

# Sauk County Land and Water Resource Management Plan

January 2008

Sauk County  
Land Conservation Department

Mission: To promote the awareness of our natural resources and to provide technical assistance for their productive use, enhancement and preservation.

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## **Executive Summary**

The Sauk County Land Conservation Department (LCD) operates under the direction of the Land Conservation Committee (LCC) of the Sauk County Board of Supervisors. The department's mission is to promote the awareness of our natural resources and to provide technical assistance for their productive use, enhancement and preservation.

The committee relies on the Land and Water Resource Management (LWRM) Plan for overall direction. Each year an annual work plan is prepared, budget initiatives developed and grant applications submitted based on the goals and objectives identified in this plan.

### **Plan Contents**

This LWRM Plan consists of a description of the plan development process and participants, a summary of Sauk County's geological and natural history, land use and natural resource conditions, identification of natural resource concerns, goals set to resolve those concerns, and an implementation strategy to achieve those goals.

### **Plan Development**

Public input was gathered via surveys, the convening of a citizens advisory committee and technical advisory review by staff from the Department of Agriculture, Trade and Consumer Protection (DATCP), Department of Natural Resources (DNR) and Farm Service Agency (FSA). In addition, a draft of this plan was posted on the county's website and advertised by way of newsletter articles and news releases. Public hearings were held on October 22, 2007 at the Sauk County West Square Building and November 14, 2007 at the Kraemer Library in Plain. A list of attendees, minutes and notes related to these hearings are on file with the LCD. A copy of the hearing notice is in Appendix D. The final plan will be submitted to the County Board for their consideration and approval at the February 18, 2008 meeting.

### **County Resource Conditions**

Based on nine years of transect survey data, the average annual cropland soil loss for the county has remained relatively constant in spite of an increase in acres planted to row crops. Using monitoring data and the number of Impaired Waters identified by DNR as an indicator, surface water quality has been stable or improving.

### **New Initiatives**

Several significant trends impact on the workload and priorities of the department. Increased emphasis on construction site erosion and stormwater runoff management, increasing ethanol production, rural development, increased farm size, growth in the number and variety of specialty agricultural producers, an increased emphasis on invasive species and a demand for sustainability initiatives in the county have all had an influence in the plan goals and objectives.

### **Goals and Objectives**

1. Protect and improve groundwater quality and quantity
2. Protect and improve surface water quality
3. Protect the productivity and viability of agricultural lands
4. Ensure the proper disposal of or reuse of waste materials
5. Protect and enhance natural communities
6. Provide and coordinate educational programming promoting natural resource protection and sustainable living issues
7. Assist Sauk County in becoming a sustainable community

## **Implementation Strategy**

1. Provide one-on-one educational and technical assistance to landowners
2. Deliver information and education programs
3. Administer cost-sharing programs to support installation of conservation practices
4. Work toward landowner compliance with state performance standards and prohibitions
5. Provide information and consultation regarding sustainable practices, materials and operations to citizens, businesses, and communities
6. Monitor and evaluate plan implementation progress

## **One-year Workplan**

Each year the Land Conservation Committee uses the goals and objectives identified in the plan to develop a workplan for the coming year. See Appendix G for the 2008 Land Conservation Department Budget Workplan.

## **Progress Tracking**

The department workplans include parameters for measuring accomplishments. Progress is reviewed monthly by the Committee and is reported annually to DATCP. Monitoring is done to evaluate compliance with and effectiveness of specific programs such as Farmland Preservation Program status reviews, Farm Service Agency spot checks, Conservation Reserve Program compliance checks, and the NR151 compliance inventories.

The department will monitor Sauk County's cropland soil erosion through annual transect surveys and surface water quality through stream monitoring.

## **Realities of the Land Conservation Department Workload**

A considerable portion of the staff time is committed to meeting the statutory requirements of various state and county mandates. Many of these programs are shared efforts between the state and county focused on the reduction of soil erosion and water pollution. For the past 20 years cost-share and staffing programs were focused on priority watersheds, and consequently the department placed a priority on work in the Crossman Creek/Little Baraboo, Narrows Creek and Baraboo River, and Dell Creek Watersheds. The new state compliance requirements will require

the county to focus Land and Water Resource Management funds toward non-compliant sites and pursue Targeted Runoff Management projects for critical resource areas.

The goals and objectives chapter includes a detailed analysis of the needs for staff time, operational cost and other implementation funding needed through a combination of county or outside sources to achieve the goals. Annual workplans will work from this analysis to balance available funds against the goals.

An evaluation of previous years' staff commitments indicate approximately 85 percent of the time was required to meeting existing program obligations. The remaining 15 percent was targeted for other activities and initiatives. Over the term of the last LWRM Plan, this targeted staff time resulted in 5 percent of our staff time working on urban issues such as stormwater management and construction site erosion, 5 percent combating invasive species threats and 5 percent assisting landowners with the management of habitat including wetland restorations, prairie establishment and woodland management. This small percentage of staff time available limits the depth of department involvement in new and emerging issues but is important because it keeps the department in touch with critical new resource threats and funding opportunities. The staff time committed to each of these initiatives has increased immensely since the adoption of the last LWRM Plan due to changes in county land ownership, increased development and the growing problems caused by invasive species. Although urban issues, invasive species and habitat management were identified in our previous plan, over the ensuing years the time dedicated to these initiative has increased considerably.

This plan attempts to identify and quantify the effort needed to address some of the arising issues, forecast by the advisory committee and others, over the next ten years. The Committee will use this evaluation to plan strategies and staffing to address these needs, identify opportunities to partner with other organizations and agencies working toward the same goals and apply for grants to assist in these efforts.

## **Conclusion**

The Land and Water Resource Management Plan is an important vehicle to help the Committee and Department meet their present obligations and commitments as well as identify new emerging issues and possible strategies the county may use to address them. This Land and Water Resource Management Plan is intended to be a guidance document that will serve this purpose well over the next ten years.

## Introduction

The county LWRM Plan concept was proposed in the fall of 1996 by conservation professionals in response to draft state agency recommendations for redesigning Wisconsin's nonpoint pollution abatement programs. The concept was promoted by the Wisconsin Land and Water Conservation Association during state legislative deliberations in the spring and summer of 1997. With the added support of the Department of Agriculture, Trade and Consumer Protection, the Department of Natural Resources, and the USDA Natural Resources Conservation Service, the county LWRM plan concept became a central theme to landmark state legislation signed into law in 1997 as part of Act 27. The intent of this change is to foster and support a locally led process that improves decision-making, streamlines administrative and delivery mechanisms, and better utilizes local, state, and federal funds to protect Wisconsin's land and water resources. The county LWRM plans are not intended to be another "program." Rather, it is a "process" or strategic plan by which counties can assess their resource conditions and needs and decide how to best meet their goals. In other words, the county LWRM plans are an "umbrella" to integrate all available programs.

The first plans were initiated in 1997, and by 2002 all 72 counties had approved LWRM plans. Sauk County's first two-year plan was approved in 1999. Using a guideline document that was prepared in 1998 by a statewide guidance team, annual workplans were subsequently developed to address the goals and objectives in that plan.

The DNR, in its administrative code NR151, established agricultural and nonagricultural performance standards and prohibitions to reduce runoff and protect water quality. In November 2002, a LWRM plan guidelines revision team was convened to update the original guidelines document based on the changes to DATCP and DNR administrative rules adopted on October 1, 2002. The DATCP administrative rule changes in ATCP50 identified conservation practices that farmers shall follow to meet the DNR standards and codified specific standards for plan development, approval and content.

The development of a LWRM Plan is required by the Wisconsin Department of Agriculture, Trade and Consumer Protection in order to qualify for state grants for staffing and conservation practice cost sharing. In addition, the plan sets the department's goals, quantifies the staff and funding needed to accomplish these goals and identifies potential partners.

With the aforementioned state requirements in mind, the Sauk County Land Conservation Department began the development of a new ten-year plan. The department saw this strategic planning process as a great opportunity to solicit input from a broad array of sources, identify resource concerns and develop innovative, long-range departmental management strategies for natural resource protection and enhancement. This LWRM Plan document outlines the results of the LCD planning efforts.

Although the specific elements of LWRM plans were not initially dictated, in 2002 DATCP significantly increased the level of detail plans must contain to comply with NR151 and ATCP50 legislation. As a result, counties are presented a list of resource concerns to be addressed, including soil erosion, nutrient management and water quality and have mandated specifics

about how these concerns will be addressed, including the inventory of farms, establishment of priorities and enforcement activities. The Sauk County LWRM Plan includes these required elements, plus additional locally identified and prioritized resource concerns. Analysis of the staff resources available compared to those required for implementation of continuing program obligations and NR151 implementation show few resources available for new initiatives.

## **Plan Development Process**

### **Citizen Participation**

The LCD conducted a survey of landowners through the department's newsletter and the county's website asking them to prioritize natural resource concerns. Results from the 225 surveys submitted by residents indicated that the protection of surface and groundwater quality was the most important resource issue facing Sauk County. The disposal of hazardous waste and electronics, the encroachment of invasive species, and manure management issues followed in order of importance. The next tier of issues included wetland protection, cropland erosion, protection of scenic beauty and the loss of agricultural land. The complete results of this survey are included in Appendix A.

In addition, the Sauk County Accounting Department conducted an online survey in 2007 to measure citizens' perceived areas of importance for County budget planning purposes. Conservation questions were ranked fourth of the eleven categories included in the survey, with the highest subcategories including electronics disposal, hazardous waste collection and recycling.

The LCD convened a Citizens Advisory Committee (CAC) composed of residents from a broad spectrum of backgrounds to identify the emerging issues that may require major changes to the way the department operates. The CAC reviewed the survey results, the resource concerns identified in county and town comprehensive plans and the County Board's strategic plan. This group met twice, on April 18th and 25th, and identified alternative energy as the highest priority emerging issue. While the present focus on producing ethanol from corn may be important for energy independence and benefit many farms economically, the Advisory Committee concluded that such production can also have negative impacts by increasing feed costs for livestock producers and increasing soil erosion. Other issues identified by the CAC included the need to broaden our educational programming to both the adult and school communities, to develop programs that will provide long-term protection of agricultural lands in Sauk County and to create systems for handling waste from both our urban and agricultural environments. The CAC conclusions were included in the LCD newsletter in the summer of 2007. A participant list, letters, minutes and findings related to this committee are on file with the LCD.

The LWRM Plan incorporated the results and inputs received from the surveys and CAC meetings. All of the identified issues have been included in the goals, objectives and actions in the information and education strategy chapter.

A draft of this plan was posted on the county's website and advertised by way of a newsletter article and news releases. Two public hearings and one additional public meeting were held to gather input and public comment on the plan. A list of attendees, minutes and notes related to these hearings are on file with the LCD. A copy of the hearing notices are in Appendix D and E.

## **Technical Advisors**

The LCD consulted with appropriate technical advisors on specific topics. A list of these technical advisors is included in the Plan Development Participants list.

## **Related Resource Management Plans**

This LWRM Plan has been developed in consultation with adjoining county LWRM plans, the Lower Wisconsin River Basin Plan, comprehensive plans prepared by the towns in Sauk County, and NRCS area and state plans.

## **Plan Review**

The draft plan was submitted to the Department of Agriculture, Trade and Consumer Protection (DATCP), Department of Natural Resources (DNR) and Farm Service Agency (FSA) for review in early September. Their comments were incorporated into the plan.

The LCC reviewed plan elements throughout the development process and reviewed drafts of the full plan throughout the fall of 2007. The final plan will be submitted to the LCC for their consideration and approval at their December 2007 meeting.

The Land and Water Conservation Board will review the final plan at their December 2007 meeting. The final plan will be submitted to the County Board for their consideration and approval at the February 2008 meeting.

## **Plan Development Participants**

### **Land Conservation Committee Members**

Lester Wiese	Chairperson
Gerald Lehman	Vice-chairperson
Katherine Zowin	Secretary
Linda Borleske	
Robert Cassity	
Joe Prem	FSA Representative

### **Land Conservation Department Staff**

Joe Van Berkel	County Conservationist
Gail Greve	Program Assistant
Brent Bergstrom	Project Manager
John Vosberg	County Engineer
Richard Albrecht	Resource Conservationist
Penny Pohle	Education Coordinator
Serge Koenig	Soil Conservation Technician
Michael Stanek	Soil Conservation Technician
Jennifer Stewart	Soil Conservation Technician

### **Technical Advisors**

John Exo	UW Extension Basin Educator
Jennifer Erickson	UW Extension Community Resource Development Agent
Jean Unmuth	WDNR Water Resources Specialist
Andy Morton	WDNR Basin Leader
Terry Lohr	WDNR Runoff Management Program and Planning Analyst
Tim Larson	WDNR Fisheries Biologist
Bryan Woodbury	WDNR Wildlife Manager
Christina Isenring	WDNR Endangered Species Biologist
Jeb Barzen	International Crane Foundation
Rick Livingston	WDNR Forester
Art Kitchen	USFWS Private Lands Biologist
Rhonda Kreuger	USFWS Private Lands Biologist
John Attig	UW Madison and WGNHS Geologist
Duane Simonson	NRCS Soil Scientist
Brian Pillsbury	NRCS Grazing Specialist
Mike Degen	WDNR Wastewater Specialist
Aaron Hartmann	P&Z GIS Specialist and Planner
Dave Tremble	P&Z Land Preservation Specialist and Planner
Mark Cupp	Lower Wisconsin Riverway Executive Director
Brad Hutnik	WDNR Lower Wisconsin Riverway Forester
Mike Mossman	WDNR Integrated Science Services Forest Community Ecologist

## **Citizens Advisory Committee Members**

### **Sporting groups**

Greg Meise, Bear Creek, trapper, hunter, small business owner  
Julie Rogers, Prairie du Sac, hunter, fisher, Boy Scout leader, teacher

### **Business**

Jim Owen, Baraboo, MSA Professional Services  
Denise Schyvink, Reedsburg, Reedsburg Bank

### **Conservation organizations**

Buddy Huffaker, Baraboo, Aldo Leopold Foundation  
Anne Burke, Baraboo, International Crane Foundation, Baraboo City Council

### **Agriculture**

Jack Wyttenbach, Prairie du Sac, pork producer  
Mike Kozlowski, Reedsburg, dairy and beef farmer, small business owner  
Larry Mundth, Reedsburg, beef grazier  
Linda White, Reedsburg, dairy farmer  
Mike Enge, Denzer, dairy farmer  
Joe Terry, Baraboo, dairy farmer

### **Real estate**

Irv Snyder, Spring Green, realtor  
Tom Gavin, Baraboo, realtor

### **Lake or river groups**

Al Baade, LaValle, Lake Redstone property owner  
Jeff Seering, Reedsburg, Reedsburg river group

### **Forestry**

Fred Clark, Town of Greenfield, Clark Forestry  
Dick Mielke, Baraboo, forest landowner

### **Mineral extraction**

Dick Marino, Franklin, The Kraemer Company

### **Municipal**

Ed Brooks, Town of Reedsburg, Foremost Farms  
Eugene Robkin, Baraboo, Baraboo City Council

### **Education**

Becca Kates, Baraboo, UW Extension Upham Woods, Baraboo Schools  
Gary Williams, Reedsburg, Reedsburg Summer Outdoor Activities Club

## County Description and Existing Resource Conditions

Sauk County is located in south central Wisconsin adjoining the Wisconsin River and the counties of Dane, Columbia, Iowa, Richland, Vernon and Juneau. The county is divided into 22 towns, 13 incorporated villages and 2 cities. The county is approximately 840 square miles or 509,789 acres. Baraboo is the county seat. Its proximity to the large urban area surrounding the state capitol in Madison and the resulting development pressures, its healthy agricultural economy, its thriving tourism sector, and the abundant natural resources presents the county with a unique set of opportunities and challenges concerning natural resource protection. The type of agricultural production has changed significantly over the last decade and these changes are putting increased pressure on natural resources. The number of dairy herds is decreasing, and yet the size of the remaining herds is increasing resulting in more concentrated numbers of livestock and the waste they produce. In the event of an accidental spill, the potential for severe environmental impact increases as these herds grow in size.

Table 1: Changes in Sauk County livestock operations (Wisconsin Agriculture Statistics)

<b>Year</b>	<b>Dairy Herds</b>	<b>Milk Cows</b>	<b>All Cattle</b>	<b>Hogs</b>
1995	432	31,500	94,000	64,000
2000	321	29,000	87,000	51,000
2005	308	27,000	83,000	46,000
2006	297	27,000	86,000	48,000
2007	282	Not available	85,500	Not available

As farms convert from livestock operations to cash grain crops, hay is often removed from the crop rotation. This presents a challenge for controlling soil erosion and subsequent nutrient runoff. Data from the Wisconsin Agriculture Statistics illustrate this decrease in hay and the resulting increase in corn and soybean acres since 1995.

Table 2: Changes in Sauk County crop acres

<b>Year</b>	<b>Hay acres</b>	<b>Corn acres</b>	<b>Soybeans acres</b>
1995	86,600	81,500	14,900
2000	61,100	79,200	29,000
2005	65,500	80,100	29,000
2006	64,000	77,500	30,000

## **Geology**

The county is composed of quite varied and unique land features including outwash plains along the Wisconsin River, the oak forest covered quartzite bluffs, the unglaciated hills and valleys of found in the western two-thirds of the county and the extensive wetlands in the northeast. Specific geological features are illustrated in Map D.

As illustrated in Map H, the three major geological regions of Sauk County are often categorized as:

### **The Driftless Area**

The western four-fifths of Sauk County is part of an area commonly described as the Driftless Area. There is no evidence of this area having been glaciated for at least 750,000 years. Because the western portions of Sauk County are unglaciated, the topography has been sculpted by flowing water for thousands of years. This has resulted in a dissected bedrock plateau underlain by dolomite with relatively narrow ridges and steep-sided valleys deeply incised into the Cambrian dolomite and sandstone formations.

### **The Glaciated Area**

In contrast to the western portion, the landscape of the eastern one-fifth of Sauk County has been modified by the last glaciation, which in Sauk County lasted from about 18,000 to about 15,000 years ago. The glacier came into the county from the east, moving slowly westward covering the landscape with glacial till deposits (clay, silt, sand, boulders, and other debris transported and deposited by glacial ice), and sediment deposited in glacial lakes and on the floodplains of glacial meltwater rivers. This eastern one-fifth of Sauk County is described as being rolling with complex slopes.

### **The Baraboo Bluffs (also known as the Baraboo Range or the Baraboo Hills)**

The Bluffs are centered across the middle section of the county and are composed of Pre-Cambrian quartzite, one of the hardest known rock types. Portions of the Baraboo Bluffs occur in both the Driftless Area and the Glaciated Area. The Baraboo Bluffs are one of the most significant topographic features in eastern Sauk County. The Bluffs extend for approximately 25 miles east-west across east-central Sauk County into western Columbia County.

The Baraboo Bluffs attain their greatest relief in the Devil's Lake area. Devil's Lake was formed when glacier ice plugged both ends of Devil's Lake gorge and left behind ridges (moraines) composed of till in a portion of the Baraboo Bluffs. These moraines are part of the terminal moraine that extends through eastern Sauk County from the north, a few miles east of the City of Wisconsin Dells and Village of Lake Delton, continuing southward towards Sauk Prairie.

## **Soils**

Due to their origin, the soils of the Driftless Area, which includes the western four-fifths of Sauk County, are quite distinct from those of the glaciated portions of the State of Wisconsin (See Map E). Soils in the Driftless Area are characterized as moderately well drained to excessively well drained. These soils have a sandy loam to silt loam, loamy to sandy surface and a sandy loam to silt loam, loamy, sandy, or clayey subsoil, underlain by sandstone and dolomite bedrock.

The majority of the soils found in the glaciated eastern one-fifth of Sauk County are characterized as being moderately well drained to excessively drained. They have a loamy or sandy surface and subsurface layer underlain by outwash and glacial till. Soils on the Baraboo Bluffs are characterized as well drained, medium textured soils over shallow quartzite rock outcroppings.

