Land & Water Resource Management Plan

2020 - 2029 (Extended 2034)

LA CROSSE COUNTY

Exceptional services. Extraordinary place.

La Crosse County Land and Water Resource Management Plan 2020-2029

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LAND AND WATER RESOURCE MANAGEMENT PLAN 2020-2029
LA CROSSE COUNTY WISCONSIN

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PLAN SUMMARY

La Crosse County sits in the heart of the un-glaciated area of the Upper Midwest known as the Driftless Region. The Driftless Region of Wisconsin is a unique landscape comprised of deep valleys and steep bluffs. This area was bypassed by the most recent glacial advance but was highly dissected by the glacial melt water when the glaciers receded over 12,000 years ago. The landscape here consists of towering bluffs and vast coulees that provide panoramic views of contoured farm fields, wooded hillsides and clear running streams. Bordered by the Mississippi River to the west and the Black River to the north, La Crosse County is rich in high quality natural resources. Diverse and complex ecosystems thrive here. La Crosse County and the Coulee Region support many rare plants and animals that are only found in this part of the country. This abundance of natural resources and beauty has led the La Crosse area to be known as "God's Country". Over 130,000 people choose to live here and many more come to visit, primarily because the quality of life the area has to offer is unmatched. The natural resources base of this area contributes mightily to that desire to be a part of God's Country.

The La Crosse County Department of Land Conservation has been charged with the responsibility of protecting and enhancing the soil and water resources of the county. In conjunction with our conservation partners, Department of Natural Resources, (DNR) Natural Resources Conservation Service (NRCS) and Department of Agriculture, Trade and Consumer Protection (DATCP), we develop and administer programs that provide technical, planning and financial assistance to landowners that cooperatively implement conservation measures that protect soil and water resources. The purpose of the La Crosse County Land and Water Resource Management Plan is to:

- Identify and prioritize natural resources issues and concerns for La Crosse County
- Develop a coordinated effort to resolve those issues and concerns
- Provide guidance for cooperating agencies to assist in implementing the plan
- Develop activities, goals and objectives that give clear direction for implementation of the plan
- Obtain financial assistance to implement the Land and Water Resource Management Plan

Funding for cost share assistance to cooperating landowners will be a necessity to provide incentive for conservation program participation. The Department of Land Conservation is required to provide cost share assistance when implementing the rules of NR 151. Providing financial assistance for those participating in the state's Farmland Preservation Program is not required but incentive money will be critical in achieving and maintaining conservation compliance.

Abbreviated Table of Contents

Chapter 1: Background, Plan Development, Citizen Participation, Public Input, Plan Oversight, Funding and Mandates, Program of Work, Estimated Program Costs

Chapter 2: 2012-2019 Plan Accomplishments

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Chapter 6: Urban Performance Standards Implementation, Urban Land Use Assessment, NR 151 Non-Agricultural Performance Standards, NR 216 Storm Water Discharge Permits, Non-Agricultural Performance Standards Implementation, NR 216 Implementation, Urban Performance Standards Implementation Schedule

Chapter 7: Non-Metallic Mining Ordinance, County Reclamation Program, Non-Metallic Mining Ordinance Schedule

Chapter 1: ***Introduction***

Background: This plan is a revision of the 2012-2019 La Crosse County Land and Water Resources Management Plan. This plan is in response to Wisconsin 1997 Acts 27 and 1999 Act 9 which amended Chapter 92 to require counties to develop and implement Land and Water Resources Management plans.

Plan Development: The La Crosse County Department of Land Conservation convened a meeting of cooperating agencies on August 18th, 2018 to review natural resources data and discuss current resource management issues in La Crosse County. Representatives from the Department of Natural Resources, Natural Resources Conservation Service, Farm Service Agency and UW-Extension were in attendance.

Citizen Participation: Land Conservation Department staff held two citizen participation meetings throughout La Crosse County to solicit public input regarding natural resources issues and concerns and how DLC staff can address them through program administration. For urban related issues, a contracted environmental educator conducted public information and outreach programs to involve businesses and homeowners regarding erosion control and stormwater management practices.

Public Input: A public hearing regarding the contents, goals and objectives of the La Crosse County revised Land and Water Resources Management Plan was held on Monday, September 2nd, 2019 at 6:30 pm in the La Crosse County Administrative Building, 212 6th Street North, Room 430, La Crosse, WI 54601.

Plan Oversight: The La Crosse County Planning, Resources and Development Committee has approved procedures for the implementation and any revisions of this plan.

Program of Work: The Department of Land Conservation has two primary areas of work which consist of rural programs and urban based programs. The department has trained staff that assists the public with wide-ranging issues that may involve animal waste management or complex storm water runoff control in an urbanized area. The Department of Land Conservation has 7 full-time employees. The Department has 14,430 available staff hours annually.

Estimated Program Costs: Department staff has estimated that it will cost $11,230,050 to implement this plan with the State of Wisconsin providing $7,471,670 and La Crosse County providing $3,758,380 over the ten-year period.

Chapter 2: 2007-2011 Plan Accomplishments

2012-2019 Plan Accomplishments: Records indicate that the DLC was successful in obtaining all the "high priority" goals and objectives for both the agriculture and urban programs and nearly accomplished all of the other goals set by the PR&D Committee.

Chapter 3: Water Quality Assessment

Basins: La Crosse County contains two primary watershed basins; the Black River Basin and the La Crosse-Bad Axe River Basin. Both basins drain to the Upper Mississippi River Watershed Basin.

Watersheds: La Crosse County has many diverse sub-watersheds. Many of them are high value resources that support cold-water sport fisheries. Other watersheds often support warm-water sport fisheries and receive high levels of recreation from fishing to canoeing and kayaking as well as swimming and recreational boating.

Water Quality Goals and Standards: The PR&D Committee has established goals for the County's water resources that are in line with other County Departments, State and Federal Agencies and based on scientific research. The committee has established the following water quality parameters; total phosphorus- 0.05 mg/L or less, fecal coliform bacteria-1000 colonies/100 ml and dissolved oxygen-not less than 5 mg/L of water at any time of the year, not less than 6 mg/L of water for streams supporting a cold water sport fishery and no less than 7 mg/L of water during trout spawning seasons.

Water Quality Monitoring-Performance Standards: La Crosse County has operated an extensive stream water quality monitoring station since 1995. The DLC staff also regularly monitors 27 of the County's largest sub-watersheds to watch for possible pollution from agricultural sources and get a general idea of the overall health of the County's streams.

Topography, Land Use, Soil Erosion Conditions: La Crosse County is located in the heart of Wisconsin's drift-less region. It consists of steep bluffs and deep coulees covered by rich and fertile, wind-blown silt loam. There are 170,000 acres of farmland in the county, most of which is cropped for feeding dairy cattle or for cash grain. Much of the farmed acres are steep slopes that are susceptible to soil erosion and animal waste runoff. It is estimated that the County's average erosion rate is 4.2 tons/ac/yr compared to the County's average "tolerable" soil loss rate of 4.5 tons/ac/yr.

Water Quality Assessment Schedule: The DLC has established a schedule for monitoring the County's water resources over the next ten years and have estimated the associated costs at $542,600.

Chapter 4: Agricultural Performance Standards

State Agricultural Performance Standards, NR 151: It is the intent of this plan and the DLC to implement the state's agriculture performance standards and prohibitions and incorporate the practices in all department activities and programs.

ATCP 51: La Crosse County, by way of a zoning ordinance, regulates the number of animal units that a landowner may keep on their property before needing to obtain conditional use permits. The County's limit is 500 animal units for new and expanding operations or a 20% increase in animal units for existing operations with more than 500 animal units. The DLC uses the ATCP 51 Livestock Facility Siting Application and rule process to review affected farming operations.

County Activities Subject to Regulation, Chapter 23: La Crosse County adopted an Animal Waste Management Ordinance in 1998. The ordinance regulates the construction and operation of both animal feedlots and manure storage facilities. The ordinance incorporates and enforces the Agriculture Performance Standards and Prohibitions of NR 151.

Permits: Permits are required for the construction of new manure storage facilities and feedlots. Notices of non-compliance may be issued for existing feedlots and storage facilities that do not meet ag performance standards and prohibitions.

Enforcement: La Crosse County can take enforcement and appeals action for non-conforming pre-existing regulated activities by way of the Animal Waste Management Ordinance-Chapter 23.

Technical Requirements: The Department of Land Conservation utilizes the Best Management Practices as listed in ATCP 50 Subchapter VIII. Conservation practice installation is also done in accordance with the USDA-NRCS Field Office Technical Guide.

Chapter 5: Agricultural Performance Standards Implementation

Prioritizing for Compliance: Agricultural facilities that are new or expanding and sites previously determined to be non-compliant with the agriculture performance standards will be given highest priority for technical and financial assistance when enforcing the state ag performance standards under NR 151.

Priority Farms, Farmland Preservation Program: La Crosse County is zoned as exclusive agriculture. There are currently 261 participants in the FPP in the county. All participants will be required to be in full compliance with NR 151 ag performance standards to remain eligible to receive the program tax credit. DLC staff will provide planning and technical assistance and privileged financial assistance for those program participants who wish to stay eligible for the program. They are the DLC's highest priority farms.

Targeted Watersheds: The DLC participates in the DNR's Targeted Runoff Management grant program to correct agriculture related water quality issues. The Department targets watersheds with degraded water quality that are listed by the DNR as an impaired water body. The Bostwick Creek Watershed is given a high priority and has an approved 9 Key Elements Plan. Funding for implementation of the 9 Key Elements Plan will be applied for through the DNR's Targeted Resources Management Grant Program.

Financial and Technical Assistance Policies: The Department of Land Conservation will allocate limited financial assistance monies to those landowners who are 1. in the Farmland Preservation Program and are found to be non-compliant. 2. Those landowners located within the Bostwick Creek Watershed project area. 3. Those landowners seeking to voluntarily comply with the NR 151 ag performance standards. 4. Those who are facing enforcement actions due to noncompliance issues and are considered a threat to the health and safety of the general public and aquatic life. Technical assistance policies mirrors those for financial assistance. No assistance, financial or technical, is given to those applying for a permit under ATCP 51.

Cost Share Resources: La Crosse County utilizes the following sources to provide cost share assistance to landowners who participate in county conservation programs; La Crosse County Environmental Fund, DATCP's Soil and Water Resource Management Program, DNR's Targeted Runoff Management grant program and the USDA-NRCS Environmental Quality Incentive Program.

Information and Education Program: The Department of Land Conservation will work with UW-Extension Services to develop and implement an effective educational program for rural landowners and will continue to have town hall meetings

regarding program updates. The Department will also engage in long-term contracts with NewGround for educational services for the Stormwater Runoff Management Program.

Nutrient Management: Land Conservation staff, in conjunction with NRCS, will continue to provide nutrient management planning assistance for farmers who need to remain in compliance with conservation standards. The DLC will attempt to assist with the nutrient management plan writing until the workload exceeds staff capacity.

FPP Self Certification: La Crosse County provides a self-certification process for FPP participants to easily certify their compliance with the ag performance standards and prohibitions.

Basin and LWRM Plan Coordination: The Department of Land Conservation and Department of Natural Resources will continue to work cooperatively to develop and implement strategies that address local water resources concerns.

FPP and Tracking: Department staff will monitor conservation compliance requirements for FPP participants with mandatory annual crop reporting and on site spot-checks once every four years. Staff will also assist new FPP applicants in meeting the soil and water conservation requirements of the program.

Intergovernmental Cooperation: The La Crosse County Land and Water Resource Management Plan relies on the cooperation of departments and agencies at the Town, County, State and Federal level. The DLC will continue this relationship when implementing the plan.

Agricultural Performance Standards Implementation Schedule- Objectives, Actions, Dates, Costs: This plan sets program goals, anticipated actions and timelines and highly subjective estimated costs.

Chapter 6: Urban Performance Standards Implementation

Urban Land Use Assessment: Urban sprawl around the La Crosse Metro Area continues to convert agricultural lands. The economic slow-down from 2008 has stymied the conversion of farmland to residential and hobby farm uses. There are over 2400 undeveloped lots available in La Crosse County, enough to supply the expected growth in the County for the next 25 years.

NR 151 Non Agricultural Performance Standards for Construction Site Erosion Control and Storm Water Management: The La Crosse County Land and Water Resource Management Plan references the Best Management Practices as listed in Subchapter III of NR 151. These BMP's are assumed to provide an 80% reduction in sediment load on construction sites.

NR 216 Storm Water Discharge Permits: La Crosse County is listed as a municipal separate storm sewer system (MS4) and is required to obtain a Wisconsin Pollution Discharge Elimination System permit.

Non Agricultural Performance Standards Implementation: The La Crosse County Board of Supervisors approved the Post-Construction Storm Water Management Ordinance in November of 2008. The County Board has also adopted an erosion control and land disturbance ordinance in 1992 and revised it in 2017. These ordinances control erosion and storm water runoff from construction sites.

NR 216- Implementation of MS4 Requirements: This plan describes the details for implementing the requirements of the County's WPDES permit including Public Information and Outreach, Illicit Discharge Detection and Elimination, Construction Site Pollutant Control, Post-construction Site Storm Water Management and Pollution Prevention/Good Housekeeping.

Chapter 7: Non-Metallic Mining Ordinance

County Reclamation Program: La Crosse County has established a mine reclamation program to regulate 17 non-metallic mines which include 190 active acres. The program requires mine owners and operators obtain permits with the submittal of a mine reclamation plan and provide financial assurance until the mine is completely reclaimed. Annually, DLC staff inspects the mines and reports the active acres at each site.

LAND AND WATER RESOURCE MANAGEMENT PLAN

2020-2029

LA CROSSE COUNTY WISCONSIN

Prepared by: La Crosse County Department of Land Conservation

Chapter 1: INTRODUCTION

BACKGROUND

The La Crosse County Board finds that runoff from land disturbances and agricultural facilities carries a significant amount of sediment and other pollutants to the waters of the state, and, that improper management of animal wastes, inorganic fertilizers and soil resources causes pollution of surface and ground water, harming public health, aquatic life, and consequently quality of life.

The La Crosse County Department of Land Conservation is charged with developing strategies, implementing programs, and providing the technical assistance to abate runoff pollution caused by the improper management of animal wastes, inorganic nutrients and soil resources.

1997 Wisconsin Act 27 and 1999 Wisconsin Act 9 amended Chapter 92 of the Wisconsin Statutes, requiring counties to develop Land and Water Resource Management Plans. The intent of this charge was 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 soil and water resources.

This plan is a requirement of ATCP 50.12 and is to be revised every ten years. It provides goals and objectives that the Department of Land Conservation proposes to implement as a means of reducing both urban and agricultural nonpoint sources of pollution from degrading our surface and groundwater resources and protecting our soils from erosion. This plan contains the following information;

Water Quality and Soil Erosion Conditions
State and Local Regulations to Implement the Plan
Water Quality Objectives
Key Water Quality and Soil Erosion Problem Areas
Best Management Practices to Address Problem Areas
A Plan To Address Priority Farms
Strategies to Encourage Voluntary Implementation
Compliance Procedures, Enforcement and Appeals
A Multi-Year Work Plan To Implement Rural and Urban Performance Standards, Priorities and Costs
Compliance and Progress Monitoring for Performance Standards
Information and Education Programs
Coordination with Federal State and Local Agencies

PLAN DEVELOPMENT

The La Crosse County Land and Water Resources Management Plan has been compiled using information from several local and state-wide sources including the La Crosse County Comprehensive Plan, Farmland Preservation Plan, DNR Watershed Basin Plans, the National Agricultural Statistics Service and La Crosse County Water Quality Monitoring Data.

Information was also obtained from cooperating agencies that collect and maintain natural resources data that is directly related to the management of our soil and water resources. The people listed below have provided assistance to the La Crosse County Department of Land Conservation and collaborated efforts to protect the area's natural resources. The agencies that routinely provide assistance to the Department of Land Conservation include:

State of Wisconsin

- *Department of Natural Resources*
  - Forester
  - Water Resources Management Specialist
  - Waste Water Specialist
  - Basin Supervisor
  - Program and Policy Analyst
  - Water Management Specialist
  - Fisheries Biologist
  - Water Regulations and Zoning Engineer
  - Runoff Management Water Resource Engineer
- *University of Wisconsin- Extension Services*
  - Agriculture Agent
  - Community Development Agent

United States Department of Agriculture

- *Natural Resources Conservation Service*
  - State Engineer
  - Area Engineer
  - Area Conservationist
  - District Conservationist
  - Soil Conservation Technician
- *Farm Service Agency*
  - Chief Executive Director

United States Geologic Survey

- *Upper Midwest Environmental Sciences Center*
  - Wildlife Biologist and Partnership Coordinator
  - Geospatial Biologist

A meeting with the local DNR's Program and Policy Analyst and Regional Nonpoint Source Coordinator was held August 20th, 2018. The purpose of the meeting was to collect new or updated data and information regarding the state of the County's natural resources, in particular, those concerning the quality of soil and water resources. The participants were also given the opportunity to express any resource issues or concerns they felt could be addressed through the revised LWRM plan. The results of the meeting indicated that there was little information, outside of the water quality data collected by the Department of Land Conservation, to indicate that the natural resources needs in La Crosse County currently were not being addressed. The DNR representative strongly supported that the La Crosse County Department of Land Conservation pursue implementation of the Bostwick Creek Nine Key Elements Plan.

Of special concern is the rapid loss of dairy operations in La Crosse County. In 2007, the USDA National Agricultural Statistics Service (NASS) reported that there were 121 dairy farms in La Crosse County. In 2017, NASS reported that there were only 76 dairy farms left in La Crosse County yet the number of dairy cows in the County increased from 9,034 in 2007 to 9,320 in 2017. The loss of dairy operations results in increased cash grain farming and the potential for increased cropland erosion rates. Current dairy economics will most likely continue into the near future and further dairy farm retirement is anticipated. .

Those in attendance at the meeting include:

Gregg Stangl, Director, Department of Land Conservation
Bruce Olson, Engineering Specialist, Department of Land Conservation
Matt Hanewall, Nutrient Management Planner, Department of Land Conservation
Jake Schweitzer, Water Quality Specialist, Department of Land Conservation
Cindy Koperski, Program and Policy Analyst, Department of Natural Resources

CITIZEN PARTICIPATION

The La Crosse County Department of Land Conservation routinely conducts information and education meetings throughout the year to gage citizen concerns regarding natural resources management issues. These meetings have open question and answer sessions that give citizens the opportunity to share their concerns or suggestions to improve the management of La Crosse County's natural resources. Meaningful dialogue at these meetings results in the sharing of ideas and the development of processes that improve program delivery. Some of the regularly scheduled meetings include:

- Nutrient Management Planning Workshops
- Annual NMP Revision Workshop

The Department of Land Conservation is a member of the La Crosse Area Local Municipal Storm Water Group. It is a coalition of Municipal Separate Storm Sewer System (MS4's) that are permitted by the DNR under the WPDES permit system. The Group has hired a private consultant (NewGround) to develop and implement a public outreach and education program. NewGround also acts as a liaison between the group members and area contractors, home builders, developers, realtors, building suppliers and trade schools. NewGround solicits comments and concerns regarding local storm water ordinances and program delivery. The comments have shaped the way our local programs are implemented and how services are delivered. The Stormwater Group has contracted with NewGround through 2023.

La Crosse County continues to improve its website to provide better information about the services that the Department of Land Conservation offers and links to other helpful sites. A new website, lacrosseareawaters.com, was developed primarily to provide information on urban storm water management issues to the general public and home builders. The website was expanded to include businesses, home owners and home buyers. It was designed to be a one-stop information center regarding all things related to storm water management and construction site erosion control. The website has a public comment section and strongly encourages the public to utilize the feature.

PUBLIC INPUT

The general public was given an opportunity to review and comment on the La Crosse County Land and Water Resource Management Plan. A Public Hearing was held on Tuesday, September 3rd, 2019 at 6:00 pm in the La Crosse County Administrative Building, 212 6th Street North, Room 430, La Crosse, WI 54601. Public comment was requested at the hearings and a two week written-comment period was observed. The public hearings notice was published on August 21, 2019 and on August 26, 2019. It is anticipated that the La Crosse County Board of Supervisors will approve the 2020-2029 Land and Water Resources Management Plan at their monthly meeting on October 17th, 2019.

A draft copy of the Land and Water Resource Management Plan was made available on the County's website at http://www.co.la-crosse.wi.us/departments/land%20con/ for the public to review prior to the scheduled public hearings.

PLAN OVERSIGHT

The La Crosse County Planning, Resources and Development (PR&D) Committee is required, under Chapter 92 Wisconsin State Statutes, to jointly develop a Land and Water Resource Management Planning program with the assistance from the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) and the Wisconsin Land and Water Conservation Board. The PR&D's duties include; plan preparation, landowner notification, conduct public hearings and submit a final plan to DATCP and the Land and Water Conservation Board.

The Planning Resource and Development Committee has long established policies to guide the plan development process as well as any subsequent revisions to an approved Land and Water Resource Management Plan. The PR&D Committee policies include the following:

Plan Revisions

Actions of the La Crosse County Board or Planning Resource and Development Committee (PR&D) affecting content of this plan shall be considered revisions to this plan. The plan is to be considered a working document and is kept current through these revisions. In accordance with the provisions of Chapter 92, the PR&D Committee shall submit a revised Land and Water Resource Management Plan every ten years to DATCP and the Land and Water Conservation Board for approval.

Plan Implementation

Staff and cost-share grants from DATCP are tied to an unknown level of plan implementation. Therefore any costs estimated or programs or policies described are to satisfy state planning requirements but are not to encumber current or future Department budgets.

Providing technical and financial assistance to land users to protect County surface waters, groundwater, and soil resources is the Department's primary goal. Implementation of the State's Agricultural and Urban Nonpoint Pollution Runoff Management Program (NR 151) shall be the underlying principle for achieving that goal.

This plan does not have the authority to establish fiscal policy for the County. For the schedules listed herein, the activities estimated will be accomplished to the extent state funds are available. Beyond that funding, and within available County resources, the Department will continue to work towards implementation of the agricultural and urban performance standards. The estimated staff time and costs herein are to satisfy state planning requirements and do not suggest anticipated Department budgets

PROGRAM OF WORK

Urban

A summary of Department programs which mainly comprise the LWRMP include:

1. *Administer the Erosion Control Land Disturbance Ordinance, Chapter 21*
   Control of sediment and storm water from construction sites, and sediment from logging roads, has been addressed by ordinance through the La Crosse County Erosion Control/Land Disturbance Ordinance. The Department reviews and accepts applications and reviews erosion control plans prior to issuing erosion control permits for land disturbances in unincorporated areas of La Crosse County. Permits are issued for land disturbances where more than 4,000 sq. ft. is disturbed on slopes of up to 20%, or 2,000 square feet on slopes of 20% and steeper, where more than 400 cubic yards of fill /excavation occurs and where excavation of logging roads is necessary. The Department also enforces restrictions on land disturbances where slopes are 30% or steeper. The ordinance was adopted by the County Board in January l992 and is administered and enforced through the Department of Land Conservation under authority granted by S.59.693 Wisconsin Statues. The ordinance is applicable to all unincorporated areas of the County.

2. *Administer the Erosion Control Provisions of the Department of Commerce Uniform Dwelling Code (UDC)*
   Through agreement with 10 of 12 townships, the Department, in accordance with the UDC, accepts applications, investigates sites, issues and enforces erosion control permits and requirements during the construction of one and two family dwellings.

3. *Administer the Post Construction Storm Water Management Ordinance, Chapter 29*
   Uncontrolled, storm water from post construction runoff has a significant adverse impact upon water resources and the health, safety and general welfare of the community and diminishes the public enjoyment and use of natural resources. On November 20th, 2008, the La Crosse County Board of Supervisors passed a resolution approving the implementation of a county-wide storm water management ordinance. The Department of Land Conservation is responsible for the day-to-day implementation of the ordinance. Department staff receive and review storm water applications, review and approve storm water management plans, inspect construction sites for compliance and collect fees for the following;

   - Land disturbance activities greater than 1 acre in size
   - Development that results in a cumulative addition of 0.5 acres of impervious surface
   - A subdivision plat
   - A certified survey map
   - The private development of a road that will become public

4. *Provide Site Evaluations for Urban and Rural Landowners*
   Upon request the Department provides individuals and units of government site evaluation and technical design information on a variety of urban land and surface water related issues.

5. *Provide Site Evaluations for PR&D Committee Review and Approval*
   For PR&D approval, the Department reviews erosion, sediment, and storm water control plans for plats and other sites in excess of 5 acres land disturbance.

6. *Administer the Technical Requirements of the Non-Metallic Mining Ordinance*
   In cooperation with Zoning, Planning and Land Information the Department accepts, reviews and approves reclamation plans for new and existing mines. The Department tracks financial assurance fees for all active areas within mines. The Department certifies reclamation of sites and mine site closures.

Rural

1. *Administer the La Crosse County Animal Waste Management Ordinance, Chapter 23*
   The Department regulates the construction of manure storage pits and prohibits the improper handling of animal waste within water quality management areas, including: regulation of the placement of manure stacks, runoff from feedlots, overflow of manure storage structures, and overgrazing of stream banks.

2. *Administer the Conservation Requirements of the Farmland Preservation Program*
   The Department certifies that landowners meet the Soil and Water Conservation Standards for Farmland Preservation Program participants. Certified participants receive tax credits if soil and water conservation performance standards are met.

3. *Administer the State Agricultural Performance Standard Requirements*
   Department staff provides the technical assistance to landowners to assist them in meeting the agricultural (and urban) performance standards of ATCP 50 and NR 151.

4. *Provide Nutrient Management Planning Services*
   The Department provides information, develops plans and conducts plan development workshops to insure the proper application of animal wastes and crop fertility needs while providing surface water protection from the impacts of manure runoff.

5. *Administer a Countywide Water Quality Monitoring Program*
   The Department maintains a permanent water quality monitoring station, regularly samples the County's 24 sub-watersheds, and conducts reconnaissance sampling of individual sites and projects during a variety of runoff conditions. Data is organized for educational, research, and policy purposes.

6. *Provide the Technical Assistance for the Installation of Best Management Practices*
   The Department provides county and state cost sharing, survey, design, and installation technical assistance for a wide variety of rural Best Management Practices for cropland and surface water protection or other erosion control purposes.

7. *Administer Timber Harvest Program in the County Forest System*
   In cooperation with the DNR Forester, the Department administers the timber cuts within Hoeth Forest and the Raymond C. Bice Forest Preserve in the County Forest System for the harvesting of pulpwood and timber products. The Department also provides access road and fire lane maintenance for fire protection and vandalism control.

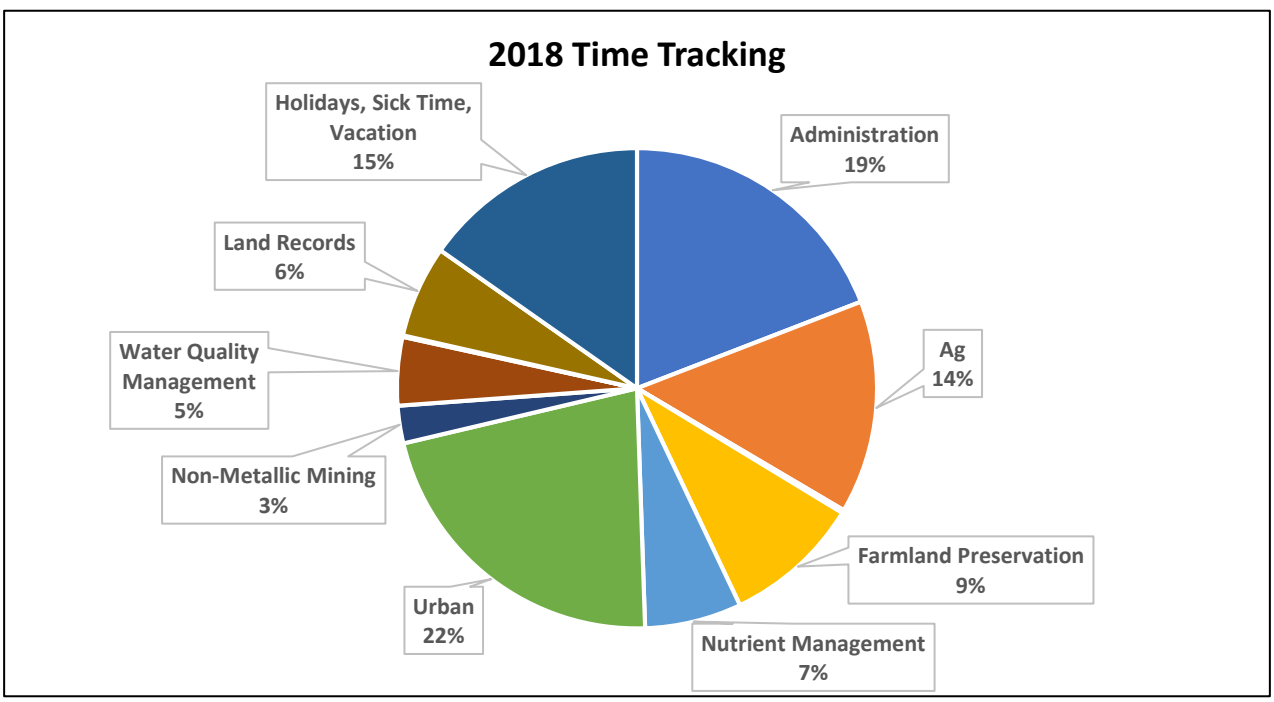
8. *Operate and Maintain Flood Control Structures*
   La Crosse County has two Flood Control Structures that were built in 1960 to alleviate flooding in the community of Coon Valley in Vernon County. The Department of Land Conservation is responsible for the operation and maintenance of the aging flood control structures.

9. *Administer ATCP51 Livestock Facility Siting Rule*
   The Department of Land Conservation reviews applications for local approval of new or expanding livestock facilities for compliance with county ordinance requirements and the state's agriculture performance standards and prohibitions.

Left to Right – Gregg Stangl, Matt Hanewall, Jacob Schweitzer, Sue Sheehan, Rob Hemling, Kurt Pederson, Bruce Olson

Gregg Stangl – Land Conservation Director
Matt Hanewall – Agronomy Conservation Specialist
Jacob Schweitzer – Urban Conservation Specialist
Sue Sheehan – Land Conservation Technician
Rob Hemling – Agriculture Conservation Specialist
Kurt Pederson – GIS Conservation Specialist

Figure 1-1 ***2018 STAFF TIME / WORKLOAD DISTRIBUTION***



ESTIMATED PROGRAM COSTS

A schedule of activities, objectives, dates and costs for the administration only for all Department programs for 2020-2029 follows. The proposed activities are based on the counties urban and agricultural program of work indicated in this plan. County staff costs and associated state staff reimbursements for activities between 2020 and 2029 are based on actual 2018 County costs and approved 2018 DATCP staff disbursements extrapolated over ten years. Costs do not account for inflation. This plan only documents a wide level of activities to be consistent with ss. 92.10 (6) Wis. Statutes. Costs to implement activities may not represent actual costs or commitments. The plan provides the framework for a more detailed level of planning to occur as needed.

TABLE 1-1

PROGRAM ADMINISTRATION SCHEDULE
2020 - 2029

34 % TOTAL PROGRAM HOURS 7,800	ACTIVITY	OBJECTIVE	DATES	10 YEAR PROJECTED COSTS	
				COUNTY (1)	STATE (2)
DLC	Administration of all Department programs (see program of work Rural and Urban) including County Forest timber harvests and forest properties maintenance. Administration includes meetings and prep for meetings reporting, budget management, personnel management, grant applications, coordination with other agencies and units of government, and general assistance to the public. Includes holidays, sick leave and vacation.	Coordinate conservation programs with County Board, DNR, NRCS, DATCP,UWEX	2020-2029	$1,100,000	$750,000

(1) Based on 2019 salary and fringe for program administration. Includes operating expenses/supplies and county cost sharing to implement all sections of the LWRMP. Does not include matching revenues / expenditures.
(2) Based on 2019 SWRM staff and supply (operating expense) reimbursement.

Chapter 2: 2012-2019 PLAN ACCOMPLISHMENTS

The following is a summary of the priority work items in the 2012-2019 La Crosse County Land and Water Resource Management Plan.

