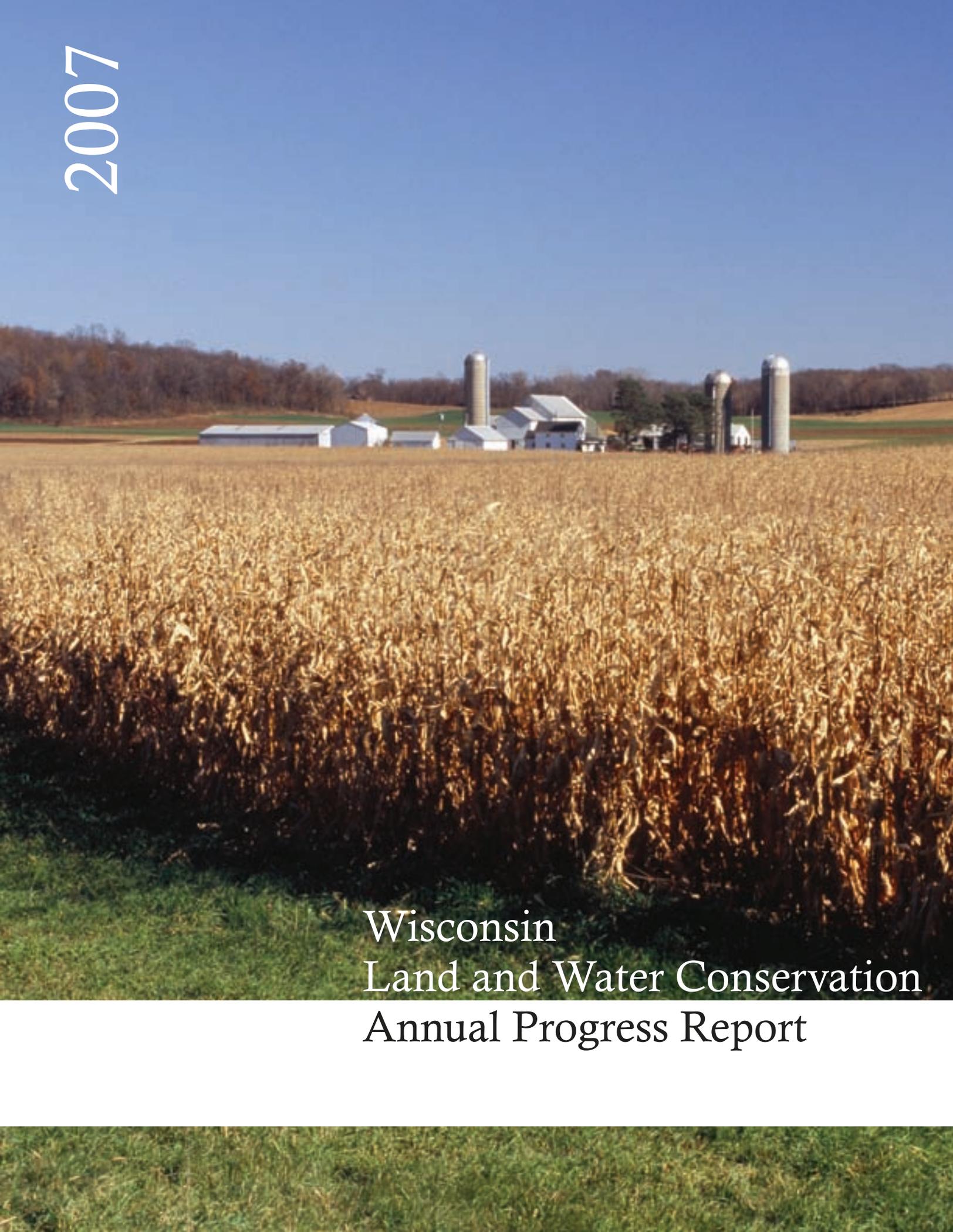


2007



Wisconsin
Land and Water Conservation
Annual Progress Report

Land and Water Conservation Board

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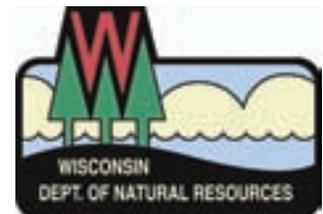
2007 ANNUAL PROGRESS REPORT

This report to the Wisconsin Land and Water Conservation Board summarizes progress made in 2007 on programs administered by the Department of Agriculture, Trade and Consumer Protection (DATCP) and the Department of Natural Resources (DNR) to promote conservation and control polluted runoff from both rural and urban sources. This report is submitted in part to meet program requirements under § 281.65(4)(o) and § 92.14(12), Wis. Stats. for an annual report.

Funding for this report was provided in part by a nonpoint source grant from s. 319 of the Clean Water Act administered by USEPA.



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Frequently Used Acronyms and Abbreviations

Agencies, Departments and Organizations

DATCP	Wisconsin Department of Agriculture, Trade and Consumer Protection
DNR	Wisconsin Department of Natural Resources
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
WALCE	Wisconsin Association of Land Conservation Employees
WLWCA	Wisconsin Land and Water Conservation Association

State and Federal Programs and Terms

BMP	Best Management Practice
CAFO	Concentrated Animal Feeding Operation (Facilities permitted by DNR under NR 243)
CREP	Conservation Reserve Enhancement Program (Federal and state grant program)
EQIP	Environmental Quality Incentive Program (NRCS grant program)
FPP	Farmland Preservation Program (DATCP program)
LWRM	Land and Water Resource Management (DATCP planning program)
PWP	Priority Watersheds and Lake Projects (DNR grant program)
SWRM	Soil and Water Resource Management (DATCP grant program)
TRM	Targeted Runoff Management grant (DNR grant program)
UNPS	Urban Nonpoint Source and Stormwater Management grant (DNR grant program)
TMDL	Total Maximum Daily Load (part of DNR program for impaired waters)
WAV	Water Action Volunteers (Citizen monitoring program)
WPDES	Wisconsin Pollutant Discharge Elimination System (DNR permitting program)

Wisconsin Administrative Rules

ATCP 50	Ch. ATCP 50 Wisconsin Administrative Rule (SWRM, LWRM)
ATCP 51	Ch. ATCP 51 Wisconsin Administrative Rule (Livestock Facility Siting)
NR 151	Ch. NR 151 Wisconsin Administrative Rule (Runoff Management)
NR 216	Ch. NR 216 Wisconsin Administrative Rule (Stormwater Discharge Permits)
NR 243	Ch. NR 243 Wisconsin Administrative Rule (Animal Feeding Operations)
NR 153	Ch. NR 153 Wisconsin Administrative Rule (Targeted Runoff Management Grants)
NR 155	Ch. NR 155 Wisconsin Administrative Rule (Urban Nonpoint Source Water Pollution Abatement and Stormwater Management Grants)



EXECUTIVE SUMMARY

In 2007, staff from county land conservation departments and municipalities delivered over \$39.5 million in conservation practices and technical assistance to control erosion from both croplands and construction sites, repair eroded streambanks and shorelines, manage livestock manure to keep it out of waterways, and reduce polluted stormwater runoff from city streets and parking lots. Innovative methods of managing manure increased across the state and changes in the local conservation delivery systems presented opportunities and challenges to conservation professionals. Some highlights from 2007 are as follows:

- ◆ 2,749 best management practices were installed.
- ◆ Through best management practices installed in priority watershed projects, nearly 424,000 fewer tons of sediment and about 146,000 fewer pounds of phosphorus entering rivers, streams and lakes each year.
- ◆ 93% of critical sites in priority watersheds have been resolved, primarily through installation of BMPs.
- ◆ Results from 29 counties that conducted transect surveys show about 78% of fields are at or below the tolerable rate for soil loss.
- ◆ Increase in commitment of county resources to implementing the runoff performance standards and prohibitions.
- ◆ Conservation partners delivered hundreds of hours of educational activities to agricultural and urban audiences.
- ◆ Over 1,800 citizens participated in volunteer stream monitoring.
- ◆ Strengthened the foundation for statewide implementation of the nutrient management standard through expanded county programming and new cost-share funding.

Data for this report come from traditional state and federal sources. New to this year's report are best management practice data provided by NRCS. These data compliment the financial data and reflect how state, local and federal money work together to achieve conservation results.

The following programs, along with their authorizing Wisconsin statutes, are covered by this report:

- ◆ Land and Water Resource Management Planning Program, ch. 92.10
- ◆ Soil and Water Resource Management Program, ch. 92.14
- ◆ Priority Watersheds and Lake Projects, ch. 281.65
- ◆ Targeted Runoff Management Grant Projects, ch. 281.65
- ◆ Urban Nonpoint Source and Stormwater Management Grant Projects, ch. 281.66
- ◆ Farmland Preservation Program, ch. 91



PROGRAM MANAGEMENT

LAND AND WATER RESOURCE MANAGEMENT PLANNING PROGRAM

Wisconsin's 72 counties are the main vehicles for delivering state conservation programs and funds. Land and Water Resource Management (LWRM) plans are the primary planning tools counties use to target their conservation efforts.

These plans are the product of a locally-led process conducted every five years to establish county conservation priorities and identify activities to address these key concerns. Each plan must describe how the county will implement the state performance standards and prohibitions to control agricultural and urban runoff. Each plan is developed in consultation with DNR and must be approved by DATCP. By the end of 2007, all 72 of Wisconsin's counties had revised their LWRM plans to meet the latest standards for approval, which includes an NR 151 implementation strategy.

Counties conduct activities as diverse as invasive species management, grazing assistance, urban stormwater management and groundwater management. Figure 1 displays the top four county activities. In 2007, the four most common activities reported were soil erosion control, nutrient management, manure management and shoreland management. Nutrient management training continues to be a key element of county outreach activities with over half the counties conducting nutrient management planning workshops.

Counties have reported several benefits associated with their LWRM plans. Key among these benefits is obtaining additional funding for conservation practices and additional staff. Once again, LWRM plans helped counties access over \$1 million in additional cost-share funds and obtain several part- or full-time staff members.

FUNDING FOR CONSERVATION

In 2007, staff from county land conservation departments (LCDs) and municipalities delivered over \$39.5 million in conservation practices and technical assistance. This money was administered through cost-share agreements with agricultural producers and other landowners, as well as grants to eighteen urban municipalities, several lake districts and a tribal government.