Soil types, and more specifically, soil parent materials affect water quality and quantity and the general physical condition of streams, lakebeds, and shorelands. Many of the soils in Sauk County, especially in its unglaciated area west of Highway 12, are susceptible to higher rates of erosion. The resulting siltation has reduced the water quality of impoundments and many streams in the area. When a high soil erosion hazard exists, it is essential that good soil conservation be practiced to reduce damage to the aquatic environment and retain soil health. The land use causing the greatest quantity of soil erosion is agriculture. Nearly half (45 percent) of Sauk County's soils are under active cropland use. Currently, some 40 percent of the cropland in the county is under conservation tillage (minimum 30 percent crop residue). Data from the county transect survey, described in detail in the implementation chapter of this plan, shows that the use of reduced tillage has steadily increased in Sauk County over the last ten years. This trend is likely to continue. Woodland covers approximately 39 percent, while pastureland covers about 10 percent of the soils. Residential, commercial, farmsteads, roads, and railroads occupy the remaining 6 percent of Sauk County's soils.

## **Soil Erosion**

The amount of soil erosion occurring on lands in the county is extremely important since it affects cropland productivity, surface and groundwater quality, flooding, fish and wildlife habitat, landscape aesthetics and even infrastructure maintenance.

Soil building and soil erosion are two processes that work hand in hand to give us the beautiful and varied landscape of Sauk County. These two natural processes are constantly at work, and over thousands of years have shaped our hills and valleys. Building soil takes hundreds and thousands of years to weather rocks, decompose organic matter and dissolve minerals. The resulting topsoil is rich in nutrients, minerals and water holding capacity and is used by plants for growth and efficient energy production. After the last glacial period, we were left with a layer of windblown silts and clays. In the intervening 10,000+ years, wind and water have molded our landscape in many unique ways. Moving wind and water combined to erode or wear down areas giving us scenic rock outcrops and forested hills. Some of the soil that moved off these areas was deposited in our alluvial fans, flood plains, wetlands and grasslands.

Between the extremes of building and eroding, there are areas where a unique balance has been struck. Erosion processes have been matched by the equally forceful soil building processes, and these areas of Sauk County are where most crops are grown. Crops thrive in this deep, nutrient rich layer of topsoil. If this balance is upset, more topsoil is lost to the effects of wind and water. If this erosion is severe, layers of subsoil could be mixed with the topsoil during cultivation requiring greater inputs of fertilizer and lesser crop yields, resulting in fewer profits for the farmer. If this erosion continues unabated, all of the topsoil could be lost making the field uneconomical to plant and harvest crops. Many of the soils mapped in Sauk County have already lost over 25 percent of their topsoil due to the impacts of cultivation and the resultant erosion.

This balance between erosion and soil building is fragile, especially on cropped fields. Whenever soil erosion processes equal those of soil building, we refer to the maintenance of this balance as tolerable soil loss, or “T”. When soil building processes exceed soil erosion levels, the field has a soil loss less than “T”. When soil erosion exceeds soil building, the field has a soil loss greater than “T”. The ultimate goal is to have all fields in Sauk County eroding at “T” or less.

County transect survey data shows the average annual soil loss measured has remained steady at 3.4 tons per acre, and 78 percent of fields sampled have a soil loss less than “T”.

Soil erosion in fact varies significantly from field to field. Although the time of year, and the amount and intensity of rainfall events affect erosion levels, such factors cannot be controlled. On the other hand, crop rotation, tillage method, crop residues left on the field and conservation practices all affect soil erosion levels and are factors which can be controlled.

Farmers in Sauk County continue to fight a never-ending battle to keep soil erosion levels in check. While erosion is a natural occurring process, human activities can accelerate it, and farmers are mindful of its negative effects. Conservation-minded farmers keep soil erosion levels to a minimum, thereby protecting their investments, as well as the future prosperity of the county.

Every soil type has a particular level of erosion at which the soil building versus erosion balance is maintained and the long-term productivity is maintained. Most Sauk County soils can lose from 2 to 5 tons per acre per year and still be in balance. Exceeding these levels has a negative effect on productivity.

## **Groundwater**

Groundwater is the major source of water supply in Sauk County and is found in varying depths throughout the county. General topography, the distance above the permanent stream level, and the character of the underlying rock formations are factors that influence its presence. Local differences in the quality of groundwater in Sauk County are the result of differences in the composition, the solubility, the surface area of particles of soil and rock through which the water moves, and in the length of time the water is in contact with these materials. For example, lakes

and streams in the Cambrian sandstone and Baraboo quartzite regions (rocks low in calcium and magnesium) have relatively soft water. Streams and lakes in the dolomite/limestone bedrock region (rocks high in calcium and magnesium) of Sauk County have relatively hard water.

The most common type of aquifer in the western portion of Sauk County is the sandstone and dolomite aquifer, which consists of layers of sandstone and dolomite bedrock units that vary greatly in their water yielding properties. Overall, this aquifer provides reliable supplies of water suitable for virtually all uses.

Another important source of groundwater is the subsurface sand and gravel deposits along the Wisconsin River and the lower reaches of the Baraboo River. These deposits yield large quantities of water and are often susceptible to human-induced pollutants. The east-central portion of Sauk County is underlain by quartzite bedrock. Drilling wells in these hard rock areas is expensive and yields are generally low, often barely sufficient for domestic purposes.

Atrazine, coliform bacteria, and nitrates are common contaminants found in Sauk County's groundwater resource. Nitrates appear to be the biggest threat. Fertilizer, septic system effluent, animal wastes, and landfills can all contribute to elevated nitrate levels. State and federal laws set the maximum allowable level of nitrate-nitrogen in public drinking water at ten parts per million (ppm). Based on groundwater samples analyzed by Sauk County Health Department, Central Wisconsin Groundwater Center, Wisconsin DATCP, and Wisconsin DNR, the highest nitrate levels came from the northeastern and southwestern portion of the county where the permeable soils facilitate the movement of nitrates into the groundwater. Special efforts need to be made in these areas to ensure protection and improvement of this very valuable resource. Overall results show approximately 15 percent of the wells indicate nitrate levels above the 10 ppm enforcement level. Countywide 64 percent of tested wells show nitrate levels above 2 ppm, an indicator of an elevated level due to the impacts of human activities.

The county contracted with the Wisconsin Geologic and Natural History Survey for the development of a groundwater report that was completed in 2004. The report modeled flows, identified depths to bedrock and groundwater and potential volume of available groundwater. The report also identifies the recharge areas for the community wells in the county. The report indicates that, based upon present growth and development rates, there will be adequate groundwater quantities to support that growth.

The county continues to work with staff from the Geologic and Natural History Survey to evaluate development proposals, their effect on groundwater volume and their potential to cause groundwater contamination. The report can also be used as the basis for identification of wellhead protection areas and the establishment of protective zoning.

## **Surface Waters**

All of Sauk County lies within the drainage basin of the Wisconsin River, with two major streams and two small tributaries draining the county. The Baraboo River, which drains central and northern Sauk County, is one of the larger Wisconsin River tributaries. The other major stream is Honey Creek, which crosses most of the southern portion of Sauk County. Dell Creek

is located in the northeastern corner of Sauk County, and Bear Creek is located in the southwestern corner of the county. Small regions of the county are included in other watershed areas draining to neighboring counties. Many of the county's streams are fed by permanent springs.

Segments of five streams are currently included on the State Impaired Waters List (See Map F and Appendix C). These waters have been impacted in some way such that a) the current water quality does not meet the numeric or narrative criteria in a water quality standard or b) the designated use that is described in Wisconsin Administrative Code is not being achieved. The list is updated every two years, with 2006 being the most recent revision.

In 1989, the department adopted an anti-degradation policy which classified many waters as an Outstanding Resource Water (ORW) or Exceptional Resource Water (ERW). At the same time the Natural Resources Board approved a rule package designating numerous waters as ORW and ERW. The ORW/ERW list was subsequently updated in 1993 when approximately 300 new waters were added to the list and again in 1998 when several additional lakes and impoundments were designated. All or part of 13 streams and lakes in Sauk County are listed by the state as Outstanding or Exceptional Resource Waters. (See Map F)

Historically, a variety of characteristics were evaluated as part of the decision-making process for recommending waters for ORW/ERW designation. These characteristics included biological, chemical and social aspects. Consideration of these characteristics in combination with best professional judgment allowed department staff to recommend ORW and ERW designations for various waters throughout the state.

### **Major Watersheds** (See Map A)

There are a total of nine watersheds within Sauk County. All of the watersheds within the county fall within the Lower Wisconsin River Basin as identified by the Department of Natural Resources. Local differences in the quality of surface water and groundwater in these watersheds reflect current land use practices, composition of soil and rock through which the water moves, and the length of time the water is in contact with these materials.

There are two major municipal wastewater discharges from the cities of Baraboo and Reedsburg that may have an impact on the county's water resource. Smaller wastewater treatment plants service North Freedom, Lake Delton, Merrimac, Prairie du Sac and Sauk City, Loganville, Spring Green, Plain, Lime Ridge, Ironton, Cazenovia, LaValle and the Sauk County Health Care Center.

Agriculture is the predominant land use in the county and as a result has the greatest influence on the surface water resource. Soil erosion, streambank erosion, animal access and the polluted runoff from animal confinement areas all negatively impact water quality. Development along the shore of rivers, lakes and streams has also impacted water quality. The increase in fertilized, mowed land along the water's edge has increased the contribution of nutrients delivered to the water bodies. Development in urban regions has impacted water bodies through the increased delivery of nutrients and other pollutants through storm water discharges. Development has also

impacted the flow rates of rivers and streams through increased peak flows and reduced average flow rates.

### **Lower Baraboo Watershed**

This watershed lies in eastern Sauk County and a portion of western Columbia County. Agriculture is the predominant land use in the watershed with dairying, field crops and several large muck farms making up the primary activities. Devil's Lake State Park is found in this watershed and encompasses Devil's Lake (369 acres). Other water resources include the Wisconsin River bordering Sauk County, the Baraboo River upstream to the City of Baraboo, and four of the main tributary streams to the Baraboo River; Leech, Rowley, Boulder and Clark Creeks.

The Baraboo River has undergone a major transformation since the last draft of the Land and Water Resource Management Plan. The Land Conservation Department worked together with the City of Baraboo, the Department of Natural Resources, the River Alliance of Wisconsin and the Sand County Foundation to remove the last four dams remaining on the main stem of the Baraboo River. The removal of these dams eliminated the sediment pools behind the dams, exposed riffle areas and opened the waterway to fish movement. Riffle areas are expected to reach their full food production potential because of better aeration and higher dissolved oxygen in the water column. Riffle spawning fish will be able to use the area for feeding, spawning, rearing and for permanent habitat. Research on species diversity and location are showing the movement of fish into previously inaccessible regions of the river and into tributary streams that offer much improved habitat. Combining the water quality improvements from the dam removal with the beneficial effects of two successful priority watershed projects along the upper reaches of the river has resulted in a much improved Baraboo River. Habitat assessment work on the Baraboo River is also showing marked improvement since the removal of the dams.

Studies have also shown a much improved game fishery in the Baraboo River and some of its branch streams. The river was removed from the DNR Impaired Waters or 303D listing in 2006 and is seeing steadily increasing use by the public. Several canoe liveries are now operating on the river and the number of canoe and kayak users has increased significantly over the last 10 years. The City of Baraboo has initiated an extensive riverfront revitalization project and other communities along the river are also looking at ways to make better use of this resource. Fishing in the rapids areas in the City of Baraboo is now a regular occurrence where it was unheard of only five years ago.

Fishery research has shown great increases in the number of smallmouth bass, catfish and other species throughout the rapids section of the river. The research has also shown a much wider distribution of many important game and feeder species throughout the river system rather than just below the dams as evidenced in earlier samples.

Devil's Lake State Park and Devil's Lake are located within this watershed. As the most visited State Park in the system, the Park is an important asset to the nearby City of Baraboo and all of Sauk County. Recent studies of the lake have shown increasing levels of Eurasian Milfoil, an exotic invasive plant. Increases in populations of this plant, along with an increased occurrence

of “swimmer’s itch”, caused by a parasite that lives on snails feeding on the more frequent algae blooms are both linked to elevated phosphorus levels in the lake. Starting in 2002 the Department of Natural Resources initiated a bottom draw program in the late fall to reduce phosphorus levels in the lake in an attempt to reduce plant and algae growth, increase oxygen levels and improve fish habitat.

### **Narrows Creek and Baraboo River Watershed**

The Narrows Creek and Baraboo River Watershed lies entirely within Sauk County. It includes the Baraboo River from the City of Reedsburg to the western edge of the City of Baraboo. Agriculture, primarily dairy farming, is the primary land use within the watershed. Streams include Hillpoint, Pine, Narrows, Seeley, and Skillet Creeks and the Middle Baraboo River. Lakes and impoundments include Lake Virginia (35 acres) and Seeley Lake (49 acres). Rivers and streams in the watershed provide a valuable fishery for county residents. The Baraboo River through this section is a warm water fishery supporting a vibrant smallmouth bass population and other warm water species. The combined effects of dam removal, allowing fish migration into this stretch, and improved water quality due to the success of a recent nonpoint priority watershed program are having a major impact on the quality and use of the resource. More fishers and canoeists are making use of the river and communities along this section are working to increase these recreational uses.

The Narrows Creek and Baraboo River Watershed was an active priority watershed project from 1992 to 2005 enabling agreements to be signed with landowners to address the sources of nonpoint pollution arising from the farming operations in the watershed. Participation rates within the project were very high with approximately 60 percent of eligible landowners choosing to participate through the program. Through the cooperation of these participating farmers the project was able to meet goals in reduction of soil erosion from cropland, streambank erosion, and phosphorus runoff from barnyards. The success of this project has been an important factor in the improved conditions in the river and helped to allow the removal of the Baraboo River from the Impaired Waters list.

The communities of Reedsburg, Loganville, North Freedom and Rock Springs all have municipal treatment plants within this watershed and are the origin of some point source discharges.

### **Seymour Creek Watershed**

This watershed is located in the very northwest corner of Sauk County. Stream gradients are relatively steep and the headwaters of the Baraboo River are located in this watershed. The Seymour Creek Watershed covers approximately 300 acres of the county. The predominant land use on this acreage is agriculture and the primary concerns are excessive soil erosion and nutrient loading. The area of the watershed located in Sauk County drains to a small creek that flows into the South Branch of the Baraboo River west of Union Center.

### **Crossman Creek/Little Baraboo River Watershed**

This watershed is located in the unglaciated portion of the county, known as the Driftless Area. The topography in this area is characterized by steep slopes and narrow valleys. Impoundments include Lake Redstone (612 acres) and Dutch Hollow Lake (210 acres). The county owns the dam that created Lake Redstone and a dam at Hemlock Park (See Map G). Streams include the Little Baraboo and Upper Baraboo rivers and Big Creek, Dutch Hollow Creek, and Plum Creek.

Although the dominant land use in the watershed is agriculture, a few small municipal and industrial point source discharges operate in the watershed. The State of Wisconsin designated this watershed as a priority through the Wisconsin Nonpoint Source Water Pollution Abatement Program in 1983. The state-funded watershed project was completed in 1996. Goals of the project were to protect and improve water quality and fish habitat by controlling erosion from farm fields, reducing streambank erosion, reducing or controlling barnyard runoff, and improved management of manure spreading in the watershed. The project achieved the goals of a 70 percent reduction of phosphorus loading and a 50 percent reduction in sediment loads contributed to the watershed.

Overall the watershed project was very successful in reducing the sediment and nutrient levels entering the surface water resources but the level of success varied within the project area by subwatershed. Some of the most severe pollution sites were located above Lake Redstone and many of these landowners did not choose to participate in the program. The Lake Redstone Protection District has recognized the importance of reducing the inputs to the lake from these operations and has initiated a very active incentive program funded by the district. They are working with the individual landowners and emphasizing clean water diversion practices to reduce runoff. The lake district also has worked closely with the Department of Natural Resources and obtained a number of lake planning and management grants to help them address water quality concerns.

### **Bear Creek Watershed**

The headwaters of the Bear Creek Watershed lie in the southwest corner of Sauk County. Most land cover in the watershed is broadleaf deciduous forest; however, dominant land use in the watershed is agricultural, particularly dairy production. There are small wetland complexes, usually wet meadow, adjacent to streams in the watershed. The Bear Creek Watershed contains the mainstream of Bear Creek and five major tributaries: McCarville, Marble, Little Bear, Kroal, and Biser Creeks. Water quality concerns are sediment loading, barnyard runoff, and cattle grazing adjacent to streams.

The Department of Natural Resources has an active program to purchase fishery easements along the creeks in this area. The purchase of easements has contributed to the reduction of cattle access and reduced sediment and nutrient contributions. The application of buffers through various programs to other sections of the watershed could further enhance water quality.

### **Honey Creek Watershed**

The Honey Creek Watershed is located in the south central region of Sauk County and includes

five subwatersheds: mainstream Honey, North Branch (Leland), East Branch, Otter Creek, and Wilson Creek. The watershed also contains White Mound Lake, a 104-acre impoundment on a branch of the Honey Creek. The county owns the White Mound, Shanahan and Highway N dams in this watershed (See Map G). Agriculture, specifically dairy farming, is the predominant land use.

In 2003, Sauk County partnered with USDA-NRCS and WDNR to rehabilitate White Mound Lake to its original (1970) design capability. The sediment deposits from runoff over the previous 33 years had resulted in increased weed and algae growth. In order to restore the lake to its original plan depth and allow for an additional 100 years' worth of sediment accumulation, the lake was dredged in the fall and winter of 2003. Reduced weed and algae growth were a natural result of sediment removal. Better management practices installed by farmers upland from the lake also reduced runoff and sediment inputs to the lake, improving water quality and the life of the lake for years to come. The major water quality problem in the watershed is siltation.

### **Lake Wisconsin Watershed**

The Lake Wisconsin Watershed is located in the southeastern portion of Sauk County. Lake Wisconsin is an impoundment of the Wisconsin River, created in 1915 by the construction of the Prairie du Sac Hydroelectric Dam. The predominant land use is agriculture; however, there is significant residential development around the lake. The Sauk County portion of the Lake Wisconsin Watershed contains the area drained by Parfey's Glen Creek and Manley Creek.

The residential development around the lake and the predominantly agricultural use on lands draining into the lake poses eutrophication as well as siltation problems. The Wisconsin Department of Natural Resources is performing a trend analysis of the fish resource on a yearly basis. Manley Creek is a relatively small creek that drains into Lake Wisconsin. Riverland Conservancy owns and manages over 1,500 acres of the land draining into Manley Creek. They have restored many acres of wetlands and prairies. They have also collaborated with DNR to perform in-stream habitat work to improve the native brook trout populations in Manley Creek.

### **Dell Creek Watershed**

The watershed lies in northeastern Sauk County and southern Juneau County with agriculture being the primary land use. The Wisconsin Dells/Lake Delton tourism area falls partially within this watershed. Intense commercial development pressure has had a large impact on the water resources in the area. Public holdings within the Dell Creek Watershed include the Dell Creek Wildlife Area, Mirror Lake State Park, and Rocky Arbor State Park. Four impoundments are located within the watershed including: Lake Delton (267 acres), Mirror Lake (137 acres), Blass Lake (34 acres), and Trout Lake (11 acres). The county owns the dam that created Mirror Lake (See Map G). Major waterways include: Dell, Hulbert, Camels, Beaver, Springbrook and Holtzander Creeks.

The Dell Creek Watershed was designated a priority watershed through the Wisconsin Nonpoint Source Water Pollution Abatement Program in 1995. The agricultural land use as well as the intense commercial development pressure has had a major impact on the water resources of the

area. The Dell Creek Wildlife Area is a large publicly owned area that is currently being managed by the DNR to enhance its fishery, water quality, and other resources.

### **Willow Creek Watershed**

The Willow Creek Watershed is located in the west central portion of Sauk County. This particular watershed has a small fraction of its total acres within Sauk County. An inventory of the resources in the Willow Creek Watershed has been performed by Richland County and the DNR in an effort to improve the fisheries (trout) resources of Willow Creek.

