisCALM listing thresholds for the Fish and Aquatic Life use. This water was meeting this designated use and was not considered impaired. The 2018 assessments of Taylor Creek (miles 0-6.06) showed continued impairment by phosphorus; new total phosphorus sample data exceeded the 2018 WisCALM listing criteria for the Fish and Aquatic Life use. However, available biological data did not indicate impairment. Based on the most updated information, no change in the existing impaired waters listing was needed. WDNR rates the general condition of the stream as poor.

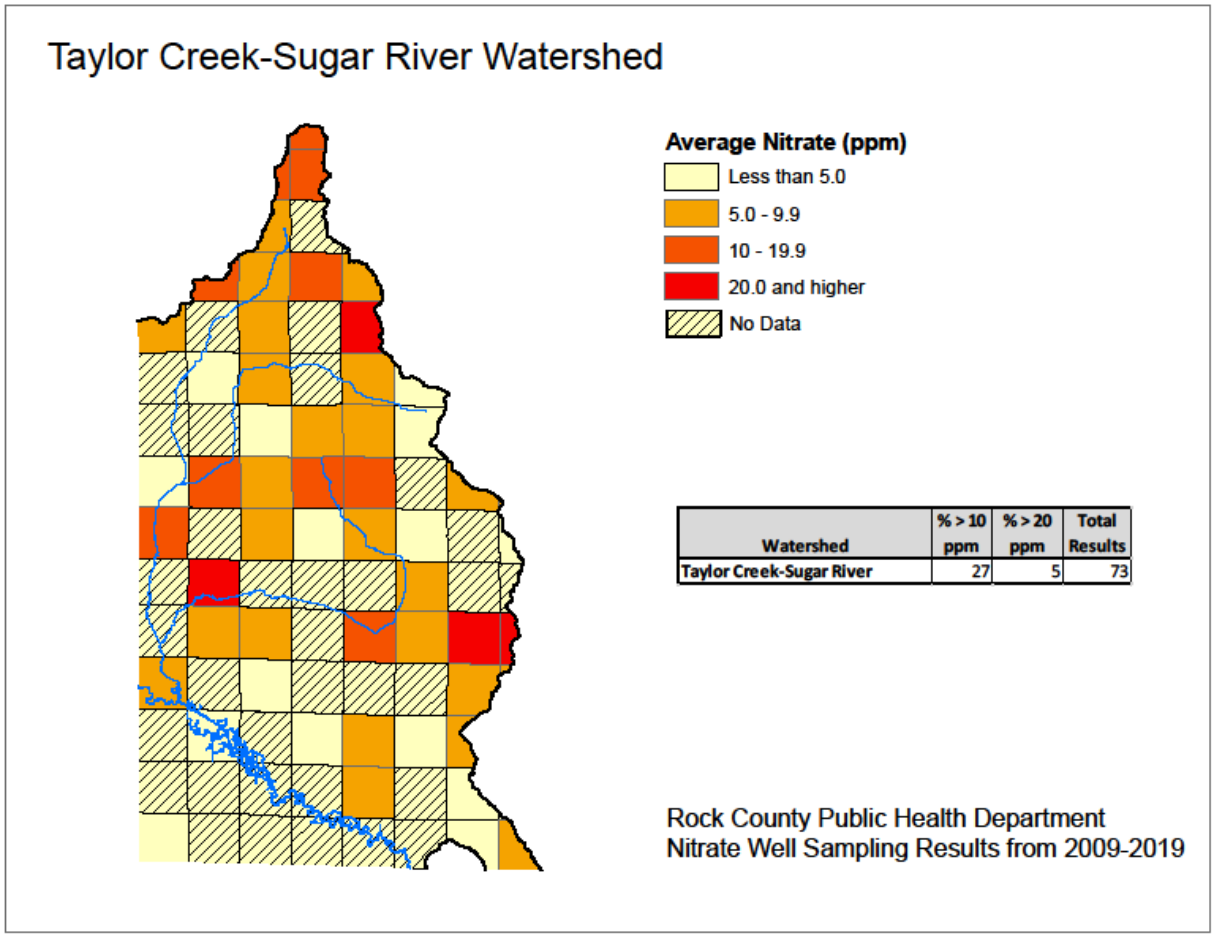


Map 32. Taylor Creek - Sugar River watershed.

Swan Creek is a 5 mile seepage fed warm water stream originating near Orfordville and flows west, then south to empty into Taylor Creek. Access is available from three town roads and two state highway crossings. The lower 5 miles of stream supports a warm water sport fishery. The upper two miles of stream are classified as limited forage fishery. The stream receives effluent from the Orfordville sewerage treatment plant. This water was assessed during the 2016 listing

cycle; total phosphorus sample data exceeded 2016 WisCALM listing criteria for the Fish and Aquatic Life use, however, available biological data do not indicate impairment. Total Phosphorus comes from point and nonpoint sources. Temperature data met 2016 WisCALM listing criteria for the Fish and Aquatic Life use. Swan Creek was placed on the Wisconsin 303(d) Impaired Waters List in 2016. This water was assessed during the 2018 listing cycle; total phosphorus sample data exceed 2018 WisCALM listing criteria for the Fish and Aquatic Life use, however, temperature and available biological data do not indicate impairment. WDNR rates the general condition of the upper 2 miles of the stream as fair while the lower 5 miles is rated poor.

Willow Creek is an 11 mile cold water seepage fed stream originating south of Orfordville, then flowing west to enter Taylor Creek. The upper three quarters of the stream has been ditched. Access is provided by three town roads and one state highway crossing. This stream is impacted by beaver dams. Public-owned stream frontage totals .7 mile and 120 acres of public hunting and fishing grounds adjoin the stream. The area is moderately used by migrating waterfowl. The upper three quarters of the stream supports warm water forage species while the lower 3 miles of stream support a warm water sport fishery. Water quality was monitored during the years 2009, 2014, 2015, with no negative results reported by the WDNR. Willow Creek was assessed during the 2018 listing cycle; new biological (macroinvertebrate Index of Biotic Integrity (IBI) scores)



Map 33. Taylor Creek groundwater nitrates.

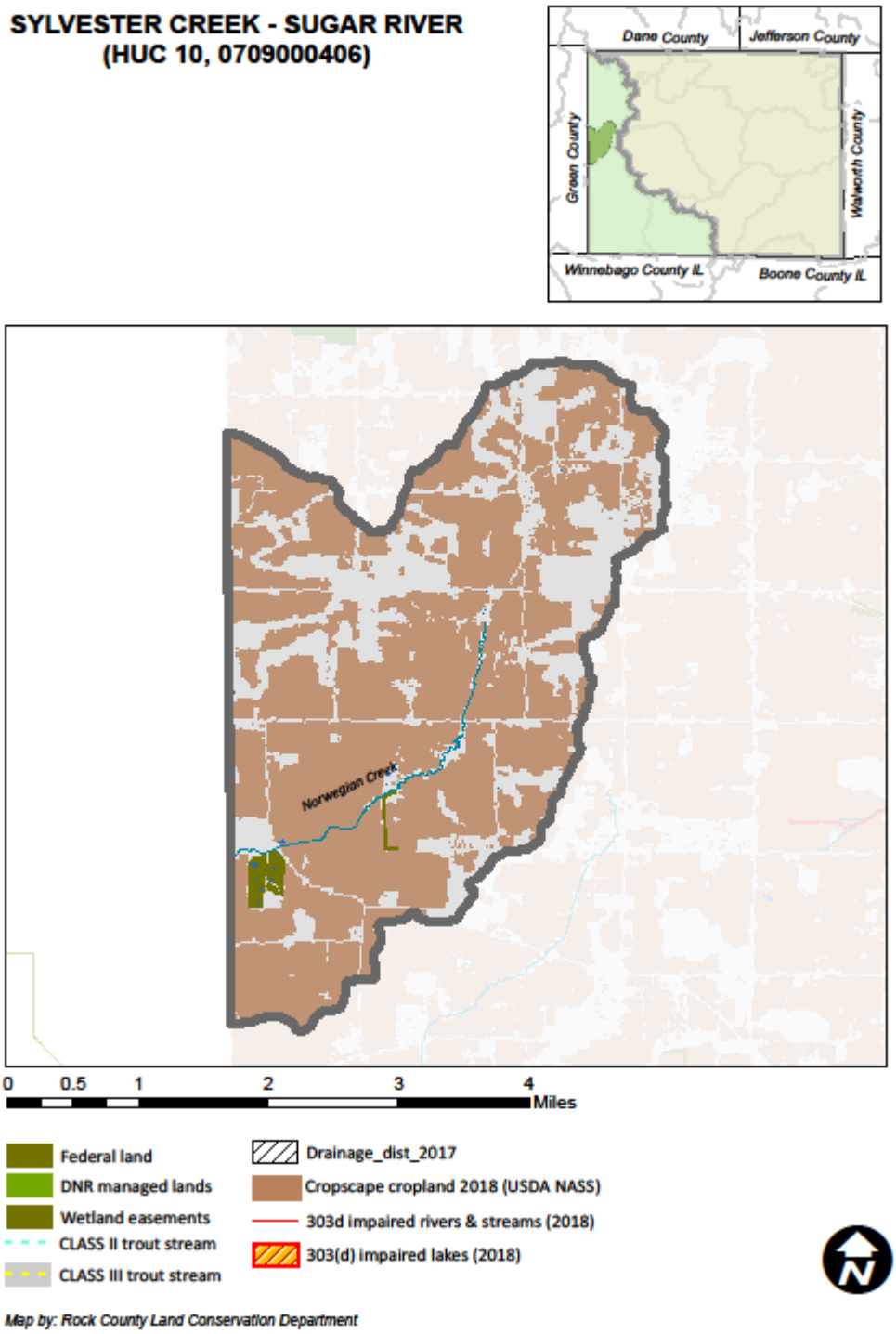
sample data were clearly below the 2018 WisCALM listing thresholds for the Fish and Aquatic Life use. This water is meeting this designated use and is not considered impaired. WDNR rates the general condition of the stream as good.

Groundwater Resources
This watershed has a medium susceptibility for groundwater contamination based on the DNR groundwater susceptibility modeling. Protection of the groundwater resource is limited due the following attributes; depth to groundwater is less than 3 feet, soil characteristics have medium attenuation properties, and surficial deposits present tend to be shallow. It should be noted this watershed has two Atrazine Prohibition Areas.

This watershed is susceptible to high nitrates in well water. Rock County Public Health Department estimates that 27% of the wells tested for nitrates in this watershed exceeded 10 mg/L. Of those wells tested over 10 mg/L, 5% tested over 20 mg/L (Map 33).

Sylvester Creek – Sugar River (HUC 10, 0709000406)
This watershed is approximately 56 square miles (69,275 acres) in size and is located in the western section of Rock County (Western Uplands). Only the upper 11 square miles (7,090 acres) of this watershed is located in the Rock County (Map 34). Agriculture is the primary land use in Rock County's portion of this watershed. Approximately 75% (5,295 acres) of the land base is in production, of which 58% (3,097 acres) are enrolled in the Wisconsin Farmland Preservation Program. Landowners in this watershed have a high frequency of participation in the Wisconsin Conservation Reserve Enhancement Program (CREP). Currently, this Watershed is a component of the Lower Sugar River Watershed Association and the Farmers of the Sugar River Producer-Led Watershed group.

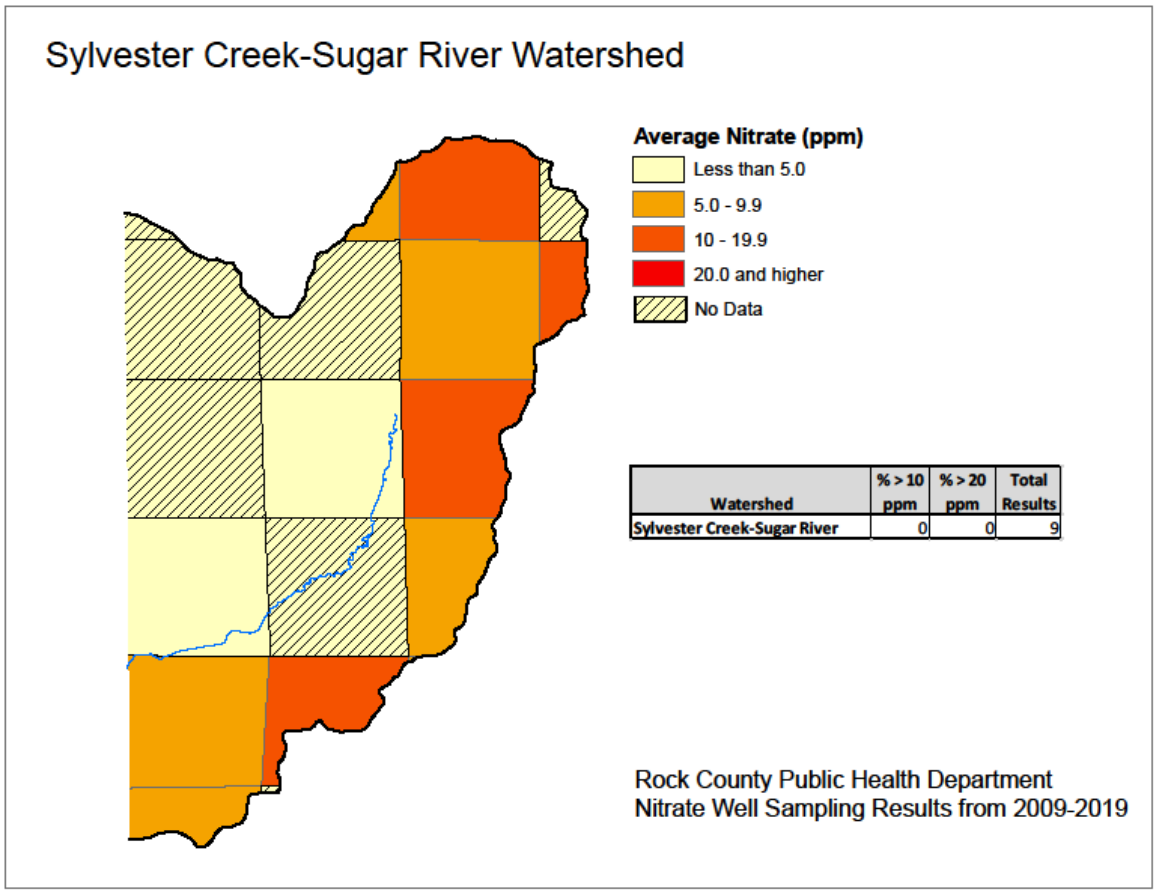
Surface Water Resources
Norwegian Creek is a warm water, slow moving stream flowing in a southwesterly direction entering the Mill Race arm of the Sugar River at Decatur Lake. A little over one-half of the stream is located in Rock County, and the downstream half is in Green County. Much of the stream has been straightened by ditching. Public access is provided at four road crossings and at a Department of Natural Resources boat launching site at the stream's mouth. The fishery in Norwegian Creek in Rock County is managed for forage species including the least darter, a species on the states special concern list. The stream is classified as an Exceptional Resource Water (ERW). This water was assessed during the 2016 listing cycle; total phosphorus and biological sample data clearly met 2016 WisCALM listing thresholds for the Fish and Aquatic Life use. Norwegian Creek was assessed during the 2018 listing cycle; new total phosphorus sample data were clearly below the 2018 WisCALM listing thresholds for the Fish and Aquatic Life use. This water is meeting the designated use and is not considered impaired. WDNR rates the general condition of the stream as good.



Map 34. Sylvester Creek watershed.

Groundwater Resources

This watershed has a medium susceptibility for groundwater contamination based on the DNR groundwater susceptibility modeling. Protection of the groundwater is limited, hence a medium rating. Depth to groundwater is less than 3 feet, soil characteristics have medium attenuation properties, surficial deposits tend to be shallow, and the area is underlain by fractured dolomite and sandstone bedrock. It should be noted this watershed has two Atrazine Prohibition Areas.

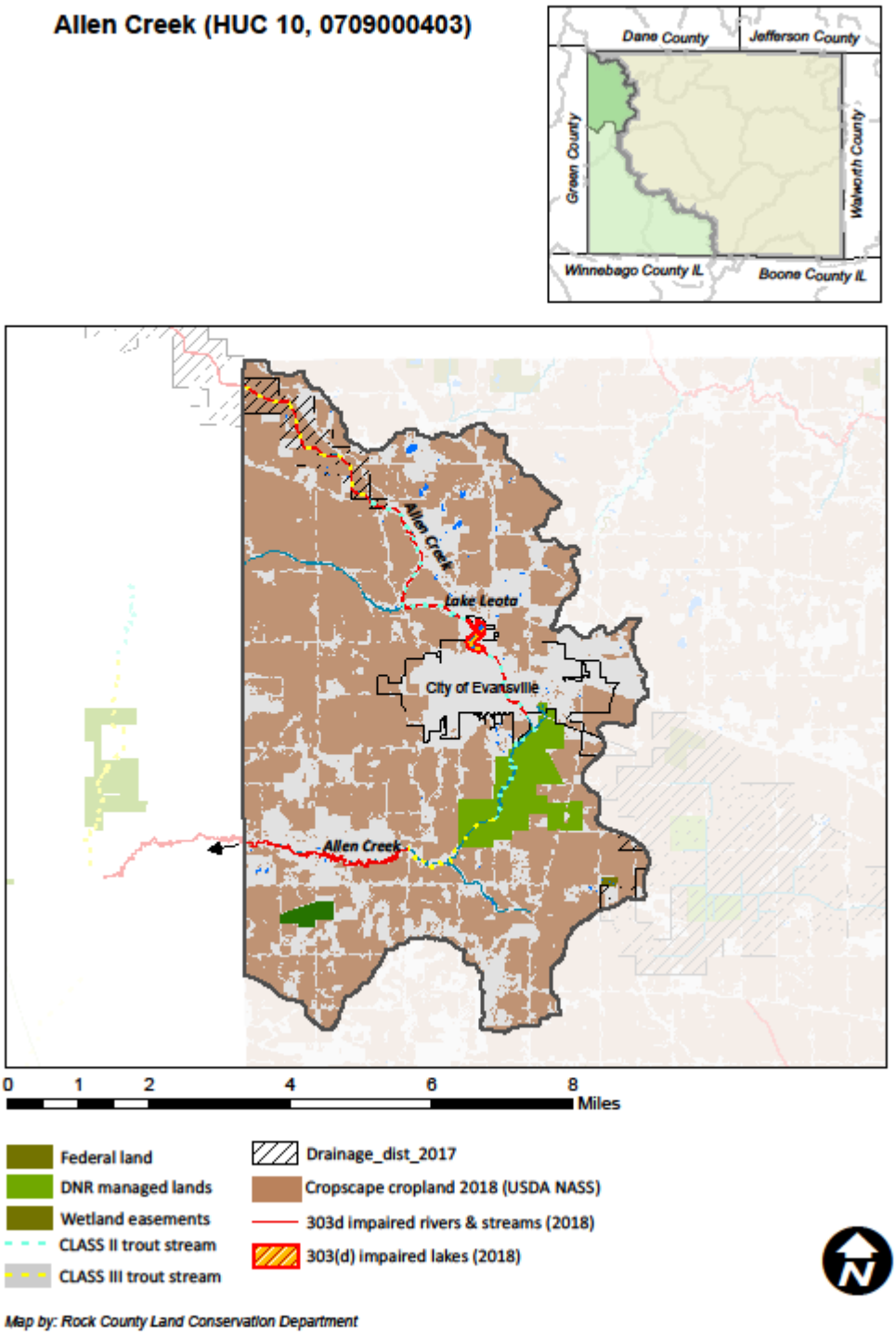


Map 35. Sylvester Creek groundwater nitrates.