Funding for cost sharing, staffing and support came from both state (\$20.9 million) and federal (\$18.7 million) funds. Staffing and planning assistance through state programs totaled more than \$10.6 million and cost-share totaled more than \$10.2 million. Federal funding came from EPA through section 319 of the Clean Water Act, and from USDA's Environmental Quality Incentives Program (EQIP) and Conservation Reserve Enhancement Program (CREP). These programs provided over

Table I: 2007 Financial data	
SWRM Grant Program Expenditures	
\$9,331,194	DATCP Staffing and support
\$4,850,483	DATCP Cost-share
\$610,000	State CREP
360	County Conservation Staff
91%	percentage of cost-share spent or extended
DNR Grant Program Expenditures	
\$536,454	TRM for BMPs
\$945,342	UNPS for urban BMPs
\$1,328,304	UNPS for stormwater planning
\$3,293,290	PWP for BMPs
Federal Grant Program Expenditures	
\$17,133,023	EQIP for BMPs
\$490,000	CREP for BMPs
\$934,862	S. 319 grant for BMPs
\$93,068	NRCS technical assistance

\$93,000 in staffing assistance and about \$18.6 million in cost-share. Cost-share dollars for both state and federal programs are further broken down in figure 2. Reporting of additional contributions of money, time and other resources that came from counties, municipalities, landowners, and nonprofit organizations is beyond the scope of this report.

SOIL AND WATER RESOURCE MANAGEMENT PROGRAM

The Soil and Water Resource Management (SWRM) program supports locally-led conservation efforts by providing counties staffing grants and cost-share funding to implement LWRM plans.

For 2007, DATCP had \$0.5 million in staffing grants restored, but the grants program still fell behind in meeting the goal in Sec. 92.14(6)(b), Stats., to fund an average of 3 staff in each county. Beyond meeting this goal, DATCP had nearly \$5.0 million in unmet requests from counties. At the same time, counties are seeing tight budgets and increased

demands on local staff to implement local priorities and state conservation initiatives. The need for funding, at both the state and local levels, continues to be a source of concern for conservation professionals.

In the second year of the 2006-2007 biennium, DATCP continued to operate with less cost-share funding for hard practices as a result of a reduction in its bonding authority. DATCP was unable to meet about \$4.5 million in county requests for cost-share funds to install hard practices such as manure storage, shoreland protection, and barnyard runoff controls. For the next biennium, DATCP will make a small dent in addressing this need with the restoration of \$1.5 million in its bond authority. With access to about \$0.5 million in funds for cost sharing nutrient management plans, DATCP made progress in building the framework to administer an expanded cost-share program based on a significant funding increase in the next biennium.

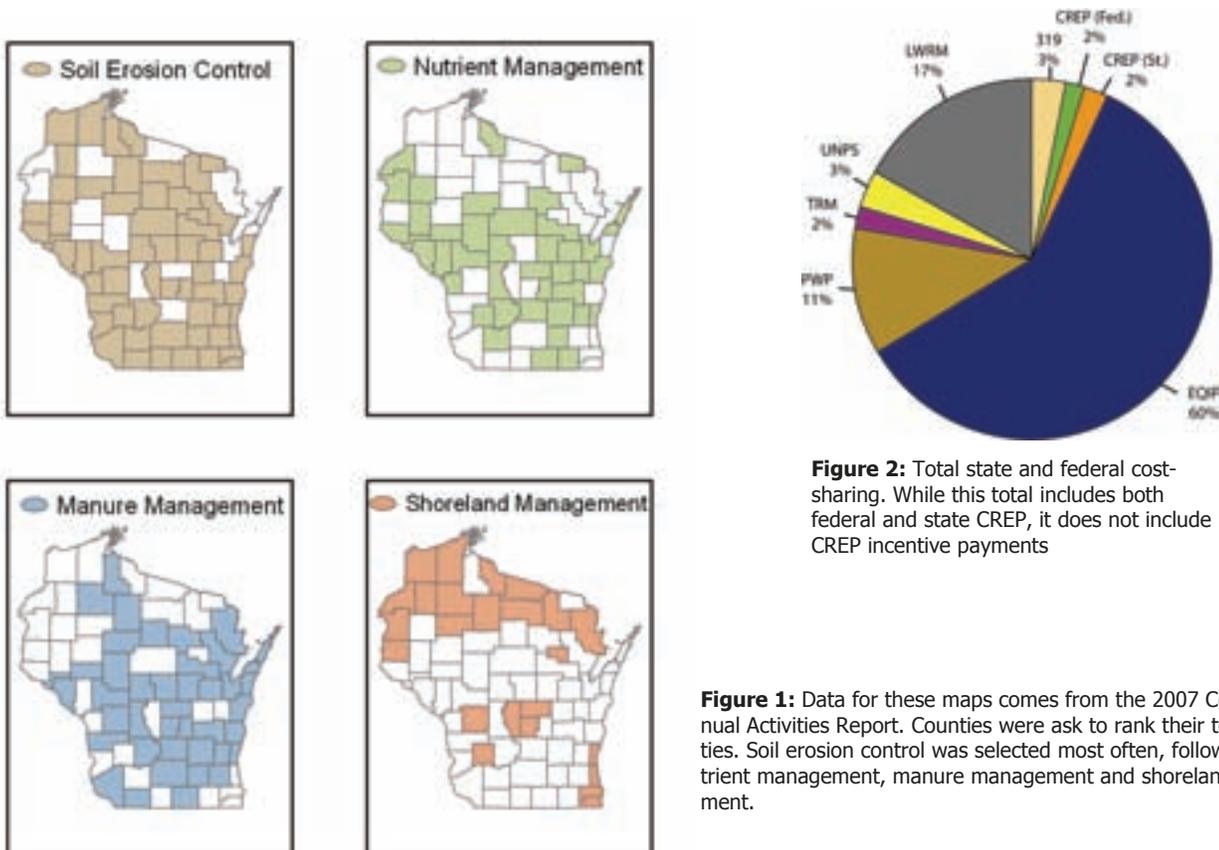


Figure 2: Total state and federal cost-sharing. While this total includes both federal and state CREP, it does not include CREP incentive payments

Figure 1: Data for these maps comes from the 2007 County Annual Activities Report. Counties were ask to rank their top activities. Soil erosion control was selected most often, followed by nutrient management, manure management and shoreland management.

Over the last five years, counties have been making improvements in their ability to spend cost-share dollars. In 2007, there was a slight decrease in the percent of available cost sharing spent through grant contracts with landowners, or through extensions of landowner contracts; however, this decrease was not significant. Counties, along with DATCP, continue to work towards finding ways to improve their ability to use all available cost-share funds, including more flexibility in extending cost-share projects.

PRIORITY WATERSHED AND LAKE PROGRAM

Projects in this program set pollution reduction goals based on the severity of polluted runoff from both agricultural and urban sources. DNR administers funds for best management practices. DATCP funds local staff that provides technical assistance, education, and project management. Legislation passed in 1997 ended new project selection. All projects are scheduled to end in 2009. However, 1-year extensions may be approved to allow for completion of BMP installation projects.

Priority Watershed Critical Sites

While most participation in priority watershed and lake projects is voluntary, projects selected after 1993 are required to address the most critical sites needed for water quality improvement. Owners of critical sites must either participate voluntarily or be subject to legal orders to abate pollution. Local project managers help landowners install BMPs or change management practices on these sites.

As of the end of 2007, over 93% of all types of critical sites were resolved (livestock—96%, uplands—92%, streambanks/shorelines—97%, other—44%). Most of these critical sites are resolved voluntarily by the landowner with cost sharing for BMPs and technical assistance. Data on the types of critical sites are detailed under the manure management, cropland soil erosion and streambank/shoreline sections of this report.

TARGETED RUNOFF MANAGEMENT (TRM) GRANTS

DNR administers TRM grants to local governments to address both urban and rural polluted runoff. Projects are site-specific and usually last two years. Typical TRM projects, cost shared at 70% up to \$150,000, include livestock manure management, erosion control and stream bank protection practices. In 2007, funding for TRM grants was sufficient to award \$2.3 million or 40% of the \$5.8 million in eligible requests.

URBAN NONPOINT SOURCE AND STORMWATER MANAGEMENT GRANTS

These DNR grants cover both planning and construction projects to address polluted urban runoff. They typically last two years. Planning grants can pay for 70% up to \$85,000 for stormwater management planning, education, ordinance and utility development and enforcement. Construction grants may cover 50%—up to \$150,000—of the cost of BMPs such as stormwater detention ponds, infiltration practices, and streambank and shoreline stabilization. In 2007, DNR was only able to fund about \$1 million in planning grants. This represents 44% of the \$2.3 million of eligible funding requests. DNR did not fund any urban construction grants in 2007 due to lack of funds.

IMPAIRED WATERS AND TOTAL MAXIMUM DAILY LOADS

Impaired waters, as defined by Section 303(d) of the federal Clean Water Act, are those waters that do not meet the state's water quality standards. Section 303(d) of the Clean Water Act requires states to list water bodies as impaired if they are not meeting water quality standards or designated uses. The DNR updates its "Impaired Waters List" every two years. In 2007, Wisconsin listed 643 water bodies; of those, 271 are listed for atmospheric deposition of mercury. Thirty-eight percent of the waters on the

303(d) list are listed for nonpoint source pollution. DNR is developing a surface water assessment methodology to establish new guidelines for listing and delisting waters.

Once a waterbody is on the Impaired Waters List, the state is required to write a Total Maximum Daily Load (TMDL) report for that waterbody. A TMDL is a quantitative analysis of the amount of a pollutant a stream, river, or lake can assimilate before exceeding water quality standards. The TMDL is equivalent to the loading capacity of the stream made up of background, point sources, nonpoint sources and a margin of safety. The allocations are distributed among the point sources (wasteload allocation) and nonpoint sources (load allocations). DNR and EPA must approve all TMDLs before implementation can begin.

Wisconsin has approved TMDLs for 52 waterbodies since 2000. Ninety percent of these TMDLs address sediment from agricultural runoff, which leads to degraded habitat. Larger, watershed-scale TMDLs are being developed for the Upper and Lower Rock River Basins, the Lower Fox River Basin, and the Red Cedar River Basin. These larger-scale TMDLs will address both point source and nonpoint source pollutants.

Efforts to develop a statewide TMDL implementation program are underway. DNR is developing a program framework, including identifying program goals, regulatory, financial, and technical tools, and determining roles and responsibilities of partners and stakeholders. During 2007, the development of the state's first TMDL implementation plan continued in the Red Cedar River Basin.

