DRAFT FOR REVIEW

WISCONSIN'S NONPOINT SOURCE PROGRAM MANAGEMENT PLAN

FFY 2021-2025

Approved by EPA on XXXXXXXXX

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Wisconsin's approach to addressing water quality impacts from nonpoint source pollution.

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Acronyms & Abbreviations

Agencies, Departments and Organizations

EPA	United States Environmental Protection Agency
FSA	Farm Service Agency (part of USDA)
FWS	United States Fish and Wildlife Service
LCD	County Land Conservation Department
LWCD	County Land and Water Conservation Department
NRCS	Natural Resources Conservation Service (part of USDA)
USDA	United States Department of Agriculture
UWEX	University of Wisconsin—Extension
WDATCP	Wisconsin Department of Agriculture, Trade and Consumer Protection
WDHS	Wisconsin Department of Health Services
WDNR	Wisconsin Department of Natural Resources
WDSPS	Wisconsin Department of Safety and Professional Services

State and Federal Programs and Terms

BMP	Best Management Practice
CAFO	Concentrated Animal Feeding Operation (Facilities permitted by WDNR under NR 243)
CREP	Conservation Reserve Enhancement Program (Federal and state grant program)
CRP	Conservation Reserve Program
EQIP	Environmental Quality Incentive Program (NRCS grant program)
FPP	Farmland Preservation Program (WDATCP program)
LA	Load Allocation
LWRM	Land and Water Resource Management (WDATCP planning program)
NOD	Notice of Discharge (WDNR program)
NWQI	National Water Quality Initiative (NRCS grant program)
PWS	Priority Watersheds and Lake Projects (WDNR grant program)
SWIMS	Surface Water Integrated Monitoring System (WDNR database)
SWRM	Soil and Water Resource Management (WDATCP grant program)
TRM	Targeted Runoff Management grant (WDNR grant program)
UNPS	Urban Nonpoint Source and Stormwater Management grant (WDNR grant program)
TMDL	Total Maximum Daily Load
WATERS	Waterbody Assessment, Tracking, Evaluation, and Reporting System (WDNR database)
WAV	Water Action Volunteers (Citizen monitoring program)
WBIC	Waterbody Identification Code
WLA	Wasteload Allocation
WPDES	Wisconsin Pollutant Discharge Elimination System (WDNR permitting program)

Wisconsin Administrative Codes

ATCP 50	Ch. ATCP 50, Wisconsin Administrative Code (SWRM, LWRM)
ATCP 51	Ch. ATCP 51, Wisconsin Administrative Code (Livestock Facility Siting)
NR 140	Ch. NR 140, Wisconsin Administrative Code (Groundwater Quality)
NR 151	Ch. NR 151, Wisconsin Administrative Code (Runoff Management)
NR 216	Ch. NR 216, Wisconsin Administrative Code (Stormwater Discharge Permits)
NR 243	Ch. NR 243, Wisconsin Administrative Code (Animal Feeding Operations)
NR 153	Ch. NR 153, Wisconsin Administrative Code (TRM & NOD Grants)
NR 154	Ch. NR 154, Wisconsin Administrative Code (Best Management Practices)
NR 155	Ch. NR 155, Wisconsin Administrative Code (UNPS Grants)
NR 162	Ch. NR 162, Wisconsin Administrative Code (Clean Water Fund Program)
NR 190	Ch. NR 190, Wisconsin Administrative Code (Lake Planning Grants)
NR 191	Ch. NR 191, Wisconsin Administrative Code (Lake Protection/Classification Grants)
NR 195	Ch. NR 195, Wisconsin Administrative Code (River Protection Grants)
NR 809	Ch. NR 809, Wisconsin Administrative Code (Safe Drinking Water)

CHAPTER 1: The State of Nonpoint Source Pollution Control in Wisconsin

1.1 Purpose of this Report

This document outlines the state of Wisconsin's approach to addressing water quality impacts from nonpoint sources (NPS) of pollution. This version of the *Wisconsin NPS Program's Management Plan* covers the projected management activities and efforts from federal fiscal years (FFY) 2021 through 2025 and will be automatically amended based upon enacted administrative rules, modifications to existing state statutes listed in this document and annually to incorporate as a milestone, NPS loading reduction goals documented in an EPA-approved Total Maximum Daily Load (TMDL) report. The effective timeframe for the NPS Program is FFY 2021 to the latest amended milestone date. This statewide management plan meets U.S. Environmental Protection Agency (EPA) Clean Water Act requirements and ensures Wisconsin's eligibility for Section 319 (federal NPS Program) funding. The required "Eight Key Components of an Effective Nonpoint Source Management Program" are listed in Section 1.7. This chapter introduces the vision and objectives for NPS management in Wisconsin and frames the current challenges and opportunities for NPS management. Chapter 2 gives an overview of water quality monitoring and assessment in Wisconsin. Chapter 3 provides a description of the statewide watershed planning process, including TMDL implementation planning. Chapter 4 focuses on implementation strategies for water resource protection and includes a list of water quality programs and partners. Chapter 5 details the statewide NPS tracking, evaluation and reporting processes. Finally, Chapter 6 concludes by outlining the future direction for Wisconsin's NPS Program.

1.2 Wisconsin's Water Landscape

Wisconsin enjoys a historic abundance of clean and accessible water resources. Over 84,000 miles of streams flow through the state, and more than 15,000 lakes totaling 1.2 million surface acres. Add to those water resources over 5.3 million acres of wetlands and enough groundwater to cover Wisconsin to a depth of 100 feet. These resources provide a source of clean, safe water for drinking, recreation, farming and manufacturing. Wisconsin's economy, quality of life, and identity are interdependent with our water resources.

Here's a partial list of functions performed by surface waters and groundwater that are important to Wisconsinites:

- flow of water
- storage of floodwaters
- enrichment of the soil through sedimentation
- removal of pollutants through movement through riparian zones
- dilution and/or removal of wastes
- regulation of temperature
- cycling of oxygen, carbon, nitrogen and phosphorus
- export of organic and inorganic materials
- habitat for fish and game
- recreational use
- economic use through the capture and release of flow
- economic uses through the storage and release of waters
- source of drinking water

The state is keenly aware of the challenges of maintaining the quality and accessibility of these water resources. Polluted runoff is the greatest threat to Wisconsin water quality. The Wisconsin Department of Natural Resources (WDNR) estimates that over 70 percent of the lakes and streams within assessed watersheds are degraded by NPS pollution. (Wetlands have not yet been assessed as part of this

process, but there is growing need to elucidate the effects on these water resources as well.) In addition, approximately 10% of potable wells statewide do not meet drinking water standards due to NPS nutrient impacts. The Clean Water Act goals of fishable and swimmable waters will not be met, and Safe Drinking Water Act standards will continue to be exceeded without sustained attention to the challenge of reducing polluted runoff.

What is Nonpoint Source Pollution?

NPS pollution, unlike pollution from industrial and municipal sewage treatment plants, comes from many diffuse sources. NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into rivers, lakes, wetlands, and groundwater. These pollutants include:

- *excess fertilizers, herbicides, and insecticides from agricultural lands and residential areas;*
- *oil, grease, and toxic chemicals from urban runoff and energy production;*
- *sediment from improperly managed construction sites, crop and forest lands, and eroding stream banks;*
- *salt from road de-icing and acid drainage from abandoned mines; and,*
- *bacteria and nutrients from livestock, pet wastes, and faulty septic systems.*

Atmospheric deposition and hydromodification are also sources of NPS pollution.

The origins of NPS pollutants are diffuse and often difficult to trace. Human-related origins of NPS pollution that have been identified as most prevalent in Wisconsin include:

- *animal production operations and feedlots*
- *other agricultural activities*
- *streambank and shoreline erosion*
- *timber harvesting*
- *urban land development*
- *transportation-related facilities*
- *atmospheric deposition.*

1.3 WDNR Vision for NPS Management

Although managing NPS pollution in Wisconsin involves a partnership of many programs, agencies, and stakeholders, the WDNR is the central unit of state government assigned to protect, maintain and improve the quality and management of the waters of the state. This work is a key component of the WDNR's mission.

WDNR Mission Statement

To protect and enhance our natural resources:
*our air, land and **water**;*
our wildlife, fish and forests
and the ecosystems that sustain all life.
To provide a healthy, sustainable environment
and a full range of outdoor opportunities.
To ensure the right of all people
to use and enjoy these resources
in their work and leisure.
To work with people
to understand each other's views
and to carry out the public will.

And in this partnership
consider the future
and generations to follow.

The WDNR provides comprehensive and integrated management of water resources—from small wetlands to Great Lakes, groundwater to drinking water, local fisheries and beaches to entire watersheds. The WDNR Runoff Management Section, located within the Watershed Management Bureau, provides the information and resources needed to effectively manage polluted runoff from agricultural and urban nonpoint sources in Wisconsin. The WDNR's overarching, long-term goal is supported by the NPS Program:

"to fully implement the Clean Water Act and Safe Drinking Water Act in order to achieve the goal of drinkable, fishable and swimmable waters throughout the state of Wisconsin."

The Runoff Management Section shares the responsibility for implementing and tracking goals and measures to achieve the goal of fully implementing the Clean Water Act and Safe Drinking Water Act. The NPS-related objectives and milestones the state has identified to achieve this goal are discussed in more detail in Chapter 5.

Further, the WDNR Runoff Management Program's effort to reduce NPS pollution in Wisconsin is guided by the following mission statement:

"To strive for clean and healthy waters by preventing polluted runoff, encouraging watershed stewardship and public involvement, fostering partnerships, furthering understanding, providing guidance and financial assistance, and effectively administering regulatory authority to control agricultural and urban runoff."

1.4 NPS Management Key Stakeholders

Moving NPS management rules from concept to reality requires cooperation between numerous stakeholders including local governments, state and federal agencies, educational institutions, advocacy organizations and private citizens. Three main stakeholders manage NPS pollution in Wisconsin: the WDNR, the Wisconsin Department of Agriculture, Trade and Consumer Protection (WDATCP), and collectively, the 72 Wisconsin counties. The WDNR and WDATCP play three key roles in an effort to achieve the NPS management objectives and goals: 1) creating and revising administrative rules; 2) developing implementation tools and strategies; 3) awarding funding through competitive and base grants.

The WDNR and WDATCP work jointly to control NPS water pollution and soil erosion in the state. Wisconsin's 72 counties, specifically the County Land and Water Conservation Departments, are the main vehicles for implementing state land and water conservation programs and funds. Each county must develop a Land and Water Resource Management (LWRM) Plan that describes the goals and activities to control runoff and other water pollution.

Additional state NPS Program stakeholders include:

- Wisconsin Department of Transportation - Culvert replacement and erosion control and stormwater management on transportation projects
- Wisconsin Department of Administration Coastal Management Program
- Regional Planning Commissions - Regional stormwater and floodplain management planning
- University of Wisconsin Extension (UWEX) - Statewide implementation, outreach and education
- University of Wisconsin System - Madison, Stevens Point, others - Research and technical assistance

- Wisconsin Land and Water Conservation Association (WI Land+Water) - Nonprofit organization representing Wisconsin's County Board Land Conservation Committees and Land Conservation Department employees
- Wisconsin Counties Association (WCA) - Governmental association representing the interests of counties at both the state and federal level
- League of Wisconsin Municipalities – Governmental association representing the interests of cities and villages
- Wisconsin Land and Water Conservation Board (LWCB) - Advises WDATCP and WDNR on NPS grant allocations; reviews management plans and administrative rules
- Wisconsin Geological and Natural History Survey – Conducts studies, writes reports on the state of groundwater resources
- Wisconsin Department of Health Services – Assists with the development of health-based groundwater standards

Federal NPS program stakeholders:

- Environmental Protection Agency (EPA)
- USDA Natural Resources Conservation Service (NRCS)
- USDA Farm Service Agency (FSA)
- USDA Forest Service
- U.S. Geological Survey (USGS)
- National Oceanic and Atmospheric Administration (NOAA)
- U.S. Army Corps of Engineers
- Tribal governments

Advocacy organizations play an important role in influencing NPS policy and in providing public education regarding NPS programs. Active advocacy groups in Wisconsin include, but are not limited to:[1]

- River Alliance of Wisconsin
- The Nature Conservancy
- Sand County Foundation
- Wisconsin Lakes
- Wisconsin Wetlands Association
- Gathering Waters Conservancy
- Wisconsin Farm Bureau Federation
- Wisconsin Dairy Business Association
- Professional Dairy Producers of Wisconsin
- Wisconsin Association of Professional Agricultural Consultants
- Wisconsin Farmers Union
- Clean Wisconsin
- Wisconsin League of Conservation Voters
- Midwest Environmental Advocates
- Wisconsin Rural Water Association

1.5 Past and Current Programs

Past Programs

In 1978, the WDNR launched the Priority Watershed and Lakes Program, the first Wisconsin program designed specifically to address NPS pollution. This comprehensive program, which ended in 2009, identified farm fields, livestock areas, streambanks and shorelines, and urban areas that were sources of

[1] Additional information on advocacy groups is available through most internet search engines.

polluted runoff, set pollutant load reduction goals, and targeted best management practices, technical assistance and education to sites in 86 watersheds. Between 1992 and 1995, private well sampling was part of the priority watershed assessment process. Well water samples were analyzed for nitrate and the triazine screen with follow up sampling available for analytical results above the NR 140 groundwater standards. The steps involved in developing priority watershed and lake plans were similar to those used to develop TMDLs and TMDL implementation plans today. These steps also mirrored the 9 key element planning process that EPA's NPS Program (Section 319) requires for watershed-based plans.

Participation in the Priority Watershed and Lakes Program was mostly voluntary, but projects selected after 1993 included a regulatory component. Persons responsible for "critical sites" could resolve them voluntarily within three years and receive cost sharing or be forced to resolve them with reduced or no cost sharing after that time. By the end of 2008, 93 percent of the 1,657 designated critical sites had been resolved with a minimum of enforcement actions.

While the Priority Watershed and Lakes Program achieved many of its goals, a number of lessons were learned:

1. A solely voluntary program is not sufficient to control polluted runoff.
2. General water quality improvement goals of most Priority Watershed Projects did not provide sufficient focus to effectively target program resources;
3. The condition and status of wetland resources were inadequately considered as part of this program; and
4. Monitoring before and after water quality conditions within Priority Watersheds was inconclusive, owing to the difficulty of accounting for the multiple and changing variables affecting runoff and receiving water response.

In 1974, Wisconsin Governor Patrick Lucey signed into law a comprehensive state program for protecting and rehabilitating lakes. The bill established a $1.3 million grant program for inland lake protection and rehabilitation. Funding was also provided for staff from the WDNR to administer the effort and provide public education about the new law. It included the creation of Chapter 33, Wis. Stats., the statutes governing lake districts, and established the process for districts to work with the WDNR to complete lake studies and receive cost-share funding for plan implementation. Over the last forty years, many of these grant projects have addressed NPS pollutant loads.

Current Programs

The current regulatory approach to NPS pollution reduction, in place since 2002, centers on statewide enforceable agricultural and non-agricultural performance standards and manure management prohibitions, required by Chapter NR 151, Wis. Adm. Code (http://docs.legis.wisconsin.gov/code/admin_code/nr/100/151.pdf). Performance standards are minimum expectations that apply to phosphorus delivery, cropland erosion, livestock and manure storage management, nutrient management, livestock process wastewater, construction erosion, post-construction storm water management, developed urban areas and transportation facilities.

Under state law, WDNR coordinates NPS program implementation with WDATCP. Through Chapter ATCP 50, Wis. Adm. Code (http://docs.legis.wisconsin.gov/code/admin_code/atcp/020/50.pdf), WDATCP establishes technical standards and other elements related to program implementation. In addition to other watershed plans, County Land and Water Resource Management Plans define a locally appropriate mix of approaches (e.g. regulatory, nonregulatory, financial and technical assistance) for implementing state performance standards. The steps involved in developing these plans mirror the 9 key element process that EPA's NPS Program (Section 319) requires for watershed-based plans.

The non-agricultural performance standards are primarily implemented through Chapter NR 216, Wis. Adm. Code, (https://docs.legis.wisconsin.gov/code/admin_code/nr/200/216.pdf) the state's Storm Water Discharge Permit rule. The agricultural performance standards and manure management prohibitions are enacted through a statewide implementation strategy (available at

http://dnr.wi.gov/topic/nonpoint/nr151Strategy.html) that relies on cooperation between the county land conservation staff and WDNR. Agricultural performance standards cannot be enforced for existing cropland and livestock operations unless cost sharing is provided. (This stipulation does not apply to the non-agricultural performance standards.) Once performance standards are achieved, they must be maintained in perpetuity by all current and future landowners, regardless of cost sharing.

Wisconsin is continuously improving NPS performance standards, technical specifications, and financial assistance programs. Most recently, Chapter NR 151, Wis. Adm. Code, was revised and went into effect in June 2018. The revisions added a new targeted performance standard for manure application in areas with Silurian bedrock. WDATCP revised ch. ATCP 50, Wis. Adm. Code, in February 2018. The performance standards and prohibitions as well as the WDNR/WDATCP grant programs are discussed in more detail in Chapter 4.

Non-regulatory approaches to NPS pollution reduction are equally important to maintaining fishable, swimmable, and drinkable waters throughout the state of Wisconsin. Since 1978, managing NPS pollution in Wisconsin involved a partnership among many actors, including non-governmental organizations and citizen groups. Non-regulatory approaches such as stewardship purchasing programs, voluntary implementation of best management practices, producer-led initiatives, and citizen monitoring programs are discussed in more detail in Chapter 4.

In addition to NPS focused grant programs, the WDNR continues to operate the Lake and River Protection and Rehabilitation Grant Program. In the last forty years, over one billion dollars have funded over 24,500 grant projects protecting and restoring surface water throughout the state of Wisconsin. Today, grant funds are being maintained largely through the motorboat gasoline tax. Eligible projects range from developing and implementing lake and river management plans, developing lake classification and ordinances, land/easement acquisition, wetland and shoreline habitat restoration, and aquatic invasive species education, prevention, planning and control projects. The WDNR Lakes Program and NPS Program work together to encourage lake and river associations to develop management plans that address EPA's 9 key elements.

1.6 Current Challenges & Opportunities

Adequate funding and staffing at all levels of government are crucial to successfully managing NPS pollution and to ensuring high water quality in Wisconsin. In addition, since both WDNR and WDATCP have shared responsibilities for NPS Program management and receive separate state funding to carry out their responsibilities, the two agencies must coordinate efforts to effectively implement NPS activities. Four additional issues present challenges for NPS management in Wisconsin: performance standards implementation, implementing TMDLs, numeric phosphorus water quality standards, and including groundwater and wetlands in nonpoint source management planning.

Performance Standards Implementation

Chapter NR 151, Wis. Adm. Code, contains runoff pollution performance standards for Wisconsin. Steady progress has been made towards carrying out the implementation strategy put in place shortly after ch. NR 151, Wis. Adm. Code, went into effect October 1, 2002. However, the greatest barriers to implementation of performance standards continue to be insufficient staff levels, inadequate time and resources at both the state and county levels, and the lack of cost-share dollars for both hard (e.g. structural) and soft (e.g. management) practices.

Implementing TMDLs

Implementing plans to achieve TMDL targets for polluted runoff from cities, construction sites, farms and roads is a challenging process that requires the collaboration of diverse stakeholders and a substantial commitment of public and private dollars. The state's NPS Program currently has insufficient financial and staff resources to effectively implement TMDLs.

Numeric Phosphorus Water Quality Standards

Changes to chapters NR 102 and NR 217, Wis. Adm. Code, went into effect December 1, 2010. Central to the rule package are numeric concentrations set for the amount of phosphorus that can be allowed in different categories of waterbodies and still support fish and other aquatic life. Different numerical concentrations are set for five categories of lakes and reservoirs, for rivers and streams, and for the Great Lakes. Numeric water quality standards for wetlands and lakes smaller than 5 acres were not included in this process and continue to be an outstanding issue needing resolution due to lack of resources and staff. For wastewater dischargers, these numeric concentrations have been reflected in permits issued beginning in 2011. Ch. NR 217, Wis. Adm. Code, includes flexible options to give dischargers longer than usual compliance schedules and modified limits for dischargers who work with upstream nonpoint sources to reduce larger sources of phosphorus pollution. Wisconsin became the first state to put in place an adaptive management approach that promotes cooperation among point and nonpoint pollution sources to find the most cost-effective means to reduce phosphorus and other pollutants on individual watersheds. Water quality trading may also be used by point sources to demonstrate compliance with water quality-based effluent limitations for phosphorus. And the multi-discharger variance (MDV) for phosphorus (approved by EPA on February 6, 2017) extends the timeline for point sources to comply with low-level phosphorus limits. In exchange, point sources commit to step-wise reductions of phosphorus within their effluent as well as helping to address nonpoint sources of phosphorus.

Including Groundwater Concerns in Nonpoint Source Management Planning

Overall, 70% of Wisconsin residents and 97% of communities rely on groundwater as their drinking water source. For most areas of the state, groundwater aquifers are the sole source for drinking water. While Wisconsin's NPS planning has focused primarily on impacts to and protection of lakes, reservoirs, rivers, and streams, groundwater quality has also been degraded by nonpoint source pollution, impairing our primary drinking water aquifer sources. For example, there are large areas of the state where nitrate concentrations in groundwater exceed the drinking water standard of 10 milligrams per liter. Several lines of evidence, including analysis of statewide potable well datasets, and long-term trends for baseflow dominated streams, suggest that groundwater concentrations of nitrate are increasing statewide. Both groundwater quality and quantity impacts contribute directly to surface water degradation, so coordinated management of these resources is optimal, Liquid manure applications, particularly in winter, are threatening groundwater in a number of vulnerable areas in the state. The WDNR's Bureau of Drinking Water and Groundwater is currently working with partners on developing strategies to protect groundwater recharge in well-head protection areas from agriculture nonpoint source pollution. Methods developed could be adopted for use in TMDL implementation plans and other 9 key element plans.

1.7 The Eight Key Components

In April 2013, the EPA issued *Nonpoint Source Program and Grants Guidelines for States and Territories*. The guidance contains a description of the "eight key components" that characterize an effective state nonpoint source management program. During the spring of 2012, EPA convened an EPA-state workgroup to inform Section 319 Program improvements; this update was developed with input from the workgroup and further refined by comments and input from other states. The EPA's eight key components are addressed in the Wisconsin *NPS Program Management Plan* as outlined in the tables below.

Key Component No. 1
The state program contains explicit short- and long-term goals, objectives and strategies to restore and protect surface water and groundwater, as appropriate.

The state's long-term goals reflect a strategically focused state NPS management program designed to achieve and maintain water quality standards and to maximize water quality benefits.	*Chapters 1,5,6*

The shorter-term objectives consist of activities, with annual milestones, designed to demonstrate reasonable progress toward accomplishing long-term goals as expeditiously as possible.	*Chapters 5, 6*
Annual milestones in a state's NPS management program describe outcomes and key actions expected each year, e.g., delivering a certain number of WQ-10 success stories or implementing projects in a certain number of high priority impaired watersheds.	*Chapter 5*
The state program includes objectives that address nonpoint sources of surface water and ground water pollution as appropriate (including sources of drinking water) in alignment with the goals of the Clean Water Act.	*Chapter 5*
The objectives include both implementation steps and how results will be tracked (e.g., water quality improvements or load reductions).	*Chapter 5*
The state program includes long-term goals and shorter-term (e.g., three- to five-year) objectives that are well integrated with other key environmental and natural resource programs, such as those described under component #3.	*Chapters 4,5*
State program goals and objectives are periodically revised as necessary to reflect progress or problems encountered, strategies to make progress towards achieving the goals, and indicators to measure progress.	*Chapter 5*

Key Component No. 2
The state strengthens its working partnerships and linkages to appropriate state, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.

The state uses a variety of formal and informal mechanisms to form and sustain these partnerships.	*Chapters 1,4*
The state NPS lead agency works collaboratively with other key state and local NPS entities in the coordinated implementation of NPS control measures in high priority watersheds.	*Chapters 1,2,3,4*
The state works to ensure that its local partners and grantees have the capacity to effectively carry out watershed implementation projects funded to support its NPS management program.	*Chapter 4*
The state seeks public involvement from local, regional, state, interstate, tribal and federal agencies, and public interest groups, industries, academic institutions, private landowners and producers, concerned citizens and others as appropriate, to comment on significant proposed program changes.	*Chapters 3,4,5*

Key Component No. 3
The state uses a combination of statewide programs and on-the-ground projects to achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs.

The state has the flexibility to design its NPS management program in a manner that is best suited to achieve and maintain water quality standards. The state may achieve water quality results through a combination of watershed approaches and statewide programs, including regulatory authorities, as appropriate.	*Chapter 3,4*
The state NPS management program emphasizes a watershed management approach and includes an explanation of the state's approach to prioritizing waters and watersheds to achieve water quality restoration and protection.	*Chapter 2,3,4*
The state NPS management program is well integrated with other relevant programs to restore and protect water quality, aligning priority setting processes and resources to increase efficiency and environmental results.	*Chapters 2,3,4*
The state makes a strong sustained effort to coordinate and leverage with USDA NRCS.	*Chapter 4,5*

A state NPS management program is well-integrated and clearly identifies processes to incorporate some of the significant resources of the CWSRF loan program for eligible nonpoint source activities. Where applicable, the state NPS management program explains how NPS projects fit into the state's prioritization scheme for CWSRF funding and describes state efforts to increase the use of the state CWSRF for the NPS management program. If there are barriers to prioritization of NPS projects, the state NPS management program describes efforts to coordinate with the CWSRF program and potential future steps to encourage NPS projects are considered.	*Chapter 4*
If, in reviewing federal programs, the state identifies federal lands and activities that are not managed consistently with state nonpoint source program objectives, the state may seek EPA assistance to help resolve issues at the federal agency level.	*Chapter 4*

Key Component No. 4
The state program describes how resources will be allocated between (a) abating known water quality impairments from NPS pollution and (b) protecting threatened and high-quality waters from significant threats caused by present and future NPS impacts.

The program describes its approach to addressing the twin demands of remedying waters that the state has identified as impaired by NPS pollution and preventing new water quality problems from present and reasonably foreseeable future NPS impacts, especially for waters which currently meet water quality standards.	*Chapters 2,3,4*
The state's program describes how it will approach setting priorities and aligning resources between these two areas of emphasis based on their water quality challenges and circumstances.	*Chapters 2,3,4*

Key Component No. 5
The state program identifies waters and watersheds impaired by NPS pollution as well as priority unimpaired waters for protection. The state establishes a process to assign priority and to progressively address identified watersheds by conducting more detailed watershed assessments, developing watershed-based plans and implementing the plans.

The state identifies waters impaired by nonpoint source pollution based on currently available information (e.g., in reports under sections 305(b), 319(a), 303(d), 314(a), and 320), and revises its list periodically as more up-to-date assessment information becomes available. As feasible, the state also identifies important unimpaired waters that are threatened or otherwise at risk from nonpoint source pollution.	*Chapter 2*
The state identifies the primary categories and subcategories causing the water quality impairments, threats, and risks across the state.	*Chapter 2*
At regular intervals the state updates the identification of waters impaired or threatened by NPS pollution preferably as part of a single comprehensive state water quality assessment which integrates reports required by the Clean Water Act.	*Chapter 2*
The state establishes a process to assign priority and to progressively address identified waters and watersheds by conducting more detailed watershed assessments, developing watershed-based plans, and implementing the plans.	*Chapters 2,3*
The state links its prioritization and implementation strategy to other programs and efforts such as those listed under component #3.	*Chapters 2,3,4*
In establishing priorities for groundwater activities, the state considers wellhead protection areas, groundwater recharge areas, and zones of significant ground water/surface water interaction, including drinking water sources.	*Chapter 2*

Key Component No. 6
The state implements all program components required by section 319(b) of the Clean Water Act and establishes strategic approaches and adaptive management to achieve and maintain water quality standards as expeditiously as practicable. The state reviews and upgrades program components as appropriate. The state program includes a mix of regulatory, nonregulatory, financial and technical assistance, as needed. In addition, the state incorporates existing baseline requirements established by other applicable federal or state laws to the extent that they are relevant.

The state includes in its program and implements all of the following components:

An identification of measures (i.e., systems of practices) that will be used to control NPS pollution, focusing on those measures which the state believes will be most effective in achieving and maintaining water quality standards. These measures may be individually identified or presented in manuals or compendiums, provided that they are specific and are related to the category or subcategory of nonpoint sources. They may also be identified as part of a watershed approach towards achieving water quality standards, whether locally, within a watershed, or statewide;	*Chapter 4*
An identification of the key programs to achieve implementation of the measures, including, as appropriate, nonregulatory or regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects. The state is free to decide the best approaches for solving the problems that it identifies under key component #5 above. These approaches may include one or all of the following: watershed or water quality-based approaches aimed at meeting water quality standards directly; iterative, technology-based approaches based on best management practices or measures, applied on either a categorical or site-specific basis; or an appropriate mix of these approaches.	*Chapter 4*
A description of the processes used to coordinate and, where appropriate, integrate the various programs used to implement NPS pollution controls in the state;	*Chapters 3,4*
A schedule with goals, objectives, and annual milestones for implementation at the earliest practicable date: legal authorities to implement the program; available resources; and institutional relationships;	*Chapters 4,5,6*
Sources of funding from federal (other than section 319), state, local, and private sources;	*Chapter 4*
Federal land management programs, development projects and financial assistance programs; and	*Chapter 4*
A description of monitoring and other evaluation programs that the state will conduct to help determine short- and long-term NPS management program effectiveness.	*Chapters 2,5*

Key Component No. 7
The state manages and implements its NPS management program efficiently and effectively, including necessary financial management.

The state implements its program to solve its water quality problems as effectively and expeditiously as possible and makes satisfactory progress each year in meeting program goals.	*Chapters 3,4,5*
To help assure that priority water quality problems are addressed cost-effectively and in a timely manner, the state includes in its program a process for identifying priority problems and/or watersheds and deploys resources in a timely fashion to address priorities, including any critical areas requiring treatment and protection within watersheds.	*Chapters 2,3,4*

The state employs appropriate programmatic and financial systems that ensure section 319 dollars are used efficiently and consistent with its legal obligations, and generally manages all section 319 funds to maximize water quality benefits.	*Chapters 4,5*
The state ensures that section 319 funds complement and leverage funds available for technical and financial assistance from other federal sources and agencies.	*Chapter 4*

Key Component No. 8
The state reviews and evaluates its NPS management program using environmental and functional measures of success and revises its NPS management program at least every five years.

The state establishes appropriate measures of progress in meeting programmatic and water quality goals and objectives identified in key component #1 above.	*Chapter 5*
The state also describes a monitoring/evaluation strategy and a schedule to measure success in meeting those goals and objectives.	*Chapters 2,5*
The state integrates monitoring and evaluation strategies with ongoing federal natural resource inventories and monitoring programs.	*Chapters 2,5*
The state NPS management program is reviewed and revised every five years. The revision is not necessarily a comprehensive update unless significant program changes warrant a complete revision; instead, an update targets the parts of the program that are out-of-date. At a minimum, this includes updating annual milestones and the schedule for program implementation, so that they remain current and oriented toward achieving water quality goals.	*Chapter 5*

CHAPTER 2: Monitoring and Assessment

Chapters NR 102, 103, 104, and 105, Wis. Adm. Code, establish water quality standards for surface waters of the state, describing the designated use categories (s. NR 102.04) and the water quality criteria necessary to support these uses. The state is responsible for assigning designated uses and conducting periodic assessments of these uses on individual waterbodies. Assessments result in an overview of the status of Wisconsin's waterbodies for reporting under Section 305(b) of the Clean Water Act; provide data for determining whether waterbodies should be listed as impaired; and provide background information for conducting Total Maximum Daily Load (TMDL) analyses on impaired waters.

Chapter NR 140, Wis. Adm. Code, establishes standards for groundwater quality. Various programs within WDNR regulate nonpoint pollution sources that may affect groundwater quality and conduct related monitoring. In addition, several other state agencies, such as WDATCP, WDOT, and WDSPS regulate activities that require adherence to these standards. Chapter NR 809, Wis. Adm. Code, addresses Safe Drinking Water Act requirements for public water supply systems by establishing monitoring requirements and setting maximum contaminant levels for primary drinking water contaminants. Aggregated data derived from public well compliance datasets have been utilized for targeting purposes in the State Nutrient Reduction Strategy.

2.1 Water Quality Standards

Surface water quality standards define the goals for a waterbody by designating its uses, (e.g., fish and aquatic life, recreation, public health, or fish consumption), setting criteria to protect those uses (numeric pollutant concentrations and narrative requirements) and establishing provisions to protect water quality from pollutants. Water quality standards consist of three basic elements:

1. **Designated uses** of the water (e.g., fish and aquatic life, recreation, public health and welfare, wildlife),
2. **Water quality criteria** to protect designated uses (numeric pollutant concentrations and narrative requirements), and
3. An **antidegradation policy** to maintain and protect existing uses and high-quality waters.

Standards support efforts to achieve and maintain protective water quality conditions, including:

- Total maximum daily loads (TMDLs), waste load allocations (WLAs) for point sources of pollution, and load allocations (LAs) for nonpoint sources of pollution
- Water quality management plans which prescribe the regulatory, construction, and management activities necessary to meet the waterbody goals
- Wisconsin Pollutant Discharge Elimination System (WPDES) water quality-based effluent limitations for point source discharges
- Water quality certifications under CWA Section 401 for activities that may affect water quality and that require a federal license or permit
- Reports, such as the reports required under CWA Section 305(b), that document current water quality conditions
- CWA Section 319 management plans for the control of nonpoint sources of pollution
- Well-head and source water protection efforts,
- Implementation of Wisconsin's Nutrient Reduction Strategy

Water quality standards for surface waters are described in Chapters NR 102, 103, 104, and 105, Wis. Adm. Code. These rules include general policies and detailed provisions describing implementation issues such as mixing zone provisions, etc.

Under the Clean Water Act, each waterbody is classified according to its designated uses. Assigning a use designation, such as a "Fish and Aquatic Life" subcategory, is one of the first steps in managing water quality. Designation is a scientific process that involves evaluation of the resource and its natural characteristics. Each use designation category carries with it a set of goals with expectations for a waterbody's performance. For some designations, such as Fish and Aquatic Life, detailed sub-categorization occurs to classify the water according to its specific potential.

Wisconsin's designated uses are:

Recreational Use: All surface waters are considered appropriate for recreational use unless a sanitary survey has been completed to show that humans are unlikely to participate in activities requiring full body immersion.

Public Health and Welfare: All surface waters are considered appropriate to protect for incidental contact and ingestion by humans. All waters of the Great Lakes as well as Lake Winnebago are identified as public water supplies and have associated water quality criteria to account for human consumption. Fish consumption also falls under this category.

Wildlife: All surface waters are considered appropriate for the protection of wildlife that rely directly on the water to exist or rely on it to provide food for existence.

Fish and Aquatic Life: All surface waters are considered appropriate for the protection of fish and other aquatic life. Surface waters vary naturally with respect to factors like temperature, flow, habitat, and water chemistry. This variation allows different types of fish and aquatic life communities to be supported. Currently, Wisconsin recognizes the following Fish and Aquatic Life use designation sub-categories:

- *Coldwater Community:* Streams capable of supporting a cold-water sport fishery or serving as a spawning area for salmonids and other cold-water fish species.
- *Warmwater Sport Fish Community:* Streams capable of supporting a warm water-dependent sport fishery.
- *Warmwater Forage Fish Community:* Streams capable of supporting a warm water-dependent forage fishery.
- *Limited Forage Fish Community:* Streams capable of supporting small populations of forage fish or tolerant macroinvertebrates that are tolerant of organic pollution. Typically limited due to naturally poor water quality or habitat deficiencies.
- *Limited Aquatic Life Community:* Streams capable of supporting macroinvertebrates or occasionally fish that are tolerant of organic pollution. Typically, small streams with very low-flow and very limited habitat. Certain marshy ditches, concrete lined-drainage channels and other intermittent streams.

2.1.a Rulemaking to Update Water Quality Standards

A rulemaking effort is currently underway to revise and add to the water quality standards in chs. NR 102, 104, and 105, Wis. Adm. Code. This effort has several components:

- Adjust the fish and aquatic life use subcategories to more appropriately characterize the variety of waterbody types in the state.
- Specify a "public drinking water supply" designated use as part of the designated use revisions.
- Establish narrative biological criteria in the code, which set expectations for aquatic biological communities such as fish, insects, plants, and algae.
- Establish a set of "phosphorus response indicators", primarily algal and plant metrics, to be used in conjunction with phosphorus criteria for determining impairment or eligibility for site-specific phosphorus criteria.
- Establish criteria for chlorophyll *a* to protect aquatic life and recreational uses.

- Establish oxythermal layer criteria for two-story fishery lakes. These lakes require a combination of suitable dissolved oxygen and temperature to support coldwater fish.
- Update the state's bacteria criteria from fecal coliform to *E. coli* as the pathogen indicator for recreation use protection, since *E. coli* is a much better predictor of human health risk.

These criteria and phosphorus response indicators will be used, along with the existing chemical criteria, to assess the state's waterbodies. These rulemaking efforts are expected to extend through 2020.

2.2 Wisconsin's Surface Water Monitoring Programs

This section provides a general description of the types of monitoring done under the WDNR's *Water Quality Monitoring Strategy* and a description of Wisconsin's citizen-based monitoring program.