This watershed is considered to have the occurrence of nitrates in well water. Rock County Public Health Department estimates that % of the wells tested for nitrates in this watershed exceeded 10 mg/L. Of those wells tested over 10 mg/L, 0% tested over 20 mg/L (Map 35). Caution with interpretation of the results well tests must be observed, since only 9 samples have been tested over a ten year period.

Allen Creek Watershed (HUC 10, 0709000403)

This watershed is approximately 153 square miles in size with 40 square miles located in the uppermost northwest section of Rock County (Moraine High Relief) (Map 36). The upper reach of Allen
Creek is a registered drainage district. This section of the stream has been straightened by the drainage board in years past. Agricultural is the predominant land use, composing approximately 64% of the land base or 16,179 acres. Approximately 7,086 acres or 43% of the agricultural base is enrolled in the Wisconsin Farmland Preservation Program. Currently, this Watershed is a component of the Lower Sugar River Watershed Association and the Farmers of the Sugar River Producer-Led Watershed group.



Map 36. Allen Creek watershed.

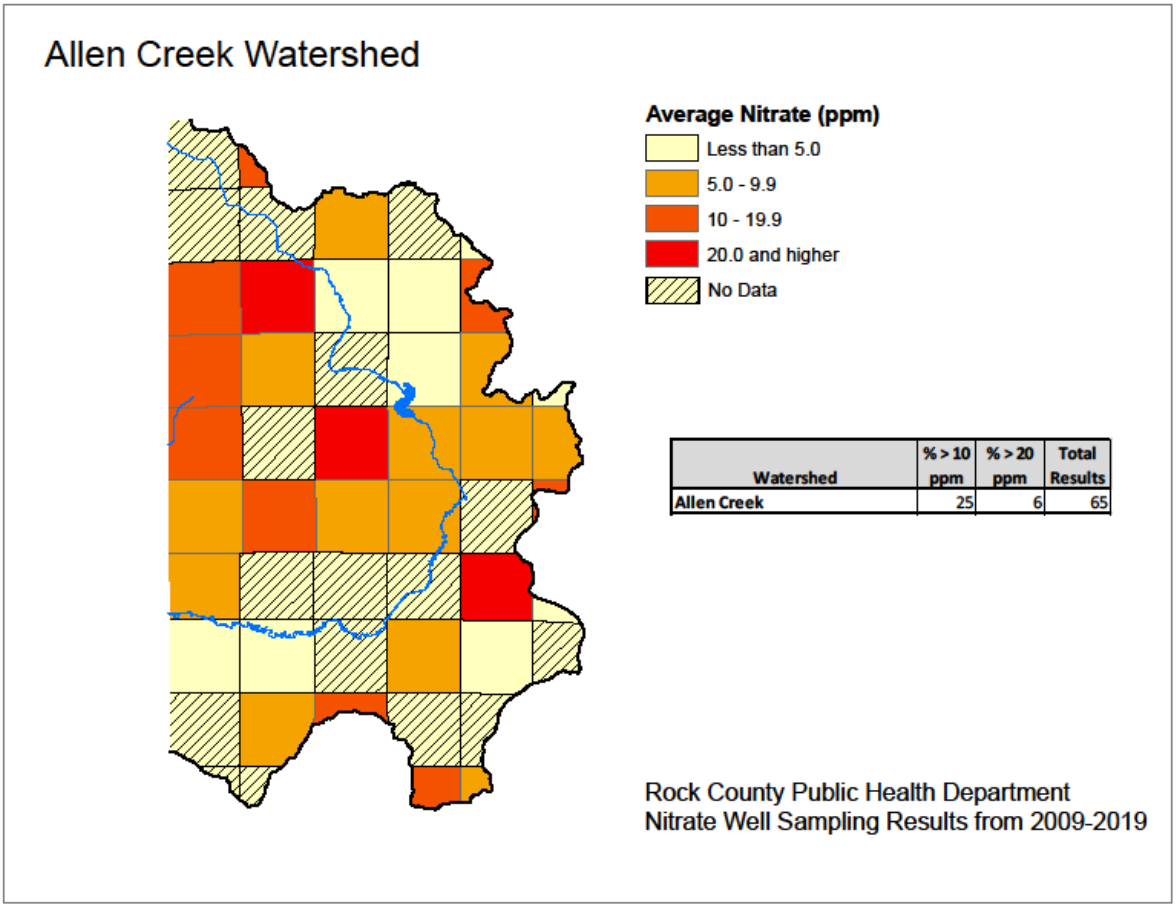
The City of Evansville is only city in this watershed in Rock County. Storm water and construction site erosion from this municipality have impacted the water quality of Allen Creek. The City of Evansville and Village of Brooklyn Waste Water Treatment facilities are permitted to discharge treated waste water to this stream under the WPDES permit system.

Surface Water Resources
Allen Creek is a 26-mile stream beginning in southern Dane County, flowing southeast through Rock County and turns west flowing into Green County where it enters into the Sugar River. Stream access occurs in Rock County at 4 roads and at WDNR wildlife area. The first 11 miles from the mouth up to Old 92 Road is a diverse warm water fishery and classified as an Exceptional Resource Water (ERW). The rest of the stream, with the exception of Lake Leota, are classified cold trout waters. A dam with an eight foot head forms the Lake Leota. Water warmed from the impoundment has a thermal impact downstream from the dam. The municipalities of Brooklyn and Evansville discharge to the creek. The 2018 assessments of Allen Creek (mouth to Old HWY 92) showed impairment by phosphorus; new total phosphorus sample data exceeded the 2018 WisCALM listing criteria for the Fish and Aquatic Life use. However, available biological data did not indicate impairment (i.e. no macroinvertebrate or fish Index of Biotic Integrity (IBI) scored in the "poor" condition category). This water is on the state 303(d) impaired waters list due to levels of Total Phosphorus exceeding state standards. Total Phosphorus comes from point and nonpoint sources. WDNR rates the general condition of the stream as poor.

Lake Leota, located in the City of Evansville, is a 36 acre lake created by an 8-foot dam on Allen Creek. Maximum depth of the lake is 15 feet and its bottom is muck and gravel. This lake is managed by the City of Evansville for fishing and swimming. A dredging project of the impoundment was completed in the fall of 2009. Most of the shoreline is within the Evansville's Lake Leota Park where public access is available. Picnic tables and beach facilities are provided. Fish species present include bluegills, largemouth bass, bullheads, northern pike and crappies. Water temperature, pH and clarity along with aquatic invasive species have been monitored since 2016. Aquatic invasive species of concern is Phragmites. The trophic status is eutrophic and the water is currently considered impaired. Lake Leota was assessed during the 2016 listing cycle; total phosphorus and chlorophyll sample data exceeded 2016 WisCALM listing thresholds for the Recreation use, but did not exceed Fish and Aquatic Life thresholds. Lake Leota was placed on the impaired waters list for total phosphorus in 2016. The 2018 assessments showed continued impairment by phosphorus; new total phosphorus sample data overwhelmingly exceeded the 2018 WisCALM listing thresholds for the Recreation use and Fish and Aquatic Life use. Chlorophyll-a sample data clearly exceeded the REC use thresholds, and nearly exceeded the FAL use thresholds. The assessments show a declining trend for water quality and recreational value.

Groundwater Resources
This watershed has a medium susceptibility for groundwater contamination based on the DNR groundwater susceptibility modeling. Protection of the groundwater is limited and hence a medium rating. Depth to groundwater is less than 3 feet, soil characteristics have medium attenuation properties, and surficial deposits tend to be shallow. This watershed has one atrazine prohibition zone, as defined by DATCP.

This watershed is susceptible to high nitrates in well water. Rock County Public Health Department estimates that 25% of the wells tested for nitrates in this watershed exceeded 10 mg/L. Of those wells tested over 10 mg/L, 6% tested over 20 mg/L.



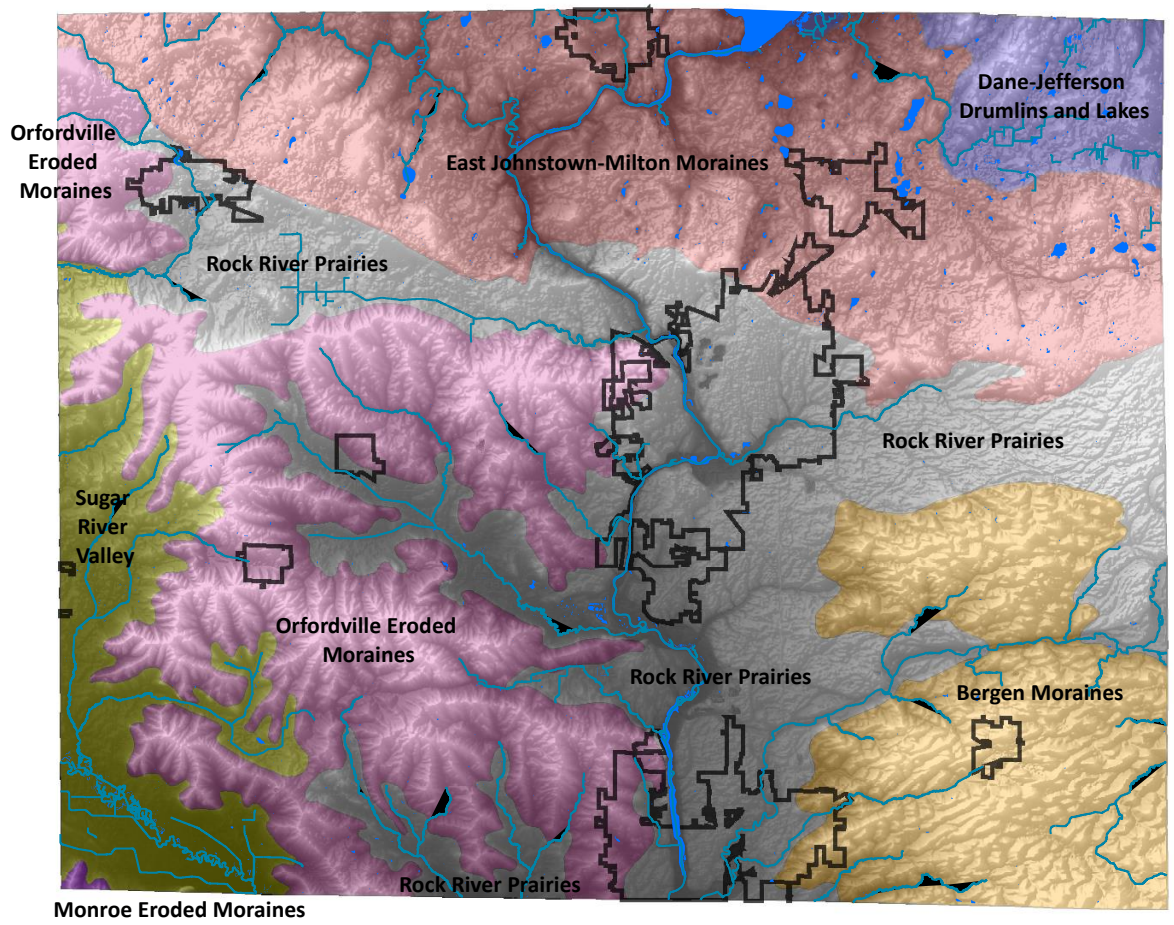
Map 37. Allen Creek groundwater nitrates.

Other Natural Resources and Related Concerns

Ecological Landscapes

In 2015, WDNR released updates to the ecological landscapes of Wisconsin. This work complements and supports related assessments such as WDNR basin plans and state action plans for fish, birds, wildlife, habitat, and legacy lands.

Each ecological landscape region is defined by "a combination of physical and biological factors, such as climate, geology, topography, soils, water, and vegetation . . ." (WDNR). Rock County is entirely within the expansive swath of the Southeast Glacial Plains that in Wisconsin extends from the north side of Lake Winnebago, south to Wisconsin - Illinois state line and from west of Madison east to the Lake Michigan Coastal Landscapes. The Southeast Glacial Plains are described as "rolling topography with productive silt loam soils; outstanding array of glacial landforms; agriculture is the dominant land use; numerous wetlands including large fertile marshes; the Kettle Interlobate Moraine is a major repository of globally rare communities such as tallgrass prairie, oak savanna, calcareous fen; diverse warm water rivers and streams, and marl lakes." The Southeast Glacial Plains are further localized into Land Type Associations (LTAs). There are eight LTAs in Rock County (MAP 38 and Table 4).



Map 38. Land Type Associations of Rock County..

Table 4. Land Type Associations found in Rock County.

LTA_CODE	LTA_NAME	Characteristic landforms and description
222Ke09	Jefferson Lake Plains (very small area in county, not shown on map)	Nearly level lake plain with broad areas of much and widely scattered drumlins. Soils are predominantly poorly drained silt over calcareous silty, sandy, or clayey lacustrine or sandy outwash.
222Ke08	Dane-Jefferson Drumlins and Lakes	Undulating complex of till plains with drumlins, outwash plains, lake plains and muck deposits common. Soils are predominantly well drained silt and loam over calcareous sandy loam till, loamy lacustrine, or gravelly sandy outwash.
222Kh02	Sugar River Valley	Undulating valley floor with floodplains, terraces, beaches, lake plains and scattered bedrock knolls. Soils are predominantly well drained loam and silt over gravelly sandy outwash, silty alluvium, silty and clayey lacustrine, or silty loess.

LTA_CODE	LTA_NAME	Characteristic landforms and description
222Ke02	East Johnstown-Milton Moraines	Undulating hummocky moraine and outwash plain complex with scattered lake plains. Soils are predominantly well drained silt over calcareous sandy loam till or gravelly sandy outwash.
222Kh05	Orfordville Eroded Moraines	Rolling till plains and erosional surfaces. Soils are predominantly well drained silt and loam over calcareous loam till, clayey residuum, or dolomite.
222Kh03	Rock River Prairies	Nearly level outwash plain. Soils are predominantly well drained silt over calcareous gravelly sandy outwash or silty and sandy lacustrine.
222Kh01	Monroe Eroded Moraines	Hilly till plain and erosional surface with ravines. Soils are predominantly well drained silt and loam over calcareous loam till, clayey residuum, or dolomite.
222Kh04	Bergen Moraines	Undulating till plain. Soils are predominantly well drained silt over calcareous sandy loam till.

Significant Areas
WDNR has recognized certain areas as ecologically significant. In Rock County, these are Turtle Creek, Avon Bottoms, Sugar River, Raccoon Creek, Lake Koshkonong Wetlands, and the Rock River from Janesville and Beloit.

Threatened and Endangered Species
While conservation is important for all native plants, animals, and habitat, this is particularly essential for threatened and endangered species. A threatened species is one that is likely, within the foreseeable future, to become endangered. An endangered species is one whose continued existence is in jeopardy and may become extinct. When the size and composition of habitat are reduced, plants and animals are forced to adjust or, if able, to seek suitable habitat elsewhere. This adjustment or movement stresses the viability of individuals, of the population, and of the plants and animals that rely on the affected species.

The State Legislature enacted the Wisconsin Endangered Species Law to protect animals and plants recognized as threatened or endangered at the state level. In addition, the Federal Endangered Species Act protects animals and plants that are considered endangered or threatened at the national level. Projects that receive federal or state funding must be screened for threatened or endangered species. Remnants of Wisconsin's intact native habitats are also tracked but not protected by the law.
The Wisconsin DNR's Endangered Resources Program monitors endangered, threatened, and species of special concern and maintains the state's Natural Heritage Inventory (NHI) database of rare species in Wisconsin. NHI data are exempt from the open records law because of their sensitive nature; however, maps of general locations of reports, species lists, and statuses are available to the public.

According to the NHI and the DNR, there are 47 species in Rock County listed threatened or endangered by federal or state governments (21 plants, 10 birds, 7 fish, 3 reptiles, 2 mammals, and 4 mussels) (Table 2-3).

Table 5. Threatened and Endangered Species of Rock County.

Threatened and Endangered Species – Rock County NHI - 2019		
Common Name	**Scientific Name**	**State Status**
PLANTS		
Muskroot	Adoxa moschatellina	Threatened
Roundstem Foxglove	Agalinis gattingeri	Threatened
Woolly Milkweed	Asclepias lanuginosa	Threatened
Purple Milkweed	Asclepias purpurascens	Endangered
Prairie Milkweed	Asclepias sullivantii	Threatened
Kitten Tails	Besseya bullii	Threatened
Wild Hyacinth	Camassia scilloides	Endangered
Hill's Thistle	Cirsium hillii	Threatened
White Lady's-slipper	Cypripedium candidum	Threatened
Ovate Beak Grass	Diarrhena obovata	Endangered
Pale Purple Coneflower	Echinacea pallida	Threatened
Forked Aster	Eurybia furcata	Threatened
Round-fruited St. John's Wort	Hypericum sphaerocarpum	Threatened
Prairie Bush Clover	Lespedeza leptostachya	Endangered
Eastern Prairie White Fringed Orchid	Platanthera leucophaea	Endangered
Pink Milkwort	Polygala incarnata	Endangered
Prairie Parsley	Polytaenia nuttallii	Threatened
Rough Rattlesnake-root	Prenanthes aspera	Endangered
Nodding Rattlesnake-root	Prenanthes crepidinea	Endangered
Hairy Wild Petunia	Ruellia humilis	Endangered
Small Skullcap	Scutellaria parvula var. parvula	Threatened
MAMMALS		
Northern Long-eared Bat	Myotis septentrionalis	Threatened
Eastern Pipistrelle	Perimyotis subflavus	Threatened
BIRDS		
Upland Sandpiper	Bartramia longicauda	Threatened
Red-shouldered Hawk	Buteo lineatus	Threatened
Black Tern	Chlidonias niger	Endangered
Acadian Flycatcher	Empidonax virescens	Threatened
Loggerhead Shrike	Lanius ludovicianus	Endangered
Yellow-crowned Night-Heron	Nyctanassa violacea	Threatened
Cerulean Warbler	Setophaga cerulea	Threatened
Hooded Warbler	Setophaga citrina	Threatened
Yellow-throated Warbler	Setophaga dominica	Endangered
Bell's Vireo	Vireo bellii	Threatened
FISH		
Starhead Topminnow	Fundulus dispar	Endangered
Pallid Shiner	Hybopsis amnis	Endangered
Black Buffalo	Ictiobus niger	Threatened
Redfin Shiner	Lythrurus umbratilis	Threatened
River Redhorse	Moxostoma carinatum	Threatened
Pugnose Shiner	Notropis anogenus	Threatened
Ozark Minnow	Notropis nubilus	Threatened
Threatened and Endangered Species – Rock County NHI - 2019		
Common Name	**Scientific Name**	**State Status**
MUSSELS/CLAMS		
Purple Wartyback	Cyclonaias tuberculata	Endangered

Monkeyface	Theliderma metanevra	Threatened
Ellipse	Venustaconcha ellipsiformis	Threatened
Rainbow Shell	Villosa iris	Endangered
REPTILES		
Queensnake	Regina septemvittata	Endangered
Eastern Massasauga	Sistrurus catenatus	Endangered
Ornate Box Turtle	Terrapene ornata	Endangered

Forests and Woodlands

According to the WDNR, Rock County forested area comprised 50,688 acres or 11% of the total county land area. Of this acreage, 47,646 are privately owned with the remainder being public lands. Approximately two-thirds of the total acreage is in tracts of less than forty acres. All land enrolled in Managed Forest Law and Forest Cropland Law in Rock County as of January 2019 was 4,373.96 acres.

Threats to the ecologic benefits of woodlands are disturbance and fragmentation, and invasive species. Fragmentation or the conversion of large contiguous areas of forest into relatively small patches occurred in the generations since European settlement to meet the agricultural and lumber needs of the county and contributed to the decline of this limited resource. Today, however, fragmentation and disturbance are occurring due to housing developments in woodlands. Wildlife habitat suffers the greatest as these lands are developed. Farmers are still the largest holders of woodlands as part of farms, but as long as woodlands are taxed at higher rates and increase in real estate value, these lands continue to experience the greatest development pressure in the County.