Agriculture

- Completed soil and water conservation compliance assessments for 261 Farmland Preservation Program participants.
- Completed GIS based tracking program of landowner compliance with agriculture performance standards.
- Enrolled 227 landowners (17,815 acres) into nutrient management planning program.
- Work towards full compliance of agriculture performance standards for landowners in designated priority areas.
- Expand water quality monitoring program and coordinate data exchange with DNR.
- Completed Nine Key Elements Plan for Bostwick Creek Watershed.
- Participated as a member of a local groundwater task force to identify causes of nitrate contamination in private wells.

Urban

- Implemented County-wide Storm Water Management Ordinance
- Hired an Environmental Educator to develop and implement a public education program
- Implemented a public education & outreach program with the other MS4 permitted municipalities in La Crosse County
- Promote Storm Water practices through installation of 5 rain gardens
- Worked with La Crosse Area Builders Association to provide training opportunities for their membership
- Enforce provisions of the Erosion Control and Land Disturbance Ordinance
- Conduct annual inspections of non-metallic mines to determine compliance with reclamation plans

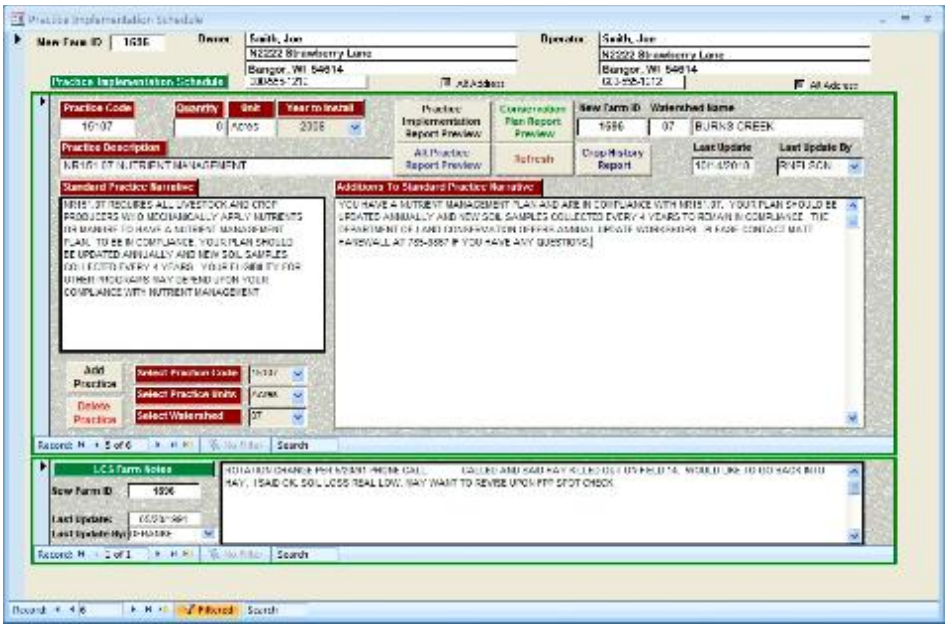
Implementation of the 2012-2019 Land and Water Resource Management Plan was successful in meeting a number of goals and objectives. The following is a partial list of the accomplishments achieved by the La Crosse County Planning, Resources and Development Committee and the Department of Land Conservation from 2007 through mid year 2011:

1. The Department of Land Conservation, in conjunction with the Wisconsin Department of Natural Resources, developed an EPA Nine Key Elements Plan for the Bostwick Creek Watershed in Central La Crosse County. The Bostwick Creek Watershed was chosen for this planning effort for a number of reasons. In discussions with local DNR staff, it was determined that Bostwick Creek would have the best water quality response to wide-spread installation of key soil and water conservation measures.

   The headwaters of Bostwick Creek are designated as an exceptional resource water by the DNR whereas, the lower one third of Bostwick Creek is designated as an impaired resource water. Bostwick Creek is classified as a Class I trout water in the headwaters area but quickly diminishes to a Class II and Class III trout fishery. There is a manageable number of working farms in the Bostwick Creek Watershed with nearly one half of them in the State's Farmland Preservation Program.

   The DNR has nearly 3 miles of easements on Bostwick Creek for fisherman access. The Department of Land Conservation will apply for a DNR Targeted Resources Management Grant in 2020 or 2021 to begin implementation of the ten-year Bostwick Creek Nine Key Elements plan.

2. The Department of Land Conservation has developed and implemented a Geospatial database that tracks the land use records of all conservation compliant assessed properties in La Crosse County. The GIS program provides quick access to farm owner/operator records as well as produces a conservation compliance certification form for all Farmland Preservation Program participants.



3. La Crosse County is zoned as exclusive agriculture and initially issued zoning certificates for those landowners participating in the State's Farmland Preservation Program. In 1996, FPP participants were no longer required to submit annual zoning certificates to qualify for the program's tax credit. Since the Wisconsin Department of Revenue concluded that a participant's tax records were considered confidential information, Land Conservation Departments had no way of determining who was participating in the program and needed to be in compliance with state soil and water conservation standards. The Department has reestablished contact with previous Farmland Preservation Program participants to reaffirm their current level of program participation. Using FPP Certificates of Compliance, the Land Conservation only issued certificates to those landowners who could verify compliance with the soil and water conservation standards. This gave the Department a solid number of participants, as well as identities, to assist and monitor through 2019. It was learned that there are 261 landowners and 62,000 acres of farmland enrolled in the program.

4. Conservation compliance assessments for Farmland Preservation Program participants began in 2008. This is a farm-by-farm detailed assessment that determines which, if any, of the agriculture performance standards or prohibitions are not being met. This process was completed in 2018 for all 261 FPP participants. The Department still conducts compliance assessments for new enrollees but is primarily in update and monitoring mode.

5. The Bostwick Creek Watershed in central La Crosse County has been researched as a probable candidate for a priority watershed project. Consultations with local DNR fisheries staff concluded that Bostwick Creek had the highest potential in La Crosse County to achieve its water quality goals established in the Bad Axe-La Crosse River Basin Plan. In 2018, an EPA Nine Key Elements Plan was written for the Bostwick Creek Watershed. The plan was approved by the DNR as well as the EPA in November of 2018. It is anticipated that a DNR Targeted Resources Management Grant will be applied for in 2021. To begin implementation of the 10 year plan.

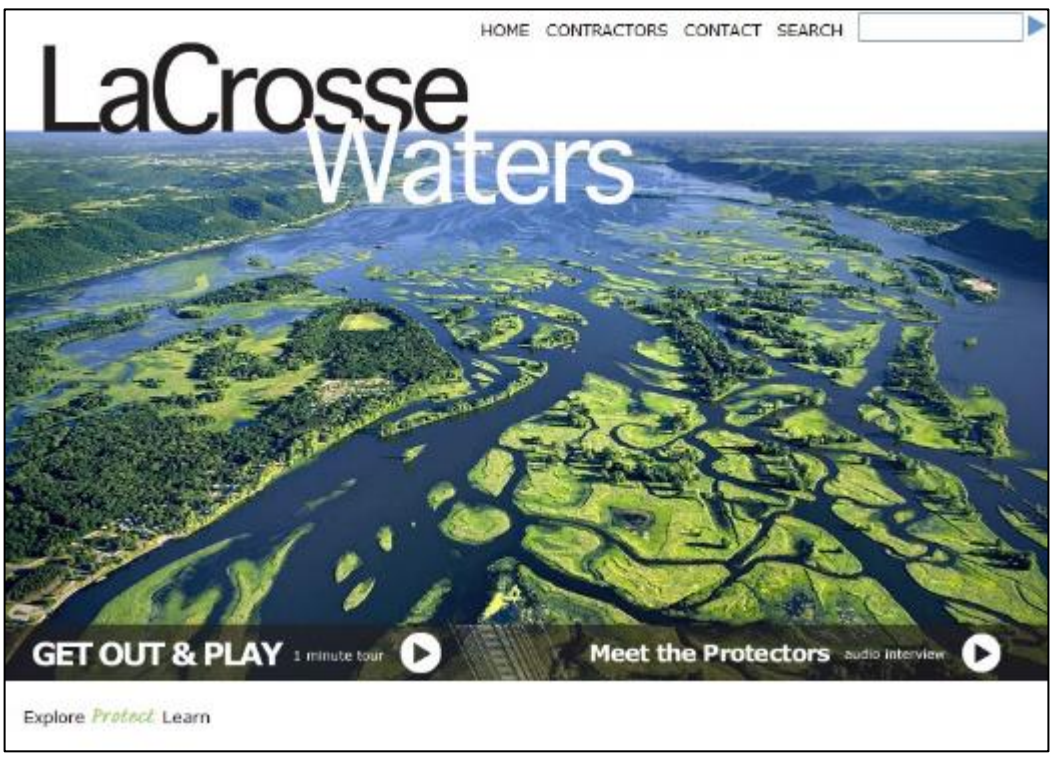
6. The Department of Land Conservation has been providing nutrient management training courses for County farmers since 1999. Beginning in 2012, emphasis was placed on increasing the number of acres under a nutrient management plan in La Crosse County. Between 2012 and 2019, there were 227 new farms that were planned through the nutrient management workshops. This amounted to 17,815 new acres under a nutrient management plan. The Department also conducted two soil sampling workshops, one in 2014 and one in 2015. A total of 23 farmers attended the workshops to learn proper soil sampling techniques on their own farms. DATCP Nutrient Management Farmer Education Grants were utilized to conduct the workshops.

7. An additional two new Dissolved Oxygen Sondes were added to the County's water quality monitoring program. The sondes measure dissolved oxygen levels and temperature in county streams and rivers on a 24 hour, continuous basis. The sondes are mobile and can be quickly set to take water quality readings over a month-long period without having to recharge its batteries. The sondes can be moved to a suspected area of pollution and monitored to detect water quality changes. The Department also replaced an aging bubble flow meter and water sampler to the Department's monitoring station in 2019.

8. In 2008, the Department of Land Conservation developed and implemented a Post-Construction Storm Water Management Ordinance. This was in conjunction with the County's Erosion Control and Land Disturbance Ordinance that was created in 1992. To improve efficiencies in implementing the stormwater and erosion control program, the Department worked with developers and home builders to allow the use of text messages and site photos to verify that permitted erosion control and stormwater practices were correctly installed in accordance with their erosion control and stormwater plans. This practice has been well received by contractors and has saved valuable staff time. Since 2012, The Department has issued 1,026 erosion control permits and 33 stormwater management permits.

9. La Crosse County joined other municipalities in the La Crosse-Onalaska-Holmen metro area to form a consortium to develop a unified, public information and outreach program. The municipal storm water group organized meetings and developed strategies conduct a public education program that addressed storm water management practices in urbanized areas. The Group hired Nancy North of *NewGround* to carry out many of the educational activities. The public education and outreach program has grown extensively and has been a well-received by the general public as well as our business partners.

10. The La Crosse Area Municipal Storm Water Group developed a common website that provides information and education materials to citizens, homebuilders, contractors, realtors and developers regarding storm water management and local regulations. The website has ordinances, permit forms and instructions on-line for the convenience of its users. The website has recently been updated to include more information and helpful links. www.lacrosseareawaters.org.



11. The Department of Land Conservation has updated its use of newer technologies by adding two tablets for Department staff while performing field work. The tablets allow staff conducting construction site inspections and Farmland Preservation Program spot checks to easily record field notes and photos on-site and download the information in the office in much less time than handwritten notes. This also saves valuable staff time in the office and in the field.

Chapter 3: WATER QUALITY ASSESSMENT

BASINS

Two Basins, identified by the Department of Natural Resources, are found in La Crosse County; the Black River and the La Crosse-Bad Axe River.

Waters in the northern third of the County drain land within the Black River Basin. In the central half of the County, streams drain to the La Crosse River.

Streams near the southern border are considered part of the Bad Axe River Basin and drain to either Coon Creek or the Mississippi River. Surface water flow in the County is all directed toward the Mississippi River, which borders the County to the west.

There are also two lakes in the County. Lake Onalaska, a 5,400 acre flowage created by the Dresbach and Onalaska Corps of Engineer dams on the Mississippi and Black Rivers. Lake Neshonoc, a 600 acre lake created by a dam on the La Crosse River at West Salem.

Both of these lakes are continually losing their depth due to siltation. Primary pollutant sources are agricultural (non-point), and urban storm water runoff.

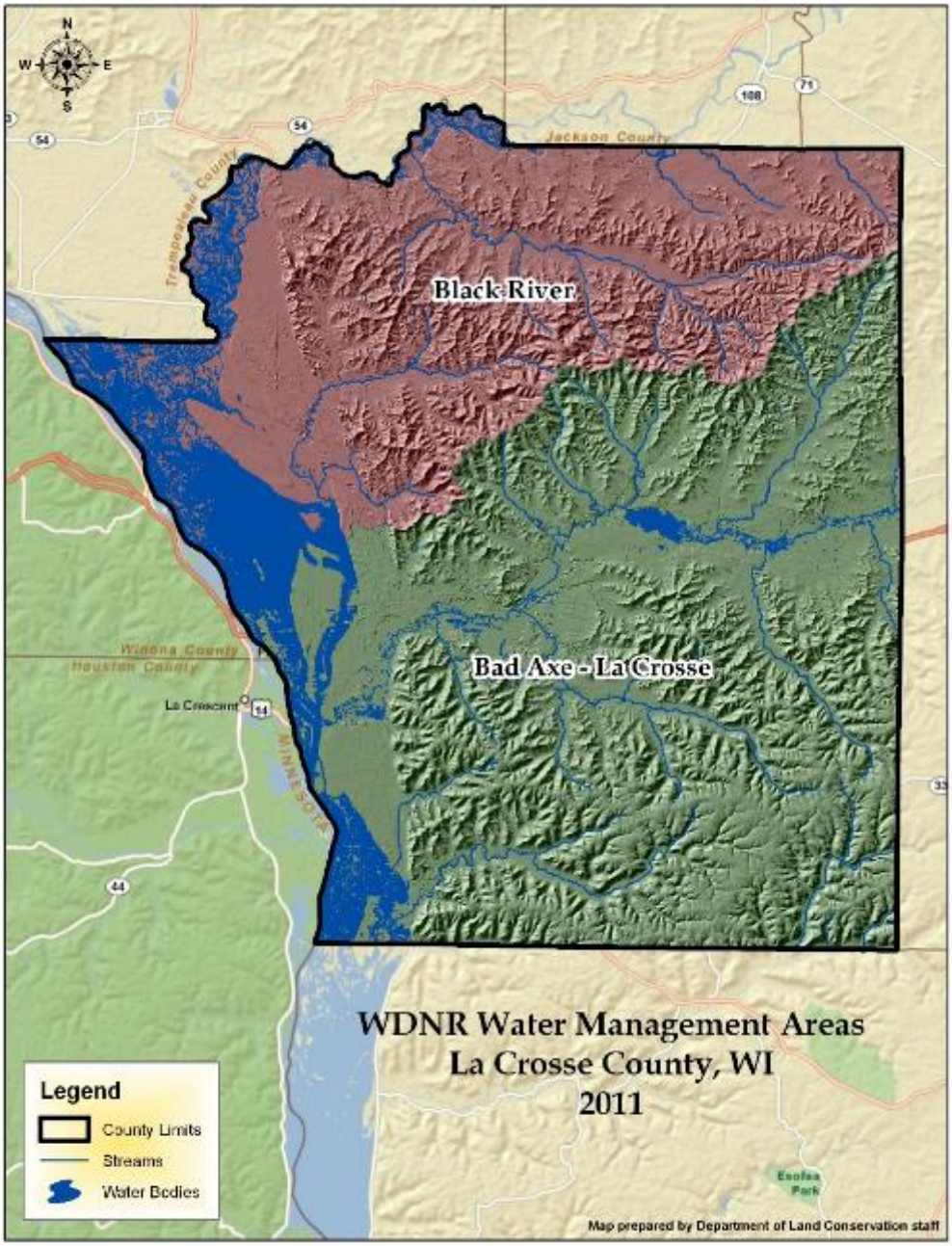


Figure 3-1 La Crosse County Basins

WATERSHEDS

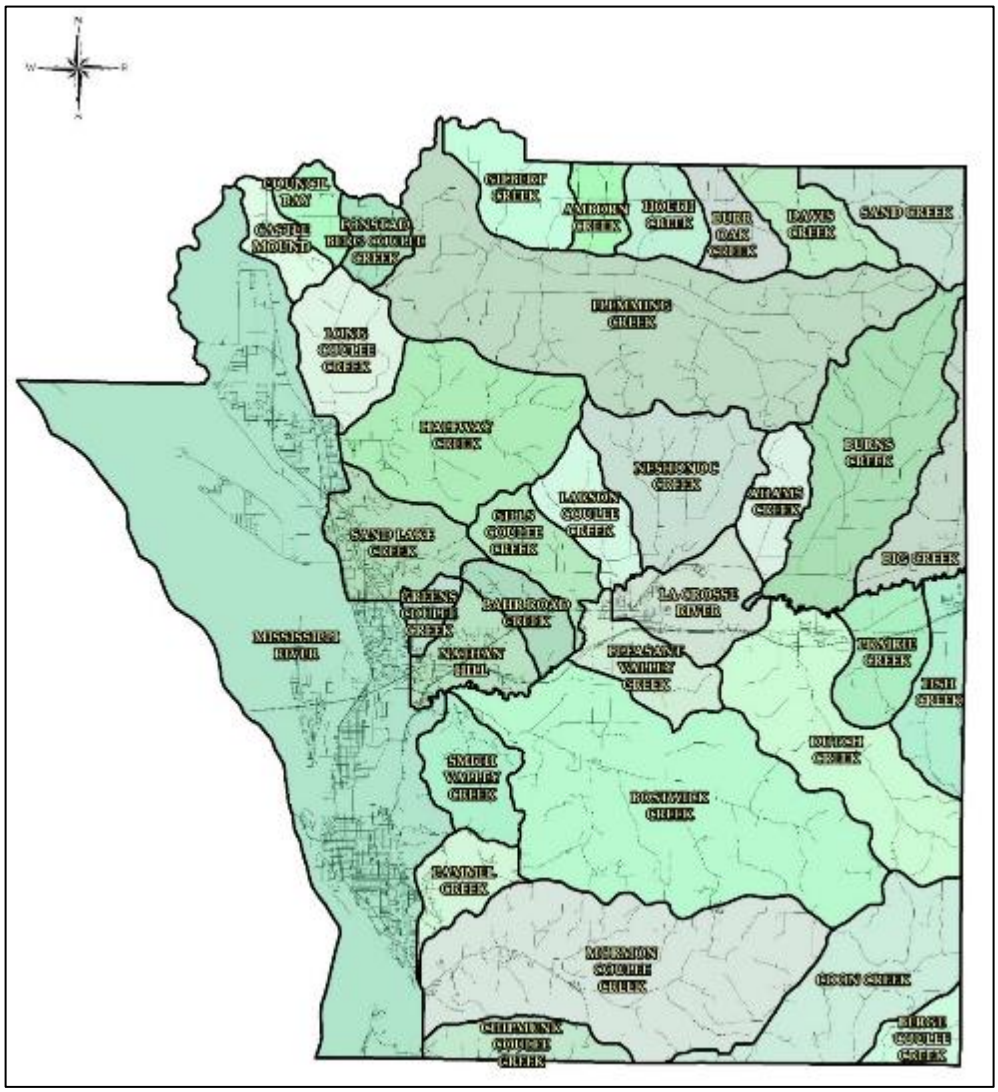


Figure 3-2 La Crosse County Watersheds

LA CROSSE COUNTY WATERSHED ASSESSMENTS

Adams Valley Creek

Adams Valley Creek is a spring-fed tributary to Burns Creek in eastern La Crosse County. It flows in a southwesterly direction for 2.5 miles before reaching Burns Creek. This stream has a slight gradient of 21 feet per mile and drains lowland farms and adjacent wooded hillsides. Adams Valley Creek is a Class II trout stream for the upper one mile and Class III for the lower 1.5 miles. The entire length of Adams Valley Creek is on the Wisconsin 303d list of impaired waters for sedimentation of the stream causing lack of in-stream habitat for the fish species expected to flourish in the stream – brook trout. La Crosse County Land Conservation Department has also documented regularly low dissolved oxygen levels in two locations of the stream.

In January 2000, the La Crosse County Land Conservation Department secured a Targeted Runoff Management (TRM) grant to focus installation of best management practices on land adjacent to Adams Valley Creek. Eroded streambanks were reshaped, riprapped and seeded and livestock were limited to select stream crossings. Best management practices installation ended in 2003. A 2005 fish survey on two stations was conducted to determine if the stream improved enough to change the trout classification. Even with the streambank improvements, the brook trout numbers in the stream did not increase as expected. In-stream habitat, which was not part of the TRM grant, should be installed to improve trout habitat. Manure laden runoff from one landowner to Adams Valley Creek has been shown to reduce dissolved oxygen levels in the stream to below 3 ppm. After this runoff problem is addressed, additional fish surveys should be conducted to determine the status of the fishery.

Before the TRM grant in 2000, four stations were sampled for fish and habitat. The surveys documented a stream bottom comprised mainly of sand with lesser amounts of clay, gravel and detritus. The riparian land use was largely meadow and pasture; however streambank erosion due to grazing was noted. In order of abundance, in-stream cover consisted of woody debris, overhanging vegetation, submergent vegetation and undercut banks. Forage fish species dominated the lower stations (#1 and 2) while the upper two stations (#3 and 4) contained only brook trout. This stream was sporadically stocked from 1962 to 1994 with brook trout. Access is possible from two road crossings.

La Crosse County should continue baseflow water chemistry monitoring of Adams Valley Creek to determine water quality trends after completion of work with landowners adjacent to Adams Valley Creek. The DNR should survey Adams Valley Creek of the La Crosse County LCD project to document any fish or habitat changes.

Bell Coulee Creek (Creek 25-8)

Bell Coulee Creek, located in northern La Crosse County, flows in a northerly direction for 3.5 miles before reaching Fleming Creek. This stream has a gradient of 62 feet per mile and drains a largely agricultural watershed with some forested hillsides. Bell Coulee Creek is not a classified trout stream.

The most recent survey was conducted in 2001. The fish community was comprised of several forage fish species and one brook trout. Soon after the survey, wild brook trout were stocked in Bell Coulee Creek. The dominant substrate was sand, followed by silt and clay. Gravel was more prevalent in the most upstream reaches of the creek. Riparian land use consisted of pasture, woodland and meadow. In-stream cover for adult game fish included woody debris and overhanging vegetation. A fish survey of Bell Coulee Creek should be conducted to determine the status of the wild brook trout.

Berge Coulee Creek

Berge Coulee Creek, also known as Bergen Coulee and Creek 35-16, is located in southeastern La Crosse County, northeast of Coon Valley. It flows in a southerly direction for approximately 1.5 miles before reaching Timber Coulee Creek. It has a steep gradient of 77 feet per mile and drains forested hillsides, lowland pasture and agricultural land. Berge Coulee Creek is a Class I trout stream for its entire length and an outstanding resource water (NR102)

The most recent habitat survey, conducted in 1975, found clear, cool water that carried a low suspended silt load. The streambed consisted of rubble, gravel, sand, silt and abundant aquatic vegetation. Pasture comprised the majority of bank cover, with some swamp hardwood and shrub marsh also. In-stream cover was common and consisted of undercut banks, rocks, boulders, logs and trees. A few deep holes were present in the lower section of the stream with good underwater cover. A 1983 fishery survey documented a naturally reproducing population of brown trout. There are no WDNR stocking records for Berge Coulee Creek. Access is available from three road crossings and WDNR streambank easements.

Big Creek

Big Creek flows for approximately 5.9 miles in a southerly direction toward the La Crosse River near Rockland. Upper Big Creek and East Upper Big Creek merge to form Big Creek in Monroe County. Big Creek has an average gradient of 18 feet per mile and drains lowland farms and wooded hillsides in both La Crosse and Monroe Counties. Big Creek is a Class II trout stream upstream of Hamilton Ave. and Class III downstream of Hamilton Ave. in Monroe County to STH 16.

A 2005 survey of Big Creek documented a stream bottom comprised mainly of sand. Streambank erosion was noted. Overhanging vegetation and woody debris provided overhead cover for fish. Brook trout, brown trout and a numerous forage fish species inhabited the station, which was immediately downstream of HWY 16. Brook trout have been stocked in Big Creek since 1993. Access to Big Creek is from three road crossings.

Black River

The lower 25 miles of the Black River forms a portion of the La Crosse County border. This segment of river averages 250 feet wide and contains areas of eroding sandy banks and sand bars. Much of the river in La Crosse County flows through the Van Loon State Wildlife Area and the Upper Mississippi River Fish and Wildlife Refuge to meet the Mississippi River in the City of La Crosse. The lower Black River harbors numerous species of game fish and freshwater mussel species. The largely natural setting with much public land surrounding the lower Black River results in high recreational use. The Black River in La Crosse County is on the Wisconsin 303d list of impaired waters due to a contaminated fish consumption advisory for mercury.

Bostwick Creek

Bostwick Creek, also known as Irish Coulee Creek, is located in central La Crosse County. This stream flows in a northwesterly direction for approximately 13.6 miles, before reaching the La Crosse River. It has a moderate gradient of 38 feet per mile and drains forested hills and agricultural valley land. Bostwick Creek is a Class II trout stream from its mouth upstream to CTH M, and Class I from CHT M upstream to its headwaters. From CTH O upstream to the headwaters, Bostwick

Creek is an Exceptional Resource Water (NR102). The lower third of Bostwick Creek has recently been listed as an impaired waterbody by the DNR.

A fishery survey conducted in 2001 suggested that Bostwick Creek should be upgraded from Class III to Class II in the lower portion. Additional fishery surveys in 2005 confirmed the improved trout classifications. Good carry over of stocked fish and adequate habitat was noted. In-stream habitat in the upper portions of the stream allows for natural reproduction and good winter survival. However, streambank erosion and sedimentation of Bostwick Creek is a problem throughout its length. Additional in-stream habitat development in Bostwick Creek would benefit the trout fishery. Bostwick Creek was last stocked in 2001 with wild brown trout. Access to Bostwick Creek is from WDNR owned easements and seven road crossings. See Appendix for DNR Bostwick Creek Survey information.

Burns Creek

Burns Creek is a spring-fed stream located in eastern La Crosse County. It flows in a southwesterly direction for approximately 12 miles before reaching the La Crosse River just upstream of Lake Neshonoc. It has a gradient of 29 feet per mile and drains rolling agricultural land and forested hillsides. Burns Creek is a Class I trout stream upstream of the dam located in T17N R5W S21 and Class II downstream of the dam. The dam acts as a barrier for migration of brown trout into the upper five miles of Burns Creek, enabling the successful introduction of native brook trout into the upper half of the creek with minimal competition from brown trout. The uppermost 4.5 miles (from T17N R5W S10 upstream) is an Exceptional Resource Water (NR102).

The most recent comprehensive stream survey, completed in 1999, documented a stream bottom consisting mainly of sand with some clay, silt and gravel. Riparian land use was mainly wooded, with meadow, cropland, and pasture. Fish cover consisted of woody debris, overhanging vegetation and undercut banks. Both brook and brown trout were found during this survey, along with a wide variety of aquatic invertebrates and minnow species. In 2005, one fishery survey in the upper end of Burns Creek documented naturally reproducing brook trout with some brown trout. Streambank erosion and sedimentation has reduced in-stream cover for fish. Much of the stream contains a sand bottom. Fish cover is only located where overhanging vegetation or woody debris are present. From 1960 to 1975, the stream was stocked with brown trout. In 1976, the introduction of brook trout into the upper half began and has continued with occasional stocking of browns below the dam. Access is possible from several road crossings and DNR owned easements.

Coon Creek (Bohemian Valley Creek)

Coon Creek, also known as Bohemian Valley Creek in La Crosse and Monroe Counties, begins in Monroe County and flows for approximately two miles in a westerly direction before reaching La Crosse County. It then flows in a southwesterly direction through La Crosse County for approximately seven miles in the southeast corner of the county. It has a moderate gradient of 45 feet per mile and drains steep sloped agricultural land and forested hillsides as well as lowland pasture. The La Crosse County portion of Coon Creek is a Class I trout stream for its entire length as well as an Exceptional Resource Water (NR102).

Three P.L. 566 dry pool flood detention structures exist in the watershed draining toward Bohemian Valley Creek. From the Korn Spring (Section 24, T15N, R5W) downstream, water quality and stream temperature are ideal for brown trout. The cool water temperatures are the result of more than 50 springs entering the creek in La Crosse County alone. Fishery population surveys conducted in the 1980's and 1990's documented a healthy, naturally reproducing brown trout population along with a variety of forage fish. A 1999 fish survey documented no forage fish in the stream, probably due to the abundant picsivorous brown trout. In 2000, sculpin were introduced to the stream to establish a forage fishery. A 2005 fish survey revealed a robust brown trout population, an abundance of sculpin and very few brook trout.

The most recent habitat survey was conducted in 1975. The water was clear and contained a low suspended silt load. The streambed consisted mainly of boulder, rubble, gravel, and sand with lesser amounts of silt and detritus. Bank cover was composed of firm pasture, shrub marsh, meadow pasture and upland hardwood. In-stream fish cover was found throughout the stream and consisted of wing deflectors, LUNKER structures, boulders, aquatic vegetation beds, and log tangles.

In 1955, the Wisconsin Conservation Department (now the WDNR) initiated a fishery habitat demonstration project along Bohemian Valley, Timber Coulee and Rullands Coulee Creeks. The purpose of this project was to develop and refine in-stream habitat restoration techniques. This pioneering project resulted in restoration methods that are still used today in coulee region streams.

Perpetual fish management easements were purchased by the WDNR, as recommended in the Coon Creek Fishery Area Master Plan, from Korn Springs in Monroe County downstream to the Vernon and La Crosse County line. Nearly the entire length of stream in La Crosse County is covered by WDNR fishing easements. Protection easements were also purchased on most of the major springs entering Bohemian Valley Creek. This stream has not been stocked with trout since 1996. Access to the stream is possible from three road crossings and WDNR easements and WDNR owned lands.

Creamery Creek (Severson Coulee, Creek 20-1)

Creamery Creek, also know as Severson Coulee Creek and Creek 20-1, flows in a northerly direction for nearly four miles before reaching Fleming Creek near Mindoro in north central La Crosse County. This stream has a gradient of 63 feet per mile and drains agricultural valleys and forested hillsides. Creamery Creek is a Class III trout stream for its entire length.

A 2001 survey of the stream over three stations documented numerous brook trout and five forage fish species along with bluegill and green sunfish. The substrate was dominated by sand and gravel. Some stream banks were highly eroded and corn was found in the stream. In-stream cover for adult fish consisted largely of overhanging vegetation and woody debris with some undercut banks. Domestic brook trout were stocked in Creamery Creek for many years, but the most recent stockings have been wild brook trout. A follow up fish survey is necessary to determine if the trout population has become self sustaining.

Davis Creek

Davis Creek, located in northeast La Crosse County, flows for 3.4 miles in a northwesterly direction before reaching the Black River. It has a gradient of 27 feet per mile and drains agricultural lands. Much of the stream corridor is forested with adjacent farm fields. Davis Creek is a Class II trout stream.

The most recent survey was conducted in 1973. It documented brook trout, burbot, and a variety of forage fish species. Sand was the dominant substrate with some gravel. WDNR should conduct fish and habitat surveys on Davis Creek.

Dutch Creek

Dutch Creek is a spring-fed stream located in east central La Crosse County. It flows in a northwesterly direction for approximately 9.4 miles before reaching the La Crosse River at Bangor. Dutch Creek has a gradient of approximately 30 feet per mile and drains steep forested hillsides and agricultural valley land. Dutch Creek is a Class II trout stream for its entire length. From Russlan Coulee Road (T16N R5W S8) upstream to the headwaters, Dutch Creek is an Exceptional Resource Water (NR102).