### **Natural Communities**

Although natural communities are not legally protected, they are critical components of the county's biodiversity and provide habitat for rare, threatened and endangered species. There are a total of 35 natural community types that occur within Sauk County. Important examples of the following natural community types have been found in the county: Oak Barrens, Southern Dry-mesic Forest, Bedrock Glade, Hemlock Relict, Moist Cliff, and Dry Prairie.

### **Woodlands**

Approximately 195,000 acres, or 36 percent of Sauk County is forested. The forest contributes to the county's economy providing wood products and supporting ecotourism. Timber producers have long regarded the red oak, walnut, sugar maple, and other hardwoods here to be among the finest in North America. Currently, Sauk County is number one in the state in red oak saw timber production.

Well managed forests also provide wildlife habitat and water quality benefits. The Natural Resource Conservation Service classifies mature forest as the land use with the lowest runoff curve number, translating into the highest infiltration rate of all land uses. This infiltration function helps recharge aquifers, prevent soil erosion and nutrient runoff and reduce flooding events.

One of the last parts of the county settled due to its steep slopes and shallow soils was the Baraboo Bluffs, shown on Map B as the east and west Baraboo Ridges. As a result, they harbor the largest block of contiguous hardwood forest not only in Sauk County but also the largest of its kind (oak/maple, upland deciduous) in a 5 state, 40 million acre part of the Midwest.

Two other important forested portions of the county are the southwestern hills in the Driftless Area, including the Wisconsin River floodplain south of Sauk City and the northern mixed hardwood and pine forests. These are shown on Map B as the hills and valleys of the Wisconsin River Drainage and the Trempealeau Sandstone Hills, respectively. Each of these areas provide important wildlife habitat, soil stabilization and economic value to the county.

Important changes are occurring in the forests of Sauk County. Early in the 20th century, much of the forestland was more open as a result of fires. Fires produced conditions that were ideal for forests made up of a large percentage of oaks, which grow well in full sunlight. Today, fires are

not allowed to burn freely for obvious safety reasons. That factor, combined with others, is causing a gradual shift to forests dominated by trees that grow well in shade.

It is envisioned that in the coming decades fewer oaks and more red maples and sugar maples will be present within Sauk County. The impact of the oak-maple shift on forest industries, wildlife populations or other elements is not yet clearly known. Land managers have observed a significant increase in young maple and little evidence of young oak trees in the understory of mature oak forests. They expect that data will demonstrate this dramatic change in coming decades. The Department of Natural Resources data in Table 1 below documents that oak has already decreased somewhat in the last ten years.

**Table 1: Percent Distribution of County Timber Types 1996-2005**

<b>Forest type group</b>	<b>1996 acres</b>	<b>2005 acres</b>	<b>percent of total 1996 acres</b>	<b>percent of total 2005 acres</b>	<b>percent change</b>
<b>Oak-hickory</b>	118,502	93,864	65%	55%	-10
<b>Maple basswood</b>	41,130	39,537	23%	23%	0
<b>Bottomland hardwoods</b>	8,120	19,490	4%	11%	7
<b>White, red and jack pine</b>	8,567	5,823	5%	3%	-2
<b>Aspen-birch</b>	2,900	4,337	2%	3%	1
<b>Nonstocked</b>	2,014	3,641	1%	2%	1
<b>Exotic softwoods</b>		1,491	0%	1%	1
<b>Oak-pine</b>	1,268	1,490	1%	1%	0
<b>Total</b>	182,501	170,342			

Source: Wisconsin Department of Natural Resources

About 90 percent of the woodland in the county is under private ownership. This presents a challenge in gaining the participation of landowners for appropriate management of Sauk County's forest resources. The state offers a property tax incentive program, Managed Forest Law (MFL), to address forest management on private lands. This encourages sustainable forest management by offering participating landowners a significant reduction in property taxes. Currently there are nearly 40,000 acres of forestland under the MFL. Another 21,000 acres are under forest management systems located on public lands and in private nature preserves. Several public agencies and conservation organizations purchase conservation easements from willing sellers in the Baraboo Bluffs for further protection. These conservation easement programs allow and encourage the practice of sustainable forest management along with the protection of habitat for rare plants, birds, and animals.

Forest fragmentation remains a significant threat to the Baraboo Bluffs. Based on information gathered from the Sauk County Planning and Zoning Department for the years 1970-2007, newly installed septic systems and Certified Survey Maps (CSM) within the seven towns that encompass the Baraboo Bluffs have steadily increased. An estimated 854 of the 3,684, or 23 percent of all new septic systems have occurred within these seven towns. A CSM is required

for the splitting of land that is under 35 acres into lots, parcels or building sites of less than 40 acres. Of the 2,000 CSMs that have been recorded in the county between 1990 and 2007, 488, or 24 percent occurred in the Baraboo Bluff towns. The threat of fragmentation and parcelization of woodlands extends beyond the Bluffs into all parts of Sauk County. Additional threats to Sauk County's forests include improper timber harvesting, such as high-grading (cutting the best and leaving the rest), harvesting timber prematurely, and the continued invasion of exotic plant and insect species.

Resources available to landowners for forest management include two DNR foresters and several private forestry consultants. The DNR foresters focus primarily on administering MFL plans and the Wisconsin Forest Landowner's Grant Program, state-owned forestry management and DNR fire management operations which leaves limited time for providing technical assistance for the majority of private landowners.

## **Wetlands**

A wetland is an area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions. Wetlands are among the richest and biologically most productive habitats in Sauk County. Wetlands occur in many forms, including forested swamps, deep and shallow marshes, bogs, and potholes. Some wetlands remain wet, while others, such as bottomland swamps, dry out in certain seasons.

These different types of wetlands have important functions. They protect shorelines, shelter rare and endangered species of plants and animals, and remove nutrients and pesticides from surface water and groundwater. Some wetlands filter out sediment before it reaches the surface waters of the county. Many wetlands slow the overland flow of water and thus reduce flooding and soil erosion downstream.

Currently, wetlands comprise approximately 1 percent of the land area in Sauk County. During early settlement times, wetlands encompassed an estimated 20 percent of the county. The greatest concentrations of prime wetlands consisting of shallow and deep marsh, shrub swamp, and timber swamps are located along the Wisconsin River, Honey Creek, Baraboo River above the City of Reedsburg, and Dell Creek above Mirror Lake. Existing wetlands are declining in quality as well. They are impacted by sediment accumulations and invasive species.

Special emphasis needs to be placed on this disappearing and ecologically vital county resource. Private landowners, government agencies such as the U.S. Department of Agriculture, Natural Resources Conservation Service, U.S. Fish and Wildlife Service, Wisconsin Department of Natural Resources, and the Land Conservation Department, as well as nonprofit organizations like the Wisconsin Waterfowl Association and Ducks Unlimited play an important role in the restoration of this valuable resource.

Because there are so many wetlands in need of protection or restoration, prioritization of efforts is necessary. The Wisconsin Land Legacy Report recommends targeting large sedge meadows and marshes; high-quality cattail and bulrush marshes (shallow and deep), especially adjacent to

lakes; wild rice lakes and bogs; wetlands for migrating and breeding waterfowl and shorebirds; as well as wetlands areas critical to hydrology and water quality.

## **Prairies and Grasslands**

Nineteenth century settler accounts and field studies indicate that at the time of European settlement much of the now heavily wooded area of the county was more open. The typical cover then was prairie, or more commonly, oak savanna (oak opening), shrub and briar thicket, or thinly timbered oak woodland with brushy understory. Oak savannas, mesic and dry prairies represented approximately 46 percent of Sauk County during the early settlement days (1840-1845).

The two largest prairies were the Sauk Prairie, approximately 14,000 acres that extended west and northwest of the present day villages of Sauk City and Prairie du Sac, and an especially dry region called the “Wisconsin Desert,” approximately 13,000 acres near the present day village of Spring Green, which formed on sand terraces of the Wisconsin River. Two additional prairies included Pleasant Prairie (2,200 acres), north of the City of Baraboo, and Cassell Prairie (1,200 acres), located along the Wisconsin River between the villages of Sauk City and Spring Green.

There were also numerous smaller native prairies through the county. However, prairies and savannas were quickly converted to farmland by the European settlers. By 1868, just 30 years after the sod was broken in Sauk County, 85,000 acres, accounting for 16 percent of the county's land cover, had been converted to agricultural use. Just two years later, the amount of plowed land had increased to approximately 137,000 acres, or 26 percent of the county's land cover. Many native prairies and savannas have survived on steep, thin-soiled bluffs, especially in the Wisconsin River valley. With proper care, these ecosystems can be restored very successfully. This opportunity presents landowners with a rare opportunity to more directly engage in conservation through land stewardship.

Altogether the remaining prairies today represent less than one-half of one percent of the original prairies in Sauk County. Landowner participation in prairie restoration projects, as well as potential restoration of the land located within the Badger Army Ammunition Plant near Sauk Prairie, will aid in reestablishing this unique resource of Sauk County.

In some areas of the county, settlers cleared woodland that was too steep to cultivate and harvested hay or used it for pasture. These areas remained in pasture and hay until 1970 when row crops were encouraged “fence row to fence row.” Our challenge is to promote conversion of this land back to grassland by demonstrating the profitability and environmental stewardship of grassland farming using managed grazing techniques.

## **Wildlife**

Due to the wide range of ecosystems in Sauk County, it supports the highest diversity of species in the state. The following is information regarding some of the mammals, birds, amphibians, and reptiles of Sauk County.

From many perspectives, the white-tailed deer is a very important part of the landscape and culture of Sauk County. The deer herd is managed by setting overwinter population goals. Ideally these goals will produce a healthy herd, a healthy ecosystem, few crop damage complaints, and good hunting opportunities. An assessment of the deer population indicates an overabundance based on the overwinter population goals set by the Department of Natural Resources. Hunting via firearms and bows appear to be the most effective measure of population control. The challenge of deer management involves the need to set goals that are ecologically responsible and that blend well with the desires of a majority of citizens. On February 28, 2002, Wisconsin's first case of Chronic Wasting Disease (CWD) was reported in three deer harvested in Iowa County. The discovery of CWD in southern Wisconsin represents a significant threat to the state's white-tailed deer population and the culture of deer hunting in the state. Since 2002, the DNR has sampled 8,426 deer in Sauk County, and 21 deer tested positive for CWD.

Prior to the early 1900s, black bears were considered year-round residents of Sauk County. Bears generally disappeared from the county after 1901 and until recently were considered absent or transitory. Sightings of black bears by Sauk County residents are becoming more common, indicating bears may inhabit the county on a year-round basis.

In the early 1800s, as many as 3,000 to 5,000 gray wolves may have existed in Wisconsin. By 1900, after a state bounty was placed on wolves, they had disappeared from southern Wisconsin. By 1960 they were considered extinct. In 1975, wolves began to re-colonize Wisconsin in the northwest portions of the state, along the Minnesota border. The 2006-2007 winter population estimate for wolves is between 540-577 animals statewide. Sightings by Sauk County residents are rare, indicating wolves are transitory.

Assessments of the other mammal resources in Sauk County indicate that there are 16 species commonly referred to as "furbearers" known to occupy the county. These are coyote, red fox, gray fox, beaver, otter, mink, raccoon, muskrat, opossum, skunk, badger, fisher, bobcat and the least, short-tailed and long-tailed weasels. Some species are more abundant than others due to differing habitat needs.

More than 29 species of small mammals are known to inhabit the county. These include shrews, mice, voles, bats, moles, ground squirrels, tree squirrels, and rabbits. Because these are prey species, factors that influence their abundance, such as habitat, will ultimately have an impact on predator species within the county.

Wild turkeys are native to Sauk County but were largely eradicated by unregulated hunting and habitat loss by the late 1800s. Reintroduction, careful monitoring, and proper management by the DNR have re-established the wild turkey population in Sauk County.

Sauk County contains important habitat for breeding and wintering bald eagle populations, particularly in association with the Wisconsin and Baraboo River valleys. The Wisconsin River, downstream from Wisconsin Dells to the village of Lone Rock, and agricultural areas near Leland, Blackhawk and Spring Green, provide critical roosting and feeding areas during the winter for bald eagles from throughout the upper Midwest and Canada. Existing and potential

roost and nesting sites along the lower Wisconsin River require continued protection to ensure habitat is available to winter populations and nesting pairs. The Ferry Bluff Eagle Council studies eagle populations as well as organizes educational events to promote bald eagles and protect their habitat.

As many as 23 species of migratory waterfowl are known to inhabit the county during seasonal migrations and 7 of these species regularly nest in the county. The waterfowl resource is directly associated with wetland habitat and is most concentrated near the open water and wetlands of the Wisconsin and Baraboo Rivers, as well as their tributaries. Most species that nest in the county (i.e., mallard, teal) require undisturbed grassland cover for nesting habitat, while other species (i.e., wood duck, hooded merganser) require tree cavities in riparian areas for nesting. Changes in the amount of wetland and grassland or wooded riparian (nesting) habitat will influence numbers of migratory and locally breeding waterfowl.

Bobwhite quail and ruffed grouse are native inhabitants of the county, while ring-necked pheasants were introduced in the late 1800s and early 1900s. Historically, pheasants and quail were abundant in the more open wetland/grassland landscapes of eastern Sauk County, but their numbers have declined as habitat has been lost to intensive agriculture and development. Cooperation of local groups such as Pheasants Forever is imperative in the restoration and creation of habitat necessary for Sauk County's upland gamebird resource as well as other wildlife with overlapping habitat needs. Ruffed grouse populations have declined as well, but the reason is not clear.

According to the Wisconsin Breeding Bird Atlas, Sauk County has one of the most diverse nesting bird assemblages in the state including 146 breeding species. This extraordinary diversity can be attributed to the wide diversity of habitats in Sauk County. Foremost among these are the extensive, mature forests of the Baraboo Bluffs, which contain some of the largest Midwestern populations of threatened and declining forest-interior songbirds such as Worm-eating and Hooded Warblers, as well as northern species that occur in the high-quality hemlock and pine relics. This reemphasizes the need to protect the Baraboo Bluffs. Other important breeding bird habitats include high-quality wetlands along the Wisconsin River and other watercourses, home to waterfowl and other denizens of marshes and swamps, including herons, rails, and the Prothonotary Warbler. Grasslands at Badger Army Ammunition Plant, prairie restorations and remaining pasture land provide excellent habitat for severely declining grassland bird species such as upland sandpiper, meadowlarks and grasshopper sparrows.

Sauk County has one of the most diverse amphibian and reptile (herptile) assemblages in the state including 5 species of salamanders, 9 frogs, 15 snakes, all 10 species of turtles, and 3 of the state's four lizards. This rich herptile community represents 78 percent of the total species found in Wisconsin. One of the reasons for this diversity is the variety of habitat types within the county. Of the county's 43 herptile species, 14 (33 percent) are considered significantly declining to imperiled, including four state-endangered and one state-threatened species. Seventeen species are listed as species of greatest conservation need. Hence, care must be taken to ensure that the necessary habitat types are preserved and reestablished. Frog species known in the county include Wood, Chorus, Peeper, Leopard, Pickerel, Eastern Gray, Copes Gray, Green and Bull.

## **Endangered, Threatened and Special Concern Species**

Many endangered and threatened flora, fauna, and high quality natural communities exist in Sauk County due to its diverse habitat types. The Department of Natural Resources tracks rare plants and animals, and high quality natural communities through its Natural Heritage Inventory (NHI). This inventory maintains a database of the locations of rare species, their populations, and status of their habitat and unique natural communities.

NHI has recorded 73 species of rare vascular plants as occurring in the county and records indicate 55 of these are still present. Of the remainder, 12 are considered historic records and presumed to not occur in the county anymore, and 6 have not been recorded for several decades and may not be present. The prairie bush-clover (*Lespedeza leptostachya*), prairie white-fringed orchid (*Platanthera leucophaea*), northern wild monkshood (*Aconitum noveboracense*), spotted pondweed (*Potamogeton pulcher*), and rough rattlesnake-root (*Prenanthes aspera*) are just a few examples of the state and federal endangered and threatened plants that currently inhabit Sauk County.

Approximately 100 species of state and federal listed threatened and endangered fauna occur in Sauk County. The following is a list of some of these species: Cerulean Warbler, Kentucky Warbler, Bell's Vireo, Henslow's Sparrow, Western Slender Glass Lizard, Ornate Box Turtle, Red-shouldered Hawk, Karner Blue Butterfly, Blanding's Turtle, and Osprey.

## **Invasive Species**

The large tracts of forest cover in the Baraboo Bluffs, the undeveloped bluff prairies and the wide marshes and floodplain forests along the Wisconsin River have long been a refuge of native plant species. However, in recent years, changes in land uses have caused an increase of invasive plants. Among the most invasive plants present within Sauk County are the bush honeysuckles, buckthorns, garlic mustard, multiflora rose, wild parsnip, Japanese knotweed, Japanese barberry, purple looserstrife, and aquatic milfoil.

There are dozens of other invasive plants that degrade natural communities or create problems in agricultural crops. New invasive species are discovered each year in southern Wisconsin. As development and recreational pressures continue to rise, both existing and new weeds will continue to push out the native wildflowers, grasses, shrubs, and trees.

The Land Conservation Department and other partners created the Greater Sauk County Invasive Plant Team in 2000 to collaborate on invasive species issues. The group of 15 organizations meets quarterly to learn about new species on the horizon, share control methodologies, and plan educational and fundraising projects.

Many nonprofit organizations, government agencies and lakes associations work on invasive species issues. Some examples are the Lake Redstone residents who tackle aquatic invasive plants, the Friends of Devil's Lake State Park members that combat garlic mustard, and the Aldo Leopold Foundation burn program that encourages native communities.

The work done by private landowners to control invasive species has a significant impact due to the high percentage of land in private ownership in the County. They tap into educational and financial resources through LCD, DNR and NRCS programs and affect thousands of acres. Landowners have a vested interest in controlling invasives because these plants have been proven to decrease the recreational and economic value in woodlands, pasture and lakes, not to mention the negative aesthetic changes.

Several invasive insects are threatening the biotic diversity and economic health in Sauk County. The Gypsy Moth, Emerald Ash Borer and Asian Longhorned Beetle pose the most imminent threat to our forests. The Gypsy Moth has been located in the county and in response the county participates in the state Gypsy Moth Suppression Program. As Gypsy Moth Coordinator, the county acts as the repository for all reported gypsy moth populations. County staff assist landowners in the identification and verification of infestations, monitor populations levels and reviews qualifications, and coordinate and sponsor applications for participants in the Gypsy Moth Suppression Program. During aerial treatments through the Suppression Program, County staff act as ground observers to document application parameters and answer community concerns.

## **Land Use**

Sauk County, like so many counties in southern Wisconsin, is in a state of transition regarding land use. The major land use over time has been primarily agricultural in the rural areas with adjoining small communities that relied on the agricultural sector and a small manufacturing base. Unlike some of the other southern counties though, Sauk County has always had a very strong tourism economy. The Dells of the Wisconsin River, near Wisconsin Dells, and Devil's Lake, near Baraboo, have been tourist destinations for over 150 years. During this period, tourism has expanded beyond the natural features of these two sites to include numerous man-made attractions. The tourism industry has evolved into a continuous 20 mile long tourist corridor extending from Wisconsin Dells to the City of Baraboo and beyond. The county has become the third highest ranked county in the state for tourism income behind Milwaukee and Dane Counties.

This strong tourism economy has led to a low unemployment rate and an increasing wage scale. Such factors make the county a desirable location for the relocation of working families and helps to keep young adults employed in their home communities. Combine these factors with the draw of a unique and beautiful natural setting and it helps explain the rapid growth in population.

The population of the county increased by 17.6 percent from 1990 to 2000. The number of rural land use permits issued per year has doubled between 1990 and 2006. Over 50,000 acres have been removed from agricultural production since 1970. All of these statistics reflect the growth and development within the county both in the incorporated areas and in the rural towns. Reacting to this growth, the county Board of Supervisors initiated efforts to develop a plan that would assist them in dealing with such growth in the future. The plan, identified as the Sauk County 2020 Development Plan, was developed by a 23 member citizen's advisory committee

and approved at the County Board session on February 16, 1999.