2.2.a Wisconsin's Monitoring Approach

Wisconsin's water quality monitoring program (http://dnr.wi.gov/topic/surfacewater/monitoring) is located in the Environmental Management Division's Bureau of Water Quality, but shares some responsibilities with two Bureaus located in two other WDNR Divisions: Bureau of Fisheries Management and Bureau of Watershed Management. The WDNR's *Water Quality Monitoring Strategy* is available online at: http://dnr.wi.gov/topic/surfacewater/monitoring/strategydetail_T1.html. Sampling protocols within the strategy are developed by monitoring technical teams, comprised of staff with a high level of technical knowledge and applied field sampling experience.

The WDNR's *Water Quality Monitoring Strategy* for surface waters is organized into a three-pronged approach:

- Statewide Baseline Monitoring
- Prescribed Monitoring
- Local Needs Monitoring

The three monitoring categories differ primarily in intensity, standardization and data needs. Baseline Monitoring is usually less intense at each site, but it is done on a broad geographic scale and standardized to determine trends and to assess statewide health of waters. Prescribed Monitoring is focused on a few statewide priorities with opportunity to enhance standardized protocols based on specific project needs. Local Needs Monitoring involves projects targeted at management program effectiveness, cross-program support and monitoring of unique stressors, among others. Local Needs Monitoring programs often involve intense monitoring at small geographic scales for projects such as evaluating the effectiveness of Clean Water Act management actions or compliance monitoring.

Baseline Monitoring: This monitoring collects baseline physical, chemical, and biological information necessary to satisfy information needs at a broad spatial scale and track water quality trends. This level of monitoring determines water chemistry, quantity and biologic status and trends and identifies potential problem areas based on chemical concentrations and physical and ecological indicators. Waterbody types evaluated under Baseline Monitoring include lakes, rivers, streams, Great Lakes, the Mississippi River and groundwater. For resources that are too numerous to individually evaluate, such as streams and lakes, a probabilistic sampling effort allows information from sampled waters to be used to provide information on the current status all of the state's waters. Where environmental problems are discovered through Baseline Monitoring or other credible sources of information, these problem areas are identified and prioritized for further study under Prescribed or Local Needs Monitoring. With the exception of "Status and Trends" monitoring for wetlands (https://dnr.wi.gov/topic/Wetlands/documents/WetlandTrackingReport2006-2013.pdf), baseline monitoring for wetlands has not been completed by WDNR to date. The program has only recently achieved development of a "beginner's toolbox" of adequate tools and protocols to begin this effort. The scale of

implementation for baseline monitoring of wetlands is currently under discussion and is a longstanding program need that the program is striving to resolve within the timeframe of this plan.

Prescribed Monitoring: Waterbodies or watersheds needing more information are prioritized and monitored more intensively under Prescribed Monitoring. The Targeted Watershed Assessment Program samples intensively in several HUC 12 watersheds across the state every year in order to make management decisions. These watersheds may be monitored to gather data at high quality watersheds, collect pre-BMP implementation data, evaluate BMP implementation success, or for watershed planning. Directed Lakes monitoring prioritizes lakes with minimal data to provide holistic water quality assessments and provide lake monitoring data to support WDNR and partner agencies with lake management activities. A pilot project is currently underway attempting to integrate wetland monitoring and assessment as part of Targeted Watershed Assessments. Integration of wetland monitoring and assessment into Directed Lakes monitoring has not yet occurred but is a top priority and will also likely require a pilot study. The program is striving to resolve these wetland monitoring gaps within the timeframe of this plan including creation of a set of decision-support and training manuals for staff to decide appropriate study design for wetland monitoring incorporation into these projects and estimating resources (funding, staff, training, etc.) needed.

Local Needs Monitoring: This monitoring category provides follow-up analysis of management plans that have been implemented for problem waterbodies and evaluates permit compliance and the effectiveness of WDNR or partner agency management actions. Local needs monitoring evaluates the responses of waterbodies to management actions at many spatial scales (stream reach, waterbody or whole watershed). Effectiveness of waterbody-specific management actions is determined using core indicators from the more intensive sampling designs. The chosen indicators are compared before and after management actions are implemented. Waterbody-type technical teams, monitoring staff and local biologists all provide input ensuring the project is sufficiently designed to meet data objectives and Division priorities.

2.2.b Citizen-Based Water Quality Monitoring Program

Multi-level citizen-based water quality monitoring programs include both lake and stream monitoring programs and were developed to accommodate the varied interests and time availability of citizens. Data collected by volunteers is integral to WDNR's monitoring programs and is used for assessments, trends analysis, and other management needs.

Water Action Volunteers – Citizen-Based Stream Monitoring

Baseline Monitoring:
The Baseline Monitoring level of WAV is designed to introduce citizens to the basics of stream monitoring and educate them about the waterbody type and the connection between land and water. Volunteers are trained to collect instantaneous temperature, dissolved oxygen, transparency, and streamflow during a once monthly visit to their site(s). Additionally, volunteers conduct the WDNR Qualitative Habitat Assessment once per season at the height of summer, and a biotic index macroinvertebrate assessment at least twice per season - once in the spring and again in the fall. Data for this type of monitoring is entered into the statewide Surface Water Integrated Monitoring System (SWIMS) Database. More information about the program can be found at:
http://watermonitoring.uwex.edu/wav/monitoring/index.html?_sm_au_=irVRQrHj3r1tF0WQ.

Special Projects Monitoring:
Water Action Volunteers participants have several opportunities to go above and beyond the Baseline Monitoring program. Special Projects volunteers follow protocols and attend additional trainings to collect data for DNR-driven data projects. This includes aquatic invasive species response monitoring, nutrient monitoring, and continuous temperature monitoring. These projects are generally triggered when there is a need for a response or specific data. More information on WAV Special Projects monitoring can be

found http://watermonitoring.uwex.edu/level2/stream.html and http://watermonitoring.uwex.edu/level3/index.html.

Citizen Lake Monitoring Network
Citizens that join the Citizen Lake Monitoring Network (CLMN, http://dnr.wi.gov/lakes/CLMN/) begin by monitoring Secchi depth, a measure of water clarity. This effort not only collects useful data, but also aims to educate people about the lake's water quality and its connection with the surrounding landscape. Approximately 900 lakes are monitored each year for Secchi depth, and the number of lakes monitored continues to increase.

A subset of volunteers that successfully monitor water clarity also monitor water chemistry. Approximately 550 lakes are sampled for total phosphorus and chlorophyll *a*, and 360 lakes for dissolved oxygen. Citizens are asked to follow a specific monitoring schedule, including specific times and locations for monitoring. CLMN has a quality assurance plan that includes collection of duplicate and blank water chemistry samples. Thus, CLMN data is stored in the department's water quality database (Surface Water Integrated Monitoring System). This data contributes to WDNR's assessments of water quality, long-term analyses of water quality trends over space and time and also contributes directly to lake management plans.

2.3 Assessment Methodology

The WDNR is responsible for conducting periodic assessments of the designated uses on individual waterbodies. Assessments result in a picture of the status of waterbodies, for reporting required by Section 305(b) of the Clean Water Act, as well as background information to evaluate listing impaired waterbodies for possible Total Maximum Daily Load (TMDL) work based on evidence of impairment and written documentation.

WDNR's priority is to create and use clearly defined, publicly accessible methods for collection and analysis of data to ensure defensible decisions regarding water quality. To this end, the WDNR created the *Wisconsin Consolidated Assessment and Listing Methodology* (WisCALM) (http://dnr.wi.gov/topic/surfacewater/assessments.html) to conduct general and specific assessments for determining the attainment of designated uses.

2.3.a Data Used for Assessment

Data submitted by the public and data collected through WDNR's monitoring program is used for assessments. The monitoring data used to make assessment decisions is stored in the Surface Water Integrated Monitoring System (SWIMS) and the Fisheries Database. Assessment data for the State's Integrated Report are stored in the State's Water Assessment, Tracking and Electronic Report System (WATERS). The public can view spatial (or GIS) data and written information about each waterbody using the WDNR's interactive mapping tool, the Surface Water Data Viewer (SWDV) (http://dnr.wi.gov/topic/SurfaceWater/swdv/) and the searchable water detail pages: http://WDNR.wi.gov/water/watersearch.aspx.

WDNR staff ensures all data used for assessments meet quality assurance requirements and data are representative of current conditions. Agencies and individuals submitting data for assessments must meet minimum data requirements and demonstrate that sample collection occurred at appropriate sites, during appropriate periods, and use certified laboratories for sample analysis. If the quality assurance procedures are not adequate, staff may use this data to initiate further investigations by Department staff. If quality assurance procedures are adequate, WDNR may use this data to assess the water for possible impairment listing.

WDNR may assist outside groups in the design and implementation of data quality procedures necessary for data to be used for assessments. Groups outside of WDNR who regularly collect and submit data to

WDNR may work with WDNR to upload data into the SWIMS database to be considered as part of our evaluation and assessment process.

As discussed in the previous section, WDNR supports a Citizen-Based Monitoring Program for rivers, streams, and lakes. As stated in the WDNR's *Water Monitoring Strategy for Wisconsin*, "If citizens follow defined methodology and quality assurance procedures, their data will be stored in a Department database and used in the same manner as any Department-collected data for status and trends monitoring defined in the Strategy." Citizen data are currently used for water quality assessments, including broad-scale statewide assessments and assessments against applicable water quality standards.

2.3.b General Condition Assessments

After waterbodies are classified according to their natural communities, two phases of assessment are conducted: (1) a "General Condition Assessment" to determine the overall quality of the waterbody and (2) an "Impairment Assessment" for those waters which may be degraded.

A general condition assessment can be done with biological and water quality metrics but is considered a 'general' assessment because there is insufficient data for a full impairment assessment. WDNR uses four levels of biological conditions to represent a water's placement in the overall water quality continuum:

- *Excellent*- Waters are considered to be fully supporting their assessed designated uses.
- *Good or Fair*- Waters are considered to be supporting their assessed designated uses.
- *Poor*- Waters may not support assessed designated use(s) but have been insufficient information for a decision at the impairment assessment level.

Waters meeting criteria for water quality metrics, which include temperature, total phosphorus, and chloride, are considered attain their assessed designated uses. Waters determined to be in poor condition or exceeding criteria based on a limited amount of monitoring data are further evaluated and may be selected for additional monitoring or, if the limited dataset includes overwhelming evidence of impairment (e.g. large magnitude of exceedance), might be considered for impairment listing based on best professional judgment.

2.3.c Impairment Assessments

In accordance with the requirements of Section 303(d) of the Clean Water Act, the WDNR updates biennially the list of waterbodies that are not meeting water quality standards and require the development of Total Maximum Daily Load (TMDL) studies to restore water quality. This list, also known as the "Impaired Waters List", is updated to reflect waters that are newly added or removed based on new information or changes in water quality status.

The assessment and listing process involves a high level of planning and cooperation among WDNR staff and partners. The goal of this effort is to use representative data and sound science to assess the condition of Wisconsin's surface waters. The following is a description of the five major steps that go into assessing our surface waters and developing the list.

1. The first step in developing the list is to determine the assessment methods. The methods guidance document (WisCALM) is prepared or refined biennially for each listing cycle. The guidance contains information on standards, data collection, data assessment requirements, and methodologies used to conduct an assessment.

2. The next step in identifying impaired waters involves collecting all of the monitoring data available for Wisconsin's surface water resources. WDNR provides an opportunity for the public to submit water quality datasets for inclusion in assessments. Data from citizen stream and lake monitoring networks are also incorporated.

3. WDNR scientists then analyze the quality-assured data for multiple parameters (e.g., fish, macroinvertebrates, and phosphorus) and complete draft assessments and identify potential impairments of a water's designated uses (e.g., recreation, fish and aquatic life). These draft assessments are then vetted internally by water resources staff statewide and may be updated based on the reviewers' local perspectives. In addition to identifying newly impaired waters, WDNR staff evaluates waters currently on the list for potential de-listing.

4. Once the draft list is compiled, WDNR holds informational public meetings to answer questions from the public about the listing process, the draft list and impaired waters in general. The draft list and request for comments is publicly noticed in a press release, posted on WDNR's website and emailed to contacts subscribed to receive notification of listing updates. Following the comment period, responses to comments are developed and the draft list is modified as necessary based on the comments received.

5. For the last step in this process, the final draft Impaired Waters List is provided to the EPA for approval. States are required to submit their final draft list to EPA by April 1, of even-numbered years.

2.4 Surface Water Assessment Results

EPA encourages the use of a five-category system for classifying all water bodies (or segments) within its boundaries regarding the waters' status in meeting the State's/Tribe's water quality standards (Table 2.0). The classification system is based on designated uses for reporting on water quality. Each waterbody is assigned a reporting category. All lakes, reservoirs, rivers and streams in the state are assigned one of five EPA categories that indicate the status of the waterbody. This relates to issues such as whether the waterbody is meeting its designated uses (i.e., whether or not it is impaired), and whether a TMDL or Alternative Project is needed or is in progress. The most recent *Water Quality Report to Congress* (i.e. Integrated Report) can be found at: http://dnr.wi.gov/topic/surfacewater/assessments.html.

Table 2.0 EPA Integrated Reporting Categories

Category/Subcategory	Description
Category 1	All designated uses are supported, no use is threatened.
Category 2	Available data and/or information indicate that some, but not all, designated uses are supported.
Category 3	There is insufficient available data and/or information to make a use support determination.
Category 4	Available data and/or information indicate that at least one designated use is not being supported or is threatened, but a TMDL is not needed.
Subcategory 4a	A State developed TMDL has been approved by USEPA or a TMDL has been established by USEPA for any segment-pollutant combination.
Subcategory 4b	Other required control measures are expected to result in the attainment of an applicable water quality standard in a reasonable period of time.
Subcategory 4c	The non-attainment of any applicable water quality standard for the segment is the result of pollution and is not caused by a pollutant.
Category 5	Available data and/or information indicate that at least one designated use is not being supported or is threatened, and a TMDL is needed.

Source: http://water.epa.gov/learn/training/standardsacademy/page7.cfm

WDNR has further refined subcategories. Category 5 (waters not meeting water quality standards and a TMDL is needed) subcategories distinguish among differing types of impaired waters and TMDL priorities. WDNR created 5B to identify waters impaired by mercury mainly from atmospheric sources. Within the last two assessment periods, WDNR has added additional subcategories under Category 5. These additional subcategories are defined in Table 2.1.

Table 2.1 WDNR's Integrated Reporting Subcategories for Impaired Waters Requiring TMDLs

Subcategory	Definition
Category 5A	Available information indicates that at least one designated use is not met or is threatened and/or the anti-degradation policy is not supported, and one or more TMDLs are still needed. This is the default category for impaired waters.
Category 5B	Available information indicates that atmospheric deposition of mercury has caused the impairment and no other sources have been identified.
Category 5C	Available information indicates that non-attainment of water quality standards may be caused by naturally occurring or irreversible human-induced conditions.
Category 5P	Available information indicates that the applicable total phosphorus criteria are exceeded; however, biological impairment has not been demonstrated (either because bioassessment shows no impairment or because bioassessment data are not available).
Category 5W	Available information indicates that water quality standards are not met; however, the development of a TMDL for the pollutant of concern is a low priority because the impaired water is included in a watershed area addressed by at least one of the following WDNR-approved watershed plans: adaptive management plan, adaptive management pilot project, lake management plan, or Clean Water Act Section 319-funded watershed plan (i.e., nine key elements plan).

Of the 7,027 waters assessed for impairment for the 2018 Integrated Report, 1,534 (22%) were found to not meet water quality standards and are included on the Impaired Waters List. Of the state's impaired waters, 205 (13%) have EPA-approved TMDLs (Category 4A). For those impaired waters still requiring TMDLs, 26 waters are categorized as impaired due to suspected naturally occurring sources of pollution (Category 5C), 177 (13%) are impaired due to atmospheric deposition of mercury only (Category 5B), 286 (22%) are impaired due to levels of phosphorus only (5P), and 897 (67%) waters are impaired due to other causes (5A).

2.4.a Overview of Statewide Waterbody Conditions

Only a portion of the state's waters can be monitored or assessed at any given time; below are assessment summaries for waterbody type groupings.

Lakes, Impoundments, Bays and Harbors
Of the 3,862 lakes, impoundments, bays and harbors assessed for the 2018 Integrated Report, 3,305 (86%) were found to be supporting all assessed designated uses (Category 2). Of the 557 waters that were not supporting at least one designated use, 539 still require TMDLs (Category 5) and 18 are addressed by EPA-approved TMDL studies (Category 4).

Beaches and Great Lakes Shoreline Waters
Of the 238 assessed beaches and Great Lakes shoreline waters, 201 were found to be supporting all assessed designated uses (Category 2). The remaining beaches were not supporting at least one designated use. TMDLs have not been developed for beaches for Great Lakes shoreline waters.

Rivers and Streams
Of the 2,927 river and stream segments assessed for the 2018 Integrated Report, 1,564 (53%) were found to be supporting all assessed designated uses (Category 2). Of the 1,363 waters that were not supporting at least one designated use, 1,178 still require TMDLs (Category 5) and 185 are addressed by EPA-approved TMDL studies (Category 4).

Wetlands
Despite the State's narrative criteria as defined in ch. NR 103, Wis. Adm. Code (*Water Quality Standards for Wetlands*), wetlands have not been assessed for impairment to date as part of WDNR's assessment process. Insufficient resources and personnel have restricted efforts towards creation of numeric water quality standards and are urgently needed to assess the state's 5.3+ million acres of wetlands for impairment to identify wetland enhancement, restoration, and other management activities needed as part of watershed planning and allow for access to funds currently only available for improvement of other surface waters, including 319 funding.

2.4.b Impaired Waters

Assessing waterbodies against water quality standards and identifying impaired waters that do not meet standards is part of the overarching federal Clean Water Act (CWA) framework for restoring impaired waters. Waters that do not meet their designated uses because of water quality standard violations are impaired. Waterbodies are removed from the list when new data indicates that water quality standards are attained.

The 2018 impaired waters list contains more than 1,940 pollutant/water listing combinations. The primary pollutant listings were total phosphorus, total suspended solids (sediment), and mercury, representing almost 75% of the current listings (see Figure 2.0).

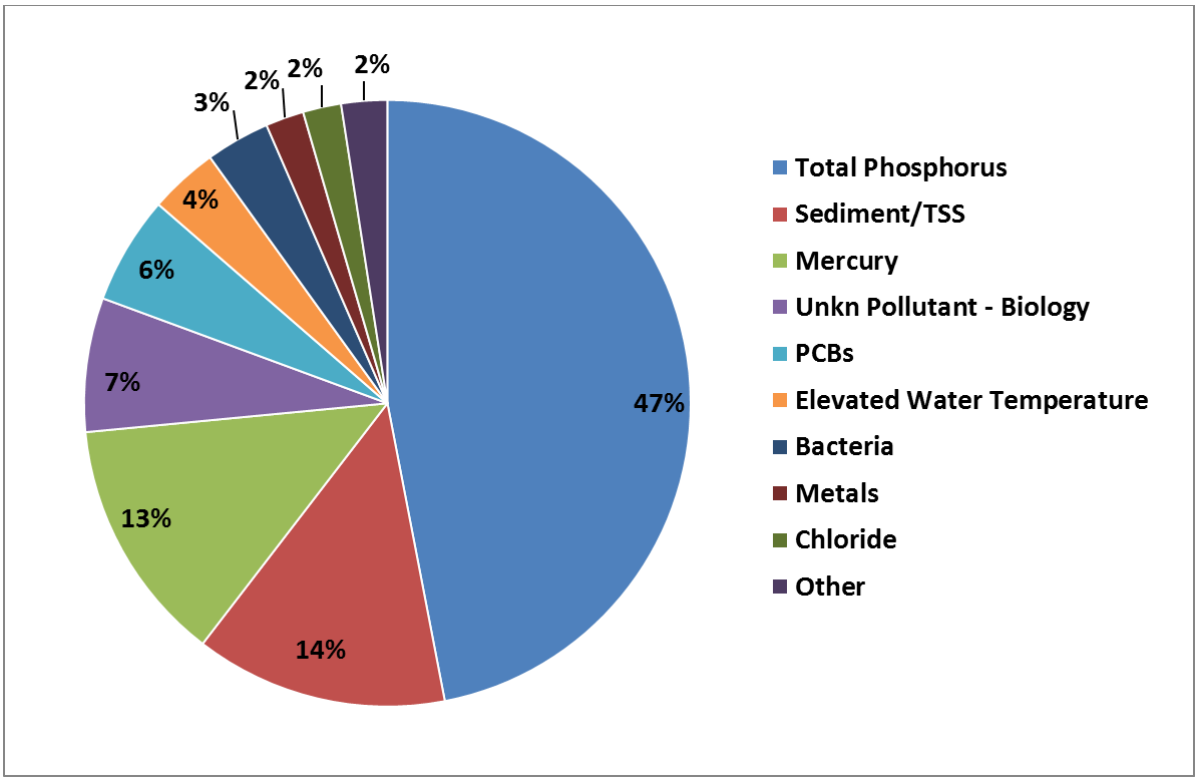


Figure 2.0. Causes of impairment (or pollutants) for waters included on Wisconsin's 2018 CWA Section 303(d) list of waters not meeting water quality standards.

A total of 289 pollutant/waterbody segment combinations (i.e. listings) were newly proposed for the draft 2018 list, of which 244 were for waterbody segments that have never been listed before. A majority of the new listings were based on exceedance of the total phosphorus criteria (n=208). A total of 29 listings were based on poor biological condition with unknown causes (i.e. pollutants).

The number of waterbodies newly listed was 283; while some of these waters had been listed previously for other impairments, 239 of these waters were never been listed before. There were 35 listings, one each in 35 waterbodies, proposed to be removed during the 2018 updates.

When a water is deemed impaired, the potential source(s) causing the impairment are identified. Knowing the impairment sources helps determine future monitoring needs and analyses best-suited for the development of restoration plans. Impairment sources currently assigned to impaired waters listings on the 2018 list are shown in Figure 2.1. ***Nonpoint source pollution is a source of impairment to approximately 75% of the impaired waters listings***. Considering that wetlands have not been assessed for impairment to date, this estimate may increase in the future. A description of impairment source categories assigned to impaired waters listings is provided below:

Atmospheric Deposition: This source category includes waters with fish consumption advisories (FCAs) caused by atmospheric deposition of mercury. Atmospheric deposition is currently only applicable to mercury and PCBs, but it could be identified as a source for other pollutants in the future.

Contaminated Sediment: Waters identified through various monitoring activities, sediment core analysis, and collection of fish tissue that exceed ambient water quality criteria for toxics as specified in ch. NR 105, Wis. Adm. Code. In addition, this may include waters where contaminated sediments contain pollutant concentrations that will cause "probable effects" in biological organisms based on guidelines outlined in the "Consensus-Based Sediment Quality Guidelines: Recommendations for Use and Application".

Physical Habitat: Waters where designated uses are not being met due to physical habitat degradation, including anthropogenic stream channel and flow alterations, such as a dam installation, stream channelization, bank erosion, and riparian zones disturbance.

Point Source Dominated: Waters are categorized as point source dominated when the impairment may be a result of a discharge from an existing point source. The Wisconsin Pollutant Discharge Elimination System (WPDES) Permit Program issues and evaluates permits for point sources to assure the attainment of standards at the time of permit issuance.

Nonpoint Source (NPS) Dominated: Waters in which the impairment is a result of nonpoint source runoff, including urban and agricultural stormwater runoff.

Nonpoint Source/Point Source Blend: Waters are placed in this category when impairments exist due to both point source contributions and nonpoint source runoff.

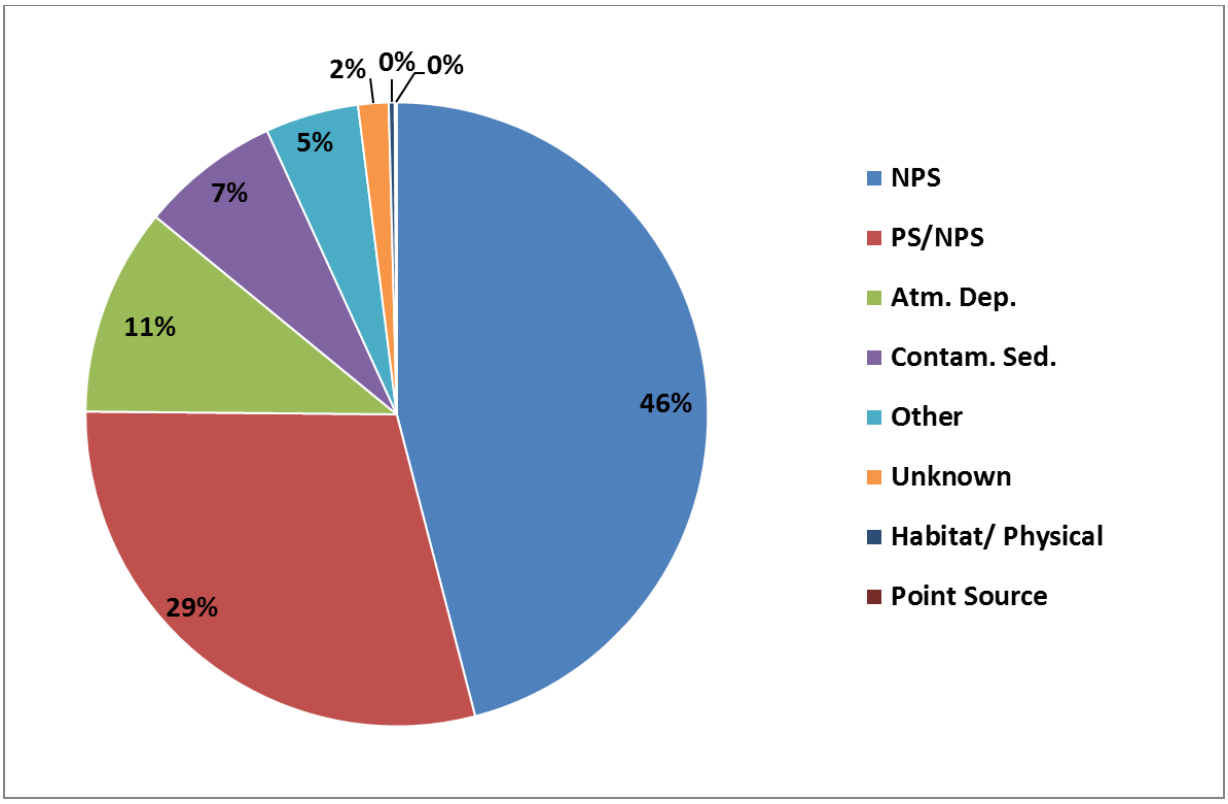


Figure 2.1. Impairment source categories for impaired waters listings included on the 2018 impaired waters list.

Impaired waters listings provide impetus for completing watershed restoration studies. Federal and state cost-share grants may be available to landowners for projects that address nonpoint sources of pollution, and some grants provide incentives for restoration of impaired waters. For certain grants, applicants with projects that help restore impaired waters have a greater chance of receiving funding; including funding from the USDA's Environmental Quality Incentives Program (EQIP) and WDNR's Targeted Runoff Management (TRM) Grant Program.

2.4.c Future Direction for Surface Water Assessment

The WisCALM guidance is updated for each assessment cycle (every other year) based on WDNR staff and external comments, taking into consideration newly available assessment tools, revised monitoring plans, including changes in the types and amounts of water quality data available, and completed or pending revisions to water quality standards.

Several revisions to future WisCALM guidance are being considered. WisCALM currently does not address aquatic life habitat impairments related to low flow/water levels or hydrologic impairment of wetlands (both by drainage or impoundment of excess water that artificially alter the hydroperiod of wetlands). Methods to assess fish and aquatic life use impairments due to low water level/stream flow or hydrologic impairment of wetlands may be developed by workgroups in the future. A workgroup incorporated flow/water level monitoring in the revised 2015 - 2020 *Water Monitoring Strategy* (https://dnr.wi.gov/topic/SurfaceWater/monitoring/strategy/Strategy_2015_2020.pdf). The agency is also beginning a pilot project to develop a process for characterizing the natural hydroperiod of various wetland types across the landscape, which may be a multi-decadal effort.

WisCALM currently does not include methods to assess stream primary producers (e.g., algae or aquatic plants), which could serve as additional biological indicators of eutrophication. Certain types of algae tend to have high dispersal rates and short generation times, making them well-suited to exhibiting rapid responses to stressors. Despite their infrequent use by state monitoring agencies, diatoms are widely recognized as valuable indicators of river, stream, and wetland water quality because they: 1) are relative simple to collect, 2) have short regeneration times so respond quickly to stressors, 3) respond directly to nutrients and can be a more stable indicator of tropic state than measurements of nutrient concentrations or algal biomass (e.g., chlorophyll *a*), 4) are ubiquitous, allowing for comparisons across geographic regions, and 5) have been shown to be sensitive to physical habitat impairments such as bank stability, channel dimensions and riparian canopy coverage, flow regime, and stream substrate composition (Hill et al. 2000).

The WDNR has developed a number of biological metrics to assess a waterbody's response to phosphorus concentrations. These focus on primary producers: aquatic plants, benthic algae, and suspended algae. Both qualitative (e.g., visual surveys and other rapid assessment methods) and quantitative (e.g., abundance of phosphorus-tolerant aquatic plant species, diatom metrics) assessment approaches have been developed and are being proposed as part of a rulemaking package currently underway.

In-stream suspended sediment and siltation and downstream sedimentation are common impairments to the designated uses of Wisconsin's surface waters. Approximately an eighth of the Section 303(d) impairment listings to date are sediment-related (e.g., legacy sediment, turbidity, or TSS). More than three-quarters of these listings are degraded habitat impairments with TSS listed as a "cause" of impairment. These habitat impairments were evaluated for listing on a case-by-case basis based on professional judgment. Assessment methods, including listing/delisting thresholds for TSS and/or habitat metrics like stream substrate size and embeddedness, would improve upon our consistency and transparency in sediment-related impairment assessments. Establishing assessment thresholds for TSS would also provide targets for watershed restoration efforts, including TMDLs and nine key element plans.

Quantitative and qualitative habitat assessment protocols are currently used during baseline monitoring. Historically, this stream physical habitat information was evaluated using biologists' best professional judgment for impairment listing decisions. Over 250 stream impairment listings are attributed to "degraded habitat." WDNR may begin work to develop listing/delisting thresholds for specific stream habitat metrics and/or overall habitat scores; these thresholds should be incorporated in WisCALM to guide impairment listing and delisting decisions.

Cyanobacterial toxin and cell density criteria and/or guidance was identified as a topic for consideration through the current Triennial Standards Review (2018-2020). The U.S. EPA has developed draft recreational water quality criteria for the cyanobacterial toxins microcystin and cylindrospermopsin which states may use for swimming advisories or recreational criteria for waterbody impairment. The WDNR will be considering these options for adoption by rule when U.S. EPA's recommendations are finalized.

The lack of lakeshore habitat assessment methods is a significant gap in our current WisCALM. WDNR is currently exploring the National Lake Assessment (NLA) habitat data, as well as supplemental habitat data from an additional 100 lakes statewide and evaluating the use of the NLA lakeshore riparian and shallow water habitat metrics for use in Wisconsin. Identifying thresholds for impairment assessment may be difficult in the southwestern part of the state (i.e. Temperate Plains), where data from fewer reference lakes is available. More habitat data from this area may be needed to develop statewide assessment tools.

The WDNR recently developed an aquatic plant assessment tool for lakes called the "Macrophyte Assessment of Condition" (MAC) and a related version tailored to assessment of phosphorus response called MAC-P. These tools assess the relative abundance of tolerant, moderately tolerant, and sensitive plants to determine the condition of the aquatic plant community. The WDNR expects to incorporate these tools into its assessments on a regular basis and has proposed them for inclusion in the rule packages currently underway.

WISCALM currently has no standards for assessing wetland impairment because no numeric standards for wetlands currently exist. However, wetlands exist across the state that are undoubtedly impaired to due anthropogenic factors such as hydrologic manipulation, NPS pollution, and many other causes, but most of these factors have not been quantifiable in nature due to the state of the science, lack of funding, and lack of personnel with contemporary wetland ecosystem ecology expertise. To correct this gap, the department has pursued a variety of applied research efforts (as incrementally able through EPA Wetland Program Development Grants) over the past two decades to create Level 1, Level 2, and Level 3 methods of wetland monitoring and assessment (https://www.epa.gov/wetlands/wetlands-monitoring-and-assessment) that may eventually aid in creation of numeric wetland water quality standards and WisCALM criteria over the next decade. These tools and methods may be used to evaluate or estimate the physical (hydrologic), biological, and chemical condition of wetlands or estimate the current and past ecosystem services provided by current and past/lost (e.g. drained, farmed) wetlands. Additionally, these tools may also provide the opportunity to explore wetland-related watershed metrics as potential criteria for other surface waters, as wetlands can provide important water quality improvement and habitat functions for these waters when these functions are not exhausted/altered due to anthropogenic disturbance. A non-exhaustive list of these applicable wetland monitoring and assessment methods, noting some also in development, includes:

Level 1:

- Wetlands by Design/Wetlands and Watersheds Explorer (www.wetlandsbydesign.org)
- Integrated Surface Water Layer

Level 2:

- Wisconsin Wetland Rapid Assessment Methodology of Function and Condition v.2 (WRAM v.2)

Level 3:

- Wetland Floristic Quality Assessment (WFQA) Methodology for Wisconsin.

2.5 Condition of the Groundwater Resource

2.5.a Overview of Statewide Groundwater Conditions

Wisconsin's groundwater resource has significant quality and quantity issues throughout Wisconsin. The specific nature of the concern varies greatly depending on land uses, soil depth, geological formations and water demand. The major surface water nonpoint source issues which may have a groundwater contribution are primarily in the areas of pesticide, nitrate, and microbial contamination.

The condition of the groundwater in relation to these three nonpoint source contaminants are:

Pesticides: Pesticide contamination in groundwater results from field applications, pesticide spills, misuse, or improper storage and disposal. Pesticide metabolites are related chemical compounds that form when the parent pesticide compounds break down in the soil and groundwater. The most commonly detected pesticide compounds in Wisconsin groundwater are atrazine and metabolites of atrazine, alachlor, and metolachlor.

In 2011, WDATCP reported on the results of its *2010 Survey of Weed Management Practices in Wisconsin's Atrazine Prohibition Areas (PA)*. The main purpose of this survey was to identify differences in herbicide use and other weed control practices inside and outside of Wisconsin's atrazine prohibition areas. Survey results suggest that although many corn growers would like the option to use atrazine in a prohibition area, they have adapted to growing corn without it. Half of the respondents indicated that they do not find it more difficult to control weeds in a PA without atrazine.

The WDATCP pesticide database contains test results from nearly 13,000 wells tested with the

immunoassay screen for atrazine and over 5,500 wells tested by the full gas chromatography method. In 2013, WDATCP produced a map showing locations and atrazine levels of private drinking water wells tested for atrazine in the state. The immunoassay screen results showed that about 40 percent of private wells tested have atrazine detections, while about 1 percent of wells contained atrazine over the groundwater enforcement standard of 3 µg/L. The approximately 5,500 wells tested by full gas chromatography showed detectable levels of atrazine in about 38% of the wells and levels over the enforcement standard in about 8% of the wells. The enforcement standard for atrazine includes atrazine and three of its metabolites.

Nitrate: Nitrate is Wisconsin's most widespread groundwater contaminant and is increasing in extent and severity. Nitrate levels in groundwater above 2 milligrams per liter (mg/L) indicate a source of contamination, such as agricultural or turf fertilizers, animal waste, septic systems, or wastewater. While nitrogen is an essential plant nutrient, high concentrations of nitrate-nitrogen in groundwater lead to public health concerns. Approximately 90% of total nitrate inputs into our groundwater originate from agricultural sources.

Approximately 284 public water supply systems (mostly systems like mobile home parks, restaurants and taverns) exceeded the nitrate drinking water standard of 10 mg/L in 2018 requiring them to post notices, provide bottled water, replace wells, install treatment, or take other corrective actions. Concentrations of nitrate in private water wells have also been found to exceed the standard. A 2017 DATCP survey estimated that 8% of private wells exceeded the 10 mg/L enforcement standard for nitrate. GCC member agencies are working on multiple initiatives related to reducing the risk of high nitrate levels in groundwater and drinking water.