The most recent survey, completed in 2005, documented cool, clear water with a bottom consisting mainly of sand, with the upstream portion dominated by rubble and gravel. Riparian land consisted mainly of pasture. Streambank erosion was evident due to high water and overgrazing. In the lower half of Dutch Creek, in-stream cover was scarce consisting of scattered log tangles and over-hanging grasses. In the upper portions, in-stream cover consisted mainly of undercut banks, log and brush tangles and scattered beds of aquatic vegetation. Both brook trout and brown trout were found in Dutch Creek. Brown trout were naturally reproducing, whereas the stocked brook trout were not. Forage fish consisted of only a few brook stickleback and Johnny darters.

The La Crosse County Land Conservation Department has operated a continuous water quality monitoring station since 1995 in Dutch Creek. Continuous flow, temperature and dissolved oxygen are collected as well as bacteria and nutrient samples during both base flow and runoff events.

Brown trout were last stocked in 2003 and wild brook trout have been stocked from 2003-2005. Access is possible from several road crossings and DNR owned easements.

Eggens Coulee Creek

Eggens Coulee Creek, located in central La Crosse County, flows for approximately 1.4 miles in a southerly direction before reaching Neshonoc Creek. It has a moderate gradient of 50 feet per mile and drains steep forested hills and agricultural valley land. Eggens Coulee Creek is a Class II trout stream for its entire length.

A 2005 fishery survey documented naturally reproducing brook trout. Since this stream has not been stocked by WDNR since the early 1960s, reclassification to Class I was substantiated. The stream bottom was largely comprised of sand with lesser amounts of silt and gravel. Some streambank erosion was apparent throughout the survey reach. Access to Eggens Coulee Creek is from two road crossings.

Fish Creek

Fish Creek is a spring-fed coulee stream located in east central La Crosse County and west central Monroe County. Fish Creek begins in Monroe County and flows in a northerly direction for approximately 1.7 miles with a steep gradient of 100 feet per mile and then through La Crosse County for 5.2 miles with a more moderate gradient of 35 feet per mile before reaching the La Crosse River near Rockland. This stream drains steep forested hillsides and agriculture valley land. Fish Creek is not a classified trout stream in Monroe County but is a Class III trout stream for the entire length in La Crosse County.

During 2001, fish and habitat surveys were conducted on two stations. The stream bottom consisted mainly of sand. Riparian land consisted of cultivated crops and pasture. The shifting sand bottom prevented growth of aquatic vegetation and in-stream cover was limited to woody debris, overhanging vegetation and undercut banks. Streambank erosion and sedimentation were noted as well as lack of cover for adult fish. Brown trout was the dominant species in Fish Creek, followed by American brook lamprey, brook trout, Johnny darter, and northern pike. Wild brook trout were stocked from 2003 to 2005. A 2005 fish survey at one station noted only three young of year brown trout. A more thorough fish survey of Fish Creek should be conducted to determine if stocking of wild brook trout should continue. Access is possible from six road crossings.

Fishback Creek

Fishback Creek, located in southeastern La Crosse County, flows in a southerly direction for two miles before reaching Coon Creek (Bohemian Valley Creek). It has a steep gradient of 100 feet per mile and drains forested hillsides and agricultural land. Fishback Creek is classified as a Class II trout stream for the lower 0.5 mile and Class III for the remaining 1.5 miles. The lowest half mile of Fishback Creek is an Exceptional Resource Water (NR102).

A 1975 stream survey documented cool, clear water that carried a low suspended silt load. Rubble comprised the majority of the streambed with lesser amounts of sand, silt, gravel, and boulder. The riparian land consisted of pasture, swamp hardwood, and shrub marsh. Approximately six acres of wetland adjoin the creek. In-stream cover was common and composed of boulders, woody debris and aquatic vegetation. A 1988 fish survey documented brook trout, brown trout and a variety of minnow species. The WDNR should update fish and habitat data from Fishback Creek.

Fishback Creek has not been stocked since 1990. Access is possible from the CTH G road crossing where DNR easements border the stream above and below the bridge for approximately 182 feet of public frontage.

Fleming Creek

Fleming Creek, located in northern La Crosse County, flows in a westerly direction for approximately 17 miles before reaching the Black River. It has a gradient of 25 feet per mile and drains agricultural valley land with wooded hillsides. Fleming Creek is not a classified trout stream. The upper half of Fleming Creek (above Mindoro) is on the Wisconsin 303d list of impaired waters for sedimentation of the stream causing lack of in-stream habitat for the fish species expected to flourish in the stream.

The most recent survey of Fleming Creek was in 2001 when both fish and habitat data was collected. The bottom substrate was primarily sand with small amounts of silt and gravel. In-stream habitat for adult game fish was limited to woody debris. Much of the riparian corridor was either wooded or meadow with some pasture land. Cropland was found adjacent to the stream in the upstream reaches. The fish community was primarily comprised of 11 forage fish species. Burbot were also present throughout the stream. Even though Fleming Creek has not been stocked with trout, brook trout were encountered in the upper half of the creek. Some tributary streams have been stocked and the fish likely migrated downstream. The Mindoro Sanitary District operates a permitted wastewater treatment facility that discharges to Fleming Creek.

Garbers Coulee Creek (Creek 28-7)

Garbers Coulee Creek (Creek 28-7), located in south central La Crosse County, flows in a northerly direction for 3.2 miles before reaching Bostwick Creek near Barre Mills. This stream has a gradient of 42 feet per mile and drains agricultural lands which are quickly changing to rural housing on two to five acre lots. It also flows through a portion of a golf course. Garbers Coulee Creek is a Class II trout stream.

A 2004 fish survey at two stations documented a naturally reproducing brook trout population. Some brown trout were also found. The stream bottom was mostly sand and cover for fish included overhanging vegetation, naturally undercut banks, and some woody debris. Data from the 2004 survey justified reclassification of Garbers Coulee Creek to Class I trout. This stream was last stocked in 1979. For this fishery to remain stable and viable, storm water volumes from any new subdivisions in the watershed should be minimized by implementation of storm water best management practices which promote infiltration.

Gavin Coulee Creek (Creek 18-15)

Gavin Coulee Creek, located in north central La Crosse County, flows in a northerly direction for approximately two miles before reaching Fleming Creek. It has a gradient of 40 feet per mile and drains predominantly agricultural lands with some wooded hillsides. Gavin Coulee Creek is not a classified trout stream.

A 2002 fishery survey documented several forage fish species at two stations. Three brook trout were found. The substrate was dominated by sand and in-stream fish cover consisted of overhanging vegetation and woody debris. The lower end of this stream had extensive streambank erosion and sedimentation. Very little gravel or cobble was found at the two stations. No WDNR stocking records exist for this stream.

Gills Coulee Creek

Gills Coulee Creek, located in central La Crosse County, flows for approximately three miles in a southerly direction before reaching the La Crosse River near West Salem. It has a gradient of 44 feet per mile and drains agricultural valley land with some steep wooded hills. Gills Coulee Creek is a Class III trout stream from the mouth upstream for one mile, then Class II for the remaining upstream miles. The entire length of Gills Coulee Creek is on the Wisconsin 303d list of impaired waters for sedimentation of the stream causing lack of in-stream habitat for the fish species expected to flourish in the stream – brook trout.

In a 2004 fish survey, only forage fish species, one brook trout and one brown trout were documented at the lower station. Only brook trout were found at the upper station. Evidence of natural reproduction of brook trout was also documented. The stream was last stocked with brook trout by the WDNR in 1996. Heavy bank erosion due to cattle access and steep eroding streambanks create a scarcity of in-stream cover, and a predominantly silt and sand bottom. In 2005, La Crosse County Land Conservation Department began implementing best management practices on lands in the upper half of the Gills Coulee Creek watershed in order to improve the stream. In 2006, Gills Coulee Creek received an approved Total Maximum Daily Load by the DNR. Stream bank restoration and upland erosion control practices were completed as part of the DNR TRM Grant in 2011. La Crosse County Department of Land Conservation water quality monitoring data from 2004 through 2017 shows reduction in total phosphorus of 31%. Access to Gills Coulee Creek is from six bridge crossings. It is anticipated that Gills Coulee Creek will be removed from the Impaired Waters List in the near future.

Halfway Creek

Halfway Creek, located in western La Crosse County, flows for 11.3 miles in a westerly direction before reaching the Black River north of Onalaska. This stream has an average gradient of 19 feet per mile; however, the lower end of the creek has a much lower gradient. Halfway Creek is a Class II trout stream from CTH W upstream to its headwaters and Class III downstream of CTH W to CTH DH in the Village of Holmen. Stream miles 7-9 are on the Wisconsin 303d list of impaired waters due to sedimentation resulting in reduced in-stream habitat for fish.

A 2002 fish and habitat survey of Halfway Creek documented a stream bottom consisting primarily of sand, silt and clay. In-stream cover for adult game fish consisted of woody debris and overhanging vegetation. One segment of stream contained LUNKER structures and boulders. Streambanks of the urban segment in the Village of Holmen were unsightly and unhealthy for the stream. Piles of cut grass, brush and garbage were noted. Only adult brown trout were documented in the lower stations; however, the majority of them contained lesions of an unknown source. Creek chub, Johnny darter, white sucker, stonecat and black nose dace made up the forage fishery. The most upstream station contained a naturally reproducing population of brook trout. Since the WDNR has no documentation of brook trout stocking to Halfway Creek, their presence is unexplained.

Frequent flooding of Halfway Creek in its lower reaches and sedimentation of Mississippi River backwater areas prompted a study of the Halfway Creek watershed. The increased flood frequencies were linked to sediment loading throughout the 36 square mile Halfway Creek watershed. An estimated sediment load of 50,170 tons per year, or 1,400 tons/sq. mile/year, reaches Halfway Creek (Vierbicher). A portion of that sediment load is transported downstream. As the stream gradient decreases near the Mississippi River, movement of this sediment slows and accumulates in the stream channel, causing the stream to become wide and shallow, which leads to lower flood thresholds.

The Village of Holmen has been requiring storm water treatment for new subdivisions. Many storm water detention ponds now exist in and around Holmen. The sandy soil of the area allows much of the water accumulating in these ponds to infiltrate into the ground. With the historical flooding problems of lower Halfway Creek, this best management practice is vital to reduce flood flows and reduce sedimentation of the stream from urban sources.

Halfway Creek flows through the Village of Holmen and receives treated wastewater from the Holmen wastewater treatment plant. During the facility planning process, the community of Holmen should examine regionalized sewerage treatment with the City of La Crosse as a potentially cost effective option.

Metallics, Inc. also discharges process wastewater to Halfway Creek. A study to determine water quality below the discharge in Halfway Creek was conducted in 1996. Continuous monitoring equipment measured a number of water quality parameters. No measurable negative effects to Halfway Creek with regard to temperature, dissolved oxygen or pH were documented (Sullivan and others).

Hoyer Valley Creek (Creek 23-7)

Unnamed Creek 23-7, located in central La Crosse County, flows for approximately two miles in a southwesterly direction before reaching Neshonoc Creek. It has a gradient of 53 feet per mile and drains agricultural valley land and forested hillsides. Creek 23-7 is a Class I trout stream for its entire length.

The most recent survey, conducted in 1978, documented a cold, spring-fed stream with good trout spawning habitat. Brook trout and a variety of forage fish species were present. An updated fish and habitat survey should be conducted to document current conditions. Brook trout were last stocked by WDNR in 1989. Access to Creek 23-7 is from one road crossing.

Johns Coulee Creek (Creek 20-6)

Johns Coulee Creek, also known as Creek 20-6, is located in southern La Crosse County. It flows in a southwesterly direction for approximately two miles before reaching Mormon Coulee Creek. This stream has a moderate gradient of 47 feet per mile. Johns Coulee Creek is a Class I trout stream for its entire length.

A fish and habitat survey conducted in 2000 documented a naturally reproducing brook trout population and very few brown trout. The stream bottom was comprised mainly of sand, gravel and clay. Overhanging vegetation was the primary in-stream fish habitat, followed by woody debris and undercut banks. No WDNR stocking records exist for Johns Coulee Creek. Access to the stream is possible from two road crossings and WDNR owned fishing easements on the lower end.

Johnson Coulee Creek

Johnson Coulee Creek, located in northwestern La Crosse County, flows in a southerly direction for 3.1 miles before reaching Halfway Creek just upstream of Holmen. This stream has a gradient of 64 feet per mile and drains agricultural land and wooded hillsides. Johnson Coulee Creek is not a classified trout stream. Johnson Coulee Creek is on the Wisconsin 303d list of impaired waters due to sedimentation resulting in lack of fish habitat.

Very little biological information has been collected from this stream. A 1988 runoff event brought an estimated 2,000 cubic yards of clay into the creek from a quarry operation where no erosion control measures were taken. A thorough survey of Johnson Coulee Creek should be conducted to document the existing aquatic biological communities.

La Crosse River

The La Crosse River flows for approximately 30 miles through central La Crosse County before discharging to the Mississippi River in the City of La Crosse. It has a gradient of 3.6 feet per mile and is bordered by wetlands, forest, farm fields and private residences for much of its length through the county. Where the river banks are tall and steep, some erosion is taking place whereas others have adequate vegetation to minimize erosion. The Villages of Bangor and West Salem have permits to discharge treated wastewater to the river. Access to the La Crosse River can be found at many road crossings and parks.

An August 2005 fish survey of the La Crosse River, conducted from Lake Neshonoc downstream to the Mississippi River, revealed numerous game fish species and forage fish species along the entire length. Game fish species included: walleye, sauger, large mouth bass, small mouth bass, northern pike, yellow perch, bluegill, black crappie, channel catfish and flathead catfish. In-stream cover for fish was primarily woody debris.

Lake Neshonoc

Lake Neshonoc is a 737 acre impoundment of the La Crosse River in West Salem. The dam is operated to produce electricity which consequently affects water levels in the lake and the river downstream. La Crosse County operates a park along the western and southern shores of the lake with three boat landings and one handicapped accessible fishing pier. Homes and a privately owned recreational park surround much of the rest of the lake. New housing subdivisions have recently been approved immediately south of the lake. Proper storm water containment and treatment from these subdivisions will be necessary to reduce their negative influence to the lakes water quality. High bacterial counts, nuisance algal blooms, and sedimentation of Lake Neshonoc are all due to the runoff of soil, nutrients, and bacteria from the land upstream of the lake which extends into Monroe County.

The La Crosse County Health Department has closed the Lake Neshonoc swimming beaches on a regular basis due to harmful bacteria levels. Sediment was hydraulically dredged from Lake Neshonoc to create fish habitat and a sediment trap at great expense. Lake Neshonoc is on the Wisconsin 303d list of impaired waters due to bacterial contamination and excessive nutrients which result in nuisance algae blooms and pH values above the water quality standard.

A 2003 fish survey confirmed that Lake Neshonoc contains a diverse fishery which includes: walleye, northern pike, bluegill, yellow perch, white crappie, black crappie, carp, small mouth bass, large mouth bass, white bass and a variety of forage fish species. Very little aquatic vegetation is present in the lake except for the eastern end, where the river enters the impoundment. Sand and silt are the predominant sediment types in the lake.

Lake Onalaska

Lake Onalaska is part of the Mississippi River on the western edge of La Crosse County. It is bounded by Lock and Dam 7 and French Island to the south, the Black River delta to the north and La Crosse County to the east. Numerous boat landings allow access to this lake for fishing and other recreational opportunities. However, hunting is not allowed. Numerous game fish and non-game fish species abound in Lake Onalaska. Zebra mussels also are found in the lake. Cleaning of boats and trailers used in the Lake Onalaska to remove all life stages of the mussels is essential in reducing the spread of zebra mussels to any inland waters of La Crosse County.

Larson Coulee Creek

Larson Coulee Creek, located in central La Crosse County, flows for approximately 3.5 miles in a southerly direction before reaching the La Crosse River. It has a moderate gradient of 40 feet per mile and drains agricultural valley land and steep wooded hills. Larson Coulee Creek is a class Class I trout stream above CTH M for about 0.5 miles and Class II for approximately 3 miles below CTH M.

A 2002 fish survey documented naturally reproducing brook trout and some brown trout. Longnose dace, American brook lamprey, and brook stickleback comprised the forage fishery. Abundant watercress, a sign of spring inputs to the stream, was noted. Much of the stream bottom was sand and silt, with small amounts of gravel and cobble. Riparian land cover was mostly wooded with some meadow. Fish cover was dominated by woody debris and undercut banks. Overhanging and submerged vegetation also provided cover for adult game fish. Larson Coulee Creek was last stocked with wild brook trout by the WDNR in 2004. Results of the 2002 fish survey justified reclassifying the entire length of Larson Coulee Creek as Class I. Access to Larson Coulee Creek is from WDNR owned easements and five road crossings.

Little Burns Creek

Little Burns Creek, located in north east La Crosse County, flows in a southeasterly direction for approximately 1.3 miles before reaching Burns Creek. It has a steep gradient of 80 feet per mile and drains rolling agricultural and forested land. Little Burns Creek is a Class I trout stream for its entire length.

The most recent survey, conducted in 1977, documented cool, clear water and a stream bottom which consisted of sand, gravel and silt. Riparian land use was primarily pasture and wetland, with some bank erosion due to excessive livestock grazing. Many brook trout and one forage fish species were found during this survey. The fishery of Little Burns Creek would benefit from the addition of in-stream habitat. To update information on the status of Little Burns Creek, a fish and habitat survey should be conducted. No DNR stocking records exist for this stream. Access is possible from two road crossings and DNR owned easements.

Long Coulee Creek

Long Coulee Creek, also known as Creek 8-6, is located in northwest La Crosse County. This stream flows for approximately 3.9 miles in a southerly direction before reaching Halfway Creek just east of Holmen. This stream has a relatively low gradient of 26 feet/mile. Long Coulee Creek is not a classified trout stream. Long Coulee Creek is on the Wisconsin 303d list of impaired waters for excessive sedimentation resulting in reduced in-stream habitat for fish.

A 2006 survey documented Johnny darter and brook stickleback. Steep raw banks which slough off into the stream contribute sediment to the stream. At the time, the stream was heavily pastured. This stream has the potential to become a Class II trout if sedimentation to the stream were reduced.

McKinley Coulee Creek (Creek 23-12)

McKinley Coulee Creek, also known as Creek 23-12, is located in central La Crosse County. This stream flows for approximately three miles in a southwesterly direction before reaching Neshonoc Creek. It has a moderate gradient of 43 feet per mile and drains agricultural valley land and steep forested hills. McKinley Coulee Creek is a Class III trout stream from its mouth upstream for 0.5 miles then Class II for 2.3 miles upstream.

The most recent survey, conducted in 2006, documented a small, spring-fed stream which supports brook trout with some natural reproduction. The stream bottom consisted of primarily sand with lesser amounts of silt, gravel, cobble and clay. In-stream cover consisted of log tangles, undercut banks and overhanging vegetation. Streambank erosion was threatening the fishery of this stream. WDNR has stocked this stream with brook trout since 1960. Access to McKinley Coulee Creek is from four road crossings.

Mississippi River

The Mississippi River borders La Crosse County on the east. Lock and Dam 7 is located on the west side of French Island which creates Pool 7 upstream of the dam. The remainder of La Crosse County is bounded by Pool 8 of the Mississippi River.

Access to the river can be found via Goose Island County Park, numerous city parks such as Pettibone Park and Riverside Park, as well as several boat landings. Within La Crosse County, the Mississippi River receives flow directly from the Black River, the La Crosse River, Pammel Creek and Mormon Coulee Creek. Numerous game fish and non-game fish species abound in the Mississippi River. Zebra mussels also are found in the river. Cleaning of boats and trailers used in the Mississippi River is essential in reducing the spread of zebra mussels to any inland waters of La Crosse County. The Mississippi River in La Crosse County is on the Wisconsin impaired waters list (303d list) due to a contaminated fish consumption advisory for mercury and PCBs (polychlorinated bi-phenols).

Mormon Coulee Creek

Mormon Coulee Creek, located in southeast La Crosse County, flows in a westerly direction for approximately 15 miles before reaching the Mississippi River south of the City of La Crosse. It has a gradient of 23 feet per mile and drains steep forested hillsides, agricultural valley land, and numerous housing developments. Mormon Coulee Creek is a Class II trout stream for its entire length.

This stream contains a gravel and cobble bottom in the extreme upper end which eventually changes to more sand, silt and clay downstream. Brown trout have been stocked in Mormon Coulee Creek since 1976. Recently, wild brown and brook trout were stocked in Mormon Coulee Creek. Several forage fish species and numerous year classes of brown trout and brook trout were documented in both June 2000 and October 2005 surveys. The majority of in-stream cover was woody debris. More permanent cover in the form of LUNKER structures has been installed in some areas. Mormon Coulee Creek would benefit from the purchase of additional streambank easements and in-stream habitat restoration. Much of Mormon Coulee Creek is entrenched with steep streambanks, especially throughout its lower reaches. Access to Mormon Coulee Creek is from 14 road crossings, a Town of Shelby park, and DNR streambank easements.

The lower end of Mormon Coulee Creek is located on the south end of the City of La Crosse and the Town of Shelby. The stream has a fairly wide valley here surrounded by steep hills. The major land use was agriculture until fairly recently. Due to the close proximity to the City of La Crosse and beautiful landscape, numerous housing developments have been built in the lower end of the Mormon Coulee Creek watershed and more are planned. Control of soil erosion during construction of homes or other buildings is vital for the continued trout stream classification of Mormon Coulee Creek. Soils which are allowed to leave a construction site and reach the stream will smother spawning habitat for fish as well as habitat for aquatic insects on which the fish feed. After a construction site is stabilized, the storm water generated off that site during a rain storm can also detrimentally affect a trout stream if not managed properly.

Trout streams in urban areas are rare due to changes in storm water runoff volume and temperature from an urban landscape. Stormwater from areas with impervious surfaces, such as roofs, sidewalks and streets generate more runoff than vegetated areas. This added volume of runoff is often times warmer than the cold temperatures healthy trout streams require. When this warm water is discharged to trout streams or their tributaries, warming of the stream creates conditions which stress trout. The accumulation of these subdivisions eventually will produce storm water volumes that exceed what agricultural lands previously generated. Additional volume of storm water can reduce in-stream habitat through its scouring and erosive action.

Infiltration of storm water reduces surface water volume fluctuations in the stream during both dry and wet periods by returning the storm water to groundwater, as was the case with natural vegetation or agricultural crops. Rain and snow that percolates through the ground, rather than over the land surface, is much cooler once it reaches the stream. All new subdivisions in the Mormon Coulee Creek watershed should detain and infiltrate their storm water using rain gardens, grass swales, or infiltration basins. To reduce the costs of storm water systems and reduce the affects of storm water to the stream, the City of La Crosse and the Town of Shelby should create a storm water plan for the Mormon Coulee watershed with costs shared by new subdivision developments.

Neshonoc Creek

Neshonoc Creek, also known as Scotch Coulee Creek, is located in central La Crosse County. This stream flows for approximately five miles in a southwesterly direction before reaching the La Crosse River downstream of Lake Neshonoc. It has a moderate gradient of 29 feet per mile and drains roughly six square miles of agricultural land and steep forested hillsides. The lower 2.4 miles of Neshonoc Creek are Class III trout and the upper 2.4 miles are Class II.

A 2005 fishery survey documented a healthy reproducing brook trout population in the upper portions of Neshonoc Creek and a robust forage fishery with some brook trout in the lower reaches. Streambank erosion was noted as a problem in both surveyed stations. The data collected during this survey suggest that Neshonoc Creek should be upgraded to Class I in the upper 2.4 miles and Class II in the lower 2.4 miles. Neshonoc Creek has been stocked regularly with brook trout by the WDNR since 1960. Access to this stream is from four road crossings.

Pammel Creek

Pammel Creek, located in southwest La Crosse County, flows for five miles in a westerly direction before reaching the Mississippi River on the south side of La Crosse. This stream has a gradient of 22 feet per mile. Pammel Creek is not a classified trout stream. Pammel Creek flows through some agricultural areas, an expanding rural home setting, a mobile home park, then through the southern portion of the City of La Crosse. Several subdivisions located on nearby hillsides drain their storm water to Pammel Creek. Frequent flooding of homes adjacent to the creek precipitated a flood control project that resulted in a two mile long concrete lined ditch built in the late 1980's. Upstream of the concrete channel, the stream bottom is comprised mainly of sand with small areas of gravel. Once the stream enters the concrete channel, the flow disperses across 15 feet of concrete to a maximum depth of a few inches during normal flow. Any accumulation of sediment in the concrete channel is regularly removed by the City of La Crosse.

Due to the lack of habitat and shallow water in the channel, no fish are present. Wild brook trout were stocked in the Pammel Creek upstream of the concrete ditch. A 2005 fish survey showed natural reproduction and three year classes of fish. This self sustaining population of brook trout justifies classifying Pammel Creek upstream of the concrete ditch as a Class I trout stream. Mississippi River fish frequent the portion of Pammel Creek downstream of the flood control channel. Flashy flows do still exist upstream of the concrete ditch. Stormwater in the surrounding urbanizing area above the concrete ditch should be controlled with infiltration techniques to preserve the cold summer temperatures found in the creek. Erosion of steep banks contributes to the sediment load of the stream.

Pinkish Coulee Creek (Creek 27-3)

Pinkish Coulee Creek, also known as Creek 27-3, flows in a southeasterly direction for 1.3 miles before reaching Bohemian Valley (Coon) Creek in southeastern La Crosse County. This stream has a gradient of 133 feet per mile and is not a classified trout stream. A May 2005 fish survey revealed two year classes of brown trout. There are no WDNR stocking records for this stream. The station surveyed was pastured, but bank erosion was only moderate.

Pleasant Valley Creek (Creek 18-2)

Pleasant Valley Creek, also known as Creek 18-2, is located in central La Crosse County. This stream flows in a westerly direction for approximately six miles before reaching the La Crosse River. It has a gradient of 30 feet per mile and flows through agricultural land with heavy pasturing, rural housing, and a golf course. Pleasant Valley Creek has been channelized as it runs parallel to I-90. A portion of the stream flows through culverts under I-90 and railroad tracks into wetlands adjacent to the La Crosse River. The rest of the flow eventually reaches Bostwick Creek in Section 18. Pleasant Valley Creek is not a classified trout stream.

A 1988 stream survey of Pleasant Valley Creek near the golf course documented a variety of forage fish species. In 2004 and 2006, fish surveys conducted further upstream of the golf course turned up only brook stickleback. Much of the stream corridor is buffered through the agricultural fields. However, streambank erosion adjacent to CTH M due to livestock was causing degradation of in-stream fish habitat.

Poplar Creek

Poplar Creek, located in southeastern La Crosse County and northwestern Vernon County, flows for approximately two miles in a southerly direction before reaching Coon Creek northeast of Coon Valley. In Vernon County, this stream is also known as Creek 4-8 and in La Crosse County as Creek 33-11. This stream has a steep gradient of 100 feet per mile and drains steep forested land, agricultural and lowland pasture. Poplar Creek is classified as a Class II trout stream for the 0.6 miles located in Vernon County and Class I for the 1.4 miles in La Crosse County.

Fish surveys conducted in 2003 and 2004 in La Crosse County documented several year classes of brown trout. In-stream cover for adult fish was scarce, however the substrate was adequate for young brown trout. No WDNR stocking records exist for Poplar Creek.

Sand Creek

Sand Creek, located in northeastern La Crosse County, flows in a northwesterly direction for nearly nine miles through La Crosse, Monroe, and Jackson Counties, before reaching the Black River. The 2.5 miles that flow through La Crosse County has a gradient of 38 feet per mile and is a Class I trout stream for its entire length. Adjacent lands are primarily wooded with stands of old growth timber. Streambank grazing and cropland erosion negatively affect the La Crosse County portion of Sand Creek. This stream has good water quality and potential for fishery habitat improvement. The DNR designated a corridor surrounding Sand Creek for streambank protection via land purchase. Through this program, the DNR has acquired approximately 715 acres surrounding approximately one and a half miles of Sand Creek in Monroe County. In-stream habitat structures were installed and prairie and oak savannah restoration efforts began in 1997 on a newly acquired one square mile piece of land. The prairie will be maintained by periodic burning. Preliminary endangered resource inventory work was done on the property. More detailed information should be collected for both aquatic and terrestrial species.

Sand Lake Coulee Creek

Sand Lake Coulee Creek, located in east central La Crosse County, flows in a westerly direction for approximately four miles before reaching the wetlands adjacent to Lake Onalaska in the Town of Midway. This stream has a gradient of 24 feet per mile and drains forested hillsides, only a small amount of agriculture, a rural subdivision, golf course, and the urbanizing area between the Village of Holmen and the City of Onalaska. Sand Lake Coulee Creek is not a classified trout stream.

A portion of Sand Lake Coulee Creek, adjacent to the Cedar Creek Golf Course, was straightened and ditched. A low head dam was placed on the stream within the golf course which impounds approximately two acres of water. A 1988 fish survey confirmed forage fish in the stream above the golf course. Sedimentation and increased runoff volumes have caused this stream to flood frequently. The sediment load from this sub-watershed (8 square miles) is estimated at approximately 4,470 tons per year, or 560 tons/square mile/year. (Vierbicher). In 2005 and 2006, the lower end of Sand Lake Coulee Creek in the Town of Midway experienced periodic dewatered episodes during the summer months. This lack of water had been noted in previous years and may be due to low groundwater levels from drought. This problem may also be related to high capacity wells in the area.

Smith Valley Creek

Smith Valley Creek, located in central La Crosse County, flows for approximately four miles in a northerly direction before reaching the La Crosse River just east of the City of La Crosse. It has a gradient of 46 feet per mile and drains a rural subdivision and some agricultural land. Smith Valley Creek is not a classified trout stream.

The configuration of Smith Valley, the road, stream, and development patterns have required the installation of many culverts and bridges over the creek. If these stream crossings are not designed and constructed properly, damage to the fishery, in-stream habitat, and upstream property can result. The Smith Valley Creek watershed is experiencing a boom in rural home building. Stormwater from these subdivisions should be infiltrated as much as possible to preserve the groundwater inputs to the stream. Ponds on the upstream end of the stream warm the water temperatures. A 2002 fish survey documented enough brook trout to reclassify the stream to Class II brook trout. However, a 2005 fish survey found no trout. The stream should be surveyed once again. It was last stocked in 1994 with brook trout. Access to the stream is from four road crossings.

Sour Creek

Sour Creek flows in a northerly direction for approximately three miles before reaching Fleming Creek in north central La Crosse County. It has a gradient of 37 feet per mile and drains agricultural lands with some forested hillsides. Sour Creek is not a classified trout stream.

Surveys of Sour Creek in 2001 documented very few forage fish; however, it was determined that the stream had potential for brook trout. The stream bottom was primarily sand and the dominant fish cover was overhanging vegetation. In 2004, wild brook trout were stocked in Sour Creek and a 2005 survey documented both adult and young of the year brook trout. Some of the adults appeared to have a skin disease. Additional surveys of this stream should be conducted to determine if the brook trout population in Sour Creek is self sustaining.

Spring Coulee Creek

Spring Coulee Creek, located in north central La Crosse County flows in a southerly direction for nearly two miles before reaching Halfway Creek. It has a gradient of 31 feet per mile and drains forested hillsides and agricultural valleys. Spring Coulee Creek is not a classified trout stream. A 2002 fish survey documented four forage fish species and one bluegill.

St. Joseph Coulee Creek (Creek 26-15)

St. Joseph Coulee Creek, also know as Creek 26-15, flows in a northerly direction for three miles before reaching Bostwick Creek in central La Crosse County. It has a gradient of 78 feet per mile and drains forested hillsides and agricultural land in both the valleys and hilltops. St. Joseph Coulee Creek is not a classified trout stream. A 2005 fish survey documented brown trout. The stream bottom was dominated by silt and cobble. Streambank erosion and sedimentation were also noted.

Tollefson Coulee Creek (Creek 28-16)

Tollefson Coulee Creek, also known as Creek 28-16, flows in a northerly direction for two miles before reaching Bostwick Creek in central La Crosse County. It has a gradient of 87 feet per mile and drains forested hillsides and agricultural valleys and hilltops. Tollefson Coulee Creek is not a classified trout stream.

A 2004 fish survey documented brown trout, brook stickleback and white sucker. The stream bottom consisted of primarily sand and cobble. Streambank erosion and sedimentation were limiting in-stream adult game fish cover. No WDNR stocking records exist for this stream.