Since then the State of Wisconsin enacted its comprehensive Planning Statute, sometimes referred to as the “Smart Growth” law, which requires that by January 1, 2010 local land use and growth management regulations be consistent with an approved Comprehensive Plan, as defined in the statutes. Twenty-one of twenty-two rural Sauk County towns have completed comprehensive plans or are currently engaged in planning. In 2008 Sauk County will begin a countywide comprehensive planning process, to be completed by January, 2010. The County Comprehensive Plan will supersede the Sauk County 2020 Plan.

The next step will be to revise the county zoning ordinances to offer more tools to the towns to deal with local development issues. This long-term and far-ranging planning effort will better prepare the towns and county to deal with the related development effects of rapid growth and help preserve the important natural resources found throughout the county.

This change in land use directly affects the work load of the LCD, both in volume and variety of topics. While farm numbers are decreasing, the number of owners of farm land is increasing. This results in a larger number of people the LCD must educate and assist with conservation issues. Many of these new owners do not have agricultural experience, so not only are there more people with which to interact, but they most likely will need more assistance concerning conservation management techniques. LCD is experiencing a rising number of requests for nonagricultural technical assistance as well, ranging from invasive species control, prairie, wetland and woodland restoration, the design and construction oversight of recreational ponds, sustainability issues and recycling.

## Goals and Objectives Introduction

The goals and objectives for this plan were developed using input from a variety of sources including:

The Citizens Advisory Committee (CAC) conclusions regarding emerging issues:  
Alternative energy, education, land protection and waste management.

County web survey priorities:  
Electronics disposal, hazardous waste collection and recycling.

Sauk County Board Strategic Planning priorities:  
Farmland preservation through purchase of development rights, create County rules to regulate manure hauling, conservation easements to protect wild and open spaces, implement 2020 Plan and the implementation of more sustainable County practices.

NRCS national goals per FY2006 annual report:  
High quality, productive soils, clean and abundant water, healthy plant and animal communities, clean air, working farm and ranch lands, and an adequate energy supply.

Natural Resource concerns identified in the Smart Growth plans prepared by the towns in Sauk County.

The Land Conservation Committee then evaluated these goals along with the directives and responsibilities assigned to the department by the Board of Supervisors and the state mandated role for the department in the implementation of the nonpoint source pollution rules, as identified in state statutes.

Using all of this information the Committee established seven major goals for the ten year plan timeframe and specific objectives to help achieve each of these goals. Estimated staff needs and implementation costs are identified for each of these objectives. Annual workplans will use this information to prioritize the available staff time and to recognize and address the commitments needed to achieve additional initiatives.

# Goals and Objectives

## Goal I. Protect and improve groundwater quality and quantity

Groundwater is the source of all drinking water and commercial and industrial operational water in the county. As such, it is critically important to our economic vitality and the health of citizens and visitors. A 2005 study by the National Geologic and Natural History Survey indicates good general quality and quantity. Nitrate levels reflect the influence of human activities with approximately 15 % of wells measuring nitrate levels above the enforcement limits and 64 % showing some elevation above background levels. Our goal is to

Objectives	Actions	Priority	Estimated staff hours over 10 years	Estimated operational cost	Estimated cost or cost share needs	Cooperating Partners
A. Increase stormwater infiltration to recharge aquifers	1. Decrease run-off and increase infiltration through practices identified in conservation plans	High	12,480	\$9,000	\$200,000	NRCS
	2. Promote perennial vegetation through managed pasture, woodland, prairie, wetlands in cons plans	High	6,240	\$2,000	\$500,000	NGOs, DNR, NRCS
	3. Provide review of stormwater management plans for large-scale developments for towns and municipalities	Medium	2,496	\$1,000	\$0	Municipalities, P&Z, DNR, Dept. of Commerce
	4. Promote raingardens and other infiltration practices applicable to small businesses and residences	Medium	1,440	\$3,000	\$50,000	UWEX, Master Gardeners, Municipalities
B. Manage the sustainable use of groundwater	1. Review industrial development proposals and potential impacts on groundwater for towns and municipalities	Medium	820	\$1,000	\$0	WGNHS, municipalities
	2. Provide assistance to businesses to use water sustainably	Medium	1,240	\$6,000	\$0	UWEX, SCDC, DNR
	3. Identify current high-capacity wells and provide review for planned additional h.c. wells to manage aquifer sustainability	Medium	960	\$2,000	\$0	UWEX, SCDC, P&Z, DNR, municipalities

**Goal I. Protect and improve groundwater quality and quantity, *continued***

Objectives	Actions		Estimated staff hours over 10 years	Estimated operational cost	Estimated cost-share needs	Cooperating Partners
C. Minimize risk of groundwater contamination	1. Develop wellhead protection program	High	416	\$5,000	\$0	UWEX, P&Z, DNR, municipalities
	2. Identify vulnerable regions and implement protection strategies	High	416	\$3,000	\$0	P&Z, WGNHS
	3. Develop well decommissioning assistance program using county or state funds	Medium	2,080	\$14,000	\$50,000	DNR, DATCP
	4. Update Animal Waste Ordinance to address abandonment of facilities and review of non-permitted structures	High	4,784	\$8,000	\$0	DNR, DATCP
	5. Continue to provide guidance and educational opportunities for landowners to engage in nutrient management planning	High	2,080	\$8,000	\$1,500,000	NRCS, DATCP, CCAs, Co-ops
D. Reduce existing groundwater contamination	1. Support BAAP clean-up	Medium	416	\$2,000	\$0	BIG, DNR, EPA
	2. Implement plan to mitigate and prevent further contamination at the Sauk County landfill	Medium	832	\$6,000	\$25,000	EPA, DNR
	3. Identify additional landfills and cooperate with other agencies to identify potential contamination and develop plans for mitigation	Low	1,040	\$4,000	\$0	DNR, EPA, P&Z
	4. Provide assistance to businesses regarding alternative operations that reduce contamination	Medium	2,080	\$6,000	\$50,000	SHWEC, DNR
	5. Continue systematic education program for private well owners on regular testing procedures and follow-up	High	2,080	\$8,000	\$0	UWEX

## Goal II. Protect and improve surface water quality

Sauk County has a long, successful history of initiatives to protect and improve surface water quality and quantity. Most point sources have been addressed and the county has worked extensively with cooperative rural landowners to address runoff pollution. Future efforts will focus on addressing urban sources of runoff pollution and implementation of the state non-point rules to address severe cases of agricultural runoff pollution.

Objectives	Actions		Estimated staff hours over 10 years	Estimated operational cost	Estimated cost-share needs	Cooperating Partners
A. Management of stormwater to minimize excessive or contaminated runoff	1. Increase infiltration through practices prescribed in conservation plans, including managed grazing and buffer strips	High	5,200	\$18,000	see I.A.1.	NRCS, CCAs, FSA
	2. Continue to promote nutrient management planning with landowners; priorities including lands under FPP, PDR's, AWO and in WQMAs.	High	4,368	\$5,250	see I.C.5.	NRCS, CCAs, FSA, Co-ops
	3. Evaluate extent and impact of drain tile and develop methodologies to address resource concerns	Medium	832	\$750	\$240,000	NRCS, FSA, Discovery Farms
	4. Provide education and resources promoting raingardens, rain barrels, pervious pavement, and other methods of infiltrating stormwater	Medium	960	\$5,000	\$0	UWEX, Master Gardeners, Municipalities
B. Protect Outstanding and Exceptional Resource Waters	1. Review potential watershed issues identified in Basin plan and initiate action plans to address them	High	1,040	\$4,000	\$0	DNR
	2. Work with landowners to recognize the importance of these streams and minimize impacts to the resource	High	2,080	\$4,000	\$0	DNR, USFWS
	3. Monitor stream water quality in conjunction with DNR and volunteers	High	2,080	\$26,000	\$20,000	DNR
C. Improve water quality to remove streams from DNR Impaired Waters List	1. Identify resource issues on impaired streams after DNR quantifies the TMDLs	High	2,080	\$8,000	\$0	DNR
	2. Develop and implement strategies to address issues	High	2,080	\$6,000	\$800,000	DNR, DATCP, USFWS, FSA

## Goal II. Protect and improve surface water quality, *continued*

Objectives	Actions		Estimated staff hours over 10 years	Estimated operational cost	Estimated cost-share needs	Cooperating Partners
D. Implement NR151 run-off rules including stabilizing soil to reduce soil erosion, nutrient management planning and maintaining and improving surface water quality county-wide	1. Develop MOU with partner agencies defining process, roles and responsibilities addressing the implementation of NR151 rules	High	416	\$1,000	\$0	UWEX, DNR, DATCP, NRCS
	2. Develop a self-certification form to inventory compliance	High	208	\$1,000	\$0	NRCS, DATCP, UWEX, DNR
	3. Develop list of actions needed for each landowner to resolve non-compliance issues as cost-share is available	High	832	\$14,000	\$0	DNR
	4. Prioritize issues identified in farm inventories and received as complaints	High	416	\$2,000	\$0	NRCS, DATCP
	5. Offer landowners cost-sharing through programs such as LWRM and EQIP to address priority non-compliance issues	High	20,800	\$24,000	\$2,500,000	DNR, NRCS
	6. Evaluate present administration of construction site erosion control rules and consider alternatives to provide better enforcement	High	11,232	\$6,000	\$0	DNR, UWEX, P&Z, municipalities
	7. Follow-up on installed practices to evaluate whether proper operation and maintenance occurs	High	1,664	\$20,000	\$0	NRCS
	8. Develop a GIS database to track landowner compliance	High	832	\$2,000	\$0	SCMIS
	9. Work with DNR to utilize Green Tier permitting process where applicable	Medium	416	\$2,000	\$0	DNR
	10. Assess water resources through various monitoring efforts in coordination with partners	High	960	\$8,000	\$0	UWEX, WDNR
	11. After the state completes the buffer performance standard, develop an implementation strategy	Medium	416	\$2,000	\$1,000,000	WDNR, DATCP
E. Expand scope of conservation plans beyond crop fields to incorporate whole farms in resource management plans	1. Increase capacity of conservation planning staff regarding forestry and wildlife management	High	9,984	\$10,000	\$0	NRCS, DATCP, DNR
	2. Increase contact with wildlife professionals	Medium	416	\$4,000	\$0	DNR, USFWS
F. Manage county-owned dams to ensure public safety and water quality	1. Continue annual dam safety inspections	High	8,320	\$8,000	\$2,000,000	DNR
	2. Evaluate up- and downstream effects of structures	Medium	416	\$8,000	\$0	DNR, NRCS
	3. Develop management strategies to minimize safety and water quality impacts of structures	Medium	1,040	\$2,000	\$0	DNR, NRCS

### Goal III. Protect the productivity and viability of agricultural lands

Growth and development in Sauk County as well as the changing economics of agriculture have placed the county at a critical juncture. The value of land for development or recreational use has surpassed its value as agricultural lands. At the same time economics has pressured farm units to expand operations, often to a point of diminishing return by row cropping on steeper lands. To maintain a viable agricultural economy the county should look at expanding programs designed to protect soil health, such as managed grazing; expand initiatives to offset the difference in land value for development versus agriculture; and promote smaller, specialty crop and value added agricultural operations that contribute to the agricultural economy while reducing their environmental impact.

Objectives	Actions		Estimated staff hours over 10 years	Estimated operational cost	Estimated cost-share needs	Cooperating Partners
A. Limit soil erosion on crop land	1. Continue to provide conservation planning assistance, limiting soil erosion to "T"	High	12,480	\$38,000	\$100,000	NRCS
	2. Monitor soil erosion via annual transect surveys	High	624	\$3,000	\$0	DATCP
	3. Assist landowners' managed grazing of livestock	High	2,080	\$14,000	\$250,000	NRCS
	4. Facilitate landowner participation in FPP and maintain departmental capacity to administer FPP	High	10,400	\$28,000	\$0	DATCP
B. Provide technical and financial assistance for landowners managing nutrients	1. Work with landowners to test cropland soils according to 590 standards to evaluate current nutrient levels and determine nutrient inputs needed	High	2,080	\$12,000	\$0	NRCS, UWEX, UW Soils Lab
	2. Assist landowners in creating nutrient management plans through self-certification classes and cost-shared contracted services	High	7,600	\$12,000	see I.C.5.	NRCS, DATCP
	3. Investigate alternative manure handling options such as manure brokering, regional treatment facilities, methane generation and composting facilities	Medium	720	\$1,000	\$0	UW, UWEX, NRCS, USDA
	4. Evaluate issues related to septage spreading on farmland	Medium	416	\$2,000	\$0	DNR, P&Z

**Goal III. Protect the productivity and viability of agricultural lands, *continued***

Objectives	Actions		Estimated staff hours over 10 years	Estimated operational cost	Estimated cost-share needs	Cooperating Partners
C. Encourage landowners to maintain unfragmented tracts of productive farmland	1. Assist towns and Sauk County in developing comprehensive land use plans that facilitate farmland preservation	High	416	\$6,000	\$0	P&Z
	2. Support efforts to protect farmland through purchase of development rights programs and conservation easements such as Farm and Ranchland Protection Program (NRCS) and Baraboo Range Protection Program (P&Z)	High	4,160	\$12,000	\$0	NRCS, P&Z, DNR
	3. Support the creation and administration of a county purchase of development rights program for agriculture and open space	Medium	20,800	\$36,000	\$2,500,000	DATCP
D. Promote growth and viability of the county's agricultural economy	1. Continue to provide technical assistance to Sauk County farms to assist with their management, growth and expansion plans	High	1,640	\$32,000	\$0	NRCS, UWEX
	2. Educate farmers regarding economic and natural resource benefits of lower-yield, higher-end products	High	720	\$8,000	\$0	UWEX, NRCS, MFI, SARE, MOSES, PH
	3. Promote managed grazing, especially on steep crop fields with high erosion rates and areas with grassland ecosystem benefits	High	3,280	\$12,000	see III.A.3.	NRCS
	4. Work with MATC and UW Madison to develop new farmer training programs	Medium	640	\$8,000	\$0	MATC, UW Madison, UWEX
	5. Increase number of farms, with dairy, beef and sheep products raised sustainably and/or organically	High	3,120	\$12,000	\$0	UWEX, NRCS, MFI, SARE, MOSES, PH
	6. Promote local marketing of agricultural products	High	1,248	\$32,000	\$0	UWEX, chambers of commerce
	7. Cultivate farmer relationships with schools, hospitals, restaurants and other institutions	Medium	1,040	\$18,000	\$0	UWEX
	8. Continue support of the animal damage program	Medium	416	\$8,000		DNR

## Goal IV. Ensure the proper disposal of or reuse of waste materials

The Land Conservation Department was assigned responsibility for county initiatives to promote the reduction of hazardous waste materials and recycling of waste upon the elimination of the Solid Waste Department at the end of 2006. These initiatives will help protect natural resources by reducing the pollution of surface and ground water from chemicals and heavy metals. Recycling reduces the amount of material hauled to landfills, lowering landfill space needs and saving money with lower tipping fees. Increased recycling also reduces the amount of new raw materials extracted from the earth.

Objectives	Actions		Estimated staff hours over 10 years	Estimated operational cost	Estimated cost-share needs	Cooperating Partners
A. Provide information and facilities to assist residents in properly disposing of hazardous materials	1. Increase Clean Sweep program frequency and geographic locations to provide regular, convenient disposal of hazardous materials	High	12,480	\$48,000	\$60,000	UWEX, DNR, municipalities, SHWEC
	2. Provide information on the county website and in the office identifying disposal options and ways to reduce use of hazardous materials	High	1,040	\$6,000	\$0	MIS
B. Increase recycling of materials	1. Work with county building management to increase employee awareness, number of recycling containers and scope of materials recycled in county operations	High	1,248	\$6,000	\$0	EMBS
	2. Provide information and technical assistance to residents, municipalities and businesses identifying waste-reduction management techniques	Medium	3,120	\$6,000	\$0	WasteCap WI, SHWEC
C. Evaluate the process of land spread human and industrial waste disposal	1. Evaluate current septage disposal process and licensing procedures, and coordinate information with LCD nutrient management planning	Medium	832	\$3,000	\$0	DNR, P&Z
	2. Study sewage disposal issues for rural residences and municipalities, including monitoring stormwater outlets to rivers in urban areas	Medium	2,080	\$8,000	\$0	DNR, P&Z, municipalities

## Goal V. Protect and enhance natural communities

One of the greatest assets in Sauk County is the abundance of large expanses of natural communities. Several threats to these communities are addressed in this section to encourage protection of these large expanses of natural communities and continue the

Objectives	Actions		Estimated staff hours over 10 years	Estimated operational cost	Estimated cost-share needs	Cooperating Partners
A. Limit fragmentation of existing blocks of natural communities such as the Baraboo Bluffs and the Sauk Prairie grasslands	1. Refer landowners to government agencies and non-profit groups for financial and technical ass't	High	832	\$5,000	\$0	NGOs, DNR, USFWS
	2. Provide technical assistance in restoration and maintenance as possible.	High	1,200	\$24,000	\$360,000	DNR, USFWS
	3. Support educational programs	High	640	\$8,000	\$0	UWEX, DNR
	4. Encourage and promote benefits of town and county programs that limit impacts on natural communities	Medium	832	\$8,000	\$0	
	5. Support the continuation of existing land protection programs such as Farm and Ranchland Protection Program (NRCS), Baraboo Range Protection Program (P&Z) and State Stewardship Fund	High	1,664	\$8,000	\$0	P&Z, NRCS
	6. Support the creation of a county purchase of development rights program for agriculture and open space	Medium	4,160	\$12,000	see III.C.3.	DATCP
B. Encourage restoration, preservation and sustainable use of natural communities	1. Reinstate conservation credit program and encourage implementation of CSP or other initiatives that reward voluntary stewardship activities	Medium	10,400	\$24,000	\$1,200,000	NRCS, FSA
	2. Use county, state & federal programs to assist landowners with technical & financial planning	Medium	640	\$5,000	\$0	NRCS, DNR, USFWS
	3. Evaluate county-owned parcels in cooperation with other departments for potential sustainable use	Medium	832	\$6,000	\$0	P&Z, Parks
	4. Study efficacy of large-scale stream restoration	Medium	416	\$6,000	\$4,000,000	DNR, NRCS
	5. Provide whole farm resource management plans including assistance with forestry and wildlife habitat management	High	6,240	\$12,000	\$0	NRCS, DNR
	6. Assist with town and county comprehensive plan development to identify sensitive natural resources	High	832	\$6,000	\$0	P&Z

## Goal V. Protect and enhance natural communities, continued

Objectives	Actions		Estimated staff hours over 10 years	Estimated operational cost	Estimated cost-share needs	Cooperating Partners
C. Maintain diverse flora and fauna by reducing the impact of invasive species	1. Educate private landowners and youth regarding the potential impact of invasives and actions they can take to reduce the impact	High	10,400	\$20,000	\$200,000	YEPS, Woodland School, schools, DNR
	2. Participate in the Greater Sauk County Invasive Plant Team and other networking organizations to stay abreast of current species of concern and management techniques	High	1,200	\$6,000	\$0	UWEX, land trusts, DNR
	3. Work with partners to identify and eliminate new species populations immediately	High	960	\$12,000	\$40,000	Highway Dept, GSCIPT,
	4. Initiate and support invasive management groups to coordinate control efforts	Medium	832	\$8,000	\$0	Municipalities, lake associations, UWEX, RC&D
	5. Continue and expand native tree and plant sale	High	2,400	\$32,000	\$0	DNR, private nurseries
	6. Continue to serve as gypsy moth coordinator	Medium	964	\$15,000	\$0	DNR
	7. Work with local nurseries to decrease the sale and distribution of invasive species	Medium	832	\$8,000	\$0	GSCIPT
D. Capitalize on county's aesthetic beauty and abundant natural resources through promotion of ecotourism	1. Assist with promoting and implementing the Green Travel program	Medium	2,080	\$24,000	\$0	DNR, SCDC

**Goal VI. Provide and coordinate educational programming promoting natural resource protection and sustainable living issues**

Effective education is critical to the success of all efforts to protect natural resources in the county. The Department's highest priority is insuring that staff are available to work one-on-one with landowners. These efforts coupled with classes and information distributed in newsletters and on the website aim to encourage sustainable use and enjoyment of Sauk County's natural resources.

