

January 1, 2013 –  
December 31, 2013

# 2013—A Year in Review



BUREAU OF WATER QUALITY

## 2013 WATER QUALITY HIGHLIGHTS

The Bureau of Water Quality made significant progress in reissuing Wisconsin Pollutant Discharge Elimination System (WPDES) permits this year! Major industrial permits are issued for industries with significant wastewater volumes which can impact the receiving water. Major municipal permits discharge 1 million gallons or more of treated effluent per day. “Majors” are determined by considering factors such as wastewater volume or stream flow, public health impacts and water quality. We began the year with a 37.9% backlog for major WPDES permits and reduced it to 22.8% by the end of the year. All of our staff can be very proud of this significant work effort.



While 2012 was the year of filling wastewater position vacancies, 2013 was a year devoted to training new permit drafters and developing guidance to implement new phosphorus and thermal rules in WPDES permits. Staff specialists developed the guidance documents and created webinars for training staff on incorporating adaptive management, water quality trading and thermal rule implementation decision-making into permit drafting. Water Quality staff also improved processes for submitting variances to USEPA for review and approval and working through other permit issuance barriers. These efforts reflect the increased number of permits issued this year compared to last: 2012 – 120 permits; 2013 – 177 permits. The WPDES program has produced impressive work in 2013 through a team effort.

This 2013 Annual Report is just a highlight of work accomplished within the Bureau of Water Quality. Each program area has equally impressive gains in protecting and improving water quality. The Water Division Customer Service Survey initiated during 2013 shows a very high level of customer satisfaction between the interactions of our staff and the public we serve. Survey respondents consistently report they are “very satisfied” to “satisfied” with the customer service they have received. The hard work and dedication of our staff is validated through our customer service ratings.

*Susan Sylvester, Director of Water Quality*

Camille Bruhn and April Marcangeli conduct stream flow monitoring. DNR Photo.



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Editor: Julia Riley

# Monitoring and Research Success Stories



**Rainbow darter. The type, number and size of fish collected during monitoring is included as biocriteria data for a stream. DNR Photo.**

The Bureau of Water Quality's Monitoring Section hosted a three-day workshop in 2013 to assess the technical rigor of the DNR's [Water Monitoring Programs](#) as it moves toward the goal of incorporating biocriteria data in its 2015-2020 Monitoring and Assessment Strategy. Biocriteria data on the number and types of fish, insects, algae, plants and other organisms is used to help assess the health of aquatic ecosystems, as compared to the more traditional analyses of water chemical data and sediment data. Evaluating the health of a body of water using biocriteria data is called bioassessment.

A statewide, multi-disciplinary Monitoring Success Team was created to revitalize and revamp Wisconsin's existing surface water monitoring strategy. The team is charged with coupling existing monitoring resources and emerging science and tools with changing program needs. The current focus is to identify and address the water resource information to help ensure that our "roadmap for success" thoroughly addresses known and potential water information needs to successfully manage surface water in the coming decade. The strategy, which will cover 2015-2020, will provide an over-arching design, identify fiscal needs, provide detailed guidance for study design, decisions, documentation standards, and reporting requirements for surface water quality condition information and detailed assessments.

These are some of the highlights of monitoring and research accomplishments of the state's abundant water resources that include 15,081 lakes and 12,600 rivers and streams.

## DNR Monitoring

- Monitoring was completed for 25 [National Rivers and Streams Assessment \(NRSA\)](#) wadeable stream sites in Wisconsin and an additional 25 randomly-selected stream sites during May-September 2013, to develop a statistically-valid characterization of the state's entire wadeable stream population. Read the success story at: <http://dnr.wi.gov/About/documents/Water/WQmonitoringNRSA.pdf>
- 101 probabilistic wadeable stream sites and 87 sites identified throughout Wisconsin as being severely impacted, based on a statewide disturbance model, were monitored for water chemistry, macroinvertebrates and fish communities. Staff continued sampling fixed-station trend sites for 44 wadeable streams including water chemistry, macroinvertebrates, fish communities and continuous water temperature. Staff also monitored 42 fixed-station trend sites at nonwadeable rivers that included monthly or quarterly water chemistry grabs totaling 352 site visits.
- 60 long-term trend lakes were monitored according to the [baseline](#) water quality monitoring protocol: one sam-

pling in spring and three samples throughout the summer. These lakes have been monitored between 9 to 38 years depending on site, and will continue to be monitored into the future. The following parameters were measured on all sampling dates: temperature and dissolved oxygen profiles, chlorophyll-a, total phosphorus, and secchi depth. Conductivity, pH, alkalinity, water color, nitrate, nitrite, and total Kjeldahl nitrogen (TKN) were measured once during July 15–September 15, 2013.