Wet Coulee Creek (Creek 26-1)

Wet Coulee Creek, located in north central La Crosse County, flows in a northerly direction for nearly three miles before reaching Fleming Creek. This stream has a gradient of 80 feet per mile and drains agricultural valleys and forested hillsides. Wet Coulee Creek is not a classified trout stream.

A 2001 fish survey documented five forage fish species as well as a few brook trout. The substrate was dominated by gravel and sand. In-stream cover for fish consisted of overhanging vegetation with some scattered boulders and undercut banks. Wild brook trout were stocked in 2001. A 2005 fish survey found only a few adult brook trout and no young of the year. It was determined this stream was too small to support a self-sustaining brook trout fishery. At the time of the survey, adjacent land use was not detrimentally affecting the stream.

Based on data from the Department's water quality monitoring program the Department has ranked the water quality of all 27 watersheds in the County. This ranking mirrors the Department of Natural Resources ranking of 303d waters in the County. In general, the highest ranked watersheds are considered the County's priority areas for receipt of technical assistance and the expenditure of funds.

WATER QUALITY DESIGNATIONS

La Crosse County has 274 miles of stream, or 983 surface acres, excluding the Mississippi River, and approximately 730 surface acres of lakes, excluding Lake Onalaska. La Crosse County has 10 waterbodies on the State's 303(d) list, 9 exceptional waterbodies and one outstanding waterbody.

Impaired Waters 303(d) Water

- Lower Black Creek
- Mississippi River
- Long Creek
- Halfway Creek
- Johnson Coulee Creek
- Gills Coulee Creek - TMDL
- Adams Creek
- Lake Neshonoc
- Fleming Creek
- Lower Bostwick Creek

Exceptional Resource Waters

- Larson Coulee Creek
- Hoyer Coulee Creek
- Little Burns Creek
- Burns Creek
- Dutch Creek
- Bostwick Creek
- Poplar Coulee Creek
- Coon Creek
- Fishback Creek

Outstanding Resource

- Berge Coulee

In September of 2006, a Total Maximum Daily Load (TMDL) was established for Gills Coulee Creek in an attempt to improve water quality parameters. Gills Coulee Creek (GCC) is approximately 5 miles long and is a tributary to the La Crosse River located between La Crosse and West Salem. The 5.9 square mile watershed is primarily made up of agricultural cropland, pastures, and upland forest. GCC is listed as a warm water forage fishery by the DNR due to agricultural practices that degraded the stream resulting in high levels of pollutants and loss of fish habitat. Sediment from eroding stream banks and cropland were considered the biggest pollutants.

In October of 2004, the La Crosse County Department of Land Conservation held its first landowner information meeting to encourage farmers in the watershed to participate in a stream restoration project aimed at improving water quality. The ultimate goal was to do improvements that would change its fishery classification to a Class I Trout Stream. In 2005, grants from the DNR helped to provide financial assistance to farmers in the GCC watershed. Seven landowners in the watershed participated by installing:

- 3 ½ miles of stream bank rock riprap
- 1,225' of clean water diversions
- 785' of stream crossings
- 4,000' of fencing
- 8 dams
- 6.7 acres of grassed waterways
- 14 rock outlets
- 2 feedlot runoff control systems

The total cost of the restoration project was $694,517 and was completed at the end of 2012. We immediately began measuring improvements in the water quality. Dissolved oxygen levels, critical to trout survival, improved greatly over the entire length of the stream. Total phosphorous, e. coli bacteria, and sediment levels also improved substantially.

In July 2014, a DNR fish survey was done. One section of the sample run captured 83 Brook Trout over a 300' test section. The trout ranged from 2" to over 12" long. Trout had also moved to previously unoccupied sections of the GCC and were showing signs of strong reproduction. It is anticipated that Gills Coulee Creek will be delisted from the Impaired Waters 303(d) list in the near future.

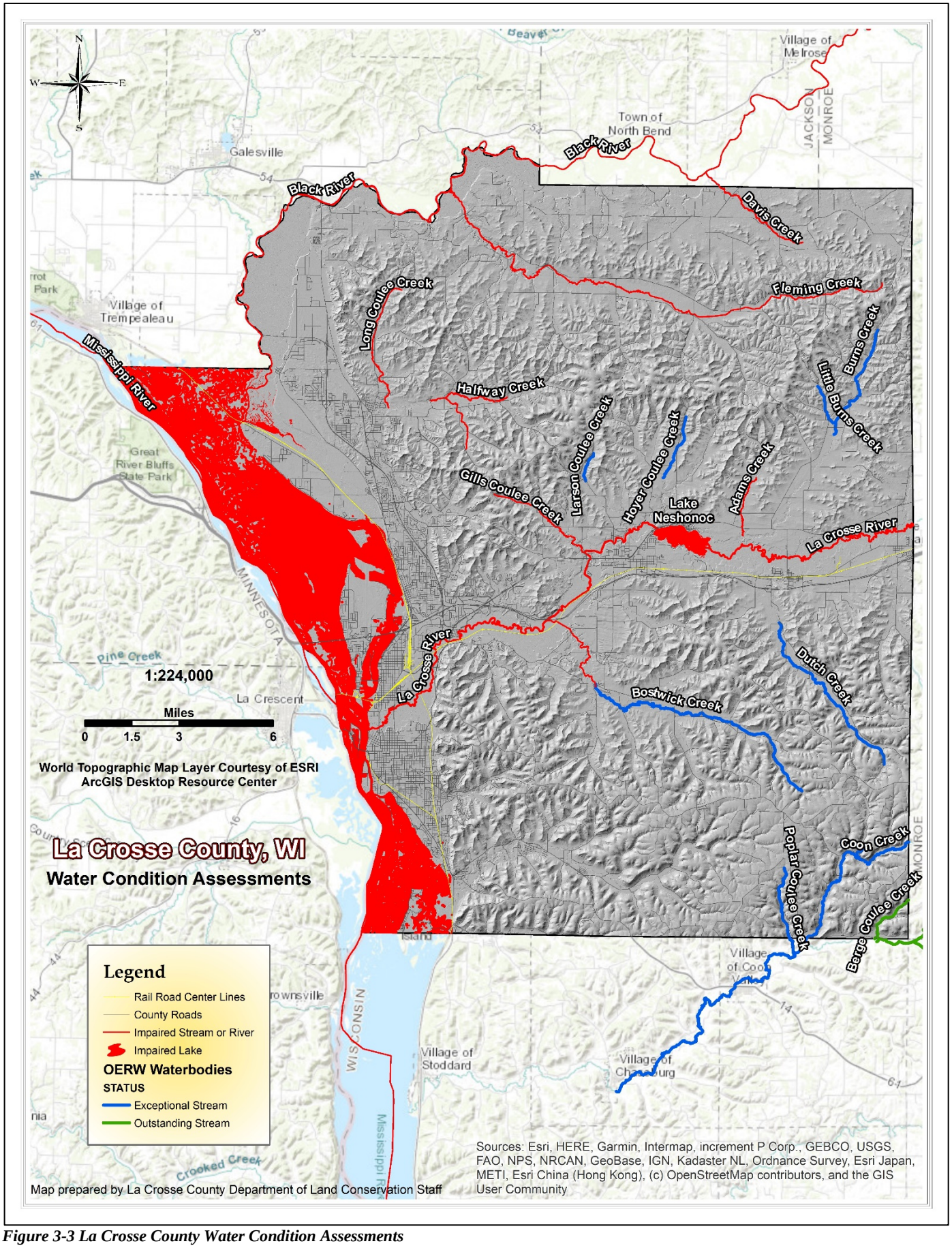


Figure 3-3 La Crosse County Water Condition Assessments

WATER QUALITY MONITORING

The Department has been conducting water quality monitoring activities for 25 years; the Dutch Creek monitoring station since 1995, a county-wide base flow sampling program since 1998, and various upstream-downstream sampling programs (or Signs of Success) at various sites in Dutch, Adams, Gills Creeks and Bostwick Creek since 1998.

Monitoring Station

The Dutch Creek monitoring station was set up and operating in January 1995. The station is located off of Darling Road, 3 miles south of the village of Bangor. It is equipped with an ISCO 4130 bubbleline flowmeter, an ISCO 3700 sampler, and an ISCO tipping bucket rain gauge. A Scientific Instruments AA current meter is used for taking discharge measurements. A YSI 600R sonde is used to measure dissolved oxygen and water temperature. ISCO's Flowlink software is used to communicate with and program the flowmeter.

Except for the year of 2018 for replacement of the bubbleline flowmeter and sampler, the Dutch Creek monitoring station has been operating continuously since February of 1995. Water samples taken during runoff events are tested for Fecal Coliform bacteria, total phosphorus and total suspended solids concentrations. These concentration values, along with stream discharge information, allow us to compute total loadings of E. coli bacteria, phosphorus and suspended solids for runoff events.

Figure 3-4 shows E. coli bacteria levels averaged over a ten-year period versus samples collected in August of 2018. The average percentage of suspended solids and phosphorus over 10 years of data is shown in Figure 3-5. Calendar year 2008 has contributed the most of both suspended solids and phosphorus, with more than double the amount of solids and almost double the amount of phosphorus compared to any other year. This increase was due to storm events occurring on one weekend, June 7 & 8, 2008. Four separate rain events occurred, with the last 2 both exceeding the previously recorded high flow mark. This was the same weekend that Lake Delton failed and Cedar Rapids, Iowa flooded.

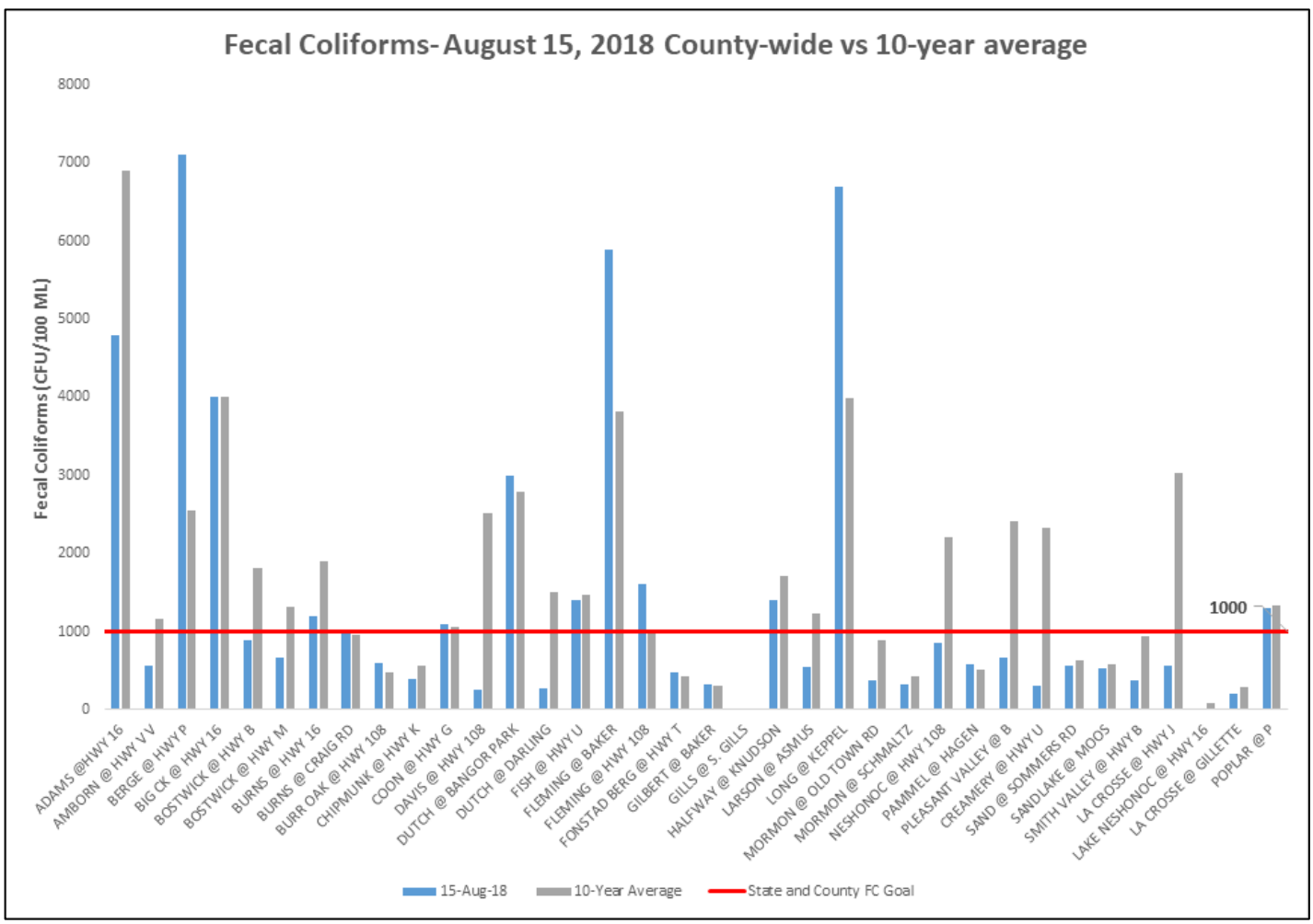


Figure 3-4 La Crosse County Fecal Coliform – County Wide

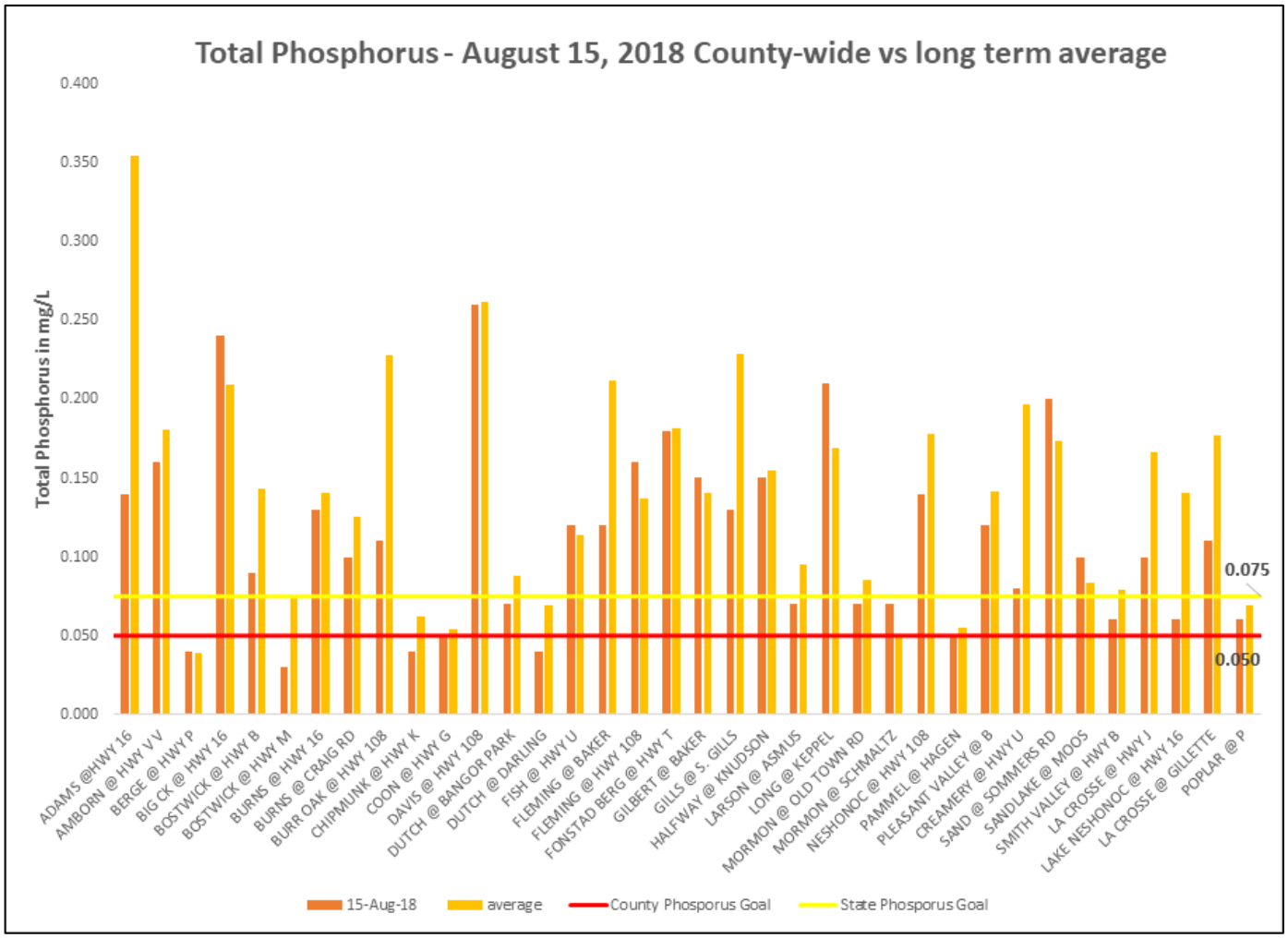


Figure 3-5 La Crosse County Total Phosphorus – County Wide

Baseflow Stream Monitoring

The county-wide stream sampling program was started in the summer of 1998. Water chemistry samples for most streams in the County are collected within about a 2.5 hour timeframe at a time when there has been at least 72 hours of no runoff activity from rainfall or snowmelt. Depending upon available funding, these sample runs have been done from 2 to 4 times per year. Samples collected are analyzed for fecal coliform bacteria and total phosphorus. Each one of these snapshots in time isn't necessarily reflective of the streams general water quality, but over time and looked at as a whole, they are a good indication of which streams have the best quality and what ones have the poorest.

Adams Creek typically has had the poorest water quality in the County. It suffers from streambank erosion, feedlot and milkhouse runoff, and poor cattle management in the riparian corridor. The Burns-Adams TRM project made improvements in some of the streambank erosion and cattle management issues. A manure storage facility has had a major impact on improving water quality.

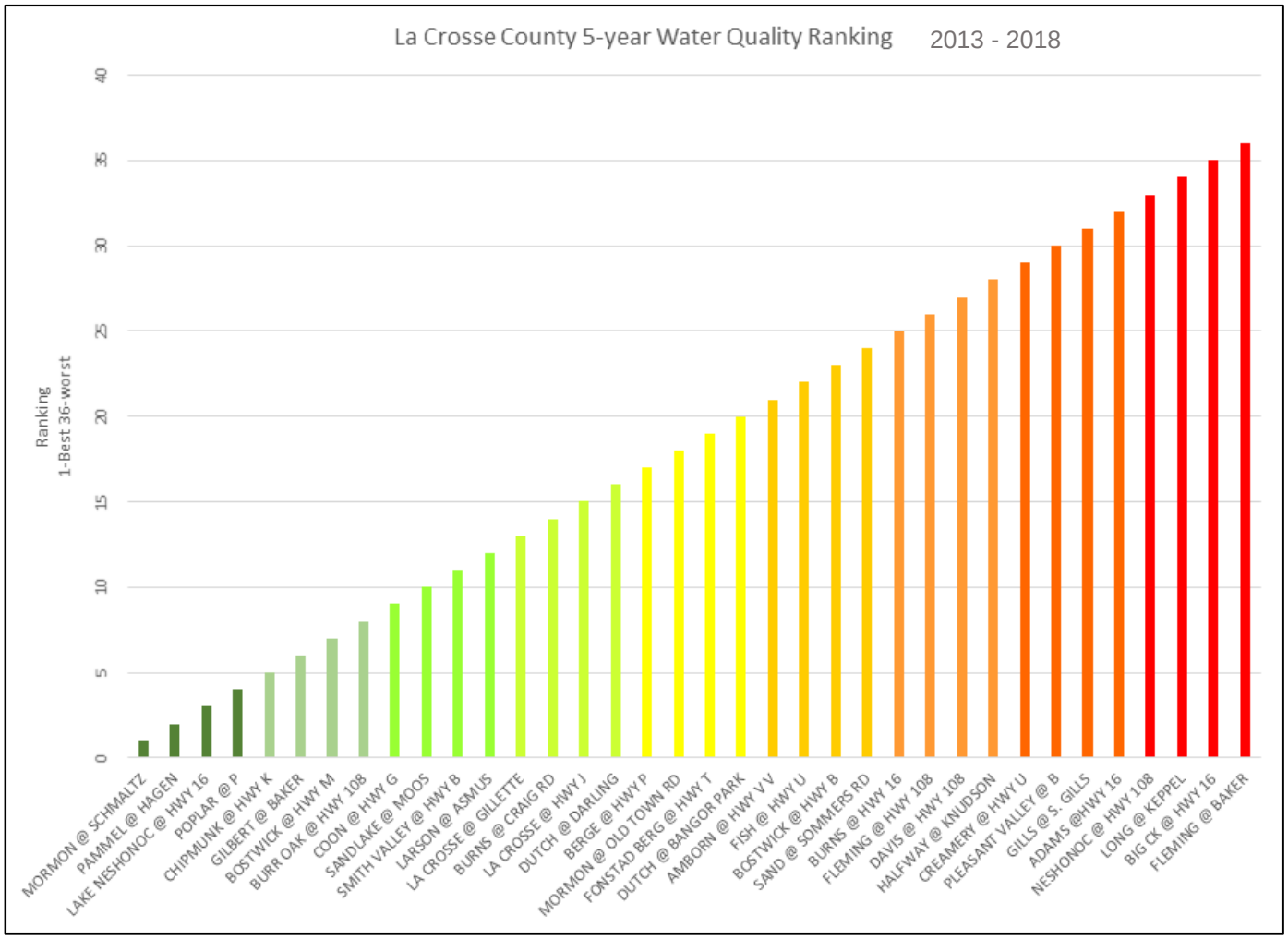


Figure 3-6 La Crosse County 5-Year Water Quality Ranking

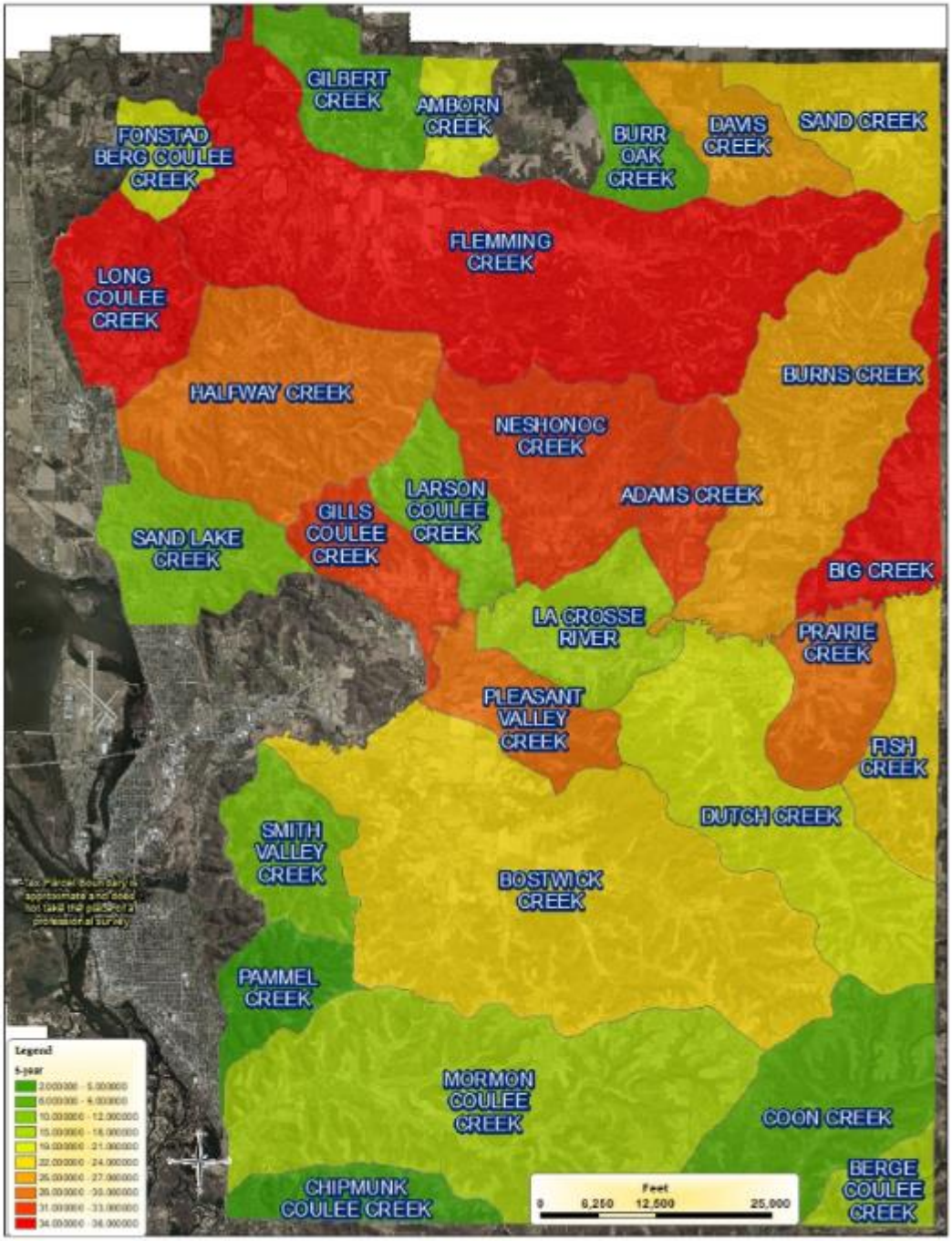


Figure 3-7 La Crosse County Watershed Water Quality Priority Ranking

Generally, the streams with the poorest water quality are found in the northern half of the County and the best water quality are in streams in the southern one third of La Crosse County, south of Highway 33.

The La Crosse County Watershed Water Quality Priority Ranking graph, figure 3-6, indicates County streams ranked best to worst, based upon the county-wide base flow sampling. The streams are color coded by quartile, the worst 25% in red to the best 25% in green. The locations of these streams and watersheds follow the same color coding in Figure 3-7.

WATER QUALITY ASSESSMENT SCHEDULE – OBJECTIVES, ACTIVITIES, DATES, COSTS

A schedule of activities, objectives and costs for Water Quality Assessment for 2020-2029 follows. The proposed activities are based on the county's program of work indicated in this chapter. County staff costs and associated state staff reimbursements for activities between 2020 and 2029 are based on actual 2018 county costs and approved 2018 DATCP staff/supply disbursements extrapolated over ten years.

This plan is only to provide a framework for planned Department activities to be consistent with ss. 92.10. Costs to implement these activities may not represent actual costs or commitments. This plan will be reviewed as necessary to revise goals, objectives, actions or priorities.

Table 3-1

WATER QUALITY ASSESSMENT SCHEDULE 2020 – 2029

	ACTIVITY	OBJECTIVE	DATES	PROJECTED COSTS*	
				COUNTY (1)	STATE (2)
DLC	Conduct biannual water quality sampling of 27 county watersheds	Obtain water quality data to establish county priorities and water quality baseline	2020-2029 May and September	$45,000	
DLC	Maintain monitoring station and collect data as required from Dutch Creek monitoring station	Obtain water quality data to establish county priorities and water quality baseline	2020-2029 April-November	$245,000	
DLC	Submit samples to La Crosse County health lab for analysis of TSS, Total Phosphorus and Coliform Bacteria	Obtain water quality data to establish county priorities and water quality baseline	2020-2029 April-November	$160,000	
DLC, DNR	Coordinate exchange data with DNR	Obtain water quality data to establish county priorities and water quality baseline	2020-2029 December	$18,000	
DLC	Analyze data, prioritize surface water bodies for planning purposes.	Prioritize watersheds	2020-2029 January-March	$73,400	
DLC	Report annually to the PR&D monitoring program data	Obtain water quality data to establish county priorities and water quality baseline	2020-2029	$1,200	
Total				$542,600	$18,300

(1)Based on 2018 staff costs only to implement this section of the LWRMP.
(2)Based on 2018 SWRM staff and supply reimbursement

WATER QUALITY GOALS

The Department's water quality monitoring program provides data that is primarily used to prioritize its soil and water conservation programs. The Department of Land Conservation has carried out a variety of water quality monitoring projects for the past 25 years; a permanent monitoring station has been established on Dutch Creek, county-wide baseflow monitoring of the County's 27 watersheds, and upstream-downstream sampling at several signs of success project sites are examples of the monitoring program. The Dutch Creek monitoring station has shown how single runoff events dominate pollutant loadings for an entire year. The county-wide baseflow sampling has illustrated the water quality differences of the County's streams and is used for program prioritization purposes. Upstream-downstream sampling has shown how effective stream corridor practices have been in improving water quality. County and DNR water quality data are used to compliment each other's programs.

For this plan, "water quality" refers to the suitability of those water bodies for a designated use. Designated uses for most Wisconsin streams and lakes are for support of fish and other aquatic life, and whole-body contact recreation such as wading or swimming.

La Crosse County's designated use water quality goals for surface waters are that surface waters be safe for whole body contact recreation and that surface waters meet County Health Department bacteria standards.

The Department has established surface water quality goals compatible with existing goals for total phosphorus, fecal coliform bacteria, and dissolved oxygen. These goals have been established for all La Crosse County surface waters are as follows;

Total Phosphorus: 0.05 mg/L or less. To prevent excessively high phosphorus levels that may lead to eutrophic conditions and low dissolved oxygen levels. 83% of the streams do not meet goal based upon the county-wide averages from 2013-2018.

Fecal Coliform Bacteria: Less than 1,000 colonies per 100ml. Department water samples from 2013-2018 show that 53% of La Crosse County streams average over the 1000 fecal coliform colonies per 100 ml standard, and are not suitable for whole body contact recreation.

Dissolved Oxygen: No less than 5 mg/L at any time; no less than 6 mg/L for trout waters; and no less than 7 mg/L during spawning season.

That surface waters attain their fishery potential as indicated in the DNR Black River Basin Water Quality Management Plan, and Bad Axe-La Crosse Rivers Water Quality Management Plan.

GROUNDWATER

In 2017, The La Crosse County Health Department conducted a groundwater study in the Towns of Holland and Onalaska to understand the extent of nitrate contamination in private wells. The area under study has a mix of agriculture and residential land use. The study area also has soils that are environmentally sensitive and susceptible to groundwater contamination. Of the 540 private wells that were tested for nitrates, thirty percent of those tested were above the federal nitrate standard of 10 mg/L nitrate-nitrogen and sixty percent were 5 mg/L or greater indicating wide-spread groundwater pollution from human activities.

In December of 2017, the La Crosse County Health Department formed a Nitrate Well Water Task Force to make policy recommendations to the County Board of Supervisors to reduce human exposure to nitrate in drinking water. See Appendix for a copy of the Task Force Policy Proposal.

Addressing groundwater contamination issues in La Crosse County is in its infancy stage. Future proposals to solve nitrate contamination in groundwater will develop as the county pursues causes and corrective actions. The La Crosse County Department of Land Conservation will be a part of this process.