Objectives	Actions		Estimated staff hours over 10 years	Estimated operational cost	Estimated cost-share needs	Cooperating Partners
A. Develop strategic plan for information and education efforts	1. Study educational methods and seek input from experts and local partners to identify efficient and effective methods of delivering high priority messages to Sauk County children and adults	High	8,320	\$12,000	\$0	UWEX, DNR, NGOs, schools, MATC, BooU
B. Provide educational programming for priority topics	1. Make staff available for one-on-one contact with landowners	High	3,800	\$32,000	\$0	DATCP
	2. Plan and implement classes per Information and Education Strategic Plan	High	6,240	\$16,000	\$0	
	3. Plan and implement on-going programs, such as YEPS and youth days, per Information and Education Strategic Plan	High	6,240	\$48,000	\$0	UWEX, conservation partners
	4. Provide materials on the county website and in the department office	Medium	1,040	\$6,000	\$0	SCMIS
	5. Partner with other educational organizations such as the Woodland School	Medium	1,040	\$3,000	\$0	ALF, ICF, UWEX

## Goal VII. Assist Sauk County in becoming a sustainable community

There is an increasing demand by citizens that government leaders consider the sustainability aspect of all of their decisions. The Land Conservation Department is well equipped to assist businesses, citizens and other county departments, as well as other units of government, in evaluating these factors. Implementation of this goal will help the Department fulfill one of the visions outlined for the Department, "that the impact on natural resources be a conservation in every decision being made in Sauk County." Implementation of this goal also expands the role of staff to provide expertise and assistance to previously under-served urban taxpayers.

Objectives	Actions		Estimated staff hours over 10 years	Estimated operational cost	Estimated cost-share needs	Cooperating Partners
A. Reduce Sauk County's residents contribution to fossil fuel dependence and to wasteful use of scarce metals and minerals	1. Provide information and technical assistance for county departments, residents, municipalities, schools and businesses to conserve energy in existing buildings and to plan new buildings constructed with more recycled and recyclable components, use less hazardous materials during construction, generate fewer waste products and require less energy to maintain.	Medium	2,080	\$12,000	\$0	EMBS, Focus on Energy, Alliant Energy, DNR, OoE, SHWEC
	2. Encourage alternative energy production that is sustainable and/or uses waste stream products such as animal waste	Medium	2,080	\$8,000	\$0	MREA, Dane County, Co-ops, UWEX
	3. Provide information and technical assistance for county departments, residents, municipalities, schools and businesses regarding alternatives to petroleum-fueled vehicles	Medium	2,080	\$8,000	\$0	DNR, OoE, Towns, Municipalities
	4. Promote transit and pedestrian-oriented development through participation in Sauk County's Comprehensive Plan process	Medium	1,040	\$12,000	\$0	P&Z
	5. Provide information and technical assistance for organic and/or sustainable farming techniques that minimize phosphorus and petrochemical fertilizers and herbicides	Medium	2,080	\$12,000	\$0	MOSES, DNR, UWEX, Co-ops
	6. Develop an incentive program and appropriate facilities for county employees to encourage carpooling, biking or walking to work	High	832	\$15,000	\$15,000	EMBS, DNR
B. Reduce Sauk County's residents contribution to dependence upon persistent chemicals and wasteful use of synthetic substances	1. Provide information and technical assistance for county departments, residents, municipalities and businesses to reduce their use of persistent chemicals through providing lower-impact alternatives for construction, cleaning, landscaping	Medium	2,080	\$12,000	\$0	DNR, UWEX

**Goal VII. Help Sauk County become a sustainable community, *continued***

Objectives	Actions		Estimated staff hours over 10 years	Estimated operational cost	Estimated cost-share needs	Cooperating Partners
C. Reduce the overall impact of Sauk County's residents upon nature (e.g. land, water, wildlife, forests, soil, ecosystems)	1. Participate in Sauk County's Comprehensive Plan development process to advocate for the protection of large contiguous blocks of natural area, corridors connecting natural areas, critical habitat areas, high quality agricultural soils, the function of ecosystems, redevelopment of existing sites, encouraging infill development	High	1,040	\$4,000	\$0	P&Z, DNR, SHWEC
	2. Protect ground and surface water quality and quantity through wellhead protection, high-capacity well development review, water treatment plant facility review, and water re-use programs.	Medium	1,040	\$8,000	\$0	DNR, UWEX
D. Meet human needs fairly and efficiently	1. Develop capacity within the department to better connect with minority populations such as Latino, Amish, Hmong and Native American communities	High	1,664	\$24,000	\$0	UWEX
	2. Maintain staffing levels to meet all landowners' requests for technical assistance	High	480	\$2,000	\$0	DATCP
	3. Support local food production and distribution	High	2,400	\$28,000	\$0	UWEX, NRCS
	4. Support the utilization of waste-stream materials in secondary operations	Medium	2,400	\$24,000	\$0	WasteCap

## **Plan Implementation Strategy**

### **Provide One-on-one Education and Technical Assistance to Landowners**

The LCD staff will continue to respond to landowners' requests for assistance with natural resource issues on their land. This will involve on-farm visits to identify resource concerns, their inherent causes and prescribe conservation practices to resolve them. Assistance will also continue to be available in the department office, where staff review conservation plans, provide invasive species information and assist with other conservation issues.

### **Deliver Information and Education Programs**

The LCD staff currently includes an Education Coordinator who will develop a strategic plan to evaluate priorities and build capacity in the department to meet the growing need for natural resources education. This education plan process may include defining objectives that correlate with this LWRM Plan's goals, identifying target audiences and developing messages, methods, materials and programs to deliver those messages.

Current programs include:

Classes and workshops - Conservation contractors, invasive species control, native landscaping, rain gardens, pasture walks, nutrient management, dairy farm expansion

Youth programs - YEPS, Youth Days, schools, 4-H

Earth Day Celebration

Earth Day projects

Conservation Chronicle Newsletter

News releases

County website

Drinking water testing and education program

Solid waste reduction and recycling education

Presentations at civic organizations and other meetings

Scholarships for teachers and youth camp

Partnership projects with environmental, sporting, and service groups

New topics recommended by the CAC and others included more adult education, including classes focused on ex-urbanites living in farm country, classes for realtors to reduce potential residential rural development conflicts with agricultural interests and classes for employees of agricultural cooperatives on conservation issues. For children, they recommended collaborating with nonprofit organizations and schools, increasing hands-on experiences, and helping to raise funds for educational projects.

Additional programming may include Natural Step study groups, incorporation of more recycling in county operations, Green Travel, business partners and serving as a resource center for educators. Significant efforts will also be focused on NR151-specific training programs for agricultural producers.

## **Administer Cost-sharing Programs**

This LWRM Plan will be implemented through the utilization of available programs that provide cost-sharing incentives and through regulatory standards for land use, as well as collaboration with local, state and federal agencies and private organizations. These programs and partners include:

### **County Programs**

**Animal Waste Ordinance** - The purpose of this County ordinance is to regulate the location, design, construction, installation and alteration of animal waste storage facilities and use of animal waste from these facilities in order to prevent water pollution and thereby protect the health of Sauk County residents and transients; prevent the spread of disease; and to promote the prosperity and general welfare of the citizens of Sauk County. LCD staff review waste storage facility plans and land spreading plans for the waste.

**Clean Sweep** - Coordinate residents' hazardous waste disposal.

**Conservation Planning** - LCD staff work with landowners to develop individual land use plans addressing soil erosion, nutrient management and natural community management on cropland, pasture and wildlife areas.

**Educational Programs** - LCD staff coordinate and deliver natural resource information to landowners, school groups and businesses. More detail is listed in the Plan Implementation chapter.

**Groundwater Well Testing** - LCD facilitates individual well testing and provides educational programming for towns in cooperation with UW-Extension.

**Invasive Species** - The LCD provides educational and technical assistance to landowners regarding invasive plant species. On a broader scale, staff participate in regional initiatives as a part of the Greater Sauk County Invasive Species Team.

**Tree and Prairie Seed Sale Program** encourages local planting of native woodland and prairie species while meeting a demand for low-priced seed and planting stock.

### **U.S. Department of Agriculture**

**Conservation Reserve Program (CRP) and Conservation Reserve Enhancement Program (CREP)** Via this federal/state/county partnership program, landowners voluntarily install conservation practices on agricultural lands, such as stream buffers, filter strips, wetland restorations, and grassed waterways. LCD staff assist landowners with enrollment, practice design and installation.

**Environmental Quality Incentives Program (EQIP)** provides cost-sharing for a variety of conservation practices to address erosion and nutrient management issues.

**Grassland Reserve Program (GRP)** provides incentives to manage permanent pasture and hay land.

**Wetlands Reserve Program (WRP)** A provision of the federal Farm Bill that compensates landowners for voluntarily restoring and protecting wetlands on their property.

**Wildlife Habitat Incentives Program (WHIP)** provides cost-sharing for fish and wildlife habitat improvement practices.

### Wisconsin Department of Natural Resources

**Animal Waste Management Program**, administered by the DNR via NR243, seeks to identify and correct animal waste-related water quality problems.

**Dell Creek Priority Watershed Project** - This is a state-funded project focused on installing conservation practices through 2009. The goal of the project is to protect, enhance and restore the surface and groundwater resources in the watershed area. This will be accomplished by reducing the amount of sediment delivered to streams from agricultural fields and construction sites and reducing the amount of phosphorus runoff from barnyards and from erosion from agricultural uplands. LCD staff created the plan, administer cost-sharing contracts and payments, and design and oversee installation of conservation practices.

**Managed Forest Law (MFL)**, administered by the Wisconsin Department of Natural Resources, is a landowner incentive program designed to encourage sustainable forestry on private woodlands in Wisconsin. The law, through a written forest management plan, couples landowner objectives with timber harvesting, wildlife management, water quality and recreation to maintain a healthy and productive forest.

**Nonpoint Source Pollution Abatement Program** is a DNR water quality program under Chapters 120 and s. 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 in designated watersheds.

**Targeted Resource Management Program (TRM)** provides grants for a variety of conservation practices to address severe water quality problems.

**Wildlife Damage Abatement and Claim Program** is funded through hunting license fees, and is designed to help prevent crop damage due to deer, geese, bear, and turkeys. The program will provide abatement assistance, including shooting permits, to reduce damage and will also pay some compensation for damage to crops.

**Wisconsin Forest Landowner Grant Program**, administered by the Wisconsin Department of Natural Resources, is designed to assist private landowners in protecting and enhancing their forested lands.

### Wisconsin Dept. of Agriculture, Trade and Consumer Protection

**Farmland Preservation Program** - The goals of the state Farmland Preservation Program are threefold: to preserve Wisconsin farmland by means of local land use planning, to ensure good soil conservation is practiced and to provide property tax relief to farmland owners. Participants must comply with soil and water conservation standards set by the Sauk County LCC. The LCD assists landowners with the enrollment process, develops conservation plans compliant with FPP requirements and monitors compliance with the plans.

**Land and Water Resource Management Program (LWRM)** is designed to reduce soil erosion, protect water quality, and conserve the natural resources as outlined in the Land and Water Resource Management Plan prepared by the LCD. The program provides cost-sharing to landowners to install conservation practices.

**Soil and Water Resource Management (SWRM)** provides counties with funds to hire and support Land Conservation Department staff and to assist land users in implementing DATCP conservation programs (ATCP50).

## **Partner Agencies and Organizations**

Sauk County benefits from a strong array of conservation partners and a dedicated commitment to conservation by its citizens. Because of the recognized importance of the natural resources in the county various government and nonprofit organizations have chosen to establish a presence in the county. These partners assist the department in a wide range of conservation projects and educational efforts.

Sauk County is in a unique position to take advantage of the excellent cooperative conservation spirit, the broad knowledge base of individuals in the county and the long established conservation ethic in place among the residents in the county to establish itself as a model for environmental responsibility and sustainable living.

**Aldo Leopold Foundation (ALF)** proliferates the Leopold Land Ethic through education programs at Leopold's Shack and the Leadership in Environmental and Energy Design (LEED) certified Legacy Center in addition to demonstrating this ethic through Leopold Memorial Reserve land management.

**Badger Army Ammunition Plant (BAAP)** is a 7,300 acre decommissioned plant in the Towns of Merrimac and Sumpter. One parcel has been transferred to the US Dairy Forage Research Center and others are planned to be turned over to the WI DNR and the Ho-Chunk Nation.

**Badger Interim Oversight Management Commission** reviews the process of dividing up the BAAP property, the transfer process, and future land use.

**Cooperatives** Member-owned agricultural cooperatives that sell agricultural supplies such as feed, fertilizer, herbicide as well as provide agricultural services such as nutrient management planning, soil testing and herbicide and fertilizer application.

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

**Department of Natural Resources (DNR)** The state agency responsible for managing state owned lands and protecting public waters. DNR also administers programs to regulate, guide and assist LCCs, LCDs and individual land users in managing land, water, fish and wildlife. The DNR administers state cost-sharing funds for priority watershed project, Targeted Runoff Management (TRM) grants, and Urban Nonpoint Source Construction and Planning grants.

**Environmental Protection Agency (EPA)** The agency of the federal government responsible for carrying out the nation's pollution control laws. It provides technical and financial assistance to reduce and control air, water and land pollution.

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

**Farming and Conservation Together (FACT)** is an informal association of farmers, environmental groups and town and county government representatives affiliated in response to a proposed wildlife refuge located in the northeast part of the county. The group formed to support alternatives to the proposed refuge that would improve wildlife habitat and populations in the area while maintaining the land in private ownership and agricultural production where feasible. The group has secured some federal funding to further these goals.

**Fish and Wildlife Service (FWS)** is a federal agency with local offices in Portage and Madison that manages federal wildlife lands and provides landowner services and cost-sharing for natural area restoration.

**Greater Sauk County Invasive Plant Team (GSCIPT)** is a partnership between many agencies, nonprofit organizations and private businesses working toward controlling invasive species.

**International Crane Foundation (ICF)**, headquartered just north of Baraboo, works worldwide to conserve cranes and the wetland and grassland ecosystems on which they depend. ICF is dedicated to providing experience, knowledge, and inspiration to involve people in resolving threats to these ecosystems.

**Land and Water Conservation Board (LWCB)** A state board composed of three local elected officials, four members appointed by the Governor and representatives from the state agencies; DNR, DATCP and DOA. The LWCB oversees the approval of county land and water management plans (s.92.04, stats.).

**Lower Wisconsin State Riverway (LWSR)** The mission of the Lower Wisconsin State Riverway Board is to protect and preserve the scenic beauty and natural character of the Lower Wisconsin State Riverway through administration of a program to control land use and development. In concert with the program to control land use and development, due consideration shall be given to the rights of landowners and the freedom to exercise the rights associated with land ownership.

**Madison Area Technical College (MATC)** is the technical and community college for the greater Madison area. It is dedicated to providing accessible, high quality instruction and technical experience to meet the needs of its students, community and area employers. Campuses are located in Reedsburg and Portage.

**Michael Fields Agricultural Institute (MFI)** has been devoted to developing an agriculture that can sustain the land and its resources. As a public, nonprofit learning center, they seek to revitalize farming with research, education, technical assistance and public policy.

**Midwest Organic & Sustainable Education Service (MOSES)** is a 501(c)3

education-outreach organization working to promote sustainable and organic agriculture. MOSES serves farmers striving to produce high-quality, healthful food using organic & sustainable techniques. These farmers produce more than just food: they support thriving ecosystems and vibrant rural communities.

**Midwest Renewable Energy Association (MREA)** promotes renewable energy, energy efficiency, and sustainable living through education and demonstration.

**Natural Resources Conservation Service (NRCS)** Part of USDA, NRCS provides soil survey, conservation planning and technical assistance to local land users.

**The Nature Conservancy** - The Nature Conservancy has a full-time office and staff presence in Baraboo focusing on protection of the Baraboo Bluffs woodland and management of valuable natural habitats.

**The Prairie Enthusiasts** - Prairie management on preserves and private lands.

**Protected Harvest (PH)** Protected Harvest is a nonprofit organization that independently certifies farmers' use of stringent environmental growing standards.

**Public Schools** - Six districts in the County provide environmental education and stewardship projects.

**Resource Conservation and Development (RC&D)** Southwest Badger RC&D is a community development organization serving Crawford, Grant, Green, Iowa, LaCrosse, Lafayette, Richland, Sauk, and Vernon counties. Its mission is to implement natural resource conservation, managed growth, and sustainable rural economic development in the area. Their vision is to be an incubator for innovative, economic, and sustainable use of local resources. They are a nonprofit 501(c)3 organization based out of Lancaster, Wisconsin.

**Riverland Conservancy** - A land trust that manages a large reserve in the Merrimac area.

**Sauk County Development Corporation (SCDC)** Their mission is to promote and retain the diverse economic vitality of Sauk County and its individual communities.

**Sauk County Interdepartmental Partners:**

**Emergency Management and Building Services (EMBS)**

**Management Information Systems (MIS)**

**Parks Department (PD)**

**Planning and Zoning Department (P&Z)**

**Sauk County Pheasants Forever and Habitat Forever** - Support and advice for landowners with prairie planting and habitat management.

**Solid and Hazardous Waste Education Center (SHWEC)** Their mission is to enhance Wisconsin's environment and economy by providing quality education, information and technical assistance to promote the sustainable use of natural resources.

**Sustainable Agriculture Research and Education (SARE)** program has helped advance farming systems that are profitable, environmentally sound and good for communities through a nationwide research and education grants program. The program, part of USDA's Cooperative State Research, Education, and Extension Service, funds projects and conducts outreach designed to improve agricultural systems.

**University of Wisconsin Baraboo/Sauk County** is a two-year campus of the University of Wisconsin.

**University of Wisconsin - Madison (UW)** A four-year campus in the university system.

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

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

**WasteCap WI** is a statewide, nonprofit, industry supported 501(c)(3) organization that provides waste reduction and recycling assistance to businesses. WasteCap assists and encourages companies to effectively drive costs out of their operations through improved solid waste management practices.

**Wisconsin Geological and Natural History Survey (WGNHS)**, a part of the University of Wisconsin–Extension, is an interdisciplinary organization that conducts natural resources surveys and research to produce information used for decision making, problem solving, planning, management, development, and education.

**Wisconsin Counties Association (WCA)** The state association that represents the county interests and the furtherance of better county government. It is a membership organization representing Wisconsin's 72 county boards of supervisors and nine county executives.

**Wisconsin Land and Water Conservation Association (WLWCA)** Membership organization that represents the state's county Land Conservation Committees.

**Wisconsin Office of Energy Independence (OoEI)** was created in 2007. The mission of the office is to advance the state toward energy independence, focused on generating 25 percent of our state's electricity and transportation fuels from renewable resources by 2025, capturing 10 percent of the emerging bioindustry and renewable energy market by 2030 and leading the nation in groundbreaking research that will make renewable energy more affordable and will

create good-paying Wisconsin jobs.

**Youth Environmental Projects in Sauk County (YEPS)** is a partnership of agencies and individuals. The goal of YEPS is to provide an opportunity for youth and families to participate in environmental stewardship service-learning projects.

## **Implementation of NR151 Performance Standards**

### **Background Information**

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

DNR Administrative Rule NR151 sets performance standards and prohibitions for farms. It also set urban performance standards to control construction site erosion, manage runoff from streets and roads and manage fertilizer use on large turf areas. Currently Sauk County municipalities have responsibility for implementing these standards and prohibitions. As identified in the Goals and Objectives section, the LCD will evaluate the effectiveness of current programs concerned with urban performance standards and identify the need, if any, for future involvement in this area of natural resource management.

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) is responsible for developing and maintaining the list of agricultural cost-share practices that are eligible for cost-sharing to implement NR151. DATCP Administrative Rule ATCP50 identifies conservation practices that farmers can follow to meet performance standards in NR151. These are listed in Appendix G of this plan. ATCP50 also sets out the requirements for nutrient management plans. Other practices are listed in the DNR Stormwater and Erosion Control Practices and the NRCS Technical Guide.