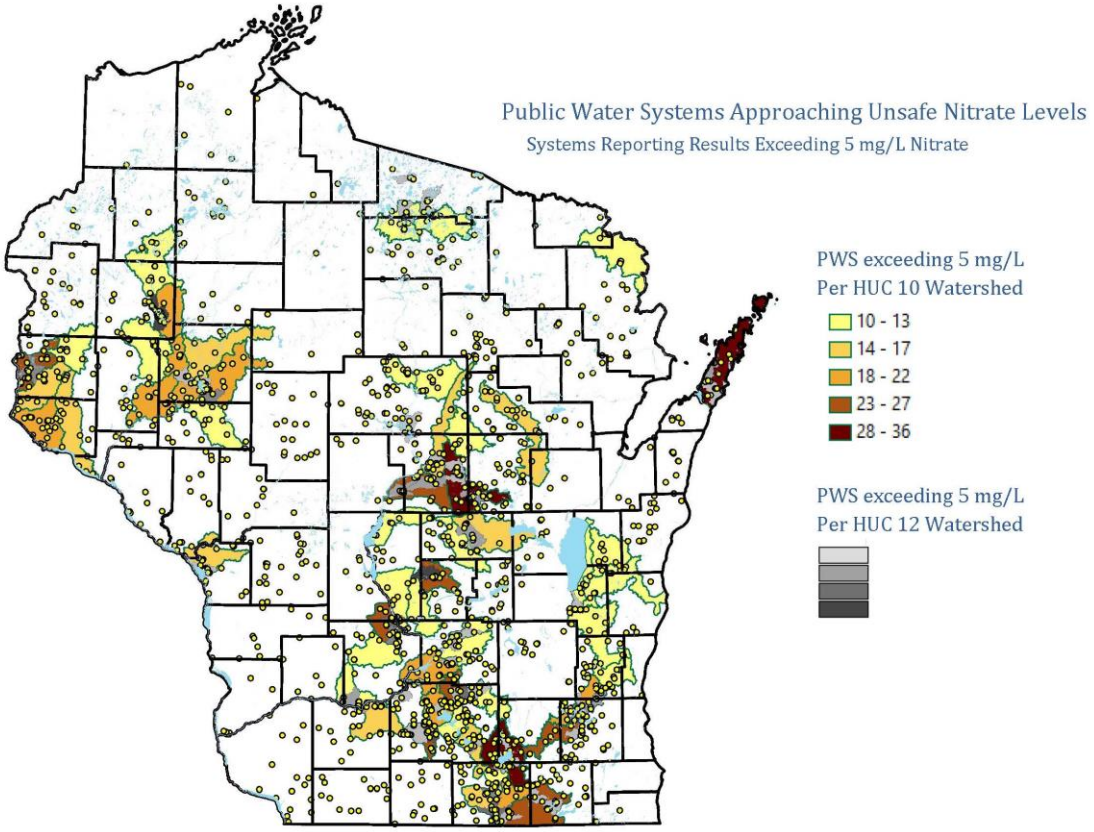


Figure 2.2 Public Water Systems Approaching Unsafe Nitrate Levels

Bacteria, viruses and other pathogens: Bacteria, viruses, and other pathogens often occur in areas where the depth to groundwater is shallow, in areas where soils are thin, or in areas of fractured bedrock. These agents can cause acute illness and result in lifethreatening conditions for young children, the elderly, and those with chronic illnesses. In one assessment (Warzecha et.al., 1994), approximately 23% of private well water samples statewide tested positive for total coliform bacteria, an indicator species of other biological agents. Approximately 3% of these wells tested positive for E. coli, an indicator of water borne disease that originates in the mammalian intestinal tract.

Viruses in groundwater are increasingly a concern as new analytical techniques have detected viral material in private wells and public water supplies. Research conducted at the Marshfield Clinic indicates that 4-12% of private wells contain detectible viruses. Other studies showed virus presence in four La Crosse municipal wells, in the municipal wells in Madison, and in five shallow municipal wells serving smaller communities.

Public and private water samples are not regularly analyzed for viruses due to the high cost of the tests. The presence of coliform bacteria has historically been used to indicate the water supply is not safe for human consumption. However, recent findings show that coliform bacteria do not always correlate with the presence of enteric viruses.

Groundwater Quality Data
Groundwater data may also be used to compliment surface water assessments and to identify groundwater impacted by nonpoint source pollution. Monitoring results for the state's 11,360 public water systems can be viewed through the Public Drinking Water System Data (https://dnr.wi.gov/dwsviewer). Information on private wells and groundwater quality is available through the Groundwater Retrieval Network (https://dnr.wi.gov/topic/Groundwater/grn.html). Information can also be found through the University of Wisconsin at Stevens Point Center for Watershed Science and Education. The center maintains a groundwater quality viewer which is available to the public. (https://www.uwsp.edu/cnr-ap/watershed/Pages/WellWaterViewer.aspx).

Groundwater Quantity
Groundwater is abundant in Wisconsin and available in sufficient amounts throughout most of Wisconsin to provide adequate water supplies for most municipal, industrial, agricultural and domestic uses. However, groundwater pumping can lower water levels in an aquifer and in certain settings reduce groundwater discharge to surface water bodies connected to the aquifer.

Studies, including the 2017 Little Plover River groundwater model in central Wisconsin, indicate that groundwater withdrawals have the ability to reduce streamflow. The degree to which groundwater withdrawals influence surface water stage can be site-specific and further studies are underway to understand the role of water withdrawals on lake levels. This issue differs from the large regional drawdown issues in the northeast and southeast, where water level declines are mainly in the confined or semi-confined systems that are not well connected to surface waters.

Private Well Monitoring by County Health and Land Conservation Departments
Several county health departments or county land conservation departments are conducting private well monitoring programs. Studies of private well water quality have been conducted in the northeast, the southwest and the central sands portions of the state. Results from a study of the occurrence of bacteria and viruses and nitrate have been used by county planners to create groundwater vulnerability assessments. Private well monitoring conducted by county programs may be used in 9 Key Element plans.

2.5.b Future Direction for Groundwater Protection

The Wisconsin Groundwater Coordinating Council (GCC) (http://dnr.wi.gov/org/water/dwg/gcc/) is an interagency group that is directed by s. 15.347(13)(g), Wis. Stats., to assist state agencies in the

coordination and exchange of information related to groundwater programs. The GCC identifies recommendations for future groundwater protection and management needs. These recommendations include top priorities of immediate concern, ongoing efforts that require continued support, and emerging issues that will need to be addressed in the near future.

Priority Recommendations:

- Evaluate the occurrence of viruses and other pathogens in groundwater and groundwater-sourced water supplies and develop appropriate response tools.

- Implement practices that protect groundwater from nitrate and other agricultural contaminants (microbial agents, pesticides and their degradates). Nitrate that approaches and exceeds unsafe levels in drinking water is one of the top drinking water contaminants in Wisconsin, posing an acute risk to infants and women who are pregnant, a possible risk to the developing fetus during very early stages of pregnancy, and a chronic risk of serious disease in adults. In addition, pesticides are estimated to be present in approximately 40% of private drinking water wells in Wisconsin. Areas of the state with a higher intensity of agriculture generally have higher frequencies of detections of pesticides and nitrate. Agencies should develop and evaluate a strategy to promote practices that lead to efficient use of nitrogen and careful or reduced use of pesticides in order to protect drinking water sources. Implementation of these practices should be supported with appropriate technical tools and incentives such as:

    - Identifying sensitive areas of the state based on geology where elevated nitrate is present
    - Implement nitrate initiative pilot recommendations, including developing a nitrate fertilizer decision support tool for nutrient management protective of groundwater quality
    - Developing soil type specific nitrogen nutrient land application rates and cropping best management practices that minimize nitrogen losses to groundwater
    - Encouraging the use of soil type specific nitrogen nutrient land application rates and cropping best management practices, developed to minimize nitrogen losses to groundwater in identified sensitive areas of the state
    - Developing educational materials for farmers and Nutrient Management Planners that identify specific alternate cropping and nutrient management practices that could be voluntarily implemented to minimize agricultural nitrogen losses to groundwater
    - Assess the role of N in HAB formation in Wisconsin lakes and Great Lakes bays (identify which lakes would most benefit from N reduction in the watershed); other aquatic ecosystem effects of N
    - Estimate current N loading from various sources (point, agriculture non-point, septic systems, land application, urban stormwater, groundwater baseflow, etc.) to Upper Mississippi River, Great Lakes, in-state surface waters, groundwater—develop "pie charts";
    - Evaluate consistency in nutrient management recommendations (e.g., land application rates) between CAFO, municipal biosolids and agricultural non-point source programs.
    - Identify the suite of BMPs most effective for reducing N loss to groundwater and surface water.
    - Update information on the cost to communities, small business well owners and individuals for well replacement and drinking water treatment to reduce nitrate; compile information on economic impact of harmful algal blooms on drinking water treatment and recreation
    - Analyze WPDES effluent data to identify major contributing sectors (POTW, industrial, air-pollution control devices, etc.
    - Research potential treatment systems available to WPDES permittees and a cost estimate / range
    - Identify healthy "ground" watersheds and develop incentives for maintaining the water quality of these areas.
    - Include groundwater quality as in forestry management
    - Evaluate impacts of climate change and how large precipitation events could impact shallow aquifers (i.e. faster recharger deeper into the water table). Evaluate and determine if deeper casing is required in certain parts of the state.

  - Include nitrate as a standard parameter for all stream monitoring programs/projects/studies. Determine the contribution of groundwater to stream water flow (base flow dominant streams vs surface runoff)
  - Conduct outreach and educational programs to health care providers to encourage them to learn more about health issues related to private wells

- Support the sustainable management of groundwater quantity and quality in the state to ensure that water is available to be used which will protect and improve our health, economy, and environment now and into the future. This includes:

  - Supporting an inventory of information on the location, quantity, and uses of the state's groundwater
  - Supporting targeted research and modeling on the impact of groundwater withdrawals on other waters of the state
  - Supporting proactive regional groundwater planning in areas with limited groundwater resources where increased groundwater use and development/population growth pressures are leading to water availability and sustainability issues

Ongoing Recommendations

- Support implementation of the *Statewide Groundwater Monitoring Strategy*. Chapter 160 of the Wisconsin Statutes requires the WDNR to work with other agencies and the GCC to develop and operate a system for monitoring and sampling groundwater to determine whether harmful substances are present (s. 160.27, Wis. Stats.). The strategy has been incorporated into the WDNR Water Monitoring Strategy, but needs are constantly evolving as new problems emerge. For example, food processors, homeowners, municipalities, and well drilling contractors need more information about the origin and extent of naturally occurring contaminants such as arsenic, other heavy metals, acidic conditions, sulfate, total dissolved solids, radium and uranium. Wisconsin should improve the accessibility of current data and continue to encourage research efforts that will provide information for addressing these issues. State agencies, the university, and federal and local partners should continue to implement and modify this strategy to efficiently meet monitoring objectives.

- Continue to catalog Wisconsin's groundwater resources.

- Continue to support applied groundwater research.

Emerging Issues

- **Industrial sand mining.** Since 2010, unprecedented growth of the frac sand mining and processing industry has occurred in West-Central Wisconsin and is expected to grow for another decade. The potential impact of this industry on groundwater resources has not been comprehensively evaluated, which would be the first step to avoid problems and plan for restoration.
- **Metallic mining.** Lead, zinc, iron and copper deposits exist around Wisconsin. These deposits may be mined in the future and are located in sparsely-populated regions where background information on groundwater resources are often incomplete. The state should support background data collection and groundwater assessments so that future decisions about potential mining operations can be made most efficiently.
- **Livestock industry expansion.** Since 2010, many animal feeding operations that house thousands of animals have been sited or proposed in Wisconsin. These operations require large quantities of groundwater and must also land spread large amounts of animal waste. Wisconsin agencies should develop better tools for measuring water quality and quantity impacts in and around these operations to evaluate the need for establishing tighter conditions on future permits for similar operations.

- **Effects of extreme weather.** More prolonged drought or heat waves can **i**ncrease groundwater demand at the same time as reducing supply. Groundwater quality may be affected by large fluctuations in water table elevation that can occur with extreme weather. More severe flooding can affect groundwater quality, wells and water system operations. Public drinking water supplies as well as water-dependent industries need reliable estimates of these effects in order to develop practical emergency response and adaptation strategies. To understand and predict the impact of these changes on the state's groundwater, agencies should develop the data and provide analyses of likely scenarios for quantity and quality of Wisconsin's groundwater supply.

2.6 Prioritization of Impaired & Unimpaired Waters/Watersheds

NPS pollution continues to dominate water quality impairments in Wisconsin. However, Wisconsin's NPS Program is committed to balancing the restoration of impaired waters with the protection of unimpaired/high quality waters, since a significant portion of the state's current and previously assessed waters meet water quality standards. And although NPS control funding needs far exceed the federal, state, and local resources available, Wisconsin will continue to address NPS pollution by leveraging various state and federal resources, supporting networks of community-based actions on a watershed scale, and developing statewide regulatory and non-regulatory programs. These NPS implementation efforts are described in more detail in Chapter 4. It is critical that NPS planning (discussed in Chapter 3) and implementation be strategically focused on priority waters and watersheds that will make the best use of limited, available resources to meet water quality goals and help Wisconsin achieve its NPS Program goals outlined in Chapter 5.

Wisconsin is fortunate to have multiple assessment and prioritization tools to assist in the selection of priority waters and watersheds for strategically targeting restoration and protection. These tools will inform the allocation of Section 319 funding and other funding sources, water quality monitoring, nine key element planning, and core NPS implementation activities:

Nutrient Reduction Strategy

Wisconsin's Nutrient Reduction Strategy is a broad overview of nutrient management activities for both point sources and nonpoint sources in Wisconsin. The strategy was developed in response to the Gulf HypoxiaAction Plan 2008 call for each state in the Mississippi River Basin to develop a strategy by 2013 to reduce the amount of phosphorus and nitrogen carried in rivers from the state to address the biological "dead zone" in Gulf of Mexico. It was also developed in response to the call from the EPA for states to develop frameworks for nutrient reduction as outlined in the March 2011 memo from Nancy Stoner, Acting Assistant Administrator for Water. Wisconsin's strategy was also developed to meet intra-state needs for Wisconsin's lakes and streams and groundwater.

Maps (included in the subsequent pages) and lists of high priority "top group" HUC 10 watersheds, comprising about 10 percent of the state's watersheds, were developed for the Mississippi River Basin and Lake Michigan Basin for phosphorus and nitrogen to surface waters and for nitrates in public drinking water wells. Refer to the WDNR's website at: http://dnr.wi.gov/topic/surfacewater/nutrientstrategy.html for the names and associated Hydrologic Unit Codes (HUCs) for the top group watersheds.

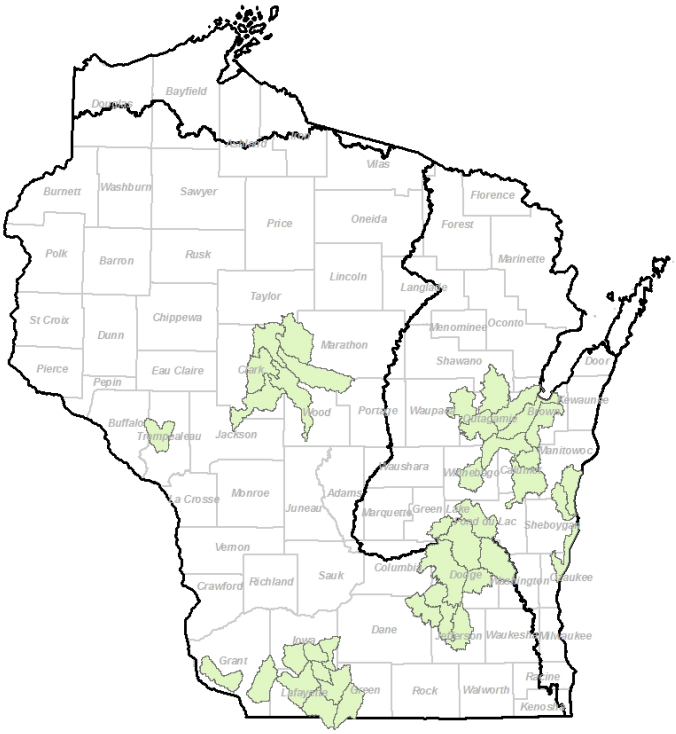


Figure 2.3 Nutrient Reduction Strategy Top Group Watersheds for Phosphorus

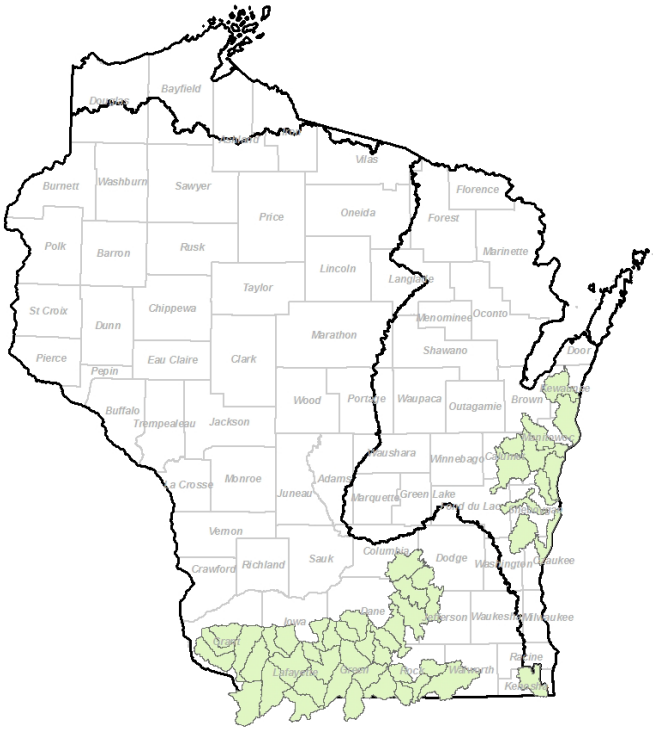


Figure 2.4 Nutrient Reduction Strategy Top Group Watersheds for Nitrogen

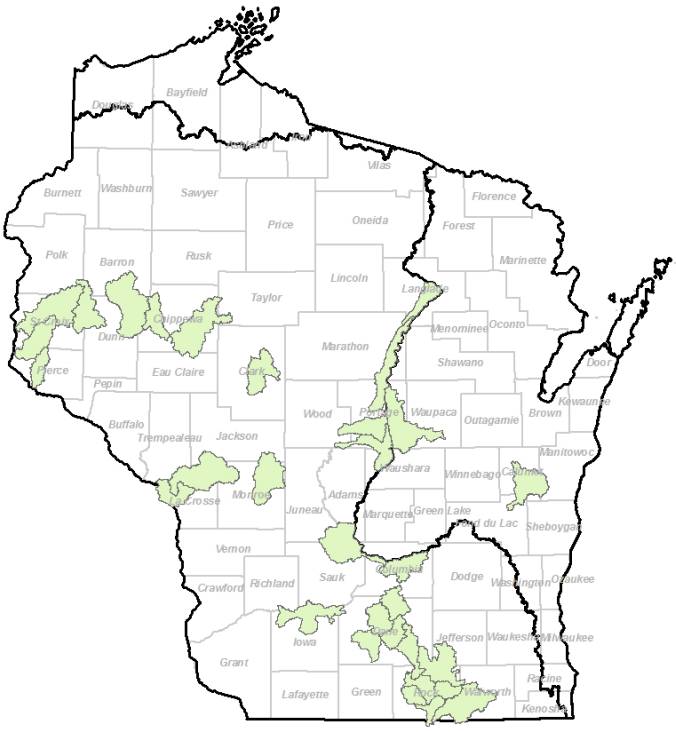


Figure 2.5 Nutrient Reduction Strategy Top Group Safe Drinking Water - Nitrates

Wisconsin Integrated Assessment of Watershed Health

In 2013, WDNR partnered with EPA to develop a model-based assessment tool, titled the "Wisconsin Integrated Assessment of Watershed Health", for all the watersheds in the state. This tool, more commonly referred to as the "Healthy Watersheds Assessment", ranks each watershed based on many aspects of watershed condition, including water quality, hydrology, habitat, and biological condition. The assessment results are a modeled prediction of both overall watershed health and vulnerability, which are presented in a series of maps and ranking scores. The assessment is available at: http://dnr.wi.gov/topic/watersheds/hwa.html.

The results should be used in a comparative sense: a watershed's rank indicates how it scored when compared to all other watersheds in the state. The ranking scores are not, by themselves, an indication of whether a watershed's overall health is "good" or "bad", or meets certain thresholds. Rather, the results are best used as a broad-level screening tool to compare watersheds to one another and begin targeting appropriate locations for monitoring and management actions.

The Aquatic Ecosystem Health Assessment is made up of four main categories: Hydrologic Condition, Habitat Condition/Geomorphology, Water Quality and Biological Condition. Within these categories are a variety of metrics.

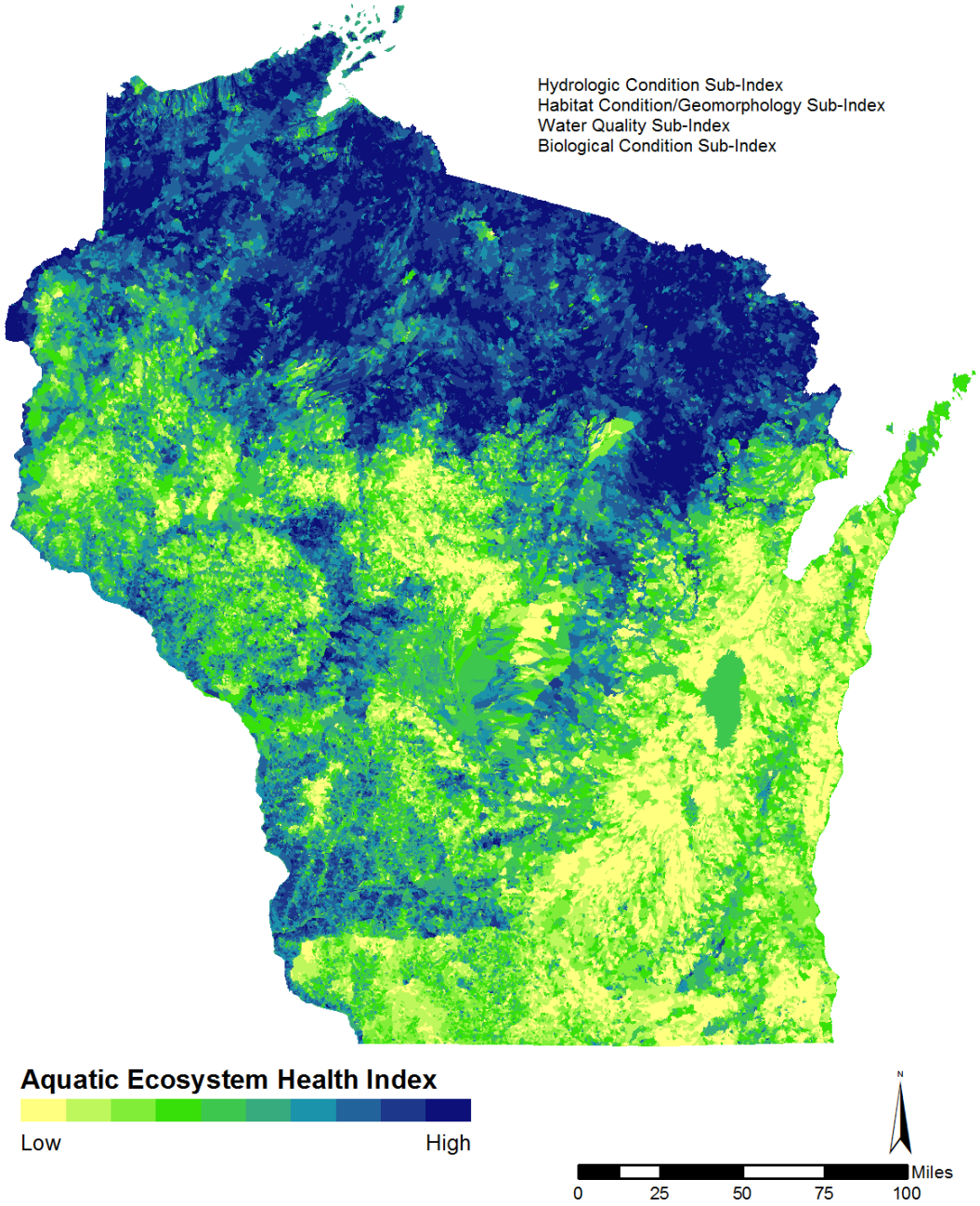


Figure 2.6 Healthy Watersheds Assessment – Aquatic Ecosystem Health Index

The Watershed Vulnerability Assessment is made up of three main categories: Climate Change, Land Use Change, and Water Use.

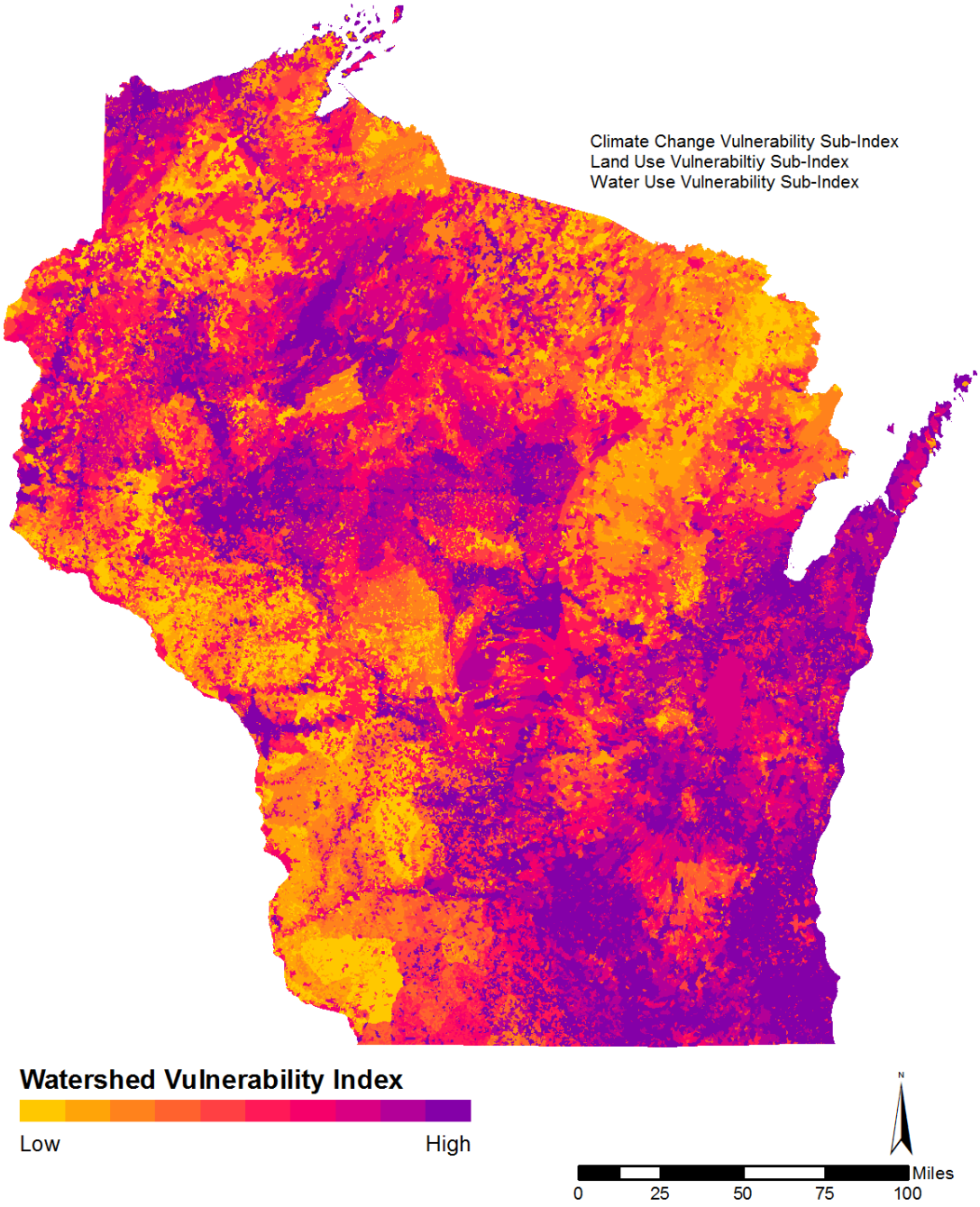


Figure 2.7 Healthy Watersheds Assessment – Watershed Vulnerability Index

One of the most powerful ways to use these rankings as a screening-level tool is to overlay the "Health" scores with the "Vulnerability" scores.

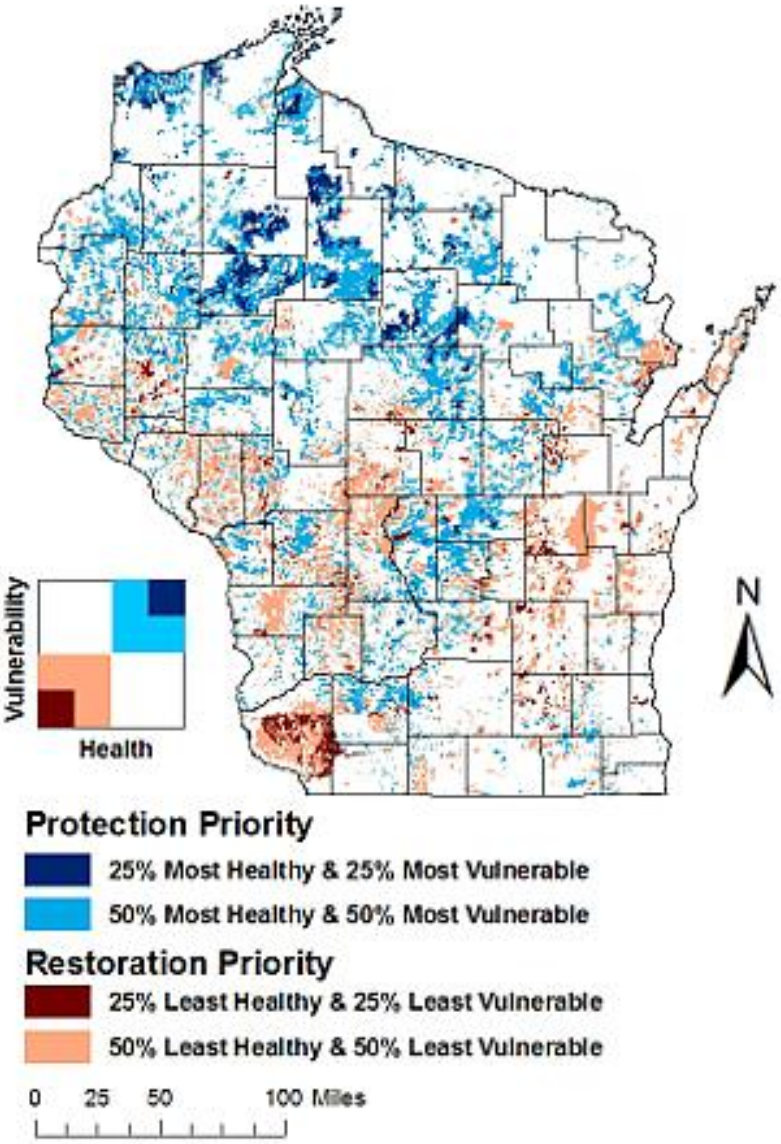


Figure 2.8 Health & Vulnerability Overlay

This helps pinpoint two useful things:

- Those watersheds that are **most healthy** but also **most vulnerable** to future degradation, shown in blue on the map. These are watersheds that could be considered for **protection priorities**, to prevent future degradation and maintain their high quality.

- Those watersheds that are **less healthy** but are **not very vulnerable** to future degradation, shown in reddish brown on the map. These watersheds may be more stable over time, so restoration actions taken here may have a better chance at maintenance and success into the future. These watersheds could be considered for **restoration priorities**.

The types of protection or restoration that might be most appropriate for each watershed can be explored by viewing the individual metric scores for the watersheds, which will help predict what the problem issues may be. This screening-level exercise should be followed by discussion with local experts who are familiar with the actual land uses and condition of the watershed.

303(d) Vision & Goals

In December 2013 EPA published "A Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program", which included goals that are directly tied to or hinge on the involvement and integration with State NPS Programs under Section 319 of the Clean Water Act:

> ***303(d) Goal Statement "Prioritization":*** *For the 2016 integrated reporting cycle and beyond, States review, systematically prioritize, and report watersheds or waters for restoration and protection in their biennial integrated reports to facilitate State strategic planning for achieving water quality goals.*
>
> ***303(d) Goal Statement "Protection":*** *For the 2016 reporting cycle and beyond, in addition to the traditional TMDL development priorities and schedules for waters in need of restoration, States identify protection planning priorities and approaches along with schedules to help prevent impairments in healthy waters, in a manner consistent with each State's systematic prioritization.*
>
> ***303(d) Goal Statement "Integration":*** *By 2016, EPA and the States identify and coordinate implementation of key point source and nonpoint source control actions that foster effective integration across CWA programs, other statutory programs, and the water quality efforts of other Federal departments and agencies to achieve the water quality goals of the state.*

Additionally, in the April 2013 revised Section 319 grant guidelines, EPA emphasized the importance of integration and collaboration with the 303(d) Program to more effectively implement the load allocations of TMDLs to address nonpoint source pollution and restore impaired waters. Specifically, the Section 319 grant guidelines state, "EPA encourages states to coordinate their Clean Water Act TMDL, Section 106, and Section 319 Programs to align priorities and leverage resources available for assessment, planning, and implementation of water quality restoration projects."

To meet the 303(d) Prioritization goal, the WDNR developed "Wisconsin's Water Quality Restoration and Protection Prioritization Framework" (Final Draft July 27, 2015) that factors in the Nutrient Reduction Strategy, the Healthy Watersheds Assessment, TMDL areas, and areas with nine key element watershed-based plans. The framework covers priorities through 2022. In 2020, DNR will begin planning efforts for the next prioritization period, which will likely cover 2022 through 2030.

The framework takes a 2-level approach to prioritization, which includes:

Level 1 Priority – Ongoing restoration planning. Level 1 priority areas were identified as areas where TMDLs are currently in development for pollutants of concern. On previous impaired waters lists (2014 list and prior), these waters were also assigned high priority for TMDL development. Two large-scale watershed projects, the Wisconsin River TMDL Project and the Upper Fox and Wolf Rivers TMDL Project, are underway that will address the priority pollutants of TP and TSS in all Level 1 priority areas.

Continuation and completion of these ongoing restoration planning efforts remains a high priority for WDNR.

Level 2 Priority – Future restoration planning. The primary mechanism for identifying additional priority areas (watersheds) was the use of modeling tools to identify areas with predicted poor ecological health or high phosphorus yields and instream concentrations. The Wisconsin Healthy Watersheds Assessment (HWA) that was conducted, in part, through the US EPA's Healthy Watersheds Initiative identified watersheds that were designated Level 2 priority areas for the development of TP and TSS restoration plans. In addition to the priority areas identified using the HWA datasets, top group phosphorus priority areas from Wisconsin's Nutrient Strategy were incorporated as Level 2 priority areas for the development of restoration plans addressing sources of phosphorus.

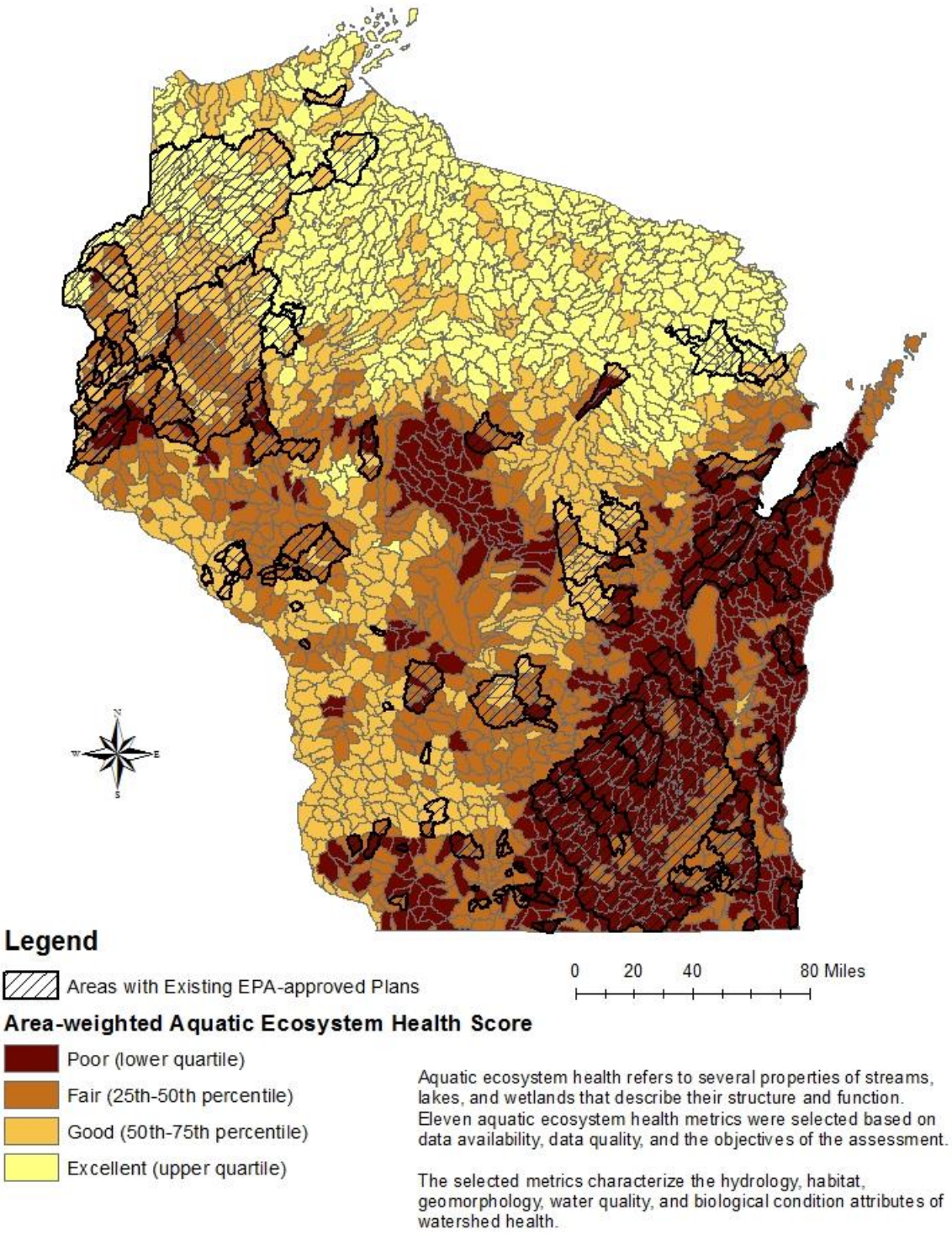


Figure 2.9: Healthy Watersheds Assessment Ecosystem Health Index scores and existing water quality restoration or protection plans.