For more information, go to:

<http://dnr.wi.gov/org/water/wm/wqs/303d/>

Table 2: 2007 Program highlights	
Priority Watershed and Lake Projects	
25	number of active priority watershed and lake projects
61	number of closed/completed projects since program started in 1978
4,796	number of participating landowners in 2007
8,682	total number of landowners participating in both active projects and those closed from 2000-2007 (overall participation rate = 31%)
150	number of nonpoint source impaired waters benefiting from project implementation
TRM Grants	
20	number of TRM projects awarded in 2007 (all agricultural)
184	total number of TRM projects, 1999 -2007 (134 agricultural, 50 urban)
145	number of TRM projects completed through 2007
120	number of nonpoint source impaired waters benefiting from project implementation (1999-2007)(86 agricultural, 34 urban)*
Urban NPS Grants	
21	number of UNPS project grants awarded in 2007 (21 planning, 0 construction)
325	total number of projects, 2000-2007 (179 planning, 146 design/construction)
259	number of completed projects through 2007
202	number of nonpoint source impaired waters benefiting from project implementation (2000-2007) (105 planning, 97 design/construction)*
Best Management Practices (BMPs)	
1,048	number of BMPs installed as part of the SWRM program during 2007
1,701	number of BMPs installed through TRM, UNPS, and PWP during 2007
Critical Sites	
25	number of priority watershed & lake projects addressing critical sites
1,655	number of critical sites identified in priority watershed projects
93%	percentage of all types of critical sites resolved as of Dec. 31, 2007

* Corrects numbers that were over-reported in 2006.

SUCCESS STORY – MARATHON COUNTY TACKLES MANURE STORAGE ABANDONMENTS

When the staff at the Marathon County Conservation, Planning and Zoning Department inventoried all 857 storage facilities in the county, they discovered that 105 of them were idle and many of those were in close contact with bedrock. These storage facilities posed potential environmental, health and safety risks.

Results of drinking water tests conducted in the mid-1990s for both the Lower Big Eau Pleine River and the Lower Rib River Priority Watershed Projects revealed that 26% of the wells exceeded the preventative action limit (PAL) for nitrates. The PAL serves as an indicator of potential contamination problems. It is also the limit at which response actions, under state administrative rule NR 140, may be required to protect public health and welfare.

The county's Land and Water Resource Management plan (2005-2010) identifies the closure of abandoned manure storage facilities in high-risk areas as an important objective. The county also has a manure storage ordinance based on the requirements of the state agricultural performance standards. But closing all those pits in an environmentally sound manner takes money and time.

Working with DNR, Marathon County staff tackled the problem by ranking the sites based on several risk factors such as potential to contaminate groundwater or presence of impaired waters. Next they bundled together several high-risk sites by geographic areas that fit the Targeted Runoff Management criteria, applied for grants and received two of them. Other sites were properly abandoned using funding from the Priority Watershed Program and federal nonpoint program.

The county estimates they have abandoned 60 total manure storage structures in the last four years with another 50 in the works. It may take another eight to ten years to completely close all the structures, but TRM grants will be a good tool to get to that goal.



Before: One of the over 100 idle storage facilities in Marathon county.



After: The same facility after the site was properly closed.

SUCCESS STORY – PROTECTING THE BRANCH RIVER THROUGH CONSERVATION EASEMENT, MANITOWOC COUNTY

The portion of the Branch River in Manitowoc County has been classified as an exceptional resource water. It supports a unique fish resource, the Greater Redhorse, which has been listed as a threatened species since 1989. The Branch is also one of the few rivers in the state that provides steelhead trout fishing. It is managed by the WDNR as a Class I steelhead stream and also a salmon fishery. The Branch River was also stocked with Lake Sturgeon in 2003.

However, nutrients and sediment runoff from nearby croplands, feedlots and streambanks impact the river. In 1996 the Branch River Priority Watershed Project plan was approved. Plan goals included improvement of aquatic habitat degraded by polluted runoff and management to provide a quality fishery.

A broken down cattle crossing and a degraded culvert on a local farm were obstructing parts of the Branch River during periods of both high and very low flow. Stream temperatures were affected by excessive pooling. Scouring of streambanks occurred in areas downstream from the obstructions. Navigation was obstructed and fish habitat degraded.

After purchasing the farm, the landowner implemented many of the conservation practices he had installed on his other farmland, practices such as conservation tillage, buffer strips, streambank protection, manure storage and implementation of a nutrient management plan. A highly polluting barnyard was decommissioned and improvements made to a second barnyard. Removing the obstructions and restoring the integrity of the river required a much larger effort.

The Manitowoc County Soil and Water Conservation Department worked with the landowner and several partner agencies to purchase 51.7 acres of conservation easement, protecting 2,850 feet along the river. The landowner spent his own money to remove the broken down crossing. Funding for an easement and for the culvert replacement came from the Priority Watershed Project. The bridge and culvert replacement were also funded through DNR's Office of Great Lakes and the U.S. Fish and Wildlife Service. The Friends of the Branch River actively promoted the project to the landowner and later provided education and study development for the project. The easement and BMPs have restored this section of the Branch to a free-flowing, fish-friendly state.



Branch River: A new culvert reduces excessive pooling and streambank scouring.

PERFORMANCE STANDARDS IMPLEMENTATION



IMPLEMENTING RUNOFF PERFORMANCE STANDARDS

2007 was the second year of collecting implementation information from counties on a variety of activities related to the performance standards and manure management prohibitions. The following information reflects both years of data.

Local Resources

Counties committed more staff resources in 2007 than the previous year, as shown in Figure 3. The number of counties that reported dedicating more than 50% of their staff resources toward implementation of the agricultural performance standards and prohibitions more than doubled over 2006 figures while the numbers committed to the implementation of the non-agricultural performance standards decreased slightly. However, the majority of counties dedicated less than 50% of their staff towards implementation as was the case in 2006.

There was an increase in counties who dedicated cost sharing toward implementation of both the agricultural and non-agricultural standards in 2007, as shown in Figure 4. Forty-six percent more counties reported dedicating more than half of the cost sharing they received toward implementation of the agricultural performance standards as compared to 2006. The number of counties dedicating more than half of their cost sharing towards implementation of the non-agricultural performance standards remained the same (11 counties) for both years. However, the number of counties that reported dedicating over 75% of their cost sharing towards non-agricultural implementation more than doubled.

Barriers to Implementation

Even as more counties focused increased resources on implementation, insufficient staff time was reported as the largest barrier for the second year in a row. Lack of cost sharing was again the second largest barrier, though to a lesser degree than the year before. Both barriers of limited access to GIS and lack of cooperation from partner agencies dropped significantly in 2007.

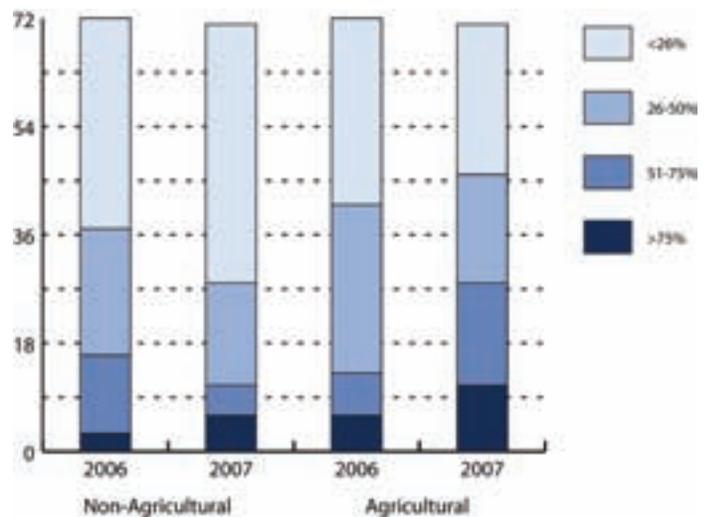


Figure 3: Percentage of staff resources counties dedicated to implementing the performance standards.

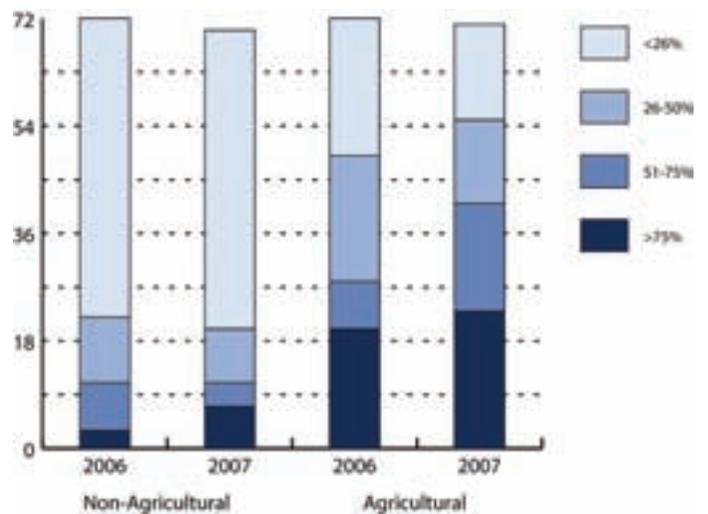


Figure 4: Percentage of cost-share resources counties dedicated to implementing the performance standards.

Partnerships

Agencies use a number of mechanisms to commit themselves to interagency cooperation in implementing NR 151. These include formal, informal written and verbal agreements. Although overall cooperation between agencies appears to have increased in CY 2007, the majority of respondents reported having no partnership agreements with DNR, NRCS or UWEX for both

agricultural and non-agricultural performance standards implementation.

Regulation

In 2007, more counties enacted or amended ordinances to implement the agricultural performance standards and prohibitions. County reliance on DNR for regulatory responsibility remained about the same in 2007 for every performance standard except for sheet, rill and wind erosion and clean water diversions where reliance on DNR increased substantially.

Compliance

The compliance process starts with a review of landowner records. In 2007, counties primarily used three methods alone or in combination: cost-share agreements (46 counties), local ordinance requirements or permits (39 counties) and FPP self-reporting (37 counties). This was a moderate increase over 2006. Landowners are then selected for on-site inventories. Many counties rely on the Farmland Preservation Program when prioritizing sites. In 2007 there were 7,858 landowners selected through the following methods: FPP self-reporting (4,604), FPP spot checks (1,297), cost-share agreements (576), priority farms in Land and Water Resource Management Plans (331), voluntary/walk-ins (302), local ordinances/permits (270), other (256), complaints (207) and water monitoring (15).

Once landowners are selected for review, county staff conducts an on-site inventory and notifies each landowner of their compliance status. In 2007, 1,178 landowners were notified of compliance status – about the same number as reported in 2006 (1,185). The most frequently used method for notifying landowners of compliance status is a combination of personal visits and letters – 28 counties used this method compared to 23 in 2006, while 20 counties reported using personal visits to notify landowners as compared to only six in 2006. Two counties reported using only letters, compared to five in 2006. Landowners who purchase agricultural land that is in compliance with performance standards and prohibitions must keep the land in compliance.