The Land Conservation Department has long been recognized as the primary agency able to bring these water quality performance standards into the field. The LCD will have lead responsibility for the implementation of the agricultural runoff standards. A major change found in NR151 moves the majority of nonpoint pollution work in Wisconsin from a mostly voluntary program to a program based largely on landowner participation through regulation. The NR151 rules lay the foundation for minimum standards regarding land use and management practices within the agricultural landscape. Many of the issues we have identified and addressed in the past are now part of this rule and provides the option of regulation if minimum levels of implementation are not reached. Enforcement of these rules also requires 70 percent cost-sharing be provided for the practices needed to achieve compliance.

The following are the performance standards in NR151:

#### **For farmers who grow agricultural crops:**

1. Must meet tolerable soil loss ("T") on all cropped field
2. Follow a nutrient management plan (NMP) designed to limit entry of nutrients into state waters (groundwater and surface water). NMP must be in place by

Jan. 1, 2005 for high priority waters (303d, outstanding/exceptional) and Jan. 1, 2008 for all others

**For farmers who raise, feed or house livestock:**

1. Prevent direct runoff from feedlots or stored manure into state waters
2. Limit livestock access to state waters to avoid high concentrations of animals and maintain adequate or self-sustaining sod cover along waterways
3. Follow a nutrient management plan for manure application

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

1. Maintain structures to prevent overflow (no overflow)
2. Repair or upgrade any failing or leaking structures that pose an imminent health threat or that violate groundwater standards
3. Close abandoned manure storage structures according to accepted standards
4. Meet technical standards for newly constructed or substantially altered structures

**For farmers with land in a Water Quality Management Area (300 feet from a stream, 1000 feet from a lake, or in areas susceptible to groundwater contamination):**

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

**Nutrient Management Plans for livestock and crop farmers:**

1. Plans can be developed by a certified agronomist or prepared by the farmer through a DATCP-approved training course
2. Plans must rely on soil nutrient test from a DATCP-certified laboratory
3. Comply with current NRCS Nutrient Management Standard 590
4. Follow the recommendations for nutrient applications in the Soil Test Recommendations for Field, Vegetable and Fruit Crops, UWEX publication A 2809

## **County Implementation**

The Sauk County Land Conservation Department will take a strong local role in the implementation of those components of NR151 not covered by the Animal Waste Ordinance. Staff will be working in close cooperation with the Department of Natural Resources (DNR) and other agencies in moving towards a practical implementation process. Regulatory and enforcement activities will be completed utilizing the appropriate statutes, rules and ordinances.

The county will follow the compliance procedure of the Sauk County Animal Waste Ordinance when appropriate. This ordinance is defined in the Glossary of this plan, and available in whole on the county website <http://www.co.sauk.wi.us> . If a landowner is found to be out of compliance with NR151 standards that are not covered by the Sauk County Animal Waste Ordinance, compliance procedures will be carried out by the Department of Natural Resources.

It should be noted that the implementation of each component of the Sauk County Land Conservation Department's strategy is dependent on receiving adequate funds to cover both staff

resources and cost-sharing resources. It is anticipated that DNR and DATCP will be the source of the major financial resources available. The department will work with these agencies to develop a memorandum of understanding that outlines the role of the LCD, DATCP and DNR in enforcing NR151.

The county's commitment to extend services beyond that core level of commitment will be dependent based upon its ability to secure funds through outside grant sources and its capacity to secure funds through other non-levy revenue, including reimbursement through local service fees or municipal, state, or federal service contracts. Priorities for plan implementation and associated service levels will be set based upon the availability of this combination of revenue sources.

At present, the demand for program services exceeds the capacity of current allocations for both staff and cost-sharing. An increase of support to Sauk County would be expected as workload increases with NR151 implementation. It is also anticipated that new sources of revenue for staff funding will be investigated through federal service contracts or through direct service fees, charged to participants participating in conservation programs.

### **Implementation Priorities**

The process of gathering NR151 compliance data will follow the priorities listed below. The LCD will develop a self-certification form to identify a landowners' status regarding compliance with the NR151 performance standards. If a landowner identifies noncompliance issues on the form, LCD staff will work with the landowner to develop a basic plan to achieve compliance and it will be implemented as cost-share funding becomes available.

NR151 compliance data collection priorities and the estimated numbers of landowners expected to self-certify include:

- LWRM cost-share applicants (30) - before receiving a cost-share contract;
- FPP participants (120) - during spot checks every 5 years;
- Parcels on which LCD has received a complaint (10) - as a part of staff follow-up;
- Dell Creek Priority Watershed participants (10) - before receiving a cost-share contract.

Once the Dell Creek Priority Watershed Project is completed, LCD will shift the priority project focus area for NR151 self-certification and compliance plan implementation efforts to those watersheds draining to a surface water that DNR has identified as "Impaired" or "Outstanding and Exceptional".

The LCD will reach out to educate and assist landowners regarding the NR151 rules on the basis of the priorities identified in this plan. The level of effort will be based on staff and cost-share funding available. These priorities will be used to create a cost-share ranking system to allocate LWRM-funded conservation practices.

Priorities areas include:

- Water Quality Management Areas (WQMA);
- Watersheds draining to a surface water that DNR has identified as “Impaired” or “Outstanding and Exceptional”;
- Livestock operations with the highest pounds of phosphorus being discharged into channelized flow;
- Soil erosion over “T”;
- Cropland erosion on lands with phosphorus index scores of greater than or equal to six.

### **Information and Educational Activities**

The implementation of the NR151 Performance Standards will focus on voluntary compliance through the education of landowners regarding these new requirements and their applicability to the landowner’s individual situation. The LCD will continue to distribute information and educational material from various sources such as UWEX, DNR, DATCP, NRCS, FSA, LCD and the statewide NR151 Information and Education Committee to affected landowners. We will use a series of direct mailings, newsletters, radio programs, workshops, and on-site visits as the avenue for information distribution. Specific programs are listed in the Information and Education Chapter of this plan.

### **Monitoring and Evaluation**

An annual report will be submitted to DATCP during our annual grant application and reporting process. The use of nonpoint source inventories will also be used for monitoring and evaluating our plan and to establish future plan objectives and goals. The LCD will continue to conduct an annual transect survey measuring cropland erosion trends. The transect survey will be conducted each spring season (May-June) with the resultant data analyzed and erosion levels summarized. This transect survey report will be used to evaluate erosion trends and workload level required to assist landowner’s with conservation plan implementation. A copy of the data will be submitted to DATCP.

The LCD will continue to monitor the FPP program participants through farm visits every five years for compliance with NR151 standards. Landowners enrolled in FPP are asked to self-certify their compliance with NR151 each year. Those in Exclusive Agriculture Zoned Towns complete the form during annual meetings with staff. Those not in Exclusive Agricultural Zones that have signed FPP agreements after the NR151 rule changes went into effect on October 1, 2002 reply to a mailing sent from the LCD. Currently, 95 of the 357 landowners in Exclusive Agricultural Zoned towns report having a nutrient management plan. All FPP participants have a conservation plan on file managing cropland erosion rates to "T", but these farms have not been analyzed to determine compliance with the other NR151 standards.

The LCD is currently collecting information on a subset of barnyards in the county regarding their compliance with NR151 standards. This information will be incorporated into a landowner database. The data collection process will be reviewed and if determined effective, the inventory will continue to collect information from all barnyards in the county.

In addition, the Sauk County LCD Annual Report will continue to be available for all county residents, and a report will also be given to the County Board of Supervisors and forwarded to the Department of Agriculture, Trade and Consumer Protection.

### **Financial Considerations**

The agricultural performance standards and prohibitions found in NR151 require 70 percent cost-sharing be offered to change an existing cropland practice or livestock facility to bring them into compliance with the new standards. The opportunity exists for an increase to 90 percent cost-sharing if economic hardship is proven.

The cost-sharing requirements to enforce compliance applies to sites found not to be in compliance prior to October 1, 2002. This excludes nutrient management which has its own timeline related to geographical location, which was covered earlier in this section. Farmers who are in compliance on or after that date do not have a right to cost sharing if they later fall out of compliance. Farmers who establish new facilities may be eligible for cost sharing, but cost sharing is not required for compliance. Those farms covered under a Wisconsin Pollution Discharge Elimination System permit are not eligible for state cost-sharing to meet performance standards and prohibitions required under their permits.

Many farmers voluntarily install conservation practices on their farms to improve water quality, enhance wildlife habitat and prevent soil erosion. Cost-share dollars will continue to be prioritized toward landowners looking to voluntarily implement Best Management Practices (BMPs) on their lands to meet NR151 standards. Sauk County will continue to offer voluntary cost-sharing as program funds become available.

### **Maintenance of Public Records and Landowner Notification**

The compliance records and related information concerning specific parcels will remain public record. To ensure that subsequent owners of property are made aware of and have access to NR151 compliance information, we will continue to work on a long-term notification and compliance recording process.

### **Ongoing Evaluations to Verify Compliance**

The LCD will develop a long-term plan to balance workload relating to servicing new NR151 non-compliant issues and spot-checking existing ongoing compliance issues. It is likely that a combination of spot-checking, self-certification forms, and other infield evaluation tools will be used to maintain a long-term monitoring plan to assure ongoing compliance.

### **Assist in Community Adoption and Implementation of Sustainability Principles**

LCD staff will provide assistance to communities, schools and businesses working toward the implementation of long-term sustainability. Staff will be made available for educational programs regarding these topics as well as individual consultations with community leaders and business operations. Initial focus will be on county buildings and operations to evaluate and make recommendations regarding practices in place. Any new buildings or structures considered by the county will be evaluated and scored against existing matrix for sustainability. Staff will investigate options for regional waste recycling and alternative treatment and use of waste products. A greater emphasis and increased assistance will be offered to farms interested in incorporating organic or other sustainable operations into their management. Alternative travel options for residents and county employees will be investigated and supported to reduce the dependence on fossil fuels.

## **Monitor and Evaluate Plan Implementation Progress**

### **Short-term Evaluation of Plan Implementation Progress**

LCD annual workplans include parameters for measuring accomplishments. Progress is reviewed monthly by the LCC and is reported annually to DATCP. Monitoring is done to evaluate compliance with and effectiveness of specific programs such as the FPP status reviews mentioned above, FSA spot checks, CRP compliance, and the NR151 barnyard inventory also described above.

### **Resource Monitoring and Evaluation of Long-term Trends**

The LCD monitors countywide trends through a transect survey focused on soil erosion rates and through water quality testing for county streams. Additional studies are recommended in the Goals and Objectives that will be considered according to availability of staff and resources.

#### **Transect Survey**

The transect survey, begun in 1999, is an annual data collection initiative designed to determine current soil erosion levels on cropland fields throughout the county and to track cropping trends. Our survey uses statistical sampling techniques to gather data from a representative sample of cropland fields. Sample points were originally plotted using GPS, the Global Positioning System, and staff surveyors return to the exact location each year to gather data. The survey samples 685 fields covering every township and representing a cross section of countywide field topography and soil types. Data is recorded on each field including soil type, slope steepness and length, previous year's crop, current year's crop, residue level present after planting, tillage method used, conservation practices present on the land, and the presence of ephemeral gully erosion. The survey is designed to get a realistic handle on the level of soil erosion in the county as well as cropping and tillage trends.

The survey for the past nine years has indicated that the average annual soil loss for the county has remained relatively constant in spite of ever greater acres planted to row crops. Crop selection and rotation are important factors in controlling soil erosion and sedimentation. A field planted to alfalfa is much less prone to soil erosion than a field of corn or soybeans. While corn

and soybean acreage has generally increased and alfalfa/hay acreage has decreased, the use of buffer strips, conservation tillage, no-till and other tillage methods that provide higher levels of crop residue left on the soil surface after planting has had a positive, offsetting effect on erosion levels. High residue levels protect the soil from eroding and washing away, the higher the residue levels, the greater soil protection is afforded the field.

Urban expansion and continued rural residential development has resulted in the conversion of some agricultural lands originally selected for the transect survey. This loss of survey points is expected to continue and will require the identification of additional cropland points to add to the survey in order to maintain statistical accuracy.

Assessing the level of soil erosion in Sauk County, as well as the rest of the state, was always a difficult task since reliable historical data was not available. The Sauk County transect survey provides an accurate, field-based method of monitoring soil erosion and cropping trends. Although predicting and measuring soil erosion levels on individual farms is a well established procedure using the Revised Universal Soil Loss Equation (RUSLE2), countywide estimates of soil erosion are now possible without resorting to “educated guesses.” The Sauk County Land Conservation Department expects to continue the transect survey in the future and thereby continue to improve the accuracy of the data.

### **Water Quality Monitoring**

The LCD is in the process of creating a baseline inventory of water quality in Sauk County surface waters to track their health over time. Although many conservation practices have been completed through a variety of initiatives and programs, assessing the success or failure of individual initiatives has been difficult due to the lack of historical data. While many streams, rivers and lakes are periodically monitored by the DNR and others, such data was not as site-specific, frequent, or extensive enough for Sauk County to evaluate our improvement efforts or to target future enterprises.

The LCD thus began a concerted effort to track water quality conditions through a variety of data management applications. Staff has been trained in sampling protocols, individuals and organizations have been solicited for additional field sampling assistance, and monitoring equipment has been purchased to provide accurate and timely data retrieval. Sauk County’s efforts to monitor and evaluate the success or failure of pollution abatement practices designed to control polluted runoff from both urban and rural sources will now be enhanced by this stream-specific data collection initiative.

Data collected includes:

- Macroinvertebrate identification to show overall stream health
- Oxygen levels to show sediment and nutrient loading
- Temperatures indicating level of sediment
- pH readings to show levels of nutrients

- Conductivity which relates to underlying geology

Additional water quality sampling data will continue to be available from cooperating agencies and individuals. Efforts to share data and coordinate program efforts will be strengthened. The DNR Fisheries and Watershed Management staff will continue to conduct water quality and wildlife monitoring to determine resource concerns, and the LCD staff will work closely with them to share data and obtain additional information. Volunteers also collect water quality information as a part of a lake or river association or individually and report their data to the DNR to record it in a statewide database.

### **Unmet Monitoring and Evaluation Needs**

Additional assessments identified as needed to accomplish the Goals and Objectives of this LWRM Plan include:

- Monitoring of construction site erosion control
- Investigation of septage disposal practices
- Monitoring of potential sewage discharge into storm sewers
- Sewage treatment plant potential for overflows
- Operation and maintenance of installed conservation practices
- Evaluation of streambank conditions
- Stormwater infiltration and runoff management effectiveness
- Urban stormwater discharge
- Evaluation of existing drain tile effluent loading to streams
- Regular inspection of animal waste storage units

## Conclusion

Sauk County enjoys abundant and diverse natural resources. To insure that these natural resources are used in such a way that they are available for future generations the county government created the Land Conservation Committee and the Land Conservation Department. This Land and Water Resource Management (LWRM) Plan identifies the county's current resource concerns and the ways in which these county entities in cooperation with local, state and federal partners will work with landowners to address these issues.

Sauk County has a long history of conservation-minded landowners who rely on the technical assistance of county staff as they make land use decisions. In this 2007 revision of the LWRM Plan, the Wisconsin Department of Agriculture, Trade and Consumer Protection required the inclusion of the NR151 rules adopted by the state in 2002. This does not change the county's role from assisting landowners with their conservation planning to becoming regulators. The county will continue to provide technical assistance including continued technical assistance and cost-sharing program administration regarding landowners' compliance with the NR151 rules.

The new natural resource issues that have been added in this 2007 plan revision include monitoring sustainable use of groundwater; increased solid waste responsibilities due to the elimination of the County Solid Waste Department; protecting agricultural lands and open space with purchase of development rights programs; and overall sustainability efforts, including residential, urban and county operations.

This plan is ambitious. In reality, every item will not be addressed, but current funding mechanisms look to comprehensive plans such as this to verify the validity of issues and subsequently require such documentation for grant eligibility. As a result, including items that are not currently supported will increase the likelihood of future funding.

The county values its natural resources as the foundation of healthy communities including its economy. Investing in the protection and enhancement of these natural resources is critical to the county's future health.

## Glossary of Terms

**303(d) Waters** Also called List of Impaired Waters. This list identifies waters which are not meeting water quality standards, including both water quality criteria for specific substances or the designated uses. It is used as the basis for development of Total Maximum Daily Loads (TMDLs) under the provisions of section 303(d)(1)(C) of the Clean Water Act, US Environmental Protection Agency (EPA) EPA requires that the DNR update its list every 2 years.

**ATCP50** 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. It identifies those conservation practices that may be used to meet performance standards.

**Sauk County Animal Waste Ordinance (AWO)** County ordinance addressing the installation of animal waste storage facilities.

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

**Certified Crop Advisor (CCA)** is a professional agronomist that provides advice to farmers regarding crop production, crop protection and natural resource management.

**Chapter 92** Portion of Wisconsin Statutes outlining the soil and water conservation, agricultural shoreline management, and animal waste management laws and policies of the State.

**Community Supported Agriculture (CSA)** is a nationwide movement linking local consumers and farmers into communities. Typical CSAs consist of a group of consumer shareholders that pay a sum in advance in exchange for a regular selection (weekly, biweekly) of in-season crops produced by a farm. CSAs often use sustainable farming techniques.

**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.

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

**County Conservationist** County Land Conservation Department head, responsible for implementing programs assigned to the LCD and for supervising LCD staff.

**Critical Sites** Those sites that are significant sources of nonpoint source pollution upon which best management practices shall be implemented as described in s. 281.65(4)(g) 8.am., stats.

**District Conservationist (DC)** NRCS employee responsible for administering federal conservation programs at the local level.

**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 geographically based data layers improve the ability to analyze complex data for decision making.

**Impaired Waters List** Same as the 303(d) Waters list, see above.

**Land and Water Resource Management Plan (LWRM)** A locally developed and implemented multi-year strategic plan with an emphasis on partnerships and program integration. The plan includes a resource assessment, identifies the applicable performance standards and related control of pollution from nonpoint sources, identifies a multi-year description of planned activities, establishes a progress tracking system, and describes an approach for coordinating information and implementation programs with other local, state and federal agencies, communities and organization (s. ATCP50.12).

**Land Conservation Committee (LCC)** The unit of county government empowered, by Chapter 92 of the Wisconsin 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)** is a formal agreement between two or more local public agencies that specifies the responsibilities of each agency in implementing a project.

**Non-Governmental Organization (NGO)** is any nonprofit, voluntary citizens' group which is organized on a local, national or international level.

**Nonpoint Source Pollution (NPS)** Pollution from many small or diffuse urban and rural sources. Livestock waste finding its way into a stream and causing water pollution is an example of nonpoint source pollution.

**NR151** DNR's administrative code that establishes runoff pollution performance standards for nonagricultural facilities and transportation facilities and performance standards and prohibitions for agricultural facilities and practices designed to meet water quality standards.

**Nutrient Management Plan (NMP)** The Nutrient Management Plan means any of the following: (a) A plan required under s. ATCP50.04 (3) or 50.62 (5) (f). (b) A farm nutrient plan prepared or approved, for a landowner, by a qualified nutrient management planner.

**Outstanding Resource Waters (ORW) and Exceptional Resource Waters (ERW)** DNR classifies streams as listed in NR 102.10 and NR102.11. ORW waters have excellent water quality and high-quality fisheries and do not receive wastewater discharges. ERW waters have excellent water quality and valued fisheries but may already receive wastewater discharges.