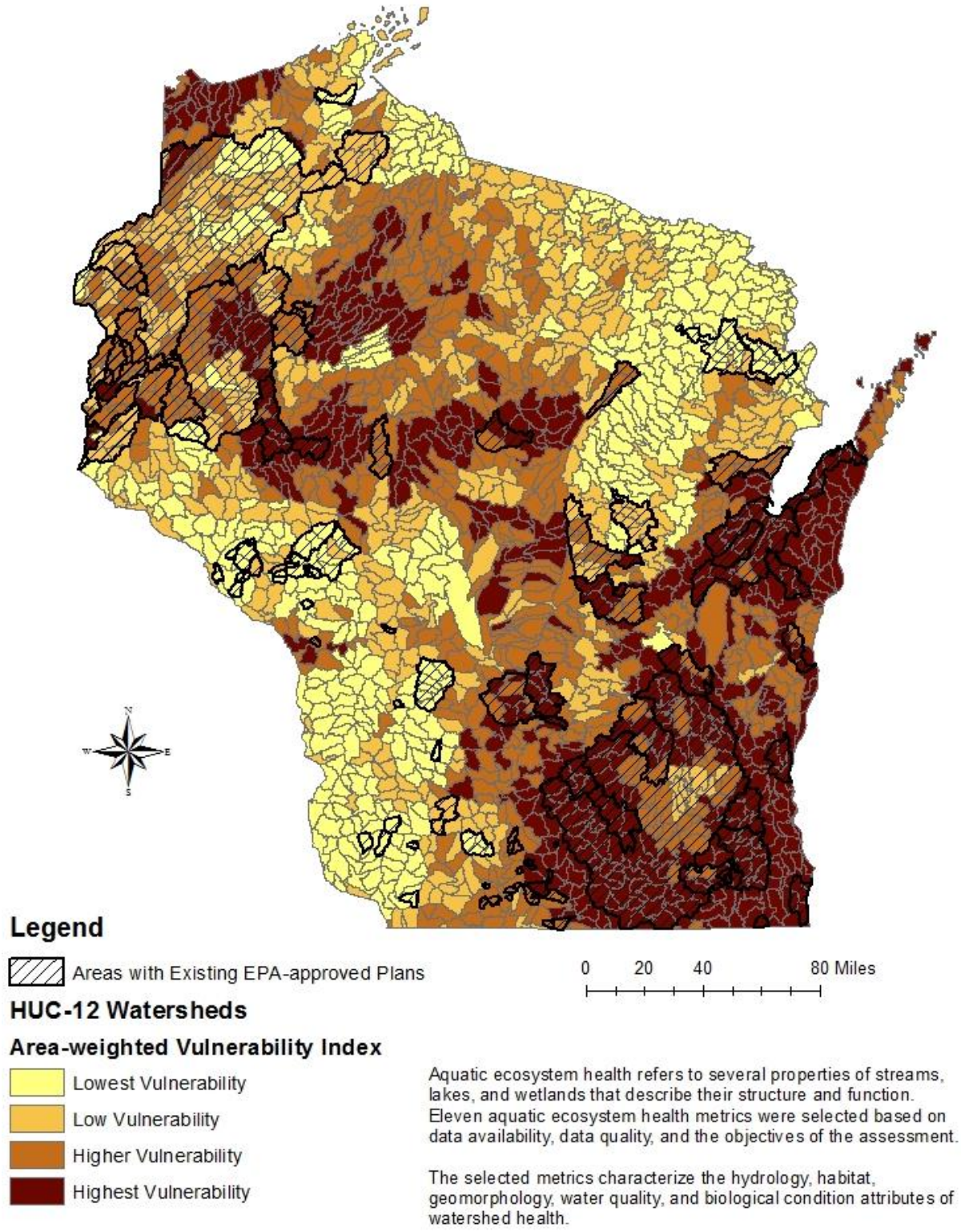


Figure 2.10: Healthy Watersheds Assessment Vulnerability Index scores and existing water quality restoration or protection plans.

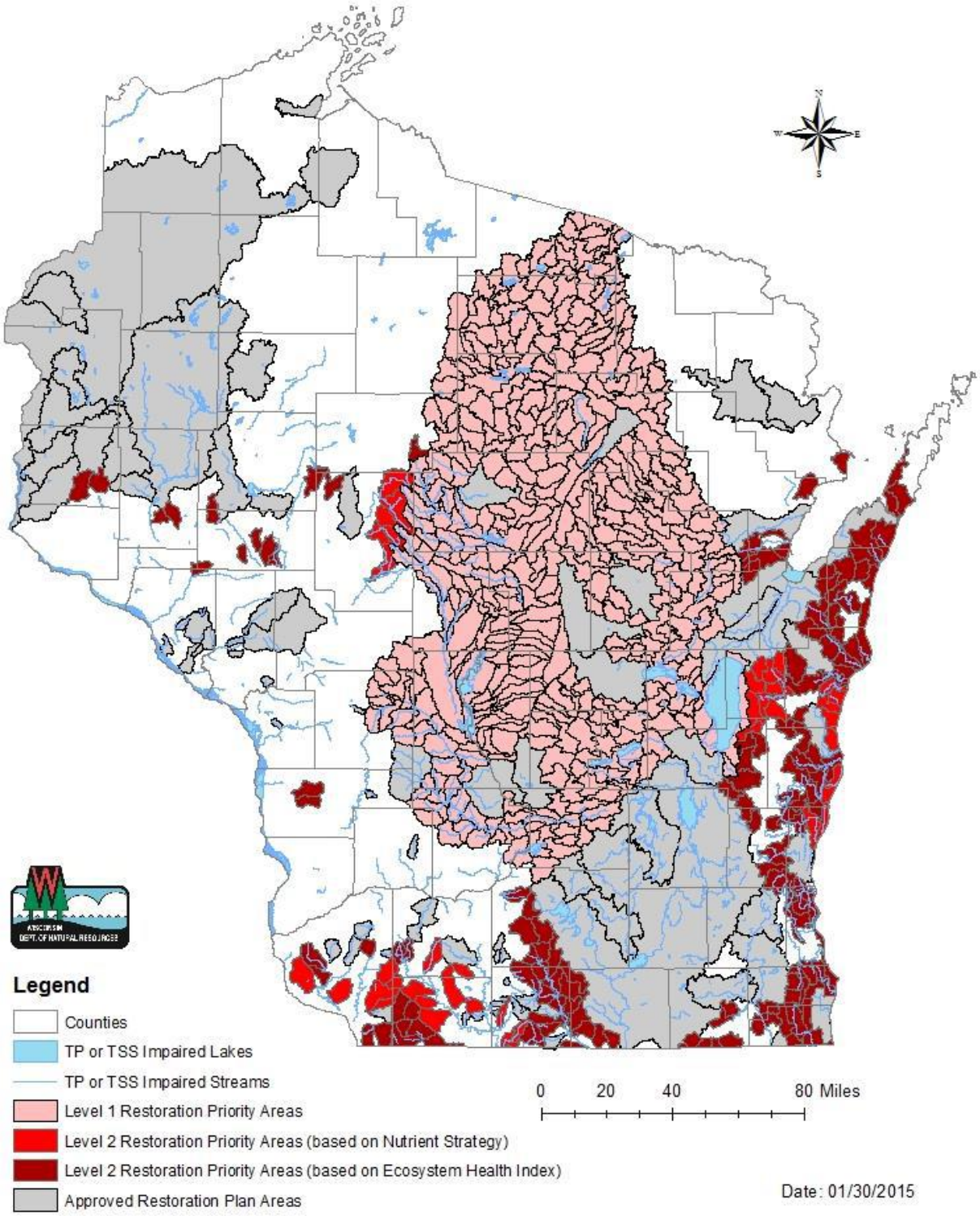


Figure 2.11: Level 1 and 2 water quality restoration priority areas (HUC-12 watersheds) and existing water quality restoration or protection plans.

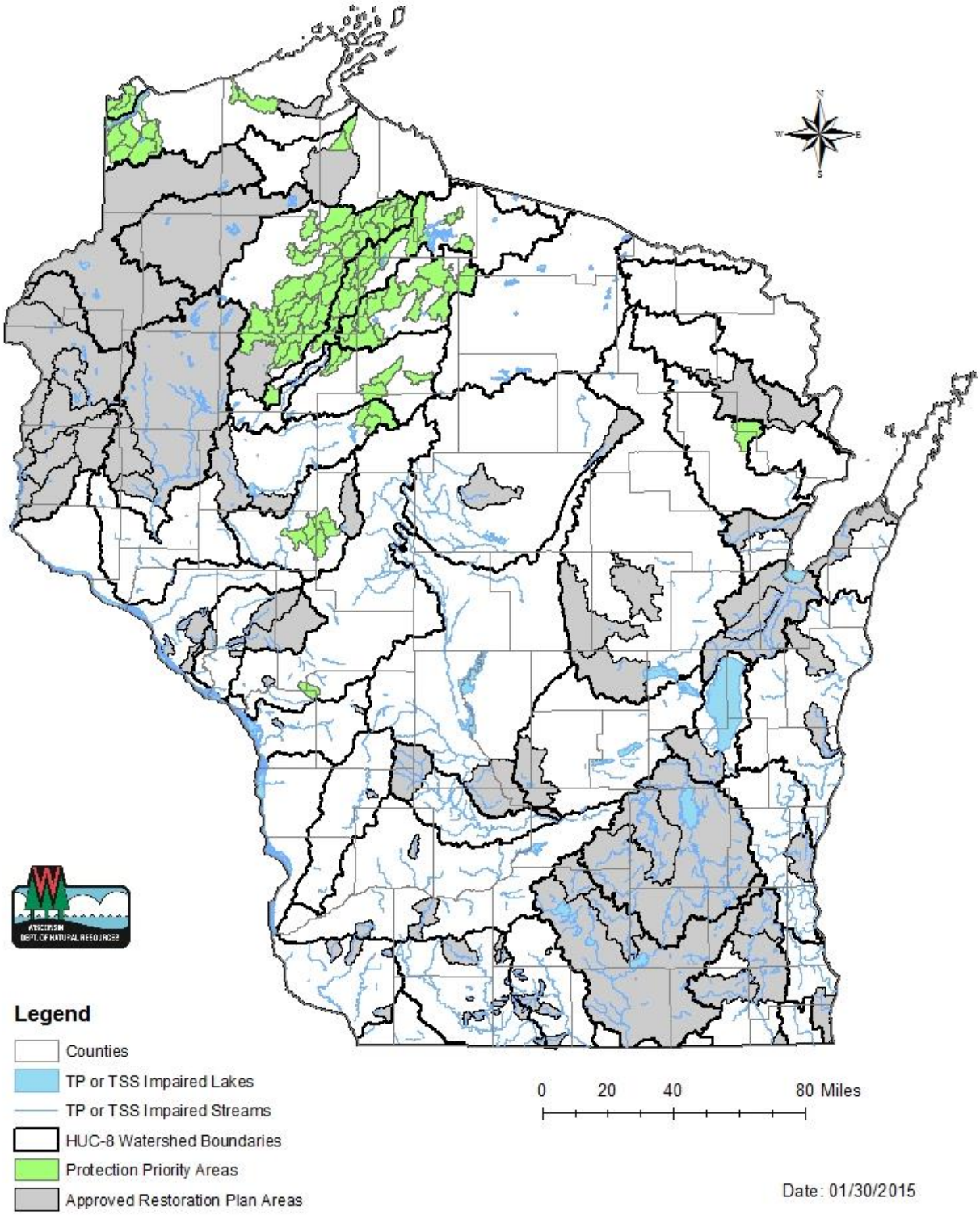


Figure 2.12: Water quality protection priority areas (HUC-12 watersheds) and existing water quality restoration or protection plans.

Additional Factors to Consider for Prioritization

While existing assessments and tools provide a good starting point for prioritization of waters and watersheds, additional factors may be considered to appropriately target resources for restoration and protection efforts, including:

- value of the watershed or groundwater area to the public;
- likelihood of achieving demonstrable environmental results;
- implementability (site-specific technical feasibility);
- adequacy of existing water quality monitoring data or future monitoring commitments;
- extent of partnerships with federal, state, and local agencies, local public and private agencies/organizations and other stakeholders to coordinate resources and actions;
- availability and access of funding sources; and
- readiness to proceed among stakeholders and project partners.

CHAPTER 3: Watershed Planning for Nonpoint Source Pollution Control

Introduction

Watershed planning is an important aspect of NPS pollution control. Wisconsin's statutes and administrative codes provide for areawide water quality management planning, as well as watershed planning for nonpoint source pollution control. The purpose of this chapter is to identify the current, overall water quality planning framework in Wisconsin, ongoing enhancements to that framework for continued NPS pollution control, and how the different levels of planning interact and influence each other.

3.1 Nonpoint Source Planning in Wisconsin

Watershed planning is an iterative process of data collection and analysis, problem identification, goal-setting, strategy development and implementation, and evaluation. This process requires meaningful participation from watershed stakeholders and can be the overarching management tool for achieving watershed goals found within Wisconsin's County Land and Water Resource Management Plans, Total Maximum Daily Loads, Lake Management Plans and Groundwater/Source water protection plans. During or after monitoring and assessment of surface or groundwater within a watershed area is complete and priorities for protection or restoration have been set, watershed planning helps sets the stage for implementation.

3.1.a Section 319 Requirements for Watershed-Based Plans

EPA developed revised guidelines for states' implementation of nonpoint source management programs under Section 319 of the Clean Water Act. The April 12, 2013 guidance (available at: http://water.epa.gov/polwaste/nps/upload/319-guidelines-fy14.pdf) specifies that watershed-based plans to protect and restore waters must be consistent with the "Minimum Elements of a Watershed-Based Plan" (commonly referred to as the "nine key elements") and are required for all projects implemented with Section 319 "Watershed Project" funds. Beginning in FFY 2015, the following information must be included in watershed-based plans to protect and restore waters impacted by nonpoint source pollution using Watershed Project funds:

1. Identification of causes of impairment and pollutant sources or groups of similar sources that need to be controlled to achieve needed load reductions, and any other goals identified in the watershed plan. Sources that need to be controlled should be identified at the significant subcategory level along with estimates of the extent to which they are present in the watershed (e.g., X number of dairy cattle feedlots needing upgrading, including a rough estimate of the number of cattle per facility; Y acres of row crops needing improved nutrient management or sediment control; or Z linear miles of eroded streambank needing remediation).

2. An estimate of the load reductions expected from management measures.

3. A description of the nonpoint source management measures that will need to be implemented to achieve load reductions in element b, and a description of the critical areas in which those measures will be needed to implement this plan.

4. Estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon to implement this plan.

5. An information and education component used to enhance public understanding of the plan and encourage their early and continued participation in selecting, designing, and implementing the nonpoint source management measures that will be implemented.

6. Schedule for implementing the nonpoint source management measures identified in this plan that is reasonably expeditious.

7. A description of interim measurable milestones for determining whether nonpoint source management measures or other control actions are being implemented.

8. A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made toward attaining water quality standards.

9. A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under element 8.

In addition, EPA's April 2013 guidance (pages 35-38) also recommends criteria for development of Alternative Watershed-Based Plans. Alternative plans are not required to meet all 9 Key Elements and may become more common within Wisconsin, over time; they are described in more detail below.

3.1.b Nine Key Element Watershed Planning in Wisconsin

Between 1979 and 2009, the WDNR developed watershed-based nonpoint source control plans under the Priority Watershed & Priority Lake (PWS) Program. This program provided financial assistance to local units of government in selected watersheds to address land management activities which contributed to urban and rural runoff. The WDNR issued grants for the implementation of watershed and lake projects through a cost-share approach. The grantees used the funds to reimburse costs to landowners for installing BMPs to reduce nonpoint source pollution.

In 1997, the Wisconsin legislature significantly changed the direction of the state's NPS Program. The 1997 Wisconsin Act 27 placed the PWS Program into a multi-year phase-out period. Funding for ongoing watershed and lake projects continued through 2009.

Chapter NR 120, Wis. Adm. Code, contains the language that governed the PWS program. Ch. NR 120, Wis. Adm. Code, stated that each priority watershed project must have a watershed plan, an assessment of the watershed, a detailed plan for implementation, and a project evaluation plan. After approval of the PWS plan for implementation, the plan was approved as a revision to the areawide water quality management plan for the appropriate basin. As of 2019, all of the eighty-six projects completed the required 10-year operation and maintenance period following project closure, and the plans are no longer active (unless they are subsequently updated).

The WDNR has transitioned from Priority Watershed/Lake Plans to the development of other nine key element watershed-based plans, including TMDL implementation plans, to address nonpoint source impaired waters and provide reasonable assurance. The state's existing NPS planning framework is evolving within the sideboards of not only limited nonpoint staff and financial resources, but also the following trends:

- Wisconsin adopting numeric surface water quality criteria for phosphorus;
- Increased monitoring and assessment of surface waters for total phosphorus impairment and associated aquatic biology/habitat via targeted watershed assessments;
- Development of large-scale, comprehensive TMDLs (i.e. HUC-8 watersheds; focus on phosphorus and sediment reductions for both local streams and downstream lakes/reservoirs)
- Increased documentation of groundwater/drinking water sources from bacteria and nitrate contamination across Wisconsin counties with shallow bedrock or sandy soils;
- Multiple nine key element plans within TMDL watersheds (with dominant agricultural land use) showing a need to adopt and maintain multiple agricultural cropland practices over a majority of agricultural acres in a watershed in order to meet TMDL-based reductions and meet water quality standards;

- Wisconsin's current agricultural performance standards for phosphorus loss from cropland (for both non-CAFO and CAFO facilities) not reflecting TMDL findings and reduction goals;
- Legacy pollutant sources within many agricultural dominated watersheds (generated decades ago by NPS pollution sources) masking the ability to measure pollutant reductions and show progress towards implementing TMDLs and nine key element plans;
- Limited ability to verify implementation of nutrient management plans and associated agricultural cropland performance standards across the state.

These limitations and trends present ongoing challenges to adequately address current NPS planning needs, to meet federal funding and Clean Water Act mandates, and for the development and implementation of nine key element plans. There are and will continue to be very limited WDNR staff or funding available to develop nine key element plans.

The WDNR continues to, as staff and financial resources allow, to:

- Develop watershed-based nonpoint source control plans;
- Develop watershed-based TMDL implementation plans for nonpoint source impaired waters,
- Meet Section 319 grant requirements;
- Meet TMDL reasonable assurance requirements;
- Incorporate groundwater and/or drinking water concerns;
- Incorporate wetland concerns;
- Provide additional nonpoint source information for Areawide Water Quality Management Plan (AWQMP) updates; and
- Encourage and support 3rd party development of plans.

In doing so, the WDNR integrates and aligns NPS implementation planning with the AWQMP process, described in Section 3.3, to prevent redundant planning efforts. Federal and state law (ch. NR 121, Wis. Adm. Code) requires that NPS analyses and solutions and impaired waters lists and TMDL plans are elements of the state's AWQMP. The existing AWQMP updates already make water quality recommendations related to NPS pollution and TMDLs. WDNR has modified its AWQMP Program to accommodate fewer staff, moving to online, dynamically-generated "watershed plans" from databases. The WDNR is also evaluating ways to align NPS planning with other Departmental planning efforts to improve and increase the state's ability to generate Section 319-eligible plans.

TMDLs & TMDL Implementation Planning

When a waterbody in Wisconsin does not meet water quality standards, as described in Sections 2.3 and 2.4, it is listed as an impaired water, as required by Section 303(d) of the Clean Water Act. The pollutants and impairment affecting these waters are addressed through the process of the developing a Total Maximum Daily Load (TMDL) calculation, which identifies the amount of the offending pollutant that the waterbody can assimilate and still meet water quality standards.

TMDL = Wasteload Allocation (WLA) + Load Allocation (LA) + Margin of Safety (MOS)

The WLA is the total allowable pollutant load from point sources (i.e. municipal and industrial wastewater facilities, CAFO production areas, and MS4s). The LA is the load assigned to nonpoint sources (i.e. agricultural runoff, non-regulated urban areas). The MOS is the margin of safety which accounts for uncertainty in modeling watershed pollutant loads. Future growth is accounted for between the WLA and the LA as TMDLs are updated.

To establish the TMDL, goals are defined using numeric water quality standards or applicable water quality targets based on narrative water quality standards. Water quality monitoring determines current pollutant loads to the waterbody. Sources of the pollutants are determined through working with county land conservation departments, agricultural producers, certified crop advisors, non-governmental organizations and natural resource consulting firms to assist with or complete watershed land use

inventories, and some water quality monitoring and modeling. Modeling watershed conditions and calibrating the model results with water quality data (flow and concentration) helps accurately determine the existing pollutant load and the target load to calculate the load reduction from pollutant sources in a watershed.

A TMDL is both the calculation and a descriptive term for the report that presents the analyzed water quality, pollutant source loads, and land use information to the public and affected parties. TMDL reports describe the analysis methodology, how load reductions were derived, and both general and specific recommendations regarding from which sources (point, nonpoint, in-lake, etc.) the necessary load reductions will come to meet water quality standards. TMDLs involve a public process, including a minimum 30-day public comment period. Once comments are addressed, the TMDL report is approved by the State of Wisconsin and the U.S. EPA. Once approved by the U.S. EPA, the load allocation goals are automatically amended into the current state *NPS Program Management Plan* WDNR Objective WQ3 in Chapter 5.

State and EPA-approved TMDLs are available on the WDNR website at: http://dnr.wi.gov/topic/tmdls/.

With that said, TMDLs do not provide additional regulatory authority or additional staff or financial resources to reduce nonpoint sources of pollution. Existing authority and resources to address nonpoint pollution sources must be used and incorporated into a TMDL implementation plan. A TMDL implementation plan is a document, guided by the TMDL analysis that provides actions needed to achieve load reductions, outlines a schedule of those actions, and specifies monitoring needed to document actions and progress toward meeting water quality standards. An implementation plan provides a framework for stakeholders to use to reach the pollutant reduction goals established in the TMDL. Wisconsin's TMDL implementation planning process advocates for TMDL implementation plans to be developed to meet the Section 319 Program's "nine key elements" for watershed-based plans, thereby providing a common framework for multiple efforts/stakeholders within a watershed.

When TMDL implementation plans are completed and approved as consistent with the nine key elements, they are automatically amended to this Management Plan and added to WDNR's official nine key element plan website at: http://dnr.wi.gov/topic/nonpoint/9keyelementplans.html.

The WDNR considers County Land Conservation Departments (LCD), as well as certified crop advisers (CCA), due to their knowledge, skills, connections and services they provide to local landowners and producers, to be critical stakeholders for TMDL implementation. However, many LCDs face the ongoing challenges of limited staff and financial resources, which restrict their ability to effectively implement TMDLs. Accordingly, TMDL implementation efforts involving NPS pollution control will need to be maintained over time and will extend beyond this 5-year management plan.

Other Planning Efforts that May Produce Nine Key Element Plans

Land & Water Resource Management Plans

The Land and Water Resource Management (LWRM) Planning Program, administered by WDATCP, is the primary statewide vehicle for targeting and implementing conservation practices to conserve soil and water resources. The plans advance land and water conservation and, when implemented consistently within specific watersheds, can help reduce or prevent NPS pollution by:

- Inventorying water quality and soil erosion conditions in the county.
- Identifying relevant state and local regulations, and any inconsistencies between them.
- Setting water quality goals for specific watershed or waterbodies, in consultation with the WDNR.
- Identifying key water quality and soil erosion problems, and practices to address those problems.
- Identifying priority farm areas using a range of criteria (e.g., impaired waters, manure management, high nutrient applications).
- Identifying strategies to promote voluntary compliance with statewide performance standards and

prohibitions, including information, cost-sharing, and technical assistance.
- Identifying enforcement procedures, including notice and appeal procedures.
- Including a multi-year workplan to achieve soil and water conservation objectives.
- Including an assessment of groundwater resources and concerns.
- Including an implementation strategy for Wisconsin's agricultural performance standards and prohibitions.

WDATCP approves plans for up to 10 years after consulting with WDNR nonpoint source, TMDL project management, and water quality monitoring/assessment staff. LWRM plans for many of Wisconsin's 72 counties can be found on county web sites. As LWRM plans expire every 10 years, WDNR staff assist with updating the plans to reflect current number and extent of pollutant impaired waters, TMDLs within their county, and set goals and objectives, as staff and financial resources allow, to implement TMDLs. The LWRM Planning Program is discussed in more detail in Section 4.3.

As stated earlier, County LCD staff are often critical stakeholders in the development and implementation of TMDLs and other comprehensive watershed management plans that address water quality impairments for surface waters and, to some extent, groundwater/drinking water sources. LCD staff and financial resources continue to remain limited within many counties, which restricts their ability to implement LWRM plans or develop or implement nine key element plans. WDNR NPS Program staff will continue to offer assistance to interested counties for the development and implementation of nine key element plans and/or alternative watershed plans.

In 2014, however, section ATCP 50.12, Wis. Adm. Code, was revised to include the nine key elements as required content for LWRM plans, where the necessary data is available to counties. WDNR and WDATCP will coordinate activities to facilitate the development of nine key element plans as part of the LWRM plan revision/update process. When county LWRM plans are updated to be consistent with the nine key elements within specific watersheds and approved as such, they will be automatically amended to this Management Plan, as well as added to WDNR's official nine key element plan website at: http://dnr.wi.gov/topic/nonpoint/9keyelementplans.html.

Lake Management Plans

The State encourages using science and community-based goal setting processes to direct the protection and restoration of lake ecosystems and watershed health. Reports and lake management plans are often written for lakes with water quality impairments or threats caused by NPS pollution. Whether a lake community's goals are to protect, manage, or restore lake health, planning is a key first step before taking action. Lake management planning assistance result in:

- Collection of chemical, biological, physical and sociological data about lake ecosystems
- Identification and evaluation of the problems effecting lakes
- Citizen involvement in developing realistic expectations and appropriate lake management goals
- Effective management strategies that are suited to a lake's ecology and watershed conditions
- Better economic and environmental outcomes

With a holistic view of lake ecology and surrounding factors that are affecting lake health, communities can choose effective strategies that will prevent or solve lake problems, rather than merely applying temporary band-aids. Lake management plans serve as a gateway for funding and the collaboration of resources to implement activities that will help protect or restore lakes, which may include revising such plans to reflect the nine key elements and TMDLs. Plans are developed with the assistance of private consultants, county land and water staff and sometimes regional planning commissions with guidance from regional DNR staff. Information from the plans are captured electronically and used for statewide water quality assessments and federal reporting, impaired waters determinations and listing and for TMDL development.

When lake management plans are completed and approved as nine key element plans, they will be automatically amended to this Management Plan, as well as added to WDNR's official nine key element plan website at: http://dnr.wi.gov/topic/nonpoint/9keyelementplans.html.

Alternatives to Nine Key Element Plans

EPA's April 2013 guidance has recognized several cases where alternatives to nine element plans may provide an effective approach toward achieving the water quality goals of Section 319-funded restoration or protection efforts. EPA's April 2013 guidance (pages 35-38) outlines the elements required in alternative plans and the circumstances under which alternative plans may be accepted, including those pertaining to:

(1) responding to an urgent public health risk or NPS pollution emergency,
(2) protection of high quality and/or unimpaired waters), and
(3) when impairment is not specific to a pollutant.

Items 1-3 above are applicable to Wisconsin and are part of this 5-year management plan. Item 1 is most applicable to Wisconsin, given the extent of areas with demonstrated nitrate or bacterial contamination of groundwater/drinking water supplies from nonpoint sources. Alternative plans may be used in watersheds with no impaired surface waters to reduce these ongoing groundwater pollution problems that pose a public health risk.

For alternative plans, a subset of EPA's nine key elements applies and will be used to develop the plans. The applicable elements are listed in the table below.

Nine Key Element	EPA 2013 Alternative Plan Criteria
1. Identification of causes of impairment and pollutant sources or groups of similar sources that need to be controlled to achieve needed load reductions, and any other goals identified in the watershed plan. Sources that need to be controlled should be identified at the significant subcategory level along with estimates of the extent to which they are present in the watershed.	Watershed project goal(s) and explanation of how the proposed project will achieve or make advancements towards achieving water quality goals.
2. An estimate of the load reductions expected from management measures.	Watershed project goal(s) and explanation of how the proposed project will achieve or make advancements towards achieving water quality goals.
3. A description of the nonpoint source management measures that will need to be implemented to achieve the plan's load reductions, and a description of the critical areas in which those measures will be needed to implement this plan.	Proposed management measures, including a description of operation and maintenance requirements and explanation of how the measures will effectively address the NPS impairment identified above.
6. Schedule for implementing the nonpoint source management measures identified in this plan.	Schedule to guide project implementation.
7. A description of interim measurable milestones for determining whether nonpoint source management measures or other control actions are being implemented.	Milestones to guide project implementation.

9. A monitoring component to evaluate the effectiveness of the implementation efforts over time.	Water quality results monitoring component, including description of process and measures (e.g., water quality parameters, stream flow metrics, biological indicators) to gauge project success.

3.2 Tools for Developing and Implementing Nine Key Element & Alternative Plans

A variety of surface water quality models and web or GIS-based tools are available to watershed planners and NPS implementation stakeholders to predict the levels, distribution, and risks of NPS pollution in a given waterbody and watershed. Each model or tool has its own set of characteristics and requirements. Watershed planners/stakeholders should review the documentation and consider its strengths, limitations, and data requirements prior to application. Some of the tools that may be useful in the development of 9 key element plans and the targeting of NPS pollution control activities include:

Erosion Vulnerability Assessment for Agricultural Lands (EVAAL)

The WDNR Bureau of Water Quality has developed the Erosion Vulnerability Assessment for Agricultural Lands (EVAAL) toolset to assist watershed managers in prioritizing areas within a watershed which may be vulnerable to water erosion (and thus increased nutrient export) and thus may contribute to downstream surface water quality problems. It evaluates locations of relative vulnerability to sheet, rill and gully erosion using information about topography, soils, rainfall and land cover. This tool enables watershed managers to prioritize and focus field-scale data collection efforts, thus saving time and money while increasing the probability of locating fields with high sediment and nutrient export for implementation of best management practices (BMPs). Additional information regarding EVAAL is available on WDNR's website at: http://dnr.wi.gov/topic/nonpoint/evaal.html.

Spreadsheet Tool for Estimating Pollutant Loads (STEPL)

EPA offers the Spreadsheet Tool for Estimating Pollutant Load (STEPL) which calculates nutrient and sediment loads from different land uses and the load reductions that would result from the implementation of various BMPs. STEPL provides a user-friendly interface to create a customized spreadsheet-based model in Microsoft Excel. It computes watershed surface runoff; nutrient loads, including nitrogen, phosphorus, and 5-day biological oxygen demand (BOD5); and sediment delivery based on various land uses and management practices. Additional information regarding STEPL is available on EPA's website at: http://it.tetratech-ffx.com/steplweb/.

SnapPlus Nutrient Management Software

SnapPlus (**S**oil **n**utrient **a**pplication **p**lanner) is Wisconsin's nutrient management planning software, developed by the University of Wisconsin Soil Science Department with funding from WDNR, WDATCP, and NRCS-WI. The program is designed to help farmers make the best use of their on-farm nutrients, as well as make informed and justified commercial fertilizer purchases. It includes calculators for fertilizer recommendations, field nutrient balances, soil erosion, the P Index (runoff P yield estimator), and checks to makes sure the plan follows Wisconsin Nutrient Management Standard 590 and additional requirements for WPDES-permitted farms. It connects to a web-based GIS-system, called "SnapMaps". Planners can draw or import field boundaries into SnapMaps, and the software will download required soil and application restriction-area information to the desktop. SnapMap layers include high-leaching potential soils; areas with shallow water tables, groundwater, or fractured bedrock; and buffer areas for surface and groundwater protection zones. Producers can also import their routine agronomic soil test results from state-certified laboratories into SnapPlus. By calculating potential soil and phosphorus runoff losses on a field-by-field basis, noting required setback distances and application rate restrictions,

SnapPlus provides Wisconsin farmers with a tool for evaluating the effects of alternative crop management practices on their own fields. SnapPlus also assists agencies and certified crop advisors to evaluate compliance with statewide agricultural performance standards (Chapter NR 151, Wis. Adm. Code) and is another tool for the development and implementation of nine key element plans. It includes assessments designed to support phosphorus and sediment water quality trading. SnapPlus and SnapMaps software and additional information is available at: http://snapplus.wisc.edu/.

WDNR Web-Based Viewers

Water Condition Viewer (WCV) is an interactive mapping tool that focuses on water condition, monitoring, assessment, and management data. https://dnr.wi.gov/topic/surfacewater/wcv/

Surface Water Data Viewer (SWDV) is a WDNR data delivery system that provides interactive webmapping tools for a wide variety of datasets, including chemistry (water, sediment), physical, and biological (macroinvertebrate, fish) data. https://dnr.wi.gov/topic/surfacewater/swdv/

Watershed Restoration Viewer (WRV) is a WDNR interactive web mapping tool for exploring water quality improvement projects within TMDL areas across Wisconsin.
https://dnr.wi.gov/topic/surfacewater/restorationviewer/

UW Stevens Point – Well Water Quality Viewer: Private Well Data for Wisconsin
https://www.uwsp.edu/cnr-ap/watershed/Pages/WellWaterViewer.aspx

UW Stevens Point Center for Watershed Science and Education's Guide to Organizing a Community Drinking Water Testing and Educational Program
https://www.uwsp.edu/cnr-ap/watershed/Documents/Drinking%20Water%20Program%20Manual%202005.pdf

UW Stevens Point – Groundwater Information and Education Resources
https://www.uwsp.edu/cnr-ap/watershed/Pages/GWInfoEd.aspx

Wisconsin Geological and Natural History Survey (WGNHS) Maps and Data Look Up
http://wgnhs.uwex.edu/maps-data/

Wisconsin Land and Water – Source Water Protection Program, Resources, and Staff
https://wisconsinlandwater.org/programs/groundwater-protection

WDNR Source Water and Wellhead Protection Resources
https://dnr.wi.gov/topic/DrinkingWater/SourceWaterProtection.html
https://dnr.wi.gov/topic/DrinkingWater/WellheadProtection/faq.html
https://dnr.wi.gov/topic/DrinkingWater/documents/SWAP/i.pdf

Groundwater and Nitrate Decision Support Tool

The "Wisconsin Nitrate Initiative" is an effort started by the WDNR Drinking Water and Groundwater Program to evaluate strategies to reduce impacts from nonpoint sources of nutrient pollution to sources of drinking water. Activities in pilot project areas include assessment of current nitrogen inputs and groundwater nitrate levels, determining and implementing nitrogen management practices that optimize groundwater conditions and agricultural production efficiency. Project areas are focused in locations where drinking water systems are approaching unsafe levels of nitrate contamination. WDNR is currently working with stakeholders to determine critical groundwater recharge zones and optimal nitrogen management systems and strategies to "bend the curve" and stem rising nitrate trends in potable wells.

To expand groundwater-focused Source Water Protection efforts beyond initial pilot project areas and foster partnerships with those who traditionally implement programs to reduce nonpoint source pollutant

loads, the Drinking Water and Groundwater Program has partnered internally with our Clean Water Act implementing programs, and externally with the Wisconsin Land and Water Association to serve as a liaison to county conservation departments. WDNR and Wisconsin Land and Water Conservation Association provide county conservationists with technical assistance for drinking water source protection, including data on water supplies and nutrient impact occurrence and trends. Feedback and surveys of county conservation staff indicate increased awareness and interest on the part of local stakeholders in the protection of groundwater sources of drinking water.

To achieve improvements in source water quality in Wisconsin, new tools are required to better understand land use impacts and the variation in nitrogen loads to groundwater that may occur under differing agricultural nutrient management plan scenarios. Such tools would assist local resource managers with creating landowner and producer partnerships to implement Source Water Protection action plans in areas where potable wells have been impacted. The WDNR is leading an effort to develop a suit of Groundwater and Nitrogen Decision Support tools (GW & Nitrogen DSTs) for use by community water supplies, conservation departments, agricultural leaders, and other stakeholders to achieve groundwater-focused water quality improvement. These DSTs are being developed in partnership with a broad range of state, federal, and local partners. This partnership coalition will share ownership and responsibility for continued improvement of the DST products. The DSTs would be used on a voluntary basis to understand and plan a mix of land use and nutrient management practices that will be sufficiently protective of groundwater quality within a "wellshed" or other groundwater management area.

Combining groundwater and nitrogen decision support will enable local implementation of plans to protect drinking water sources. These tools, when fully realized, will allow for alternative land management and nutrient management scenario testing, inform economic tradeoffs, and will address questions on the estimated time delay between practice implementation and expected water quality improvements at receptors. Additionally, GW & Nitrogen DSTs will facilitate access to existing state and federal programs that incentivize land conservation practices. The DSTs could be used, for example, to meet requirements for inclusion into traditional watershed-based plans (such as "9 Key Element" Plans) by providing information on estimated pollutant load reductions for proposed management practices, and then helping to describe the achievable milestones (e.g. magnitude and timing of water quality improvements). Approved watershed plans, expanded to include drinking water source protection, will meet pre-requisites for agricultural practice cost-share funding derived from nonpoint source pollution mitigation programs that have traditionally focused on improving surface water quality.