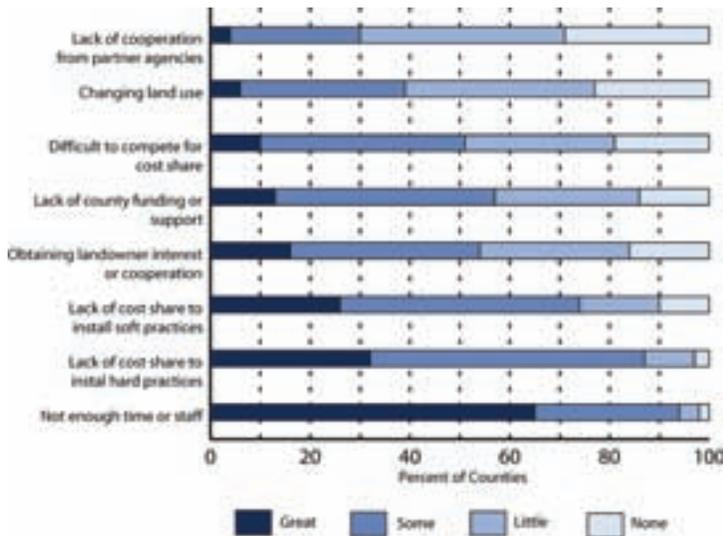


Figure 5: Barriers to implementing the performance standards in 2007.

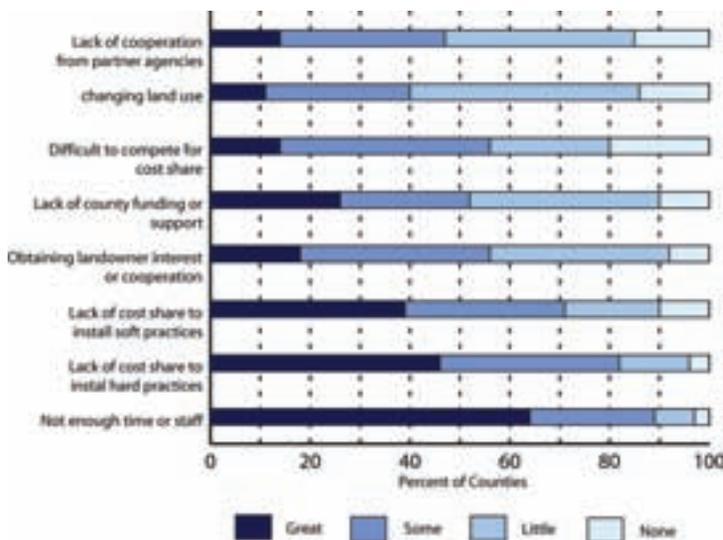


Figure 6: Barriers to implementing the performance standards in 2006.

In both years only 14 counties reported having a method of notifying these new landowners of their compliance obligations, although several counties said they are working on a method.

Estimated levels of compliance with agricultural performance standard and prohibitions generally increased over 2006 levels as did the number of fields and farms that were inventoried for compliance. Figures 7 and 8 show the estimated percentage of compliance. While there was a larger overall percentage of counties reporting increases in all levels of compliance (high, medium and low) in 2007, the greatest increases were in the high and medium levels. The only decrease in low compliance levels was for new manure storage facilities (-5%). The exception was the nutrient management performance standard. In 2007, compliance with this standard was reported as low by 41% of the counties, medium by 25% of counties and high by only 12% of counties. These are slightly higher numbers for all levels over 2006 levels.

Tracking compliance with performance standards and prohibitions is an important step of record keeping. Counties have been developing tracking systems with varying levels of sophistication. In 2007, 18 counties reported having a tracking system with GIS mapping capabilities (six more than in 2006), while another 21 reported plans to develop tracking systems with GIS capabilities within the next two to three years. Another 17 counties reported plans to develop some type of tracking system within the next two to three years.

Information and Education

Counties use a variety of methods to inform and educate landowners about implementing the performance standards and prohibitions. Personal visits were the most popular method reported for two years—66 counties in 2007 and 62 in 2006. DNR and DATCP fact sheets was the second most popular method (58 counties), newsletter articles (41 counties), and county-specific materials (32 counties). Other methods cited include radio programs, websites, direct mailings, workshops and presentations. There was a moderate increase in these methods in 2007 compared with 2006.

AGRICULTURAL PERFORMANCE STANDARDS AND PROHIBITIONS

- ♦ Control cropland erosion to meet tolerable rates.
- ♦ Build, modify or abandon manure storage facilities according to accepted standards
- ♦ Divert clean runoff away from livestock and manure storage areas located near waterbodies or areas susceptible to groundwater contamination
- ♦ Apply manure and other fertilizers according to an approved nutrient management plan
- ♦ No overflow of manure storage facilities
- ♦ No unconfined manure piles near waterbodies
- ♦ No direct runoff from feedlots or stored manure into state waters
- ♦ No trampled streambanks or shorelines from livestock

NON-AGRICULTURAL PERFORMANCE STANDARDS

- ♦ During construction, control 80% of the sediment load from sites of 1 acre or more
- ♦ After construction, control 80% of the total suspended solids, control the peak discharge rate, infiltrate a portion of the water coming off the site and maintain vegetated buffers around waterbodies
- ♦ Control petroleum product runoff from fueling and vehicle maintenance areas
- ♦ In developed urban areas (density of 1,000/sq. mi. or more), educate the public and develop programs on proper leaf, yard and pet waste management, apply nutrients on municipally owned property in accordance with a nutrient management schedule and detect and eliminate illicit discharges
- ♦ Permitted municipalities, in addition to the above 3 requirements, must reduce total suspended solids by 20% by 2008, and 40% by 2013
- ♦ Non-municipal properties that apply fertilizers to more than 5 acres of turf or lawn must do so according to an application schedule based on soil tests

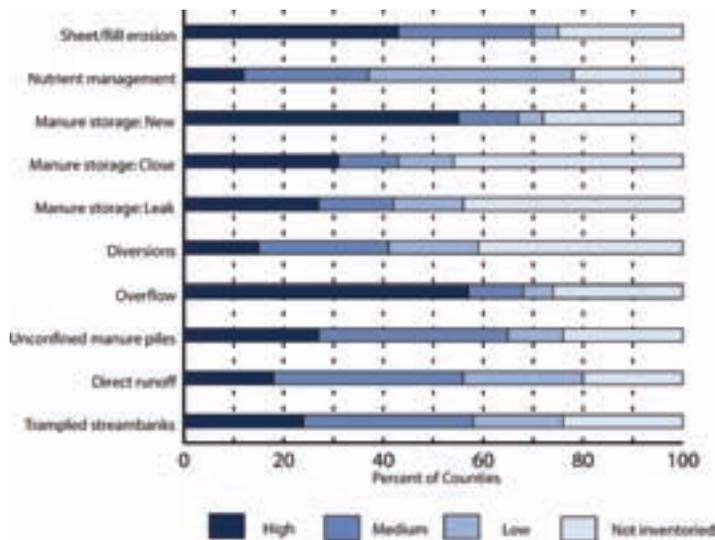


Figure 7: Estimated percentage of compliance with the agricultural performance standards in 2007.

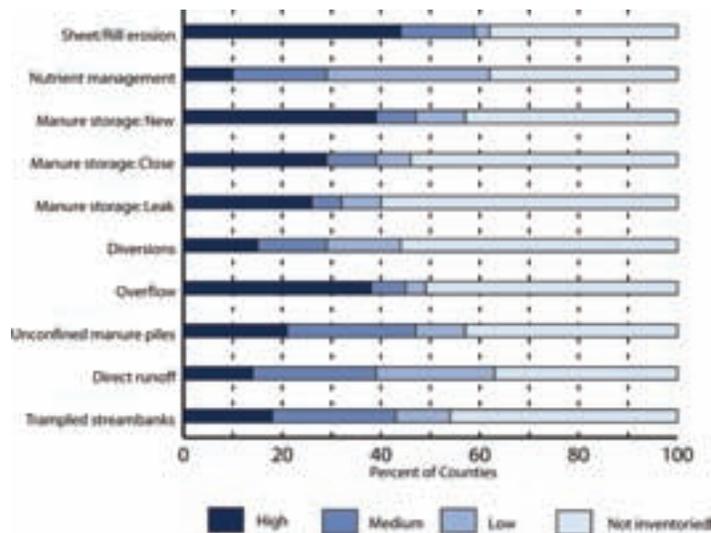


Figure 8: Estimated percentage of compliance with the agricultural performance standards in 2006.

SUCCESS STORY – OUTAGAMIE COUNTY NR 151 TRACKING

Field staff from Outagamie County now have a new tool in their toolbox to track compliance with NR 151 performance standards and prohibitions. When they visit a site for a compliance check, they take along a tablet PC and a digital camera. Using an application developed specifically for tracking NR 151 compliance, the county is able to access data and spatial layers on the PC, take and store photos of the site, and store the final compliance record until it can be uploaded with their tracking database. Once staff returns to the office, the new record is automatically moved to a database stored on the county's network. The system even generates notification letters to landowners automatically.

The county estimates that this approach has saved several hundred hours of staff time – an important consideration when staff dollars are shrinking and counties are required to become more efficient.



NR 151 Tracking: Screenshot of Outagamie County's NR 151 tracking program.