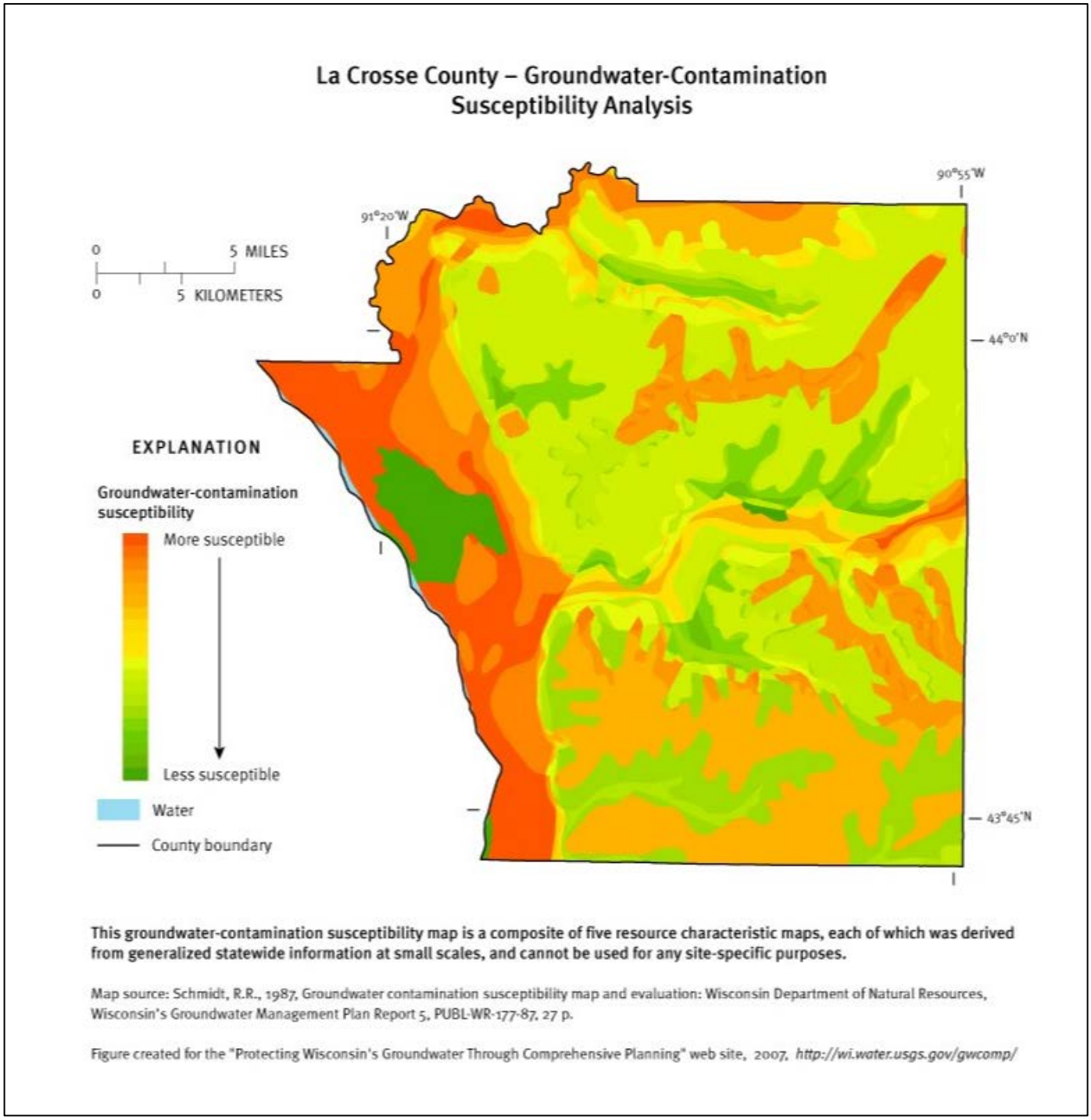


Figure 3-8 La Crosse County – Groundwater Contamination Susceptibility Analysis

TOPOGRAPHY, LAND USE, SOIL EROSION CONDITIONS

General

La Crosse County lies in the heart of the driftless area in Western Wisconsin. It is in an area untouched by recent glacial activity. The total land area of La Crosse County is 469 square miles or 300,160 acres. There are twelve townships, four villages and two cities. There are approximately 115,477 acres of cropland; 92,895 acres of woodland; 36,925 acres of pasture; 45,858 acres in urban use; and 9,005 acres of other land.

Many small streams have shaped the county, carving out hundreds of small valleys known as coulees. This erosion process has left the county traversed with narrow wooded ridges and narrow valley bottoms. Many of the ridges have bluffs of exposed limestone outcroppings that are especially prominent on the western edge of the county bordered by the Mississippi River.

The coulee region is the birthplace of the first large scale organized government effort to reduce soil erosion. In 1932 the Upper Mississippi Erosion Experiment Station was established near the City of La Crosse. The Civilian Conservation Corp was very active in the area and in La Crosse County from 1933 until 1941. The nation's first watershed project, SCS Project No. 1 in Coon Creek is located partially in La Crosse County. The Bostwick Creek Soil Conservation District was established in 1933, and the La Crosse County Soil Conservation District in 1939, one of the first districts in the nation.

The 1940s and 1950s were years of expanding technical and educational programs. With the federal government cost sharing conservation practices, contour strip cropping became the practice which reshaped the surface landscape in the county. Prior to the mid 70s, all technical assistance to landowners was provided by the staff of the USDA Soil Conservation Service, which generally consisted of two employees.

The mid-1970's and 1980's became another period of transition. Increasing awareness and concern for the environment, specifically nonpoint source pollution and soil erosion, led to the creation of several new programs. These programs were complimented by a commitment from the County of La Crosse to hire staff in 1975 to provide the needed technical assistance to carry out these programs. On June 17, 1982, in accordance with Chapter 92, Wisconsin's Soil and Water Conservation Law, La Crosse County abolished its Soil and Water Conservation District and created a Land Conservation Committee and Department of Land Conservation. In 2004 the La Crosse County Land Conservation Committee responsibilities became part of the new county Planning Resource and Development committee.

Figure 3-9 La Crosse County Topography

Geology / Soils

La Crosse lies in the center of a driftless area, an area untouched by the most recent Wisconsin glaciations. The evidence of this is seen by the lack of natural lakes and undrained depressions. Abrasion by the Wisconsin Glaciations resulted in deep deposits of loess being blown into the county after the retreat of the glaciers, 10,000 years ago.

La Crosse County's soils have formed from: weathered sandstone bedrock, loess or wind laid silts, and water laid silts or sands on stream terraces. In most of the county, loess was blown onto the uplands from the western plains. In the northern part of the county the loess is thin, and the parent materials of the soils are sandstone. The soils in the valley bottoms reflect the location of largest deposits of loess or soils formed from sandstone that were carried by water.

The relationship of soils to each other can be categorized into two areas. Where uplands are underlain by dolomite rock, as in the southern part of the county, Fayette soils will occur on ridge tops and Dubuque soils on the side slopes. In the north, where sandstone is the parent material, Gale-Hixton and Sparta-Plainfield occur adjacent to each other. Throughout the county where slopes are steep, the soil materials were removed by water almost as fast as they were deposited. Soils here are shallow and poorly developed.

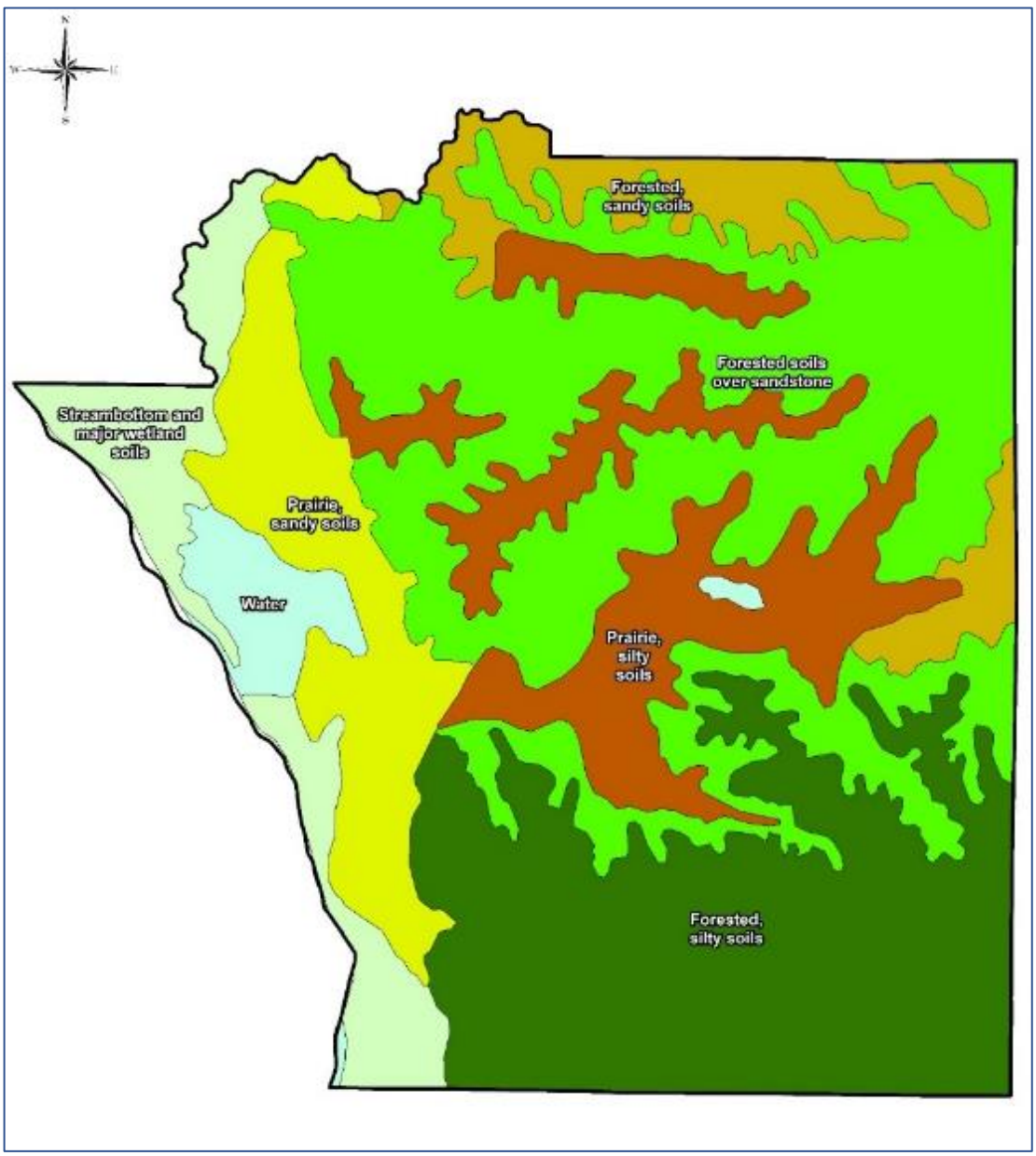


Figure 3-10 La Crosse County Soils Association Map

Land Use / Agriculture

The dominate land use in La Crosse County is agriculture however the number of operating farms is declining rapidly while urban areas continue to expand throughout the county. In 2007 there were 845 farms comprised of 165,368 farmland acres in La Crosse County according to USDA National Agricultural Statistics Service (NASS). 2017 data from NASS shows that the number of all farm operations had declined to 667 farms and only 144,334 operated acres. Although the land in farms dropped nearly 13%, the average size of farms increased slightly at 216 acres.

Most alarming is the number of dairy farms that have suspended operations from 2007 through 2017. In 2007, NASS reported 121 dairy farms existed in La Crosse County. By 2017, that number has been reduced to 76, a 37% loss of the County's dairy operations over that 10 year period. Most of the failed dairy operations have converted to cash grain operations and while corn grain acres have remained stable since 2007, soybean acres has increased by 7,000 acres or nearly 36%. The Department of Land Conservation is concerned that the conversion of dairy farm crop rotations to cash grain operations will increase the County's soil loss rate. There are other livestock operations in La Crosse County consisting of beef, hogs, and chickens but their numbers are relatively low and scattered about the County and are not considered an environmental threat to water resources.

There are several factors which are cause for the reduction in dairy farm numbers. The dairy economy has been suppressed for more than several years and animal feed costs have increased at the same time creating economic hardship for many operators. Other factors contributing to the downturn in farm operations includes the consolidation of farms and the selling of marginal or other lands for hobby farms and developments. Many small family-operated dairy farms in the county have also been replaced by larger dairies or cash-grain operators. Dairying is likely to be replaced by cash grain operations as the most common farm enterprise in the county in the very near future.

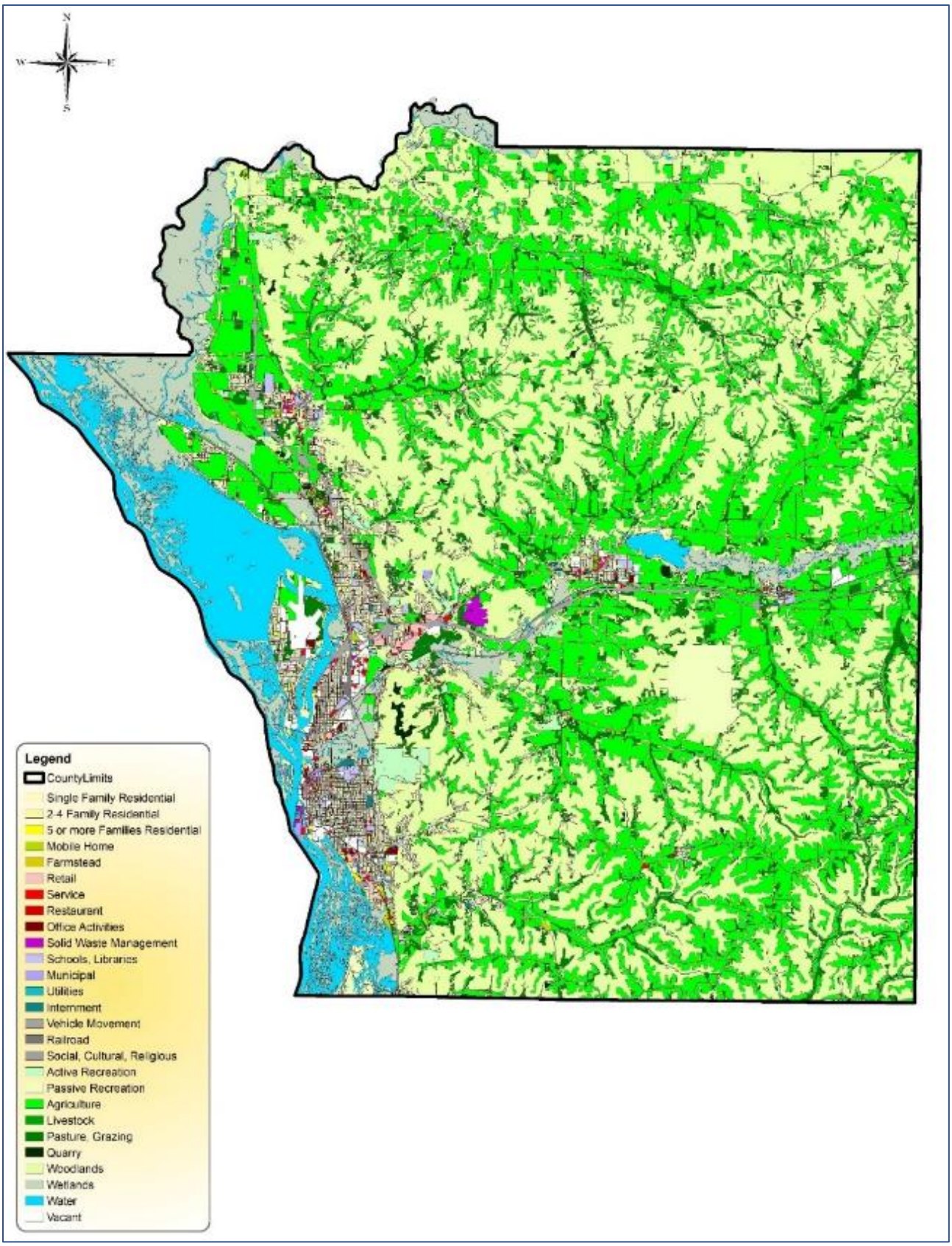


Figure 3-11 La Crosse County Land Use

Woodland

Woodlands are widely distributed throughout La Crosse County. More than 44 percent of the county is currently in woodland. The majority of woodlands lay on the steep slopes of the ridges, between 20 and 60 percent in slope. The majority of woodlands consist of hardwoods. The soils and conditions are suitable for harvesting quality timber. The major timber types are oak and hickory, 65 percent; maple and birch, 17 percent; pine, 8 percent; and bottom land hardwoods and aspen, 10 percent. These timber types reflect the parent soil types in the county. A large part of the wooded acreage consists of stony or sandy soils. These soils are easily damaged by erosion.

Since the 1930's woodland acreage has slowly increased. Steep lands which were cleared and farmed with small equipment or horses have been replanted or retired from agricultural production and allowed to naturally reforest. Rural economic conditions and the expansion of forest based industries in the county also provide an incentive to maintain forest productivity. Another trend has been the removal of livestock from woodlands. In 1954, approximately half the pasture acreage was in woodland. Landowners in general realize the benefits of reforestation in terms of reduced runoff potential from steep barren slopes. The result of increased and better quality woodlands has been a reduction in erosion, improved water quality, and reduced flooding potential. Other associated benefits of improved fisheries, wildlife habitat, and aesthetics are no less important but more difficult to assess.

Soil Erosion Conditions

Soil loss from crop fields is a primary non-point source pollutant. There are approximately 85,863 cropland acres in La Crosse County according to the National Agricultural Statistics Service. The Department has collected cropland soil loss data on approximately 84% of these acres. Crop type, rotations and tillage records were established for these acres and soil loss rates were determined by utilizing USLE or RUSLE2.

Plans were developed specifying acceptable soil losses for those crop fields based on soils, crop type and rotation, field slope, and tillage methods. The plan establishes crop rotations and tillage methods to meet soil loss guidelines insuring soil losses are at "T" or "tolerable" levels of soil loss for crop production.

The average "T" for county soils is 4.5 tons soil loss (movement) per acre per year. Based on existing plans developed since 1986 the estimated county average cropland erosion rate = 4.2 tons per/ac./yr.

Eroded conditions of La Crosse County soils, from NRCS Soil Survey, La Crosse County, are shown in Figure 3-12.

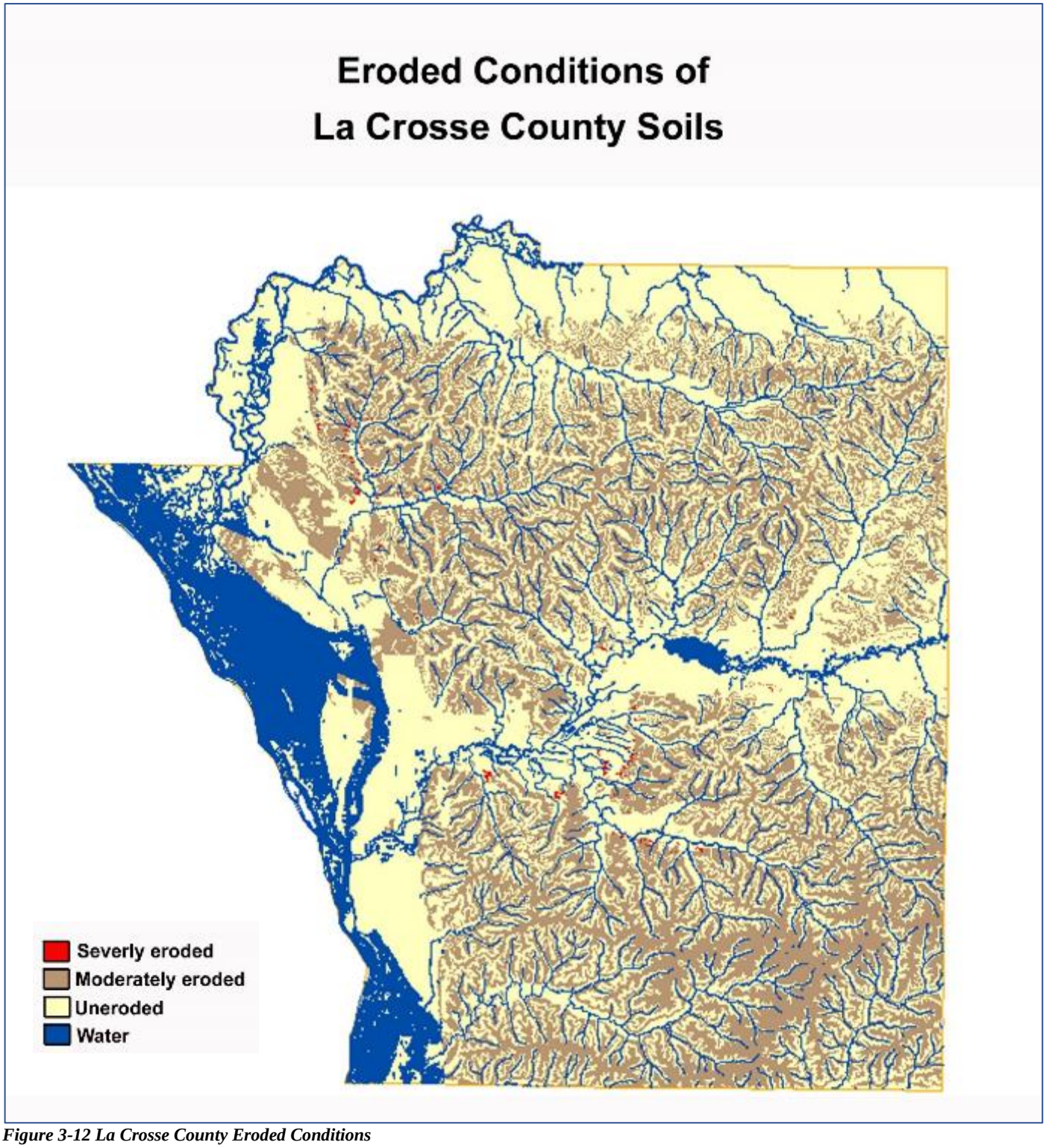


Figure 3-12 La Crosse County Eroded Conditions

Chapter 4: AGRICULTURAL PERFORMANCE STANDARDS

STATE AGRICULTURAL PERFORMANCE STANDARDS, NR 151

In 1997 the legislature passed Wisconsin Act 27. This act was in response to growing public concern, a legislative audit over water pollution from animal waste runoff, and response to the inability of the state to administer an effective animal waste management program. Act 27 was to provide the framework for the regulation of animal waste from livestock operations. Act 27 identified four "prohibited activities" or agricultural performance standards to be applied within Water Quality Management Areas.

Water Quality Management Areas, or WQMA's, are areas within 1000 feet of lakes, and 300 feet of streams, or areas of direct runoff to navigable or ground water. Administrative rules NR 151 further defined additional agricultural performance standards. The new requirements apply state-wide and are detailed in ATCP 50.04, and NR151.02 to 151.08 Wis. Adm. Code. The agricultural performance standards and prohibitions are as follows:

1. Sheet Rill and Wind Erosion, NR 151.02 and ATCP 50.04 (2). All land where crops or feed are grown shall be cropped to achieve a soil erosion rate less than or equal to the tolerable soil loss (T- value) established for that soil. Cropping plans to achieve T-Value are to be compliant with the initial or amended soil loss formula and calculations in effect at the time a plan is approved by the Land Conservation Department.

2. Tillage Setback, NR 151.03. Tillage operations shall not negatively impact stream banks or directly deposit soil directly to surface waters. Adequate sod buffers of 5 to 20 feet will be required to meet this standard.

3. Phosphorus Index, NR 151.04. Croplands, pastures, and winter grazing areas shall average a phosphorus index of 6 or less over the accounting period and may not exceed a phosphorus index of 12 in any individual year within the accounting period.

4. Manure Storage Facilities, NR 151.05. New or substantially altered facilities shall be designed, constructed and maintained consistent with NR 151.05(2), Wis. Adm. Code. The closure of facilities and failing and leaking existing facilities shall comply with NR 151.05(3), Wis. Adm. Code.

5. Process Wastewater Handling, NR 151.055. There shall be no significant discharge of process wastewater to waters of the state.

6. Clean Water Diversions, NR 151.06. Runoff shall be diverted away from feedlot, manure storage areas and barnyards within water quality management areas consistent with NR 151.06(2), Wis. Adm. Code, except that a diversion to protect a private well under s. NR 151.015 (18) (a) is required only when the feedlot, manure storage area or barnyard area is located upslope from the private well.

7. Nutrient Management, NR 151.07 and ATCP 50.04 (3). Manure, commercial fertilizer, and other nutrients shall be applied consistent with NR 151.07 and ATCP 50.04(3), Wis. Adm. Code. Each participant shall have an annual nutrient management plan as scheduled consistent with NR 151.07 (4) through (6).

8. Silurian Bedrock, NR 151.075. All crop producers and livestock producers that mechanically apply manure directly or through contract or other agreement to cropland or pasture may not cause the fecal contamination of water in a well or apply to soils that have 24 inches or less of separation between the ground surface and apparent water table. Manure must be applied in conformance with a nutrient management plan that meets the requirements of NR 151.075 (4) through (16).

9. Manure Management Prohibitions, NR 151.08. Participants shall comply with the manure management prohibitions consistent with NR 151.08, Wis. Adm. Code, including:
   a) No overflow of manure storage facilities
   b) No unconfined manure pile in a water quality management area
   c) No direct runoff from a feedlot or stored manure into waters of the state
   d) No unlimited livestock access to waters of the state where high concentrations of animals prevent the maintenance of adequate sod or self-sustaining vegetative cover.

ATCP 51

Beginning July 1, 2013, applications, processes for approval, and regulated activities required for the approval of conditional use permits for livestock facilities of 500 animal units or greater shall be subject to administrative rule ATCP 51. La Crosse County regulates livestock operations of 500 animal units or greater through Zoning Code Chapter 17 of the La Crosse County Code of Ordinances.

COUNTY ACTIVITIES SUBJECT TO REGULATION, CHAPTER 23

La Crosse County Code of Ordinances, Chapter 23, Animal Manure Management, was developed to provide a local framework for enacting the state agricultural performance standards. The performance standards of the La Crosse County Animal Waste Management Ordinance are:

- That a livestock operation has no overflow of manure from manure storage structures. The Animal Waste Management Ordinance regulates the location, design, and construction of new manure storage facilities, and the alterations or abandonment of existing manure storage facilities.

- That a livestock operation has no unconfined manure stack in a water quality management area This includes areas of concentrated flow where the drainage area is one acre or greater, unless a stack location, dimension and runoff plan has been approved and is on file with the DLC.

- That a feedlot operating within a water quality management area has no direct runoff to waters of the state. Direct runoff means surface water flow from a feedlot that exceeds a phosphorus threshold in lbs. per year as determined by accepted models.

- That mismanaged pastures are prohibited within water quality management areas. Mismanaged pastures are those where confinement of livestock for the purpose of feeding, browsing or loafing prevents the adequate maintenance of sod cover, causing bank erosion. Water quality management areas are defined as areas within 1,000' of the ordinary high water mark of navigable waters that consist of a lake, pond or flowage; areas within 300' of the ordinary high water mark of the navigable waters of a river or stream; areas with potential to be direct conduits for groundwater contamination; or areas of direct runoff from animal waste to surface water.

- Any person who applies animal manure or other nutrients to agricultural fields shall do so in accordance with a certified, annual nutrient management plan.

Chapter 23 became effective January 1999. ATCP 50 and NR 151 were adopted in 2002 codifying additional standards and procedures.

PERMITS

Excepting applications under ATCP 51, permits required under Chapter 23 are necessary prior to construction for new impoundments and new feedlots. It is the responsibility of the owner of such sites to ensure compliance with the La Crosse County Animal Waste Management Ordinance prior to construction. New impoundments and feedlots are any impoundment or feedlot constructed after the effective date of the La Crosse County Animal Waste Management Ordinance dated January 2, 1999.

Prior to issuance of a permit, landowners who installed new impoundments or feedlots after January 1, 1999, shall provide the Department with information necessary to determine that sufficient land under their control is available to apply manure per recommendations. Pre-existing feedlots are exempt from enforcement or permits until a site evaluation is conducted, cost-share offered and conformance achieved.

For pre-existing feedlots, notices of noncompliance and notice extensions shall specify timeframes for compliance. Due to the requirement for cost-sharing, pre-existing feedlots may continue to operate under a notice of non-compliance. Notices of noncompliance for pre-existing feedlots will allow the landowner or county to implement the ordinance based on available technical and financial assistance. Under state rules pre-existing feedlots are not subject to enforcement until a notice of non-compliance is issued, financial aid rejected, and compliance timetables expire.

For impoundments, permits are granted upon approval of as-built construction plans. For new feedlots, permits are granted after a site evaluation by the DLC has determined that the facility plan (as-built) is in conformance with the La Crosse County Animal Waste Management Ordinance. Permit procedures are indicated below.

ENFORCEMENT

Chapter 23

La Crosse County may take enforcement and appeals action through Chapter 23 against nonconforming pre-existing regulated activities. Enforcement actions, where needed, will include the required procedures in NR 151.

The Department may pursue action through 23.14 of the La Crosse County Animal Waste Management Ordinance on any site where the severity of a violation is such that conditions threaten public health, safety or welfare, or the potential for severe offsite damage warrants immediate attention. This section is intended to expedite the clean up of animal waste spills, breaches or failure of an impoundment, or the removal or location of unconfined manure stacks within Water Quality Management Areas.

ATCP 51 / Conditional Use Permits

Enforcement actions taken as a result of violations of a conditional use permit for facilities permitted under ATCP 51 requirements will be subject to the enforcement procedures in La Crosse County Zoning Ordinance ch. 17.11.

TECHNICAL REQUIREMENTS

Technical specifications ensure that practices applied to the landscape are installed to meet uniform requirements as specified in state administrative code or adopted by the county. Technical specifications are prescriptive measures detailing requirements needed to plan, design, install, and maintain various Best Management Practices.

All agricultural facilities are required to meet agricultural performance standards. Landowners may achieve performance standards by complying through the Department; through the Department's agricultural performance standards certification program, or independent of DLC oversight. It is the landowner's responsibility to ensure that measures applied to their site meet performance standards if those measures are applied independent of DLC oversight.

Department of Land Conservation technical specifications for Best Management Practices are those adopted by the county Planning Resource and Development Committee and the Natural Resources Conservation Service and on file with the Department. All technical standards and specifications shall apply to lands owned and operated by the County.

Best Management Practices

This Land and Water plan must describe the conservation practices and cost-share policies and rates needed to address key water quality and erosion issues. Any practice listed in ATCP 50 Subchapter VIII may be used by La Crosse County in the implementation of this plan. See subchapter VIII for full description. Those practices primarily used by the county to address key water quality and erosion issues are:

ATCP 50.62 "Manure storage systems" means a manure storage facility and related practices needed for the environmentally safe storage of manure at that facility.

ATCP 50.63 "Manure storage system closure" means permanently disabling and sealing a leaking or improperly sited manure storage system.

ATCP 50.64 "Barnyard runoff control system" means a system of facilities or practices used to contain, divert, retard, treat or otherwise control the discharge of runoff from outdoor areas of concentrated livestock activity.

ATCP 50.65 "Access road and cattle crossing" means a road or pathway which confines or directs the movement of livestock or farm equipment, and which is designed and installed to control surface water runoff, to protect an installed practice, to control livestock access to a stream or waterway, to stabilize a stream crossing, or to prevent erosion.

ATCP 50.66 "Animal trails and walkways" means a travel lane to facilitate movement of livestock.

ATCP 50.67 "Contour farming" means plowing, preparing, planting and cultivating sloping land on the contour and along established grades of terraces or diversions.

ATCP 50.68 “Cover Crop” means close-growing grasses or legumes, or small grains to control erosion during periods when major crops do not furnish adequate cover.

ATCP 50.69 “Critical area stabilization” means planting suitable vegetation on erodible areas such as steep slopes, gullies and roadsides to reduce soil erosion or pollution from agricultural non-point sources.

ATCP 50.70 “Diversion” means a structure installed to divert excess surface runoff water to an area where it can be used, transported or discharged without causing excessive soil erosion.

ATCP 50.705 “Feed Storage Runoff Control System” means a system of facilities or practices to contain, divert, retard, treat or otherwise control the discharge of leachate and contaminated runoff from livestock feed storage areas.

ATCP 50.71 “ Field Windbreaks” means a strip or belt of trees, shrubs or grasses established or renovated within or adjacent to a field, so as to control soil erosion by reducing wind velocities at the land surface.

ATCP 50.72 “Filter Strips” means an area of herbaceous vegetation that separates an environmentally sensitive area from cropland, grazing land or disturbed land.

ATCP 50.73 “Grade stabilization structures” means a structure which stabilizes the grade in a channel in order to protect the channel from erosion, or to prevent gullies from forming or advancing.

ATCP 50.75 “Livestock fencing” means either of the following: Excluding livestock, by fencing or other means, in order to protect an erodible area or a practice under this subchapter, or restricting by fencing or other means human access to manure storage structures or other practices under this subchapter which may pose a hazard to humans.

ATCP 50.76 “Livestock watering facilities” means a trough, tank, pipe, conduit, spring development, pump, well or other device or combination of devices installed to deliver drinking water to livestock.

ATCP 50.77 “Milking center waste” means waste water, cleaning ingredients, waste milk or other discharge from a milking parlor or milk house. “Milking center waste control system” means a system of facilities or equipment designed to contain or control the discharge of milking center waste.