The Groundwater DSTs (and the underlying spatial datasets) will have many applications beyond understanding nitrate transport from below the root zone and though the subsurface to a well or stream. But to address potable well impacts from nonpoint pollution sources, we must identify critical land areas where management actions will be most effective. Groundwater DSTs will leverage existing hydrogeologic research and modeling products and utilize advanced techniques to make essential hydrogeologic information available to decision makers. Simultaneously, both the Groundwater and Nitrogen DTSs will be designed to communicate the sources of uncertainty associated with model predictions. Full realization of the DST products will quantitatively bracket model output ranges such that local planners can effectively incorporate these factors into the planning process.

The Groundwater and Nitrogen Decision Support Tool partnership incorporates multi-disciplinary technical contributions from researchers at the University of Wisconsin, and from other state agencies and organizations such as the Wisconsin Geologic and Natural History Survey (UW-Extension), the Wisconsin Department of Agriculture Trade and Consumer Protection, the Department of Health Services and the Wisconsin Rural Water Association. Key federal partners include USGS, USDA-NRCS, and EPA. The Wisconsin Land and Water Conservation Association is providing essential connections to county conservation and county health departments. Through these local connections, the range of agricultural stakeholders will expand, providing essential feedback for developing robust decision support tools to protect drinking water supplies while sustaining profitable agricultural production.

Example use cases of proposed Groundwater and Nitrogen Decision Support Tools:

- Targeting: identify opportunities for groundwater management, such as Source Water Protection (SWP) areas with "remediation" potential
- SWP Feasibility Assessment
- What are the prospects of improving WQ at this well or stream?
- What proportion of "young water" is captured by this well?
- Do these "addressable recharge areas" contain high N loading sources
- What practice changes are feasible in these recharge areas?
- What's the timeframe for expected WQ change at the receptor?
- What magnitude of WQ is possible?
- How does the cost of landscape management changes compare to alternatives such as well replacement?

Principles underlying proposed Groundwater and Nitrogen Decision Support Tools:

- Involve broadest set of stakeholders feasible from the start.
- Multiple agencies will share curation and ownership. Project will be essentially 'open source', seeking best available solutions.
- Mechanisms and basis supporting the estimation/modeling processes embedded within DSTs will be well documented.
- Strengths and limitations will well documented.
- Improvement path and opportunities for stakeholder contributions will be 'spelled out'.
- Solutions to various technical challenges to produce DSTs will require multidisciplinary and multi-stakeholder collaboration.
- Consensus "best available solutions/approaches" are desired for each technical challenge.
- "Modularity" should be designed into components such that newer data or improved approaches can supplant priors as they become available.

3.3 Wisconsin's Areawide Water Quality Management Planning Program

3.3.a Continuous Planning Process

Wisconsin's Continuous Planning Process (CPP), authorized under section 283.83, Wisconsin Statutes, directs that WDNR shall establish a continuing water pollution control planning process which is consistent with applicable state requirements.

It is designed to describe:

- the state's process for the development of effluent limitations and schedules of compliance at least as stringent as those required by Section 301(b)(1), Section 301(b)(2), Section 306, and Section 307 of the Clean Water Act (CWA), and at least as stringent as any requirements contained in any applicable water quality standard in effect under authority of Section 303 of the CWA;
- the process for the incorporation of all elements of any applicable areawide water quality management plans under Section 208 of the CWA, and applicable basins plans under Section 209 of the CWA;
- the process for developing total maximum daily loads for pollutants in accordance with section 303(d) of the CWA;
- procedures for revision; the process for adequate authority of intergovernmental cooperation; adequate implementation, including schedules of compliance, for revised or new water quality standards under Section 303(c) of the CWA;
- the process for the controls over the disposition of all residual waste from any water treatment processing;

- the process for developing an inventory and ranking, in order of priority, of needs for construction of waste treatment works required to meet the applicable requirements of Sections 301and 302 of the CWA; and
- any related, relevant water quality or water resource management program affecting the condition of water resources.

3.3.b Areawide Water Quality Management Plan

Wisconsin's *Areawide Water Quality Management Plan* is a virtual document comprised of: basin (watershed) plans which identify the status/condition of water quality and management recommendations; sewer service area plans which are detailed plans for developed areas with sewer service and which specify specific update and amendment procedures designated to protect the water condition outlined in basin/watershed plans; and all related plans, programs and documents considered updates or amendments, linked by conformance review and reference. Formal updates and amendments to the state's Areawide Water Quality Management Plan require Governor and U.S. EPA certification.

3.3.c Federal and State Legal Basis

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500), Section 208, establishes Areawide Water Quality Management Planning. The state program, codified through ch. NR 121, Wis. Adm. Code, specifies process, program and plan elements, designated agencies and areas, and public participation requirements. http://dnr.wi.gov/topic/surfacewater/planning.html.

Federal and state funds are used to implement Wisconsin's Water Quality Management Planning Program. Clean Water Act Section 205(j) grant awards are authorized through Section 604(b) of the Federal Clean Water Act, s. 281.51, Wis. Stats. (previously s. 144.235(2)(c), Wis. Stats.), and through general purpose revenue funds targeted for state local aids for water quality.

Chapter NR 121, Wis. Adm. Code, identifies three highly developed municipal areas as "designated areas" – Fox Valley Water Quality Planning Area (Brown County and portions of the East Central Regional Planning Area), Dane County, and the seven far southeast Wisconsin counties. Explicitly named agencies or "designated agencies" are responsible for planning activities in these designated areas. Only one of the original designated agencies – Southeast Wisconsin Regional Planning Commission (SEWRPC) – continues to carry out its originally designated agency functions. In all other areas, contract relationships are in place to ensure ongoing water quality management planning work.

In non-designated areas – and in areas without a designated agency – the WDNR is directly responsible for creating water quality management plans and all related elements, including that communities with populations of greater than 10,000 have plans and procedures for sewered service. WDNR must also ensure that state actions taken in these non-designated areas, such as permit limits or grant awards, are in conformance with the Areawide Water Quality Management Plan. Ch. NR 121, Wis. Adm. Code, grants WDNR the authority to request and/or rescind designation status through governor approval and certification by the U.S. EPA.

3.3.d State Water Quality Planning Framework

Wisconsin has conducted water quality planning since the mid-1970s, when newly promulgated Clean Water Act authorities were delegated to the WDNR. The specific type of planning work has changed over time, but the end goal -- restoring, protecting and maintaining clean water and healthy aquatic ecosystems -- has been a constant through the past nearly 40 years.

History - Early Water Quality Planning (1970s)

Initially, water quality management plans, or "basin plans" were designed to assess the need for and extent of wastewater treatment plant upgrades to secondary treatment. The majority of work involved conducting wasteload allocations for biological oxygen demand (BOD) on major river systems to determine the allowable pollutant loads from point source discharges. Examples of river systems that were analyzed include the Fox River (Green Bay), Wisconsin River, Milwaukee River, and Rock River. Every few years the state produced a *Water Quality Assessment Report to Congress* (CWA Section 305(b)), which provided a narrative of the state of the state´s water condition and a summary of work achieved under the water quality program.

Basin Planning, Facilities Plan Reviews, Sewer Service Area Planning (1980s)

The 1980s brought significant changes to the water quality planning program in Wisconsin. The state implemented its innovative Priority Watershed Program to control nonpoint source discharges and enacted state legislation to systematize the connection between the state´s delegated CWA responsibility and its evaluation of point source discharges including urbanizing areas throughout the state. Chapters NR 121, NR 110, and NR 120, Wis. Adm. Code, provided a structure and framework to tie together the state´s planning program with its implementation vehicles for permitting point source discharges and outreach and education for voluntary efforts for nonpoint sources of pollutants.

The development of Sewer Service Area Plans (http://dnr.wi.gov/topic/wastewater/SewerServiceArea.html) for areas in the state specifically "designated" or mentioned in ch. NR 121, Wis. Adm. Code, as well as for communities with populations of greater than 10,000 individuals, began. This work required review and formal "amendment" of specific actions such as permits or specialized plans to the state´s basin plans, which were the umbrella vehicle for related water quality work in the state. Water Quality Planners conducted "conformance reviews" for proposed permit limits, storm water plans, sewer service area plans, and priority watershed plans to ensure that the proposed work was needed to protect or restore, the water quality in the respective basin.

Watershed Approach, Integrated Planning, and "GMUs" (1990s)

In the 1990s, the state began enacting a series of water resources rules, which up until that point, had been "covered" under the state Sewer Service Area Program´s Environmentally Sensitive Area (ESA) designations. [ESAs are resource areas identified in Sewer Service Area Plans that must not be developed with public sewer (as per ch. NR 121, Wis. Adm. Code) (http://dnr.wi.gov/topic/wastewater/SSAdelineation.html).]

State rules and federal law regarding shoreland/wetland areas, wetlands, floodplain zones, and Great Lakes related issues provided updated authorities for protecting and better managing these sensitive areas. For much of the state, these rules brought tremendous positive change with greater consistency and resource protection.

Basin planning, or "Water Quality Management Planning", continued to evolve in response to the modified legal framework and supplementary management tools. Recommendations in "basin plans" focused more on partnership, and on "ecosystem" recommendations, particularly those plans developed in the late 1990s. In 1999, the water quality program worked with lands and fisheries to develop "integrated basin plans" statewide. These plans were designed to capture the essence of popularly discussed holistic, systems-based planning approaches. These Integrated Basin Plans, or State of the Basin Reports, reflected the department´s reorganized structure into geographic management units (GMUs) and were reflective of "basin team" partnerships at the local level. Integrated Plans, or State of the Basin Reports, were developed for most of the state´s 23 GMUs from 1999 through 2002.

Watershed Planning Network (2007)

Technological investments by WDNR have resulted in the state´s ability to better identify and track resource issues and better manage and share information on water condition. In 2001, the state received the first of many federal grants to invest in the development of data systems that build upon the state´s 1:24,000-Scale Hydrography (http://dnr.wi.gov/maps/gis/datahydro.html) data layer.

Work conducted in the past six years has resulted in two new water-related GIS-enabled data systems. The first is the Water Assessment Tracking and Electronic Reporting System (WATERS), which supports the state´s water quality planning program (http://dnr.wi.gov/topic/watersheds/), including waterbody level assessments, water quality standards, and use designation assessments. The second is the Surface Water Integrated Monitoring System (SWIMS), which supports a wide variety of work, but its primary function is to provide ready access to monitoring sites and results against the state´s hydrologic systems. Both WATERS and SWIMS are supplemented by the Water Program´s Surface Water Data Viewers, interactive web mapping tools which provide "data delivery" to WDNR staff and partner agencies.

The logical evolution of these tools is the development of support systems for partnership work which affects and is affected by WDNR water program activity. The WDNR recognizes, and in many cases provides funding for, watershed/water quality planning work on specific waterbodies or specific areas of the state. For several years, this planning work was conducted and no further action was taken. However, with the advent of new tools, WDNR is now able to provide online progress reporting and easy to use tools for partners funded through WDNR grants to share their final reports and resource status with WDNR and others by a simple "click of the mouse"!

3.3.e Watershed-Based Water Quality Management Plans Today

Wisconsin DNR has modified its water quality planning program to accommodate fewer staff and fewer fiscal resources by moving to online, dynamically generated watershed plans from data stored in databases. This rotating targeted watershed approach will allow the state to continue its work of targeting high priority watersheds, leveraging critical resources where possible, with mandated monitoring, assessment and planning work. Final plans are available on the WDNR website at: http://dnr.wi.gov/topic/surfacewater/watershedplans.html.

3.4 Relationship to Storm Water Management Plans

Nine key element watershed plans as discussed above are not the only planning efforts that address NPS pollution. Storm water management plans, while needed to meet a permit requirement, often address what citizens can do about NPS pollution on their own property.

Storm water runoff is water from rain storms or snow melt that flows over the land rather than evaporating or soaking into the ground. Urban areas generate more storm water runoff than rural areas because buildings and pavement cover much of the land and prevent water from soaking into the ground. Drainage systems in urban areas carry excess water and the associated pollutants to nearby water bodies. In these lakes and streams, urban storm water creates many problems, including: increased storm flows and decreased base flow, and channel erosion with wider flood plains, poor water quality, and loss of habitat and recreational use.

Storm water management, while mostly controlled through permitting and regulations, contains elements of nonpoint pollution control as well. Storm water management in Wisconsin usually focuses on three main areas:

- Storm water permits for municipalities;
- Storm water pollution prevention for industrial operations; and

- Construction site storm water runoff.

There are numerous federal and state regulations that provide guidance for how these various elements of storm water runoff are regulated as point sources, much of it covered under ch. NR 216, Wis. Adm. Code. The focus here will be how the control of these sources of storm water runoff interacts with the control of nonpoint source pollution. (It is important to note that federal regulations and guidance limit how Section 319 funds can be used for any planning or BMP installation involving point sources. Wisconsin's NPS Program closely evaluates projects to ensure that funding is not allocated to activities required by a storm water permit.)

Storm Water Permits for Municipalities

A municipality large enough to require a storm water permit must develop a storm water management program to address the discharge of pollutants from its storm sewer system. The requirements for the storm water program have several components, including the following:

- Public information and outreach
- Detection and elimination of discharges that should not go to the storm sewers
- Construction site erosion control and storm water management ordinances
- Storm sewer system mapping
- Pollution prevention measures to reduce the amount of total suspended solids enter lakes and streams

The control of NPS pollution in urban environments can be assisted through proper land use planning and proper design and construction of best management practices. In order to meet requirements within their storm water permit for minimizing the amount of total suspended solids (TSS) in their runoff, a municipality will use many methods at their disposal. Street sweeping, detention ponds, and constructed treatment practices are just some of the BMPs municipalities can use to minimize the amount of pollution contained in urban runoff. While there is a fixed, or "permitted" level of TSS that the municipality must achieve, achieving this limit can be accomplished by any suite of BMPs and design that the municipality can incorporate.

Growth of urban areas is often done with mostly an economic focus, but there is an increasing interest in designing and carrying out urban development with an eye toward low impact to the environment, including receiving water bodies. The whole concept of low impact development focuses on infiltrating rain water where it falls, rather than the traditional method of moving water off property and into a storm sewer or drainage ditch, moving it quickly to a local stream or lake. This infiltration can be accomplished, again, by proper planning as well as design and installation of BMPs. However, getting property owners to incorporate practices on their own property focused on decreasing runoff is also a part of this concept. The information and education element required in a storm water management program often includes information and training for urban residents on how to design and install rain gardens, or how to build and use rain barrels on their downspouts. All these activities work to control nonpoint source pollution in the urban environment.

Storm Water Pollution Prevention for Industrial Operations

Most industrial facilities in Wisconsin covered under ch. NR 216, Wis. Adm. Code, are required to have a Storm Water Pollution Prevention Plan (SWPPP). The ultimate goal of such a plan is to prevent contaminants from polluting the waters of the state through discharge in storm water.

The focus of the SWPPP for industrial facilities is the use of source control instead of storm water treatment to prevent the contamination of storm water. Source control consists of practices ranging from non-structural (good housekeeping or personnel training) to structural (covering of stored materials). These practices reduce the chance of polluting storm water. Storm water treatment consists of structural practices which remove pollutants from contaminated storm water. Such structural and non-structural

practices are used to prevent any sort of pollutant from entering storm water in the first place, thus minimizing the need for treatment of the contaminated storm water.

Some potential sources of storm water contamination that are addressed by a SWPPP can include:

- outdoor manufacturing areas
- shipping and receiving areas
- material handling sites
- refuse sites
- vehicle maintenance and cleaning areas
- areas of significant soil erosion
- storage areas

Industrial facilities that properly address potential storm water pollution issues from such sites will help decrease the overall amount of nonpoint source pollution entering Wisconsin's waters.

Construction Site Storm Water Runoff

Most construction sites in Wisconsin that are disturbing one acre or more need a storm water permit. The DNR oversees permits that are not associated with transportation construction projects (that fall under the jurisdiction of the Department of Transportation).

A landowner about to embark on a construction project must develop and implement site-specific erosion control and storm water management plans. The erosion control plan details how they will control sediment and other pollutants on the construction site by implementing erosion and sediment control practices throughout the duration of the construction until the project is completed, and the site is stabilized from erosion. These practices include sediment ponds, tracking pads, silt fence, temporary seeding, and mulching. The storm water management plan for long-term pollutant control will include BMPs such as wet ponds, infiltration structures, grass swales, vegetative filter strips and vegetative buffers to control runoff from the site after construction is completed. Because every site is unique, erosion control and storm water management plans must be customized to site-specific conditions. The erosion control and storm water management plans must be completed before the landowner files a Notice of Intent (NOI) form for permit coverage.

Much like industrial facilities, the focus of construction storm water control is keeping the possible pollutants (primarily sediment in most construction sites) from getting into storm water in the first place. This helps minimize the amount of nonpoint source pollution from such sites.

3.5 Relationship to Water Quality Trading, Adaptive Management, and Multi-Discharger Variance Plans

After promulgating numeric phosphorus criteria for surface waters in 2012, Wisconsin adopted several options for point source dischargers to select to assist them in complying with revised water quality-based effluent limits for phosphorus. These options include Water Quality Trading, Adaptive Management and Multi-Discharge Phosphorus Variance:

- Water Quality Trading: https://dnr.wi.gov/topic/surfacewater/documents/WQT_Factsheet_432013.pdf
- Adaptive Management: https://dnr.wi.gov/topic/surfacewater/documents/AM_Factsheet_382013.pdf
- Multi-Discharger Variance: https://dnr.wi.gov/topic/SurfaceWater/documents/phosphorus/MDVFactsheet.pdf

All three of these options may include/involve working with NPS pollution sources within a watershed to reduce phosphorus or sediment losses to surface waters. During 2020-2025, it is expected that more point source dischargers will select one of these options and the corresponding projects generated will help directly, or indirectly, with implementation of nine element plans and restoring nutrient impaired waters.

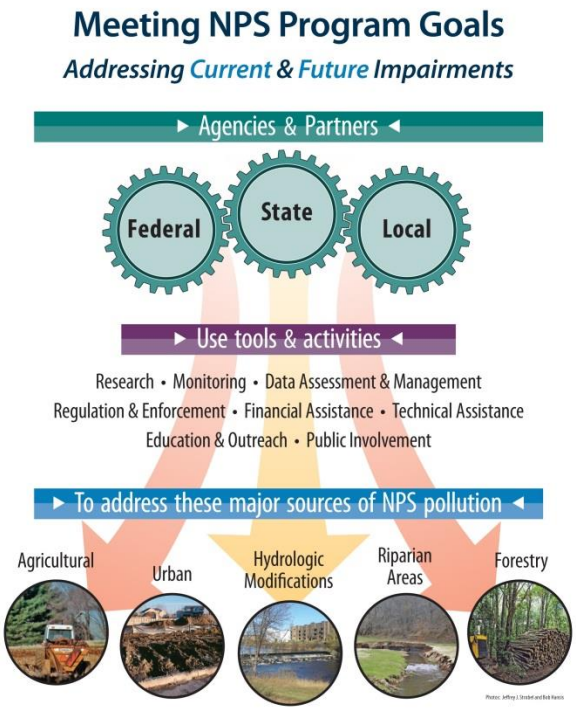
CHAPTER 4: Statewide Implementation Program for Protection and Improvement of NPS Impacted Waters

Introduction

Wisconsin has long been recognized as a leading state in the effort to control nonpoint source pollution. Since 1978, the state's NPS Program has made significant progress in addressing runoff-related water quality problems that, in many cases, had existed for decades. Even with this work, runoff management is still one of the largest remaining challenges to improving and protecting the state's water quality. This chapter describes the partnerships, programs and financial resources that work in coordination to decrease NPS pollution and describes how the state has institutionalized its program beyond the annual implementation of Section 319-funded activities and projects.

4.1 Comprehensive Nonpoint Source Management

Wisconsin's NPS Program is implemented through a comprehensive network of federal, state, and local agencies, working in partnership with other organizations and the citizens of Wisconsin to address the significant nonpoint sources in the state, including agriculture, urban, forestry, wetlands, and hydrologic modifications. The core activities of these programs – research, monitoring, data assessment and management, regulation and enforcement, financial and technical assistance, education and outreach, and public involvement – work to address current and prevent future water quality impairments and threats caused by NPS pollution. Wisconsin's success in addressing NPS issues is aided by the partnerships that have been developed and the use of both voluntary and regulatory approaches coupled with financial and technical assistance.



4.2 Legal Implementation Authority

http://legis.wisconsin.gov/rsb/stats.html

Wisconsin's history of progressivism in natural resource protection is reflected in the value its citizens, legislature, and public institutions place upon upholding the fundamental concept that the waters of the state should meet the federal CWA goal of being fishable and swimmable. The development of strong legislation guides the state toward this goal. Listed below is a summary of Wisconsin State Statutes that influence water quality and nonpoint source pollution.

Section 281.11, Wis. Stats., identifies the WDNR "as the central unit of state government to protect, maintain and improve the quality and management of the waters of the state, ground and surface, public and private." This section of the statutes also states that "a comprehensive action program directed at all present and potential sources of water pollution whether home, farm, recreational, municipal, industrial or commercial is needed to protect human life and health, fish and aquatic life, scenic and ecological values and domestic, municipal, recreational, industrial, agricultural and other uses of water. The purpose of this subchapter is to grant necessary powers and to organize a comprehensive program under a single state agency for the enhancement of the quality management and protection of all waters of the state." Wisconsin's NPS Program is part of this comprehensive program to attain and maintain water quality standards for both surface water and groundwater.

Section 281.15, Wis. Stats., authorizes the promulgation of water quality standards, including designated uses.

Section 281.16, Wis. Stats., establishes the state framework for developing and implementing standards to control nonpoint source pollution. WDNR is primarily responsible for adopting performance standards to prevent pollution runoff from agricultural and non-agricultural sources. The performance standards are designed to achieve water quality standards by limiting nonpoint source pollution. The WDATCP must prescribe conservation practices to implement the WDNR agricultural performance standards.

Section 281.31, Wis. Stats., provides protection for navigable waters and states:

"To aid in the fulfillment of the state's role as trustee of its navigable waters and to promote public health, safety, convenience and general welfare, it is declared to be in the public interest to make studies, establish policies, make plans and authorize municipal shoreland zoning regulations for the efficient use, conservation, development and protection of this state's water resources. The regulations shall relate to lands under, abutting or lying close to navigable waters. The purposes of the regulations shall be to further the maintenance of safe and healthful conditions; prevent and control water pollution; protect spawning grounds, fish and aquatic life; control building sites, placement of structure and land uses and reserve shore cover and natural beauty."

Section 281.65, Wis. Stats., establishes the nonpoint source pollution abatement financial assistance program, including the Priority Watershed Program, Targeted Runoff Management Grant Program, and Notice of Discharge Grant Program, to:

"(a) Provide the necessary administrative framework and financial assistance for the implementation of measures to meet nonpoint source water pollution abatement needs identified in areawide water quality management plans.
(b) Provide coordination with all elements of the state's water quality program in order to ensure that all activities and limited resources are optimally allocated in the achievement of this state's water quality goals.
(c) Provide technical and financial assistance for the application of necessary nonpoint source water pollution abatement measures.
(d) Focus limited technical and financial resources in critical geographic locations where nonpoint source related water quality problems and threats are the most severe and control is most feasible.
(e) Provide for program evaluation, subsequent modifications and recommendations."

Section 281.68, Wis. Stats., establishes the lake management planning grants program.

Section 281.69. Wis. Stats., establishes the lake management and classification grant program to provide funding for:

"(a) Lake management projects that will improve or protect the quality of water in lakes or the quality of natural lake ecosystems.
(b) Lake classification projects that will classify lakes by use and implement protection activities for the lakes based on their classification."

Section 281.70, Wis Stats., establishes the river protection grants program.

Section 91.80, Wis. Stats., requires owners claiming farmland preservation tax credits to comply with applicable land and water conservation standards.

Section 91.82, Wis. Stats., establishes county responsibilities for monitoring compliance of and issuing notices of noncompliance, as appropriate, to landowners receiving farmland preservation tax credits.

Section 92.05, Wis. Stats., establishes WDATCP as the central state agency responsible for setting and implementing soil and water conservation policies, with focus on soil erosion control and nutrient management, and administering the state's soil and water conservation programs in coordination with WDNR programs.

Section 92.10, Wis. Stats., establishes the land and water resource management planning program to conserve long-term soil productivity, protect the quality of related natural resources, enhance water quality and focus on severe soil erosion problems.

Section 92.14, Wis. Stats., establishes the soil and water resource management program for:

"(a) Enhancing protection of surface water and groundwater resources in this state.
(c) Providing statewide financial and technical assistance for land and water conservation activities at the county level.
(d) Promoting cost-effective land and water conservation activities.
(e) Promoting soil and water conservation by persons claiming farmland preservation tax credits.
(g) Promoting and attaining the soil erosion control goals.
(h) Encouraging innovative local strategies, regulations and incentives to address soil and source water conservation activities.
(i) Increasing local technical assistance to address soil and water resource problems.
(j) Enhancing the administration and coordination of state nonpoint source water pollution abatement activities by the department and the department of natural resources, including providing a single process for grant application, funding allocation, reporting and evaluation."

Section 93.90, Wis. Stats., established WDATCP as the state agency to promulgate rules for specifying standards for siting and expanding livestock facilities.

4.3 Core Implementation Programs, Activities, & Strategies

The WDNR's Runoff Management Program and Lakes & Rivers Program, WDATCP's Farmland Preservation Program and Soil and Water Resource Management Program described below provide the core of Wisconsin's NPS Program implementation.

The Wisconsin DNR's Runoff Management Section, with expertise in stormwater, agricultural runoff, and other areas of water resources management, is charged with leading the NPS efforts within the WDNR. The Runoff Management Section is part of the Bureau of Watershed Management in the Division of External Services.

The WDNR's Lakes and Rivers Section, with experience in lake and river ecology, is charged with leading surface water protection efforts within WDNR. The Lakes and Rivers Section is part of the Bureau of Water Quality in the Division of Environmental Management. While the core work is guided by in-lake efforts, the program also addresses NPS pollution issues. The program takes a holistic view of lake ecology and surrounding factors that are affecting lake health.

The WDATCP's Soil and Water Resource Management Program requires that county-based conservation departments prepare a Land and Water Resource Management (LWRM) Plan in consultation with WDNR and submit the plan to WDATCP for approval. These programs integrally connect WDATCP, county conservation departments, and the WDNR and provide the framework for identifying and addressing agricultural runoff in Wisconsin, thus, being referred to in this plan as the "core" implementation partners of Wisconsin's NPS Program.

This core work is guided by a deliberate effort to address NPS pollution issues. Work planning processes, discussed in more detail in Chapter 5, are used to ensure a thorough coverage of NPS issues in day-to-day work activities. County Land Conservation Departments' work is guided by work plans that are developed as part of the LWRM Plan. These state-approved plans must meet minimum requirements to promote compliance with state performance standards.

Like WDNR, WDATCP's state programs rely on a range of vehicles for implementation, including coordination of cost-share grants from local, state, and federal sources, technical assistance, and progressive compliance actions, including suspension of a violator's eligibility for Farmland Preservation Program (FPP) tax credits and enforcement of local ordinances. In 2017, about 12,000 farmers, who received nearly $16 million in FPP tax credits, were expected to achieve compliance with performance standards to remain in the program. In 2018, FPP participants will be expected to comply with the newest performance standards added to ch. NR 151, Wis. Adm. Code in 2011, and ch. ATCP 50, Wis. Adm. Code, as of 2018.

4.3.a Runoff Management Program - WDNR

The WDNR has made a commitment to performance-based pollution control. Since October 2002, the NPS Program has been implementing the statewide agricultural, non-agricultural and transportation performance standards, as well as manure management prohibitions. The standards, promulgated in ch. NR 151, Wis. Adm. Code, are intended to be minimum standards of performance necessary to achieve water quality standards. Implementing the performance standards and prohibitions on a statewide basis is a high priority for the NPS Program.

Wisconsin moved to the use of performance standards rather than requiring prescriptive practices, such as buffer strips or tillage practices, for a number of reasons. This method allows the affected party, whether a crop, livestock or dairy farmer, or a regulated municipality the ability to use their knowledge of their land, past practices, and resource availability, as well as their short-term goals and long-term plans in deciding how best to meet the standards. Using performance standards recognizes that methods, which work well in one area of the state might not work in others due to differences in soil, climate conditions, slope or other variables. It also recognizes that technology and management practices continue to evolve, and thus a performance standard allows for continued improvement without the need to change the regulations.

The WDNR believes that the NPS performance standards represent the most integrated standards needed to address the major sources of polluted runoff in rural and urban areas in a cost-effective manner. The performance standards and prohibitions are also designed for a more comprehensive approach to control NPS pollution in Wisconsin and to restore designated uses to waterbodies degraded by polluted runoff. Implementation of the performance standards and prohibitions through local ordinances conveys more implementation and enforcement capabilities to local governments. These standards have become a compliance requirement in other programs, including the WDATCP's Farmland Preservation Program and Livestock Siting Program.

In December 2010, a revised version of NR 151 was published. The rule changes strengthened regulations to control NPS pollution, particularly phosphorus, from agriculture and urban sources and also to fairly balance controlling runoff between urban and agricultural sources. In addition, the revised rule language established a process for addressing the more stringent NPS controls that will likely be needed in TMDL areas. Revisions to ATCP 50 in 2014 added requirements and technical standards to facilitate implementation of the new performance standards.

In addition to nonpoint sources of phosphorus pollution being addressed through the 2010 revision to ch. NR 151, Wis. Adm. Code, the State of Wisconsin in 2010 adopted numeric phosphorus water quality standards criteria in ch. 102, Wis. Adm. Code, for lakes, reservoirs, streams and rivers. Ch. NR 217, Wis. Adm. Code, provides for implementation of those criteria for point sources of phosphorus pollution through Wisconsin Pollutant Discharge Elimination System (WPDES) permits. The phosphorus criterion for listed rivers is 100 ug/L and the criterion for all other streams, unless exempted, is 75 ug/L. The criteria are set at levels intended to prevent in-stream algae and plant growth to the extent that is detrimental to fish and aquatic life as determined by intensive field studies. For lakes and reservoirs, a series of phosphorus concentrations were set as criteria, ranging from 15 ug/L for lakes supporting a cold water fishery in lower positions of the lake to 40 ug/L for shallow lakes and reservoirs. For small impoundments, the criteria are the same as the inflowing streams or river.

The switch from a focus on Priority Watersheds to performance standards was initiated in 1997, when the Wisconsin Legislature and the Governor, recognizing the continued impacts that NPS pollution pose to the state's water resources, passed Act 27, which required the WDNR to do the following (s. 281.16, Wis. Stats.):

- develop non-agricultural nonpoint source performance standards designed to meet water quality standards;
- in consultation with WDATCP, develop agricultural nonpoint source performance standards and prohibitions designed to meet water quality standards, including, at a minimum, the four manure management prohibitions specified in statute;
- specify a process for development and dissemination of technical standards to implement the non-agricultural performance standards;
- administer cost-sharing funds provided for compliance;
- specify criteria for determining whether cost sharing is available for compliance by an agricultural facility; and
- jointly with WDATCP specify procedures for review and approval of proposed local regulations of livestock operations demonstrated by the local government unit as necessary to achieve water quality standards.

Act 27 also directed WDATCP, in consultation with WDNR, to prescribe conservation practices and specify a process for development and dissemination of technical standards to implement the agricultural performance standards. At a minimum, the conservation practices and technical standards needed to cover animal waste management, nutrients applied to the soil and cropland sediment delivery.

Act 9, the state's 1999-2001 biennial budget, provided funding and other provisions that facilitated the redesign of the nonpoint source programs. The legislation:

- created a new urban nonpoint source program (Urban Nonpoint Source & Storm Water Management Grant Program);
- provided funding for targeted, competitive nonpoint source projects (Targeted Runoff Management Grant Program);
- transferred funding to WDATCP for local assistance grants to priority watershed and priority lake projects;
- provided base level funding to counties for staff and cost sharing;

- created a unified grant submission and interagency clearinghouse between WDNR and WDATCP; and
- further clarified the content and role of county Land and Water Resource Management Plans.

Below is a summary of the resulting eight administrative rules that were promulgated in October 2002, and revised in 2010, to meet the intent of Acts 9 and 27 to govern NPS pollution control in Wisconsin:

Ch. NR 151 - Runoff Management: This rule defines agricultural performance standards and manure management prohibitions, a process for agricultural implementation, non-agricultural performance standards, transportation facility performance standards and a process for the development and dissemination of non-agricultural technical standards.

Ch. NR 152 - Model Ordinances for Construction Site Erosion Control and Storm Water Management: This rule provides examples of ordinances for construction site erosion control and storm water management.

Ch. NR 153 - Targeted Management Grant Program & Notice of Discharge Grant Program: This rule contains policies and procedures for administering targeted runoff management grants to reduce both agricultural and urban nonpoint source pollution. Grants may be used to cost share the installation of best management practices as well as to support a variety of local administrative and planning functions. Projects are selected through a competitive scoring system and generally take two to three years to complete. The rule also contains policies and procedures for administering notice of discharge grants.

Ch. NR 154 - Best Management Practices, Technical Standards, and Cost-Share Conditions: Lists of acceptable best management practices, technical standards, and cost-share conditions for projects outlined in chs. NR 153 and NR 155, Wis. Adm. Code. For agricultural practices, this rule is closely coordinated with ch. ATCP 50, Wis. Adm. Code.

Ch. NR 155 - Urban Nonpoint Source Water Pollution Abatement and Storm Water Management Grant Program: This rule contains policy and procedures for administering the urban nonpoint source and storm water management grant program authorized under s. 281.66, Stats. The department may make grants under this program to governmental units for practices to control both point and nonpoint sources of storm water runoff from existing urban areas, and to fund storm water management plans for developing urban areas and areas of urban redevelopment. The goal of this grant program is to achieve water quality standards, minimize flooding, protect groundwater, coordinate urban nonpoint source management activities with the municipal storm water discharge permit program and implement the non-agricultural nonpoint source performance standards under ch. NR 151, Wis. Adm. Code. Grants to a governmental unit may be used to cost share the installation of best management practices as well as to support a variety of local administrative and planning functions. The department may also make grants to the board of regents of the University of Wisconsin System to control urban storm water runoff from campuses in selected locations. Projects are selected through a competitive scoring system and generally take one to two years to complete.

Ch. NR 216 - Storm Water Discharge Permits: Chapter NR 216, Wis. Adm. Code, requires certain municipalities, industries, and construction sites to follow the non-agricultural performance standards as part of their storm water permits. Revisions of ch. NR 216, Wis. Adm. Code, completed in 2002 provided cross regulations with ch. NR 151, Wis. Adm. Code. The revisions to ch. NR 216, Wis. Adm. Code, incorporate the non-agricultural performance standards of ch. NR 151, Wis. Adm. Code, into the storm water discharge permit process. In addition, governmental units, industrial units and construction sites must now meet the stormwater discharge performance standards in ch. NR 151, Wis. Adm. Code.

Ch. NR 243 - Animal Feeding Operations: Chapter NR 243, Wis. Adm. Code, addresses water quality impacts associated with Concentrated Animal Feeding Operations or CAFOs. Chapter NR 243, Wis. Adm. Code, states that owners, operators or animal feeding operations that receive a

Notice of Discharge (NOD) for an unacceptable practice shall implement corrective measures within a specified compliance period and may become subject to a CAFO permit under certain circumstances.

Ch. ATCP 50 - Soil and Water Resource Management Program: A companion administrative rule, developed by WDATCP, to implement Wisconsin's soil and water resource management program, under ch. 92, Wis. Stats. Ch. ATCP 50, Wis. Adm. Code, provides for cost sharing, technical assistance, educational programs and other programs to conserve soil and water resources and encourages coordinated soil and water conservation planning and program implementation.

Ch. ATCP 51 - Livestock Facility Siting: A companion administrative rule that establishes state standards that local governments must apply in issuing permits to new and expanding livestock facilities. The siting standards are designed to be consistent with those in chs. ATCP 50 and NR 151, Wis. Adm. Code.

NR 151 Overview

A brief description of the agricultural and non-agricultural performance standards and manure management prohibitions in ch. NR 151, Wis. Adm. Code, is included here. The full administrative code can be found at: http://docs.legis.wisconsin.gov/code/admin_code/nr/100/151.pdf.