## Citizen Monitoring Program

- 903 [citizens monitored](#) at 840 lake stations. DNR added over 20 new chemistry lakes to the citizen monitoring network in 2013. Over 400 [citizens monitored](#) 564 stream stations.
- [Water Action Volunteer](#) staff introduced at least 125 students to the basics of monitoring, waterbody types and their connection with land use, and water quality issues through introductory-level volunteer stream monitoring trainings. DNR added over 70 new phosphorus stream sites to the Water Action Volunteers Program in 2013.

- 12 trainings introduced 51 new stream monitors to road salt project monitoring. The project identified 98 acute USEPA chloride exceedences at 28 sites, plus an additional 272 chronic USEPA chloride standard exceedences at 49 sites (estimated since chronic standard is 4-day and volunteers only do point-in-time measures.) At least four sites are being considered for inclusion on the 2014 [impaired waters listing](#) for chloride.

## Watershed Research

- Pilot watershed sampling-design studies were conducted in the Pecatonica River Watershed in 2011 and the Upper Yellow River Watershed in 2012. Data analysis and reporting was completed for the Pecatonica Pilot and a draft final report for the Yellow River Watershed was written and distributed for review.
- The results from 20 years of standardized water quality and fisheries, and 15 years of standardized aquatic vegetation monitoring in Pool 8 of the Upper Mississippi River (UMR) were published in a "[2012 Pool 8 State of the Ecosystem Report](#)" by the DNR La Crosse Field Station team.

# Water Evaluation and Assessment Success Stories

Data collected and evaluated is stored in the [SWIMS](#) and/or WATERS databases. The [Surface Water Data Viewer \(SWDV\)](#) is the DNR's interactive webmapping tool for a wide variety of datasets including chemistry (water, sediment), physical, and biological (macroinvertebrate, aquatic invasives) SWIMS data. The SWDV was extensively updated in 2013 to enhance layer activation, panning, zooming and shorter page-loading times. New features include more drawing tools, the ability to add a CSV or Shapefile, and the ability to change coordinate systems.

Staff evaluate the data to [assess](#) where a specific river or stream falls on a continuum of water condition, which is the core assessment to determine if a waterbody is attaining its applicable designated uses. DNR uses four levels of condition to represent waters' placement in the overall water quality continuum: excellent; good; fair; or poor.

Every two years, DNR publishes a list of waters considered impaired under Clean Water Act Section 303(d). [Impaired waters](#) do not meet water quality standards and may not support fishing, swimming, recreating or public health and welfare. Improvements to impaired waters are addressed through the development of a [Total Maximum Daily Load \(TMDL\)](#).

A TMDL is the amount of a pollutant a waterbody can receive and still meet water quality standards. It is a pollution "budget" for a water body or watershed that establishes the pollutant reduction needed from each pollutant source to meet water quality goals.

These are some of the highlights of accomplishments in water evaluation and assessment.

## Guidance Development

- A team was formed in November 2012 to develop recommendations for updating the Wisconsin Consolidated Assessment and Listing Methodology ([WisCALM](#)) used by staff to assess water conditions. The team's recommendations were incorporated and the 2014 version of WisCALM was finalized on September 17, 2013.

- Wisconsin's framework / policy document on water quality trading was drafted into guidance including procedures for placing trading into permits, finalizing trade ratios, credit thresholds and credit tracking systems. See: <http://dnr.wi.gov/topic/surfacewater/waterqualitytrading.html>.
- A Nutrient Reduction Strategy was developed and submitted to USEPA in December 2013. The strategy lays out a statewide framework for nutrient reduction and management of phosphorus and nitrogen carried in rivers from the state to address the biological "dead zone" in Gulf of Mexico and intra-state needs for Wisconsin's lakes, streams, rivers and groundwater. The draft strategy is available at: <http://dnr.wi.gov/topic/surfacewater/nutrientstrategy.html>.