2007 DATCP and DNR Cost-shared Conservation Practices By Land and Water Resource Management Region

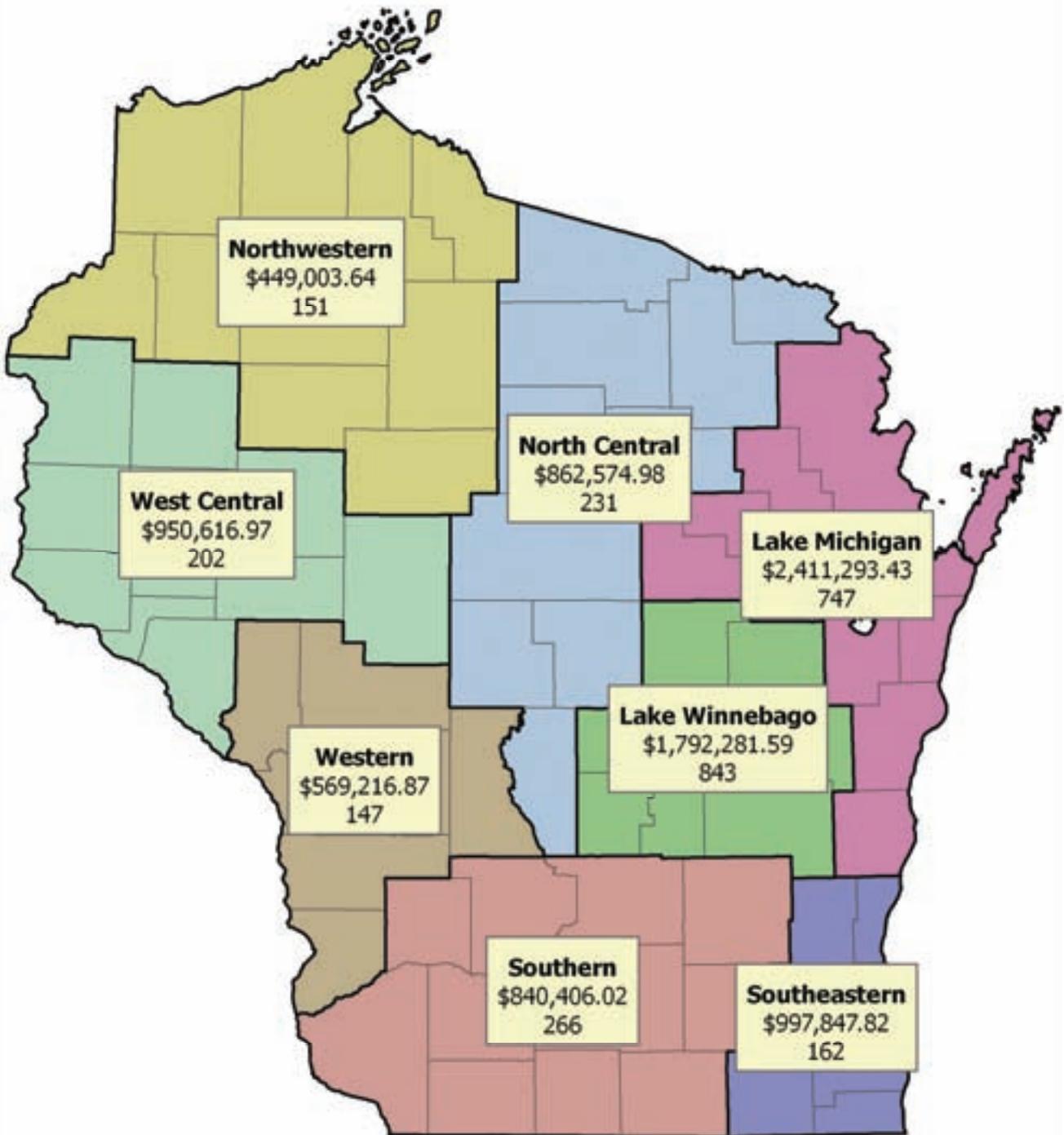


Figure 9: Best Management Practices Installed



BEST MANAGEMENT PRACTICES

Data tracked by DNR and DATCP show that 2,749 agricultural and urban BMPs were installed during 2007. This includes projects installed with funding awarded in 2006 and extended into 2007. For the reporting years 2004-2007, there were a total of 13,759 BMPs installed.

2007 data on the categories and types of BMPs installed by the administering agency can be found in Table 10 on page 22. A new addition to the table for 2007 is BMP data provided by NRCS. However, other tables under the following sections do not include the NRCS data for purposes of comparison with previous reports.

Generally, DNR cost sharing is used to pay for a broad range of cropping and livestock management practices, while DATCP costs-share dollars are focused on the installation of low-cost practices and will be increasingly available for nutrient management planning. State and local funds are used to leverage federal cost sharing through EQIP and s. 319.

CROPLAND SOIL EROSION CONTROL

State Funded Conservation Practices

Keeping productive soil on the land and out of the water is one of Wisconsin's primary conservation goals. The counties, state and federal government administer a variety of programs that work together to help landowners reduce soil erosion to tolerable ("T") levels or below.

In 2007, cost sharing through SWRM, TRM and PWP helped pay for agricultural BMPs such as

reduced tillage, high residue management, cover crops, and windbreaks to hold soil in place, grade stabilization and other structures to deflect or slow down runoff from slopes and practices to repair and prevent gullies. Table 3 shows the totals of these erosion control practices, by units of measure, for 2007 and for the 4 years from 2004-2007.

High residue management has consistently been the most popular cropland BMP. Nearly 35,300 acres were cost shared for high residue management in 2007 and a total of 234,084 acres from 2004-2007. Some practices installed for other purposes also have erosion control benefits.

Sediment Reductions In Priority Watershed And Lake Projects

Nearly all priority watershed and lake projects developed goals to control sediment resulting from cropland soil erosion. Many also set specific goals to control gully erosion. The total pollutant reduction goal for both cropland and gully erosion control was 529,101 tons per year (about 40% of the estimated load of 1,362,564). By the end of 2007, sediment delivery to surface water had been reduced by 348,486 tons per year, meeting 66% of the projects' goals. There were an additional 18,803 tons per year of sediment reduction reported by grantees that did not identify loadings or goals. Data came from projects that were open during 2007 along with projects that had closed in the previous five years, but were still in the operations and maintenance period.

Cropland Erosion Critical Sites

Twenty-three priority watershed and lake projects identified a total of 1,368 sites deemed critical sources of cropland soil erosion. By the end of 2007, landowners and county staff had resolved

Table 3: Cropland Erosion Control Practices

Unit of measure	2007 (state only)	2004-2007 (state only)
Acres	51,943	317,885
Number	132	650
Feet	110,736	583,689

1,263 (92%) of those sites mostly through implementation of best management practices or management changes.

Transect Survey

Since the 1980s, landowners have made strides toward conserving productive soil on the land through the use of numerous soil conservation techniques. The transect survey is a statistical method for estimating cropland soil erosion based on a visual examination of field conditions. It is currently the most effective way for Wisconsin conservationists to evaluate the amount and success of conservation practices occurring on agricultural fields.

In 2007, 29 counties reported conducting the transect survey to measure the rate of soil erosion. This is an increase over 2006 when only 22 counties reported conducting the survey. In the counties surveyed, approximately 78% of fields were at or below the tolerable rate of soil loss. This is a slight increase over data reported for last several years.

In 2008, a new version of the transect computer program was released. This new version, WinTransect, has improved data input and reporting services.

Farmland Preservation Program

The Farmland Preservation Program (FPP) is designed to preserve agricultural land and open spaces by promoting orderly land use planning and

Table 4: Farmland Preservation Quickfacts	
7.7 million	of Wisconsin's 15.2 million acres of farmland protected through the FPP
18,100	farmland owners who received farmland preservation tax credits in 2007
\$12.1 million	value of farmland preservation tax credit
\$669	average tax credit per claimant
20%	percentage of the total property taxes offset by farmers who claimed the credit
35%	percentage of Wisconsin's potentially eligible farmers who claimed the credit

development, by securing soil and water conservation, and providing tax relief to farmers in the program. All landowners receiving the credit must meet county soil and water conservation standards, which initially required soil erosion rates to be at or below tolerable rates ("T"). County land conservation department staff check each participating landowner for compliance with the conservation standards at least once every six years.

All 70 counties participating in FPP (Menominee and Milwaukee do not participate) updated their county standards to require farmer participants to meet the performance standards and manure management prohibitions. Beginning in 2005, many FPP participants needed to meet a compliance schedule that includes these expanded conservation standards in order to receive the tax credit. These cross compliance requirements do not require that cost sharing be made available.

NUTRIENT MANAGEMENT

The 2007 growing season was the 12th year of quality assurance review performed by nutrient management planners for improving Wisconsin nutrient management plans. Over this time, 190 planners have had plans reviewed for compliance with the NRCS nutrient management technical standard. Plan usefulness is improving and more plans are being developed.

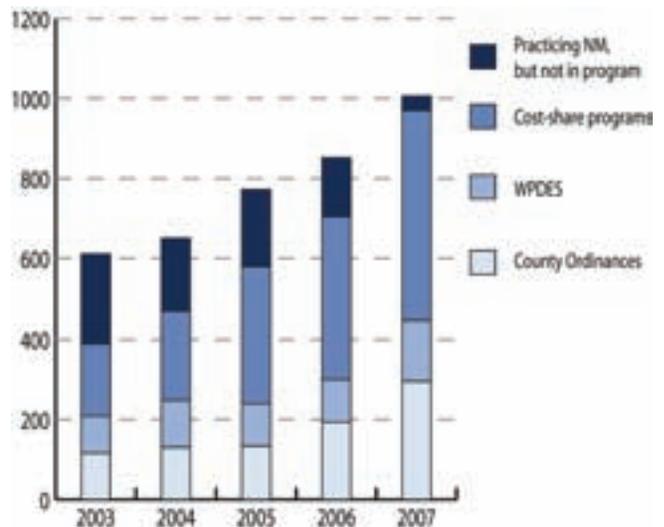


Figure 10: Nutrient management acres 2003-2007

These annually updated plans are based on soil tests and UW soil fertility recommendations that credit nitrogen, phosphorous, and potassium from manure and fertilizer against the soil test recommendations for the crops to be grown. A properly developed and implemented nutrient management plan will reduce risks of acute or chronic runoff, maintain soil productivity, reduce excess nutrient applications, maximize profitability and achieve realistic crop yields.

2007 Planning Progress and Trends

As of December 2007, 388 farmers and 717 other certified planners in Wisconsin were considered qualified nutrient management planners. DATCP annually collects total acreage under nutrient management plans in two ways: 1) a survey of farmers completed by bulk fertilizer suppliers; 2) the nutrient management plan checklists submitted by farmers, agronomists, and public agency staff.

Suppliers of bulk fertilizer reported 2,484 plans covering 1,050,454 acres in 2007, an increase of about 3% over the previous year.

For the 2007 growing season, 503 nutrient management planners submitted nutrient management plan checklists for county, state and federal programs covering 2,320 nutrient management plans on 1,006,342 acres. This acreage is a 28% increase from the acres reported in 2006. Of the 1,006,342 acres reported in nutrient management plan checklists, 283 farmers are writing their own plans on 77,706 acres. This represents a 2% decrease in plans and a 3% increase in acres over 2006. In contrast, 220 agronomists (30 more than in 2006) reported 2,037 nutrient management plans on 928,636 acres, a 30% increase in acres and

Unit of measure	2007	2004-2007
Acres	60,074	189,208
Number	270	1,325
Feet	72,737	234,060

Parameter	Initial loading (lbs./yr.)	Reduction goal (lbs./yr.)	Amount Reduced (lbs./yr.)	% of goal Achieved
Phosphorus	402,874	223,270	146,120	66
COD	850,856	411,568	307,395	75

33% increase in plans during the same timeframe. The total amount of acres under nutrient management plans represents about 11% of Wisconsin's total cropland.

MANURE MANAGEMENT

State Funded Conservation Practices

In 2007, landowners used state cost sharing to install manure management practices such as manure storage structure construction and closures; practices to control runoff from barnyards, feedlots, milk houses, and pastures; livestock fencing, access roads and cattle crossings, and wastewater treatment strips to reduce runoff in areas of heavy livestock activity; and nutrient management, heavy use area protection, and wastewater treatment strips to keep manure out of sensitive areas. Table 5 shows the totals of these manure management practices, by units of measure, for 2007 and for the 4 years from 2004-2007.