Agricultural Performance Standards and Prohibitions

- **Tillage setback:** A setback of 5 feet from the top of a channel of a waterbody for the purpose of maintaining stream bank integrity and avoiding soil deposits into state waters. Tillage setbacks greater than 5 feet but no more than 20 feet may be required if necessary to meet the standard. Harvesting of self-sustaining vegetation within the tillage setback is allowed.
- **Phosphorus Index (PI):** A limit on the amount of phosphorus that may run off croplands as measured by a phosphorus index with a maximum of 6, averaged over an eight-year accounting period, and a PI cap of 12 for any individual year. The PI will take effect on July 1, 2012 for pastures.
- **Process wastewater handling**: a prohibition against significant discharge of process wastewater from milk houses, feedlots, and other similar sources.
- **Meeting TMDLs:** A standard that requires crop and livestock producers to reduce discharges if necessary to meet a load allocation specified in an approved Total Maximum Daily Load (TMDL) by implementing targeted performance standards specified for the TMDL area using best management practices specified in ch. ATCP 50, Wis. Adm. Code. If a more stringent or additional performance standard is necessary, it must be promulgated by rule before compliance is required.
- **Sheet, rill and wind erosion:** All cropped fields shall meet the tolerable (T) soil erosion rate established for that soil. This provision will also apply to pasture lands starting in 2012.
- **Manure storage facilities:** All new, substantially altered, or abandoned manure storage facilities shall be constructed, maintained or abandoned in accordance with accepted standards, which includes a new margin of safety. Failing and leaking existing facilities posing an imminent threat to public health or fish and aquatic life or violate groundwater standards shall be upgraded or replaced.
- **Clean water diversions:** Runoff from agricultural buildings and fields shall be diverted away from contacting feedlots, manure storage areas and barnyards located within water quality management areas (300 feet from a stream or 1,000 feet from a lake or areas susceptible to groundwater contamination).
- **Nutrient management:** Agricultural operations applying nutrients to agricultural fields (cropland and pasture) shall do so according to a nutrient management plan that follows the Wisconsin Nutrient Management Technical Standard 590. (This standard does not apply to applications of industrial waste, municipal sludge or septage regulated under other DNR programs provided the material is not commingled with manure prior to application.)

Manure management prohibitions:

- no overflow of manure storage facilities
- no unconfined manure piles in a water quality management area
- no direct runoff from feedlots or stored manure into state waters
- no unlimited livestock access to waters of the state in locations where high concentrations of animals prevent the maintenance of adequate or self-sustaining sod cover

Non-Agricultural Performance Standards

New Development, Infill, and Redevelopment

- Construction sites with one or more acre of land disturbance shall reduce sediment to the maximum extent practicable in accordance with an erosion and sediment control plan. The performance standard was an 80% sediment reduction until January 1, 2013, after which the standard changed to a maximum discharge of 5 tons per acre per year of sediment.
- For post-construction storm water management, a plan is required to be developed and implemented to meet the post-construction performance standards for construction sites with one or more acre of land disturbance (Note: Not all post-construction performance standards apply to infill or redevelopment). The plan shall include best management practices to meet the performance standards for:

    - Total suspended solids
    - Peak runoff discharge rates
    - Infiltration
    - Protective areas near waterbodies and wetlands
    - Control of petroleum products runoff from fueling and vehicle maintenance

Developed Urban Areas

- Municipalities with average population densities of 1,000 people per square mile or greater and contiguous commercial and industrial areas shall meet the following:

    - public education promoting proper yard and garden care to minimize polluted runoff
    - appropriate leaf management and collection and proper disposal of grass clippings
    - nutrient application schedules when fertilizers are applied to its properties over 5 acres (this also applies to privately-owned areas of this size)
    - detection and elimination of illicit discharges to storm sewers

    In addition to the above, municipalities that are regulated under a municipal separate storm sewer system (MS4) permit pursuant to subchapter I of NR 216, Wis. Adm. Code, are required meet the developed urban area performance standard of a 20% reduction in total suspended solids. Municipalities covered under an MS4 permit prior to July 1, 2011 that achieved a greater that 20% reduction in total suspended solids as of that date are required to maintain their best management practices to the maximum extent practicable.

Transportation Performance Standards

Transportation facilities (roads and associated structures) are subject to the non-agricultural performance standards listed above. Some specific modifications are made in recognition of the unique character of transportation facilities:

- Exemption from post-construction performance standards for highway resurfacing, reconditioning or minor re-construction
- Option to use a water quality designed swale to meet the post-construction performance standard

- Exemption from the infiltration performance standard for highways and other heavily traveled roads
- Requirement to meet the total suspended solids control similar to a MS4 permittee for state and federal highways within municipalities permitted under subchapter I of NR 216, Wis. Adm. Code

4.3.b Lake & River Management Program – WDNR

The WDNR has made a commitment to improving the state's surface water resources and have been funding lake and river protection projects since 1974. To date, the program has funded over 24,500 surface water grants. Eligible projects range from developing and implementing lake and river management plans, developing lake classification and ordinances, land/easement acquisition, wetland and shoreline habitat restoration, and aquatic invasive species education, prevention, planning and control projects. The surface water grant program was recently consolidated under DRAFT chapter NR 193, Wis. Adm. Code which has a promulgation target of early 2020. The consolidated code chapter unites, updates, and defines a program to support surface water planning and management in waterbodies and watersheds by establishing procedures for implementing a planning and management grant program. Below is a summary of the five major program areas detailed in Ch. NR 193 subchapters that support the department's NPS management efforts:

Education and Planning: The purpose of this subchapter is to establish procedures for awarding cost-sharing grants for implementing a surface water management planning program. Education projects are undertaken to provide information and education to increase understanding of surface water and aquatic ecosystems. Eligible projects may focus on surface water quality, the quality of aquatic ecosystems, the quality of aquatic life, methods to protect the quality of any of the foregoing, the use of surface water, or the formation of river management organizations. Planning projects, enhance the assessment of surface water quality and aid in the selection of activities that will benefit surface water, including those that protect or improve water quality, prevent pollution from entering waterbodies, or protect or improve aquatic ecosystems.

County Lake Grants: The purpose of this subchapter is to establish procedures for implementing a lake classification grant program. Funding awarded under this program will allow counties to assist the department to update and improve lake information, classify lakes by use, and implement activities that will protect water quality and lake ecosystems.

Surface Water Management: The purpose of this subchapter is to establish procedures to award cost-sharing grants to implement a surface water management grant program for lakes, rivers and wetlands. Grants awarded under this subchapter shall be used to implement protection or improvement projects for surface water or aquatic ecosystems. Grant funding awarded under this subchapter may be used to for healthy lakes and rivers projects, shoreland protection, in-water management, wetland restoration, management plan implementation, wetland incentives, and ordinance development.

Lake Monitoring & Protection Contracts: The purpose of this subchapter is to establish eligible activities, qualifications, and procedures for the administration of contracts for the creation and support of a statewide lake monitoring and protection network. Contracts under this section will be used to provide for the promotion of lake protection activities, collection and reporting of quality-assured data on the use and condition of lakes and lake ecosystems, the protection of lakes through watercraft inspection, the early detection of aquatic invasive species, and technical assistance to persons engaging in aquatic invasive species prevention and management.

4.3.c Farmland Preservation Program (Formerly "Working Lands Initiative") – WDATCP
(http://datcp.wi.gov/Environment/Working_Lands_Initiative/index.aspx)

Signed into law in 2009, the Wisconsin Working Lands Initiative, administered by WDATCP, is comprised of three programs: the Farmland Preservation Program, the Agricultural Enterprise Area Program, and the Purchase of Agricultural Conservation Easement Program (which currently is not funded). The Initiative,

which is now referred to as the "Farmland Preservation Program", seeks to preserve areas that are significant for current and future agricultural uses and requires cross-compliance with the ch. NR 151, Wis. Adm. Code, agricultural performance standards and prohibitions. A detailed discussion of the benefits is provided in Section 4.7.a.

4.3.d Soil & Water Resource Management Program – WDATCP & Counties
(https://datcp.wi.gov/Pages/Programs_Services/SWRMResourcesForCounties.aspx)

Through 1997 Act 27 and 1999 Act 9, the Wisconsin legislature established the Soil and Water Resource Management (SWRM) Program (Ch. 92, Wis. Stats.). This program is the primary statewide vehicle for implementing conservation practices as identified in ch. ATCP 50, Wis. Adm. Code. Under the program, counties are required to develop and revise LWRM plans for the purpose of conserving soil and water resources. Each of Wisconsin's 72 counties has a Land Conservation Committee (LCC) which oversees the activities of a Land and Water Conservation Department (LWCD) or a Land Conservation Department (LCD). Comprising over 100 county officials, working with nearly 350 staff persons, the LCCs and LWCDs/LCDs serve as the main local delivery system of natural resource conservation programs and funds. They provide educational outreach and technical assistance to the public on land and water resource management issues including lake and stream conservation, erosion control, groundwater protection, farmland preservation, water quality, and capacity-building of stakeholders involved with conserving natural resources. They also enforce local ordinances and provide cost sharing to landowners.

4.3.e Land & Water Resource Management Plans – WDATCP & Counties
(https://datcp.wi.gov/Pages/Programs_Services/LWCPlanning.aspx)

Counties are responsible for developing and encouraging adoption of local programs aimed at conserving soil and water resources. LWRM plans, which are the main vehicle for programming, are the product of a locally-led process conducted regularly to establish conservation priorities and identify activities to address these key concerns. Each plan, describing how the county will implement the state performance standards to control agricultural and urban runoff, is developed in consultation with WDNR and must be approved by the WDATCP.

Every 10 years, counties must revise their LWRM plans and are scheduled to present these revisions to the Land and Water Conservation Board (LWCB). The LWCB is responsible for recommending the plans for approval by the WDATCP. Only counties with WDATCP-approved LWRM plans are eligible to receive annual funding through WDATCP's Soil and Water Resource Management (SWRM) Grant Program (discussed further in Section 4.7). Counties must appear before the LWCB to participate in a review of their LWRM plans five years after DATCP approves their revised plans. Many LWRM plans can be found on the county web sites.

The plans advance land and water conservation and prevent NPS pollution by:

- Inventorying water quality and soil erosion conditions in the county.
- Identifying relevant state and local regulations, and any inconsistencies between them.
- Setting water quality goals, in consultation with the WDNR.
- Identifying key water quality and soil erosion problems, and practices to address those problems.
- Identifying priority farm areas using a range of criteria (e.g. impaired waters, manure management, high nutrient applications).
- Identifying strategies to promote voluntary compliance with statewide performance standards and prohibitions, including information, cost-sharing, and technical assistance.
- Identifying enforcement procedures, including notice and appeal procedures.
- Including a multi-year workplan to achieve soil and water conservation objectives.

As noted earlier, changes to planning requirements for LWRM plans (s. ATCP 50.12, Wis. Adm. Code) will facilitate development of plans that address the nine key elements specified by EPA.

4.3.f Additional WDATCP Programs & Responsibilities

Local Ordinances: County and local governments may regulate conservation practices on farms, within limits specified by state law, including local regulation of the ch. NR 151, Wis. Adm. Code, performance standards and manure management prohibitions. Subchapter VII of ch. ATCP, Wis. Adm. Code, spells out standards for local ordinances, including manure storage, shoreland management and livestock facility siting ordinances. WDATCP helps local governments comply with these applicable state standards.

Engineering Assistance: WDATCP is responsible for providing conservation engineering assistance statewide through regional field offices. Working in partnership with technical staff from NRCS and county departments, WDATCP engineers and environmental specialists provide technical support to design and install best management practices throughout Wisconsin. WDATCP specifically provides engineering assistance in the form of training, plan review, project designs and construction oversight, development and maintenance of best management practice standards, development of computer design aids and standard designs, and certification accreditation. WDATCP in conjunction with NRCS counterparts operate a statewide job approval/certification program that authorizes county and state technicians to design and install engineered practices.

4.3.f Best Management Practices for Nonpoint Source Pollution Control

(http://docs.legis.wisconsin.gov/code/admin_code/nr/100/154.pdf
http://docs.legis.wisconsin.gov/code/admin_code/atcp/020/50.pdf)

Wisconsin has identified best management practices (BMPs) that may be used to address agricultural, urban, and other categories or sources of NPS pollution and to meet the statewide performance standards and prohibitions. BMPs are enumerated in chs. NR 154 and ATCP 50, Wis. Adm Code. See Table 4.1. Other practices may be approved when determined necessary to meet water quality objectives.

Table 4.1 Best Management Practices Outlined in ch. NR 154 and ch. ATCP 50, Wis. Adm. Code.

Legal Authority		BMP	Primary Pollutant(s) Addressed
NR 154.04	ATCP 50.62	Manure storage systems	Nutrients
NR 154.04	ATCP 50.63	Manure storage systems closure	Nutrients
NR 154.04	ATCP 50.64	Barnyard runoff control systems	Nutrients
NR 154.04	ATCP 50.65	Access road	Sediment, Nutrients
NR 154.04	ATCP 50.66	Trails and walkways	Sediment, Nutrients
NR 154.04	ATCP 50.67	Contour farming	Sediment, Nutrients
NR 154.04	ATCP 50.68	Cover crop	Sediment, Nutrients
NR 154.04	ATCP 50.69	Critical area stabilization	Sediment, Nutrients
NR 154.04	ATCP 50.70	Diversions	Sediment, Nutrients
NR 154.04	ATCP 50.705	Feed storage runoff control systems	Nutrients
NR 154.04	ATCP 50.71	Field windbreaks	Sediment, Nutrients
NR 154.04	ATCP 50.72	Filter strips	Sediment, Nutrients
NR 154.04	ATCP 50.73	Grade stabilization structures	Sediment, Nutrients
NR 154.04	N/A	Heavy use area protection	Sediment, Nutrients
NR 154.04	N/A	Lake sediment treatment	Sediment, Nutrients
NR 154.04	ATCP 50.75	Livestock fencing	Sediment, Nutrients
NR 154.04	ATCP 50.76	Livestock watering facilities	Sediment, Nutrients
NR 154.04	ATCP 50.77	Milking center waste control systems	Nutrients
NR 154.04	ATCP 50.78	Nutrient management	Sediment, Nutrients
NR 154.04	ATCP 50.79	Pesticide management	Pesticides
NR 154.04	ATCP 50.80	Prescribed grazing	Sediment, Nutrients

Legal Authority		BMP	Primary Pollutant(s) Addressed
NR 154.04	ATCP 50.81	Relocating or abandoning animal feeding operations	Sediment, Nutrients
NR 154.04	ATCP 50.82	Residue management	Sediment, Nutrients
NR 154.04	ATCP 50.83	Riparian buffers	Sediment, Nutrients
NR 154.04	ATCP 50.84	Roofs	Nutrients
NR 154.04	ATCP 50.85	Roof runoff systems	Nutrients
NR 154.04	ATCP 50.86	Sediment basins	Sediment, Nutrients
NR 154.04	N/A	Shoreline habitat restoration for developed areas	Sediment, Nutrients
NR 154.04	ATCP 50.87	Sinkhole treatment	Nutrients
NR 154.04	ATCP 50.88	Streambank or shoreline protection	Sediment, Nutrients
NR 154.04	ATCP 50.885	Stream crossing	Sediment, Nutrients
NR 154.04	ATCP 50.89	Stripcropping	Sediment, Nutrients
NR 154.04	ATCP 50.90	Subsurface drains	Sediment, Nutrients
NR 154.04	ATCP 50.91	Terrace systems	Sediment, Nutrients
NR 154.04	ATCP 50.92	Underground outlets	Sediment, Nutrients
NR 154.04	ATCP 50.93	Waste transfer systems	Nutrients
NR 154.04	ATCP 50.94	Wastewater treatment strips	Nutrients
NR 154.04	ATCP 50.95	Water and sediment control basins	Sediment, Nutrients
NR 154.04	ATCP 50.96	Waterway systems	Sediment, Nutrients
NR 154.04	ATCP 50.97	Well decommissioning	Nutrients, Bacteria
NR 154.04	ATCP 50.98	Wetland development or restoration	Sediment, Nutrients
NR 154.04	N/A	Urban best management practices	Sediment, Nutrients

4.4 Partnering & Affiliated Programs, Activities, & Strategies

Bringing together people, policies, priorities, and resources is critical to the success of the NPS Program. These partners and affiliated programs have goals that align or overlap with the goals of the core NPS Program, thus providing mutual benefits. Partnering efforts also strengthen the program by bringing in new ideas and input and by increasing public understanding of the problems, and more important, public commitment to the solutions.

Table 4.2 NPS Program Partners

Partner	Description	Web Link
Citizen initiatives	Many citizen initiatives, such as watershed and friends' groups provide volunteer labor for restoration, education, and monitoring of water quality.	Example websites: http://usrwa.org/ http://rockrivercoalition.org/
Farm Service Agency (FSA)	FSA supports CREP, CRP and other complementary programs.	http://www.fsa.usda.gov
Groundwater Coordinating Council (GCC)	The GCC is an interagency group that is directed by law to assist State agencies in the coordination and exchange of information related to groundwater programs. The GCC publishes a statewide Groundwater Directory, with contact information for agencies and education resources.	https://dnr.wi.gov/topic/groundwater/GCC/About.html
Land and Water Conservation Board (LWCB)	The LWCB is composed of members of county land conservation committees, state agency leaders, and Governor-appointed members that represent urban and rural natural resource issues. The Board oversees the implementation of the State's NPS Program under ss. 92.04 and 281.65(3), Wis. Stats. The Board provides	http://datcp.wi.gov/Environment/Land_and_Water_Conservation/Land_and_Water_Conservation_Board/index.aspx

Partner	Description	Web Link
	recommendations on funding and implementing state NPS programs including allocation of county staffing.	
Natural Resource Conservation Service (NRCS)	NRCS provides assistance to farmers to improve water quality. This includes improving nutrient and pesticide management and reducing soil erosion, thus decreasing sediment that would otherwise end up in lakes and streams. Technical assistance, including engineering, structure design and layout for manure management and water quality practices contributes significantly to state water quality efforts.	http://www.wi.nrcs.usda.gov/
Non-Governmental Organizations (NGO)	NGOs, such as the River Alliance of Wisconsin, the Nature Conservancy, the Wisconsin Farmers Union and Midwest Environmental Advocates, play an important role in influencing NPS policy and in providing public education regarding NPS programs.	Example websites: http://www.wisconsinrivers.org http://www.wisconsinfarmersunion.com http://midwestadvocates.org https://www.nature.org/en-us/about-us/where-we-work/united-states/wisconsin/
Office of Great Waters	The Office is charged with implementing a comprehensive program to protect the lakes, identify problems and solutions, and serve as a contact point for the Great Lakes and Mississippi River communities.	https://dnr.wi.gov/topic/greatlakes/
Standards Oversight Council (SOC)	The SOC oversees the development, maintenance and distribution of quality technical standards to support urban and rural land and water conservation programs in Wisconsin**.** Participating members include NRCS, WDNR, WALCE, WI Land+Water, WDATCP, UWEX, and the Department of Commerce.	http://socwisconsin.org/
State Technical Committee (STC)	The STC is a subset of NRCS and is composed of a diverse group of public and private entities to provide advice on a wide variety of policy issues to NRCS. Although the STC has no implementation or enforcement authority, USDA gives strong consideration to the Committee's recommendations.	https://www.nrcs.usda.gov/wps/portal/nrcs/main/wi/technical/stc/
Statewide Interagency Training Committee (SITCOM)	SITCOM is made up of members from various agencies and organizations around the state that develop and sponsor training for conservation professionals in Wisconsin.	http://wisconsinlandwater.org/training/state-interagency-training-committee
U.S. Forest Service	Established in 1905, the Forest Service is an agency of the USDA. The Forest Service manages public lands in national forests and grasslands. Its mission is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations.	http://www.fs.fed.us/
U.S. Fish and Wildlife Service	The U.S. Fish and Wildlife Service is dedicated to the conservation, protection, and enhancement of fish, wildlife and plants, and their habitats. The Service also helps ensure a healthy environment for	http://www.fws.gov/

Partner	Description	Web Link
	people through its work benefiting wildlife, and by providing opportunities for Americans to enjoy the outdoors and our shared natural heritage.	
University of Wisconsin (incl. Extension) & Wisconsin Technical Colleges	The state's university and technical college system provides technical and implementation support with focus on nutrient management.	https://extension.wisc.edu/ https://ipcm.wisc.edu/ https://extension.soils.wisc.edu/ http://www.uwdiscoveryfarms.org/ https://wpindex.soils.wisc.edu/ https://www.uwsp.edu/cnr-ap/UWEXLakes/Pages/default.aspx?_sm_au_=irVS6DMHnW1FQR4P
Wisconsin Coastal Management Program (WCMP)	The WCMP is a voluntary state-federal partnership. Through a Governor-appointed Council, WCMP provides policy coordination among state agencies, and awards federal funds to local governments and other entities for the implementation of coastal initiatives.	https://doa.wi.gov/Pages/LocalGovtsGrants/CoastalManagement.aspx
Wisconsin Land and Water Conservation Association (WI Land+Water)	WI Land+Water is a nonprofit organization representing Wisconsin's County Land Conservation Committees and Departments and linking local conservation efforts with federal and state agencies to improve program delivery and strengthen cooperation and coordination.	http://wisconsinlandwater.org/

Table 4.3 Affiliated Programs Addressing NPS Issues

Program Title	Admin. Code	Lead Agency	Program Description/Emphasis	Web Link
Wisconsin Clean Sweep	ATCP 34	DATCP	The program provides financial assistance to Wisconsin counties, regional planning commissions, cities, villages, and other municipalities to collect and dispose of unwanted pesticides, household hazardous wastes, and prescription drugs, reducing public health and water quality risks	http://datcp.wi.gov/Environment/Clean_Sweep/index.aspx
Conservation Reserve Enhancement Program (CREP)	NA	FSA DATCP County	A program to encourage voluntary retirement of sensitive lands, thus decreasing erosion, restoring wildlife habitat and safeguarding surface and groundwater.	https://datcp.wi.gov/Pages/Programs_Services/CREP.aspx
Confined Animal Feeding Operations (CAFO) Permits	NR 243	WDNR	Requires owners/operators of CAFOs to control runoff, comply with surface and groundwater quality standards, and ensure pollutants are not discharged from the production area to navigable waters.	https://dnr.wi.gov/topic/agbusiness/CAFO/
Construction of Bridges	TRANS 207	DOT	Provides standards and specifications for the design and construction of municipal highway bridges, arches, and culverts over and in navigable streams, to reduce obstructions and sediment delivery to the waterbody.	http://docs.legis.wisconsin.gov/code/admin_code/trans/207.pdf
Road Construction Site Runoff	TRANS 401	DOT	Outlines basic principles of erosion control and stormwater management, performance standards, best	http://docs.legis.wisconsin.gov/code/admin_code/trans/401.pdf

Program Title	Admin. Code	Lead Agency	Program Description/Emphasis	Web Link
			management practices and an erosion control implementation plan to reduce runoff from construction sites.	
Dam Safety Program	NR 333 NR 335	WDNR	Ensures that dams are safely built, operated and maintained. NR 333 provides design and construction standards for large dams and NR 335 covers the administration of the Municipal Dam Repair and Removal Grant Program. Both serve to protect habitat and minimize sediment and nutrient runoff.	http://docs.legis.wisconsin.gov/statutes/statutes/31.pdf http://docs.legis.wisconsin.gov/code/admin_code/nr/300/333.pdf http://docs.legis.wisconsin.gov/code/admin_code/nr/300/335.pdf
Environmental Quality Incentives Program (EQIP)	NA	NRCS	Provides financial and technical assistance for development of a farm conservation plan that guides nutrient management and decreases negative impacts on area waters	https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/wi/programs/financial/eqip/?cid=NRCS142P2_020742
Forestry Best Management Practices Program	Ch. 77, Wis. Stats. NR 46	WDNR	Intended to help landowners, loggers, and natural resource managers minimize nonpoint source pollution from forest management activities by requiring the implementation of best management practices in forests enrolled in the Managed Forest Law program.	https://dnr.wi.gov/topic/ForestManagement/bmp.html
Water Evaluation Programs	NR 102 thru NR 106	WDNR	Establishes water quality standards, assessment methodology, impaired waters list, and TMDLs.	https://dnr.wi.gov/topic/surfacewater/standards.html https://dnr.wi.gov/topic/impairedwaters/ https://dnr.wi.gov/topic/tmdls/
Groundwater Programs	NR 140 NR 141	DATCP WDNR	Establishes groundwater standards and regulates/restricts use of products that may enter groundwater.	http://dnr.wi.gov/org/water/dwg/code.htm http://legis.wisconsin.gov/rsb/code/nr/nr140.pdf http://legis.wisconsin.gov/rsb/code/nr/nr141.pdf
Livestock Facility Siting	Ch. 93, Wis. Stats.; ATCP51	DATCP	Establishes standards and procedures that affect manure storage and handling, runoff, setbacks and odor issues.	https://datcp.wi.gov/Pages/Programs_Services/LivestockSiting.aspx
Non-Metallic Mining	Ch. 295, Wis. Stats.; NR 135	WNDR	Provides a framework for statewide regulation of nonmetallic mining reclamation, thus achieving approved post-mining land uses. This results in environmental protection, stable non-eroding sites, productive end land uses and potential to enhance habitat and increase land values and tax revenues.	https://dnr.wi.gov/topic/mines/nonmetallic.html http://docs.legis.wisconsin.gov/code/admin_code/nr/100/135.pdf
Public Trust Doctrine	Ch. 30, Wis. Stats.	WDNR	Allows for the protection of public waterways and the consideration of the cumulative impacts of individual projects in decisions including nonpoint source pollution abatement.	https://dnr.wi.gov/topic/waterways/about_us/doctrine.htm

Program Title	Admin. Code	Lead Agency	Program Description/Emphasis	Web Link
Shoreland Zoning	NR 115	WDNR	Protects lakes and rivers by requiring buffer zones and other measures to reduce the impacts from development.	https://dnr.wi.gov/topic/shorelandzoning/ http://docs.legis.wisconsin.gov/code/admin_code/nr/100/115.pdf
Storm Water Permits	NR 216	WDNR & Local Municipalities	Regulates discharge of storm water from construction sites, industrial facilities and municipalities to prevent the transportation of pollutants via stormwater runoff. Some communities require a municipal storm water permit designed to reduce adverse impacts to water quality from urban sources of storm water runoff.	https://dnr.wi.gov/topic/stormwater/ http://docs.legis.wisconsin.gov/code/admin_code/nr/200/216.pdf
Wellhead and Source Area Protection	NA	WDNR	Achieves groundwater pollution prevention by protecting the wellhead areas of public water supplies.	https://dnr.wi.gov/topic/drinkingwater/sourcewaterprotection.html
Wetland Zoning	NR 103	WDNR	Establishes water quality standards for wetlands, with the intention of protecting public rights and interest, public health and welfare and the present and prospective uses of all waters of the state.	https://dnr.wi.gov/topic/wetlands/ http://docs.legis.wisconsin.gov/code/admin_code/nr/100/103.pdf

4.5 Statewide Collaborations

Collaboration is a must in today's setting of limited resources. As previously discussed, the WDNR works in tandem with the WDATCP and the counties (LCD/LWCD) in delivering the NPS Program. This section describes additional relationships that further NPS Program delivery in Wisconsin. The collaborative relationships are organized around four themes: collaboration in administration and counsel; collaboration in scientific and technical discovery; collaboration in program implementation and delivery; and collaboration in education and outreach. See Table 4.2 for a brief description of the organizations, committees, and boards mentioned below.

Collaboration in Program Implementation and Delivery: The core programs described in section 4.3 are the backbone of the Wisconsin NPS Program. The successful implementation of these core programs relies on the collaborative works of the WDNR, WDATCP and the counties (primarily LCDs and LCCs). However, the truest benefits are realized when these core agencies/programs also bring *their* additional partners and collaborators, including all of those mentioned in the following three collaborative themes.

Collaboration in Administration and Counsel: Boards and committees such as the NRCS State Technical Committee, the Wisconsin Statewide Interagency Training Committee and the Standards Oversight Council are comprised of agency leaders from NRCS, WLWCA, WDATCP, and UWEX, as well as, citizens and Governor appointed designees. They review and make recommendations to the WDNR and WDATCP on funding, research and education issues, develop and sponsor training for conservation professionals, oversee the development and distribution of technical standards, and provide coordination and consistency in NPS Program delivery and support of urban and rural land and water conservation programs in Wisconsin**.**

In addition, the NPS Program works with and seeks the input of the statewide Land & Water Conservation Board (LWCB) (https://datcp.wi.gov/Pages/About_Us/LandWaterConservationBoard.aspx). Created by state law, the LWCB is a policy level board concerning soil and water conservation and NPS pollution abatement. It consists of secretary-level representation from the WDNR, WDATCP, the Wisconsin

Department of Administration, plus Governor appointees and representatives from county level government. The University of Wisconsin-Division of Extension and the NRCS are among the advisors to the board. The LWCB meets six times per year and deals with program policy, project selection, and program evaluation. It also makes recommendations on administrative rules and program budget requests to the WDNR and WDATCP.

Collaboration in Scientific Discovery: The University of Wisconsin researchers and specialists make many and varied contributions to the science base needed to have sound implementation of a statewide NPS Program. A few examples include the Wisconsin Phosphorus Index, developed by the UW-Madison Soil Science Department and UW-Division of Extension, which can be used as a runoff phosphorus loss risk assessment tool for cropland management planning. Also, the "Wisconsin Buffer Initiative", a collaborative effort between a group of Wisconsin citizens and UW-Madison College of Agricultural and Life Sciences faculty to develop recommendations on how riparian buffers can be part of a larger conservation system to address agricultural NPS pollution. In addition, researchers in the UW-Madison Soil Science Department routinely focus on soil-related environmental-protection issues, including movement and degradation of plant nutrient and pesticide residues in soils and assessment, prevention and remediation of soil, groundwater and surface water contamination. WDNR and WDATCP funding of university programs provides the outreach, training, and support necessary to implement nutrient management statewide.

The "Discovery Farms Program", a cooperative effort between Wisconsin farmers and the UW-Division of Extension and UW-Madison, conducts environmental and economic research on working Wisconsin farms and uses the research findings to educate and improve communications between the agricultural community, consumers, researchers, and policy-makers. The Discovery Farms examine environmental challenges faced by Wisconsin farmers and works with farm families to learn about and develop solutions to those challenges that make both economic and environmental sense. The program's research has provided valuable information that has been used to tackle manure runoff issues, one of Wisconsin's biggest NPS issues.

Collaboration in Program Monitoring: Groundwater monitoring in Wisconsin occurs primarily through public water system testing associated with federal Safe Drinking Water Act (SDWA) requirements, private well testing for drinking water quality by individual homeowners, and formal monitoring programs conducted by WDNR, WDATCP, GNHS and USGS. Volunteer monitoring networks is primarily implemented through UW-Division of Extension with financial support from WDNR and EPA. The University of Wisconsin Stevens Point also maintains an extensive statewide database with water quality results from private wells and winter stream baseflow monitoring. The information collected from these efforts is used for various public health and environmental management purposes.

Collaboration in Education and Outreach: In 1998, the administrators from the WDNR, UW-Division of Extension, and the NRCS joined their resources to develop a network of Natural Resources Educators that would work in geographic areas aligned with the WDNR's newly formed "Basin" structure. Initially, seven educators began working to provide educational programs across eleven of Wisconsin's major river basins. Through continued support, the "Wisconsin Basin Education Initiative" grew to include 15 educators serving areas coinciding with Wisconsin's major river and Great Lakes basins. The work of the Natural Resource Educators, as varied as the landscapes of Wisconsin, has included extensive and ongoing education and outreach covering stormwater issues, agricultural runoff issues, forestry, drinking water, groundwater and lakes and rivers issues. The Educators have strong ties to the WDNR, often answering the call for specific assistance with a public input process, working with local natural resource groups, and developing and delivering programs to help farmers, municipalities and other stakeholders reach their NPS protection goals. As part of the UW-Division of Extension team, the Natural Resource Educators have also brought more county and state UW-Division of Extension resources to NPS needs in Wisconsin. WDATCP provides funding along with other partners to coordinate statewide training of conservation professionals.

Another example of the additive effects of a collaboration is the Water Action Volunteers (WAV) Program, coordinated through a partnership between the WDNR and UW-Division of Extension. WAV is a

statewide program for Wisconsin citizens who want to learn about and improve the quality of Wisconsin's streams and rivers. WAV participants are active in storm drain stenciling, river cleanup and stream monitoring. The extensive network of citizen stream monitors includes hundreds of volunteers who annually collect and submit thousands of data sets that are stored online and readily accessible to anyone wishing to view them. There is also a "Citizen Lake Monitoring Network". The WDNR and UW-Division of Extension provide training and equipment, while citizens volunteer their time and energy, playing an important part in lake monitoring and protection.

Another program that engages citizens and other stakeholders in natural resource protection is the Wisconsin Lakes Management Partnership which shares responsibility for lake protection action with the WDNR, UW-Extension, local units of government, lake districts and associations, and lake-specific conservation and community groups. This collaboration includes the administration of the Citizen Lake Monitoring Network (CLMN). The Partnership acts as a catalyst to help produce the greatest benefit from the coordinated actions of the 20 or so WDNR programs that affect lakes.

4.5.a Ensuring State/Federal Consistency on Federal Lands, Assistance Applications & Development Projects

The amount of federal land in Wisconsin is relatively small. The majority is within National Forests, and a small portion is in National Lakeshore and military bases. The WDNR Forestry Management Program works closely with the U.S. Forest Service on management of national forests. The Forest Service was involved in the development of the *Forestry Best Management Practices Manual* and uses the management practices on national forests. The state's review of applications for federal financial assistance or federal development projects includes the review of nonpoint-source-related applications and projects that fall under the jurisdiction of "Wisconsin's Coastal Nonpoint Pollution Control Program" (Section 6217 Coastal Zone Act Reauthorization Amendments) and the state's waterway permits (Chapter 30, Wis. Stats.).

State agencies involved in NPS management have worked closely with federal agencies to bring about consistency in NPS program implementation on other federal lands, as well as federal assistance applications and development projects. A number of collaborative mechanisms between state and federal entities were discussed earlier in Section 4.5. Because of these working collaborations, WDNR has not seen the need to involve the U.S. EPA in situations where the state cannot resolve federal consistency issues.

4.6 Information & Education

While the regulatory aspect of Wisconsin's NPS Program is necessary and effective, public outreach and education are also a vital part of the state's *NPS Program Management Plan*. Information and education efforts are conducted through the network of agencies and organizations in a collaborative effort to maximize participation and increase stakeholder adoption of practices that protect and enhance water quality. These collaborative efforts take advantage of key skills and knowledge of partner organizations, rather than creating an education expertise within the agency. With decreasing resources, this approach has been fundamental to the success of Wisconsin's NPS outreach and education. In addition, education itself is integrated into nonpoint source programs, rather than approached as an add-on. While some view education as a stand-alone effort, Wisconsin has endeavored to make it integral to its NPS programs, as evidenced by partnerships, such as with the UW-Division of Extension Natural Resource Educators, and many others with statewide nonprofit organizations, state agencies, and the University of Wisconsin System.

Increasingly, efforts include a technology-based component to heighten accessibility and participation. Many publications and presentations are also archived on the web to further extend their impacts. Online instruction, such as webinars and other e-learning tools, continues to be used as we strive to offer information and education in a time of limited human and financial resources.

Key areas and organizers from recent and ongoing efforts are identified in Table 4.4. Areas for increased education and outreach will continue to include: TMDLs, understanding and implementing the phosphorus water quality standard, and implementation of the agricultural performance standards.

Table 4.4 Recent and Ongoing Information & Education Efforts

Educational Focus	Organizers	Results
Agricultural Performance Standards and Prohibitions: *Local, County and Regional Efforts*	County Land Conservation Staff, County-based NRCS staff, WDNR, UWEX Natural Resource Educators, County UWEX Agents and other local partners and organizations. County LCD/LWCD's outreach goals are detailed in each county's LWRM Plan.	Farm visits, field days, factsheets, newsletters, radio programs and other local media outlets Regional annual meetings between WDNR, County Land Conservation staff, and other partners as needed.
Agricultural Performance Standards and Prohibitions: *Statewide – Other*	WDNR, WDATCP, NRCS, Professional Nutrient Applicators Association of Wisconsin, University of Wisconsin, Wisconsin Technical Colleges, UWEX Natural Resource Educators, State Specialists, and County Educators. • Nutrient Pest Management (NPM) Program • UWEX Teams • Discovery Farms • Discovery Watersheds • Winter Manure Spreading Media Campaign • Runoff Risk Advisory Forecast	Factsheets, workshops, etc. http://dnr.wi.gov/topic/nonpoint/ Presentations/informational meetings for farm commodity organizations https://datcp.wi.gov/Pages/Programs_Services/NutrientManagement.aspx http://uwdiscoveryfarms.org/ https://extension.wisc.edu/natural-resources/ http://wpindex.soils.wisc.edu/ http://www.manureadvisorysystem.wi.gov/runoffrisk/index Radio advertisements, press releases, and various outreach activities to reach producers with important reminders regarding the timing of manure land applications.
Citizen Monitoring	Water Action Volunteers (WAV), WDNR, UWEX Natural Resource and County Educators, County LCD/LWCD staff, citizens and citizen groups.	Training workshops, newsletters, list serve, Facebook page Data collection and reporting http://watermonitoring.uwex.edu/wav/monitoring/index.html
Confined Animal Feeding Operations	WDNR, WDATCP, UWEX, and County LCD/LWCDs.	Response to concerns expressed by agricultural and environmental groups and the state legislative committees dealing with agriculture CAFO compliance calendars http://dnr.wi.gov/topic/AgBusiness/CAFO/ Manure runoff prevention education
Conservation Professional	WDNR, WDATCP, UWEX, NRCS, County LCD/LWCDs, commodity and interest groups.	Workshops, field days, conferences/meetings, publications

Educational Focus	Organizers	Results
Development Training (SITCOM)		http://wisconsinlandwater.org/training/state-interagency-training-committee
Forestry BMPs	WDNR Forestry Division, UWEX Natural Resource Educators, UWEX Forestry Specialists, Wisconsin Woodland Owners Association, Forest Industry Safety & Training Alliance (FISTA), land trusts, and professional forestry organizations.	Wisconsin Woodland Assistance Website: www.woodlandinfo.org "Learn About Your Land" in person classes, online classes, DVD versions, Facebook page, blog for woodland owners Wisconsin Woodland Landowners Conferences and North Central Land Stewardship Conferences Funding mechanism that results in annual forestry education through WEEB https://www.uwsp.edu/cnr-ap/weeb/Pages/about/index.aspx LEAF – DNR K-12 Education Program and UWSP School Forest Education Assorted state and local workshops, newsletters and conferences
Healthy Lakes & Rivers	WDNR led effort with assistance from UW Extension – Lakes.	Statewide initiative to improve habitat and water quality with five best practices, technical assistance, and possible grant funding for shoreland properties. www.healthylakeswi.com
Impaired Waters/TMDLs	WDNR led effort with assistance from UWEX Natural Resource Educators, consultants, and local groups.	Website http://dnr.wi.gov/topic/impairedwaters/ http://dnr.wi.gov/topic/tmdls/ Public input webinars Informational meetings Factsheets
Urban Performance Standards: *Construction Site Erosion*	WDNR, UWEX Natural Resource Educators, UWEX Specialists, consulting firms, municipal staff.	Technical workshops Webinars Local materials, media campaigns
Urban/Non-Ag. Performance Standards: *Stormwater*	Collaborative effort between UWEX, WDNR and local partners.	Rain Garden Education http://dnr.wi.gov/topic/Stormwater/raingarden/ Regional collaboratives have developed extensive local workshops, materials, media campaigns, tours, etc.
Watershed Projects	WDNR, WDATCP, UWEX, NRCS, County LCD/LWCD's, the River Alliance, Trout Unlimited, and local watershed groups.	DNR's online watershed reports. http://dnr.wi.gov/topic/watersheds/

Educational Focus	Organizers	Results
		Funds obtained for local projects such as restoration, BMP installation, education

4.7 Implementation Financing

A critical factor in turning watershed plans into action is the ability to fund implementation. For the last forty years, the WDNR and WDATCP have made a significant commitment of state funds for implementation, above and beyond available Section 319 grant funding. Each year, the two agencies award millions in *state* funds (General Purpose Revenue, Segregated Funds, and Bond Revenue) for local assistance, planning, and BMP construction cost-sharing grants to local units of government from the core funding programs discussed in Section 4.7.a. However, no one agency or program can adequately fund all of the nonpoint source control needs across the state. Stakeholders are encouraged to leverage funds from existing programs to efficiently target and meet the needs of a particular area. Funding can be accessed from numerous sources at the federal, state, local level. This section provides a summary of core and affiliated funding sources available for nonpoint source implementation.