The future of the county's woodland resources rests in sustainable management. Woodland plans ensure that sound management practices are used to grow healthy timber in exchange for reduced taxes and harvest profits. Management plans establish systems for the control of invasive species and tree diseases that harm timber production. Currently the most wide spread invasive in Rock County woodlots are Glossy and Common buckthorn, Garlic mustard, Exotic bush honeysuckle and Oak wilt. Emerald Ash Borer is established in the county and is spreading through ash stands.

Non-native Invasive Species

Non-native invasive species can overwhelm habitat and degrade the ecologic, recreational, or economic value of a resource Non-native species are introduced by human activity and once naturalized can be dispersed by wildlife, other natural means, or by people. Humans assist with the spread of invasive species by planting them in their gardens and yards or inadvertently moving seeds, spores, eggs, in diseased or infested firewood or parts of plants stuck to equipment used in multiple locations without being cleaned. Some well-known local examples are infestations of Wild Parsnip, spread by mowing roadsides after flowers appear; Buckthorn and Honeysuckle brought from Asia for ornamental use; Zebra Mussel spread by uncleaned boats; Emerald Ash Borer in firewood and Gypsy Moth moved on vehicles and firewood.

Like the rest of the state, Rock County faces an onslaught of invasive species from other regions and countries. Although a problem in any favorable environment, in forests, these species often out-compete native trees and will degrade forest productivity, wildlife habitat, recreational

values, and water quality. Invasive species also greatly increase expenses as public and private land managers work to combat their spread and deal with their effects.

Controlling invasive species is difficult, and clearing an area of them completely and permanently is impossible. People play a major role in spreading invasive species, but can also help keep them from spreading. Gypsy Moth, Glossy and Common Buckthorn, Garlic Mustard, Oak Wilt, Reed Canary Grass, Exotic Bush Honeysuckle, Spotted Knapweed, and Carp are a few of the invasive species, which the citizens of Rock County are currently contending with.

Wildlife Resources

The varied topography and vegetative communities found among the landscape eco-regions of the county are prime habitat for a large variety upland and wetland wildlife species, including mammals, birds, amphibians, reptiles, invertebrates and fish. Forest, savanna, grasslands, cropland, streams, lakes, and marshes and transition zones from one cover to another provide shelter and a progression of food sources for many species to thrive. Whitetail deer and wild turkey are common in agricultural areas. Large wetlands provide food and rest for migrating waterfowl and as homes for countless amphibians, reptiles, and fish. Some very good wetland complexes waterfowl breeding are found in the northeast section of the County. Lake Koshkonong and connected wetlands are home to many resident and migratory birds and is a recognized Important Bird Area (IBA), a designation earned from the Wisconsin Bird Conservation Initiative, a cooperative of state and federal organizations. The western section of the County lends itself to grasslands for upland birds and is considered the best pheasant and bobwhite quail habitat in the state. Rock County is the southernmost point of the Rock Prairie Giant Canadian Goose flock's winter migration. The flock's summer nesting grounds are in southeast Manitoba, Canada. Mississippi Kite nesting shows wildlife response to climate change and more favorable habitat. Bald Eagles, Osprey, and White Pelicans have returned to Rock County.

Healthy and sustainable wildlife populations depend on a clean environment and adequate habitat for food, cover, and water. Land use and development are negatively affecting their environment and habitat. Development and rural home building are fragmenting woodland and grassland habitat, disturbing wildlife travel corridors, cover, and food sources. Non-point source pollution from agricultural and urban land uses are degrading surface waters to the point that they no longer support the variety of fish species that they were once capable of sustaining. The draining and filling of wetlands are destroying habitat and breeding grounds for fish and other species.

Wildlife areas owned and managed by DNR are open to a full range of traditional outdoor recreational uses. These include hunting, fishing, trapping, hiking, nature study, and berry picking. The wildlife areas in Rock County are Turtle Creek, Avon Bottoms, Footville, Evansville, Storrs Lake, and Lima Marsh. Evansville, Avon Bottoms, and Footville Wildlife Management Areas are destination Pheasant hunting properties.

According to DNR wildlife resource professionals, the following are issues of concern related to wildlife and wildlife habitat in the County:

1. Fragmentation of woodlands and grasslands:

   a. Privately created woodlands and grasslands are not matching the surrounding landscape, creating fragmented habitat;
   b. Government programs for grassland and woodland establishment promote fragmentation;
   c. Need more connected grassland areas for grassland species of birds (meadowlark, bobolink, upland sandpipers) and
   d. Need more corridors for neotropical birds (purple martin, warblers, orioles);
2. Impacts of high deer and goose populations on woodlands, croplands, and domestic plantings;
3. County owned parks are becoming deer refuges during hunting seasons;
4. Chronic Wasting Disease (CWD) continues to slowly increase in occurrence.

According to DNR fishery professionals, the following are issues of concern related to fisheries in the County:

1. Nutrient and sediment inputs to surface waters have degraded water quality and destroyed habitat;
2. Loss of wetlands have made river systems flashy resulting in low flows during critical periods of the year;
3. Fragmentation of fish habitat from dams and other structures (small or perched culverts) have negatively impacted fish migration and stream fisheries;
4. Alteration of shorelines and stream banks have reduced valuable fish habitat;
5. Need more trees along streams and lakes to create woody debris in stream for fish and other aquatic life habitat; and
6. Reed canary grass along streams catches sediment and the weight then collapses the stream bank.

The LCD provides wetland design, land survey, and construction assistance in the restoration of wildlife habitat, including shore land to county residents. The LCD also provides information on and application assistance for Federal and State programs to cost share restorations.

Recreation

Water, wetlands, woods, and prairies are recreational destinations for hunting, fishing, hiking, biking, and boating. These areas are key parts of the park and trail systems at the county, city, town, and regional levels. The largest population centers in the county are on the Rock River which is a focal point for special events, tourism, and everyday recreation.

Rivers and small lakes are popular for boating. Most motorized boating is on Lake Koshkonong and the Rock River except for shallow areas in downtown Janesville. Agencies that track boat launch permits reported approximately 2,888 daily permits and about 660 annual permits issued for 2018. Of these, 2,562 permits for the three county parks ramps (Gibbs Lake, Dallman Park on Lake Koshkonong, and Happy Hollow on the Rock River). In 2018, the Town of Beloit issued 914 launch permits just on its two ramps on the Rock River.

In the past 10 - 15 years, the widespread availability of inexpensive carry-in paddle craft (stand-up paddle boards, kayaks, and canoes) has increased recreational use of local streams that are typically too shallow or too small for most motorized boats. Popular paddling waters are

Badfish Creek, Yahara River, Turtle Creek, Sugar River, Rock River (off-peak times and slow-no-wake stretches), and all lakes with public access.

CHAPTER 3 - CONSERVATION PROGRAMS: CURRENT, FUTURE, AND PAST

In 1982, Rock County Board of Supervisors created the Land Conservation Department (LCD) under the supervision of the Land Conservation Committee (LCC) and managed by the County Conservationist. From 1942 until 1982, the Soil Conservation District, an independent unit of government, provided technical assistance for agricultural soil conservation as needed by county landowners. Starting in 1979, the County provided the District with a Soil Conservation Technician. Water quality initiatives were added after 1982 and Rock County was one the first in the state to receive funding for a Non-Point Source Pollution Abatement Program locally implemented as the Turtle Creek Priority Watershed. In 1997, Wisconsin Act 27 (1997-1999 Biennial Budget Bill) amended Chapter 92 of the Wisconsin Statutes creating the Land and Water Resource Program. The Rock County LCC petitioned DATCP to be included in the first selection of Land and Water Resource Management Planning grants. The next year, the Rock County Board of Supervisors adopted the County's first Land and Water Resource Management Plan (LWRMP). The plan outlined future programming, but did not include the NR 151 or ATCP 50 administrative codes adopted by the State in October 2002 until the LWRMP was amended in 2004.

Many changes have occurred within the LCD as a result of the 2004 LWRMP and a reorganization of programs in Rock County. The LCD now administers the Construction Site Erosion Control, Storm Water Management, and Non-Metallic Mining Reclamation Ordinances in most of the County (2007), these will be discussed in Chapter 4; coordinates the Clean Sweep for Household and Agricultural Hazardous Waste (2002); coordinated the gypsy moth suppression program for the county (2006) until DNR deactivated the state aerial spray program; and provides the application review process for ATCP 51 for the participating towns. In November 2008, the LCD became the co-administrator of the recently approved Well Abandonment component of the Rock County Health Code. In 2011 the Rock County Board of Supervisors approved the Rock County Purchase of Agricultural Easement (PACE) Program. This allowed staff to commence with the purchase of PACE Easements in identified priority areas. Starting in 2017, the LCD became involved with implementing Adaptive Management and Water Quality Trading for Wisconsin Pollutant Discharge Elimination System (WPDES) permits for the purpose of meeting Total Maximum Daily Loads (TMDL) for waters within Rock County.

Current Programs

The LCD uses many programs to meet conservation initiatives for resource conservation associated with agriculture and development; surface and ground water quality associated with agriculture and development; control of non-native invasive species; collection of household and agricultural hazardous wastes; establishment and enhancement of wildlife habitat; and providing technical assistance to other departments, local units of government in Rock County, and federal conservation programs. Voluntary programs are described below and regulatory programs are described in Chapter 4.

Land and Water Resource Management Program
State cost sharing is available through the LCD to protect or improve identified resources with management recommendations that meet stated goals and objectives for soil conservation and water quality. Practices include but are not limited to grass waterways, diversions, terrace systems, water and sediment control basins, well decommissioning, nutrient management and stream bank protection.

Groundwater Nitrate Program
In 2017, the Rock County Board recognized there are areas within the County where nitrate levels in ground water exceed state standards. The County Board created a work group whose membership represents UW-Extension, Rock County Board of Supervisors, Agricultural Industry, Rock County Public Health, Land Conservation Department and Planning and Development Department, Agricultural Producers, and USDA-Natural Resources Conservation Service. The work group mission is to investigate, research and develop options to reduce nitrate levels in groundwater. Efforts include:

- A demonstration project at the Rock County Farm to determine the level of nitrate reduction after implementation of best management practices (i.e. cover crops, nutrient management, etc);
- Facilitating the formation of a Producer Led Watershed effort within the southeast portion of Rock County for the purpose of developing a water quality testing program and implementing best management practices (ie: irrigation management, cover crops, and nutrient management).
- Develop 9 Key Element plans for targeted areas (southeast) and secure grants for implementation of BMPs.

Farmland Preservation Program
Developed by the state DATCP, FP is a Wisconsin income tax credit for landowners who apply the state's conservation standards on farmland they own in a FP district or subject to an FP agreement, which limits development of the land for non-ag uses. Landowners enroll through Rock County LCD. Rock County LCD reviews conservation compliance, manages enrollment, and provides certificates of compliance to claimants. LCD charges an annual administrative fee of $0.50/enrolled acre plus $15 per farm. WI Department of Revenue has additional requirements (WI DOR Publication 503) including gross farm revenue excluding rent of at least $6,000/year or $18,000 over the previous three years.

The original program adopted by all towns in Rock County in 1977 was significantly updated in 2010 as part of the DATCP's Working Lands Initiative. Since 2010, 19 of the 20 towns in Rock County have certified under the 2010 FP zoning rules, the exception being the Town of Newark, which opted out in 2014. The La Prairie AEA established in 2011 is the only area of the county where landowners are eligible to sign new 15-year agreements. The AEA overlays most of the Town of La Prairie FP zoning district and a small part of the Town of Turtle's FP district. In 2010, the credit on FP zoned land and on new agreements changed to a flat rate with no maximum credit. Rates are either $7.50/FP zoned acre, $10/FP zoned acre with a 15-year agreement signed after 2009, or $5/acre for agreements with no FP zoning or signed before 2010. There is no cap on credit. Prior to 2010, the credit for all participants was based on property taxes versus household income and the credit amount was capped. New conservation elements adopted into FP included nutrient management plans, manure management, manure storage,

discharges from farm facilities, and livestock access to surface water. Landowners could continue to claim the credit until 2016 when the official conservation compliance transition period ended.

Of the many changes to the program in 2010, the biggest have been the per-acre rate, removing the credit cap, and the nutrient management requirement. Small farms with limited household income received less credit under the new flat rate; large farms received more without the cap; and credit was consistent and easy to estimate. Added costs and potential risks to implement nutrient management on owned or leased farmland was a major factor to continue in the program or not. The cost of upgrading facilities to meet new standards affects fewer farms, but is a major cost.

Table 6. Acres enrolled in Farmland Preservation state income tax credit program.

	FP enrolled acres (2018)	
FP district:	FP AEA agreements + FP zoning (ac)	FP zoning (ac)
TOWN OF AVON	0	949
TOWN OF BELOIT	0	625
TOWN OF BRADFORD	0	11,114
TOWN OF CENTER	0	6,396
TOWN OF CLINTON	0	9,053
TOWN OF FULTON	0	3,790
TOWN OF HARMONY	0	4,817
TOWN OF JANESVILLE	0	3,408
TOWN OF JOHNSTOWN	0	9,095
TOWN OF LA PRAIRIE	1,698	10,379
TOWN OF LIMA	0	6,584
TOWN OF MAGNOLIA	0	8,716
TOWN OF MILTON	0	1,485
TOWN OF PLYMOUTH	0	3,652
TOWN OF PORTER	0	8,225
TOWN OF ROCK	0	3,766
TOWN OF SPRING VALLEY	0	5,270
TOWN OF TURTLE	0	6,109
TOWN OF UNION	0	5,972
Total enrolled acres:	1,698	109,405
No FP district:		
TOWN OF NEWARK	0	0

Landowners must annually certify that they are farming their lands within the Rock County Soil and Water Conservation Standards for the Farmland Preservation Program. DATCP and WI DOR track participation through claims on Wisconsin income taxes, whereas counties track

participation annually by property owner. In 2007, 808 Rock County landowners claimed the credit, resulting in 159,349 acres protected. By 2018, the enrolled acres had fallen to 109,405 (Table 6). In 2009, 530 landowners claimed the credit. As of 2016, 404 county landowners filed for the credit.

Surface Water Quality – Water Quality Trading/Adaptive Management
Water quality trading (WQT) and Adaptive Management may be used by Wisconsin Pollutant Discharge Elimination System (WPDES) permit holders to demonstrate compliance with water quality-based effluent limitations (WQBELs). A WPDES permit holder facing relatively high pollutant reduction costs compensates a nonpoint source within the same watershed to achieve less costly pollutant reduction with the same or greater water quality benefit offsetting their point source load so they will comply with their own permit requirements. Starting in 2017, the LCD has assisted with the implementation of WQT and Adaptive Management by entering into agreements with WPDES permit holders to recruit, provide technical assistance and distribute financial payments to nonpoint pollution sources (agricultural landowners) within the same watershed where the WPDES permit holder resides.

Clean Sweep Program for Hazardous Agricultural and Household Waste
The drop-off program provides safe and affordable disposal for hazardous chemicals from homes, farms, and eligible business and organizations. Clean Sweep has been held in 2006 and every year since 2008 including 2019 for a total of 39 events. So far, the program has collected 146,336 lbs. of hazardous chemicals from 2,814 residents, 17,937 lbs. from more than 80 farms, and 18,021 lbs. from 56 businesses. The program is funded primarily by DATCP Clean Sweep grants, municipal contributions, and the county.

Citizen Stream Monitoring/Sampling
In 2002, Rock County LCD joined the Rock River Coalition (RRC), DNR, and UW-Extension Water Action Volunteers (WAV), among others to promote stream awareness, local stewardship, and gather baseline data on wadeable streams in the Rock River Basin in Wisconsin. The data is part of the larger dataset DNR uses to assess watersheds and long-term trends; the program is not intended for enforcement. Trained volunteers collect data using the protocols developed by WAV for temperature, dissolved oxygen, water transparency, flow, biotic index, and habitat on a monthly or seasonal basis from May through October depending on the parameter. A notable Special projects have included invasive monitoring and total phosphorus sampling on nearly all streams in the county. For total phosphorus, approximately every 30 days, monitors collected and shipped samples on ice to the State Lab of Hygiene. Protocols were developed with input from DNR to ensure that volunteer-collected data could be used in water assessments.

LCD's role is to assist with volunteer training and support. RRC, WAV, and DNR provide equipment, database management, and coordinator support. The Lower Sugar River Watershed Association monitors independently from Rock County LCD, but uses the same WAV protocols and database. Most sites are selected with input from DNR basin field staff to assist them with total watershed assessments or long-term trend sites. Data can be viewed at Surface Water Data Viewer.

Wildlife Damage Abatement and Claims Program (WDACP)
Adopted by the Rock County in 1997, this program provides damage prevention assistance and partial compensation to landowners when deer, bear, geese, and/or turkey damage their agricultural crops. Wildlife managers issue agricultural damage shooting permits to farmers for removal of animals that cause damage. The LCD contracts with USDA-APHIS-Wildlife Services to provide all field investigations. The LCD does the book keeping, all legal public notifications for the program and arranges time allocations to address the Land Conservation Committee during their regularly scheduled meetings.

Livestock Siting (ATCP 51)
The issues related to the siting and expansion of livestock operations are essential to keeping Wisconsin's agricultural economy growing. The livestock facility siting regulations balance local control, community oversight, environmental protection and the need for a predictable siting process. During 2006, the LCD and UWEX agreed on guidelines to assist landowners and towns with the application process. The UWEX provides the landowners with assistance while the LCD assists all towns requesting reviews of application materials with technical accuracy.

Tree and Shrub program
Rock County LCD sells approximately 13,000 bare-root trees and shrubs each year that are appropriate for windbreaks, small forest plantings, or for enriching edge or savanna habitat. The Department offers technical assistance with plantings and maintains two tree planters and one sprayer, which can be rented by individuals.

Notice of Discharge (NOD)
The LCD recognizes the benefit of manure applied to land for its fertilizer and soil conditioning value, and encourages the management and use of these materials in accordance to a Nutrient Management Plan. The NOD program establishes criteria under which the DNR may issue a notice of discharge or a permit to animal feeding operations that discharge pollutants to waters of the state or fail to comply with applicable performance standards and prohibitions in NR 151. Only those animal feeding operations that improperly manage their wastes and as a result cause groundwater or surface water pollution or that fail to comply with applicable performance standards and prohibitions are regulated under this program. A protocol has been established in the Memorandum of Understanding (MOU), refer to Appendix H, with the DNR for this program's administration.

Conservation Reserve Program (CRP)
The LCD and NRCS provide technical assistance to this program**.** The USDA/Farm Service Agency (FSA) administers the CRP. The CRP reduces soil erosion, improves water quality, establishes wildlife habitat, and enhances forest and wetland resources. The CRP has two forms; a competitive, limited period "general" sign up to convert highly erodible cropland to native grasses, wildlife plantings, or trees; and an on-going, need-based, non-competitive "continuous" sign-up for filter strips, riparian buffers, contour strips, and grassed waterways. Farmers receive an annual rental payment for the term of the multi-year contract. Cost sharing is provided to establish the vegetative cover practices. The practices are subject to NRCS technical standards adapted for local conditions.

Conservation Reserve Enhancement Program (CREP)
An offshoot of the "continuous" CRP, CREP is a voluntary program for landowners to receive additional financial incentives for installing specific conservation practices on agricultural land. The LCD plays a crucial role in the CREP by implementing the State portion of the funding. Over $1.3 million dollars in state funding has been brought into Rock County through direct payments to landowners. These monies are in addition to the U.S. Department of Agriculture payments to landowners. As of June 14, 2019, Rock County had 335 fifteen year agreements consisting of 2,754 acres. These acres are mainly allocated to conservation buffer strips along riparian corridors. In addition, 31 perpetual easements were established consisting of 925 acres. These acres are mainly allocated to reclaiming wetlands. Both components of this program are water quality driven but also provide a diverse wildlife habitat.