Nutrient Reductions in Priority Watershed and Lake Projects

Almost all of the priority watershed and lake projects inventoried every barnyard and feedlot in the project areas and identified phosphorus from livestock manure as a key water quality problem. Several projects also identified excess phosphorus problems related to improperly stored or applied manure and milk-house waste, and developed reduction goals for those sources. Three projects tracked reductions in chemical oxygen demand (COD) from BMPs and management changes associated with barnyards and feedlots. Through 2007, these projects had achieved a large percentage

of their nutrient reduction goals (see Table 6). There was an additional 76,938 pounds per year of phosphorus reduction reported by grantees that did not identify initial loadings or goals. Data came from projects that were open during 2007 along with projects that had closed in the previous five years, but were still in the operations and maintenance period.

Livestock-Related Critical Sites

Twenty-two priority watershed and lake projects reported progress on the 216 livestock-related critical sites identified in those projects. As of the end of 2007, two additional critical sites had been resolved bringing the total to 208, or 96% resolved. Only eight sites remained. The majority of the sites have been resolved through the installation of best management practices.

Management Intensive Grazing

Management Intensive Grazing (MIG) is an increasingly popular option for managing livestock that can help reduce soil erosion, control nutrient losses, and better manage manure. Nearly a quarter of Wisconsin’s dairy farmers practice MIG and about half of all new farmers adopt MIG techniques into their farming practice.

Many county conservation departments encourage grazing practices through LWRM plan activities. These activities range from actively managing grazing programs with staff that promote grazing and assist with implementing a grazing plan, to annual activities such as providing workshops, developing information materials and cost sharing conservation practices to implement grazing plans.

Practices	Goal (acres)	Enrolled (acres)
Grassland	15,000	11,355
Riparian buffers	80,000	28,000
Wetland restorations	5,000	3,160
All practices	100,000	42,500

Table 8: Regulatory approaches to managing manure

NOD Statistics as of Dec. 31, 2007	
596	number of NODs since program began in mid-'80s
6.8	million grant dollars to NOD recipients since 1985
CAFO Statistics as of Dec. 31, 2007	
169	number of CAFOs with WPDES permits
28	number permits issued/reissued during 2007
12%	permit backlog percentage (goal = 15% or less)*

*new permit applications older than 6 months or expired permits awaiting re-issuance

CONSERVATION RESERVE ENHANCEMENT PROGRAM

Wisconsin’s Conservation Reserve Enhancement Program (CREP) is a cooperative effort with the USDA’s Farm Service Agency and Natural Resources Conservation Service, DATCP, DNR, LCDs and Wisconsin landowners. This partnership allows Wisconsin to leverage about \$77 million in federal payments over the next 15 years.

Wisconsin’s CREP goal is to improve water quality and grassland habitat for wildlife by enrolling 100,000 acres into riparian buffers, filter strips, wetland restorations, grassed waterways, and grassland habitat. Landowners can choose to enroll their land in either 15-year agreements or perpetual easements.

REGULATORY APPROACHES TO MANAGING MANURE

Notices of Discharge

Since the mid-1980s DNR has used notices of discharge (NODs) issued under ch. NR 243 to address significant discharges to state waters from small (<300 animal units) and medium (300 – 999 animal units) livestock operations. DATCP engineers and county staff provide technical assistance. When appropriate, cost sharing to address the requirements of NODs is provided by

DNR under the Targeted Runoff Management Grant Program and the Notice of Discharge Grant Program, and by DATCP under the Soil and Water Resources Management Grant Program. The two state agencies run a joint grant application and project selection process to efficiently use state funds.

The number of NODs issued has declined from a historic range of 30–40 per year to a total of 22 between 2000 and 2007. In 2007, DNR issued five NODs. The primary reasons for this decline are decreased funding and increasing DNR workload in other areas including concentrated animal feeding operations (CAFO) permitting and activities to address acute manure runoff incidents. In 2007, DNR received statutory authority to fund NR 243-related NODs outside of the competitive TRM grant process. DNR will allocate \$325,000 and DATCP will allocate \$200,000 for a total NOD allocation of \$525,000 for CY 2008.

Concentrated Animal Feeding Operations

Under ch. NR 243, DNR regulates livestock operations with 1,000 or more animal units. These concentrated animal feeding operations, or CAFOs, require a Wisconsin Pollution Discharge Elimination System permit.

In 2007, NR 243 was revised to meet federal regulatory changes that went into effect. The changes primarily affect CAFOs and deal with restrictions on manure applications near surface waters and during the winter, phosphorus-based nutrient management requirements, adjustments to animal unit equivalency numbers, additional groundwater protection associated with land-applied manure and development of emergency management plans.

Local Ordinances

Local ordinances are becoming more important as tools to regulate manure management. Counties continue to modify their manure storage ordinances to include the state manure management prohibitions in NR 151. Under the state nonpoint law, most farms are entitled to cost-share funds if they are required to install practices to meet state performance standards on existing cropland practices and livestock facilities. State

approval is required if local ordinances include standards more stringent than those in NR 151 or ATCP 50. DNR and DATCP have developed joint procedures to review and approve more stringent ordinances.

Under the Livestock Facility Siting Law (s. 93.90 Wis. Stats., ATCP 51) local governments must apply state standards if they require local permits for new and expanded livestock facilities. To date, 21 counties and 32 towns have adopted siting ordinances, and several others are actively considering ordinances. In jurisdictions that regulate facility siting, permit applicants must meet current state standards for manure and nutrient management. Cross compliance requirements for NR 151 under the livestock siting law do not require that cost sharing be made available.

For additional information on the siting law, visit:

<http://livestocksiting.wi.gov>

Winter spreading of manure is a growing concern in many areas of the state. At least two counties have adopted ordinances and several are considering ordinances to address these concerns.

STREAMBANK, SHORELINE, AND WATER QUALITY AND HABITAT PROTECTION

State Funded Conservation Practices

In 2007, many landowners used state cost-share dollars to install practices that protect and restore streambanks and shorelines, protect groundwater, and improve habitat through wetland restorations. These conservation practices were some of the most popular and accounted for most of the practices installed in the

Unit of measure	2007	2004-2007
Acres	0	385
Number	1	1,534
Feet	19,954	501,054
Square feet	22,950	108,965

northern third of the state. Partners such as fishing and hunting groups, conservation organizations, “friends of” groups, local conservation staff, U.S. Fish and Wildlife Service, and DNR staff often contribute matching funds along with expertise and labor to make these projects successful.

Streambank/Shoreline Sediment Reduction In Priority Watershed And Lake Projects

The majority of the priority watershed and lake projects established goals to reduce the amount of sediment erosion from streambanks and shorelines by 85,931 tons per year. This is based on total load estimates of 188,570 tons per year. By the end of 2007, those projects reported reductions of 74,173 tons per year, or 86% of the reduction goal. There was an additional sediment reduction of 2,123 tons per year reported by grantees that did not identify initial loadings or goals. Data came from projects that were open during 2007 along with projects that had closed in the previous five years, but were still in the operation and maintenance period.

Streambank and Shoreline Critical Sites

Twelve priority watershed and lake projects identified a total of 62 streambank/shoreline erosion sites as critical sources of sediment to surface water. By the end of 2007, 60 critical sites had been resolved mostly through BMP installation.

Easements

The acquisition of conservation easements along rivers, streams and lakes has been a long-standing tool used cooperatively by landowners, counties, DNR, NRCS and nonprofit conservation organizations to protect water quality. Through June 30, 2008, DNR held a total of 1,424 water quality easements encompassing 14,544 acres of land and 15 easements totaling 1,616 acres in the North Branch of the Milwaukee River Wildlife and Farming Heritage Area that support the goals of the nonpoint source program.

Table 10: 2007 BMP highlights			
Practice Installed	DNR	DATCP	NRCS
Erosion Control			
Residue management, green manure crop, grassed waterways, buffers, waterway systems, reduced tillage, grade stabilization structure, critical area stabilization (acres)	43,342	8,601	198,704
Critical area stabilization, grade stabilization, sinkhole treatment, sub-surface drains, underground outlets water and sediment control basins (number)	20	112	318
Animal trails and walkways, critical area stabilization, diversions, wind-breaks, underground outlets, waterway systems, streambank and shoreline protection (feet)	9,835	100,901	144,171
Manure Management			
Agricultural sediment basin, barnyard runoff control systems, live-stock watering facilities, manure storage facilities, milk-house waste control, roof runoff systems, sediment basins, waste transfer systems (number)	141	129	184
Access roads and cattle crossings, barnyard runoff management, live-stock fencings, wastewater treatment strips (feet)	8,285	64,452	173,176
Heavy use area protection, nutrient management, wastewater treatment strips (acres)	32,071	28,004	244,700
Streambank and Shoreline			
Critical area stabilization, streambank/shoreline protection, shoreline habitat restoration, stream crossing, streambank rip-rap, streambank/shoreline fencing, streambank/shoreline shaping and seeding (feet)	19,954	–	74,997
Shoreline habitat restoration for redeveloped areas (sq. feet)	22,950	–	–
Residential nutrient management, stream crossing (number)	12	–	24
Other			
Pesticide management, soil analysis for nutrient management, well abandonments (number)	183	283	1,732
Easements, pesticide management, rotational grazing, wetland restoration (acres)	6,445	212	49,439
Rotational grazing (feet)	539	34,322	–
Critical area stabilization (sq. feet)	26,308	–	–

SUCCESS STORY – FISH PASSAGE RESTORED ON SPRING CREEK, DOUGLAS COUNTY

Spring Creek is a small tributary to Upper St. Croix Lake, the headwaters of the St. Croix River, in Douglas County. The creek maintains its base flow through many springs located in the streambed along its entire course. However, large fluctuations in water level occur through surface water runoff that primarily comes from urbanization of the nearby village of Solon Springs. The creek is ecologically important not only because it is a clean, dependable water source for Upper St. Croix Lake, but also because it contains a robust population of brook trout. Because these fish are native and endemic, they represent a precious genetic record of pre-settlement area brook trout strains.

As a result of an improperly installed culvert on Spring Creek, a large rain event washed out a portion of the streambed downstream of the culvert. This event left the culvert even further perched, well beyond the traveling abilities of brook trout. Also, this event caused excess sedimentation to the lake and removed aquatic habitat from the downstream portion of the creek. Wisconsin Department of Natural Resources staff conducted fish population surveys that showed a relative abundance of 523 brook trout in the scour hole at the downstream end of the perched culvert and 105 brook trout above the culvert. In order to sustain their population in this small creek, the brook trout needed to once again reach high quality habitat above the culvert as well as immediately below the culvert.

The solution was a fish passage project resulting from a collaboration between the Douglas County Land & Water Conservation Department, WDNR, NRCS, US Fish and Wildlife Service, and adjacent landowner. Through cost share and technical assistance, a project was designed, installed, and funded that restored aquatic and upland habitat, stopped continued erosion, and will maintain important ecological functions into the future.



Before: A poorly installed culvert resulted in a washed-out streambed and downstream streambank erosion.



After: The new culvert allows the natural trout population to access important habitat.