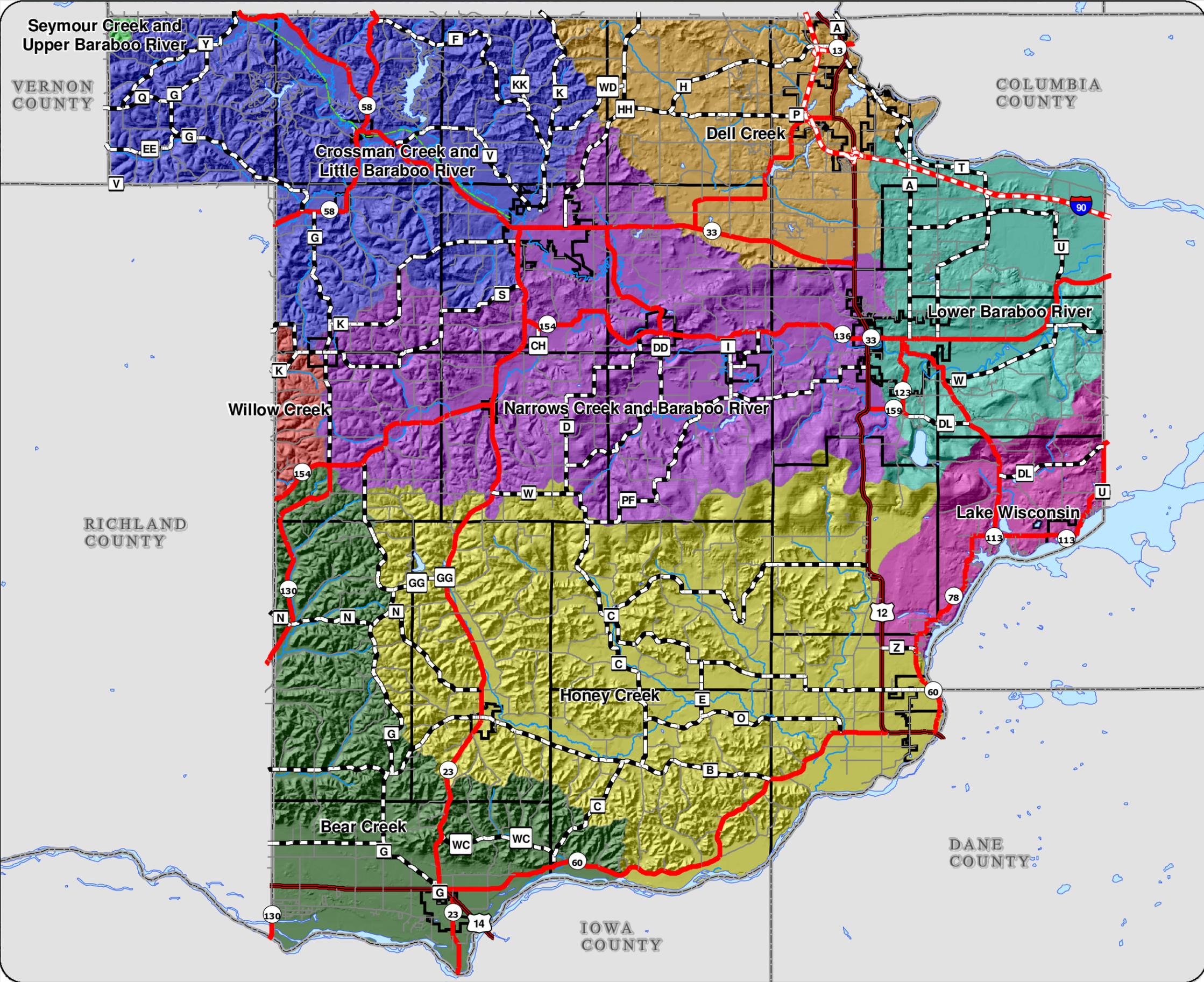
**Purchase of Development Rights (PDR)** Under a PDR program, a landowner voluntarily sells his or her rights to develop a parcel of land to a public agency or a charitable organization. The landowner retains all other ownership rights attached to the land, and a conservation easement is placed on the land and recorded on the title. The buyer essentially purchases the right to develop the land and retires that right permanently, thereby assuring that development will not occur on the property.

**Soil Loss Tolerance (“T”)** Erosion rate in tons per acre per year of soil field could lose and still maintain productivity.

**Soil Survey** NRCS conducts the National Cooperative Soil Survey and publishes soil survey reports. Soils data is designed to evaluate the potential of the soil and management needed for maximum food and fiber production.

**Water Quality Management Areas (WQMAs)** Areas 300 feet from a stream, 1000 feet from a lake or in areas susceptible to groundwater contamination.

**Watershed** The geographic area that drains to a particular river, stream or water body providing its water supply.



### Sauk County Watersheds

**Legend**

**Watersheds**

- Bear Creek
- Crossman Creek and Little Baraboo River
- Dell Creek
- Honey Creek
- Lake Wisconsin
- Lower Baraboo River
- Narrows Creek and Baraboo River
- Seymour Creek and Upper Baraboo River
- Willow Creek

**Governmental Boundaries**

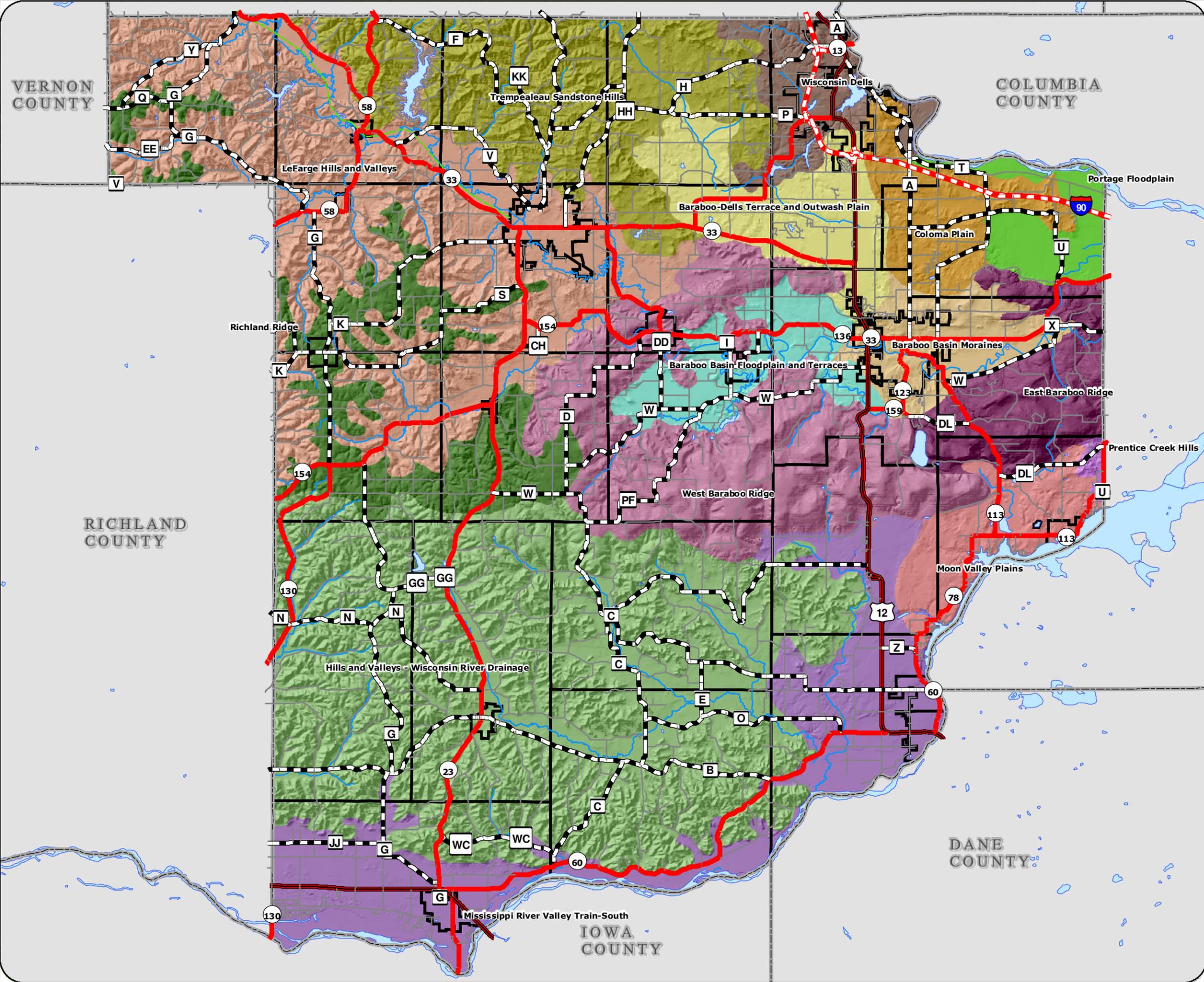
- Municipal Boundaries
- County Boundary

**Water Features**

- Rivers/Streams
- Open Water

**Transportation**

- Interstate Highway
- United States Highway
- State Highway
- County Highway
- Town Road
- Recreation Trail



### Landtype Associations

**Legend**

**Landtype Association**

- Baraboo Basin Floodplain and Terraces
- Baraboo Basin Moraines
- Baraboo-Dells Terrace and Outwash Plain
- Coloma Plain
- East Baraboo Ridge
- Hills and Valleys - Wisconsin River Drainage
- LeFarge Hills and Valleys
- Mississippi River Valley Train-South
- Moon Valley Plains
- Portage Floodplain
- Prentice Creek Hills
- Richland Ridge
- Trempealeau Sandstone Hills
- West Baraboo Ridge
- Wisconsin Dells

**Governmental Boundaries**

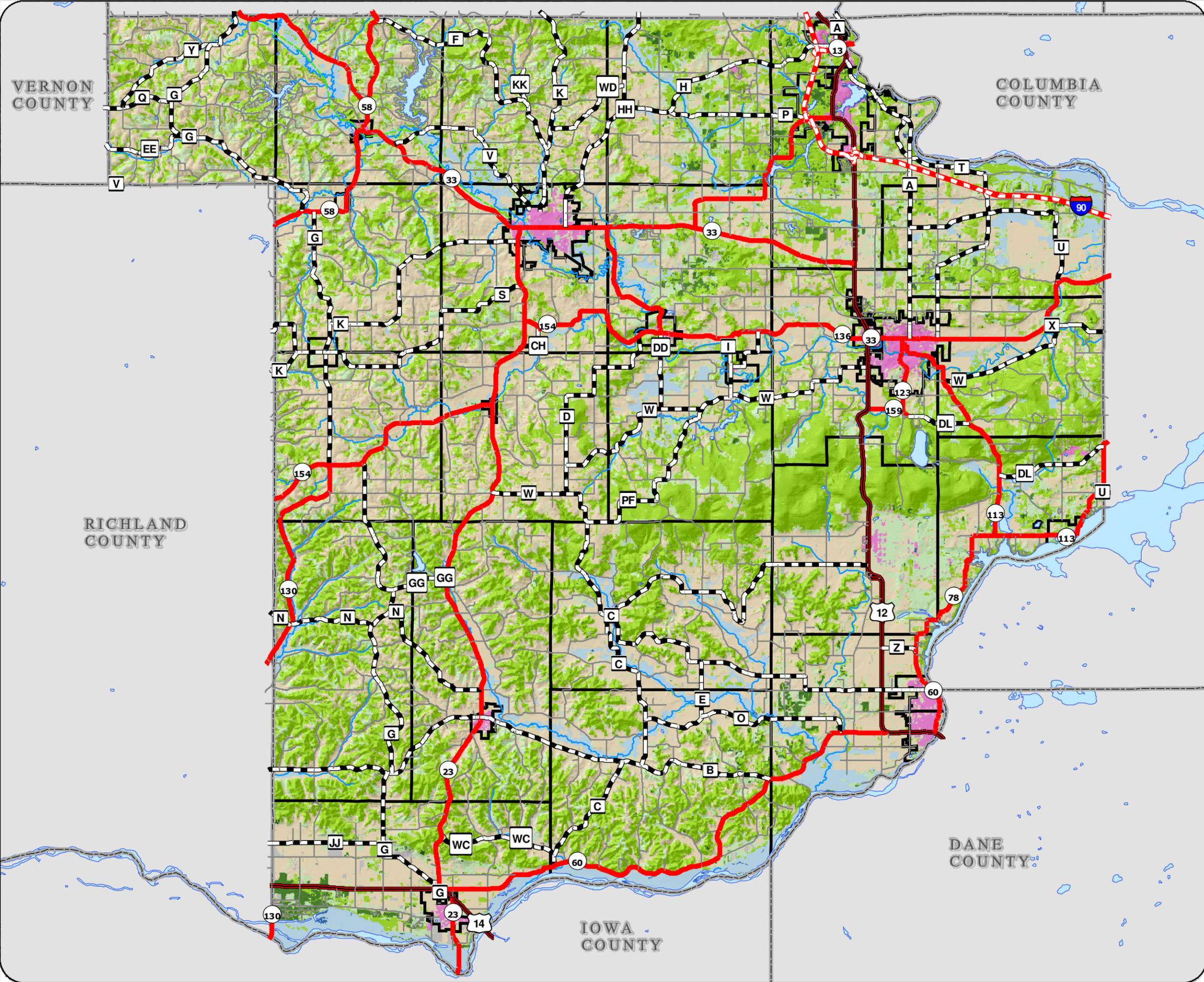
- Municipal Boundaries
- County Boundary

**Transportation**

- Interstate Highway
- United States Highway
- State Highway
- County Highway
- Town Road
- Recreation Trail

**Water Features**

- Rivers/Streams
- Open Water



Land Use / Land Cover Map

Legend

Land Use / Landcover

- Urban / Developed
- Agriculture
- Grassland
- Coniferous Forest
- Deciduous Forest
- Open Water
- Wetlands
- Barren

Governmental Boundaries

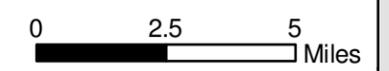
- Municipal Boundaries
- County Boundary

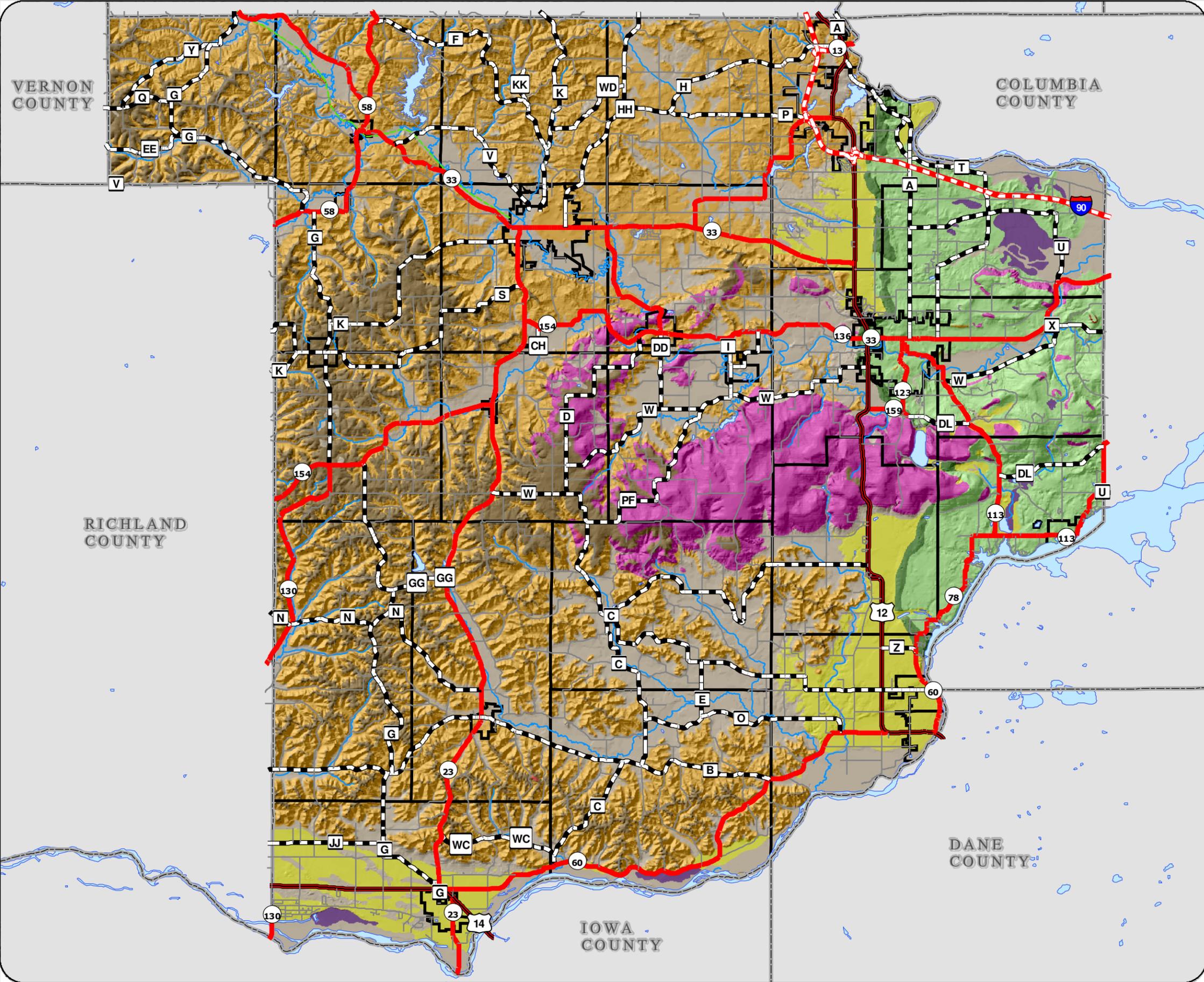
Water Features

- Rivers/Streams
- Open Water

Transportation

- Interstate Highway
- United States Highway
- State Highway
- County Highway
- Town Road
- Recreation Trail

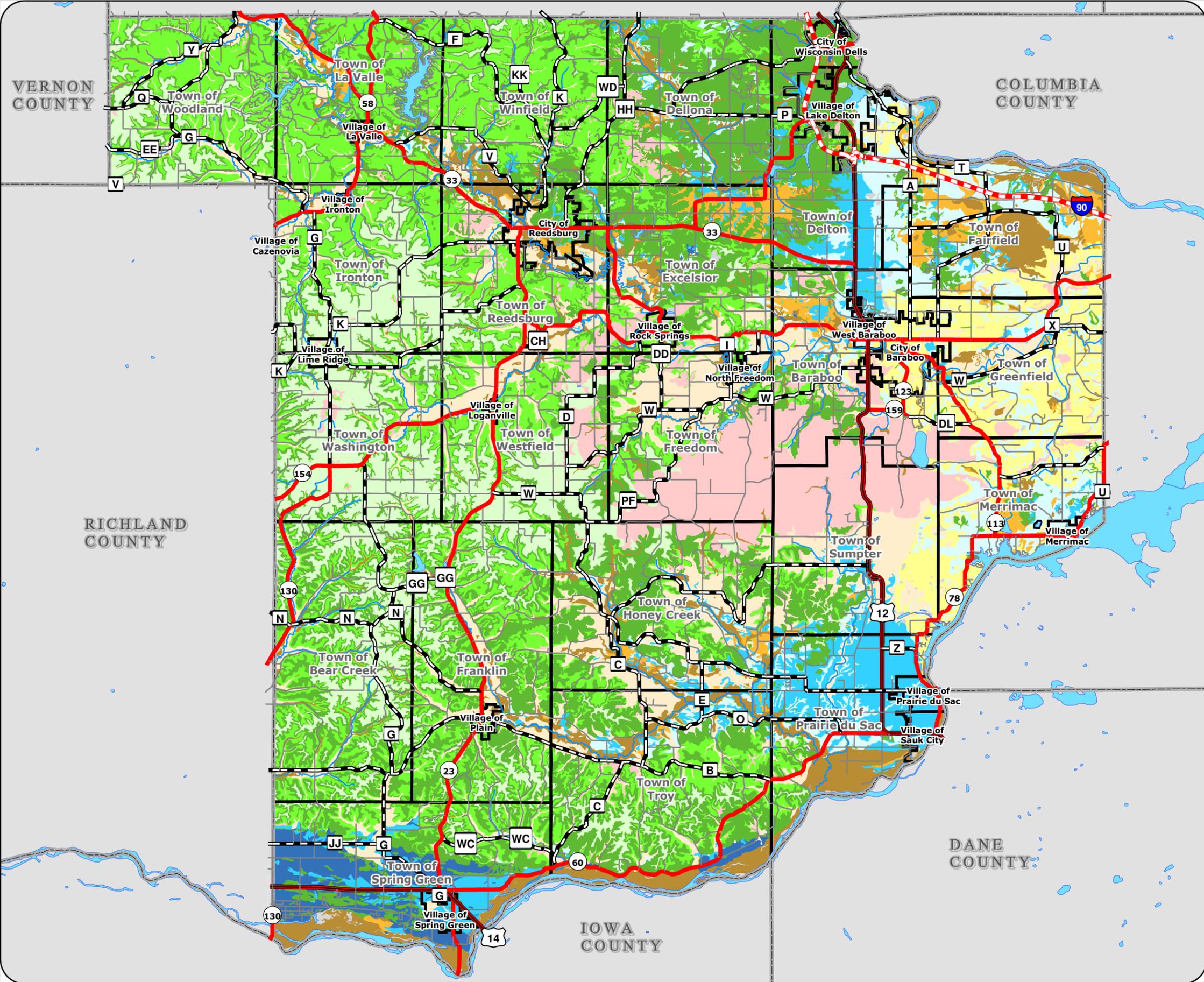




Sauk County Geology

Legend

- General Geology**
- Bottom Land and River Terrace
  - Baraboo Quartzite
  - Cambrian Sandstone
  - Organic
  - Outwash
  - Prairie du Chien Dolomite
  - St. Peter Sandstone
  - Till
  - Terminal Moraine
- Governmental Boundaries**
- Municipal Boundaries
  - County Boundary
- Water Features**
- Rivers/Streams
  - Open Water
- Transportation**
- Interstate Highway
  - United States Highway
  - State Highway
  - County Highway
  - Town Road
  - Recreation Trail