Environmental Quality Incentives Program (EQIP)
LCD is a member of the local work group that provides input on local practices and assists NRCS with project design and installation. EQIP is a voluntary federal conservation program that offers financial and technical help to eligible participants to install and establish structural and management practices on agricultural land. The EQIP encourages the incorporation of conservation technology into farming operations from managing runoff around buildings and farmyards to no-till to nutrient management among many other practices. The lengths of contracts, incentive payments, and capped cost shares for EQIP depend on the practice. Eligible participants include individuals engaged in livestock or agricultural production as owners or renters. Limited resource producers and beginning farmers may be eligible for cost shares up to 90%. For each contract, a local conservationist and a producer develop a plan of operations that identifies resource concerns, appropriate conservation practice(s), and covered costs. The practices are subject to NRCS technical standards adapted for local conditions. Practices are selected annually by a local workgroup. There is one sign-up per year.

Wetland Reserve Program (WRP)
An NRCS program, the LCD provides limited technical assistance to landowners with their wetland restoration efforts. Landowners enrolled in the WRP receive technical and financial support to protect, restore, or enhance the hydrology and ecology of wetlands on their properties. The program goal is to achieve the greatest wetland functions and values, along with optimum wildlife habitat, on every acre enrolled in the program. The practices are subject to NRCS technical standards adapted for local conditions.

Purchase of Agriculture Conservation Easements (PACE)
Rock County commenced with the implementation of the Purchase of Agriculture Conservation Easements (PACE) in 2011 with the goal to preserve a critical mass of land in Rock County for agriculture, forestry, recreation, and tourism using comprehensive planning for business and housing growth in an environmentally friendly way. The county's agricultural economy (1.3 billion dollar impact annually) depends on retaining prime farmland for long-term production. PACE is one tool available to ensure that these lands are protected in perpetuity. Under a PACE program, a landowner voluntarily sells his or her rights to allow development to occur on a parcel of land to qualified organizations, usually a town, county, or land trust. The landowner retains all other ownership rights attached to the land, and a conservation easement is placed on the land and recorded on the title. In placing such an easement on their land, participating landowners often take the proceeds from the sale of the development rights to invest in their

farming operations or retire from the business, and may allow another farmer to purchase the land at lower rates (i.e., rates devoid of development rights). As of the writing of this document Rock County has purchased 15 easements, had an additional three easements donated to the program for a total of eighteen easements comprised of 1,815 acres.

Future Programs

Targeted Runoff Management (TRM) grants
DNR TRM grants replace the priority watershed projects that were last selected by the State of Wisconsin in 1997 and closed in 2002. The DNR program offers competitive financial awards to support small-scale, short-term projects that are completed within 24 months of the start of the grant period. Both urban and rural projects can be funded through a TRM grant. Seventy percent of project cost up to a maximum of $150,000 in State funding is available through a TRM grant. Project selection is based on geographical water quality priorities, local support for the project, and the ability of the project to control nonpoint pollution and other factors.

National Water Quality Initiative (NWQI) grants
Through the NWQI, the local conservation staff offer financial and technical assistance to farmers interested in improving water quality and aquatic habitats in priority watersheds with impaired aquifers. To be eligible for this grant the LCD must first produce and seek approval of a 9KE plan. Once the plan is approve the LCD may seek financial assistance from the NRCS for implementation of authorized BMPs to increase soil health, reduce runoff impacting surface water, and reduce the likelihood of nitrates impacting the aquifer. The 9KE plans once approved by DNR, will identify all associated costs associated within the implementation of BMPs in the selected watersheds.

Regional Conservation Partnership Program (RCPP) grants
Through the RCPP, conservation activities associated with USDA programs, such as the Environmental Quality Incentives Program, Conservation Stewardship Program, Agricultural Conservation Easement Program, Healthy Forests Reserve Program, PL 83-566 Watershed Program, and the Conservation Reserve Program. The LCD will consider this program funding for Surface water and/or groundwater quality priority watersheds. The 9KE plans once approved by DNR, will identify all associated costs associated within the implementation of BMPs in the selected watersheds.

Past Programs

Gypsy Moth Aerial Suppression Program (past)
The DNR de-activated the aerial suppression program for non-state lands in 2018 with the caveat that the program could be re-activated if major large-scale infestations return. The DNR program required a county coordinator (Rock County LCD) to compile and submit local spray requests. The DATCP 'Slow the Spread' treatments along the leading edge of the gypsy moth range remain in effect. DATCP's program is based on trap counts whereas the DNR program was driven by nuisance complaints on eligible public and private properties. Although gypsy moth has not gone away, populations have declined with the establishment of viral and fungal diseases to which late-instar gypsy moth caterpillars are susceptible. Private arborists have

capacity to control nuisance outbreaks in yards and small areas. Rock County is a gypsy moth quarantine county as is most of the eastern half of the state.

The first reported infestation was in 2006 at Armstrong Eddy Park in the Town of Beloit and the Beloit area had most sprays (Beloit College, Big Hill Park, Leeson Park, Cranston Rd at Turtle Creek, Riverside Drive corridor, and The Oaks subdivision). Other infestations were at Lustig Park (City of Janesville), Afton, Town of Janesville, Town of Lima, and Town of Milton.

CHAPTER 4 - REGULATORY REQUIREMENTS IN ROCK COUNTY

Introduction
The LCD administers several ordinances related to soil and water resource management: Animal Waste Management - Chapter 4. Part 9; Construction Site Erosion Control - Chapter 4, Part 1; Storm Water Management - Chapter 4, Part 8; and Non-Metallic Mining - Chapter 4, Part 1. The LCD administers the Soil and Water Resource Conservation Standard for the Farmland Preservation Program and will co-administer the County Well Abandonment component of the Public Health Code.

The LCD has also developed a strategy for implementing the NR 151 performance standards and prohibitions. Through provisions in 1997 to Act 27 and in 1999 to Act 9, the Wisconsin Legislature directed the DNR to develop performance standards to: control polluted runoff from non-agricultural activities; develop performance standards and prohibitions for agricultural activities through cooperation with DATCP (including four manure management prohibitions developed through a previous advisory committee effort); and make other changes to address polluted runoff problems from rural and urban sources. Additional details on the rule can be found at http://www.dnr.state.wi.us/org/water/wm/nps/rules/NRrules.html.

While Chapter 3 identified voluntary conservation programs, this chapter describes local regulatory requirements of local ordinances and state administrative codes. As part of the requirements of the LWRM Plan process, components of the structured implementation for NR 151 that will be used by the LCD are included in this chapter. This chapter also identifies protocols that will be used for the compliance, enforcement, appeals, and cost share requirements as it relates to the implementation of NR 151 as outlined in the recently signed MOU with the DNR, refer to Appendix H.

Local Ordinances

Animal Waste Management Ordinance - Chapter 4, Part 9:
This ordinance was developed to regulate the location, design, construction, installation, operation, and alteration of an animal waste storage facility. The ordinance also regulates the transfer of animal waste into a facility and the utilization (Nutrient Management Plan) of animal waste stored in a facility. Abandonment of idled storage facilities are also regulated. All activities are regulated to prevent the pollution of both the surface water and groundwater resources of Rock County.

Construction Site Erosion Control Ordinance – Chapter 4, Part 1:
This ordinance sets mandatory countywide performance standards that minimize the amount of sediment and other pollutants carried by runoff or discharged from land disturbing activities to the waters of the state. It is intended to give users the flexibility to meet the standards effectively and efficiently. This ordinance is reviewed and amended as needed to keep current with construction site erosion control standards and technology. The ordinance applies to all unincorporated areas of the county excluding the Town of Beloit, which enforces its own ordinance.

Storm Water Management Ordinance – Chapter 4, Part 8:
This ordinance was developed to prevent or control the adverse effects of storm water on soils (loss of topsoil, stream bank failure and channel erosion); the safe capacity of existing drainage facilities and receiving water bodies; and on downstream property. At the same time, the ordinance will protect or improve fisheries, riparian habitat, and the scenic appeal of local waters, and will preserve topsoil. Performance standards for the ordinance allow flexibility for choosing the most cost-effective and efficient Best Management Practices (BMPs). The ordinance is not intended to limit the activity or division of land under the applicable zoning and land division ordinances. The ordinance is reviewed and amended as needed to keep current with storm water management standards and technology. The ordinance is applied in all unincorporated areas of the county excluding the Town of Beloit and the Town of Union, which enforce their own ordinances.

Non-Metallic Mining Reclamation Ordinance - Chapter 4 Part 1:
This ordinance was developed to set performance standards countywide (incorporated and unincorporated areas) that must be followed to ensure that impacts to surface water and groundwater resources and public safety are minimized following reclamation. The ordinance also ensures that sites will not be used for solid and/or hazardous waste accumulation by overseeing the creation of a productive post-mining landuse. Reclamation Plans are due prior to the start of mining so that the standards must be considered early in the operation plan for that site. Rock County is obligated by the State to administer and enforce this program and is subject to periodic audits by the DNR.

Well Abandonment Program, Rock County Public Health Ordinance, Chapter 13.13:
This section of the well abandonment ordinance was developed in response to an abandoned well inventory made in the late 1990s. Since 2000, the LCD has provided cost sharing to landowners resulting in approximately 10 safely abandoned wells per year. In 2006, the LCD and the Rock County Public Health Department agreed that a well abandonment program was needed in the county. Under this program, the LCD notifies landowners of their status and the program requirements and the Department of Public Health acts as the enforcement agency.

Policies

Soil and Water Conservation Standard for the Farmland Preservation Program:
This policy was established by the LCC pursuant to ss. 92.105, Wis. Statutes and related guidelines adopted by the Wisconsin Land and Water Conservation Board under s. 91.105 (2). It provides for soil and water conservation standards to be met and procedures to be followed by participants in the Wisconsin Farmland Preservation Program. Conformance with these standards and procedures will be necessary for landowners to establish and maintain eligibility for Farmland Preservation tax credits under subchapter IX of chapter 71 and 92.105 (6). This policy shall apply to landowners that claim a Farmland Preservation tax credit. This policy was updated to meet the requirements set forth by DATCP in 2016.

Voluntary Compliance with NR 151 Agriculture Performance Standards:
Over the past ten years, the funding (grant) provided to Rock County by DATCP/DNR for the implementation of NR 151 has remained stagnant. Priority for all voluntary compliance activities will be given to landowners who participate or who want to participate in the

Wisconsin Farmland Preservation Program, make application for an animal waste storage facility under the Rock County Code of Ordinance, Chapter 4, Part 9, or any landowner/producer who asks for a full compliance review associated with another program or not.

NR 151 Implementation Strategy for Agricultural Performance Standards:
The following discusses the LCD's strategy for implementation of the NR 151 performance standards. The implementation strategy details the methods that will be employed to assure landowners are in compliance with the state mandated regulations. In addition to the strategy, a checklist was drafted which will be used by staff to help determine overall compliance with the NR 151 performance standards. The implementation of compliance strategy is based on staff and funding availability.

Identification of Priority Farms:
Priority farms can best be described as those farms that have significant problems with manure management, lands where excessive nutrient applications are being made, and/or farms with clearly excessive rates of cropland erosion. Identification of priority farms is based on comprehensive strategy as per ATCP 50.12(2)(f) which allows the LCD to focus the priority farm strategy. The strategy will focus on a countywide Nutrient Management effort for farms making excessive nutrient applications. Also the strategy will include farms in subwatersheds, which directly drain to either ERW or 303(d) waters. Subwatersheds will be ranked according to their ability to respond to the implementation of Best Management Practices for the abatement of nonpoint source pollution. In addition, farms that are subject to a DNR notice of intent under s.281.16(4) or a NOD under NR 243.24, shall also be included in the priority farm strategy. Efforts will commence in the southeastern area of the county.

Determination of Current Compliance

Records Inventory:
The records inventory involves a cursory review of Conservation Plans on file at the office. Conservation files apply to both State and Federal program participation. LCD staff will be responsible for this review. Evaluation methods to be used may include one or more of the following:

1) Review of existing conservation plans;
2) Existing priority watershed contracts;
3) Nutrient management plans;
4) Annual status reviews; and,
5) Self-certifications – Farmland Preservation Program.

Onsite Evaluations:
The LCD will perform onsite evaluations based on the following criteria**:**

1) Review at the request of the landowner;
2) Landowners who, through the records inventory, are deemed to be out of compliance based on the evaluation methods utilized;
3) Formal complaints received by the LCD or DNR;
4) Where a landowner may be out of compliance with the performance standards or applicable Rock County Ordinance;
5) Farmsteads located within a WQMA as determined through the use of GIS;

6) Landowners who implement Alternative Cropping Systems (ACS); and
7) Landowners who have expired CRP plans or lack an approved conservation plan for their farm.

Onsite evaluations will be prioritized based on the overall threat to groundwater and surface waters. Compliance will be determined by the staff and documented. Should it be determined that the field(s)/farmstead being evaluated is not in compliance, a report will be drafted to include the following:

1) Corrective measures needed to be brought into compliance;
2) Estimated costs for implementing the corrective action(s);
3) Status of eligibility for cost share assistance;
4) Funding sources and technical assistance available from federal, state, and local sources;
5) Signature line on the report findings indicating whether the landowner agrees or disagrees with the report findings;
6) Process and procedures for the purpose of the landowner contesting the findings;
7) A copy of the performance standards and prohibitions; and,
8) A process/schedule for continued compliance monitoring.

As per the DNR/LCD MOU, (Appendix H) the DNR will be notified prior to landowner contacts, and the LCD will communicate with DNR throughout the process.

Funding, Administration, and Technical Assistance:
Landowners who are required to implement conservation practices under the provisions of the County's policy or ordinances will have a schedule of compliance developed. Cost share dollars may be appropriated if available or required as part of the ordinance, policy, or NR 151.

As part of the implementation of the LWRM Plan, the cost sharing of conservation practices may be required to achieve compliance with the state performance standards. A cost share offer may be from different sources. If a Landowner who qualifies for the cost sharing of conservation practices is tendered an offer from ATCP 50 then that landowner must follow the conditions set forth in ATCP 50. If a landowner is tendered an offer from NR 153 or NR 243, then landowners must follow the conditions set forth in the aforementioned administrative rules. Other sources of funding may be used to achieve compliance. Landowners may qualify as an economic hardship case under ATCP 50.42, NR 151.09. Cost sharing will be increased to the required cost share level of 90%.

If cost sharing is involved, the appropriate agreements will be signed and implemented. Technical assistance in the form of the following will be provided throughout project implementation:

1) Conservation planning assistance;
2) Review of conservation plans prepared by third parties, TSP;
3) Engineering design assistance;
4) Review of engineering designs by third parties, TSP;
5) Construction oversight;
6) Certification of construction projects to standards; and
7) Cost containment.

Upon completion of the practice(s) installation, the appropriate staff/LCC will notify the landowner, in written form, indicating the site has been brought into compliance with the applicable performance standards and prohibitions.

Notification Letter and Schedule of Compliance:
After the onsite evaluation has been completed and it has been determined that a non-compliance issue(s) exists, a notification letter will be forwarded to the landowner. As part of this letter, a schedule of compliance will be included for each BMP or corrective measures needed, per NR 151.09 and/or NR 151.095. In consultation with DNR, a compliance period will be developed for each non-compliance issue. The severity of the water quality problem will determine the length of the compliance schedule. The DNR may authorize an extension of up to 4 years in total, which will be handled on a case-by-case basis. If cost sharing is not required, as per NR 151.095(7), then the compliance period shall be no longer than 2 years.

Notice of Intent and Enforcement Process:
A notice of intent will be issued to a landowner who has refused to cooperate under normal voluntary efforts. It consists of a certified letter sent by the corresponding agency that details the infraction(s) that must be addressed so that compliance can be achieved:

1) If a landowner does not follow the agreed upon schedule of compliance for the implementation of the State Agriculture Performance Standards, the landowner's name will be forwarded to the appropriate state agency for a letter of intent to issue an order to address the infraction(s).
2) If a landowner does not follow the agreed upon schedule of compliance for the implementation of local standards or ordinances, the information will be forwarded to the Rock County Corporation Counsel.

After all voluntary means have been expended and a landowner continues to remain in noncompliance with the state performance standards, or should a landowner refuse technical and/or financial assistance from the LCD, the LCD will forward all information corresponding to the infraction(s) to the DNR and will notify the landowner(s) by registered mail that they are subject to an enforcement action pursuant to NR 151.09. All enforcement actions associated with NR 151.09 are coordinated with the DNR per a Memorandum Of Understanding (MOU), further described in Appendix F.

Appeals
A landowner of a site that has been determined to be out of compliance with any of the state nonpoint performance standards identified in this plan may appeal the determination to the LCC. The appeal shall be in writing and must be specific to the component(s) that the landowner wishes to appeal. The written appeal must be received by the LCD within 60 days of the landowner's receipt of the Notice of Noncompliance. All Notices of Noncompliance are sent by registered mail. The LCC shall do the following after receipt of an appeal:

1) Provide the appellant with a hearing and give reasonable notice of the hearing to the appellant, the DNR and DATCP.
2) The hearing shall be conducted as an informal hearing. Chapter 68 of the Wisconsin Statutes does not apply to the hearing. This chapter of the state statutes identifies a formal appeals process for state constitutional rights.

3) The hearing shall be conducted during a regularly scheduled LCC Meeting.
4) The LCC may affirm or reserve the findings. The LCC shall limit their consideration to whether the findings of noncompliance are valid and consistent with respected sections of NR 151 and/or ATCP 50. The LCC shall consider whether the governmental representative erred in their verification of the findings presented and identified in the case file. Loss of profit or pecuniary hardship is not grounds for affirmation of the appeal. Appeals granted to other appellants shall not justify affirmation of an appeal.
5) An appeal shall stay all proceedings in furtherance of the action appealed until the appellant has received a decision and has exhausted the entire appeals process.
6) Following the hearing, the LCC shall render a decision in writing to the appellant within 60 days. The DNR or DATCP may submit reports or recommendations specific to any determination that is being appealed. All reports and/or recommendations will be reviewed by the LCC and used to assist with the final determination of actions associated with the appeal in question.

NR 151 Performance Standards Implementation Strategy - Non-Agricultural
The Rock County Construction Site Erosion Control and Storm Water Management Ordinances were adopted in March 2004 and meet or exceed the non-agricultural performance standards of NR 151. Each ordinance outlines the following procedures that are used to ensure landowners, developers, and contractors meet these standards.

Jurisdiction and Applicability
The provisions of these ordinances apply to all unincorporated lands within the jurisdictional boundaries of Rock County where a town board has not adopted an ordinance under sec. 60.627, Wis. Stats. As of December 2008, the Town of Beloit administers their Erosion Control and Storm Water Management Ordinances. Additionally, the Town of Union administers their Storm Water Management Ordinance. Therefore, the County's ordinance(s) are not administered in these Towns. The County's Erosion Control and Storm Water Management ordinances also continue in effect in any area annexed by a city or village, unless the city or village enacts, maintains and enforces an ordinance that complies with minimum standards established by the DNR and meets or exceeds the standards of these ordinances, as established under sec. 59.693 (10), Wis. Stats.