ATCP 50.78 “Nutrient management” means controlling the amount, source, form, location and timing of plant nutrient applications, including application of organic wastes, commercial fertilizers, soil reserves and legumes in order to provide plant nutrients while minimizing the movement of nutrients to surface and groundwater.

ATCP 50.79 “Pesticide Management” means controlling the storage, handling, use and disposal of pesticides used in crop production in order to minimize contamination of water, air and non-target organisms.

ATCP 50.80 “Prescribed Grazing” means a grazing system which divides pastures into multiple cells, each of which is grazed intensively for a short period and then protected from grazing until its vegetative cover is restored.

ATCP 50.81 “Relocation or abandoning animal feeding operations”. “Abandoning” means discontinuing animal feeding operation in order to prevent surface water or groundwater pollution from that animal feeding operation.

ATCP 50.82 “Residue Management” means preparing land surfaces for the planting and growing of crop plants using methods that result in a rough land surface which is covered in varying degrees by vegetative residues of a previous crop, and which provides a significant degree of resistance to soil erosion by raindrop impact, surface water runoff, or wind.

ATCP 50.83 “Riparian Buffers” means an area in which vegetation is enhanced or established to reduce or eliminate the movement of sediment, nutrients or other non-point source pollutants to an adjacent surface water resource or groundwater recharge area, to protect the banks of streams and lakes from erosion and to protect fish habitat.

ATCP 50.84 “Roofs” means a weather-proof covering that shields an animal lot or manure storage structure from precipitation, and includes the structure supporting that weather-proof covering

ATCP 50.85 “Roof runoff systems” means facilities for collecting, controlling, diverting, and disposing of precipitation from roofs.

ATCP 50.86 “Sediment basins” means permanent basins that reduce the transport of waterborne pollutants such as eroded soil sediment, debris and manure sediment.

ATCP 50.87 “Sinkhole treatment” means modifying a sinkhole, or the area around a sinkhole, to reduce erosion, prevent expansion of the hole, and reduce pollution of water resources.

ATCP 50.88 “Streambank and shoreline protection” means using vegetation or structures to stabilize and protect the banks of streams, lakes, estuaries or excavated channels against scour and erosion, or to protect fish habitat and water quality from degradation due to livestock access

ATCP 50.885 “Stream Crossing” means a road or pathway which confines or directs the movement of livestock, machinery, or vehicular traffic over a stream, and which is designed and installed to improve water quality, reduce erosion, protect an installed practice, or control livestock access to a stream.

ATCP 50.89 “ Stripcropping” means growing crops in a systematic strip arrangement in which strips of grass, legumes, or other close growing crops are alternated with strips of clean tilled crops or fallow, and which all of the strips are established on the contour or across a slope to reduce water or wind erosion.

ATCP 50.90 “Subsurface Drains” means a conduit installed below the surface of the ground to collect drainage water and convey it to a suitable outlet.

ATCP 50.91 “Terrace Systems” means a system of ridges and channels installed on the contour with a non-erosive grade and suitable spacing.

ATCP 50.92 “Underground outlets” means a conduit installed below the surface of the ground to collect surface water and convey it to a suitable outlet.

ATCP 50.93 “Waste transfer systems” means components such as pumps, pipes, conduits, valves and other structures installed to convey manure and milking center wastes from buildings and animal feeding operations to a storage structure, loading area or treatment area.

ATCP 50.94 “Wastewater treatment strips” means an area of herbaceous vegetation that is used as part of an agricultural waste management system to remove pollutants from animal lot runoff or wastewater, such as runoff or wastewater from a milking center.

ATCP 50.95 “Water and sediment control basins” means an earthen embankment or a ridge and channel combination which is installed across a slope or minor watercourse to trap or detain runoff and sediment.

ATCP 50.96 “Waterway systems” means a natural or constructed waterway or outlet that is shaped, graded and covered with vegetation or another suitable surface material to prevent erosion by runoff waters.

ATCP 50.97 “Well Decommissioning” means permanently disabling and sealing a well to prevent contaminants from reaching groundwater.

ATCP 50.98 “Wetland Development or Restoration” means the construction of berms, or the destruction of tile line or drainage ditch functions, to create or restore conditions suitable for wetland vegetation.

Manure Storage

Regardless of funding sources, all manure storage facilities shall be designed and installed according to technical specifications as adopted by the County. The design and installation of any manure storage facility within the County shall be certified by an agricultural or civil engineer, or Department of Agriculture Trade and Consumer Protection, or Natural Resource Conservation Service Engineering Practitioner as meeting current standards and specifications prior to the facility becoming operable.

Cropland Soil Erosion

For landowners, the ability to estimate or quantify the extent of erosion occurring on a crop field is the key to their understanding of the relationship between soil loss and loss of soil productivity. Soil loss models provide the guidance for a landowner to farm their soils according to tolerable soil loss levels to assure that productivity levels remain high.

It is the policy of the Planning Resource and Development Committee that all crop fields be planned to tolerable or "T" soil loss standards. SNAP+ and RUSLE2 shall be used to calculate soil erosion for new croplands or where compliance determinations are to be made.

Plan Revisions

Plan revisions to cropping rotations for the purpose of achieving "T" may be requested by a landowner or may be required by the county as part of a cost-share contract, violation of performance standards or as a required update to an existing plan. Plan revision timetables shall be established by the Department on a per plan basis and in the general order of county priorities.

For Farmland Preservation Program participants, the technical standards in effect at the time a landowner applies for a zoning certificate shall remain in effect for that landowner until updates are provided by the Department subject to availability of technical and or financial assistance.

Feedlots

Mathematical models use specific on-site parameters providing a uniform and relatively objective means of comparing pollution potential from feedlots. The Barnyard Model (BARNY) or its equivalent will be used to determine pollutant loads from feedlots. A statistical variation or tolerance of + 20% will be allowed when calculating phosphorus from feedlots. The Department will not require retrofitting of permitted feedlots based on updated models. For the most part phosphorus limits can be met through the application of basic feedlot Best Management Practices, water diversions, buffers, roof runoff systems or roofed barnyards.

Chapter 5: AGRICULTURAL PEFORMANCE STANDARDS IMPLEMENTATION

PRIORITIZING FOR COMPLIANCE

The Bostwick Creek Watershed in central La Crosse County will be the focus for meeting compliance under chapter NR151 soil and water conservation standards and prohibitions. The Bostwick Creek Watershed has an approved EPA Nine Key Elements Plan and is a strong candidate to receive future DNR Targeted Resources Management (TRM) Grant funding. TRM Grants will be applied for between 2020 through 2029 to implement the 10-year Nine Key Elements Plan.

Planning and technical assistance will also be provided outside of the Bostwick Creek Watershed area. Participants in the State's Farmland Preservation Program and for new or expanding livestock facilities (ATCP 51), as well as manure runoff complaints that are an eminent threat to surface and groundwater resources.

Implementation of Chapter NR 151 Agriculture Performance Standards and Prohibitions will be prioritized as follows;

- Conditional Use Permit Requirements as requested by the Zoning, Planning and Land Information Department for new or expanding livestock operations (ATCP 51). The Department of Land Conservation Department will review applications for new or expanding (500 animal units or greater) livestock operations to ensure required deadlines are completed on time.

- Applicants for an Animal Manure Management Permit for the construction of a new or substantially altered waste storage facility or a new or expanded animal feedlot will receive planning assistance from Department staff upon submittal of an approved facility design and completed application. Applicants must be in compliance with the state's soil and water conservation standards and prohibitions upon applying for an animal manure management permit or agree to a schedule of compliance that meets those conservation standards over a specified time.

- New Farmland Preservation Program participants that need to meet soil and water conservation compliance standards or current program participants that request a revision to their soil and water conservation plan or nutrient management plan will be assisted upon request.

- The Bostwick Creek Targeted Priority Watershed will receive much of the Department's staff time to meet the goals and objectives of the EPA approved Nine Key Elements Plan. The Plan will require a 10-year implementation window to complete the installation of the prescribed Best Management Practices.

- Animal waste complaints that are received by the Department will be assessed upon a site visit and a determination will be made as to the severity of the situation. Conditions that are an eminent threat to the surface and groundwater resources of La Crosse County will be dealt with immediately through the processes outlined in the La Crosse County Code of Ordinances, Chapter 23, Animal Manure Management.

Cost-share assistance, when available, will be distributed based on the above ranking priorities with the exception of manure storage facilities. The La Crosse County Planning, Resources and Development Committee, by way of policy, does not provide cost share funding to farmers who install manure storage facilities. Only those farms that have been issued a Notice of Discharge by the Department of Natural Resources will be eligible to receive funding through the DNR's TRM grant program.

PRIORITY FARMS

Priority farms are those farms where landowners receive annual tax credits through the Farmland Preservation Program. Currently La Crosse County has 257 landowners participating in the program. By 2017, all FPP participants were assessed for compliance with the state's soil and water conservation standards and prohibitions. Annually 25% of the participants are monitored for compliance with the conservation standards. Conservation plan revisions have been common occurrences as more and more dairy operations in the county are selling their dairy herds. Much of their cropland is purchased or rented by cash grain operators with corn and soybeans dominating the crop rotation. This has the potential to increase soil erosion rates on farms that were previously at or below tolerable soil loss levels. Due to the large number of participants in the FPP program, the Department has been utilizing a self-certification process to help determine crop rotations and tillage practices. This allows department staff the ability to quickly track erosion rates and determine if a participating landowner or their renter has reached noncompliant levels of soil erosion.

In 2017, the Department of Land Conservation issued Certificates of Compliance to those landowners who could verify that they were in full compliance with the soil and water conservation standards and prohibitions. Those who did not meet the conservation requirements of the program did not receive a Certificate of Compliance but were given a schedule of compliance if they chose to gain eligibility in the future. Currently, the Department of Land Conservation has issued 257 Certificates of Compliance covering 54,566 acres.

For "priority farms" Department staff will contact landowners based on the following information provided from returned self-certification forms:

- Location within a targeted, or next highest ranked watershed; see Figure 3-6
- Non-Compliant sites
- Highest to lowest animal units relative to surface waters
- Non-compliant feedlots within Water Quality Management Areas

Once contacted and a site visit completed, participants shall develop and be compliant with a farm conservation plan as approved by the Department. A farm conservation plan shall be the participant's record of activities, schedule of compliance, data and decisions made in applying measures or BMP's to achieve or remain in compliance with standards. In cases where non-compliant sites are determined, a Notice of Non-Compliance shall be sent via certified mail to the landowner.

The La Crosse County PR&D shall issue a notice of non-compliance as provided under s. 91.82(2), Wis. Stats. if it has been determined that farming operations on participant's lands do not comply with soil and water conservation standards, LWRMP implementation policies and procedures or a farm conservation plan.

Voluntarily resigning from the Farmland Preservation Program does not exempt a participant from complying with any agricultural performance standards under other mechanisms available that are consistent with NR 151, or ATCP 50.04 Wis. Adm. Code or Chapter 23.

In cases where landowners refute staff determinations of non-compliance, hearing procedures as specified in the county LWCB approved standards shall be used.

TARGETED WATERSHEDS - BOSTWICK CREEK

Targeted watersheds are those designated by the La Crosse County PR&D to receive highest priority for administrative or technical assistance or for special program funding. The Department will select priority watersheds for implementation of agricultural performance standards from those watersheds evaluated and ranked within this and DNR basin plans. The timing, selection, and implementation of the performance standards within each successive targeted watershed will continue throughout the county on a systematic basis as funds and technical assistance are provided and all sites meet performance standards.

The Bostwick Creek Watershed has been selected as the targeted watershed for the years 2020 through 2029. Bostwick Creek is located in central La Crosse County. It is a 47 square mile area that drains to the La Crosse River downstream of Lake Neshonoc in West Salem, Wisconsin. It is designated as an exceptional resource water by the Wisconsin Department of Natural Resources from near its headwaters and extending for 12.4 miles downstream. However, the last 4 miles of Bostwick Creek is degraded, primarily from agricultural land uses, and is designated by the Wisconsin Department of Natural Resources as an impaired waterbody. Bostwick Creek has both Brook Trout and Brown Trout in much of its length.

Bostwick Creek in La Crosse County is typical of cold-water streams found in the Driftless Region however, years of agriculture activity has diminished the quality of its streams and fisheries. Excessive sedimentation and nutrient loading in Bostwick Creek has degraded aquatic insect and fish habitats and suppresses its recreational potential. Changes in farming practices, increased rainfall and snowmelt runoff rates have led to excessive in-stream sedimentation and degraded water quality. Sediment from eroding streambanks and nearby croplands have changed the dynamics of Bostwick Creek. It has impacted its water quality, especially from Barre Mills to its mouth at the La Crosse River. In 2014, this stretch of Bostwick Creek has been listed as an impaired waterbody by the Wisconsin Department of Natural Resources due to excess phosphorus loads. This nonpoint pollutant load is deposited in the La Crosse River (also listed as an impaired water) and negatively impacts the La Crosse Marsh/Mississippi River complex. The purpose of this project is to reduce the sediment and phosphorus loads to Bostwick Creek, restore fish habitat and improve overall water quality.

In November of 2018, the Department of Land Conservation received approval from the Wisconsin DNR and the US Environmental Protection Agency for the Bostwick Creek Watershed Nine Key Elements Plan. It is anticipated that the Department will apply for a DNR Targeted Runoff Management Grant in 2021 to fund the 10-year implementation plan. The plan describes the Best Management Practices and associated costs needed to accomplish the goals and objectives. Implementation benchmarks, timelines and funding sources have been identified in detail to help guide the plan through completion.

A complete copy of the Bostwick Creek Watershed Nine Key Elements Plan can be located on the following website link: http://www.co.la-crosse.wi.us/departments/land%20con/index.asp

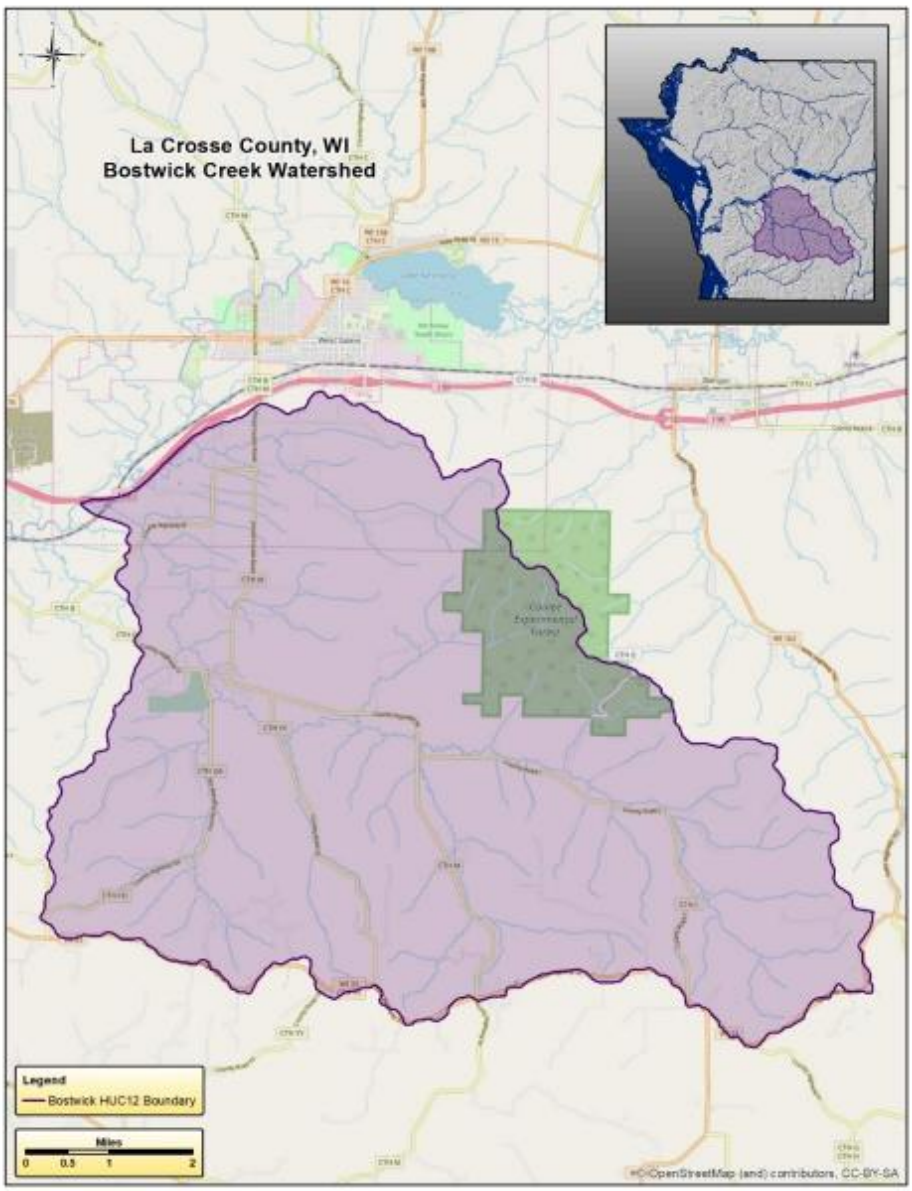


Figure 5-1 La Crosse County Bostwick Creek Watershed

FINANCIAL AND TECHNICAL ASSISTANCE POLICIES

Where applicable, assistance will be available to landowners to meet Chapter 23 and NR 151 agricultural performance standards. No financial assistance will be provided under ATCP 51 applications. Applications for cost-sharing are accepted by the Department at any time. Funding eligibility is based on Department evaluation, available staff resources, and availability of funds. Bostwick Creek Watershed landowners who are not compliant with NR 151 conservation standards will be given first priority to receive technical and financial assistance. This assumes that the Bostwick Creek Watershed project receives cost share funding through DNR's TRM Grant program. Where necessary the Department may piggyback county Environmental funds with other funding sources. Environmental Funds shall only be for BMP's needed to meet performance standards.

Assistance for sites outside priority areas may only be for BMP's necessary to bring landowners into compliance with NR 151 standards. Landowners receiving any cost-sharing through the Department must develop a schedule for compliance of all applicable non-compliant sites under their ownership as a condition of that cost-sharing.

Landowners may self-comply with the agricultural performance standards without public financial or technical assistance. However, landowners installing BMP's without technical or financial assistance are advised to request a site evaluation to ensure that the work performed is needed, and that the installed work meets engineering and performance standards.

Priorities for cost sharing are as follows:

- Bostwick Creek Watershed "Critical Farms" as defined in the Bostwick Creek Nine Key Elements Plan
- All other "Priority Farms" that are Farmland Preservation Program participants
- Voluntary applications to comply with NR 151 and Chapter 23
- Pre-existing non-compliant sites outside of targeted areas, such as a TRM project
- Other sites where the installation of BMP's is necessary

Allocation of cost-sharing for BMP's to comply with state agricultural performance standards and Chapter 23 will be based on the Implementation Workplan priorities and the following conditions:

- Nutrient Management plans be developed where livestock or croplands are present
- BMP's are necessary to meet standards
- BMP's are located within a WQMA
- Phosphorus reduction potential is greater than other applications
- The practice versus its benefit is greater than other applications
- The severity of the site is greater than compared to other applications
- A schedule of conservation compliance is made indicating that all standards will be met
- BMP's are installed to Department specifications
- BMP costs are the lowest to bring the site into compliance
- Sufficient acres exist to pasture livestock
- Costs to comply with standards for expansions of a pre-existing feedlots shall be limited to costs based on pre-existing animal units

No county or other cost-sharing will be granted for the following:

- BMP's required through litigation, failure to comply voluntarily, or criminal or gross negligent discharges of pollutants
- Impoundment spills or breaches
- Bringing abandoned impoundments into compliance
- Relocation of manure stacks
- Maintenance of practices

Policies and cost-share rates for distributing financial assistance shall be established annually by the county Planning Resource and development Committee. Current policy allows the piggybacking of county Environmental Funds with other sources to exceed state minimums. This policy is to provide additional incentive for landowners to voluntarily install BMP's to comply with performance standards.

COST SHARE SOURCES

County Environmental Fund

In 1998, La Crosse County established an Environmental Fund in the Department of Land Conservation budget. The fund is approved annually by the County Board. The Environmental Fund is to provide a stable funding source for cost sharing to assist landowner implementation of NR 151 and Chapter 23 standards.

Due to an increase in state mandates and fixed tax levy limits the Department's Environmental Fund balances have decreased from $80,000 in 1999 to $40,000.00 in 2016. Funds are used for installation of Best Management Practices for improving or maintaining surface water quality and soil resources with the priority on practices necessary to bring landowners into compliance with agricultural performance standards. The funds may be used to supplement other state, federal or private cost-share sources or to fully or partially fund any project approved by the Department or PR&D. Cost-share rates and policies for disbursing these funds are re-established annually by the PR&D.

Soil & Water Resource Management Program, DATCP

The Department of Agriculture Trade and Consumer Protection provides grants to counties with approved Land and Water Resource Management Plans. The degree to which NR 151 and ATCP 50 is implemented is contingent upon the annual allocation of cost-share appropriations to the county from the Department of Agriculture Trade and Consumer Protection. DATCP provides Bond Funds for hard practices and SEG Funds for soft practices. Procedures for the disbursement of SWRM funds shall be in accordance with ATCP 50.

Targeted Runoff Management Grants, DNR

The Targeted Runoff Management Program is the primary DNR program for implementation of the NPS rules. The TRM program provides for the selection of projects to accomplish the states non-point source program objectives. Impaired (303d list) waters, exceptional resource waters and water bodies with established Total Maximum Daily Loads receive DNR's highest priority for funding.

Targeted Runoff Management Grants provide funding for 4 different types of projects. Large-scale total daily maximum load (TMDL) projects and non-TMDL projects which run 3-4 years in duration and provide funding from $500,000 up to $1,000,000; Small-scale TMDL and non-TMDL projects run 2-3 years in duration and provides grants up to $150,000. These grants are awarded annually on a competitive basis. Cost share assistance for TRM projects is up to 70% of eligible costs. TRM program funding will be the county's primary non-county funding source to implement projects based on county water quality data and DNR basin plan priorities.

Environmental Quality Incentive Program (EQIP) and Other Federal Funds

Landowners that receive cost sharing for practices through EQIP, or other federal funding to meet performance standards are responsible for ensuring that the practices installed make the site compliant with county and state performance standards.

The Department and NRCS cooperate in establishing NRCS and County priorities through participation in the Local Work Group. NRCS and the county coordinate available county, state, and federal resources to install BMP's. Annually the county and NRCS have coordinated the piggybacking of EQIP or county Environmental Funds with other project funds administered by either the NRCS or the county. The county has funded a substantial portion of special stream projects initiated by NRCS. NRCS has piggybacked EQIP funds in TRM grant projects where funding was limited. NRCS and county staff also cooperate to provide each other technical assistance where needed. The county and NRCS will continue to cooperate through the Local Work Group or outside of memorandums of understanding as a matter of professional interaction and courtesy.

INFORMATION AND EDUCATION PROGRAM

The La Crosse County Department of Land Conservation is partners with seven other municipalities in La Crosse County who hold Department of Natural Resources Wisconsin Pollutant Discharge Elimination System (WPDES) Municipal Separate Storm Sewer System (MS4) General Permits. The La Crosse County MS4's have collaborated to provide a public education and outreach program by contracting with an environmental education company called NewGround. This company maintains our website lacrosseareawaters.org, conducts social media contacts, holds stormwater awards programs for private citizens and businesses that implement stormwater best practices and leads the local River Cleanup Day.

Annually the Land Conservation Department sponsors a nutrient management farmer workshop event in the month of January. The workshop runs from Monday through Friday the last week of January. The workshop provides the latest information on agronomic and environmental happenings that may be beneficial to our local farmers. The workshop also provides planning assistance to farmers who wish to develop a nutrient management plan or update an existing one. The week of the workshop is attended by 170 plus landowners. Staff from the Natural Resources Conservation Service also assists with the week-long workshop.

The La Crosse County Department of Land Conservation also maintains an all-inclusive website that features information on all Department functions including urban and agriculture programs and permits. Permit applications and instructions are available online through the website as well as helpful links to other state and federal conservation agencies. The Department of Land Conservation will soon have the capability to add or change content to the website remotely for more timely updates.

The website can be viewed at the following link; http://www.co.la-crosse.wi.us/departments/land%20con/

TABLE 5-1

Information & Education Activities – County Wide

Activity	Timeline			Cost	Implementation
	0-3 year	3-7 year	7-10 year		
Farmland Preservation Update Meetings	2	2	2	$ 1,800	DLC
Nutrient Management Planning Farmer Workshops	3	3	3	$ 2,800	DLC, NRCS
Update Department Website	1	1	1	$ 500	DLC
Update www.lacrosseareawaters.org Website	2	2	2	$ 5,000	DLC, Municipal Storm Water Group
Farm Bureau Meetings	1	1	1	$ 500	DLC
Storm Water "Soak it up" Award Program	3	3	3	$ 6,000	Municipal Storm Water Group, NewGround
Brochures for demo site at Habitat for Humanity Restore Storm Water Management	1	1	1	$ 1,500	Municipal Storm Water Group, NewGround
Maintenance for Rain Garden Demo Sites (5)	3	3	4	$ 60,000	Coulee Region Ecoscapes
				$ 78,100	

In the near future, the La Crosse County Department of Land Conservation and its supervising committee, Planning, Resources and Development Committee should evaluate the need to hire an Education Coordinator to work more closely with the public on conservation issues. If the Department pursues grant funding to implement the Bostwick Creek Watershed Nine Key Elements Plan, an Education Coordinator will be instrumental in the project's success. Increasing public information and education efforts for other programs such as the Farmland Preservation Program and the Soil and Water Conservation Program would most likely increase landowner participation and conservation installation. This position would work with UW-Extension staff to coordinate program delivery and fill gaps in content between the two departments.

The intent of the proposed information and education program will be to raise landowner awareness of agricultural pollution sources and their effects on surface water quality. Emphasis will be placed on agricultural pollution impacts on the local fishery. It will also serve as a means to introduce farm operators to conservation measures that they have been reluctant to adopt due to a lack of understanding or misinformation.

The La Crosse County Department of Land Conservation has developed a working relationship with nearly 60% of the landowners in Bostwick Creek Watershed. Through conservation programs such as the State Farmland Preservation Program and the County's Nutrient Management Farmer Education program, we have been engaged with the majority of the

landowners on an annual basis. The goal of this information and education program will be to engage the 40% of landowners that do not work with our Department on a regular basis and may not be applying soil and water conservation measures.

Objectives

- Determine level of landowner commitment to stewardship through a watershed-wide survey
- Develop educational materials to target various levels of landowner involvement
- Conduct Town Hall meetings to educate landowners about the project and allow them to give feedback
- Create landowner awareness of current water quality issues in their watershed
- Increase landowners adoption of conservation measures

The following Table 5-2 Shows the proposed information and education plan implemented over a ten year period and associated costs.

Table 5-2

Information and Education Plan Implementation Activities for Bostwick Creek Watershed

Activity	Timeline			Cost	Implementation
	0-3 year	3-7 year	7-10 year		
Issue a County-wide survey	60 surveys	30 surveys		$2,500	DLC, UW-Extension
Issue a post-project survey to measure project success			50 surveys	$3,000	DLC, UW-Extension
Develop a project wide newsletter	3 newsletters	2 newsletters	2 newsletters	$7,500	UW-Extension, DLC
Develop fact sheets for NR 151	60 fact sheets	30 fact sheets	30 fact sheets	$2,500	DLC
Develop BMP fact sheets	120 fact sheets	100 fact sheets	80 fact sheets	$5,000	DLC
Project kickoff meeting to introduce project	2 meetings			$500	DLC, UW-Extension
Annual "Progress to Date" meeting	1 meeting	3 meetings	3 meetings	$4,500	DLC, UW-Extension
Project wrapup meeting			1 meeting	$500	DLC
Plan "field day" to demonstrate need for erosion control practices	2 field days	2 field days	2 field days	$4,000	NRCS, DLC
DNR fisheries stream shocking event	2 events	2 events	2 events	$750	DNR, DLC
Develop demonstration plots for nutrient management, conservation tillage	3 events	3 events	2 events	$12,000	DLC, UW-Extension
Conduct one-on-one landowner meetings to encourage soil and water comservation plan development	20 meetings	20 meetings	40 meetings	$5,000	DLC, NRCS
				$47,750	

The total 2020- 2029 I & E costs for all programs is estimated at $125,850

NUTRIENT MANAGEMENT

Phosphorus from manure is a primary contributor to eutrophication of the La Crosse County's surface waters. When managed properly, animal waste is a valuable resource. When mismanaged, a pollutant. Manure entering streams can transmit pathogens, destroy fish habitat and reduce recreational opportunities. In La Crosse County, over application of manure to fields adjacent to streams is generally a result of winter spreading convenience. Many farmsteads were first built close to streams to serve as a primary source of fresh water. Barnyards and pastures were also located near water for the same purpose. During winters with deep snow and cold temperatures, crop fields closest to the farmstead received the majority of the animal manure until weather and soil moisture conditions improved. This practice has left many fields adjacent to streams with excessively high levels of phosphorus.

Soil tests from critical fields adjacent to streams and near feeding areas and buildings where livestock concentrate, often result in phosphorus levels at or above 150 ppm, or 500% higher than that which is required to grow most crops. Over time, nutrient management planning can significantly reduce phosphorus loads to surface waters, and potentially provide landowner savings by reducing expenditures on commercial fertilizers. Nutrient Management Plans are a cost-effective practice; therefore the Department has implemented nutrient management planning workshops to maximize NPM planning in the county.

Planning Workshops

The proper placement, amount, and timing of manure applications to crop fields is the most cost effective and beneficial of water quality protection practices. The Department of Land Conservation in cooperation with USDA-Natural Resources Conservation Service, offer manure management workshops to assist landowners in the development of manure management plans. Any landowner may participate in these workshops.

The workshop format allows landowners to create and maintain ownership of their plan. Workshops involve the landowner in creating conservation maps that indicate crop field acreage and slope on a field-by-field basis; collecting of soil samples, filling out manure spreading maps; manure management worksheets; fertilizer summaries; calibrating manure spreaders and completing manure generation and crop rotation summaries. These records of landowner decisions are done in a format that can be maintained by the landowner and on charts that are readily accessible. In the future, the Department will begin incorporating the use of SNAP Plus as a means of tracking farmer decisions regarding crop rotations, tillage practices and manure application rates.

Landowners required to develop plans include those who receive public funds for best management practices, have applied for manure storage permits, or reside in an active priority area. Landowners may develop plans through the workshops, or a private consultant. To date, there are 150 farm operators participating in the Department's NMP workshops. This represents 49,469 acres of county cropland that is being managed under a NM plan, or 66% of the county's total cropland acres.

Soil Sampling

Soil sampling is critical to NPM planning. The small window of time for collecting soil samples and the limited staff and resources for doing so limits the number of NPM plans that can be developed annually. The Department will pay a consultant for the collection of initial soil samples and for the lab analysis. Soil sampling fees are paid from the county Environmental Fund for landowners who participate in the scheduled workshops.

For soil sampling funded through the Department:

- Samples will be collected on rented acres where a manure barter is established.
- The person bartering manure must have a signed release form acknowledging that samples will be collected by an agent working on behalf of the Department.
- Landowners who rent land and develop plans on that land as a requirement of Department programs are responsible for those plans to be followed.
- No soil samples will be collected for participants where samples have been taken within the past three years.
- Landowners that fail to attend the group planning sessions or complete plans will be billed by the County for county soil sample expenditures.
- No funding will be allocated for soil samples for new agricultural facilities constructed after October 2002 or facilities expanded after October 2002.