4.7.a Core Funding Programs

Targeted Runoff Management Grant Program

Targeted Runoff Management (TRM) grants are provided by the WDNR to control nonpoint source pollution from both urban and agricultural sites. A combination of state General Purpose Revenue, state Bond Revenue, and federal Section 319 Grant funds is used to support TRM grants. The grants are available to local units of government (typically counties) and targeted at high-priority resource problems. TRM grants can fund the design and construction of primarily agricultural BMPs. Some examples of eligible BMPs include livestock waste management practices, some cropland protection, and streambank protection projects. These and other practices eligible for funding are listed in s. NR 154.04, Wis. Adm. Code.

Revisions to ch. NR 153, Wis. Adm. Code, (http://docs.legis.wisconsin.gov/code/admin_code/nr/100/153.pdf) which governs the program, took effect on January 1, 2011, and modified the grant criteria and procedures, increasing the state's ability to support performance standards implementation and TMDL implementation. Since the calendar year 2012 grant cycle, projects may be awarded in four categories:

Small-Scale TMDL • Implements a TMDL • Agricultural or urban focus	**Small-Scale Non-TMDL** • Implements NR 151 performance standards • Agricultural focus only
Large-Scale TMDL • Implements a TMDL • Agricultural focus only	**Large-Scale Non-TMDL** • Implements NR 151 performance standards • Agricultural focus only

Section 281.65(4c), Wis. Stats., defines additional priorities for Targeted Runoff Management Projects as follows:

- TRM projects must be targeted to an area based on any of the following:
    - Need for compliance with established performance standards.
    - Existence of impaired waters.
    - Existence of outstanding or exceptional resource waters.
    - Existence of threats to public health.
    - Existence of an animal feeding operation receiving a Notice of Discharge.
    - Other water quality concerns of national or statewide importance.

- Projects are consistent with priorities identified by WDNR on a watershed or other geographic basis

- Projects are consistent with approved county land and water resource management plans.

The maximum cost-share rate available to TRM grant recipients is up to 70 percent of eligible costs (maximum of 90% in cases of economic hardship), with the total of state funding not to exceed established grant caps. TRM grants may not be used to fund projects to control pollution regulated under Wisconsin law as a point source.

Grant application materials are available on the WDNR website at: http://dnr.wi.gov/aid/targetedrunoff.html.

Notice of Discharge Grant Program

Notice of Discharge (NOD) Project Grants, also governed by ch. NR 153, Adm. Code, are provided by WDNR and WDATCP to local units of government (typically counties). A combination of state General Purpose Revenue, state Bond Revenue, and federal Section 319 Grant funds are used to support NOD grants. The purpose of these grants is to provide cost sharing to farmers who are required to install agricultural best management practices to comply with Notice of Discharge requirements. Notices of Discharge are issued by the WDNR under ch. NR 243 Wis. Adm. Code (Animal Feeding Operations - http://docs.legis.wisconsin.gov/code/admin_code/nr/200/243.pdf), to small and medium animal feeding operations that pose environmental threats to state water resources. The project funds can be used to address an outstanding NOD or an NOD developed concurrently with the grant award.

Both state agencies work cooperatively to administer funds set aside to make NOD grant awards. Although the criteria for using agency funds vary between the two agencies, WDNR and WDATCP have jointly developed a single grant application that can be used to apply for funding from either agency. The two agencies jointly review the project applications and coordinate funding to assure the most cost-effective use of the available state funds. Funding decisions must take into account the different statutory and other administrative requirements under which each agency operates. For example, WDATCP may use its set-aside funds for projects involving discharges even if an NOD or NOI is not issued.

Grant application materials are available on the WDNR website at: http://dnr.wi.gov/Aid/NOD.html.

Surface Water Grant Program

The WDNR helps eligible recipients protect and improve surface waters and the quality of aquatic ecosystems by providing financial assistance in the form of cost-sharing grants. Grants and contracts under this program are awarded for 1) Planning projects that help communities prepare for implementation, and 2) Management projects that support the implementation of strategies to protect and improve water quality and aquatic ecosystems. Annually, around 40% of available funding is allocated to support planning activities on lakes, rivers and wetlands, while around 60% is directed toward management.

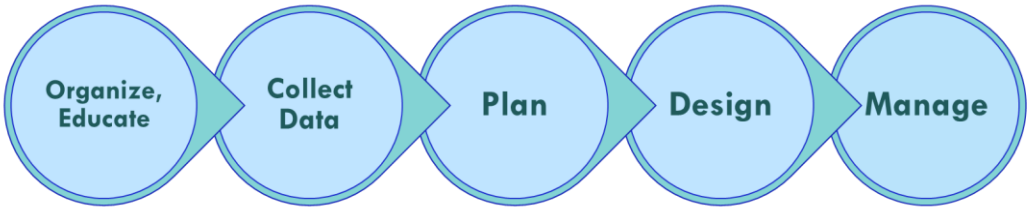


Figure 4.1: Major activities supported under the Surface Water Grant Program

Surface Water Planning Program
Grants under the planning program support a variety of activities to help communities plan strategies to protect and improve surface water. Planning projects may help grantees build capacity to carry out management projects, understand surface waters and aquatic ecosystems, collect data on surface water stressors and condition, and write management plans to inform future implementation.

Sections 281.68 and 281.70, Wis. Stats. and Draft ch. NR 193, Wis. Adm. Code provide the authority and framework for the surface water planning program. Education grants provide up to $5000 in financial assistance, management planning grants provide up to $25,000 for lakes and $10,000 for rivers, and county lake protection planning grants provide up to $50,000 to support the creation of county lake protection plans. All grants in the planning program require a grantee match of at least 33% of the total project cost.

Eligible planning projects include:

- Training, education and outreach to help communities understand surface waters and how they may work to protect and restore aquatic ecosystems.
- Gathering and analyzing physical, chemical, biological information for lakes, rivers and watersheds.
- Assessing in-water, watershed, riparian, physical and biological conditions, including assessments of impairment status or ecological health.
- Assessing of pollution sources, stressors, the causes of impairment and restoration and protection priorities.
- Gathering and analyzing information from lake property owners, community residents, and lake users.
- Assessing planning needs that will produce a robust plan to protect or improve in-water, watershed, hydrological, and riparian condition.
- Reviewing jurisdictional boundaries and evaluating ordinances that relate to zoning, sanitation, or pollution control or surface use.
- Developing, evaluating, publishing, and distributing a management plan that explores alternative courses of action and makes recommendations for the protection and improvement of surface water, aquatic ecosystems and watersheds.
- Writing detailed project plans for specific implementation strategies that include implementation schedules, site maps, design schematics, or other pre-implementation needs.

The goal of the planning grant program is to help support communities as they work toward adopting a management plan that is consistent with the U. S. EPA's "Nine Key Elements" for watershed-based plans. (refer to Section 3.1.a of this document). Our intent is to support the definition of protection and restoration priorities that will result in the improvement of aquatic ecosystems and their associated services.

Grant application materials and program guidance is available on the WDNR website at: http://dnr.wi.gov/Aid/SurfaceWater.html.

Surface Water Management Grant Program
Grants under the management program support activities related to the implementation of strategies to protect and restore surface water. Management projects may help grantees improve shoreland condition, construct and restore habitat, restore connectivity, reduce runoff, restore wetlands, and implement eligible recommendations in a management plan. Sections 281.69 and 281.71, Wis. Stats., and Draft ch. NR 193, Wis. Adm. Code, provide the authority and framework for the Surface Water Management Grant Program. All grants in the management program require a grantee match of at least 25% of the total project cost.

Eligible management projects include:

- Purchase of land or conservation easements that will significantly contribute to the protection or improvement of the natural ecosystem and water quality of a lake, with $200,000 available per project for lakes and $50,000 for rivers.
- Surface water management grants support the restoration of wetlands, shorelands, and in-water conditions. These projects will protect surface water or aquatic ecosystem quality. $100,000, $25,000 and $50,000 is available per project for lakes, rivers, and wetlands, respectively. Special wetland incentive grants of up to $10,000 are eligible for 100% state funding if the project is identified in a county comprehensive land use plan.
- Installation of Healthy Lakes practices; available funding amounts to $25,000 per project.
- Development of local regulations or ordinances to protect lakes and the education activities necessary for them to be implemented, supported by up to $50,000.
- Management plan implementation projects that implement one or more recommendations found in a management plan and approved by the Department. Management plan implementation projects may include watershed management BMPs, in-lake restoration activities, diagnostic feasibility studies, or any other projects supported by a plan and which will protect or improve lakes. These grants provide up to $200,000 per project.

Healthy Lakes practices must be installed in accordance with the Department's Healthy Lakes Plan. The Healthy Lakes team conducts site visits to track program performance. Surface water management projects include eligible activities defined by ch. NR 193, Wis. Adm. Code, and must include a project design plan submitted by the applicant with their application. For shoreland restoration, projects must be conducted in compliance with general and practice-specific standards outlined in s. ATCP 50.61, Wis. Adm. Code. In-water projects must improve habitat or connectivity. Wetland restoration practices include must conform to standards specified in ch. ATCP 50, Wis. Adm. Code, and follow U.S. Department of Agriculture Natural Resources Conservation Service practice standards for Wisconsin. Applicants seeking a grant for management plan implementation must first obtain a determination of eligibility from the department. Pursuant to that goal, the grantee must submit a complete copy of the supporting management plan, a cover memorandum describing the activities proposed for grant funding, the citation of the supporting recommendation, a description of the process the grantee used to provide the public the opportunity to review and comment on the plan, and a summary of any comments received at least 60 days prior to the grant cycle deadline. The WDNR will review the recommendation(s) and advise the sponsor on the project's eligibility in light of its likely ability to protect or improve surface waters or aquatic ecosystems and the degree of support for the project present in the plan. The Department will subsequently assist the applicant to develop a lake protection grant application to seek funding for implementation.

Grant application materials are available on the WDNR website at: http://dnr.wi.gov/Aid/SurfaceWater.html.

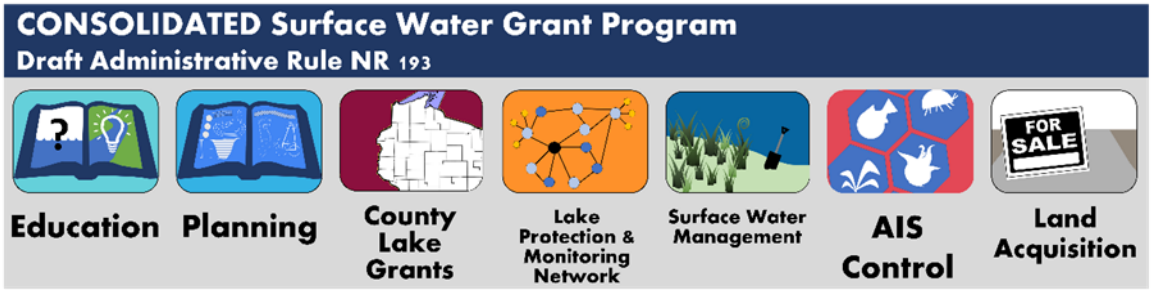


Figure 4.2: The surface water grant program supports other activities in addition to surface water planning and management, including AIS control, lake protection and monitoring. The WDNR will continue to identify opportunities for streamlining and alignment of diverse program objectives and deliverables to be consistent with and supportive of the Clean Water Act.

Soil & Water Resources Management Grant Program

The WDATCP administers the Soil and Water Resource Management (SWRM) Grant Program that supports locally-led conservation efforts. Each year WDATCP awards grants, primarily to counties, to pay for conservation staff and provides landowner cost sharing to implement Land and Water Resource Management Plans. Counties must receive WDATCP approval of their plans to receive cost-sharing grants for BMP implementation. In 2019, the SWRM Program will provide $5.9 million in grants for county cost sharing.

The WDATCP is also responsible for providing local assistance grants for county conservation staff implementing the NPS control programs included in the LWRM plans. In 2019, the SWRM Program will provide $8.9 million in grants for county staff. WDATCP funding is supplemented by local and other sources to support a statewide network of over 350 conservation department staff in 72 counties. County staff are key to delivering NPS-related programs in the state, such as the Farmland Preservation Program, Environmental Quality Incentives Program (EQIP), and the Conservation Reserve Enhancement Program (CREP).

The WDATCP allocates SWRM grants to counties and others according to an annual "Joint WDATCP/WDNR Allocation Plan." The joint annual allocation plan is reviewed by the Land and Water Conservation Board (LWCB) and approved by both the WDATCP Secretary and the WDNR Secretary (see s. ATCP 50.28, Wis. Adm. Code).

WDATCP developed a SWRM Grant Resources webpage that contains policies and procedures, cost-share agreement forms, and other critical information for county staff to facilitate SWRM Program administration. The WDATCP relies on its website to provide current program information and documents in easy-to-use formats. The manual is available on the WDATCP website at: https://datcp.wi.gov/Pages/Programs_Services/SWRMGrantResources.aspx.

Additional SWRM grant information is available on the WDATCP website at: https://datcp.wi.gov/Pages/Programs_Services/SWRMResourcesForCounties.aspx.

Farmland Preservation Program (Formerly known as the Working Lands Initiative)

The WDATCP's Working Lands Initiative, discussed previously in Section 4.3.b, provides multiple funding mechanisms that allow for the preservation of farmland and influence proper farm management, decreasing NPS pollution (nutrients and sedimentation) from productive farmlands enrolled in the program.

- *Farmland Preservation Program Tax Credits*
  The Wisconsin Farmland Preservation Program is designed to preserve agricultural land and open spaces through land use planning and development, promote soil and water conservation, and provide tax relief to farmers in the program. The program provides landowners with an opportunity to claim income tax credits. Eligible landowners may collect one of the following per acre amounts:

  - $5.00 for farmers with a farmland preservation agreement signed after July 1, 2009 and located in an agricultural enterprise area
  - $7.50 for farmers in an area zoned for farmland preservation
  - $10.00 for farmers in an area zoned for farmland preservation and in an agricultural enterprise area, with a farmland preservation agreement signed after July 1, 2009

  There is no cap on the amount of credit that an individual can claim or on the amount of acreage eligible for a credit. However, if the total amount of claims exceeds the total available funds in a given year, the state is obligated to prorate the value of the credits available to individuals.

  The following eligibility requirements apply:

  - Acres claimed must be located in a farmland preservation area identified in a certified county farmland preservation plan. Eligible land includes agricultural land or permanent undeveloped natural resource areas or open space land that is:

    - in an area certified for farmland preservation zoning, and/or
    - located in a designated agricultural enterprise area and under a farmland preservation agreement.

  - Claimants must have $6,000 in gross farm revenue in the past year or $18,000 in the past three years. Income from rental receipts of farm acres does not count toward gross farm revenue. However, gross farm revenue produced by the renter on the landowner's farmland can be used to meet this eligibility requirement.

  - Claimants must be able to certify that all property taxes owed from the previous year have been paid.

  - Farmers claiming farmland preservation tax credits must certify on their tax form that they comply with the statewide agricultural performance standards and manure management prohibitions. New claimants must also submit a certification of compliance with the standards and prohibitions that has been issued by the county land conservation committee.

  More information about the Farmland Preservation Program tax credits is available on the WDATCP website at: http://datcp.wi.gov/Environment/Working_Lands_Initiative/Farmland_Preservation_Tax_Credits/index.aspx.

- *Establish Agricultural Enterprise Areas (AEA)*
  AEAs benefit efforts to manage nonpoint pollution by:
  - Maintaining large areas of contiguous land primarily in agricultural use
  - Encouraging farmers and local governments to invest in agriculture
  - Providing an opportunity to enter into farmland preservation agreements to claim income tax credits
  - Supporting compliance with state soil and water conservation standards

Urban Nonpoint Source & Storm Water Management Grant Program

The WDNR's Urban Nonpoint Source & Storm Water Management Grant Program provides grant funding to local units of government to decrease urban polluted runoff. Funds are awarded for either construction or planning projects primarily in areas covered by municipal storm water discharge permits.

Projects to construct urban BMPs may be funded with cost sharing grants, covering up to 50 percent of the total project costs with a grant maximum of $150,000.

Planning grants can be used to pay for a variety of technical assistance activities such as stormwater management planning, related information and education activities, ordinance and utility development and enforcement and are cost shared up to 50 percent with a grant maximum of $85,000.

Grant application materials are available on the WDNR website at: http://dnr.wi.gov/Aid/UrbanNonpoint.html.

Table 4.5 Core Funding Programs

Core Programs	Activities Funded				Funding Agency
	BMPs	Planning	Staff	Other	
Targeted Runoff Management Grant Program	X		X	X	WDNR
Notice of Discharge Grant Program	X	X			WDNR, WDATCP
Surface Water Grant Program	X	X	X	X	WDNR
Soil & Water Resources Management Program	X	X	X		WDATCP
Farmland Preservation Program (f.k.a. Working Lands Initiative)		X		X	WDATCP
Urban Nonpoint Source & Storm Water Management Grant Program	X	X	X	X	WDNR

4.7.b Partnering & Affiliated Funding Programs

The following list is a sampling of partnering or affiliated funding programs that contribute to NPS pollution control in Wisconsin.

Table 4.6 Partner/Affiliated Funding Programs

Partner/Affiliated Programs	Activities Funded		Funding Source	Web Link
	BMPs	Other*		
Great Lakes Restoration Initiative	X		EPA	https://www.glri.us/
Farm Service Agency CRP & CREP	X		USDA	http://www.fsa.usda.gov
Natural Resource Conservation Service EQIP (including NWQI), MRBI & WRP	X		USDA	http://www.wi.nrcs.usda.gov/
U.S. Fish & Wildlife Service	X	X	USFWS	http://www.fws.gov/grants/
Wisconsin Coastal Management Program	X	X	DOA	https://doa.wi.gov/Pages/LocalGovtsGrants/CoastalManagement.aspx

Dam Safety Program Grants	X		WDNR	http://dnr.wi.gov/Aid/DamMunicipal.html, http://dnr.wi.gov/Aid/DamRemoval.html
*Other activities include tax incentives, planning, training workshops, demonstration sites, etc.				

National Water Quality Initiative

In the April 2013 Section 319 grant guidelines, EPA particularly emphasized the benefits of working closely with the United States Department of Agriculture (USDA) to achieve common goals in restoring and protecting water quality. Through the years, WDNR has had an effective partnership with NRCS. Most recently, NRCS, in partnership with WDNR, is implementing the National Water Quality Initiative (NWQI). The USDA launched the NWQI in federal fiscal year 2012 with the goal to assist producers in addressing high priority water quality concerns in selected watersheds. As mentioned in the Section 319 grant guidelines, "the intent of the NWQI is to invest in a selected priority watershed over multiple years to achieve widespread conservation system implementation that will yield accelerated water quality improvements that can be sustained into the future." Since 2012, NRCS allocated 5% of EQIP general financial assistance funds to address agriculture-related nutrient and sediment impairments. Wisconsin currently has 4 watersheds which receive NWQI funding:

- Big Green Lake (HUC 040302010902),
- Wilson Creek (HUC 070500071002),
- Bear Lake – Lower Little Wolf River (HUC 040302021704),
- North Branch Little River (HUC 040301040404).

NRCS consults with WDNR when selecting watersheds. WDNR will continue to coordinate with NRCS and EPA to work in these priority watersheds to accelerate water quality results.

Water Quality Trading & Adaptive Management

Water Quality Trading (WQT) and Adaptive Management (AM) may be used by municipal and industrial Wisconsin Pollutant Discharge Elimination System (WPDES) permit holders ("point sources") to demonstrate compliance with water quality-based effluent limits. Both of these compliance options provide a unique watershed-based opportunity to reduce pollutant loading to streams, rivers, and lakes through point and nonpoint source collaboration. AM and WQT may also provide a new source of funding for local assistance and implementation of management measures to address nonpoint source pollution and improve water quality. Refer to the WDNR website for more details about water quality trading at: http://dnr.wi.gov/topic/SurfaceWater/WaterQualityTrading.html and adaptive management at: http://dnr.wi.gov/topic/SurfaceWater/AdaptiveManagement.html.

Multi-Discharger Variance

The multi-discharger variance (MDV) for phosphorus extends the timeline for complying with low-level phosphorus limits. In exchange, point sources commit to step-wise reductions of phosphorus within their effluent as well as helping to address nonpoint sources of phosphorus from farm fields, cities or natural areas to implement projects designed to improve water quality. Wisconsin's phosphorus MDV was approved by EPA on February 6, 2017.

Point sources must implement one of the following watershed project options to help reduce nonpoint source of phosphorus pollution:

- Enter into an agreement with WDNR to implement a project to offset the amount of phosphorus their discharge exceeds the target value.
- Enter into a WDNR-approved agreement with a third party to implement a project to offset the amount of phosphorus their discharge exceeds the target value.

- Make payments to county LCDs of $50 per pound times the number of pounds of phosphorus their discharge exceeds the target value. At least 65% of MDV funds must be spent to bring farmers and other agricultural sources into compliance with NR 151 agricultural performance standards. The remaining funding may be spent on staffing, innovative projects, monitoring, modeling, demonstrations, etc. Funds must be targeted to the highest phosphorus loading areas within the participating county.

Refer to the WDNR website for more details about MDV at: https://dnr.wi.gov/topic/surfacewater/phosphorus/variance/.

Clean Water Fund Program (Wisconsin's State Revolving Fund (SRF) Program)

The Clean Water Fund Program (CWFP) provides financial assistance, primarily in the form of loans, to municipalities for wastewater treatment facilities and urban storm water runoff projects. A majority of CWFP loan funds are tied to Wisconsin Pollutant Discharge Elimination System (WPDES) permit compliance activities.

However, the WDNR was granted the authority to use the Clean Water Fund Program to establish "Pilot Projects" for non-traditional wastewater treatment alternatives and worked with the NPS and Wastewater Programs to further define and refine the pilot project program. These are projects intended to address non-traditional Clean Water Fund practices, such as NPS BMPs anticipated in the adaptive management and water quality trading programs, as long as they are eligible under the federal Clean Water Act. Pilot projects help fund non-traditional activities intended to meet a municipal wastewater treatment plant's WPDES permit limits. For example, some treatment plants may determine that adaptive management or water quality trading might be a more cost-effective approach to meet their permit limits than a traditional treatment plant upgrade. Nonpoint source pollution control practices implemented under an adaptive management or water quality trading plan could be considered eligible as pilot projects.

Municipalities are eligible applicants for the Clean Water Fund Program. All applicants seeking pilot project funding will need to follow the same initial process as traditional CWFP projects. The CWFP Intent to Apply (ITA) form has been revised to include pilot projects as an option. The municipality will need to submit an ITA by December 31st of the year prior to the state fiscal year for which they are seeking funding.

The DNR is still assessing what costs might be covered through a pilot project. It is anticipated that partnerships between the municipal wastewater treatment facility and local nonpoint source land and water conservation experts (such as county land conservation staff) will be established to fully implement an adaptive management or water quality trading project. Monitoring and planning costs for adaptive management and trading are likely to be eligible, assuming that they are associated with construction activities. Adaptive management and water quality trading plans will need to include the activities and costs for reducing nutrient outputs to the watershed.

Additional information regarding WDNR's CWFP is available at: http://dnr.wi.gov/Aid/EIF.html.

CHAPTER 5: Tracking, Evaluation & Reporting

5.1 EPA Expectations/Section 319 Grant Requirements

Under Clean Water Act Section 319(h), EPA awards grants for implementation of state NPS Management Programs. As the grant recipient for the State of Wisconsin, the WDNR is required to submit semi-annual and annual NPS progress reports to EPA, which address milestone progress, resulting decreases in pollutant loadings, and other water quality improvements contained in the grant workplan and also the state's *NPS Program Management Plan*.

Section 319 grant recipients are required to submit their semi-annual and annual reports in the "Grants Reporting & Tracking System" (GRTS). GRTS is the primary tool for management and oversight of the grants portion of EPA's Nonpoint Source Pollution Control Program. GRTS pulls grant information from EPA's centralized grants and financial databases and allows grant recipients to enter detailed information on the individual projects or activities funded under each grant. GRTS enables EPA and States to document the accomplishments achieved with the use of Section 319(h) grant funds. The data entered into GRTS is used by the EPA to respond to inquiries received from Congressional committees, the White House, and various constituent groups.

The WDNR will continue to meet the requirements of performance measures specific to Section 319 grants, as well as the Environmental Performance Partnership Agreement (EnPPA). This currently includes such requirements as WQ-9(a-c) (Estimated annual load reductions of nitrogen, phosphorus, and sediment achieved by Section 319 funded projects), WQ-10 (NPS Success Stories – Number of waterbodies identified by states as being primarily NPS-impaired that are partially or fully restored), and WQ-SP12 (HUC-12 Success Stories - Improve water quality conditions in impaired watersheds nationwide using the watershed approach), among others.

5.1.a Tracking, Evaluation and Reporting Indicators

WDNR, WDATCP, and affiliated agencies and organizations collect, maintain, and report numerous indicators of success in implementing nonpoint source programs and in improving water quality. A number of these indicators are directly or indirectly addressed elsewhere in this document, however the subsequent sections of this Chapter, sections 5.2-5.4, address them more specifically in the context of evaluation and reporting. These include administrative, environmental, and social indicators.

5.1.b WDNR Bureau of Watershed Management and Water Quality Goals, Objectives & Performance Measures

The NPS Program shares and supports the WDNR's goal ***to fully implement the Clean Water Act and Safe Drinking Water Act in order to achieve the long-term goal of fishable and swimmable and drinkable waters throughout the state of Wisconsin.*** This goal specifies the priority areas for NPS Program focus, which includes the efforts of four subprograms (Runoff Management, Water Evaluation, Monitoring, and Lakes & Rivers) in the WDNR's Bureaus of Watershed Management and Water Quality.

Objectives and performance measures have been assigned to this WDNR goal, giving the Department the ability to assess the NPS Program's success in achieving its goals. Efforts to meet the performance measures are reported and tracked on an annual basis in the state's Section 319 Annual Report.

The WDNR Bureaus of Watershed Management and Water Quality maintain and update several categories of performance measures applicable to its programs. Those performance measures applicable to nonpoint source programming are shown in Table 5.1 (below). The objectives and measures will be implemented by WDNR to meet the Water Division goals and objectives that apply to the NPS Program as funding allows.

Table 5.1 WDNR Bureau of Watershed Management & Bureau of Water Quality Objectives & Milestones Applicable to the NPS Program

Objective Annual Milestones	**Milestones**					**Lead WDNR Section**
	FY 21	**FY 22**	**FY 23**	**FY 24**	**FY 25**	
Objective: Water quality is protected by ensuring that impacts such as fish kills, surface water pollution, and well contamination from agricultural discharges from non-permitted livestock operations are minimized, resolved, and ultimately prevented.						
1. Resolve 100% of NR 243 NOIs and NODs issued. Document resolution.	X	X	X	X	X	Runoff Management
2. Commit annually to allocate 100% of available, reserved funds to WDNR NOD grants.	X	X	X	X	X	Runoff Management
Objective: Water quality is protected by implementing best management practices designed to achieve performance standards and prohibitions that limit nonpoint source water pollution.						
1. Meet with each county per year to identify strategies and adaptively manage implementation of NR 151 standards, including targeted performance standards.	X	X	X	X	X	Runoff Management
2. Provide compliance support for one county per region for implementation of the NR 151 performance standards.	X	X	X	X	X	Runoff Management
3. Participate in the revision process, review, and comment on 100% of the county draft LWRMP revisions.	X	X	X	X	X	Runoff Management
4. Track issuance and resolution of NR 151 Notices issued by WDNR.	X	X	X	X	X	Runoff Management
5. Commit annually to allocate 100% of available funds to grants for TRM, UNPS-P, and UNPS-C projects.	X	X	X	X	X	Runoff Management
6. Monitor grantee activities toward completion of 100% of funded TRM, UNPS-P and UNPS-C projects.	X	X	X	X	X	Runoff Management
7. Monitor TRM and UNPS-C pollutant load reduction with data entry in BITS.	X	X	X	X	X	Runoff Management
8. Assist program partners to ensure that NPS planning meets the Section 319 Program's "9 key elements" for watershed-based plans.	X	X	X	X	X	Runoff Management

Objective: Strengthen and diversify an effective partnership for protection and restoration of Wisconsin lakes and rivers.						
1. Engage people, politics and partnerships for lake protection by conducting approximately four regional or issue-based workshops annually and an annual statewide surface waters convention.	X	X	X	X	X	Lakes & Rivers
2. Engage 4 lake organization boards in capacity development training annually; publish four issues of Lake Tides; improve the knowledge base of 20 citizens (at least two per region) through the Lake Leadership Institute and hold a training session on lake organization governance annually. (There are currently over 800 known lake organizations statewide.)	X	X	X	X	X	Lakes & Rivers
3. Engage counties, tribes, and river and wetland interests to participate more in the activities of the Lake Partnership.	X	X	X	X	X	Lakes & Rivers
Objective: Lakes are managed for healthy ecosystems and quality recreation using a community- and science-based approach.						
1. Continue to improve the SWIMS database and Lake/AIS web pages and maps making them easier to use and reducing the amount of IT staff time needed to find and enter data for field staff and partners. Conduct training for partners and staff as needed. Make more data complete and available e.g. aquatic plant and habitat, bathymetry, water levels, etc. including metadata and documents for current and historic projects. Continue to support lake assessment efforts enabling more lakes to be successfully assessed. Support the development of on-line grant applications and reporting.	X	X	X	X	X	Lakes & Rivers
2. Enhance citizen-based lake monitoring network by adding and implementing new protocols e.g. color, cyanobacteria, and lake levels; conducting an annual staff/trainer refresher course; providing refresher training/audit for all volunteers every five years; conducting a field QA/QC on 10% of the volunteers per year and; encourage every new Secchi volunteer to accept training in AIS monitoring.	X	X	X	X	X	Lakes & Rivers

Objective: Wisely invest staff and financial resources to assist projects that protect and improve surface water.						
1. Administer a surface water grant program that provides financial support for surface water management planning and education.	X	X	X	X	X	Lakes & Rivers
2. Administer a surface water grant program that provides financial support for surface water management, TMDL implementation, and the implementation of watershed-based plans consistent with EPAs Nine Key Elements.	X	X	X	X	X	Lakes & Rivers
3. Implement the AIS, Lakes and Rivers grant work plan to continuously improve grant program and project outcomes. Implement the consolidated program under DRAFT ch. NR 193, Wis. Adm. Code.	X	X	X	X	X	Lakes & Rivers
Objective: Inspire and engage people for water stewardship.						
1. Incorporate social science research to better understand and re-incentivize shoreland stewardship.	X	X	X	X	X	Lakes & Rivers
2. Participate in and increase the recognition of citizen volunteers.	X	X	X	X	X	Lakes & Rivers
3. Develop and conduct training for staff, citizens, counties, and tribes through the Lake Leader Institute and other programs.	X	X	X	X	X	Lakes & Rivers
4. Implement training programs for shoreland restoration contractors as the next step in developing a certification (with Watershed Management Program).	X	X	X	X	X	Lakes & Rivers

Objective: Maintain an effective partnership among the WDNR Regional Offices and Central Office though administrative and management support.						
1. Enhance productivity, performance, and accountability among elements of water quality programs. Structure and implement evaluation processes, programs, and tools to determine if they meet their intended purpose. Work through the "Water Initiatives Steering Committee" (WISC) for cross-program integration, collaboration, and information exchange among staff and with the Policy & Management Teams.	X	X	X	X	X	Monitoring, Water Evaluation, Runoff Management, Lakes & Rivers
Objective: Lakes, rivers, and streams throughout the state are assessed using representative data collected with standardized biological, chemical, and physical metrics.						
1. Develop and submit a statewide Integrated Report to U.S. EPA for review that documents the water quality standards attainment status for lakes, rivers, and streams throughout the state (by April 1 of even-numbered years). The attainment status will be determined using the Wisconsin's Consolidated Assessment & Listing Methodology (WisCALM) Guidance in combination with best professional judgment.	X	X	X	X	X	Water Evaluation
2. Draft the 303(d) list of impaired lakes, rivers, and streams 303(d) waters, their pollutants, and TMDL priority via WisCALM guidance (January 1 of even-numbered years).	X	X	X	X	X	Water Evaluation
Objective: Modeling efforts support nonpoint and point source pollution reduction programs, including EAPs and TMDLs and their coordination. Efforts frequently transcend Section and Bureau boundaries in support of implementation efforts.						
1. Lead and participate in technical forums to advance data systems for water quality modeling, develop new modeling techniques, quantify model performance, and provide technical consultation and guidance for various modeling activities. Focal areas include quantifying the relative proportion of nonpoint source pollution within a watershed, prioritizing and targeting watersheds that yield disproportionately high levels of pollution, and tracking management across the landscape.	X	X	X	X	X	Water Evaluation

2. Provide programmatic coordination in the development of select TMDLs (e.g., Northeast Lakeshore). Collaborate with the Nonpoint Source Program, including the development and reporting associated with the Section 319 Program.	X	X	X	X	X	Water Evaluation
Objective: Water quality protection is accomplished through having an effective Water Resources Monitoring Strategy.						
1. Continue to implement the 2015-2020 Water Resources Monitoring Strategy. Develop and refine a 2021-2025 Water Resources Monitoring Strategy, including ongoing refinement of stream, river, lake, and wetland monitoring approaches to meet water quality and watershed program needs and EPA expectations related to NPS pollution.	X	X	X	X	X	Monitoring
Objective: Water quality protection is supported by implementing an annual monitoring work plan that incorporates baseline (status and trends), problem assessment, evaluation, and response monitoring needs for the agency in a balanced and cost-effective manner.						
1. Complete Baseline Monitoring as required in annual workplans, including: 1. Natural Community Random; 2. Rivers LTT; 3. Streams LTT; 4. Lakes LTT; 5. Large River watershed rotation. Data is entered in SWIMS and reviewed for completeness (stations, data quality, and applicable final reports).	X	X	X	X	X	Monitoring
2. Complete Prescribed Monitoring including Targeted Watershed Assessments, Directed Lakes, and other monitoring (e.g., watershed planning, pre and post-BMP implementation evaluation, TMDL development and 303(d) validation). Data is entered in SWIMS and reviewed for completeness (stations, data quality, and applicable final reports). Each year, final reports are linked in SWIMS and new findings are incorporated into the WATERS system in a timely manner.	X	X	X	X	X	Monitoring
3. Complete Local Needs monitoring projects as planned, approved, and funded. Data is entered in SWIMS and reviewed for completeness (stations, data quality, and applicable final reports). Each year, final reports for Local Needs projects are linked in SWIMS and new findings are incorporated into the WATERS system in a timely manner.	X	X	X	X	X	Monitoring

4. Continue to pilot integration of wetland monitoring and assessment into Baseline Monitoring, Targeted Watershed Assessment, Directed Lakes, Local Needs Projects, and other opportunities.	X	X	X	X	X	Monitoring
5. Complete response monitoring activities related to Harmful Algal Blooms in lakes, streams, and rivers related to NPS pollution.	X	X	X	X	X	Monitoring
Objective: Water quality protection is achieved by supporting and enhancing capacity for monitoring and assessment activities within the DNR and with external partners.						
1. Maintain and enhance citizen water quality monitoring on lakes and streams to support Department priorities, including projects relating to evaluation of NPS impairments and progress on implementation activities. (http://watermonitoring.uwex.edu).	X	X	X	X	X	Monitoring
2. Develop and implement a strategy to regularly assess recreational and drinking water exposure to and risks from Harmful Algal Bloom toxins generated in NPS dominated lakes, rivers and streams, using new EPA guidelines.	X	X	X	X	X	Monitoring
3. Develop a strategy to maintain and increase staffing levels to build wetland monitoring, assessment and applied science capacity for the Water Resources Program, including projects relating to evaluation of NPS impairments and development of numeric water quality standards for wetlands that are NPS related. Expand funding sources beyond EPA Wetland Program Development Grants, which are not eligible for implementation of routine program implementation activities. Evaluate and explore options for wetland restoration and mitigation within NPS funding sources.	X	X	X	X	X	Monitoring
Objective: Keep healthy water healthy by building a statewide Healthy Waters Program.						
1. Designate and charter a core work group of Water Quality Bureau staff.	X	X	X	X	X	Lakes and Rivers, Water Evaluation, Monitoring
2. Draft and implement a statewide Healthy Waters Strategy.	X	X	X	X	X	Lakes and Rivers, Water Evaluation, Monitoring

5.1.c WDNR Workplanning & Reporting

The WDNR conducts annual work planning that serves as a framework for management to make staff and funding decisions based on the Department's mission, goals, objectives and performance measures, and the budget. Work planning strives to allocate staff time to high priority activities to best achieve the Department's goals. The planning process involves WDNR Central Office and Regional staff and is typically initiated in the spring prior to the start of a new state fiscal year (July 1st of each year). The process includes updating staff performance measure and results in a workplan that is consistent with the state budget. The workplan allows more effective use of staff time, helps identify impacts of vacancies, and provides realistic staffing projections for budget purposes.