The Construction Site Erosion Control Ordinance applies to projects that involve the following:

- Grading, removal of protective cover, excavation or filling which disturbs 4,000 square feet or more of land;
- Disturbing or grading more than 1,000 square feet of land on a slope of 12 percent or greater;
- Grading, removal of protective ground cover or vegetation, excavation, or land filling exceeding 1,000 square feet or 40 cubic yards of fill near a navigable waterway, wetland or floodplain within the Shoreland Overlay District (as defined in Chapter 16 of the Rock County Code of Ordinances).
- Disturbing 100 feet or more of road ditch, grass waterway, or other land area where surface drainage flows in an existing water channel;

- Grading, excavating or filling more than 400 cubic yards of material;
- Constructing new public or private roads, access roads, or driveways exceeding 100 feet in length;
- Laying, repairing, replacing, or enlarging underground pipe, cable or wire for a distance of 300 feet or more;
- Land disturbing construction activities relating to land division (subdivision plat, Certified Survey Map or Condominium Plats) requiring public or semi-public public improvements, or;
- Other activities that are likely to result in undue channel erosion, increased water pollution by scouring or the transportation of particulate matter, or endangerment of property or public safety.

The Storm Water Management Ordinance applies to projects that involve any of the following:

- Land Disturbance activity of 1 acre (43,560 square feet) or more;
- Land Disturbance of less than one acre but is part of a larger "common plan of development" that in total disturbs more than one acre; or,
- Other activities that pose a serious risk of flooding or damage due to runoff as determined by the Technical Review Committee.

Each ordinance has a specific list of exempt activities that are not subject to the provisions of the respective ordinance.

Technical Standards
Design criteria, standards and specifications for Best Management Practices installed, as part of these ordinances must meet the DNR Technical Standards developed under subchapter V of NR 151. Where technical standards have not been developed for certain practices, the LCD may approve alternative installation methods.

Performance Standards
As included above, the performance standards for the Construction Site Erosion Control and Storm Water Management Ordinances meet or exceed the standards adopted in NR 151. This includes criteria for Suspended Solid Removal (water quality), Discharge Rate and Volume (water quantity) and Infiltration.

Permit Application and Plan Review
Standardized application forms and construction plans are required for review and approval prior to commencing land-disturbing activities. For projects requiring a Storm Water Management permit, detailed engineering reports are also required to ensure the hydrological aspects of the project meet ordinance standards. Staff reviews the applications for completeness and compliance with the ordinance. Incomplete applications are returned to the applicant and the project may not proceed until a complete application is reviewed approved. In the case of a complete application, with simply minor changes or details to work out, staff responds with a request for additional information prior to commencing construction. Timeframes for staff review are outlined by ordinance. Each application includes a fee (base fee plus a per square foot fee) paid by the applicant to cover some of the cost of administering the permit and this program.

Permit Approval, Site Inspections, Long Term Maintenance
Following a complete plan review, a permit is either denied (rare) or approved with conditions, which may be standard conditions found in ordinance or site specific conditions derived for an individual project. The conditions of approval inform the permit holder what is expected of them, before, during and after project completion. Permits are valid for one year or until the project is complete, whichever comes first.

Permit holders are required to conduct site inspections and maintenance of BMPs weekly and within 24 hours or a rain event of 0.5 inches or more. These inspections are critical and must be documented in an inspection log. LCD staff also makes periodic, random, site inspections to ensure compliance with the plan and ordinance standards based on the activity at the site and the proximity to sensitive areas. Once a project is considered stabilized (uniform vegetative cover of 70% or greater on unpaved or graveled areas), the permit is typically expired, temporary measures (such as silt fence) may be removed, and weekly inspections are no longer required.

For most projects, a financial guarantee is required, based on the estimated cost of construction of the BMPs, to ensure that the practices are constructed according to plan. If the permit holder defaults, the LCD may draw upon this guarantee to complete the necessary portions of the project. The most accepted method of financial guarantee is an irrevocable letter of credit from a financial institution.

Storm Water Management Permits require that provisions for long-term maintenance of the storm water management practices and facilities are scheduled and a responsible party(s) is assigned. Maintenance agreements are approved, signed and recorded at the Rock County Register of Deeds so that the restrictions are binding upon all future owners of land served by the storm water management BMPs.

Enforcement and Penalties
Any land disturbing activity subject to the provisions of these ordinances which is not conducted in compliance with the terms of the permit approval(s), or commencing prior to obtaining a permit, is deemed a violation and is considered a public nuisance. When LCD Staff becomes aware of a violation, notification is sent to the landowner or permit holder via certified mail. The notice includes remedial action required to gain compliance with the provision of the applicable ordinance(s). If the actions listed in the notice are not complete by the schedule set, further enforcement may commence, including posting a stop-work order, requesting a cease and desist order, issuing a citation or filing a lawsuit. The authorization to issue citations under these ordinances was granted in 2008 by the Rock County Board of Supervisors for implementation beginning in January 2009.

If non-compliance with these ordinances is determined to cause damage to adjacent property, public facilities, or waters of the state, the LCD may issue a notice of intent to perform necessary work to protect said lands. If after five working days, the landowner or permit holder has not complied with the notice, the LCD may enter upon the land to perform the work and bill the expenses to the property owner or deduct it from the financial assurance established as part of the permit process.

Appeals

As the governing committee, the LCC is the first step in the appeal process. Staff decisions may be review upon written requests to the Committee Chair by a property owner or other effected person. Where a waiver of an ordinance standard is requested, The Technical Review Committee is responsible for making a recommendation to the LCC. The Technical Review Committee is made up of the Director of the LCD, a representative of the Planning and Development Agency, a representative of the LCD and a representative of the Public Works Department. If the waiver request is for a Storm Water Management Standard, also invited to participate are: a representative of the town where the site is located, a representative of the city or village if the project is within the extraterritorial area, and if groundwater concerns are an issue, the Public Health Department.

The Rock County Board of Adjustment is the next avenue of appeal and functions under Chapter 14 of the Rock County Code of Ordinances, in accordance with sec. 59.694, Wis. Stats. Any applicant, permittee, or landowner may appeal within 30 calendar days or the date of any order, decision, or determination made by the LCD in administering these ordinances; relative to sites in with such a person has an interest.

CHAPTER 5 - MONITORING AND EVALUATION

A comprehensive evaluation that indicates whether conservation efforts are meeting the intent of the statues, administrative codes, county ordinances, and policies is essential. When evaluating a specific project or program, a qualitative or quantitative measurement should be used to determine it effectiveness. Such evaluations need to take into account a variety of factors, including but not limited to: customer needs, protection or enhancement of the physical resource targeted, regulatory requirements, and fiscal responsibility.

The LCD will monitor progress with regards to the achievement of the stated goals and objectives of this plan. As new resource information becomes available it will be integrated and used to make needed changes to increase the effectiveness of this plan.

Farmland Preservation Program
Through the conservation component of the Wisconsin FPP, landowners are required to develop and implement a conservation plan to maintain the average annual soil loss rate at or below "T". This program requires that landowners' conservation plans be reviewed every five years to assure that conservation systems are being maintained as designed.

Transect Survey
A transect survey was conducted in 1999, followed by three consecutive years of data collection from 2009 to 2011 by staff from the LCD. The survey is a cross section of the county containing approximately 700 data points. From this data set, the conservation office is able to establish trends in conservation usage and soil loss/erosion averages in Rock County. The LCD will commit to updating the current data set with a minimum of three consecutive years of data collection and use of the most current accepted models.

Status Reviews of Cost Share Practices
To ensure landowners and/or cost share recipients are maintaining conservation systems that were completed with the use of cost share dollars, Staff from the conservation office are required to conduct annual status reviews. The USDA-NRCS also conducts status reviews on an annual basis. If landowners or cost share recipients do not maintain the systems as described in the conservation plans established for federal and/or state programs, information specific to state or county programs is forwarded to LCD staff for further review and action. The 2008 Federal Farm Bill prevents the LCD from using information gathered to establish an individual's federal program eligibility for enforcement purposes.

Annual Accomplishment Reports
The LCD produces an annual report as a component for grant eligibility associated with DATCP/DNR. This report outlines the County's accomplishments associated with the implementation of the County's Land and Water Resource Management Plan.

Nutrient Management Planning
LCD will track the implementation of nutrient management planning as it relates to the state performance standard. Plans are submitted to the LCD on an annual basis and reviewed by staff

for compliance purposes. After the plan meets the criteria as set in NRCS 590 standard, the information is forwarded to DATCP for statewide tracking and quality assurance purposes.

Citizen Water Quality Monitoring Program
Since 2001, Rock County has been involved with the Citizen Water Quality Monitoring Program that focuses on the Rock River Basin. In 2006, citizen monitoring was advanced to Level II monitoring protocols. Using protocols developed by UW Extension and WDNR, the LCD partners with Rock River Coalition and Water Action Volunteers (WAV) to train volunteers to take measurements of dissolved oxygen in the water, temperature, water clarity, water flow, and habitat, macroinvertebrate inventories, and special projects such as baseline nutrients and deploying continuous temperature recorders. Volunteers provide valuable data for resource professionals who are often limited in their efforts due to time constraints. This type of monitoring provides important baseline and trend data and in some cases, may be the only data available.

Groundwater Monitoring
General trends in groundwater quality will be developed by the Public Health Department in the future. Information from past well tests will be entered into a GIS layer and analyzed for developing trends. Newly acquired data will be integrated into the data sets to assist with trend developments. This analysis will help the LCD in regards to developing a groundwater strategy as it relates to nutrient management priority areas.

CHAPTER 6 - INFORMATION AND EDUCATION

Natural resource conservation and protection are at the core of the LCD mission. It is well known that the county's population places considerable value on the quality of the county's resources and are considered an important aspect of their quality of life. As part of the strategic planning process, Information and Education (I&E) activities were identified as a component for building support for the plan's delivery.

Information and Education Activities to Encourage Voluntary Implementation of Best Management Practices.

Every effort will be made to inform Rock County landowners about the required agricultural performance standards and prohibitions. The Conservation Office (LCD/NRCS) assists approximately 1,500 landowners on an annual basis. The LCD will provide landowners/users with an overview of requirements for all applicable programs. This effort will utilize existing fact sheets, one-on-one consultations, conservation planning, referrals to applicable agencies and/or websites, newsletters, workshops, displays, news paper articles, etc. Additional information will be disseminated through a reestablished multi agency newsletter that will reaches approximately 3,800 landowners/land users. The LCD will continue its partnership with the following organizations to further information dissemination:

1) UWEX;
2) DNR;
3) DATCP;
4) Rock County Planning and Development Agency;
5) Rock County Public Health Department;
6) USDA-Natural Resource Conservation Service;
7) USDA-Farm Service Agency;
8) Rock County Chapter - Towns Association;
9) American Farmland Trust;
10) Natural Heritage Land Trust;
11) US Fish and Wildlife Service;
12) Lake Associations/Districts;
13) River Protection Citizen Groups; and,
14) Non-Governmental Organizations (Pheasants Forever, Green Rock Audubon Society, Welty Environmental Center.)

Activities that will continue if current staffing and funding remain at 2019 levels are:

1) Meet one-on-one with landowners for natural resource management issues;
2) Partner with UWEX and DATCP for support of farmer written nutrient management plan workshops;
3) Promote nutrient management BMP development and implementation were ever possible and promote Nutrient Management plan 4Rs (right timing, right placement, right rate, and right source);
4) Co-Sponsor workshops on the values of soil health;
5) Promote the use of cover crops whenever possible;
6) Promote well abandonment BMP;

7) Assist the Public Health Department with community presentations regarding groundwater quality programs;
8) Sponsor a conservation display at various community events;
9) Re-establish a multi-agency newsletter with assistance from partners;
10) Update the LCD web page to disseminate current resource and program information;
11) Develop workshops and distribute materials in cooperation with Rock County Towns Association, Planning and Development, and Extension on Purchase of Agricultural Conservation Easements for Farmland Protection;
12) Promote Donation and/or Purchase of Conservation Easements;
13) Distribute aquatic invasive species management publications;
14) Distribute terrestrial invasive species publications;
15) Provide assistance to lake and river groups;
16) Conduct educational programming for school aged children;
17) Implement the construction site erosion control and storm water management I&E plan;
18) Promote shoreline buffers and small scale wetland restorations through CREP and CRP; and
19) Conduct citizen stream monitoring workshops.

It is important to identify barriers to protecting natural resources, especially a lack of information and awareness. An Information and Education (I&E) program is the best method for minimizing barriers by demonstrating to residents how their activities directly affect the watershed in which they live. Watershed residents take ownership when they see how activities in their backyard impact their water quality. I&E programs are long-term commitments. The information and education strategy for Rock County will last well into the future, more than just the five - ten years of this plan. Learning styles must be taken into account and information needs to be presented in different manners for different people. Barriers must be identified and eliminated while messages need to be repeated often for residents to change their activities. Potential prompts need to be identified and implemented. Rock County is home to a diversified population, which calls for an I&E strategy that dispenses information in various formats and to a wide range of audiences. A strong, countywide I&E program is essential to the implementation of the LWRM plan and ultimately the protection of Rock County's natural resources.

CHAPTER 7 - PLAN IMPLEMENTATION

As part of the plan's development, the public was asked to the rank natural resource programming within Rock County. In 2019, four hundred and fifty (450) surveys were sent to landowners throughout the county and fifty three (53) were returned of which thirty five (35) were correctly filled out. The survey was an amended version of the survey used for the 2009 plan amendment. That survey five hundred eighty surveys (580) were sent out to landowners in the county and one hundred and sixty (160) were returned. Both surveys asked for a ranking of the eight natural resource initiatives currently administrated by the LCD; Groundwater quality, Surface water quality, Soil quality, Land preservation, Hazardous waste programming, Non-agricultural runoff, Invasive species, and Endangered and threatened species. The results from both surveys mimic each other's rankings. The LCD intends to use the combined results The goals for the plan were set by the results of the combined surveys with collaboration of the LCC and the AC.

The LWRM will be used to direct the delivery of soil and water conservation programming into the future. From the recommendations, the LCD has developed a work plan that outlines the major goals of the Land and Water Resource Management Plan. Objectives follow each goal. The listed objectives and goals will be reviewed on an annual basis to determine priorities and available funding levels. Progress toward the plan implementation will be measured via the evaluation tools discussed in Chapter 5. Annual reports will be generated and forwarded to the appropriate agencies for program review.

The following goals were developed from the 2009 and 2019 Resource Concern Survey, with guidance from the LCC and the AC.

GOAL 1: IMPROVE & PROTECT GROUNDWATER QUALITY

DEVELOP AND PROVIDE ASSISTANCE TO A PRODUCER LED WATERSHED GROUP INITIATIVE.

1. Assist UWEX with the development of a producer led watershed group(s).
2. Provide assistance to Producer Led Watershed group(s) for groundwater quality.

DEVELOP AND IMPLEMENT GROUNDWATER QUALITY INITIATIVE(S)

1. Seek guidance for the development of a large scale groundwater effort from the Groundwater Nitrate Workgroup established by the Rock County Board of Supervisors.
2. Make application to various organizations for financial assistance for the implementation of aforementioned project.
3. Develop a well testing program in aforementioned project areas to track changes in groundwater quality.

INCREASE PUBLIC AWARENESS OF GROUNDWATER QUALITY

1. Provide input to Public Health for updating the groundwater education plan.
2. Provide assistance with private well testing programs conducted by Public Health and or UWEX.
3. Develop and foster partnerships with citizen organizations and local governments to deliver education programs.

4. Develop maps of high-risk areas of the County.
5. Assist municipalities in developing and implementing their wellhead protection plans.
6. Promote the use of the Agricultural and Household Clean Sweep Programs.
7. Promote voluntary compliance with NR151 performance standards and prohibitions.

INCREASE USE OF NUTRIENT MANAGEMENT PLANNING

1. Increase nutrient management-training program opportunities for farmers.
2. Provide cost sharing for development of nutrient management plans.
3. Implement NR 151 performance standards for nutrient management on cropland.
4. Use program policies and regulations to require use of nutrient management plans.

ENSURE THE PROPER ABANDONMENT OF UNUSED WELLS

1. Include well abandonment as a part of the groundwater education program.
2. Provide cost sharing for proper well abandonment.
3. Use local regulations to require abandonment of unused wells.

ENSURE COMPLIANCE WITH NR 151 PERFOMANCE STANDARDS AND PROHIBITIONS.

1. Use program policies and regulations to require compliance with NR 151 Performance Standards and Prohibitions.
2. Ensure cost sharing of required practices is available.

GOAL 2: CONSERVATION EASEMENTS FOR PRESERVATION OF FARMLAND

INCREASE PUBLIC AWARENESS OF FARMLAND PRESERVATION NEEDS

1. Expand educational program for the protection of farmland.
2. Develop and foster partnerships with citizen organizations and local governments to deliver educational programs.
3. Develop educational sheets for distribution through the LCD newsletter.

PROMOTE FARMLAND PRESERVATION AND PURCHASE OF AGRICULTURAL CONSERVATION EASEMENTS PROGRAMS

1. Continue to promote the use of Conservation Easements and town zoning to protect prime farmland.
2. Amend the long range plan to protect prime farmland on a as need basis.
3. Promote the use of the USDA-NRCS Agricultural Conservation Easement Program Agriculture Land Easement (ACEP-ALE).
4. Promote the use of the states' Working Lands Initiative.

DEVELOP AND FOSTER PARTNERSHIPS WITH THE FOLLOWING ORGANIZATIONS:

1. P&D
2. NRCS
3. FSA
4. DATCP
5. DNR
6. UWEX
7. Rock County Towns Association
8. American Farmland Trust
9. Natural Heritage Land Trust

10. Grounds Well Conservancy
11. Land Trust Network of Jefferson County

GOAL 3: IMPROVE & PROTECT SURFACE WATER QUALITY

INCREASE PUBLIC AWARENESS OF SURFACE WATER QUALITY

1. Implement a surface water quality public education program.
2. Develop and foster partnerships with citizen organizations and local governments to deliver education program.
3. Promote the use of the Agricultural and Household Clean Sweep Programs.
4. Promote the use of CREP.

INCREASE USE OF NUTRIENT MANAGEMENT PLANNING

1. Increase nutrient management-training program opportunities for farmers.
2. Provide cost sharing for development of nutrient management plans.
3. Implement NR 151 performance standards for nutrient management.
4. Use program policies and regulations to require the use of nutrient management plans.

REDUCE POLLUTED RUNOFF & SEDIMENT DELIVERY TO SURFACE WATERS

1. Reduce soil erosion from all land uses.
2. Promote the establishment and maintenance of vegetative buffers within Riparian Zones through use of CRP/CREP.
3. Provide technical assistance and cost sharing for installation of conservation practices to reduce polluted runoff.
4. Implement NR 151 performance standards and prohibitions for agricultural runoff.
5. Implement County ordinance performance standards and permit requirements for storm water runoff management.
6. Use program policies and local regulations to require use of conservation practices to reduce polluted runoff and pollutant delivery to surface waters.
7. Use County ordinance to regulate construction, use, maintenance and closure of animal waste storage facilities.

GOAL 4: IMPROVE & PROTECT SOIL QUALITY

INCREASE PUBLIC AWARENESS OF SOIL QUALITY & EROSION

1. Develop and conduct a soil quality (health) and soil erosion public education programs.

REDUCE SOIL EROSION ON CROPLAND TO TOLERABLE LEVELS

1. Increase the use of conservation tillage to reduce soil erosion rates.
2. Increase the use of cover crops to reduce soil erosion.
3. Increase the use of grassed waterways to reduce gully erosion.
3. Use program policies and regulations to require the use of conservation practices to control erosion soil erosion.
4. Identify soil erosion rates and tillage practice trends.
5. Target efforts to reduce soil erosion in watersheds with high erosion rates.

REDUCE SOIL EROSION ON CONSTRUCTION SITES TO TOLERABLE LEVELS

1. Implement a training program on proper installation of conservation practices for prospective builders, contractors, and developers.
2. Implement County Ordinance standards and permit requirements for construction site erosion control.
3. Use program policies and local regulations to require the use of conservation practices to control soil erosion.