SUCCESS STORY – RESIDENTIAL STORMWATER INFILTRATION, CITY OF RIVER FALLS

The City of River Falls, like many municipalities located near Wisconsin's western border, has been facing development pressure from the Minneapolis–St. Paul metropolitan area for several years. As development increased so did the number of impervious surfaces—streets, parking lots, roofs and driveways—that affect the temperature and volume of stormwater runoff.

River Falls is located on the Kinnickinnic River, which is a COLD Class I trout water except for the section that runs through the city. Lake George and Lake Louise, two shallow lakes created by impoundments on the river, contribute sediment and thermal pollution to the river along with stormwater from the city's impervious surfaces.

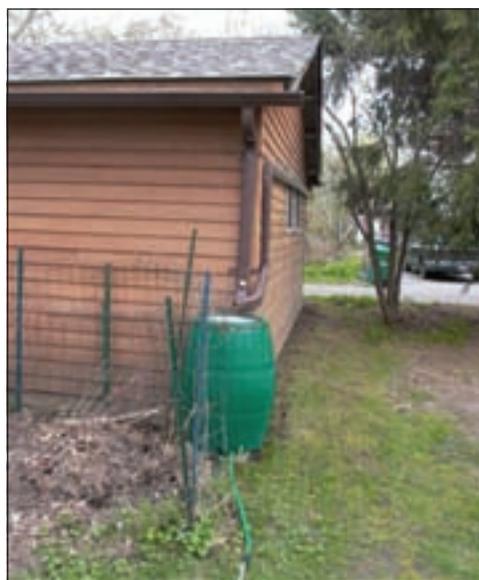
The city has been proactively controlling stormwater and protecting the river since 1991. Partners included DNR, UW-River Falls, Trout Unlimited, Pierce and St. Croix Counties, and numerous stakeholders. In 1999, the Kinnickinnic River Priority Watershed Plan was approved and in 2002 DNR provided a grant to help fund a scientific study of reconfiguring Lake George to enhance water quality of the river.

Because stormwater flowing to Lake George from the Westside neighborhoods couldn't be routed through a reconfigured Lake George, the city focused on residential infiltration practices, such as rain gardens, along with a public education effort, to achieve water quality improvements. The city, in conjunction with Trout Unlimited, the Kinnickinnic River Land Trust, and county and DNR staff involved with the Priority Watershed Project, targeted two storm sewersheds that both drain into the Kinnickinnic River for the infiltration project.

Each sewershed represents about one city block in area with well-established homes throughout. Letters were sent to residents, neighborhood meetings were held and the sewershed with the most residential interest was picked as the active project site to receive a number of infiltration practices that will decrease piped, stormwater flows to the river. The other sewershed was used as a control. Flows were measured prior to and after implementation of the project.

Five projects were designed within the right-of-way to capture street and alley runoff. The infiltration practices include 300 feet of pervious curb and gutter, 800 square feet of pervious brick pavement, two infiltration channels, two roof gutter management systems, three rain barrels and four rain gardens including three gardens that handle street curb and gutter stormwater. The street rain garden planting was done in 2007.

With one year of post-implementation flow data collected, the city has seen great progress in their goal of reducing the volume of runoff. A second year of data collection is planned for 2009. For two years after project implementation, the city will assist with the establishment and care of the rain gardens to help assure their success and to assemble some data on plant selection and maintenance. The city is using this project as a pilot to share with other communities as an innovative approach to stormwater management. For more information, go to www.rfcity.org.



Rain Barrels: Urban practices help increase stormwater infiltration.



URBAN BEST MANAGEMENT PRACTICES

In 2007, 18 municipalities used funding from Urban Nonpoint Source and Priority Watershed grants to install 108 urban practices, including BMP designs and stormwater and construction site erosion control plans. Table 11 shows the type and number of practices installed and planned with state cost-sharing.

DNR STORMWATER PERMIT PROGRAM

Since the mid-1990s, DNR has administered a program under Chapter NR 216 of the Wisconsin Administrative Code to address the issue of polluted urban stormwater runoff. Typical sources for this type of pollution are municipal storm sewers that collect runoff from lawns, streets, and parking lots, and runoff from construction sites and industrial sites that discharge to surface waters or groundwater without treatment. Research on urban streams in Wisconsin has shown high concentrations of suspended solids, bacteria, heavy metals, oil, grease and polyaromatic hydrocarbons as a result of stormwater discharges from these sources.

DNR has developed a permit program to regulate stormwater discharges from municipal, industrial and construction site sources. The municipal stormwater program addresses stormwater discharges from municipal separate storm sewer systems (MS4s), including large and medium MS4s (those serving a population over 100,000 people), MS4s in designated urbanized areas, and MS4s that serve a population of 10,000 people or more. The industrial stormwater program regulates certain industrial facilities based upon the type of industrial activity undertaken. The construction site permit program regulates sites where one or more acres of land is disturbed for new construction or redevelopment.

Municipal: As of December 31, 2007, there were 76 municipalities regulated under individual MS4

Practices	2007	2004-2007
Detention systems, infiltration devices, street sweeper, other practices (number)	85	534
Urban planning and design (number)	9	108
Storm sewer re-routing, streambank/shoreline protection (feet)	3,724	22,216
Critical area stabilization, grassed waterway, other practices (square feet)	142,498	275,663

stormwater permits in Wisconsin. Additionally, there were 142 MS4s covered under a general MS4 stormwater permit. The general MS4 stormwater permit contains six minimum control measures to reduce pollutants in urban stormwater. Some municipalities have implemented stormwater utilities to fund their local programs.

Industrial: As of December 31, 2007, there were over 5,000 industrial facilities covered by a stormwater discharge permit. Industrial permittees must develop stormwater pollution prevention plans to identify sources of stormwater contamination and pollution prevention measures. The Auto Dismantling and Scrap Recycling permittees are offered the option of joining a Cooperative Compliance Program, developed to establish industry-wide approaches to reducing or eliminating stormwater contamination. These programs provide group training, foster information sharing and promote BMPs.

Construction: On average, the DNR confers coverage to over 1,000 construction sites annually. Owners of construction sites are required to develop and implement site-specific erosion control and stormwater management plans to prevent pollutants from entering waters of the state.

SUCCESS STORY – NATURAL SHORELINE EXPO IN WINNEBAGO COUNTY

Winnebago County is 30% water—it holds 9% of all the surface water in Wisconsin. About 12,000 tax parcels are located next to water, and the lawns on the majority of these properties are mowed down to the edge. Winnebago County Land and Water Conservation Department (LWCD) staff wanted to address this issue. They knew that runoff from these properties and other land uses in the watershed were contributing to the runoff that turns Lake Winnebago into an algae bowl in the summer. And they knew that vegetative buffers, rain gardens and yard care practices were relatively inexpensive and easy solutions that landowners could do on their own.

In 2007, the LWCD staff sent 8,924 postcards to riparian landowners in the county inviting them to the first annual Natural Shoreline Expo. About 200 residents showed up to learn from shoreland specialists how to design and install a vegetative buffer or a rain garden, how to compost, where to get phosphorus-free fertilizer and how to get cost sharing through the priority watershed program and the county program.

Over 30 vendors and 8 speakers promoted planting native species on shorelines to enhance wildlife habitat and create buffers to filter runoff from the land. Attendees saw a rain garden, composting bins, rain barrels, and equipment and were able to purchase native plants and seeds. The Expo generated three shoreland buffer projects and one rain garden following the event and two more later on after the sites had been prepped.

Support for the event came from the Winnebago Lakes Council, Winnebago Audubon Society, Fox Valley Wild Ones, and Citizens Natural Resources Association for Wisconsin. The Winnebago County Parks Department provided free use of the Exposition center for the event and food was provided by the local Boy Scout troop.

Winnebago County repeated the Expo in 2008 and focused on shorelines and rain gardens. This time they included Outagamie and Calumet Counties and the Cities of Appleton and Fond du Lac that have a municipal stormwater permit requirement to provide information and education to residents. These municipalities helped get the word out by sending hundreds of colorful postcards to area residents encouraging them to attend. The event turnout surpassed the previous year and generated 12 sites for future BMP installation and lots of interest in responsible yard care. They plan to continue the Expo each year, adding new and different items each year.



Shoreline Expo: Displays educate the public on native shoreline plantings.



COUNTY ACTIVITIES

Counties conduct a range of outreach activities with an increasing focus on areas such as groundwater protection, performance standards compliance and protecting working lands. Activities often take the form of presentations to local groups or organizations, workshops to inform the public on specific topics and department newsletters directed at the public. Recognizing the importance of outreach, counties have made these activities key tools in their conservation programs.

In 2007, 57 counties reported conducting 200 workshops. In the past, these workshops have focused on topics ranging from groundwater protection to stream ecology. However, a growing area of focus for workshops is nutrient management. These workshops help train farmers to write their own nutrient management plans and are critical to increasing the total acres under nutrient management plans. Counties reported conducting 39 nutrient management workshops during 2007.

As counties come to better understand barriers to implementing the performance standards, the value of information and education is becoming clear. County activities are reported on p. 15. Supporting county efforts is the job of a multi-agency committee that develops educational materials, conducts outreach activities and maintains a website (runoffinfo.uwex.edu) on the agricultural performance standards. A similar group provides information and education to municipalities on stormwater issues.

Many counties rely on local volunteer groups and partner agencies to help address concerns identified in their LWRM plans. These relationships are often developed through presentations, newsletters and displays at local events. A total of 536 presentations were conducted by 65 counties in 2007. An additional 88 displays, 171 newsletters and 58 tours of conservation sites or facilities were conducted during the year. The content of the activities ranged from general awareness to specific issues such as invasive species management.

SUCCESS STORY – RICE LAKE RAIN GARDEN

When the UW Barron County campus was expanding, a local Rice Lake engineer designed a rain garden as part of the project. But the rain garden never moved from the design stage to the implementation stage until Tracey White, a biology professor on campus, took the initiative.

Ms. White contacted John Haack, UW Extension St. Croix Basin Educator. She had taken his train-the-trainer rain garden class four years ago. Now she wanted some help to get this rain garden built. John got the county LCD staff, the local engineer, the dean and the ground crew together to determine the necessary steps and to overcome some long-held ideas of what lawns should look like. The local master gardeners provided support and volunteer hours and a local farm donated composted manure. Thanks to all these partners, the campus now has two functioning rain gardens.



Rain Gardens: Coordination between several groups made this rain garden possible.

BASIN EDUCATION ACTIVITIES

The UW Extension Basin Education Initiative involves a collaborative educational approach to land and water resources management in the state. UWEX, in cooperation with DNR, DATCP, NRCS and other partners, provides educational programs and services in areas defined by the state's major river basins. In 2007-08, Basin Educators worked with counties, municipalities and other partners to deliver local and statewide educational and outreach services on a diversity of natural resource issues, some of which are highlighted below.