### General Soils Map

**Soil Formations**

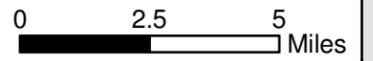
- No Soil Information
- Valton
- La Farge-Norton-Gale
- Eleva-Boone-Plainfield
- Baraboo-Rock Outcrop
- McHenry-St. Charles
- Wyocena-Gotham-Plainfield
- Dickinson-Gotham-Dakota
- Sparta-Plainfield-Sparta variant
- Ettrick-Fluvaquents, wet-Curran
- Briggsville-Mosel-Colwood
- Fluvaquents, wet-Fluvaquents

**Water Features**

- Rivers/Streams
- Open Water
- County Boundary

**Transportation**

- Interstate Highway
- United States Highway
- State Highway
- County Highway
- Town Road
- Recreation Trail



Impaired, Outstanding and  
Exceptional Resource Waters

**Legend**

**Exceptional / Impaired Waters**

- █ Exceptional
- █ Outstanding
- █ Impaired

**Governmental Boundaries**

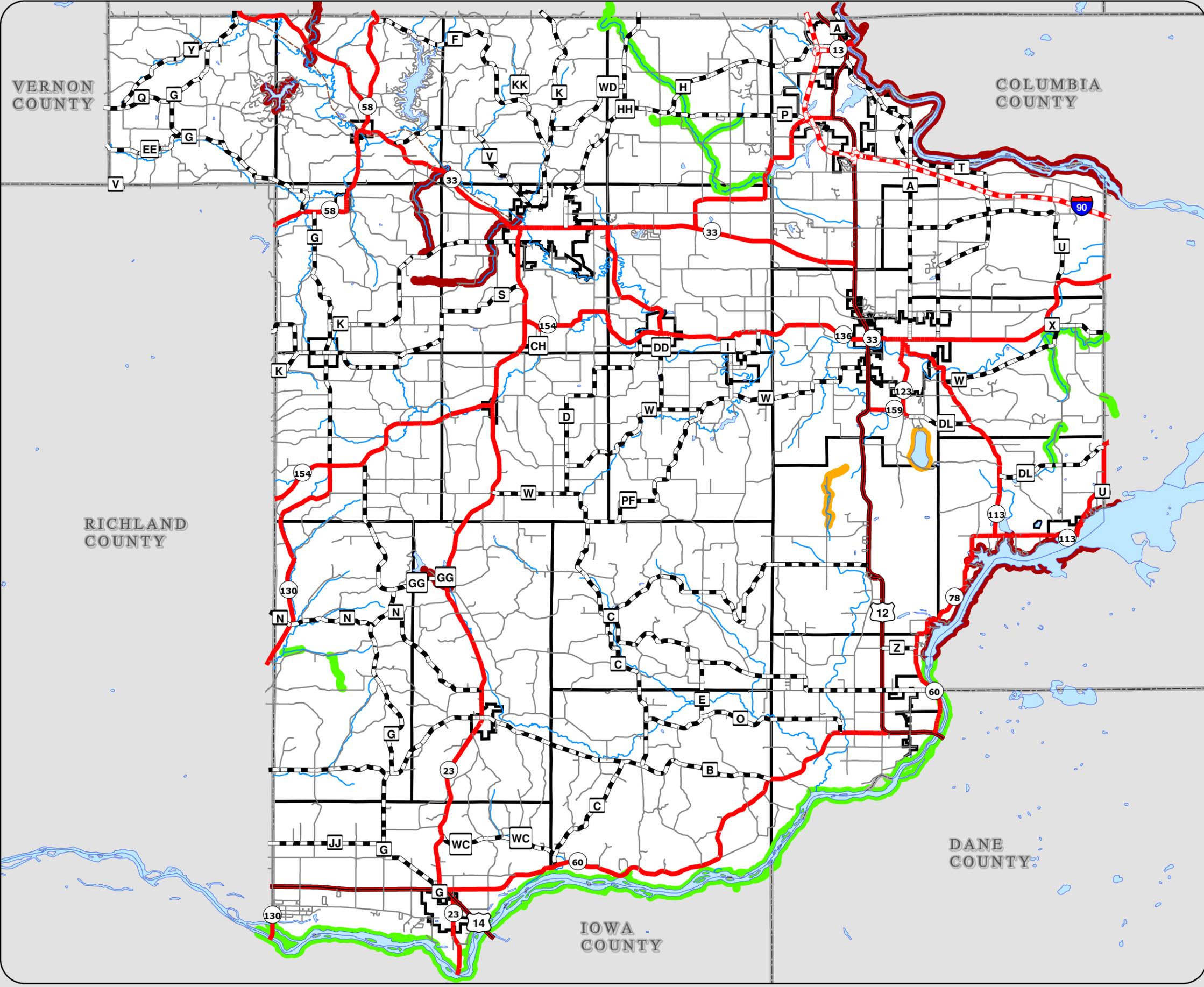
- Municipal Boundaries
- County Boundary

**Water Features**

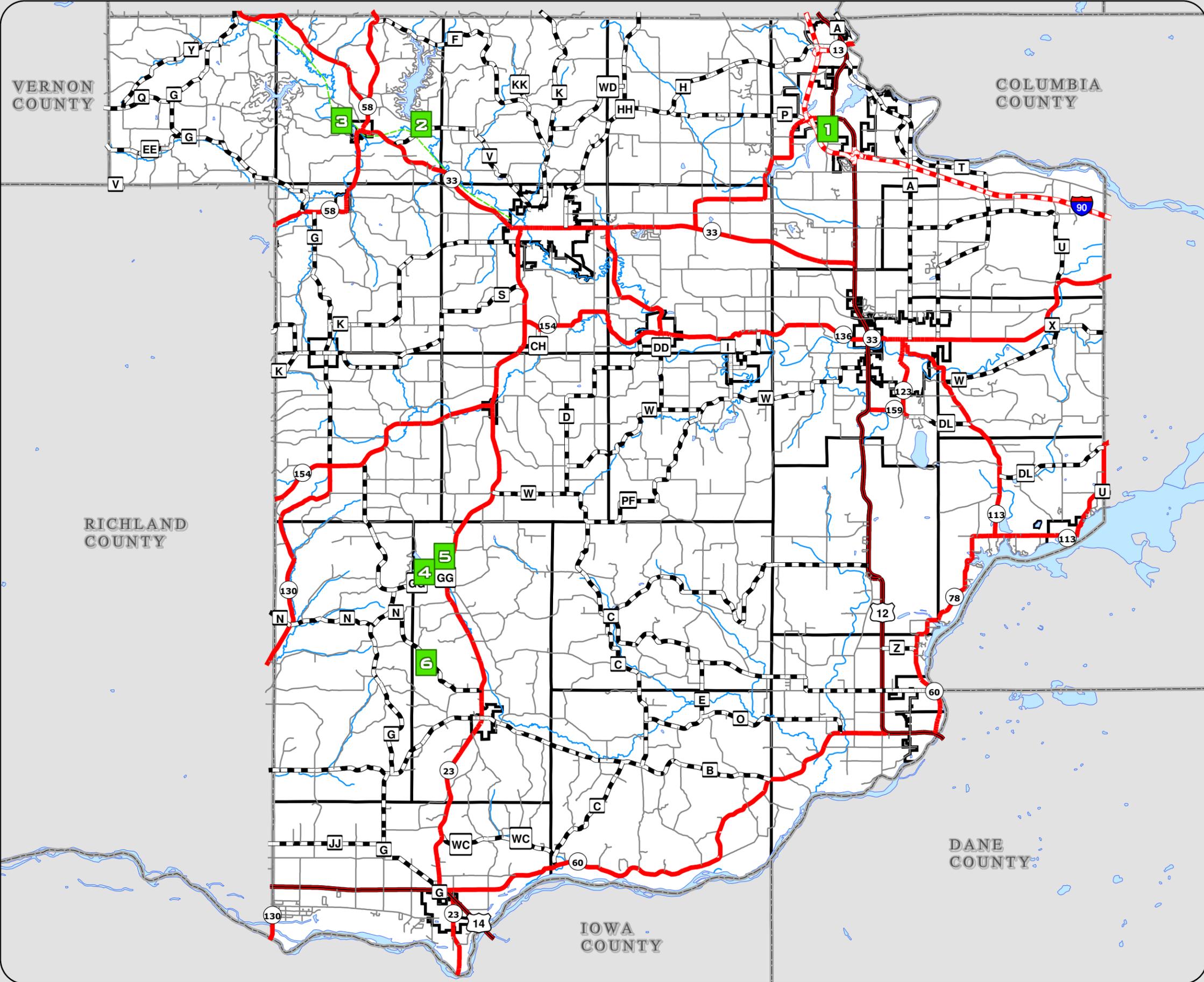
- Rivers/Streams
- Open Water

**Transportation**

- Interstate Highway
- United States Highway
- State Highway
- County Highway
- Town Road
- Recreation Trail



0 2.5 5 Miles



Sauk County Owned Dams

Legend

■ Sauk County Owned Dams

Sauk County Owned Dams	
1	Mirror Lake
2	Redstone
3	Hemlock Park
4	White Mound
5	Shanahan
6	Highway N

Governmental Boundaries

- Municipal Boundaries
- County Boundary

Water Features

- Rivers/Streams
- Open Water

Transportation

- Interstate Highway
- United States Highway
- State Highway
- County Highway
- Town Road
- Recreation Trail

0      2.5      5  
Miles

## Appendix A: Results of Public Survey

### NATURAL RESOURCE PLANNING SURVEY

*What are the most important natural resource issues that should be addressed in the county over the next five years? Score each of these issues using the following letters to indicate its ranking;  
5 = very high priority, 4 = high, 3 = medium, 2 = low, and 1 = very low*

- 4.40 Protection of surface water (streams, lakes, rivers).
- 4.39 Protection of groundwater.
- 3.94 Disposal of hazardous and electronic waste.
- 3.93 Spread of invasive species.
- 3.90 Management of livestock manure.
- 3.84 Protection of wetlands.
- 3.83 Erosion from cropland.
- 3.83 Preservation of scenic beauty.
- 3.79 Housing development in rural areas.
- 3.79 Maintenance of wildlife habitat.
- 3.76 Siting of large-scale livestock facilities.
- 3.68 Runoff from urban areas.
- 3.66 Grazing and cropping along streams and rivers.
- 3.65 Protection of air quality.
- 3.64 Protection of fishery resources.
- 3.59 Conversion of agricultural lands to other uses.
- 3.57 Solid waste disposal issues.
- 3.53 Urban storm water management.
- 3.53 Pesticide use (herbicides, insecticides, etc.).
- 3.5 Soil erosion from construction sites.
- 3.49 Availability of recycling options.
- 3.49 Management of forests and woodlots.
- 3.48 Expansion of cities and villages.
- 3.35 Spreading of septic and sewage waste.
- 3.31 Natural resource education opportunities.
- 3.23 Availability of parks and natural areas.
- 3.12 Fragmentation of forest ownership.
- 3.11 Pasture management.
- 2.99 Abandonment of unused wells.
- 2.76 Maintain access to mineral resources.
- 2.75 Access to public hunting lands.

## **Appendix B: Water Quality Monitoring Sites**

### **Water quality monitoring sites in Sauk County**

Spring Brook  
Camel's Creek  
Hulbert Creek  
Dell Creek  
Copper Creek  
Pine Creek  
Skillet Creek  
Seeley Creek  
Narrows Creek  
Hill Point Creek  
Eli Valley Creek  
Spring Valley Creek  
Carr Valley Creek  
Baraboo River  
Furnace Creek  
Crossman Creek  
Plum Creek  
Honey Creek  
Wilson Creek  
Otter Creek  
Rowley Creek  
Leech Creek

**Appendix C: 2006 DNR List of Impaired, Outstanding and Exceptional Resource Waters**

**Outstanding and Exceptional Waters**

<u>Waterbody Name</u>	<u>Portion Within ORW/ERW Classification</u>	<u>Status</u>
Devil's Lake	All	ORW
Otter Creek	From headwaters to south section line of T11N R6E S33	ORW
Parfrey's Glen	From headwaters to CTH "DL"	ORW
Beaver Creek	All	ERW
Biser Creek	All	ERW
Boulder Creek	All	ERW
Camels Creek	All	ERW
Dell Creek	All	ERW
Hulburt Creek	Hwy H bridge upstream	ERW
Marble Creek	Originating in S30 T10N R3E	ERW
Rowley Creek	All	ERW
Unnamed Crk originating in S29 T10N R3E	All	ERW
Wisconsin River	From below Prairie du Sac dam to Richland County line	ERW

**Impaired or 303(d)-Listed Waters**

<u>Waterbody Name</u>	<u>Portion Within Impaired Classification</u>
Silver Creek	Stream miles 0-4
Babb Creek	Stream miles 0-6
Gruber's Grove Bay	
Shanahan Valley Creek	Stream miles 0-1
Crossman Creek	Stream miles 0-4.5

**Appendix D: Public Hearing Notice**

**NOTICE OF PUBLIC HEARING  
BEFORE THE SAUK COUNTY LAND CONSERVATION COMMITTEE**

STATE OF WISCONSIN    )  
  )   SS.  
SAUK COUNTY                )

TO WHOM IT MAY CONCERN:

PUBLIC NOTICE is hereby given to all persons in the County of Sauk, Wisconsin, that a public hearing will be held on October 22, 2007 at 2 p.m., or as soon thereafter as the matter may be heard, in the County Board Room in the Sauk County West Square Building, Baraboo, Wisconsin, relative to the Sauk County Land and Water Resource Management Plan review. The plan can be viewed on the County website at <http://www.co.sauk.wi.us/dept/land/index.html> or at the Sauk County Clerk’s Office.

All persons are invited to attend said hearing and be heard. If you have a disability and need help, reasonable accommodations can be made for those so requesting, provided that a 48 hour notice be given. Please call 608-355-3245 or TTD 608-355-3490.

Dated at Baraboo, Wisconsin, this 24th day of September 2007.

SAUK COUNTY LAND CONSERVATION COMMITTEE

Katherine Zowin  
Secretary

To be published **October 8, 2007.**

**Appendix E: Public Hearing Notice**

**NOTICE OF PUBLIC HEARING  
BEFORE SAUK COUNTY LAND CONSERVATION COMMITTEE**

STATE OF WISCONSIN    )  
                                  )   SS.  
SAUK COUNTY            )

TO WHOM IT MAY CONCERN:

PUBLIC NOTICE is hereby given to all persons in the County of Sauk, Wisconsin, that a public hearing will be held on November 14, 2007 at 8 p.m., or as soon thereafter as the matter may be heard, in the Kraemer Library and Community Room, Plain, Wisconsin, relative to the Sauk County Land and Water Resource Management Plan review. The plan can be viewed on the county website at <http://www.co.sauk.wi.us/dept/land/index.html> or at the Sauk County Clerk's Office.

All persons are invited to attend said hearing and be heard. If you have a disability and need help, reasonable accommodations can be made for those so requesting, provided that a 48 hour notice be given. Please call 608-355-3245 or TTD 608-355-3490.

Dated at Baraboo, Wisconsin, this 15th day of October 2007.

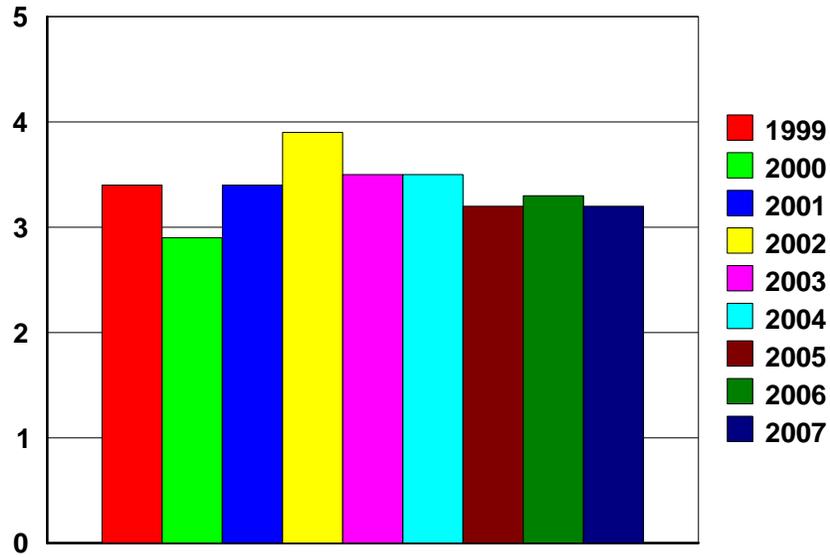
SAUK COUNTY LAND CONSERVATION COMMITTEE

Katherine Zowin  
Secretary

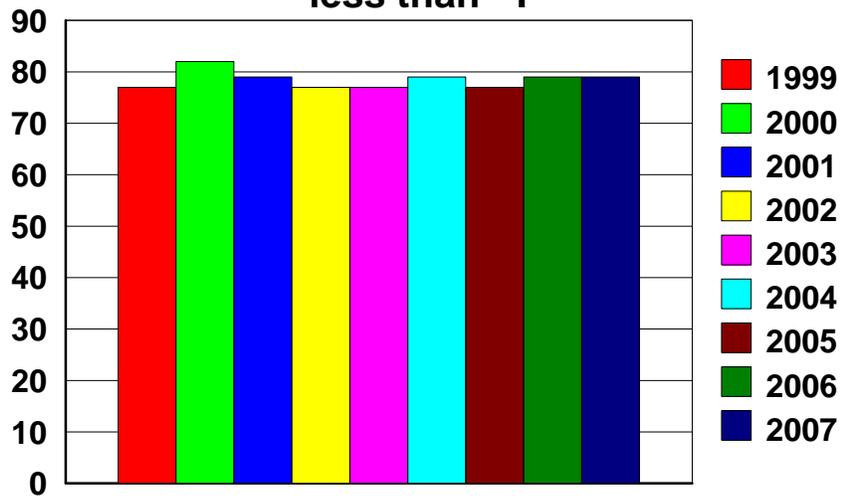
To be published **October 31, 2007.**

## Appendix F: Annual Soil Erosion Transect Data for years 1999-2007

### Estimated soil loss in tons per acre



### Estimated percentage of fields with soil erosion less than "T"



## **Appendix G: Administrative Rule ATCP50 conservation practices**

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) is responsible for developing and maintaining the list of cost-share practices to implement NR151. They are listed below, and their description can be found in ATCP50. Other practices are listed by DNR in the Stormwater and Erosion Control Practices and the NRCS Technical Guide.

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

The USDA-NRCS Technical Standards contain the specifications for the design, construction, implementation and maintenance of these practices. Copies of the USDA-NRCS Technical Standards can be viewed on-line at <http://efotg.nrcs.usda.gov/treemenuFS.aspx>