CONTROL SOIL EROSION ON STREAM BANKS

1. Provide technical assistance and cost sharing for conservation practices to control stream bank and shoreline erosion.

GOAL 5: IMPROVE & PROTECT HABITAT QUALITY

PRESERVE & RESTORE HABITAT AREAS

1. Promote programs and provide technical assistance for habitat preservation and restoration.
2. Promote correct placement of wetlands on the landscape to improve habitat for wildlife.

PROMOTE TREE AND PRAIRIE PLANTING & SUSTAINABLE WOODLANDS MANAGEMENT

1. Promote programs for tree planting and sustainable woodland management.
2. Promote correct placement of woodland plantings on the landscape to improve habitat and travel corridors for wildlife.
3. Promote woodland management plans through the DNR Forester's office.
4. Administer tree sale program for county residents.
5. Promote the use of native plantings in Critical Area Stabilization and fencerows.

PRESERVE & RESTORE IN-STREAM HABITAT & RIPARIAN CORRIDORS

1. Promote programs and provide technical assistance for restoring in-stream habitat.
2. Promote programs and provide technical assistance for stream corridor restoration.
3. Promote correct placement of buffers on the landscape to improve habitat for wildlife.

PRESERVE & RESTORE THREATENED & ENDANGERED SPECIES HABITAT

1. Provide informational materials to the public on threatened and endangered species.
2. Promote programs for restoring and preserving habitat in critical areas.
3. Ensure that projects to install conservation practices do not negatively impact species or their habitat.
4.

PREVENT THE SPREAD OF INVASIVE SPECIES

1. Provide informational materials to the public on invasive species.
2. Assist public organizations and DNR in mapping past and current populations of invasive plant species.

PRESERVE & RESTORE GRASSLAND & NATIVE PLANT COMMUNITIES

1. Provide informational materials to the public on native species of grasses, forbs, shrubs and trees.
2. Promote programs for preservation and restoration of native plant and grassland communities.

3. Promote correct placement of communities on the landscape to improve habitat and travel corridors for wildlife.
4. Administer native seed sale program for county residents.

Conclusion

The goals and objectives are used to develop an annual work plan for the LCD. The work plan, goes into the details of how the LCD plans to address the goals and objectives and accomplish measurable outcomes. The work plan includes the goals, objectives, and actions; the planned accomplishments, estimated staff hours, and financial resources that will be needed to complete them. Annual work plans are submitted to DATCP as part of the annual grant application process.

APPENDIX A - ABBREVIATIONS & GLOSSARY

ABBREVIATIONS

AC: Advisory Committee
APHIS: Animal and Plant Health Inspection Service
BMP: Best management practice
CAFO: Concentrated animal feeding operation
CREP: Conservation Reserve Enhancement Program
CRP: Conservation Reserve Program
DATCP: Department of Agriculture, Trade and Consumer Protection (Wisconsin)
DNR: Department of Natural Resources (Wisconsin)
EPA: Environmental Protection Agency (United States)
EQIP: Environmental Quality Incentives Program
FPP: Farmland Preservation Program
FSA: Farm Services Agency (USDA)
GIS: Geographic Information System
LCC: Land Conservation Committee
LCD: Land Conservation Department
NHI: Natural History Inventory
NPDES: National Pollution Discharge Elimination System
NRCS: Natural Resource Conservation Service (USDA)
P: Phosphorus
PPM: Parts Per Million
T: Tolerable soil loss
TMDL: Total maximum daily load
TRM: Targeted runoff management (grant)
TSS: Total suspended solids
USLE: Universal Soil Loss Equation
USDA: United States Department of Agriculture
UWEX: University of Wisconsin – Extension
WGNHS: Wisconsin Geological and Natural History Survey
WHIP: Wildlife Habitat Incentive Program
WPDES: Wisconsin Pollution Discharge Elimination System
WRP: Wetland Reserve Program

GLOSSARY

Animal Unit: A mature animal weighing 1000 pounds or an equivalent number of other animals.

Animal Waste Management Program: This regulatory program, administered by the DNR, seeks to identify and correct animal waste-related water quality problems.

ATCP 50: The chapter of Wisconsin's Administrative Code that implements the Land and Water Resource Management Program as described in Chapter 92 of the state statutes.

Aquifer: An underground layer of soil material or bedrock that contains groundwater.

Basin: An extremely large watershed area, used by DNR to identify major drainage patterns in the State. Rock County falls within two Watershed basins in the State, the Sugar Pentatonica and Lower Rock River basins.

Best Management Practices (BMPs): The most cost effective practice or combination of practices for reducing nonpoint source pollution to acceptable levels.

Chapter 92: Portion of Wisconsin statutes outlining the soil and water conservation, agricultural shore land management, and animal waste management laws and policies of the state.

Crop Residue: The plant residue left on the soil surface after the harvest of a crop and preparation of the soil for the following crop.

Conservation Plan: A record of decisions and intentions made by land users regarding the conservation of the soil, water and related natural resources of a particular unit of land.

Conservation Reserve Enhancement Program (CREP): An add-on to the CRP program which expands and builds on CRP's success.

Conservation Reserve Program (CRP): A provision of the federal Farm Bill that takes eligible cropland out of production and puts it into grass or tree cover for 10-15 years.

Cooperative Extension Service (CES): CES is the educational outreach agency of the USDA.

Cooperator: A landowner or operator who is working with, or has signed a cooperative agreement with, a county LCC.

Critical Sites: Those sites that are significant sources of nonpoint source pollution upon which best management practices must be implemented.

Department of Agriculture, Trade and Consumer Protection (DATCP): The state agency responsible for establishing statewide soil and water conservation policies and administering the state's soil and water conservation programs. DATCP administers state cost-sharing funds for a variety of LCC operations, including support for staff, materials and conservation practices.

Department of Natural Resources (DNR): The state agency responsible for managing and protecting public waters. The DNR also administers programs to regulate, guide and assist LCCs, LCDs and individual land users in managing land, water, fish and wildlife.

Environmental Quality Incentives Program (EQIP): Federal program to provide technical and cost-sharing assistance to landowners for water quality protection.

Erosion: The process by which rainwater and runoff detach soil particles from the soil surface and carry them downhill.

Farm Service Agency (FSA): A USDA agency that administers agricultural assistance programs including price supports, production controls and conservation cost-sharing.

Farmland Preservation Program (FPP): A DATCP land-use program under Chapter 91, state statutes, that helps preserve farmland through local planning and zoning, promotes soil and water conservation and provides tax relief to participating farmers.

Fisheries Management Program: A DNR program responsible for protecting, maintaining and selectively developing Wisconsin's fisheries and aquatic resources.

Geographic Information System (GIS): A computerized system of maps and layers of data about land including soils, land cover, topography, field boundaries, roads and streams. Such combinations (or layers) of data are otherwise impossible to achieve.

Highly Erodible Land (HEL): Land that has a high potential for soil erosion as defined by the NRCS.

Impaired Waters 303(d) List: A DNR list of water bodies that do not meet or are not expected to meet water quality standards for the State, as required by the federal Clean Water Act.

Lake Management Program: A DNR program designed to maintain a healthy and diverse aquatic environment for Wisconsin's lakes.

Land and Water Resource Management Plan: A locally developed and implemented plan with an emphasis on stakeholder involvement and program integration. The plan includes a resource assessment, identifies nonpoint pollution problems and priorities, establishes a progress tracking system, and describes an approach for coordinating information and implementation programs with other local, state and federal agencies, communities and organizations.

Land Conservation Committee (LCC): The portion of county government identified, in Chapter 92 of the state statutes, to conserve and protect the county's soil, water and related natural resources.

Land Conservation Department (LCD): The department of county government responsible for administering the conservation programs and policies of the Land Conservation Committee.

Memorandum of Understanding (MOU): An agreement between two or more public entities that typically involves one providing the other with services, funding or assistance.

Natural Resources Conservation Service (NRCS): A branch of the USDA. NRCS provides soil survey, conservation planning and technical assistance to local land users.

Non-point Source Pollution (NPS): The pollution that occurs when rainfall or snowmelt runs over land surface or through the soil and picks up natural and human applied pollutants, and

deposits them into surface water or groundwater. Pollutants include soil particles, fertilizers, animal waste, pesticides, petroleum products, and other toxic materials.

Nonpoint Source Pollution Abatement Program: A DNR water quality program under Chapters 120 and 281, Wisconsin Statutes, that provides technical assistance and cost-sharing to landowners to develop and maintain management practices to prevent or reduce nonpoint source water pollution.

Nutrient Management: A conservation practice designed to minimize the contamination of surface and ground water by limiting the amount of nutrients applied to the soil to no more than the current crop is expected to use. It involves frequent soil testing and annual planning of the techniques, placement, rate, or timing of fertilizer and animal waste applications.

Sedimentation: The transport and deposition of soil particles from soil erosion and by runoff. The particles may be deposited onto the land surface or into surface water or groundwater.

Soil Loss Tolerance ("T"): Erosion rate in tons per acre per year at which a soil can maintain productivity.

Storm Water: The portion of rainfall and snowmelt that runs over the land surface and does not soak into the ground. Paved surfaces and roofs increase storm water quantities. Storm water often delivers pollutants to surface waters.

Surface Water Quality Management Area (WQMA): A land area draining to and within 1,000 feet of a lake or 300 feet of a stream.

Technical Standards: The specifications for the design, construction, implementation and maintenance of conservation practices.

Tillage: Farming operations, which mechanically disturb the soil in preparation for planting a crop. Clean tillage, or moldboard plowing, buries all or most of the crop residue from the previous crop. Minimum tillage, reduced tillage, and conservation tillage leave a portion of the crop residue from the previous crop on the soil surface after planting to protect the soil from erosion.

Transect Survey: A survey conducted by driving on a representative route through the county, stopping at designated points and recording observations for both sides of the road for the current crop, previous crop, and residue cover shortly after planting. Observations are entered into soil loss software (either WinTransect or SnapPlus) that then calculates countywide soil erosion rates on cropland.

Tolerable Soil Loss (T): The maximum rate of soil erosion, in tons per acre per year, that is allowable for a particular soil to sustain its productivity for growing plants and crops.

Total Maximum Daily Load (TMDL): A TMDL is a quantitative analysis of the amount of a particular pollutant a stream or lake can receive before exceeding water quality standards. Water quality standards are set to protect and maintain designated uses such as drinking water, fishing,

and swimming. The goal of a TMDL is to set limits on pollutant loads to correct water quality impairments, meet water quality standards, and/or achieve designated uses of waterbodies. It serves as a basis for strategies to be developed to improve and protect water quality.

United States Department of Agriculture (USDA): A branch of federal government with responsibilities in the areas of food production, inspection, and storage. Agencies with resource conservation programs and responsibilities, such as FSA, NRCS and Forest Service and others are agencies of the USDA.

University of Wisconsin-Extension (UWEX): The outreach of the University of Wisconsin system responsible for formal and informal educational programs throughout the state.

Watershed: The geographic area from which a particular river, stream or water body receives its water supply.

Wisconsin Land and Water Conservation Association (WLWCA): Membership organization that represents the state's 72 County Land Conservation Committees and Departments.

APPENDIX B – IMPAIRED WATERS LIST

Impaired Waters within Rock County. Source: WDNR impaired waters search tool

Official Name (Click for Details)	Local Name (Click for Map)	Start Mile	End Mile	WBIC	Water Type	County	Pollutant	Impairment	Status	Priority
Allen Creek	Allen Creek	15.00	20.21	883700	River	Rock	Unknown Pollutant	Degraded Biological Community	303d Listed	Low
Badfish Creek	Badfish Creek	0.00	12.30	799500	River	Dane, Rock	Total Phosphorus	Water Quality Use Restrictions	303d Listed	Low
Bass Creek	Bass Creek	0.00	18.10	795800	River	Rock	Total Phosphorus	Impairment Unknown	303d Listed	Low
Rock River	Rock River	171.08	183.45	788800	River	Rock	Total Phosphorus	Low DO	TMDL Approved	Not Applicable
Lake Koshkonong	Lake Koshkonong			808700	Lake	Dane, Jefferson, Rock	Total Phosphorus	Low DO, Eutrophication	TMDL Approved	Not Applicable
Clear Lake	Clear Lake			775000	Lake	Rock	Total Phosphorus	Eutrophication, Excess Algal Growth	303d Listed	Low
Sugar River	Sugar River	10.99	56.14	875300	River	Green, Rock	Total Phosphorus	Impairment Unknown	303d Listed	Medium
Swan Creek	Swan Creek	0.00	5.13	876700	River	Rock	Total Phosphorus	Impairment Unknown	303d Listed	Medium
Taylor Creek	Taylor Creek	0.00	6.06	876300	River	Rock	Total Phosphorus	Impairment Unknown	303d Listed	Medium
Yahara River	Yahara, Rock R. To Badfish Cr.	0.00	7.29	798300	River	Rock	Total Phosphorus	Low DO	TMDL Approved	Not Applicable
Yahara River	Yahara R. Badfish Cr To Stoughton	7.29	16.32	798300	River	Dane, Rock	Total Phosphorus	Low DO	TMDL Approved	Not Applicable
Rock River	Rock River	201.29	207.03	788800	River	Rock	Total Phosphorus	Low DO	TMDL Approved	Not Applicable

Official Name (Click for Details)	Local Name (Click for Map)	Start Mile	End Mile	WBIC	Water Type	County	Pollutant	Impairment	Status	Priority
Rock River	Rock River	183.45	193.11	788800	River	Rock	Total Phosphorus	Low DO	TMDL Approved	Not Applicable
Leota Lake	Leota Lake			884700	Lake	Rock	Total Phosphorus	Water Quality Use Restrictions, Excess Algal Growth	303d Listed	Medium
Allen Creek	Allen Creek	20.22	22.96	883700	River	Rock	Total Phosphorus	Degraded Biological Community	303d Listed	Medium
Sugar River	Sugar River	0.00	10.99	875300	River	Rock	Total Phosphorus	Impairment Unknown	303d Listed	Medium
Rock River	Rock River	193.11	201.29	788800	River	Rock	Total Phosphorus	Low DO	TMDL Approved	Not Applicable
Allen Creek	Allen Creek	22.96	26.98	883700	River	Dane, Green, Rock	Total Phosphorus	Degraded Biological Community	303d Listed	Medium
Little Turtle Creek	Little Turtle Creek	1.03	7.34	791700	River	Rock, Walworth	Total Phosphorus	Impairment Unknown	Proposed for List	Low
Spring Brook	Spring Brook T02n R14e S27	0.00	2.00	791300	River	Rock	Total Phosphorus	Impairment Unknown	Proposed for List	Low
Turtle Creek	Turtle Creek	0.95	24.77	790300	River	Rock, Walworth	Total Phosphorus	Impairment Unknown	Proposed for List	Low
Allen Creek	Allen Creek	0.00	10.57	883700	River	Green, Rock	Total Phosphorus	Impairment Unknown	Proposed for List	Medium
Clear Lake	Clear Lake			775000	Lake	Rock	Mercury	Contaminated Fish Tissue	303d Listed	Low
Rock River	Rock River	171.08	183.45	788800	River	Rock	Mercury	Contaminated Fish Tissue	Pollutant Removed	Delisted 2008
Rock River	Rock River	201.29	207.03	788800	River	Rock	Mercury	Contaminated Fish Tissue	Pollutant Removed	Delisted 2006

Official Name (Click for Details)	Local Name (Click for Map)	Start Mile	End Mile	WBIC	Water Type	County	Pollutant	Impairment	Status	Priority
Badfish Creek	Badfish Creek	0.00	12.30	799500	River	Dane, Rock	PCBs	Contaminated Fish Tissue, Contaminated Sediment	303d Listed	Low
Rock River	Rock River	171.08	183.45	788800	River	Rock	PCBs	Contaminated Fish Tissue	Pollutant Removed	Delisted 2008
Rock River	Rock River	183.45	193.11	788800	River	Rock	PCBs	Contaminated Fish Tissue	Pollutant Removed	Delisted 2006
Rock River	Rock River	193.11	201.29	788800	River	Rock	PCBs	Contaminated Fish Tissue	Pollutant Removed	Delisted 2006
Stevens Creek	Stevens Creek	0.00	8.35	796300	River	Rock	Sediment/Total Suspended Solids	Degraded Habitat	TMDL Approved	Not Applicable
Blackhawk Creek	Blackhawk Creek	2.00	4.00	797000	River	Rock	Sediment/Total Suspended Solids	Degraded Habitat, Turbidity	TMDL Approved	Not Applicable
Rock River	Rock River	171.08	183.45	788800	River	Rock	Sediment/Total Suspended Solids	Degraded Habitat	TMDL Approved	Not Applicable
Lake Koshkonong	Lake Koshkonong			808700	Lake	Dane, Jefferson, Rock	Sediment/Total Suspended Solids	Degraded Habitat, Turbidity	TMDL Approved	Not Applicable
Yahara River	Yahara, Rock R. To Badfish Cr.	0.00	7.29	798300	River	Rock	Sediment/Total Suspended Solids	Degraded Habitat	TMDL Approved	Not Applicable
Spring Creek	Spring Creek	0.00	3.43	799900	River	Rock	Sediment/Total Suspended Solids	Degraded Habitat	Water Delisted	Delisted 2002
Markham Creek	Markham Creek	0.00	7.31	796400	River	Rock	Sediment/Total Suspended Solids	Degraded Habitat	TMDL Approved	Not Applicable
Yahara River	Yahara R. Badfish Cr To Stoughton	7.29	16.32	798300	River	Dane, Rock	Sediment/Total Suspended Solids	Degraded Habitat	TMDL Approved	Not Applicable

Official Name (Click for Details)	Local Name (Click for Map)	Start Mile	End Mile	WBIC	Water Type	County	Pollutant	Impairment	Status	Priority
Rock River	Rock River	201.29	207.03	788800	River	Rock	Sediment/Total Suspended Solids	Degraded Habitat	TMDL Approved	Not Applicable
Rock River	Rock River	183.45	193.11	788800	River	Rock	Sediment/Total Suspended Solids	Degraded Habitat	TMDL Approved	Not Applicable
Rock River	Rock River	193.11	201.29	788800	River	Rock	Sediment/Total Suspended Solids	Degraded Habitat	TMDL Approved	Not Applicable

RUSLE2 Soil Loss Summary For Rock County For Year 2011

Average county wide RUSLE2 soil loss is 2.4 tons/acre/year based on 850 observations from 882 active points.

The estimated total harvested crop area for Rock_2009_2010_2011 is 276933.0 acres.

Number, percent and average soil loss for sample fields by multiple of "T" for active points in each watershed. Note: Missing data counts are NOT included in total average soil loss.