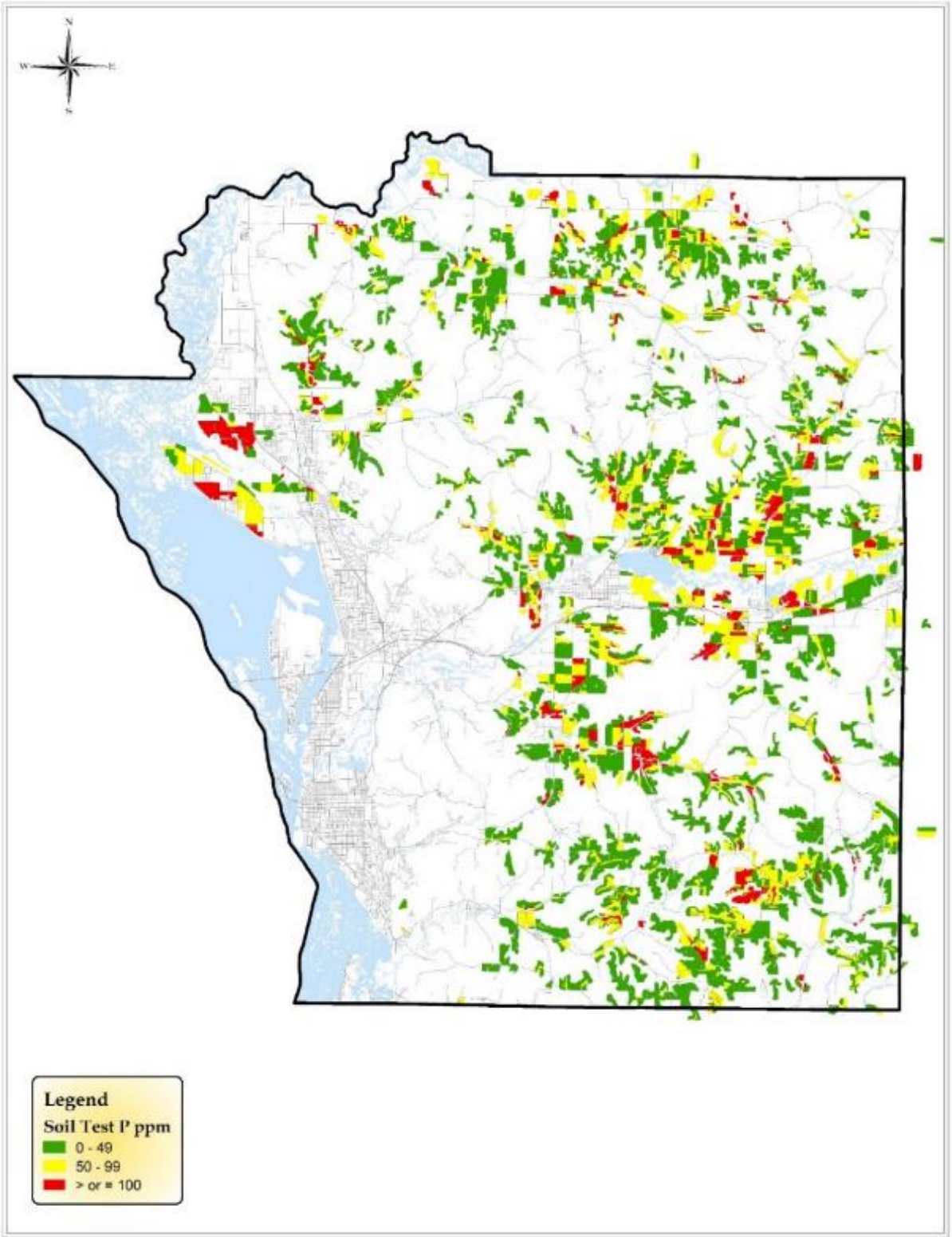


Figure 5-2 La Crosse County Soil Test - P

FPP SELF-CERTIFICATION

As a means of tracking Farmland Preservation Program (FPP) participation and soil and water conservation compliance, the Department has implemented a self-certification program. The self-certification forms are mailed annually to FPP participants. These forms require that a participant sign a statement that they are following an approved soil and water conservation plan and are in compliance with the conservation requirements of the program. Along with the self-certification form, a crop reporting form and field map(s) are also sent to program participants. The crop reporting form lists each of the participant's crop fields which the operator must record the crop that was planted and the tillage system used that planting year.

Landowners who do not return or do not complete portions of the self-certification and crop reporting forms may be considered in non-compliance. A notice of non-participation or non-compliance may be issued by the PR&D. A notice blocks tax credits until compliance with all standards is met.

Self-certification assists the Department in tracking Farmland Preservation Program participants. The county is required to administer the conservation compliance requirements of the program but is prevented by Department of Revenue from accessing names of landowners who have claimed tax credits making the identification of those needing to meet the conservation requirements of the program difficult. Through the required return of the self –certification form by FPP participants the county is able to maintain a generally accurate list of program participants.

At minimum, the Department will schedule status reviews through this form or other means once every 4 years.

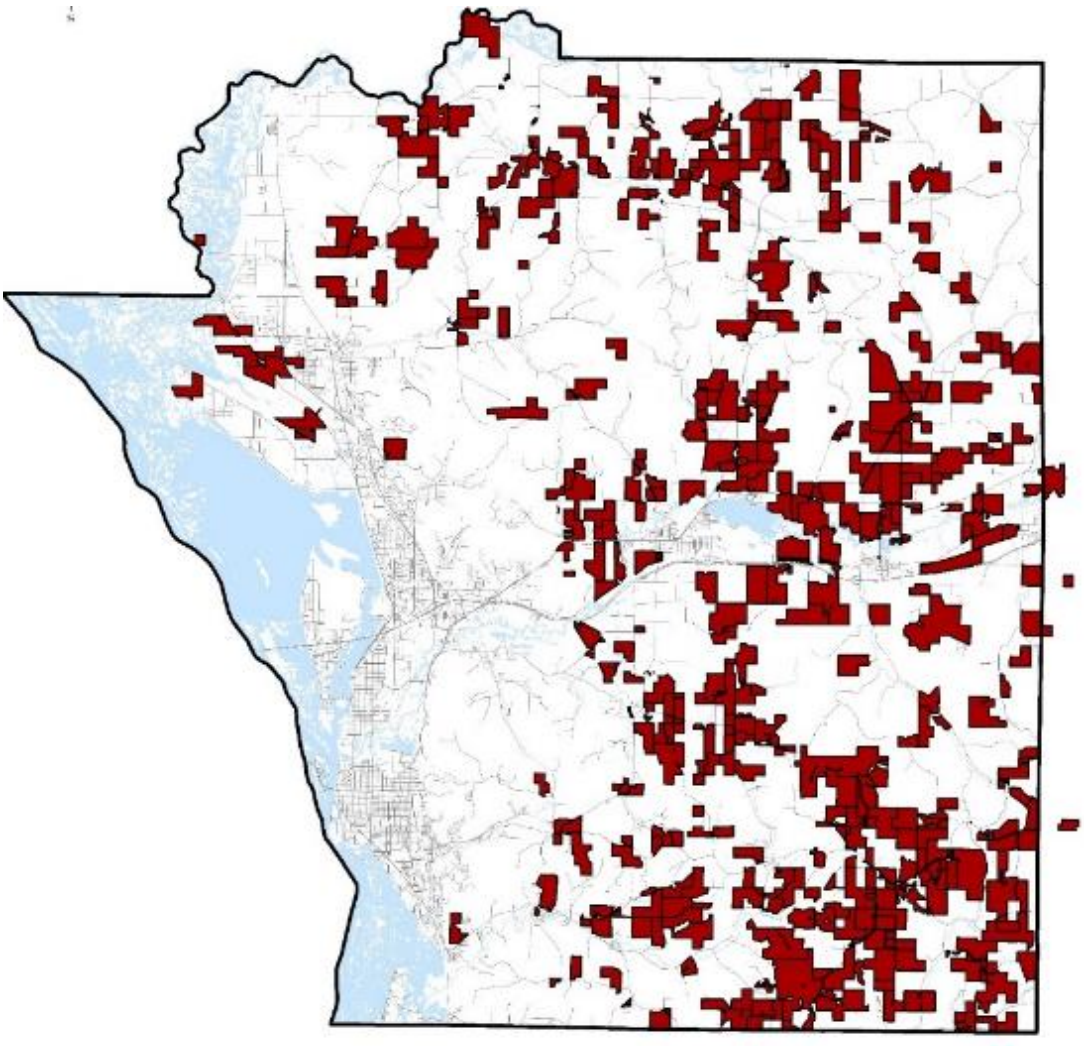


Figure 5-3 La Crosse County FPP

BASIN AND LWRM PLAN COORDINATION

La Crosse County and DNR water quality priorities are based on shared water quality data. DNR has received phosphorus and total suspended solids data and bacteria and fecal Coliform bacteria data from the Department's county – wide water quality sampling program. Coordination with DNR is our best opportunity to develop basin and watershed scale water quality needs in La Crosse County. Basin plans produced by the DNR in the past are no longer being published and updated on a cyclical basis. Periodic updates on individual watersheds within a basin occur when new data is available. As of now, La Crosse County and DNR staff rely on water quality data from the Land Conservation Department's monitoring program. This data, combined with DNR reports, are used to determine water quality needs of individual watersheds and for targeting specific areas to initiate water quality improvement projects.

The DNR and the Department of Land Conservation attempt to coordinate programs and projects when opportunities arise. The Bostwick Creek Watershed Nine Key Elements Plan is an example of such a coordinated working relationship. The county and DNR also coordinate and communicate in cases where there are violations of the state performance standards under NR 151, a Notice of Violation occurs or an animal waste complaint has been received.

TRACKING AND MONITORING PERFORMANCE STANDARD IMPLEMENTATION

Policy for tracking and monitoring is as follows: Staff visiting any "agricultural facility" due to a request for cost-sharing, technical assistance or specific request from zoning or other unit of government and shall inventory the site to make determinations regarding compliance with county and state standards. If unable to make those determinations at an initial visit, arrangements for a follow-up will be made. All parcels under a landowner's ownership shall be reviewed for compliance and results documented. If non-complying sites are found, priority for corrective action or enforcement shall be prioritized as indicated in the "Implementation Work Plan"

After a site visit, an evaluation report to include all state and county standards should be mailed to the landowner. The report will notify the landowner of non-compliant sites and available options. For standards not met, a determination will be made regarding the availability of cost-sharing.

If cost-sharing is available, the report will identify for which of the non-complying sites cost sharing will be offered. If cost sharing is limited, staff shall determine the highest priority for offer of cost share. As an example, if a non-complying feedlot is low priority the landowner will be notified of insufficient cost-share to correct the pollutant source therefore further action would be suspended until cost-share is available.

Tracking of compliance will primarily be through the Geographic Information System (GIS). The County's Land Records Office made use of GIS software accessible to staff for farm planning and recording landowner decisions. Most all office farm data is recorded and tracked through this system. The Department is currently using GIS to accommodate tracking of specific compliance data generated from FPP participant self-certifications or other individual landowner compliance with standards.

FPP TRACKING AND MONITORING

At a minimum once every 4 years, the Department shall determine a participant's compliance with the La Crosse County Soil and Water Conservation Standards for the Farmland Preservation Program. These determinations may be made through a combination of field inspections, crop reporting, annual certifications, or examination of aerial photos or slides. Data will be tracked through the Department's GIS program that was built for landowner tracking purposes.

INTERGOVERNMENTAL COOPERATION

Towns

The Department has entered into mutual agreements with 10 of 12 townships allowing the Department to administer the one- and two-family dwelling erosion control requirements of the Uniform Dwelling Code (UDC). Towns have signed memorandums of understanding with the Department waiving erosion control permit fees while requiring that town construction follow the requirements of the County Construction Site Erosion Control Ordinance.

County

A cooperative working arrangement exists between the Land Conservation Department, Zoning, Planning and Land Information Department, Health Department, and the U.W. Extension office. As an example, CREP, an FSA program, is administered through the U.W. Extension office.

The goals of the LWRM Plan may be met through cooperation of these Departments. Interdepartmental roles and responsibilities may be assigned and agreed upon when necessary within the goals and objectives of this plan and as resources allow. During the process of filing the Notice of Intent for a WPDES general permit as an MS4, the Department worked with and will continue to work with the Highway and Parks and Facilities Departments to implement the requirements of the County's Pollution Prevention and Storm Water Quality Management components of the permit. County Board approval of this Land and Water Resource Management Plan shall constitute a directive for interdepartmental cooperation.

Federal

When providing technical assistance to La Crosse County landowners, the county encourages the Natural Resources Conservation Service to ensure that clients are made aware of state agricultural performance standards and Chapter 23 requirements. NRCS is encouraged to provide their clients the technical assistance to assist them in meeting those standards. Department staff are encouraged to make landowners aware of federal programs available to La Crosse County landowners including the Conservation Reserve Program (CRP), the Conservation Reserve Enhancement Program (CREP), the Environmental Quality Incentives Program (EQIP), the Wetland Reserve Program (WRP), and the Stewardship Incentive Program (SIP).

The Department participates with NRCS in setting priorities as a member of a local work group. Participation in the local work group fosters dialogue between the NRCS and the Department regarding prioritization and installation of BMP's. NRCS staff is committed to assisting the Department with its Manure Management Planning workshops. Department and local NRCS staff work cooperatively on projects providing technical assistance and when possible piggyback county or federal cost-sharing on county or federal projects regardless of program origin.

Agricultural Performance Standards Implementation Schedule- Objectives, Actions, Dates, Costs

A schedule of activities, objectives and costs for the Agricultural Performance Standards Implementation Schedule for 2020-2029 follows. The proposed activities are based on the counties program of work indicated in this chapter. County staff costs and associated state staff reimbursements for activities between 2020 and 2029 are based on actual 2018 county costs and approved 2018 DATCP staff disbursements extrapolated over ten years. This plan is only to provide a framework for planned Department activities to be consistent with ss. 92.10. Costs to implement these activities may not represent actual costs or commitments. This plan will be reviewed as necessary to revise goals, objectives, actions or priorities.

Table 5-3

Implementation Schedule for La Crosse County Department of Land Conservation 2020-2029

Bold Items are Priority Activities

Objective	Activity	Milestones / Timeline			Funding Sources	Implementation
		0 – 3 year	*3 – 7 year*	*7 – 10 year*		
Reduce in-stream phosphorus levels and e. coli bacteria from cropland	**Revise nutrient management plans**	36,200 ac	37,400 ac	138,600 ac	DATCP, NRCS, DLC	DLC, NRCS
	Develop new nutrient management plans	1,200 ac	1,200 ac	1,200 ac	DATCP, NRCS, DLC	DLC, NRCS
	Monitor FPP conservation compliance	41,000 ac	41,000 ac	41,000 ac	DATCP, DLC	DLC
	Grassed waterway installation	6 ac	6 ac	8 ac	DATCP, NRCS, DLC	DLC, NRCS
	Grade stabilization structures	5 each	5 each	5 each	NRCS, DLC	DLC, NRCS
	Promote cover crops	200 ac	400 ac	800 ac	NRCS, DLC	DLC, NRCS
Reduce in-stream phosphorus levels & e. coli bacteria from animal feedlots	**Install roof runoff systems**	4 unites	6 units	7 units	DATCP, NRCS, DLC	DLC, NRCS
	Install clean water diversion	200 ft	200 ft	400 ft	DATCP, NRCS, DLC	DLC, NRCS
	Install roofed barnyards	2 each	2 each	3 each	DATCP, NRCS, DNR	DLC, NRCS
	Promote rotational grazing	500 ac	500 ac	500 ac	DATCP, NRCS, DLC	DLC, NRCS
	Install streambank fencing	1,000 ft	2,000 ft	3,000 ft	DATCP, NRCS, DLC	DLC, NRCS
Reduce in-stream sediment and improve fish habitat	**Install streambank stabilization**	3,000 ft	3,000 ft	5,000 ft	DATCP, NRCS, DNR	DLC, NRCS
	Install streambank buffers	5,000 ft	5,000 ft	8,000 ft	DATCP, NRCS, DNR, DLC	DLC, NRCS
	Install fish habitat structures	TBD	TBD	TBD	DNR, DLC, Trout Unlimited	DLC, Trout Unlimited

TABLE 5-4

Estimated Best Management Practice Installation Costs – County Wide

Practice		Quantity	Cost/Unit $	Total Cost $
Upland Best Management Practice	Grade Stabilization Structures (ea)	15	$ 12,000	$ 180,000
	Cover Crops (ac)	1,400	$ 25	$ 35,000
	Grassed Waterways (ac)	20	$ 1,700	$ 34,000
	Nutrient Management (ac)	3,600	$ 15	$ 54,000
	Conservation Compliance Monitoring (ac)	123,000	$ 2	$ 246,000
Animal Waste Management Practice	Roof Runoff System (ea)	17	$ 7,500	$ 127,500
	Roofed Barnyards (ea)	7	$ 130,000	$ 910,000
	Clean Water Diversions (ft)	800	$ 12	$ 9,600
	Rotational Grazing (ac)	1,500	$ 20	$ 30,000
Streambank Stabilization & Protection Practices	Streambank Fencing (ft)	6,000	$ 7	$ 42,000
	Streambank Stabilization (ft)	11,000	$ 33	$ 363,000
	Streambank Buffers (ac)	20	$ 4,000	$ 80,000
Technical Assistance	Technical Assistance (hrs)	95,000	$ 35	$ 3,325,000
Total Cost				**$ 5,436,100**

The following implementation schedule is a general outline of the planned activities for the installation of BMP's over a 10 year period.

Table 5-6

Implementation Schedule – Bostwick Creek

Objective	*Activity*	*Milestones/Timeline*			*Funding Sources*	*Implementation*
		0-3 years	*3-7 years*	*7-10 years*		
Reduce total Phosphorus & E.Coli bacteria from cropland	Plant 1200 acres of cover crops	300 acres	400 acres	500 acres	DATCP, NRCS	NRCS, DLC
	Plan 1200 acres of nutrient management	300 acres	400 acres	500 acres	DATCP	NRCS, DLC, UW Extension
Reduce total Phosphorus & E.Coli Bacteria from animal feedlots	Install 3 roofed barnyards	1 unit	1 unit	1 unit	DNR-TRM, DATCP	DLC
	Install 1500 feet livestock fencing	500 feet	500 feet	500 feet	DNR-TRM, DATCP	DLC
	Install 10 roof runoff systems	2 systems	3 systems	5 systems	DNR-TRM, NRCS	DLC, NRCS
Reduce sedimentation from uplands and eroding stream banks	Plan 500 acres of Cons. Tillage	100 acres	200 acres	200 acres	DATCP	DLC
	Install 200 acres of contour farming	40 acres	60 acres	100 acres	DATCP, NRCS	NRCS, DLC
	30,000 feet of stream stabilization	5,000 feet	10,000 ft.	15,000 ft.	DNR-TRM, NRCS	NRCS, DLC
	10,000 feet livestock exclusion fence	1,000 feet	3,000 feet	6,000 feet	DNR-TRM, NRCS	NRCS, DLC
	Install 50 acres of riparian buffers	10 acres	20 acres	20 acres	DNR-TRM, NRCS	NRCS, DLC
	Install 30 stream crossings	10 units	10 units	10 units	DNR-TRM, NRCS	NRCS, DLC
Increase water infiltration on croplands	Plant 1200 acres of cover crops	300 acres	400 acres	500 acres	DNR-TRM, NRCS	NRCS, DLC
	Plan 500 acres of Cons. Tillage	100 acres	200 acres	200 acres	DATCP	DLC
Increase in-stream fish habitat	Place in-stream fish structures	TBD	TBD	TBD	Trout Unlimited	TU, DLC

Table 5-7

Estimated Best Management Practice Installation Costs – Bostwick Creek

Practice		Quantity	Cost/Unit ($)	Total Cost ($)
Upland Best Management Practice	Cover Crops (ac.)	1,200	$50	$ 60,000
	Conservation Tillage (ac.)	500	$20	$ 10,000
	Nutrient Management (ac.)	1,200	$15	$ 18,000
	Contour Farming (ac.)	200	$10	$ 2,000
	Riparian Buffers (ac.)	50	$4,000	$ 200,000
Animal Waste Management Practice	Barnyard Roof Runoff System (units)	10	$6,500	$ 65,000
	Roofed Barnyards (units)	3	$130,000	$ 390,000
	Livestock Fencing (feet)	500	$7.00	$ 3,500
Streambank Stabilization and Protection Practices	Streambank Shaping and Sloping (ft.)	30,000	$5	$ 130,000
	Rock Rip Rap (lin. Ft.)	25,000	$38	$ 950,000
	Livestock Exclusion Fence (ft.)	10,000	$5	$ 50,000
	Stream Cattle Crossings (ft.)	1,400	$15	$ 21,000
Technical Assitance	Technical Assitance (hours)	25,000	$35	$ 875,000
			Total Cost	$2,774,500

Chapter 6: Urban Performance Standards and Implementation

URBAN LAND USE ASSESSEMENT

According to the WI Department of Revenue, land use changes from 2010-2018 show that greater than 1400 acres of agricultural or open space was developed into residential, commercial or industrial use in La Crosse County. Of that development 87% is residential. From 2010-2018 there was a 5% decrease in overall Agricultural acres and a 7% increase in total residential acres. It is apparent that urbanization will have a huge impact on the environment in La Crosse County into the future. The areas immediately adjacent to the already urban hub on the western border of the County will show the greatest change. This trend of urbanization has been persistent since the 1990s, as was apparent between 1990 and 1997 when the towns surrounding Holmen, Onalaska, and La Crosse had close to 8% of their agricultural acreage converted to other uses.

As development occurs, surface waters and groundwater may be heavily impacted by the increase in impervious areas if improvements in treating storm water aren't addressed. All construction sites under the jurisdiction of the La Crosse County Land Disturbance and Erosion Control Ordinance shall apply the standards as indicated below.

NR 151 NON-AGRICULTURAL PERFORMANCE STANDARDS FOR CONSTRUCTION SITE EROSION CONTROL AND STORM WATER MANANAGMENT

Subchapter III of NR 151 contains the performance standards for all construction sites. These standards apply to sites that disturb one or more acres of land. The main component of the standard is the requirement to (by design) reduce the sediment load off the site under construction by 80%. The DNR is currently accepting the implementation of approved construction site erosion control BMP's as meeting the 80% reduction.

The post-construction site or storm water management performance standards apply to construction sites that are subject to the erosion control standard. These standards address the following:

- TSS (total suspended solids)
- Peak Discharge
- Infiltration
- Protective Areas
- Fueling and Maintenance Areas
- Information and Education – applies to developed urban areas
- Non-Municipal Property Fertilizer

NR 216 STORM WATER DISCHARGE PERMITS

NR 216 was revised to conform to federal regulations. Subchapter I of NR 216 addresses municipal permits. The revisions to NR 216 incorporate the non-agricultural performance standards of NR 151. La Crosse County has been designated as the operator of a municipal separate storm sewer system (MS4). This means that the County is required to obtain a Wisconsin Pollutant Discharge Elimination System (WPDES) permit. There are six WPDES permit requirements for an MS4 to meet;

- Public education and outreach
- Public involvement and participation
- Illicit discharge detection and elimination
- Construction site pollutant control
- Post-construction site storm water management
- Pollution Prevention/Good housekeeping

NON-AGRICULTURAL PEFORMANCE STANDARDS IMPLEMENTATION

Construction Site Erosion Control

The Department administers and enforces Chapter 21 of the County Code of Ordinances – Land Disturbance and Erosion Control Ordinance that was adopted in 1992. See Chapter 1 program of work for more detail. A main component of this ordinance is the restriction of development on slopes of 30% or steeper. There are limited types of land disturbance that can occur in these areas. Since the Department's access to the LiDAR system, an initial slope determination is performed utilizing GIS. Revisions to Chapter 21 effective in June of 2006 address the non-ag construction site performance standards contained in Subchapter III of NR 151.

Department of Commerce Jurisdiction

The Department of Commerce has jurisdiction over construction site erosion control on all building sites. Chapter 21, the County ordinance, now only applies to commercial building sites (grandfather clause) and any site where land disturbances not associated with the construction of a one and two family dwellings are involved. Through agreements with 10 of 12 towns the Department approves erosion control plans and monitors one and two family building sites.

Post Construction – Storm Water Management

The La Crosse County Board of Supervisors approved Chapter 29 – Post Construction Storm Water Management ordinance in November of 2008. The ordinance addresses several of the requirements of the County's WPDES permit including illicit discharge and elimination, post construction site storm water management and pollution prevention.

The ordinance is primarily aimed at controlling polluted runoff from the following sites:

- Construction sites of 1 or more acres in size
- Sites that increase the amount of impervious area by greater than .5 acres – including agricultural development that creates new impervious surface areas exceeding .5 acres when those sites are located within a water quality management area
- Sites with potential for direct conduits for ground water contamination (generally sink holes that are present in some areas of the County)
- Areas of direct runoff from animal waste to surface water
- Subdivision and condominium plats
- Certified survey maps that will create land development activity that may ultimately result in .5 acres once the entire area is developed

The ordinance also addresses the following:

- Impacts of thermal pollution in areas that could impact specific cold water streams
- Restricts altering flow from one drainage area to another unless proof of no impacts are provided
- Locations where non-municipal stockpiling of off-site snow occurs
- Development of steep slopes (greater than 25%) – due to increase risk from storm water runoff (requires consideration if necessary additional information on all new development that require an erosion control permit).
- Restricts direct discharge from surface or subsurface drainage to adjacent properties (applies to all new development)

NR 216 – IMPLEMENTATION OF MS4 REQUIRMENTS

Current, ongoing, and planned endeavors that provide the County with the means to meet the MS4 requirements include:

Public Education and Outreach – Public Involvement and Participation

The La Crosse Area Storm Water Group consists of the eight municipalities in the County that are designated as MS4's. This group was created to pool funds that could then be utilized to obtain a consultant to assist members in meeting the public education and outreach and the public involvement and participation requirements with a unified message. One of the most significant features of this effort is the La Crosse Waters website (www.lacrosseareawaters.org). It has been recognized as being a model for other municipalities to follow.

Illicit Discharge Detection and Elimination

Illicit discharges are addressed in Chapter 29 – Post Construction Storm Water Management of the La Crosse County Code of Ordinances. This portion of the ordinance provides a method for the County to control illegal discharges into our County drainage systems.

Construction Site Pollutant Control

Currently Chapter 21 is enforced by the Department in all unincorporated municipalities. The Department also enforces the erosion control portion of the UDC in 10 of the 12 townships by a Memorandum of Understanding with the towns.

Post-construction Site Storm Water Management

Chapter 29 of the La Crosse County Code of Ordinances was created to assist in providing compliance with this requirement. The other portion of this requirement is storm water quality management. The County contracted with a private engineering firm which determined that the County is exceeding the sediment reduction requirements set by the State. The Department continues to work with County Highway to ensure that the areas within the County ROW's that act as control structures remain intact.

Pollution Prevention / Good Housekeeping

The consultant that was hired to determine the County's compliance with meeting sediment reduction requirements also developed storm water management plans for the County facilities that fall within the urbanized area that is under the County's jurisdiction. The Department will continue to assist the Highway, Facilities and Solid Waste Departments with our expertise to see that state requirements are met as well as integrate various projects as training experiences for County staff.

One area that needs to be completed in more detail is the mapping of the storm water conveyance system within the urbanized area that lies within the County's responsibility. This is planned to be continued in 2012 and will involve locating and determining elevations of drainage ways and culvert inverts within the urbanized area. The Department will be coordinating with the County Highway Department to provide employees with details to assist them in completing the annual inspections of the critical areas that directly impact water quality.

Table 6-1

URBAN PERFORMANCE STANDARDS SCHEDULE

Bold items are high priority activities

	ACTIVITY	OBJECTIVE	DATES	10 YEAR PROJECTED COSTS		AMOUNT PER YEAR
				COUNTY (1)	STATE (2)	
DLC	**Review erosion control management plans, conduct site inspections, issue permits, and enforcement activities**	Implement Chapter 21	2019-2029			7-10 over 1 acre, 180-200 Site inspections, 120-160 Permits, 5-10 enforcement
DLC	**Review Stormwater management plans, conduct site inspections, issue permits, and enforcement activities**	Implement Chapter 29	2019-2029			7-10 Stormwater Management plans
UWEX, DLC	**Coordinate storm water I&E efforts with other MS4's**	Implement MS4 requirements	2019-2029			Meet with stormwater group 3 times.
DLC, UWEX	Promote storm water BMP through award program. "Soak it up!"	Promote storm water education	2019-2029			Annual award given and educational placard
La Crosse Co.	Identify areas of illicit discharge under NR 216	Implement storm water management program	2019-2029			Map 5 outfalls
DLC	Provide construction site erosion control training to other County LCD staff	Promote storm water education	2019-2029			Provide annual training
DLC	Map stormwater conveyance in County's MS4 area	Identify stormwater conveyance	2019-2029			Map Stormwater Conveyance for a watershed
DLC	Integrate tracking of urban permitted sites with GIS	Implement Chapter 21 and Chapter 29	2019-2029			Run report for permits issued
Total Costs				**$1,100,000**	**$350,000**	

(1) Based on 2018 staff costs only to implement this section of the LWRMP.
(2) Based on 2018 SWRM staff and supply grant award

Chapter 7: NON-METALLIC MINING ORDINANCE

COUNTY RECLAMATION PROGRAM

1993 Wisconsin Act 464 established the nonmetallic mining reclamation law. The law mandates that counties adopt ordinances to establish reclamation programs to comply with the uniform state reclamation standards contained in NR 135. La Crosse County adopted Chapter 27 in 2001. All mines in the County have applied for and received approval for reclamation permits.

Reclamation Standards

Performance, not prescriptive standards are established. Based on post-mining land use, a reclamation plan capable of meeting the reclamation standards will be developed by the operator and approved by the Department. Reclamation standards address the salvage and protection of topsoil for use in final reclamation; re-vegetation; site stabilization and site grading. Protection of waters of the state is achieved by not having any more acreage affected by mining than is necessary to support the operation. Land use must be consistent with local zoning requirements.

Reclamation Plan and Permit

All mines must have a reclamation permit. Permits are applied for through the Zoning, Planning and Land Information office. The reclamation permit is to be a life-of-mine permit. The Land Conservation Department reviews and accepts plans to assure that state maximum standards are met. Public informational hearings are required for new mines.

A reclamation plan must be approved prior to operation of a new mine. Plans must show final site reclamation to a desired land use compliant with the uniform reclamation standards. Reclamation during the mining process includes: topsoil salvage and storage, surface and groundwater protection, and minimizing the acreage exposed to wind and water erosion.

Financial Assurance

A surety bond or other form of financial assurance is required from the mine operator based on the cost to implement the reclamation plan. Financial assurance is to ensure reclamation. The Department determines the amount of surety money to make certain that the County can obtain the funds necessary to perform site reclamation in the event of a default. Determinations of financial assurance are made annually through field investigations or other appropriate means.