WDNR staff in the Bureau of Watershed Management and Bureau of Water Quality provide annual milestone reports that help to establish progress and improve the Department's ability to:

- Assess the effectiveness of programs in meeting their goals, objectives, and performance measures;
- Provide information for management decisions regarding progress and an opportunity for midcourse correction on goals, as needed;
- Communicate measurable progress on goals to WDNR staff and external partners and stakeholders; and
- Collect information for developing the next biennium's goals.

The annual milestone reports are a reporting mechanism to track and evaluate progress in meeting the WDNR performance measures that are applicable to the NPS Program. These milestone reports are included in the state's Section 319 annual reports.

5.1.d WDATCP Bureau of Land and Water Resources Work Priorities

The WDATCP's Bureau of Land and Waters Resources develops work plan priorities annually.

Table 5.2 WDATCP NPS Program Implementation Work Priorities

Goal Objective(s)	**Milestones**					**Lead WDATCP Section**
	FY 21	**FY 22**	**FY 23**	**FY 24**	**FY 25**	
Goal: Grant Administration for Soil & Water Resource Management (SWRM), Producer-Led Watershed Protection, and Conservation Reserve Enhancement Grant Programs – Award grant funds, sign contracts, and administer awards consistent with state and related laws.						
1. Collect and evaluate SWRM grant applications from 72 counties and other grant cooperators and make funding decisions based on grant criteria.	X	X	X	X	X	Resource Management
2. Prepare preliminary and final allocations in cooperation with WDNR to make SWRM grant awards for county staff, landowner cost-sharing and other grants.	X	X	X	X	X	Resource Management
3. Update grant contracts and administer grant awards for 72 counties and other grant recipients.	X	X	X	X	X	Resource Management
4. Provide targeted SWRM cost sharing to resolve farm discharges, including	X	X	X	X	X	Resource Management

Goal Objective(s)	**Milestones**					**Lead WDATCP Section**
	FY 21	**FY 22**	**FY 23**	**FY 24**	**FY 25**	
administration of the Notice of Discharge/Notice of Intent cost sharing in cooperation with WDNR.						
5. Track expenditures of SWRM cost-share funds by practice and county and evaluate long-term trends. Provide data of expenditures to meet match requirements for Section 319 grants.	X	X	X	X	X	Resource Management
6. Ensure that SWRM cost-share funds are used to install practices that meet state standards.	X	X	X	X	X	Resource Management
7. Coordinate with federal programs, such as the conservation reserve enhancement program (see below).	X	X	X	X	X	Resource Management, Land Management
8. Award grants to producer-led watershed groups for projects as detailed at this website: https://datcp.wi.gov/Pages/Programs_Services/ProducerLedProjects.aspx.	X	X	X	X	X	Resource Management, Nutrient Management, Water Quality
Goal: Land & Water Resource Management Plan Administration - Coordinate all aspects of WDATCP-led program to support locally led conservation statewide by (1) ensuring that counties have approved Land and Water Resource Management (LWRM) plans, (2) ensuring that counties submit current work plans, and (3) collecting LWRM implementation results and data for use in annual report.						
1. Implement system for review of plans, including checklist and continuous review of process to make improvements.	X	X	X	X	X	Resource Management
2. Develop and implement a schedule for completion of 72 county plan revisions within a ten-year period and a schedule for review of plan implementation five years after each plan is approved.	X	X	X	X	X	Resource Management
3. Conduct annual survey for annual report and collect annual work plans for current year.	X	X	X	X	X	Resource Management
4. Assemble implementation data for annual report, including collection of performance data for each county based on prior year's work plan.	X	X	X	X	X	Resource Management
5. Approve county revisions to LWRM plan based on criteria in ch. 92, Wis. Stats., and ch. ATCP 50, Wis. Adm. Code. (The current version of	X	X	X	X	X	Resource Management

Goal Objective(s)	**Milestones**					**Lead WDATCP Section**
	FY 21	**FY 22**	**FY 23**	**FY 24**	**FY 25**	
WDATCP's plan review checklist is available at: https://datcp.wi.gov/Documents/LWRMPlanReviewChecklist.docx.						
6. Where data is available, coordinate LWRM plan revisions with WDNR to facilitate development of watershed plans consistent with EPA's nine key elements.	X	X	X	X	X	Resource Management
Goal: Farmland Preservation Program (f.k.a. Working Land Initiative) - Ensure that the program participants (farmers and counties) understand and implement state agricultural performance standards and related conservation practices.						
1. Implement and modify, as needed, the conservation compliance and certification process. As part of the process ensure counties and farmers have necessary information to meet compliance requirements.	X	X	X	X	X	Land Management, Nutrient Management, Water Quality
2. Provide outreach and education about compliance framework.	X	X	X	X	X	Land Management, Nutrient Management, Water Quality
3. Provide compliance assistance to counties.	X	X	X	X	X	Land Management, Nutrient Management, Water Quality
4. Implement procedures for the review of local compliance efforts, conducting an average of 18 reviews of county programs every year and tracking county compliance activities.	X	X	X	X	X	Land Management, Nutrient Management, Water Quality
5. Support counties in efforts to evaluate compliance status of farmers collecting tax credits and ensuring that counties evaluate all farmer participants once every four years for compliance.	X	X	X	X	X	Land Management, Nutrient Management, Water Quality
Goal: Nutrient Management - Improve/protect water quality by promoting the statewide adoption of nutrient management performance standard.						
1. Conduct training workshops including train the trainer workshops and farmer training to educate on nutrient management planning and SNAP-Plus software.	X	X	X	X	X	Nutrient Management, Water Quality

Goal Objective(s)	**Milestones**					**Lead WDATCP Section**
	FY 21	**FY 22**	**FY 23**	**FY 24**	**FY 25**	
2. Support SNAP-Plus software development and updates.	X	X	X	X	X	Nutrient Management, Water Quality
3. Manage grants administration for cost-share funds and nutrient management planning support activities, including farmer education training and coordination with UW CALS.	X	X	X	X	X	Nutrient Management, Water Quality
4. Assess quality of nutrient management plans through selective review and feedback.	X	X	X	X	X	Nutrient Management, Water Quality
5. Maintain resources for farmers, including management planning restriction maps that assist a farmer in planning nutrient applications by managing vulnerable fields (steep or close to water) and risky seasons (winter being the worst) and a runoff risk indicator to inform when weather and soil conditions make spreading risky. Available at: http://www.manureadvisorysystem.wi.gov/.	X	X	X	X	X	Nutrient Management, Water Quality
6. Engage in program and policy evaluation and strategic planning for the purposes of better capturing program goals and improving program delivery, with a focus on increasing adoption of nutrient management plans and addressing water quality impacts related to nutrient applications.	X	X	X	X	X	Nutrient Management, Water Quality
7. Assist WDNR on NR 151, including Silurian bedrock targeted performance standards, P standards, and TMDL issues.	X	X	X	X	X	Nutrient Management, Water Quality
8. Assist WDNR with efforts related to the work of the Gulf Hypoxia Task Force, including coordination for implementation of relevant programs.	X	X	X	X	X	Nutrient Management, Water Quality
Goal: Conservation Engineering - Provide technical and other support to county land conservation departments (LCDs) and others to ensure properly designed conservation practices						
1. Provide project-related technical assistance and support directly related to the installation of engineered BMPs.	X	X	X	X	X	Conservation Engineering

Goal Objective(s)	**Milestones**					**Lead WDATCP Section**
	FY 21	**FY 22**	**FY 23**	**FY 24**	**FY 25**	
2. Provide support and assistance to farmers and other landowners seeking to qualify for state and federal cost sharing, with a focus on projects involving complex engineered practices.	X	X	X	X	X	Conservation Engineering
3. Perform targeted local education and outreach to enhance the skills of technical staff and ensure the quality of the BMPs they design and install.	X	X	X	X	X	Conservation Engineering
4. Provide engineering assistance to local governments to support the administration of water quality ordinances.	X	X	X	X	X	Conservation Engineering
5. Provide technical assistance to support the implementation of a watershed plan or watershed-related activities.	X	X	X	X	X	Conservation Engineering
6. Provide coordination and administrative support to implement conservation programs, including NRCS EQIP and CSP.	X	X	X	X	X	Conservation Engineering

5.1.e WDATCP Bureau of Land & Water Resources Work Planning & Reporting

The WDATCP Bureau of Land & Water Resources, which houses WDATCP's portion of the NPS Program, conducts annual workplanning. WDATCP staff use the Section 319 semi-annual/annual reports that they provide to WDNR in part to evaluate progress in meeting the Bureau's goals. The Department also measures program performance by tracking the activities and performance of county and other partners. The Soil & Water Resources Management Grants Program uses a database to track expenditures of allocated funds including county spending of WDATCP cost-share funds by practice and county. The SWRM database enables WDATCP to evaluate long-term trends. The agency also uses a database to effectively track CREP projects and the environmental benefits they generate. To better track the activities of the Farmland Preservation Program, including compliance monitoring, WDATCP uses databases to track program activities. The Nutrient Management and Water Quality section collects nutrient management plan checklists to track the acres of cropland with nutrient management plans and prepares reports that show implementation of nutrient management plans by county. The Conservation Engineering Unit tracks the work performed by field staff including the design and inspection of engineered practices, review of manure storage and other permit applications, and provision of technical assistance. WDATCP is coordinating with WDNR on the development of an enhanced tracking system, called the "BMP Implementation Tracking System (BITS)".

5.1.f Annual Combined WDNR/WDATCP Reporting

The WDNR and the WDATCP are required under state statute to submit a report to the Wisconsin LWCB summarizing and evaluating progress made throughout Wisconsin to implement the land and water conservation programs funded or administered by the agencies. To develop this annual report, the

agencies use the information provided to them in an annual survey of counties to determine, among other things, progress in implementation of the performance standards. Information from the SWRM database, annual county work plans, and the county survey/report is incorporated into the WDATCP-WDNR annual report to the Wisconsin Land and Water Conservation Board. The agencies publish this report online: https://datcp.wi.gov/Pages/Publications/LandWaterAnnualReport.aspx.

5.2 Administrative Indicators

5.2.a Fiscal Accountability – Section 319 Grants

The WDNR has had the opportunity to be an EPA grant recipient for the past three decades and has consistently demonstrated grant performance accountability. WDNR management of the state's Section 319 grant is a joint effort that consists of multiple mechanisms to ensure expected outcomes and deliverables have been satisfactorily met. Internal Grant Project Officers are dedicated to each project to provide oversight and coordination. WDNR project officers have satisfactorily met reporting requirements as outlined in the Section grant's programmatic and administrative conditions (annual, and/or semi-annual, and final) for all grants received to date. Project officers are responsible for meeting technical reporting and periodic project status requirements conveyed though reporting updates or communication and correspondence with EPA.

Financial accountability has been demonstrated through systematic tracking by staff grant accountants and financial accountants. State budgetary information systems track project activity and project related expenditures in order to provide accurate fiscal reporting. State procurement policies and processes provide guidelines to ensure funds are managed appropriately. Financial reporting is completed on a quarterly basis as required in programmatic terms and conditions to include a "Final Federal Financial Report" (SF-425).

Performance Partnership Grant (PPG)

PPGs have consolidated administrative overhead and created greater flexibility in financial management within several grant categories. Through the Environmental Partnership Performance Agreement (EnPPA), WDNR is working toward five environmental goals to enhance efforts to protect and restore water resources and to measure accomplishments. The five goals are:

1. Support healthy aquatic biological communities;
2. Support fish populations with safe levels of contaminants;
3. Designated swimming waters will be swimmable;
4. Public and private water supplies will have water that is consistently safe to drink, and;
5. The quantity and quality of critical aquatic habitat, including wetlands, will be maintained or improved.

The PPG is the primary federal funding mechanism to work toward these goals. The EnPPA between the State of Wisconsin and EPA serves as the overall work plan for federal grant moneys awarded under sections 106, 319 (Program Funds only), 604(b) and 104(g) of the Clean Water Act. As part of the EnPPA process, the State of Wisconsin prepares a self-assessment annual report at the end of each federal fiscal year identifying work plan accomplishments. In addition, the state also prepares a more in-depth report for expenditure of Section 319 grant funds.

Section 319 Watershed Project Fund Grant

Section 319 Watershed Project Grant funds are used by the WDNR to implement the Wisconsin NPS Program. Funds are targeted to areas and efforts backed by watershed-based nonpoint source control plans (9 key element plans). Watershed Project funds support implementation of best management practices, water quality monitoring, and TMDL implementation in areas of the state with nonpoint source impaired water bodies and high-quality waters.

WDNR provides regular reports to EPA on progress made in projects funded with Section 319 Watershed Project monies. Progress is measured through annual surveys/reports from counties, as discussed in section 5.1.f, and implementation of the core NPS Program activities, specified in Section 4.3, in areas that have 9 key element watershed-based plans.

WDNR Bureau of Finance

The Bureau of Finance is responsible for the administration and management of the Department's fiscal and controllership functions. It serves as a financial advisor to the Office of the Secretary, administrators and program managers.

The bureau objectives are to ensure that financial transactions comply with statutes, administrative rules and the State Controller's Office policies and procedures; and to summarize data into meaningful and accurate reports for both internal and external customers.

The bureau consists of five sections: Accounting Systems, General Accounting, Management Accounting, Purchasing, and Reporting. A Finance team in each region provides selected services to its respective region.

WDNR Bureau of Community Financial Assistance

The Bureau of Community Financial Assistance (CFA) manages grant and loan programs for WDNR, awarding about $200 million annually. Program staff work closely with local governments and interested organizations to develop and support projects that protect public health, natural resources, the environment and outdoor recreational opportunities. CFA staff reduces duplication of effort by consolidating grant and loan management activities in one Bureau.

From a financial management perspective, the Bureau is responsible for ensuring that:

- People who receive money are legally entitled to it
- All grant applicants are treated fairly and equitably
- Program dollars are fully used
- Project work gets done
- State and federal program requirements are met.

The Bureau develops:

- Funding packages for a project that could include grants from a variety of sources
- Financial reports for federal and state agencies as well as the Legislature
- Budgets for individual projects, as well as grant programs, with our partners.

The Bureau provides technical assistance for DNR staff, local government, conservation organizations, and other grant applicants:

- To plan and prepare for a project
- To make project applications competitive
- To design programs and projects with evaluation in mind.

Finally, CFA ensures that projects awarded funds:

- Are aligned with WDNR's mission
- Are run within state and federal regulations.

Community Assistance Oracle System (CAOS)

CFA manages numerous state and federally funded grant programs, and each of these programs has its own needs, conditions, data sets, and work flow processes. CAOS, or the "Community Assistance Oracle System", is an Oracle database application designed to help track and manage fiscal grants administered by the CFA Bureau. CAOS's "sister" database, ELOS (Environmental Loans Oracle System), manages the bureau's fiscal loans.

CAOS stores data, produces documents, and tracks the workflow life cycle of a grant from application through project close and compliance.

In addition to being able to store data and track project status for many different grants, CAOS is also able to provide letters and documents that can be generated for a particular grant.
A series of standard and program-specific reports, available in Excel, PDF and other formats in CAOS, allow users to query the database for details such as projects nearing expiration, projects pending a final payment, projects in a particular legislative district or county, and so on. Reports can be generated not only by grant program, but across programs as well – such as a user being able to see all grants awarded in a particular county or to a particular grantee.

5.2.b GRTS Reporting System

GRTS is a web-based data system that allows for efficient data entry to report Section 319 grant progress. Table 5.3 presents the data elements that currently must be entered into GRTS at the project level:

Table 5.3 GRTS Mandated Elements

Project Type	Pollutant Load Data Indicator
Project Title	Statewide Indicator
Load Reduction Indicator	TMDL Status
Project Start & End Dates	Section 319(h) Program/Project Funds
Objectives	Overview
Methods	Functional Category
Categories of Pollution	Waterbody Type
USGS HUC/Watershed	Wetland Acres Restored/Created*
Drainage Area Location	Load Reduction Model*
Stream Reach Code(s)	Pollutants/Load Reductions*
Best Management Practices (BMPs)	303(d) Impaired List ID*
Streambank Shoreline Protection*	Stream Channel Stabilization*
Protection Work Indicator	

*If applicable

WDNR conducts the necessary GRTS data entry as new Section 319 grants are awarded, as well as annual and semi-annual reporting of project progress.

5.2.c Agricultural Performance Standards and Related Compliance Tracking & Evaluation

Implementation of the statewide agricultural performance standards and manure management prohibitions contained in ch. NR 151, Wis. Adm. Code, is a partnership between state government (WDNR, WDATCP), local government (primarily county), and individual farmers. Each entity has a different role to play in NR 151 implementation and collects different types of information that is used to assess progress:

- Annually, the WDNR and WDATCP collect and evaluate basic information from each county about ch. NR 151, Wis. Adm. Code, implementation and prepare statewide statistical summaries

that give a broad view of statewide activity. This information is presented in the annual Land and Water Conservation Report discussed in Section 5.1.f.

- WDNR tracks its grant program effectiveness in addressing standards and prohibitions. This includes tracking the portion of available grant funds committed to standards and prohibitions, the percentage of grant funds committed to grants, and the portion of funded projects completed.
- WDNR evaluates and comments on each draft County Land and Water Resource Management Plan to assure that the plan adequately addresses ch. NR 151, Wis. Adm. Code, implementation. WDNR also tracks the development of memorandums of understanding between individual counties and WDNR for coordinating state and local ch. NR 151, Wis. Adm. Code, implementation roles and responsibilities.
- WDNR tracks ch. NR 151, Wis. Adm. Code, notice issuance under ss. NR 151.09 and NR 151.095, Wis. Adm. Code, and satisfaction of these notices. WDNR also tracks state enforcement of cases related to violation of ch. NR 151, Wis. Adm. Code.
- WDNR also tracks regulatory activity under ch. NR 243, Wis. Adm. Code, for small and medium sized farms including issuance and satisfaction of pre-regulatory notices (NOIs), regulatory notices (NODs) and environmental enforcement cases. Some of these are performance standards violations.

Suggested procedures for conducting and reporting compliance are contained in the *Implementation Strategy for NR 151 – Agricultural Nonpoint Performance Standards and Prohibitions* (https://dnr.wi.gov/topic/nonpoint/documents/strategy151.pdf) that was developed jointly by WDNR, WDATCP, and representatives of Wisconsin's Land Conservation Departments. The strategy provides a framework for local implementation of NR 151, though counties have widely varying programs and processes in place to conduct and track compliance checks. Consistent with s. 92.10(6)(a)5, Wis. Stats., and s. ATCP 50.12(2)(i) Wis. Adm. Code, the first component of this framework establishes that in their Land and Water Resource Management Plans, counties identify the local strategy and process they will use to implement and ensure compliance with the State's agricultural performance standards and prohibitions. Component 4 of the strategy addresses compliance checks. The suggested process and elements are contained in Table 5.4.

Although state laws authorize counties to enforce and track implementation of ch. NR 151, Wis. Adm. Code, standards and prohibitions, counties are not required to do so. The exception is that counties are required to assure that farmers receiving tax credits under the Farmland Preservation Program or receiving a local livestock siting permit meet ch. NR 151, Wis. Adm. Code, cross-compliance requirements. Detailed records of compliance with performance standards and prohibitions, by individual land parcel, are developed and maintained by counties on a case-by-case basis. These data systems are typically GIS-based. Some are developed in-house by the County. Others are developed as proprietary systems by the private sector and are sold to County clients. Detailed parcel-specific data is kept at the local level and is not reported to state agencies. It is available to state agencies involved in ch. NR 151, Wis. Adm. Code, enforcement. The WDNR and WDATCP are developing protocols for counties to improve reporting data by parcel so agencies can evaluate general compliance statistics by watershed. However, additional funding is needed to implement this new reporting at the county level.

Table 5.4 Ch. NR 151, Wis. Adm. Code, Implementation Strategy: Determination of Compliance.

Component	Elements
Records Inventory	1. Compile records of existing State and/or Federal program participants who have previously signed contracts to install conservation practices to control soil erosion and nonpoint sources of pollution.
	2. From records, evaluate which parcels are subject to which standards and prohibitions.
	3. Based on above evaluations, determine which landowners are currently already meeting standards and prohibitions.
Onsite Evaluations	1. Compile list of parcels for which on-site evaluations will be conducted, according to systematic methodology outlined in the county Land & Water Plan.

	2. Contact owners of selected parcels and schedule site evaluations.
	3. Conduct onsite evaluations: a) Determine and document the extent of current compliance with each of the performance standards and prohibitions. b) Where non-compliant, determine costs and eligibility for cost sharing.

5.2.d Development of BMP Implementation Tracking System (BITS)

WDNR and WDATCP nonpoint source pollution reduction programs require external entities (counties, permittees, consultants, and others) to submit data regarding how they are using state and other funds to reduce NPS pollution through the implementation of best management practices (BMP). Given the number of different programs that need and use this type of data (including: multi-discharger phosphorus variance, total maximum daily load (TMDL) implementation, WDNR and WDATCP grants (such as the Targeted Runoff Management (TRM) grant program and the Soil & Water Resources Management (SWRM) grant program), Wisconsin's adaptive management option, water quality trading, NR 151 compliance tracking, and nutrient reduction strategy tracking), WDNR and WDATCP are developing a "BMP Implementation Tracking System" (BITS) that efficiently facilitates data submission (including the spatial component) and analysis so the two agencies can provide better transparency to the public as to how funds are being used and so the state can better track and show progress towards reaching nutrient reduction goals related to TMDLs, Statewide Nutrient Reduction Strategy, and other WDNR, WDATCP, and EPA reporting requirements.

The main goals of BITS are to:

1) Create a web-based portal for external entities to easily and efficiently submit information required under WDNR and WDATCP's various NPS implementation and soil and water conservation programs.

2) Include a GIS-based application for submitting and visualizing spatial data describing implemented BMPs.

3) Improve transparency as WDNR and WDATCP will have the ability to quickly query and summarize the data and the public will be able to view on a map where funds are being used for nonpoint source implementation and how much money is being spent.

4) Allow WDNR and WDATCP to show and track progress toward Wisconsin's statewide nutrient reduction strategy and will help inform WDNR's water quality monitoring strategy and watershed planning process.

To date, the multi-discharger variance tracking module in BITS has been developed and is actively being used by participants in that program. The SWRM, TRM, NOD, and UNPS grant modules are currently in development. And these will be followed by the development of an NR 151 agricultural performance standards tracking module.

5.2.e Manure Runoff/Spills Reporting & Tracking

Tracking of runoff and spill information is ongoing, with an attempt to centralize as much information as possible. One obstacle is that many spill and runoff events are not reported to the WDNR. State law only requires that spills with the potential to harm human health or the environment be reported to WDNR. And currently, there is no comprehensive database to track manure runoff or spills in Wisconsin. Of the spill/runoff events being centrally tracked by WDNR, the following data is logged: date; WDNR region; county; location information; nature of spill, release or runoff; resource impacts; person reporting; and, relevant contact information.

5.2.f County Work Plan Updates

As a condition of annual grant funding from WDATCP, counties must update their work plans to reflect the most current activities that they intend to pursue. These updates fill in critical details not provided in long-term LWRM plans, which are revised less frequently. Counties must report each year on their implementation of the past year's work plan.

5.3 Environmental Indicators

Water monitoring data are the primary environmental indicators of improvements to water quality in Wisconsin. Significant monitoring is conducted in accordance with WDNR's water quality *Monitoring Strategy*. The Strategy directs the WDNR's monitoring efforts to efficiently address the variety of management information needs, while providing adequate depth of knowledge to support management decisions.

5.3.a Surface Water Monitoring

The monitoring strategy employs baseline, prescribed, and local needs water quality monitoring, as outlined in Chapter 2. Although all types of monitoring could help to evaluate the success of management actions, local needs monitoring offers the opportunity to design projects tailored to evaluating specific BMPs. Examples include evaluating levels of compliance of facilities regulated for effluent discharges to waterways and determining effectiveness of permit conditions in protecting water quality. However, local needs monitoring resources are too limited to allow evaluation of all projects where significant resources have been invested in nonpoint source controls. WDNR will continue to seek the funding resources needed to more fully realize the potential of evaluation monitoring. Prescribed monitoring could be useful for evaluating improvements in water quality by revisiting the same Targeted Watersheds or Directed Lakes after significant management actions have been taken. In fact, some sites are chosen for post-management evaluation. Baseline monitoring can also be helpful for evaluating success if management actions occur in the watersheds upstream from our long-term monitoring sites.

Monitoring in NWQI Watersheds: Beginning in the 2014 monitoring field season, Wisconsin devoted resources to monitor water quality results in Big Green Lake, one of the three NWQI watersheds, to assess water quality impacts from conservation practices. WDNR will continue to devote resources to coordinate with NRCS to plan for and provide appropriately designed and timed water quality monitoring in the NWQI watersheds.

5.3.b Citizen Monitoring

As discussed in Chapter 2, Wisconsin enjoys a robust, well-organized citizen surface water monitoring program, a multi-partner effort of the WDNR and the University of Wisconsin-Extension. Monitoring protocols are well-established, volunteers are well-equipped and trained, and credible data is generated for hundreds of bodies of water each year, including lakes, streams and wetlands, among other natural resources. Citizen monitoring data is uploaded in the WDNR's monitoring database, where it is reviewed for quality assurance, integrated with other water resource data and is used in the same manner as any Department-collected data for status and trends monitoring. Due to the wide spatial and temporal coverage of citizen monitoring, this monitoring effort can be very useful for evaluating the success of management practices. Volunteer monitoring sites are often established to track water quality of lakes or streams with active management.

5.3.c Clean Water Act Report Consolidation

Wisconsin now submits both its *Clean Water Act Report to Congress* and *Impaired Waters List* in an integrated report. The *2018 Wisconsin Water Quality Report to Congress* (https://dnr.wi.gov/topic/ImpairedWaters/2018IR_IWList.html) combines a summary of WDNR's water

protection programs, an overview of the general status of the state's lakes and streams, and a list of impaired waters; which are those not meeting water quality expectations. This report applied up-to-date assessment protocols to a wealth of monitoring data collected by WDNR field biologists and fisheries staff and over 1,000 volunteers in the Citizen Lake Monitoring Network and Citizen-Based Stream Monitoring Programs described above.

5.3.d Data Integration

Data for these reports is generated from the WDNR's Surface Water Integrated Monitoring Systems (SWIMS) and Waterbody Assessment, Tracking, Evaluation, and Reporting System (WATERS) databases, after being reviewed for quality assurance. Thousands of assessment sites on waterbodies (using the state's 1:24,000 scale hydrography dataset) are analyzed to create waterbody condition determinations such as excellent, good, fair or poor. The SWIMS and WATERS databases, created over a six-year period from 2002 to 2008, provide real-time data through the GIS-platform called the "Surface Water Data Viewer" (http://dnr.wi.gov/topic/surfacewater/swdv/). This mapping application allows people to view and analyze watershed-related data on lakes and streams, monitoring stations, impaired waters, Outstanding or Exceptional Resource Waters, etc. for decision making.

5.4 Social Indicators

Social indicators for NPS programs function as interim measures of performance for projects seeking to influence environmental behaviors that influence NPS water quality. They complement administrative and environmental indicators and provide an approach for focusing social measures and using them for assessing project and program performance. The WDNR will encourage NPS projects to use the Social Indicators for Planning and Evaluation System (SIPES) developed with USEPA, other state agencies, and the USDA/NIFA Great Lakes Regional Water Program. The SIPES handbook and related information is available here: https://iwr.msu.edu/sidma/Info/pdfs/SI_Handbook_v4_02012012.pdf.

Application and Methodology

Social indicators for NPS and the SIPES approach are intended for NPS projects seeking behavior change to improve or protect water quality. These include projects addressing agricultural NPS, urban nutrient and flow reduction, training among professionals on NPS issues (e.g., landscapers or snow-plow drivers), and others.

SIPES uses survey and interview data with target audiences to measure pre and post levels of awareness, attitude, constraints, and behaviors. Measures also address components of capacity for the organizations implementing projects. Projects focusing on watershed planning would use the approach near the end of their planning process. Projects implementing NPS plans would include pre and post measurement as part of their project work plan.

Implementation projects would include the following tasks (Table 5.5) in their work plans; projects involved in plan development would only conduct the pre-intervention survey.

Table 5.5 Project tasks for using social indicators.

Benchmarks	Task Description	Start Date	Completion
Assemble information for survey	Assemble lists of addresses, landowners, etc.		
Develop questionnaire	Work with SIDMA to develop questionnaire		
Pre-intervention survey	Distribute the survey to target audience (include necessary		

Benchmarks	Task Description	Start Date	Completion
	practices to ensure adequate response rate)		
Data return and recording	Enter returned survey data into SIDMA		
Post-intervention survey	Distribute the survey to target audience (include necessary practices to ensure adequate response rate)		
Data return and recording	Enter returned survey data into SIDMA		
Data reporting and analysis	SIDMA analyzes data for differences between the pre and post intervention surveys. Project team assesses the information for relevance to planning and implementing project strategies		
Project assessment	Implementation interventions are amended, as needed		

The SIPES handbook provides step-by-step guidelines for each task. Finalized in 2011, projects using social indicators have access to the online Social Indicators Data Management and Analysis (SIDMA) tool. SIDMA assists projects in developing a suitable questionnaire and provides a system for data entry and analysis. Individual projects and WDNR staff have access to SIDMA data, allowing for comparison over time and across multiple projects.

Reporting, Implementation, and Integration with NPS Management and Evaluation

Social indicators provide additional information to aid projects and NPS program staff in understanding how to focus project implementation efforts and determine whether change occurs. SIDMA will integrate with existing administrative reporting systems (e.g. GRTS) to simplify state program reporting. Staff involved with individual NPS projects can use results reports with local audiences.

A list of core social indicators used in SIPES, along with specific project goals and intended outcomes for each type of indicator are included in Table 5.6. This core set was selected to provide a manageable number of indicators that address important components of the behavior change process. Social indicators will help project staff focus and evaluate their efforts toward the following intended outcomes:

- Increased awareness of relevant technical issues and/or recommended practices in critical areas;
- Changed attitudes to facilitate desired behavior change in critical areas;
- Reduced constraints to behavior change;
- Increased capacity to leverage resources in critical areas;
- Increased capacity to support appropriate practices in critical areas; and
- Increased adoption of practices to maintain or improve water quality in critical areas.

The set of core social indicators (Table 5.6) is not comprehensive. While some indicators may appear more relevant to some projects than others, all projects using the SIPES system will collect all the core indicators. Other social indicators can also provide important information for planning, implementing, and evaluating NPS projects.

WDNR and partners will support social indicators in the following ways:

- Work with project staff to help them understand which steps in the SIPES apply to their projects.
- Help project staff determine what types of mid-project evaluations are necessary.

- Help insure that projects collect data using the SIPES protocols.
- Communicate with the U.S. EPA and the regional social indicators team on refining and improving SIPES.

Table 5.6 Core Social Indictors in SIPES.

Goal	Outcome(s)	Indicators
Goal 1: Increase target audience awareness	**Awareness <u>Outcome 1</u>**: Increase awareness of relevant technical issues and/or recommended practices in critical areas	**Awareness Indicator 1:** Awareness of consequences of pollutants to water quality **Awareness Indicator 2:** Awareness of pollutant types impairing water quality **Awareness Indicator 3:** Awareness of pollutant sources impairing water quality **Awareness Indicator 4:** Awareness of appropriate practices to improve water quality **AI 4.1:** Awareness of general practices to improve water quality **AI 4.2:** Awareness of key practices to improve water quality
Goal 2: Change target audience attitudes	**Attitudes <u>Outcome 1:</u>** Change attitudes to facilitate desired behavior change in critical area	**Attitudes Indicator 1:** General water-quality-related attitudes **Attitudes Indicator 2:** Willingness to take action to improve water quality
Goal 3: Reduce target audience constraints	**Constraints <u>Outcome 1</u>:** Reduce constraints to behavior change	**Constraints Indicator 1**: General constraints to behavior change **Constraints Indicator 2**: Constraints to adopting key practices
Goal 4: Increase organizational capacity	**Capacity <u>Outcome 1</u>**: Increase capacity to leverage resources in critical areas	**Capacity Indicator 1:** Resources leveraged by grant recipient in the watershed as a result of project funding (including cash and in-kind resources)
	Capacity <u>Outcome 2</u>: Increase capacity to support appropriate practices in critical areas	**Capacity Indicator 2**: Funding available to support NPS practices in critical areas **Capacity Indicator 3**: Technical support available for NPS practices in critical areas **Capacity Indicator 4**: Ability to monitor practices in critical areas

CHAPTER 6: Future Directions – Through FFY 2025

Wisconsin's NPS Program continues to evolve and grow, most notably with the promulgation of numeric phosphorus water quality standards and additional statewide performance standards, as well as increased regulatory and financial capacity to implement TMDLs. Groundwater protection is a growing concern. The NPS Program will actively evaluate program subcomponents to identify and address gaps with new initiatives, ensuring efficient and effective program implementation into the future. However, the program faces many challenges that will limit its ability to implement new initiatives in the years covered by this plan.

While the state has had to tackle budget challenges in recent years, there are signs of increased statewide interest in water quality initiatives, especially as groundwater/drinking water protection grows in focus. Wisconsin's Governor Tony Evers declared 2019 as the "Year of Clean Drinking Water". Despite the growing interest and some potential for funding to support it in the state budget process, there is currently limited financial resources to fully support any new, significant initiatives.

In addition, the State of Wisconsin has a limited number of state employees. Significant staff cuts have occurred in all agencies in the past several years to address the budget deficit. The remaining positions have had to pick up additional work, making it increasingly difficult to implement existing programs.

With the economic uncertainty, the program's future initiatives, listed below, will be ongoing over the next five years and focused, as resources allow, on enhancing the effectiveness of existing programs and regulatory authority to ensure continued progress in controlling NPS pollution:

- Implementation of ch. NR 151, Wis. Adm. Code, including new performance standards, such as the Silurian bedrock targeted performance standard
- Continued investigation of solutions to groundwater NPS pollution problems
- Continued promotion of the nine key elements identified by EPA for watershed-based plans
- Continued development and implementation of TMDLs
- Continued implementation of ch. NR 153, Wis. Adm. Code, for the TRM Grant Program, increasing the WDNR's ability to fund TMDL implementation
- Incorporation of groundwater and drinking water priorities in watershed planning and TMDLs
- Implementation of the statewide nutrient reduction strategy
- Development of statewide nutrient export spatial modeling tools
- Continued investigation of watershed approaches to better integrate point and nonpoint source efforts and integrate federal, state, local, and non-governmental resources
- Improving partnerships with WDATCP and other stakeholders to further implement NPS reduction goals, while maintaining farm viability and productivity
- Implementation of the phosphorus water quality standard
- Pursuance of strategies to document implementation of nutrient management plans
- Implementation of water quality trading, adaptive management, and the phosphorus multi-discharger variance
- Development of educational/outreach opportunities, targeted at addressing TMDLs, implementation of the phosphorus standard, and implementation of the performance standards
- Updating surface water quality assessment guidance
- Development of a statewide Healthy Waters Protection Strategy
- Investment in wetland monitoring and assessment and applied science for creation of numeric criteria and assessment of NPS impacts to wetlands from local to statewide scales
- Continued updates to the assessment database to make the documentation of the state's waters as comprehensive as possible.

Citations

Warzecha, C., R. Gerhardt, and S. Kluender. 1995. Wisconsin private well water quality survey. Wisconsin Department of Health and Social Services, Department of Natural Resources, and State Laboratory of Hygiene. Unpublished report.