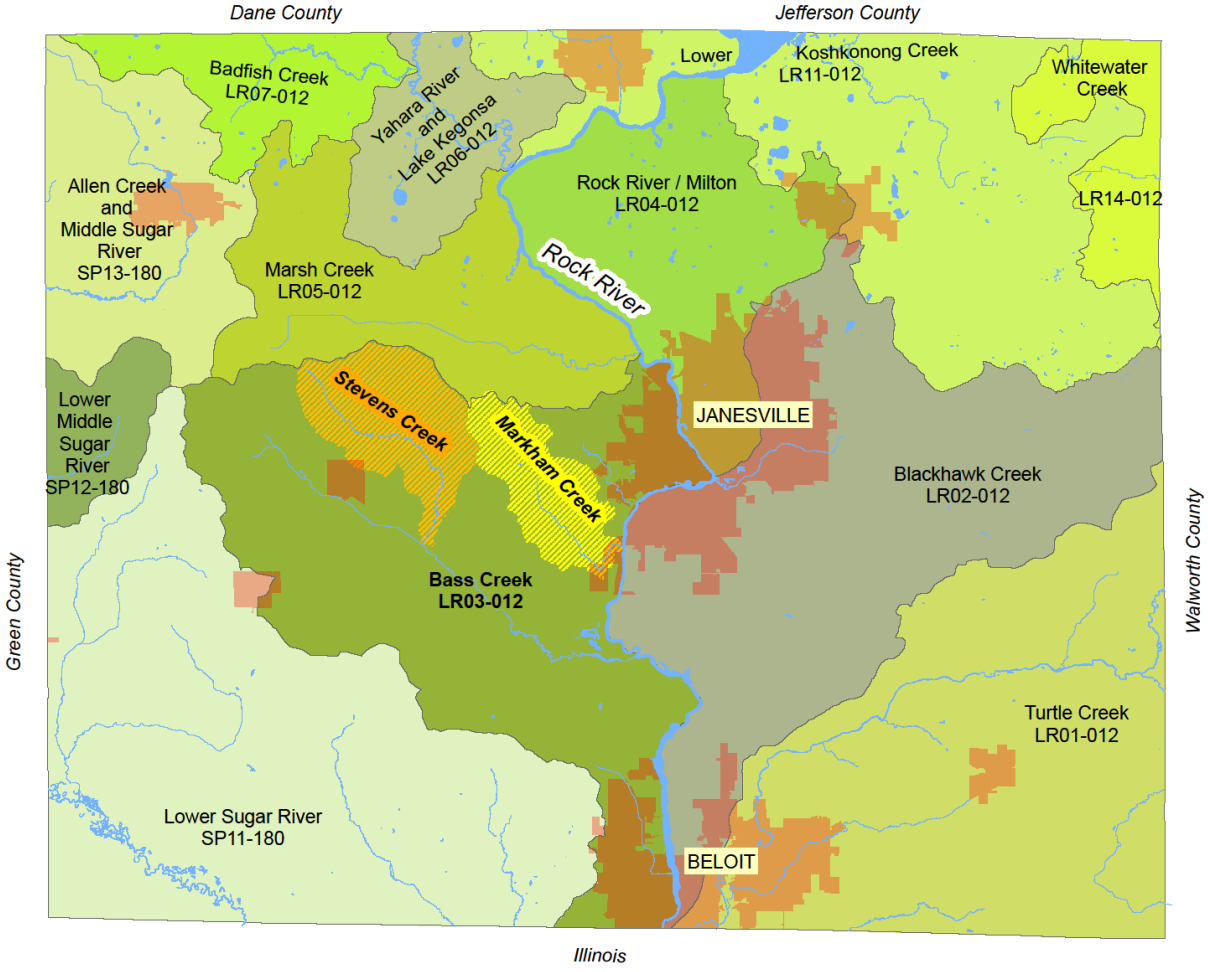
Soil Loss Rate in Tons/Acre/Year																	
-	Less Than or equal "T"			1-2 "T"			2-3 "T"			Greater than 3 "T"			Missing		Totals		
Watershed	**Count**	**%**	**Ave Soil Loss**	**Count**	**%**	**Ave Soil Loss**	**Count**	**%**	**Ave Soil Loss**	**Count**	**%**	**Ave Soil Loss**	**Count**	**%**	**Count**	**%**	**Ave Soil Loss (excluding missing data)**
Rock River Milton	38	4.3	1.9	4	0.5	5.7	0	0.0	0.0	0	0.0	0.0	3	0.3	45	5.1	2.3
Badfish Creek	23	2.6	1.8	7	0.8	6.1	0	0.0	0.0	1	0.1	15.9	2	0.2	33	3.7	3.2
Lower Middle Sugar River	14	1.6	1.2	1	0.1	7.0	0	0.0	0.0	0	0.0	0.0	0	0.0	15	1.7	1.5
Turtle Creek	128	14.5	2.0	13	1.5	6.2	6	0.7	10.4	0	0.0	0.0	5	0.6	152	17.2	2.7
Allen Creek and Middle Sugar River	31	3.5	1.7	4	0.5	4.8	0	0.0	0.0	1	0.1	10.5	0	0.0	36	4.1	2.3
Lower Koshkonong Creek	81	9.2	1.7	14	1.6	6.2	3	0.3	8.5	0	0.0	0.0	4	0.5	102	11.6	2.5
Yahara River and Lake Kegonsa	23	2.6	1.8	1	0.1	6.3	2	0.2	11.8	0	0.0	0.0	3	0.3	29	3.3	2.7
Whitewater Creek	11	1.2	1.5	1	0.1	7.1	0	0.0	0.0	1	0.1	15.6	1	0.1	14	1.6	3.0
Blackhawk Creek	103	11.7	1.7	4	0.5	5.8	1	0.1	10.4	1	0.1	8.0	1	0.1	110	12.5	2.0
Marsh Creek	64	7.3	1.5	5	0.6	5.2	0	0.0	0.0	0	0.0	0.0	3	0.3	72	8.2	1.8
Lower Sugar River	107	12.1	1.4	17	1.9	4.7	2	0.2	5.6	6	0.7	9.5	5	0.6	137	15.5	2.2
Bass Creek	112	12.7	1.7	15	1.7	5.8	5	0.6	8.3	0	0.0	0.0	5	0.6	137	15.5	2.4
Totals	735	83.3	1.7	86	9.8	5.7	19	2.2	9.2	10	1.1	10.7	32	3.6	882	100	2.4

Average County Soil Loss Acreage

Soil loss	Acres	Percent
Less Than or equal "T"	230777.5	83.3
1-2 "T"	27002.5	9.8
2-3 "T"	5965.7	2.2
Greater than 3 "T"	3139.8	1.1
Missing	10047.5	3.6
Totals	**276933.0**	**100**

Report created 5/15/2013 11:22:22 AM with WinTransect version 1.18.1.0

APPENDIX D – WATERSHED MAP USED IN PREVIOUS PLANS



APPENDIX E – LAND USE BY WATERSHED (HUC 10)

HUC10	HUC 10 NAME	Total area (acres)	Area in Rock Co. (ac)	% Area in Rock Co.	% of Rock Co. covered by HUC 10 watershed	Cropland[1] (ac)	Cropland with FPP NMP[2] (ac)	% In cropland (land use) (ac)	% Cropland with FPP NMP	CORN Acreage[3] (Cropscape)	WS ac in Co	% Cropland with corn at least 1 of past 10 yrs	All corn (ac)	% corn 5 of 10 yrs (2008 - 2018)	% corn 6 of 10 yrs (2008 - 2018)	% corn 7 of 10 yrs (2008 - 2018)	Difference Cropscape - tax cropland	Cropland in cities per watershed	Area in Cities and villages[1] (ac)	% WS in cities and villages[1]	Developed 2018[3] (ac)	% Developed 2018[3]	% Forest 2018[3]	All wetland 2018[3]	% All wetland 2018
0709000403	Allen Creek	45,317	25,248	56%	5%	16,179	7,086	64%	44%	17,402	25,248	69%	17,402	61%	47%	31%	1,223	5%	2,074	8%	1,396	6%	9%	792	3%
0709000208	Badfish Creek	54,249	12,176	22%	3%	9,386	2,365	77%	25%	9,627	12,176	79%	9,630	75%	54%	31%	241	2%	0	0%	206	2%	9%	548	4%
0709000212	Bass Creek	41,676	41,679	100%	9%	31,840	6,906	76%	22%	33,256	41,679	80%	33,258	73%	56%	36%	1,416	3%	880	2%	867	2%	6%	1,587	4%
0709000211	Blackhawk Creek	44,718	43,986	98%	9%	29,666	15,446	67%	52%	31,671	43,986	72%	31,677	84%	68%	49%	2,005	5%	8,336	19%	5,636	13%	6%	266	1%
0709000215	City of Beloit-Lower Rock River	41,604	38,277	92%	8%	20,032	7,571	52%	38%	22,794	38,277	60%	22,796	77%	61%	39%	2,762	7%	7,050	18%	5,904	15%	7%	939	2%
0709000501	Keith Creek-Rock River	149,313	8,896	6%	2%	6,247	2,119	70%	34%	6,418	8,896	72%	6,420	76%	59%	31%	171	2%	296	3%	251	3%	17%	126	1%
0709000209	Lake Kegonsa-Yahara River	80,756	13,599	17%	3%	9,741	4,288	72%	44%	9,984	13,599	73%	9,983	68%	41%	20%	243	2%	6	0%	203	1%	13%	832	6%
0709000210	Lake Koshkonong-Rock River	146,280	66,091	45%	14%	33,806	8,378	51%	25%	38,769	66,091	59%	38,775	73%	55%	37%	4,963	8%	5,490	8%	3,961	6%	16%	4,788	7%
0709000213	Marsh Creek-Rock River	62,211	62,216	100%	13%	33,629	11,783	54%	35%	37,081	62,216	60%	37,084	71%	53%	35%	3,452	6%	47	0%	7,368	12%	13%	1,343	2%
0709000315	Raccoon Creek	39,192	28,679	73%	6%	17,939	394	63%	2%	18,643	28,679	65%	18,643	67%	50%	25%	704	2%	115	0%	542	2%	17%	1,418	5%
0709000406	Sylvester Creek-Sugar River	69,275	7,090	10%	2%	5,295	3,097	75%	58%	5,403	7,090	76%	5,403	70%	54%	30%	109	2%	0	0%	94	1%	16%	110	2%
0709000407	Taylor Creek-Sugar River	81,210	49,251	61%	11%	29,615	5,180	60%	17%	29,958	49,251	61%	29,965	65%	51%	33%	343	1%	686	1%	729	1%	14%	5,199	11%
0709000214	Turtle Creek	159,303	57,424	36%	12%	40,712	21,381	71%	53%	43,965	57,424	77%	43,971	83%	66%	41%	3,253	6%	6,036	11%	3,830	7%	8%	712	1%
0709000202	Whitewater Creek	45,722	9,841	22%	2%	5,858	1,872	60%	32%	6,594	9,841	67%	6,594	74%	61%	41%	736	7%	0	0%	192	2%	13%	1,361	14%
	County Total		464,453		***100%***	***289,945***	***97,863***	***62%***	***34%***	***311,564***	***464,453***	***67%***	***311,599***				***21,619***	***5%***	***31,014***	***7%***	**31,178**	**7%**	**11%**	**20,020**	**4%**
0709000316	Pecatonica River	72,732	1	0.00%	0.00%																				
0709000408	Sugar Creek	42,103	333	1%	0.07%																				
			464,787																						

Notes -
- USDA NASS Cropscape area is actively cropped land with at least one year of corn from 2008 - 2018.
- Cropland in unincorporated areas is based on the land use for property tax assessments, updated in 2016.
- The difference between Cropscape and town tax districts is the estimated acres of cropland in city and village tax districts.
- Approxinmately 5% of the county cropland in 2018 is in a city or village tax district.

Sources & notes:
1 - Land Use Inventory (2016), Rock County Planning & Economic Development. Does not include cropland in incorporated cities or villages.
2 - Derived from Rock County Land Use Inventory (2016) cropland and parcels enrolled in the Wisconsin Farmland Preservation income tax credit program (FPP).
3 - USDA NASS Cropscape. Land use derived from national satellite data clipped to the Rock County boundary.
4 - Land: USGS National Land Cover Database
NLCD-2011: https://www.mrlc.gov/data/references/national-land-cover-database-2011-nlcd2011

APPENDIX F – AGRICULTURAL CONSERVATION PRACTICES

CONSERVATION PRACTICES FOR AGRICULTURE			
Conservation Practice	**ATCP 50 Reference**	**Conservation Practice**	**ATCP 50 Reference**
Manure storage systems	50.62	Relocating or abandoning animal feeding operations	50.81
Manure storage system closure	50.63	Residue management	50.82
Barnyard runoff control systems	50.64	Riparian buffers	50.83
Access roads or cattle crossings	50.65	Roofs	50.84
Animal trails and walkways	50.66	Roof runoff management	50.85
Contour farming	50.67	Sediment basins	50.86
Cover and green manure	50.68	Sinkhole treatment	50.87
Critical are stabilization	50.69	Streambank and shoreline protection	50.88
Diversions	50.70	Stripcropping	50.89
Field windbreaks	50.71	Subsurface drains	50.90
Filter strips	50.72	Terrace systems	50.91
Grade stabilization structures	50.73	Underground outlets	50.92
Heavy use area protection	50.74	Waste transfer systems	50.93
Livestock fencing	50.75	Wastewater treatment strips	50.94
Livestock watering facilities	50.76	Water and sediment control basins	50.96
Milking center waste control systems	50.77	Waterway systems	50.97
Nutrient management	50.78	Well decommissioning	50.98
Pesticides management	50.79	Wetland development or restoration	50.98
Prescribed grazing	50.80		

APPENDIX G - SUMMARY OF WISCONSIN RUNOFF POLLUTION ABATEMENT RULES

Wisconsin Administrative Code NR 151 establishes Runoff Pollution Abatement Procedures and Prohibitions for the Agricultural Sector; Wisconsin Administrative Code ATCP 50 establishes program standards and procedures for the implementation of NR 151. Major points of rules include:

Prohibitions:

1) No overflow of manure storage;
2) No unconfined manure stacks in water quality management areas;
3) No runoff from barnyards;
4) No unlimited grazing along streams, rivers, lakes or ponds.

Performance Standards:

1) Manure, commercial fertilizer and other nutrients shall be applied according to a nutrient management plan.
2) All lands where feed or crops are grown must be cropped at or below the established "T" for the predominant soil type for each field. In Rock County, the average "T" value for most soils equals 3 tons per acre.
3) All producers within a water quality management area must divert runoff away from contacting barnyards, feedlots, and manure storage areas.
4) Any new or alterations to an existing animal waste storage or closure of an existing facility must comply with the rules.

Program Standards:

1) Landowners must be offered cost sharing if required to install Best Management Practices.
2) Counties must insure the practices are installed according to State Standards as defined in ATCP 50.
3) Counties must adopt Land and Water Resource Management Plans.

APPENDIX H – MEMORANDUM OF UNDERSTANDING (MOU) BETWEEN DNR & ROCK COUNTY LCD

Memorandum of Understanding

Rock County Land Conservation Department
Department of Natural Resources
Implementation of the Agricultural Performance Standards and Prohibitions under NR 151

AUGUST 21, 2007

Prepared by
Tom Sweeney, Land Conservation Department
Mark Cain, DNR Wastewater Engineer
Susan Josheff, DNR Lower Rock River Basin Water Team Leader
Robert Hansis, DNR Sugar/Pectatonica River Basin Water Team Leader

c:/soil/office/lwrm/mou rock dnr nr151.doc

Table of Contents

Glossary for Rock County and DNR NR151 Implementation MOU

Compliance Status Report (CSR): A document that is prepared by Rock County, that contains detailed information for each practice and facility where an on-site evaluation (field inspection) or records review has been conducted, *(Appendix A)*. This report is primarily to be used for updating landowners. The CSR will include the compliance status and basis for the compliance determination, such as field inspection or records review. The following information is to be included in the Compliance Status Report:

a. Parcel status (new versus existing)
b. The current compliance status of individual tax parcels with reference to each of the performance standards and prohibitions.
c. Status of eligibility (costs eligible) for public cost sharing.
d. Corrective measure options to comply with each of the performance standards and prohibitions for which a parcel is not in compliance.
e. Grant funding sources and technical assistance available from Federal, State, and local sources.
f. An explanation of conditions that apply if public cost share funds are used.
g. Signature lines indicating landowner agreement or disagreement with report findings.
h. The purpose of the report, the implications for achieving and maintaining compliance.
i. Process and procedures to discuss evaluation results with county and or state.
j. If appropriate, a copy of performance standards and prohibitions and technical design standards.

Cost-share agreement and supplemental form for NR151. This document package is to be developed by the DNR and DATCP. The cost-share agreement offers funding to comply with performance standards and prohibitions. The supplemental form includes a compliance schedule to achieve compliance, requirements to maintain compliance in perpetuity and appeals procedures. Together, the agreement and form meet the requirements of s. NR 151.09 and NR 151.095."

On-site evaluation: A process, to be established by Rock County, for conducting on-site evaluations for the purpose of making a determination of parcel compliance with agricultural performance standards and manure management prohibitions.

On-site evaluation form: A standardized form that is developed by Rock County for use by county staff, for the purpose of conducting consistent and complete on-site evaluations. The on-site evaluation form should be designed to record all the information necessary to complete the Compliance Status Report, *(Appendix B)*.

Records review: A process, to be established by Rock County, for checking information contained in existing files for the purpose of making a preliminary determination of parcel compliance with agricultural performance standards and manure management prohibitions.

Records review form: A standardized form that is developed by Rock County for use by county staff for the purpose of conducting and recording the results of consistent and complete records reviews, *(Appendix C)*.

Status letters: *Standardized letters that should be sent to landowners apprizing them of the compliance with NR 151, (Appendix D).*

Rock Co. LCD and DNR NR151 Memorandum of Understanding
08/21/07

Purpose

This Memorandum of Understanding (MOU) has been developed by the Rock County Land Conservation Department (County) and the Wisconsin Department of Natural Resources (DNR) to clarify their respective roles and responsibilities needed to implement and enforce agricultural nonpoint pollution performance standards and prohibitions established in ch. NR 151, Wis. Adm. Code. Specifically, this agreement clarifies how the County and the DNR will:

- Evaluate and define the level of agency commitment to the NR 151 workload.
- Conduct information and education activities.
- Select and evaluate parcels to determine compliance with standards and prohibitions.
- Prepare compliance reports and notify landowners of compliance status.
- Provide technical assistance and/or cost-sharing funding to allow landowners to meet performance standards and prohibitions.
- Issue notice letters under NR 151.09 and NR 151.095 as appropriate.
- Monitor compliance.
- Conduct enforcement activities.
- Develop reports.

Component 1: Plan the Implementation Approach

The Parties Agree:

1. This MOU provides a framework to plan how the parties will cooperate to implement the agricultural performance standards and prohibitions.
2. This MOU and the County Land and Water Resource Management Plan (LWRM) can be used as the means to document procedures for implementing NR 151.
3. Guidance prepared by DNR is useful for making formal correspondence with landowners concerning compliance issues.
4. Targeted Performance Standards (NR 151.004) will be developed where implementation of statewide performance standards and prohibitions will not be sufficient to meet water quality standards.
5. Sections NR151.09, NR 151.095, ATCP 50.04 and ATCP 50.08 require agricultural landowners and operators to meet non-point performance standards and prohibitions. These requirements are contingent upon sufficient cost sharing for existing facilities and practices.

Rock County will:

1. Implement select portions of the administrative rules.
2. Focus NR 151 implementation activities initially in targeted areas.

3. Cooperate with DNR to identify priority areas where the county may apply for funding under the Targeted Runoff Management Program (TRM) to increase compliance with performance standards and prohibitions.

DNR will:

1. Implement select portions of the administrative rules.
2. Assign an agency representative to participate in the LWRM planning process.
3. Work jointly with the County to set mutual priorities for implementing agricultural performance standards and prohibitions.
4. Provide the County with guidance needed to fulfill its agreed-upon roles and responsibilities to implement portions of NR 151.

Component 2: Define Level of Agencies' Commitment to NR151 Workload

The parties agree:

1. There must be a clear understanding of each agency's responsibilities and level of commitment in carrying out implementation of agricultural performance standards and prohibitions, including implementation and enforcement activities identified under NR151.09 and NR151.095.
2. The extent of each agency's commitment is dependent upon the availability of public funds and agency priorities and, therefore, may be expected to change through time.
3. To meet annually to review this MOU and the associated workload commitment.
4. To notify each agency of any significant changes in workload capability.

DNR will:

1. To the extent staffing limitations allow, involve the DNR Environmental Enforcement staff in development of NR151 enforcement processes and guidance.