Agricultural performance standards was the subject of increased efforts as basin educators met with about 40 counties, DNR and agriculture extension agents to identify needs. Basin Educators assisted with key message development, target audience identification, preferred methods for delivery and future educational products (e.g., landowner FAQ, producer newsletter). Other activities included landowner workshops held in several areas, mailing fact sheets to farmers, and assistance to counties with the information and education portion of their Land and Water Resource Management Plans. Basin educators and other UWEX staff also participated in the multi-agency agricultural performance standards educational committee that focused on expanded outreach to LCCs, ag extension and crop consultants during 2007 and early 2008.

Basin educators and other UWEX staff worked with DNR, DATCP and Dairy Business Association to conduct four workshops for CAFO permittees and producers who are expanding their operations to CAFO size in the near future. Four web conferences on specific CAFO-related topics followed the workshops. Evaluations by the Environmental Resources Center will guide future training to these audiences.

Several basin educators are doing outreach associated with projects where Total Maximum Daily Loads (TMDLs) need to be developed and implemented. Activities include creating web pages, developing a poster for public meetings, making presentations, facilitating meetings and working on a

public involvement and participation plan that was submitted to EPA. Basin educators assisted with a strategic plan for DNR's Impaired Waters Program that is going through a formal approval process.

Basin educators and other UWEX faculty and staff delivered a wide variety of stormwater educational activities and materials including two web-conferences on post-construction technical standards (an additional two were reported in 2006), local workshops, a stormwater display for general use and a booklet entitled Wisconsin's Municipal Stormwater Collaborative. Downloads of these materials and archives of past webinars are available at the Runoff Info website below.

Education about rain gardens, rain barrels, sustainable landscaping, green roofs and other residential stormwater infiltration practices continued to be heavily requested of basin educators in 2007. The award-winning Rain Garden Education Kit for teachers was publicized at the State Fair, list serves, meetings, workshops and public events. Other rain garden activities included community rain garden projects, presentations at conferences and workshops, displays at fairs, supporting installation and maintenance of demonstration gardens and assisting with locally-tailored rain garden publications.

Basin Educators continued to deliver groundwater and drinking water education programs including private well testing, disseminating results through fact sheets and newsletters, teacher training and residential groundwater conservation activities.

More information at: <http://runoffinfo.uwex.edu> and <http://basineducation.uwex.edu>

CITIZEN-BASED WATER MONITORING

Citizen-based Water Monitoring efforts in Wisconsin continued to evolve in 2007 as the level 2 stream monitoring project continued in its second year as a pilot project. Water Action Volunteers level 1 stream monitoring continued to grow, offering a strong base for the level 2 and 3 programs. At level

2, volunteers are trained to use DNR methodologies to monitor status and trends in pH, dissolved oxygen, continuous temperature, and transparency. Data can then be used by DNR for management decisions.

In 2007, 130 volunteers monitored from May to September at 140 locations throughout the state. In October 2007, over 50 volunteers attended a one-day Stream Monitoring Symposium at Devil's Lake State Park. The symposium gave DNR staff and both Level 1 and Level 2 volunteers an opportunity to connect and discuss the direction of the program. Many volunteers were especially receptive to a presentation given by a DNR stream biologist on the issue of collecting data and using that data to advocate for streams. All volunteers received reports summarizing the data they had collected through the 2007 monitoring season. The reports also included information to help volunteers interpret the data.

These efforts are coordinated through the Citizen-based Water Monitoring Network which incorporates existing citizen monitoring programs for lakes and streams, and offers three levels of monitoring ranging from educational (Level 1), to status and trends (Level 2) and special research projects (Level 3). Collectively, these programs have over 3,500 participants helping to monitor and protect Wisconsin's waters.

Water Action Volunteers (WAV) comprises the Level 1 stream monitoring efforts. In 2007, 42 local programs support the efforts of over 1,800 volunteers who monitor for water clarity, temperature, dissolved oxygen, habitat, flow and macroinvertebrates. Hundreds of other students and civic groups participate annually in storm drain stenciling projects sponsored through WAV. Table 12 shows monitoring activity data for 2007. DNR coordinates the effort statewide along with the UWEX. Local partners, such as counties, Basin Educators, nature centers, local municipalities, "friends of" groups, and other citizens allow the program to operate effectively.

During 2007 the WAV on-line database was improved to streamline the data entry process,

Table 12: WAV Volunteer Monitoring Activities for 2007	
884	days volunteers spent monitoring streams during 2007
5,098	days volunteers spent monitoring since 1997
670	stream sites registered in online database
181	stream sites monitored during 2007
45	local volunteer stream monitoring programs
5	people trained as trainers for the Level 1 WAV stream monitoring program
130	people participating in the Level 2 stream monitoring pilot project
1,825	volunteers who participate in volunteer stream monitoring
12	individuals trained to monitor E. coli in streams

record habitat assessment data, record family level Biotic Index, conductivity and E. coli bacteria monitoring results, and automate password reminders. In early 2008, the WAV coordinator conducted a statewide training webinar to familiarize volunteers with the updated database and data entry procedures.

Several Level 3 projects were underway in 2007 as well. Ten volunteers were trained to collect crayfish as part of an effort to assess the distribution of various types of crayfish in the state. Other volunteers, who had been trained in previous years, also participated in the project. The crayfish were identified by UW-Madison Center for Limnology staff. In addition, two trainings were held to instruct volunteers to monitor E. coli bacteria in streams. Methods used were recommended following a three year study of a variety of volunteer-friendly methods compared to laboratory methods in six upper Midwest states. The citizens' groups trained in 2007 used the data locally for screening purposes. Monitoring also continued at two Discovery Farms through the Trained Local Samplers Program. This program links Discovery Farms' activities with their local communities through participation of community members with on-farm water quality monitoring.

SUCCESS STORY –OTTER CREEK FLOOD CONTROL, SAUK COUNTY

Landowners have requested help for decades from conservation agencies to address flooding problems along Otter Creek. The Sauk County Land Conservation Department (SCLCD) and the Natural Resources Conservation Service staff offered individual assistance, but in 2005 suggested that it might be more effective to review the entire stream and watershed, rather than individual parcels. This watershed project would also address water quality and wildlife habitat issues identified in the Department of Natural Resources' Lower Wisconsin River Basin Plan, and transportation impacts identified by local municipalities. Using a \$10,000 River Planning Grant from DNR, the SCLCD staff conducted a comprehensive review to identify solutions.

Stakeholders identified and prioritized the main issues and then developed objectives for the project. To reach these objectives, landowners and conservation agency staff created a list of potential solutions. Next, resource specialists presented information regarding watershed conditions. Through a \$100,000 Cooperative Conservation Partnership Initiative Grant from NRCS, the effectiveness of stakeholders' suggested solutions was studied. They concluded that due to the shape of the watershed and its unique geology, engineering solutions would be ineffective.

To reduce the economic and environmental impacts of flooding in the floodplain, SCLCD staff recommended alternatives to row crops such as grass filter strips under the Conservation Reserve Enhancement Program, managed grazing systems, and perennial crops such as prairie plants for bio-fuel. For those who chose to continue cropping their floodplain lands, SCLCD offered ways to minimize the impacts of cropland flooding through streambank stabilization and grass waterways.

One couple set an example for other landowners in the watershed. Robert and Joan Weiss were very interested in stabilizing the soil in their floodplain along Otter Creek. Robert remembers helping his dad to clear trees and plow under the grasses to create cropland, only to watch the soil wash away year after year in the floodwaters. The couple asked the SCLCD for possible solutions and eagerly discussed conservation practices. Robert and Joan quickly implemented the recommended grass filters and swales in their floodplain – at their own expense. These practices have protected the soil during floods that occurred in 2007 and 2008, while their neighbors' cropland was scoured away. Thanks in part to their efforts, many of their neighbors are requesting assistance from the SCLCD and the NRCS to install similar conservation practices on their farms.

For more on this project, please visit the Otter Creek project website at:

<http://basineducation.uwex.edu/lowerwis/project.htm>



Otter Creek: A grassed buffer protects a local water resource and reduces cropland erosion.

INNOVATIVE MANURE MANAGEMENT

Rising energy costs, the concentration of livestock away from their food sources and manure application sites, and concern over climate change are a few of the reasons compelling livestock operators to manage livestock manure in innovative ways. Management approaches such as anaerobic digestion, composting, and separating and concentrating manure nutrients are helping farms manage nutrients and, in some cases, turn what was once considered a waste product, or at best a soil amendment, into a value-added commodity.

As of early 2008, there were eighteen manure biogas digesters operating in Wisconsin, with others in the planning stage. These digesters have the combined potential to reduce greenhouse gases and generate an amount of energy equivalent to the power used by about 4,300 average Wisconsin homes.

As dairy herd size grows into the thousands, returning manure to the field in which it was grown becomes increasingly difficult and costly. Since manure is about 90% water, new methods to separate and concentrate manure nutrients are being piloted to reduce the cost of transporting nutrients. The goal of segregating manure into solids, nutrients and water, once thought to be impractical and cost prohibitive, may one day be practiced on large modern dairies.

But with these opportunities come challenges. DNR and DATCP will be working with their conservation partners in the coming years to ensure that innovation is tempered with environmental protection. For example, since the nutrient quantity in digested manure is essentially unchanged, nutrient management must take on increased importance to ensure that the byproducts of co-digestion are stored and properly land applied. The conservation community will also be challenged to evaluate and mitigate any negative impacts bio-energy production has on soil resources, including soil erosion and the depletion of organic matter and soil carbon.



CHANGING FACE OF CONSERVATION

The local delivery system for conservation efforts is faced with an increase in costs to implement program priorities without receiving a corresponding increase in state funding. Counties continue to see increased workloads and are shouldering a larger share of the costs for conservation staff. In 2007 alone, counties expended over \$13 million for staff to implement LWRM plans

As the nature of the environment and how we use it have changed, new challenges are arising for land conservation departments. Over the last decade, the number of farms in Wisconsin has decreased, while the average size of farms has increased. This, and a new awareness of resource threats, has shifted the focus of the conservation professional. Where traditionally the conservationist provided conservation assistance on farms of all sizes, today's professionals are increasingly finding themselves working with larger operators and assuming the new role of regulator. In addition to this change, professionals are increasingly working with landowners and managers outside of the traditional sector of agriculture. Invasive species management, urban stormwater management and land use planning are pushing land conservation departments into new areas of conservation.

As many conservation professionals reach the age of retirement, a new generation of conservation employees is entering the field. They bring with them a increased awareness of technology and its impact on conservation decision-making. Improved geographic information systems and web-base technologies have also increased our ability to access and manage data. As conservation professionals continue to adapt, leveraging these technologies will be a key element to ensuring success.