Program Funding

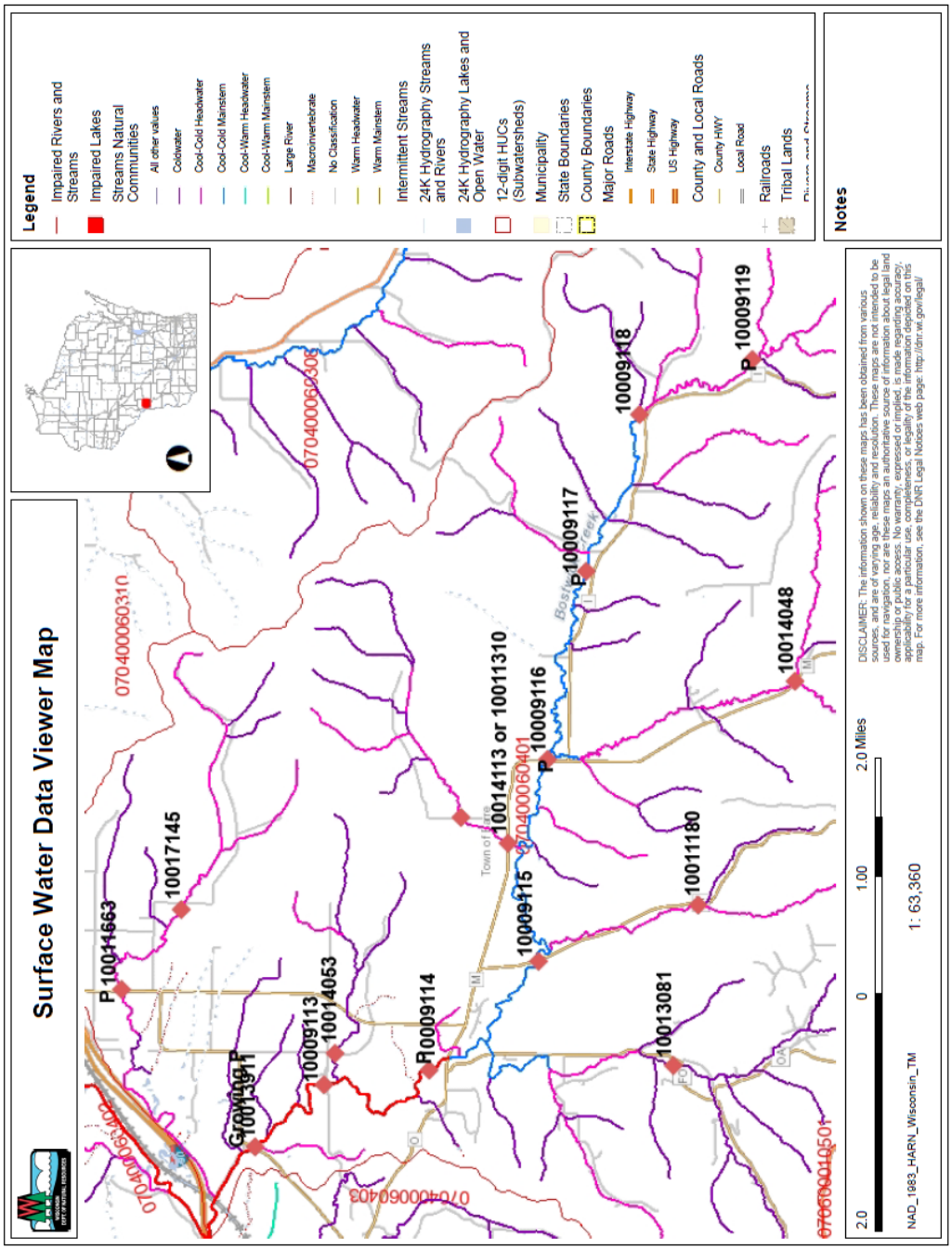
The reclamation program is intended to be self-funded through annual fees based on non-reclaimed acres. The fees support County and DNR administration. The fee is based on the un-reclaimed portions of the mine. Chapter 27 was revised in 2001 to mirror changes to the reporting time requirements for assessing annual fees. In order to assure compliance, the Department performs an annual on-site investigation of each active mine. A GPS unit is utilized to determine the current active mine acres. This information is then provided to the permittees to assist them in determining the required annual fee. The Department reports annually to the DNR.

Table 7-1

OBJECTIVES, ACTIVITIES, DATES, COSTS NON-METALLIC MINING PROGRAM

	ACTIVITY	OBJECTIVE	DATES	10 YR PROJECTED COSTS		AMOUNT PER YEAR
				COUNTY (1)	STATE (2)	
DLC	Review NMM plans issue permits and enforce Chapter 27	Insure proper reclamation of mines as required by the state	2019-2029			Issue 1 permit
DLC	Conduct annual site inspections to determine compliance / unreclaimed acreage	Insure proper reclamation of mines and assure erosion control measures are being followed	2019-2029			Conduct 14 inspections and reports
Total Cost				$151,000	$75,500	

Appendix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Impaired Lakes
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DISCLAIMER: The information shown on these maps has been obtained from various sources, and are of varying age, reliability and resolution. These maps are not intended to be used for navigation, nor are these maps an authoritative source of information about legal land ownership or public access. No warranty, expressed or implied, is made regarding accuracy, applicability for a particular use, completeness, or legality of the information depicted on this map. For more information, see the DNR Legal Notices web page: http://dnr.wi.gov/legal/

Station Name: Bostwick Creek #7 – Field Rd. Crossing on Tremaine Property **Swims:** 10009119
Habitat: Stream runs through a disturbed pasture with livestock occupying the pasture. There was little to no riparian buffer width throughout this station. Overall, the stream had a nice complex of riffles, pools, and runs. Bank erosion was limited and was primarily along bends and in areas where cattle heavily use the stream. Substrate varied throughout the stream and consisted of fines (sand, silt, and clay) in pools and deeper runs; and rubble, cobble, and gravel in the riffles. The stream had a fair amount of fish habitat which consisted of undercut banks, root wads, overhanging vegetation, and deep pools. Native vegetation such as bull rush was present along the stream corridor, but the stream is also home to invasive species such as Forget Me Not.
Fish: The only fish species present in this stream were brown trout. In the 100 meters we shocked and measured 52 brown trout. Adult brown trout lengths varied from 7.0 inches to 13.4 inches, and only one young of the year was present.

Station Name: Bostwick Creek #6- Lower Field Rd. Crossing on Schomberg Farm **Swims:** 10009118
Habitat: Entire stream flows through a pasture area with cattle. There was little to no riparian buffer width along this station. Banks were eroded from heavy cattle use. The stream complex consisted of pools, riffles, and runs. Fine sediments covered most of the stream surfaces. Fish cover consisted of woody debris (log jams and treefalls), overhanging vegetation, submerged macrophytes, pools and boulders. Aquatic invasive species noted in this stream were Forget Me Not and Rusty Crayfish.
Fish: The only fish species present in this stream were Brown Trout. In the 100 meters we shocked and measured 37 brown trout. Adult Brown Trout lengths varied from 5.0 inches to 11.6 inches, and 2 young of the year were present.

Station Name: Bostwick Creek #5- 300 Meters Downstream from Cty II Bridge **Swims:** 10009117
Habitat: Stream was filled with downed trees, log jams, and woody debris. Good riffle, run, and pool complexes. Fine sediments, mainly silt and clay, were extensive in all habitats. Erosion was extensive. Stream showed evidence of being a very flashy system (ripped up trees, high banks, etc.). In some areas the station buffer appeared wide and vegetated with trees and shrubs, other areas had a small buffer with adjacent row crops.
Fish: The only species present is Brown Trout. In a 175-meter length station we shocked approximately 300 trout. 220 of those fish were adults ranging from 4.2 inches to 15.2 inches. The other 80 trout were young of the year fish under 4 inches.

Station Name: Unnamed (St. Joseph Coulee Creek) at CTH I Bridge Crossing **Swims:** 10014106
Habitat: Stream complex was mostly runs, with no riffles, and a few short pools. Substrate consisted of all sand and silt, with very few areas of gravel. The riparian zone was well protected and relatively undisturbed. Bank erosion was present in some areas along the stream, but not extensive. Woody debris, small pools, and over hanging vegetation provided fish cover. The aquatic invasive species Forget Me Not was present in this stream.
Fish: The only species present in this stream are brown trout. In 135-meter length station 27 brown trout were present. Of the 27, 26 are adults and 1 is a young of the year.

Station Name: Bostwick Creek #4- Bridge on Cty M **Swims:** 10009116
Habitat: Stream substrate was entirely sand but was very stable. Some areas below the sand were clay. Riparian buffer width was narrow with row crops on the left side and old pasture on the right side beyond the small buffer width. The banks were fairly stable and vegetated with heavy reed canary grass and other meadow species, although there was more extensive erosion on the right bank. Stream complexes were predominantly runs with a few small pools and bends, but no riffles. Fish cover was composed of overhanging vegetation, some woody debris, and a couple of pools. Aquatic invasive species were found and consisted of curly leaf pondweed.
Fish: The only species present in this section of stream are Brown Trout. In a 140 meter segment 229 browns were captured. 192 of those fish were adults ranging from 5.5 inches to 18.5 inches. Another 37 juvenile young of the year trout were also present in the stream.

Station Name: Unnamed (Russian Coulee Creek) At Cth M Bridge Crossing **Swims:** 10014113
Habitat: Buffer width was wide and wooded. Past the buffer width the land use was agriculture and a few houses on the right bank and start of town on left bank. Limited bank erosion. All runs, no pools or riffles in station length. Two slight bends present in stream. Substrate is primarily sand, silt, and clay, but small patches of gravel were present. Fish cover limited to woody debris, scraps (metal pipes and tires) and some overhanging vegetation. Sewage smell 10 meters below bridge, visible liquid seeping from bank into stream.
Fish: Both Brown Trout and a Brook Trout are present in this stream. 6 Brown Trout were captured ranging from 3.5 inches to 8.0 inches. Only one Brook Trout was captured, and it measured 7.6 inches.

Station Name: Unnamed Creek (Tollefson Coulee Creek) - Beginning at Confluence with Bostwick Creek **Swims:** 10011179
Habitat: Riparian buffer width was less than 1 meter and stream flowed through a pasture area. Bank erosion was moderate in this station length. The stream was dominated by runs, but riffle areas and bends did exist. Fine sediments were common in the mid channel and present in riffles. Cover for fish was common, but not extensive and generally limited to overhanging vegetation and undercut banks.

Fish: In this stream both Brown Trout and Brook Trout were present. 13 Browns were captured ranging from 3.1 inches to 10.4 inches. Only one 8.2 inch Brook Trout was captured, and it had gill lice.

Station Name: Bostwick Creek #3 - Cty Rd YY **Swims:** 1009115
Habitat: In this segment, buffer width was less than 1 meter and stream flowed through a large pasture area with cattle present. Erosion was extensive and very eroded to the crest of the stream, although the bank was more stable. Within the stream complex runs were dominant and riffles and bends were present. Fine sediments were extensive throughout the stream. Cover for fish was common (woody debris and undercut banks).
Fish: This segment of Bostwick had more diversity. We shocked 36 White Suckers, 11 Johnny Darters, Brook Trout and Brown Trout. We shocked 6 Brook Trout ranging from 7.7 inches to 9.9 inches. 4 of these Brook Trout also had gill lice. We also shocked 102 Brown Trout ranging from 5.3 inches to 14.1 inches.

Station Name: Garber's Coulee Creek - Starts at Cth Oa Bridge Crossing **Swims:** 10014115
Habitat: Stream showed signs of previous flooding. Woody debris and downed trees were abundant in this portion of the stream. Fines were the dominate substrate type (sand, silt, and clay) and in some areas these fines were 2-3 feet deep. Stream was comprised of mainly runs, except for a riffle below the bridge. Bank erosion was major in some areas, but overall the station length was only moderately eroded. Iron bacteria present in back water areas and pockets along the stream bank. Cover for fish was abundant due to the amount of woody debris and overhanging vegetation in the stream. Riparian buffer width was good in most parts of the stream (trees and shrubs), but the segment started below a golf course and is adjacent to a few smaller row crop fields. One aquatic invasive species of concern that we noted was Japanese knot weed.
Fish: We shocked 175 meters upstream. In that section we shocked 11 Brown Trout ranging from 7.0 inches to 11.6 inches, 4 Brook Trout 7.4 inches to 9.4 inches, 2 of those also had gill lice. We also shocked 1 11.3-inch Northern Pike.

Station Name: Pleasant Valley – Bridge on Cth M **Swims:** 10011663
Habitat: The riparian buffer width was wide and well vegetated. Erosion was limited throughout the stream. Pools were rare overall but were located along bends which occurred throughout the segment. Riffles were generally well developed, but runs were the dominant habitat type. The stream was generally deep and narrow. Substrate was mainly silt and sand, although pockets of gravel existed in the riffles. Fish cover was limited to mainly overhanging vegetation (Reed Canary) and woody debris.
Fish: The only species present in the section of stream were Brook Trout. We captured 1 10.0 inch, and 2 8.9 inch Brook Trout. Two Brooks also had gill lice.

Station Name: Bostwick Creek – Cth B Bridge **Swims:** 10013911
Habitat: Riparian buffers were wide, although row crops were present beyond the buffer area. Erosion was limited along stream banks. Stream was very wide and sandy, and displayed few other substrate types. Log jams and woody debris were present along the station length and provided fish cover. Stream complex was not well developed and consisted mostly of runs. Fish diversity consisted of both warm-water and cold-water species which may have been influenced by the distance to the La Crosse River.
Fish: This Station yielded a diverse group of fish, 11 species in total. The non-game species we captured were; 20 White Suckers, 2 Banded Darters, 9 Johnny Darters, 1 Central Mud Minnow, 10 Longnose Dace, and 3 Western Blacknose Dace. The game species we captured were; 1- 8.0 inch Musky, 1- 2.6 inch Yellow Perch, 90 Brown Trout ranging from 13.7 inches to 3.2 inches, 1- 7.5 inch Brook Trout, and 2- 3 inch Small Mouth Bass.

Station Name: Bostwick Creek #1 – Bridge on Swamp Rd. **Swims:** 10009113
Habitat: Has not been surveyed yet.
Fish: At this site we shocked 240 meters upstream. That yielded 1 Lamprey Ammocoete, 14 White Suckers, 11 Longnose Dace, 5 Johnny Darters, 91 Brown Trout ranging in length from 3.6 inches – 15.9 inches, and 2 Brook Trout 7.5 inches and 9.9 inches.

Station Name: Unnamed Creek 20 – Old CTH M Bridge Crossing **Swims:** 10014053
Habitat: Riparian buffer greater than 10 Meters on both sides and consisted of forest and meadows. Substrate was sandy with a few gravel patches. Only one small riffle area with no pools and predominately runs. Some bank erosion on the right bank. Some woody debris in the stream, but not deep enough to provide fish cover. Culvert under road is perched and blocks fish movement upstream.
Fish: We started shocking 105 meters downstream of the culvert and then shocked upstream 100 meters. In that station length we captured 1 Brook Stickleback, 2 Brook Trout 7.3 and 9.1 inches (one with gill lice), and 3 Brown Trout 3.5, 7.1 and 7.7 inches.

Station Name: Bostwick Creek #2 – 320 Meters Downstream from CTY O Bridge. **Swims:** 1009114
Habitat: Has not been surveyed yet
Fish: In 220 Meters we shocked 4 species. 17 White Suckers, 3 Longnose Dace, 3 Brook Trout ranging from 6.6 to 12.2 inches (2 with gill lice), and 86 Brown Trout which measured 3.6 inches to 17.3 inches.

POLICY PROPOSAL

Reduce human exposure to well water nitrate in two La Crosse County townships.

La Crosse County Health Department developed a local task force to identify root causes of nitrate contamination in private wells located in the Towns of Holland and Onalaska. The task force evaluated and selected public policy recommendations to reduce human exposure to nitrate in drinking water. Laboratory testing conducted in 2017 indicated a significant number of the 10,000 residents were using drinking water above state and federal nitrate standards.

Defining the Problem

Main Policy Question:

How can La Crosse County Health Department and others reduce the number of residents exposed to well water exceeding the nitrate health standard?

Problem Trajectory – Agricultural Sources of Nitrogen

Background:

In July 2016, La Crosse County Health Department staff reviewed the Wisconsin Legislative Audit Bureau report "Wastewater Permitting and Enforcement" which evaluated the Wisconsin Pollutant Discharge Elimination System (WPDES) program administered by the Wisconsin Department of Natural Resources (WDNR). The audit found circumstances where WDNR did not adequately monitor pollution data and did not take enforcement actions to protect surface and ground waters. One violation mentioned in the audit report concerned a Concentrated Animal Feeding Operation (CAFO) located in La Crosse County near Holmen, WI. The majority of the CAFO's groundwater monitoring well samples collected between 2005 and 2016 exceeded the drinking the water standard for nitrate-nitrogen (10mg/L). After reviewing monitor well data, La Crosse County Health Department sent Health Advisory letters to all residents in the Towns of Holland and Onalaska recommending immediate well water testing for nitrate and coliform bacteria. By the June 2017, more than 540 wells were tested by La Crosse County Health Laboratory. Thirty percent (30%) of these wells exceeded the federal nitrate standard of 10 mg/L nitrate-nitrogen and 60% were 5.0 mg/L or greater indicating widespread groundwater pollution from human activities. A statewide survey of agricultural chemicals in Wisconsin groundwater conducted between March and August 2016 estimated 8.2 % of wells were above 10 mg/L.

Nitrate is a public health concern because of the potential harmful effects of exposure in contaminated drinking water. The illness methemoglobinemia occurs when infants ingest excessive nitrate. Also known as "Blue Baby Syndrome", excess nitrate interferes with the oxygen-carrying capacity of the blood creating an oxygen deficiency which can be fatal. The federal drinking water standard of 10 mg/L of nitrate-nitrogen was established in 1977 because of this condition. Although all health effects of chronic nitrate exposure are not well understood, epidemiological studies have identified an association between consumption of water with high nitrate levels and other adverse human health outcomes

including problems with thyroid function, diabetes, and birth defects among children of mothers exposed during pregnancy.

Agriculture and Nitrate:

The Towns of Holland and Onalaska are home to 9,436 residents and contain 16,000 acres of agricultural land. Groundwater is the sole source of drinking water and most private wells obtain water from an unconfined shallow sand-and-gravel aquifer which is 10-20 feet below the surface and 200 feet thick. Groundwater moves through the aquifer at three feet per day in a southwest direction toward the Mississippi River. The sand-and-gravel aquifer is more permeable than the underlying sandstone aquifer. The permeable soil and shallow aquifer conditions increase groundwater vulnerability to contamination from manure, fertilizers and private septic systems. Contaminants infiltrate the groundwater where they move quickly through the permeable substrate material and enter drinking water wells. Municipal sewer and water service is not currently available to these residents. More than 94% of the wells tested by LCHD were less than 150 feet deep. Figure 1.

Satellite imaging shows significant cropland acreage in both townships. The Bureau of Agrichemical Management of the Wisconsin Department of Agriculture & Consumer Protection reported 856,000 tons of nitrogen fertilizers were used by Wisconsin farmers from July 2015 to June 2016. Plants use nitrogen most efficiently when the producer applies it as close as possible to the time of crop uptake. Good nitrogen management involves supplying the right amount at the right time for crop needs. Lack of sufficient nitrogen reduces crop yields, but any nitrogen in excess is subject to leaching to groundwater. Studies show even small amounts of over-fertilization increased nitrate levels above drinking water standards.

In Wisconsin, 90% of the groundwater nitrate contamination is estimated to have originated from agriculture, 9% from septic systems, and 1% from other sources. In 2016 the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) and the Wisconsin Field Office of the National Agricultural Statistics Service (NASS) conducted a survey of agricultural chemicals in Wisconsin groundwater. Four hundred private drinking water wells were selected for testing using a random sampling procedure. Samples were analyzed for 101 different compounds, including herbicides, herbicide metabolites, insecticides, fungicides, and nitrate-nitrogen. Eight percent (8%) of the wells exceeded the nitrate-nitrogen standard of 10 mg/L.

Wisconsin Act 27 was created in 1997 to respond to growing public concern over water pollution from farm runoff and provided the framework for regulation of animal waste from livestock operations. The La Crosse County Department of Land Conservation is charged with the responsibility of protecting and enhancing the soil and water resources of the County. There are 170,000 acres of farmland in the La Crosse County, most of which is cropped for feeding dairy cattle or for cash grain. A County zoning ordinance regulates farms with 200 or more animal units through a permitting process. The County uses Wisconsin Chapter ATCP 51 Livestock Facility Siting regulations to review farming operations along with the Animal Waste Management Ordinance adopted in 1998. The ordinance regulates the construction and operation of animal feedlots and manure storage facilities and enforces Wisconsin Chapter NR 151 Runoff Management. County staff also provide nutrient management planning assistance to farmers seeking compliance with conservation standards. The goal is to provide the correct amount of nutrient needed by crops and limit the amount of nitrogen lost to groundwater and runoff.

Concentrated Animal Feeding Operations (CAFOs) are agricultural meat, dairy, or egg facilities where animals are kept and raised in confined conditions. In Wisconsin, CAFOs are defined as farms with at least 1000 animal units. Because the animals do not graze or seek feed in pastures, large volumes of manure and urine accumulate in small areas posing significant challenges to environmental protection. CAFOs must provide at least six months of manure storage capacity which is accomplished through construction of holding tanks, collection basins or lagoons. Animal waste is spread on lands near the CAFO where it is used to fertilize crops. The cropland must be in close proximity to the CAFO to make manure disposal economically feasible. Land spreading manure may impact surface and groundwater and increases the risk of private well water contamination.

There is one CAFO located within the Town of Onalaska. Babcock Genetics Inc. operates a swine CAFO that finishes 7,000 pigs annually. Fecal matter is moved daily into deep pit collection basins and collection pits. Manure is then sent to a 2-stage lagoon where it is eventually irrigated on adjacent lands during the spring and summer months. Manure application rates are determined by the manure nutrient content, soil nutrient level and the type of crop grown. Land spreading is done in accordance with Babcock Genetics' nutrient management plan and is regulated by the WDNR through the WPDES program. Babcock Genetics' 2017 annual report stated 10,000,000 gallons of liquid swine manure was spread over 327 acres on Dummer Family Farms from June-August 2017.

There were six groundwater monitoring wells located at Babcock Genetics and each was sampled three times during 2017 for a total of 18 samples. Nitrate levels ranged between 2.81 - 38.1 mg/L with 14 of the 18 samples exceeding 10 mg/L. This is similar to the data collected from the same monitoring wells between 2010 and 2016. The monitoring wells are shallow and vary from 21.04 to 30.93 feet in depth to groundwater. The monitoring wells are positioned to collect groundwater as it enters the CAFO and as it leaves the property to determine the impact of the operation. Not all CAFOs are required to conduct groundwater monitoring. The monitoring well data suggests Babcock Genetics has an impact on groundwater but to what extent remains unknown. It is reasonable to assume the spreading of millions of gallons of swine manure on nearby croplands with permeable soil characteristics must impact the amount of nitrate leaching to the aquifer. WDNR officials have made it abundantly clear that current Wisconsin laws are not intended to hold agricultural operations to the nitrate drinking water standard. NR 151 "Runoff Management" states the following;

"NR 151.004 State targeted performance standards. Implementation of the statewide performance standards and prohibitions in this chapter may not be sufficient to achieve water quality standards under chs. NR 102 to 105 or groundwater standards under ch. NR 140."

Wisconsin Chapter NR 140 establishes groundwater quality standards for substances of public health concern including nitrate.

Problem Trajectory – Private Septic Systems

La Crosse County Health Department estimates there are 3,000 private septic systems within the two townships. The primary concern regarding wastewater systems is the effect they have on nitrate levels in groundwater. Conventional systems are not designed to remove much nitrate or any other chemical from wastewater. Nitrate concentrations in groundwater usually exceed the drinking water standard of

10 mg/L near septic drainfields. A high density of septic systems is more likely to cause local groundwater contamination than a single system. Studies have shown effluent can remain a distinct plume for as much as several hundred feet. If not properly located or maintained, on-site sewage systems can significantly pollute groundwater in nearby wells. Some community members in Holland expressed concerned that sandy soil conditions existing throughout the town may predispose the town to increased occurrences of groundwater pollution.

An average-sized household using a septic system generates about 25 pounds of nitrogen annually. For all onsite septic systems nationally, this amounts to about 260,000 tons of nitrogen released per year. By comparison, chemical fertilizers amount to more than 12,000,000 tons of nitrogen. Nitrogen removal in wastewater varies depending on the type of waste, concentration, and type of system used to treat it. About 75-90% of nitrogen in household wastewater comes from toilet wastes and approximately 90% of that is from urine. Nitrogen concentrations generally range 50-60 mg/L in domestic wastewater. Some nitrogen entering the septic tank is removed when the scum and solids are pumped from the tank during routine maintenance. The concentration of total nitrogen in septic tank effluent is quite variable, ranging from 20-200 mg/L. Studies of groundwater below septic drainfields found 10-25 percent of nitrogen was removed from wastewater.

Processes for reducing nitrogen concentrations in discharges of treated sewage from large centralized wastewater treatment plants are well developed. The processes used at larger facilities are not practical for use in private onsite septic systems serving individual residences. Existing technologies for private onsite treatment to remove nitrate can be grouped into four main categories; (1) biological nitrification and denitrification, (2) source separation of urine, (3) physical/chemical removal, and (4) removal by natural systems such as constructed wetlands.

Currently, about half of the states regulate nitrogen from private onsite septic systems. In states that regulate nitrogen from single-family homes, regulations typically apply only to those located in certain regions with groundwater problems or those near nitrogen-sensitive bodies of water. For example, in Massachusetts the Department of Environmental Protection has designated "nitrogen-sensitive areas" in which new nitrogen discharges must be limited. Designation of these areas is based on ecological sensitivity and relative risk of threats to drinking water wells. Nitrogen treatment technology will add $10,000- 20,000 to the cost of a private septic system.

In Wisconsin, private systems are regulated through Chapter SPS 383 "Private Onsite Wastewater Treatment Systems." The administrative rule exempts private septic systems from meeting groundwater standards for drinking water. However, SPS 383(5) does not limit municipalities from establishing nitrate standards in local zoning ordinances.

"SPS 383(4). GROUNDWATER STANDARDS. (a) Pursuant to s. 160.255, Stats., the design, installation, use or maintenance of a POWTS is not required to comply with the nitrate standard specified in ch. NR 140 Table 1, except as provided under sub. (5).

SPS 383(5). LOCAL ORDINANCES. (a) Pursuant to ss. 59.70 (5) (a), 145.02 (2) and 145.13, Stats., this chapter is uniform in application and a governmental unit may not enact an ordinance for the design, installation, inspection and management of a POWTS which is more or less stringent than this chapter, except as specifically permitted by rule. (b) Except as provided in s. SPS 383.25 (1) (b), a governmental unit shall submit to the department any proposed ordinance or proposed ordinance revision relating to

POWTS. The proposed ordinance or revision shall be submitted for review a minimum of 30 calendar days prior to the first scheduled public hearing date regarding the ordinance. Note: Pursuant to ss. 59.69, 60.62, 61.35 and 62.23, Stats., this chapter does not affect municipal authority for zoning, including establishing nitrate standards as part of a zoning ordinance to encourage the protection of groundwater resources."

The planning of rural subdivisions with large on-site systems or clusters of on-site systems should include an evaluation of drinking water wells to ensure they are protected from sources of contamination. If the evaluation finds a risk, alternatives such as protected water supplies (i.e. mandatory well location and depth), nitrogen-reducing private septic systems, or community water supply and wastewater treatment should be explored.

Public health and environmental risks from properly sited, designed, constructed, and operated septic tank systems appear to be low. However, soils with excessive permeability, low organic matter, low pH, and high moisture content can increase health and environmental risks under certain circumstances.

Policy Options

La Crosse County Health Department developed and organized a task force made up of township citizens and key County Departments from Public Health, Land Conservation, UW- Extension, and Planning to address the nitrate problem. The Nitrate Well Water Task Force (NWWTF) met monthly from December 2017 to June 2018 and was charged with developing public policy directed at reducing human exposure to nitrate in drinking water wells in the Towns of Holland and Onalaska. The NWWTF met with experts from agriculture, USGS, and municipal public works to study the issue and develop strategies. A comprehensive literature review was conducted to determine how others were handling nitrate problems across the country. A list of potential public policies was developed. Table 1.

Policy Recommendations

The Nitrate Well Water Task Force met on June 6, 2018 and reviewed the policies in Table 1. The NWWTF recommended the following public policies be implemented to reduce human exposure to nitrate in private well water;

1. Develop processes to inform current and potential residents of the nitrate contamination hazard through realtors, builders, county and municipal governments.
2. Extend municipal water systems from the Village of Holmen and City of Onalaska to existing residential developments where cost effective.
3. Allow new residential developments in the Towns of Holland and Onalaska in areas where homes can be connected to public water systems or protected community wells.
4. Rent or purchase lands currently used for row crops and replace with green spaces or land used for recreation.
5. Require green zones in all new subdivisions to protect wells. Green zones are areas with vegetation where no chemicals, manure or other substances are added to the landscape.

Summary

A significant number of La Crosse County residents are exposed daily to harmful contaminants in their drinking water. Nitrate is the most common contaminant and exists as an unfortunate legacy of past land use and weak attempts to protect groundwater. It will be many decades before groundwater nitrate decreases to safe levels even if all sources were brought under control today. The use of point-of-use treatment devices such as reverse osmosis filtration require constant vigilance and maintenance by the homeowner. New wells continue to be drilled into the same shallow contaminated aquifer exposing new unsuspecting residents to this hazard.

While these challenges seem daunting there are solutions. Reducing the number of people dependent on private wells through utilization of public water utilities, protected deep community wells and zoning regulation offers the opportunity to consume safe water. Local residents, developers, well drillers, farmers and their governments must work together to make it happen. Much more can be done to reduce sources of nitrate through better land use, improved agricultural practices, new septic system technologies, effective environmental regulations and educational strategies to keep the public informed.

Figure 1.

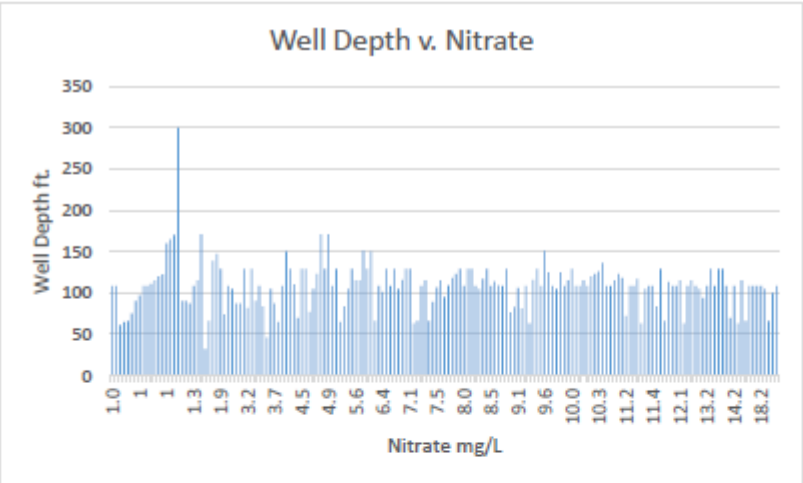

Table 1.

County Government

Use planning and zoning methods to limit residential growth in the Towns of Holland and Onalaska to areas where homes can be connected to public water supplies.

Implement a process to inform potential residents of the nitrate contamination hazard through realtors, builders, county and municipal governments.

Implement an ordinance requiring nitrate reduction treatment devices on all new septic systems installed in high nitrate areas.

Recommend implementation of a fertilizer excise fee to provide incentive to use less.

Designate areas and develop GIS mapping where groundwater resources are at high risk of contamination.

Develop and implement a process to share WPDES compliance information between the WDNR and La Crosse County Health Department.

Seek to revise Wis. Stat. 93.90 to allow local governments to impose more stringent conditions on livestock siting permits to protect groundwater.

Seek to revise WI Administrative Codes ATCP 51 Livestock Facility Siting, NR 243 Animal Feeding Operations and NR 151 Runoff Management to prevent land spreading manure in groundwater sensitive areas.

Seek to revise Administrative Code SPS 383 to allow state regulation of nitrate in private septic system effluent.

Conduct studies in residential areas to determine if nitrate is human or agricultural in origin by testing a series of private wells for artificial sweeteners and alachlor metabolites.

Require periodic nitrate testing of private wells.

Establish a drinking water well monitoring program using homeowner volunteers to determine if nitrate concentrations are increasing or decreasing.

Township and Municipal Governments

Extend water service from Holmen and Onalaska to existing residential developments when cost effective.

Limit residential growth in the Towns of Holland and Onalaska to areas where homes can be connected to public water systems.

Prohibit land spreading of human wastes in groundwater sensitive areas.

State Government

Require nitrate reduction treatment on all new septic systems installed groundwater sensitive areas.

Revise WI Stat. 93.90 to allow local governments to impose more stringent conditions on livestock siting permits to protect groundwater.

Revise WI Administrative Codes ATCP 51 Livestock Facility Siting, NR 243 Animal Feeding Operations and NR 151 Runoff Management to prevent land spreading manure in groundwater sensitive areas.

Revise WI Administrative Code ATCP Chapter 50 to update NRCS 590 standard so farmers may continue participation in the nutrient management program.

Revise Administrative Code SPS 383 to allow regulation of nitrate concentration from private septic system effluent.

Implement a fertilizer excise fee to provide incentive to use less.

Develop and implement a process to share WPDES compliance information between the DNR and La Crosse County Health Department.

Others

Rent or purchase lands currently used for row crops and replace with recreational uses.

Provide financial incentives to change from row crops to crops requiring less nitrogen fertilizers.

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