Component 3: Conduct information and education activities

The Parties Agree:

1. An information and educational program is a critical component of an agricultural nonpoint source pollution control program.
2. An effective educational program will meet the following objectives:
   a. Educate landowners about Wisconsin's agricultural performance standards and prohibitions, applicable conservation practices, and cost share grant opportunities;
   b. Promote implementation of conservation practices necessary to meet performance standards and prohibitions;
   c. Inform landowners about procedures and agency roles to be used statewide and locally for ensuring compliance with the performance standards and prohibitions; and
   d. Establish expectations for compliance and consequences for non-compliance.

Rock County will:

1. Implement a local information and education strategy to support the NR151 implementation.
2. Distribute information and educational material prepared by the DNR.

DNR will:

1. Work with UW-Extension, DATCP and others to identify and develop I & E materials and activities needed on a statewide basis and to make these materials available to the County for use and dissemination.
2. Assist the County and the Basin Educator, where possible, with implementation of the Information and Education program.

Component 4a: Determine current compliance through records review

The parties agree:

1. Sections NR151.09(3)(b) and NR 151.095(4)(b) require existing cropland practices and livestock facilities that achieve compliance with performance standards and prohibitions to remain in compliance regardless of public cost share.
2. Sections NR 151.09(3)(d) and NR 151.095(4)(d) require new cropland practices and livestock facilities to comply with performance standards and prohibitions regardless of cost share.
3. To establish a baseline for program implementation, documentation will made of locations in compliance as of October 1, 2002. Landowners will be informed, in writing, of the compliance determination and the requirements to maintain compliance.
4. State cost-share agreements, subject to contractual obligations of active operation and maintenance plans on or after October 1, 2002, can be used to document the extent of current compliance achieved through previous public investments.
5. The County will use the tax parcel as the basic geographic unit for evaluating and reporting compliance. Where a tax parcel contains more than one livestock facility or cropland practice, the evaluation and reporting system will contain information to distinguish between facilities and practices based on whether they are new, existing, in compliance and out of compliance.
6. The information in landowner files may not be up-to-date. An on site evaluation may be necessary to determine the accuracy of file information.

Rock County will:

1. Work towards developing a geographic database to input conservation plans, practices, and resource needs and compliance status determinations.
2. Conduct a records review of farms in priority areas and/or priority farms.
3. From the records review, make a preliminary determination as to the location of cropland practices and livestock facilities that were clearly in compliance with all performance standards and prohibitions applicable to the parcel. Document compliance that is a result of:
   a. Installed or implemented BMPs under an existing state or federal cost share agreement; and/or;
   b. Maintaining compliance with state or county animal waste regulations (e.g. NR 243, WPDES, or SWRM programs).

4. From the records review, identify the location of parcels and operations that are inconclusive and warrant an on-site evaluation to determine compliance, as described in Component 4b.
5. Utilize county-developed standardized records review forms to document all record reviews. Document compliance in accordance with Component 5 of this document.

The DNR will:

1. Evaluate the County records review forms for consistency with status determination and notification requirements under NR 151.09 and NR 151.095 for parcels that are in non-compliance with NR 151.
2. For large-scale livestock operations permitted and operating under the WPDES:
   a. Provide the County a notification that an updated Nutrient Management Plan for each WPDES permitted facility has been filed with the DNR, where applicable. A copy of the Nutrient Management Plan checklist will be included in this notification.
   b. Provide specific permit information as identified in County's request.

Component 4b: Determine Compliance through On-Site Evaluation

The parties agree:

1. On-site evaluations are often necessary to document current resource conditions and current management practices, as a basis for determining compliance.
2. The process for responding to public animal waste complaints, is spelled out in NR243, and is routinely administered through the cooperation of the DNR and the County.
3. New or expanding livestock facilities subject to regulations under NR 243 or the Rock County Animal Waste Management Ordinance will be evaluated for compliance with performance standards and prohibitions. An on-site evaluation and a Compliance Status Report should be completed prior to issuance of the state or county permits.

Rock County will:

1. Following the records review process as specified in Component 4a, compile a list of parcels and operations that have records that are inconclusive and warrant an on-site evaluation to determine compliance.
2. Determine the highest priority parcels for on-site evaluations.
   a. In priority areas and/or priority farms;
   b. New sites;
   c. Sites identified through public complaints or staff observations;
   d. Requests from landowners seeking compliance checks for owned parcels.
3. Contact owners of selected parcels and schedule site evaluations.
4. Utilize county on-site evaluation forms to document all evaluations

DNR will:

1. Review the County on-site evaluation forms for consistency with status determination and notification requirements under NR 151.09 and NR 151.095.

2. Assist in the identification of environmental models, site evaluation forms, and other assessment tools used to evaluate compliance.
3. Have the opportunity to provide input of the development of the County LCC's annual work plan process, specific to:
    a. The location of livestock facilities and cropland parcels where, if standards are not implemented, there is a high potential for nonpoint discharge that may adversely impact waters of the state.
    b. A request to the County for an onsite evaluation and report to determine and document the extent of current compliance.
4. Assist in making compliance status determinations for high priority or potentially controversial situations, such as those that may require notification.

Component 5: Prepare Compliance Status Report (CSR) and Inform Landowners of Compliance Status

The parties agree:

1. To be valid, the results of a record review and/or on-site compliance evaluation must be documented and be based upon confirmed facts.
2. A standardized report format will allow for the systematic collection and reporting of evaluation results and will provide consistency through time.
3. A local process, independent of a formal administrative appeal under chapter 227, Wis. Stats., can be used to provide for a structured review of any local decision pertaining to an initial finding of compliance or other decision involving the interpretation of NR 151.
4. Site evaluation forms, CSR and associated correspondence are public records that should be retained by a custodial agency.
5. The CSR is a document that will be used to inform the landowner about the compliance status of his/her operation, seek confirmation of information used to determine current compliance, and, if necessary, resolve disagreements regarding compliance status.
6. The CSR provides important baseline information needed to secure and allocate funding and technical assistance to address on-farm conservation needs.
7. A geographic database and record keeping system is necessary to provide ready access to compliance reports completed over time.

Rock County will:

1. Establish a local process to provide for reconsideration of local administrative decisions regarding findings of compliance as established in a CSR. The LCC will be the administrative body that reconsiders decisions made by County staff in implementing NR 151.
2. Following completion of the record reviews and site evaluations, prepare CSR's of the evaluated parcels. At a minimum, a CSR will convey the following information:
    a. The status of cropping practices or livestock operations based on whether they are "new" or "existing".
    b. Current status of compliance of individual parcels with each of the performance standards and prohibitions.

c. Corrective measure options and rough cost estimates to comply with each of the performance standards and prohibitions.

d. Status of eligibility for public cost sharing.

e. Grant funding sources and technical assistance available from Federal, State and local sources, and third party service providers.

f. An explanation of conditions that apply if public cost share funds are used.

g. Signature lines indicating landowner agreement or disagreement with report findings.

h. Process and procedures to contest evaluation results to county and/or state.

i. (Optional) A copy of performance standards and prohibitions and technical design standards.

3. Provide a copy of the CSR and an accompanying informational status letter to the landowner.
4. If the landowner disagrees with the facts and findings of the CSR, gather additional information and/or provide the landowner with written procedures and a timeframe to pursue reconsideration of local decisions.
5. Where livestock facilities or cropping practices are not in compliance, assess the relative pollution threat associated with the noncompliance and make a determination regarding the allocation of staff and financial resources under Component 6 of this agreement.
6. Keep and maintain public records, as the custodial authority, following requirements of the Wisconsin Open Records Law
7. Work toward developing a geographically based record keeping system and database to track site evaluations, CSR's and informational status letters issued, CSR appeals, etc.
8. Work toward developing a process for informing landowners of compliance status at the time of property ownership changes.

The DNR will:

1. Co-sign informational status letters, if requested by the County, where the Department concurs with the County's CSR findings.
2. Provide support to the County in explaining compliance determinations that DNR assisted in developing.

Component 6A: Secure Funding and Technical Assistance – Voluntary Cost-Share Component

The parties agree:

1. Section 281.16(3), Wis. Stats., sections NR151.09(3)(c), and NR151.095(4)(d) prohibit the State or municipalities from requiring that "existing" practices and facilities , to come into compliance through State regulation or local ordinance unless public cost share funds are provided for eligible costs.
2. NR151.09(3) and NR151.095(4) identify compliance requirements for owners and operators of cropland practices and livestock facilities based on whether the practices and facilities are determined to be "existing" or "new", and whether cost sharing is required and made available.

3. The CSR and accompanying Status Letter are important informational documents that explain the obligations of accepting cost sharing for practices that bring parcels into compliance with applicable performance standards and prohibitions.
4. NR151 defines cost share availability requirements for funding administered by DNR under 281.65, Stats. ATCP 50 defines cost-share availability from any other source. These requirements must be clearly understood to ensure that DNR and County staffs make proper determinations of cost-share availability.

Rock County will:

1. Prioritize parcels identified as noncompliant through the CSR process, based on the relative pollution threat associated with the noncompliance.
2. If feasible, seek additional cost-share funds through State or Federal funding programs.
3. Encourage and receive requests for voluntary cost-sharing and/or technical assistance from landowners.
4. Confirm cost-share grant eligibility and availability of cost-share & technical assistance.
5. Develop a Cost Share Agreement supplemental form for NR151. The supplemental form informs landowners of their NR151 obligations as a condition of accepting cost sharing, and stipulates that the affected cropland practices and livestock facilities will maintain or be brought into compliance with applicable performance standards and prohibitions, as enumerated in the compliance status report.

The DNR will:

1. Provide cost sharing (if available) through the TRM grant program where there is voluntary compliance and cost sharing is required.
2. With DATCP, seek to secure sources of funding to reimburse the County for its administrative and technical services.

Component 6B: Option to Issue Non-Voluntary NR151 Notice of Cost-Share and/or Noncompliance

The parties agree:

1. Chapter NR 151.09 and NR 151.095 set forth notification requirements that must be met before DNR can initiate enforcement action under Ch. 281, Stats., for non-compliance with performance standards and prohibitions. This includes provision of a notification to the landowner at the time that cost sharing is made available, or in cases when cost share is not required, when the compliance achievement period starts.
2. Notification requirements and cost-share availability requirements vary depending upon the legal authority that is used to enforce the standards and the source of funding.
3. Developing and issuing notices of cost sharing under the non-voluntary NR151 option is a joint responsibility of the County and DNR.

Rock County will:

1. If a landowner chooses not to voluntarily apply for public funding to install or implement corrective measures that entail eligible costs, or not to voluntarily install or implement

corrective measures that do not entail eligible cost, issue landowner notification per NR 151.09(5-6) and/or 151.095(6-7). The County will issue this notice jointly with DNR.

a. If eligible costs are involved, this notification shall include an offer of cost sharing.

b. If no eligible costs are involved, or if cost sharing is already available, the notification will not include an offer of cost sharing.

2. Develop, cosign, and issue notices. Provide draft notices to DNR regional staff review and DNR signature.

DNR will:

1. Co-sign notices to landowners under NR151.09 and NR151.095.

Component 7: Administer Funding and Technical Assistance

The Parties agree:

1. If public cost share funds are offered to install conservation practices, through either the voluntary or non-voluntary option, a cost share agreement must be developed and public funds must be accounted for.

Rock County will:

1. Establish and administer a budget and accounting system to receive and disperse state funds administered by the County on behalf of the State.
2. Utilize a state developed cost share agreement and supplemental form for NR151 as described in Component 6a and as defined in the Glossary.
3. Keep and maintain public records, as the custodial authority, following requirements of the Wisconsin Open Records Law.
4. Upon completion of BMP's implemented through NR151, conduct an on-site evaluation of the operation to document compliance with the agricultural performance standards and prohibitions.
5. If the site is compliant, prepare and issue a document that verifies satisfactory compliance with applicable performance standards.
6. If site is non-compliant, determine whether non-compliance is weather-related, is the fault of the landowner, or whether there has been a willful breach of contract. Nonregulatory remedies, or enforcement action taken by the County will be determined by the LCC, and will be based on the cause of the non-compliance.

The DNR will:

1. With DATCP, seek to secure sources of funding to reimburse the County for its administrative and technical services.
2. Conduct program reviews to verify that cost share funding and conservation services have been administered in accordance with appropriate state administrative rules.
3. Co-sign, if requested, a document that verifies satisfactory compliance with applicable performance standards. A "Satisfaction Letter" may be used for this purpose.

Component 8: Enforcement

The parties agree:

1. DNR and the County will use voluntary means, to the extent practical, to achieve compliance with performance standards and prohibitions, but may use enforcement when necessary to meet requirements of ch. 281, Stats., and NR151.
2. Each party has independent authority to enforce standards and reserves the right to exercise that authority without permission of the other.
3. To be effective, the public and affected landowners must perceive enforcement as a necessary option, pursued jointly by the parties, after voluntary measures to achieve compliance have failed.
4. The County has authority to enforce the performance standards and prohibitions under s. 281.16, Stats., but has chosen not to do so at this time.
5. DNR has authority to enforce performance standards and prohibitions through a number of statutory options. These include, but are not limited to:
   a. Referral by DNR to the Wisconsin Department of Justice to seek relief under s.281.98, Wis. Stats.
   b. Use of enforcement procedures under NR 243 and s. 283.89, Stats., to obtain compliance with performance standards and prohibitions or to resolve a water quality problem.
   c. Use of other state laws, including citation authority under s. 29.601, Wis. Stats.
6. To be effective, enforcement procedures must be well-coordinated and documented between DNR and the County, and must be supported by both parties.
7. NR 151.09 and NR 151.095 establish the procedures that must be followed as pre-requisites to enforcement when DNR funds are used or when DNR pursues enforcement under s. 281.98, Wis. Stats.
8. Formal enforcement procedures are recognized to begin with the issuance of a Notice of Violation. Grounds for issuing a Notice of Violation letter is non-compliance by the landowner or operator with the notice issued under NR 151.09(5), NR 151.09(6), NR 151.095(6), or NR 151.095(7) and as spelled out in Components 6a and 6b of this agreement.

Rock County will:

1. Support DNR's lead role in enforcement.
2. Identify cases where landowners do not follow the requirements of their noncompliance notices and provide this information to the DNR.
3. Participate in DNR enforcement conferences.
4. Provide background information to DNR needed for WPDES permits or to develop referral packages to the Wisconsin Department of Justice.
5. Provide documents or other technical support for enforcement cases.
6. In circumstances where the County has issued permits or is pursuing legal actions under other authority, ensure that appropriate information concerning those permits or enforcement activity is transmitted to DNR.

DNR will:

1. Take the lead role in initiating enforcement action, including issuing notices of violation.
2. Ensure that appropriate information concerning enforcement activity by the Department is transmitted to the County.
3. Schedule and conduct enforcement conferences if appropriate.
4. If a point source discharge exists, issue a WPDES permit or take enforcement action under NR 243 and ch. 283, Stats., if consistent with regional and statewide permitting priorities.
5. Determine compliance with permits if consistent with regional and statewide compliance activities.
6. Prepare referral packages to Attorney General's Office if non-compliance continues and referral is approved by the DNR Secretary's Office.

Component 9. Ongoing Compliance Monitoring

The parties agree:

1. NR151.09(3)(b) and NR151.095(4)(b) require that existing cropland practices and livestock facilities, which are in compliance on or after October 1, 2002, remain in compliance without the offer of cost share.
2. Ongoing agricultural operations continually change in response to market forces, changes in technology, and changes in land ownership.
3. Periodic compliance evaluations benefit owners and operators, as they make routine business decisions, including capital investments, land rental, and land sales.
4. Routine compliance monitoring benefits the general public by verifying that compliance is maintained.

Rock County will:

1. Conduct routine compliance monitoring for parcels/operations that have received a letter indicating compliance. The extent of monitoring will be proportional to the amount of State funding allocated to support this effort.
2. Under the monitoring system:
   a. Conduct an annual reporting and self-certification program for parcels that have been determined to be in compliance.
   b. Conduct an annual educational mailing for operations that are in compliance.
3. In regards to the content of this subchapter, respond to public complaints when compliance with NR 151 is in question, conduct site evaluations and make compliance determinations following procedures established in Components 4 and 5.

DNR will:

1. Be responsible for compliance monitoring on large-scale livestock operations WPDES permitted facilities.

Signatures

Neil Deupree 9/5/07

Neil ~~Duepree~~ DEUPREE, Chair, Rock County Land Conservation Committee — date

Ken Johnson for LE 8/27/07

Lloyd Eagan, DNR South Central Region Director — date

APPENDIX I – NOTICE OF PUBLIC MEETING

Notice of Public Information Meeting
Class II

To: Landowners in Rock County

During October 2002 and amendment thereto during 2013, the State of Wisconsin adopted the Statewide Agricultural Performance Standards and Prohibitions. In agricultural areas of Rock County, there are now limits on the allowable soil erosion from cropland, requirements that animal waste be properly applied to fields or stored in a way that minimizes threats to surface and/or groundwater, and requirements for the diversion of runoff around barnyards, feedlots, and storage facilities. Amendments include the use of a phosphorus index and a tillage setback from surface waters.

Rock County, as required by Wisconsin State Statutes, is in the process of updating the Land and Water Resource Management Plan, which identifies how, when and where the Rock County Land Conservation Department will implement the Performance Standards. All agricultural land must comply with these standards. Landowners may be eligible for cost sharing to implement needed practices.

A Copy of the DRAFT Rock County Land and Water Resource Management Plan can be viewed on the web at:

http://www.co.rock.wi.us/images/web_documents/departments/land_conservation/Land_and_Water_Resource_Plan_2019_draft_October_2019.pdf

or at the Land Conservation Department Office, 440 N US Hwy 14, Janesville WI 53546 between the hours of 8:00 am and 4:30 pm. Monday through Friday. Also, a limited number of copies will be made available to producers at no charge.

The Land Conservation Committee will conduct a public information meeting on the Land and Water Resource Management Plan on **November 12, 2019** at **7:00 pm** at the **Rock County Fair Grounds Craig Center**, 1301 Craig Ave, Janesville, WI 53545 Oral comments on the plan will be taken at that time. Written comments will be accepted until **November 15, 2019.**

Attachment: Summary of Wisconsin Runoff Pollution Abatement Rules

Summary of Wisconsin Runoff Pollution Abatement Rules

Wisconsin Administrative Code NR 151 establishes Runoff Pollution Abatement Procedures and Prohibitions; Wisconsin Administrative Code ATCP 50 establishes program standards and procedures for the implementation of NR 151.

Major points of rules:

Prohibitions:

1) No overflow of manure storage;
2) No unconfined manure stacks in water quality management areas;
3) No runoff from barnyards;
4) No unlimited grazing along streams, rivers, lakes or ponds.

Performance Standards:

1) Manure, commercial fertilizer and other nutrients shall be applied according to a nutrient management plan.
2) All lands where feed or crops are grown must be cropped at or below the established "T" for the predominant soil type for each field. In Rock County, the average "T" value for most soils equals 3 tons per acre.
3) All producers within a water quality management area must divert runoff away from contacting barnyards, feedlots, and manure storage areas.
4) Any new or alterations to an existing animal waste storage or closure of an existing facility must comply with the rules/local ordinance.
5) No tillage may be conducted within 5 feet of the top of channel of surface waters.
6) Croplands, pastures, and winter grazing areas shall average a phosphorus index of 6 or less over the accounting period and may not exceed a phosphorus index of 12 in any individual year within the accounting period.

Program Standards:

1) Landowners must be offered cost sharing if required to install Best Management Practices, if applicable.
2) Counties must insure the practices are installed according to State Standards as defined in ATCP 50.
3) Counties must adopt Land and Water Resource Management Plans.
4) Counties must maintain/update conservation standards for the Farmland Preservation Program.