## Total Maximum Daily Load (TMDL) Projects

- TMDL Webpages and online dynamic pages for water quality / watershed planning were updated to help keep the public informed on the status of the state's waters: <http://dnr.wi.gov/water/tmdls/>
- The [Wisconsin River TMDL](#) effort moved forward in three areas: monitoring, modeling, and outreach. Nutrient loading information was collected at 36 sites within the basin. Nutrient diagnostic information was collected on five major impoundments within the basin. Development of both watershed models (SWAT, [WinSLAMM](#)) and reservoir models (BATHTUB, CE-QUAL-W2) in support of the TMDL commenced. The modeled approach was finalized in late September 2013 through a technical scope of work document. The 3rd Wisconsin River Water Quality Improvement Symposium was held on March 28th, 2013. The symposium informed a wide variety



**AWARe Division Administrator Pat Stevens (right) congratulated Jim Baumann upon receiving the DNR's 2013 Leadership in Excellence Pride Award for his work on analyzing phosphorus data, developing phosphorus water quality criteria, writing administrative rules and developing Wisconsin's Nutrient Reduction Strategy.**

- of stakeholders about the monitoring effort, ongoing implementation efforts, and the importance of the Wisconsin River to local communities.
- The [Upper Fox/Wolf Basins TMDL](#) was started. CADMUS was retained by USEPA to develop the TMDL to address streams, rivers, and lakes impaired by sediment and phosphorus. The DNR project manager helped oversee the development of the TMDL for the Upper Fox/Wolf and assisted in implementation of the already completed and approved Lower Fox TMDL.
- TMDL implementation planning efforts, involving DNR staff and stakeholders, are underway for [Lake St. Croix](#) and Mead Lake TMDLs, the [Rock River TMDL](#) and the [Tainter Lake/Lake Menomin](#) TMDLs. These planning efforts will serve as pilots and will feed into the larger statewide TMDL implementation program framework developed during 2013.

# Lakes and Rivers Success Stories

The DNR partners with the University of Wisconsin Extension (UWEX) and citizens around the state to help protect and maintain our lakes and rivers. Wisconsin's water resources provide some of the best recreational opportunities in the nation.

More than 600 [lake organizations](#) and thousands of volunteers play a leadership role in the stewardship of Wisconsin's water resources. Read how high school students helped in the restoration of Lulu Lake in Walworth County at: <http://dnr.wi.gov/About/documents/Water/LuluLake.pdf>

A Water Division-level program review of the Aquatic Plant Management (APM) program was completed in 2013. An action plan to improve consistency and communication with the consulting community is moving forward. About 200 (33% of all [APM pond permits](#)) were processed through the central intake share point site in 2013 compared to only four in 2012. Other key accomplishments in the Lakes and Rivers Program were:

## Web Page and Guidance Updates

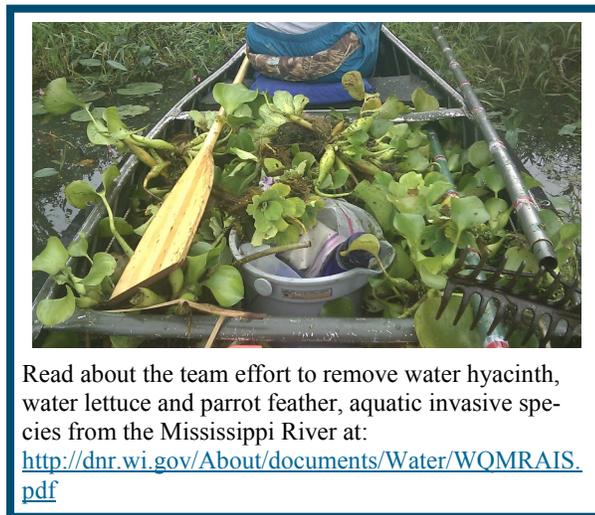
- Lake information from the [SWIMS database](#) is incorporated into the "Find A Lake" web pages. The web pages feature basic information about the lakes, invasive species, water quality data, lake grant projects and more. A mobile-friendly version of the "Find a Lake" web pages was launched in spring 2013. The regular & mobile pages receive over 25,000 visits monthly.
- Work groups were formed to implement a comprehensive grant improvement effort including recommendations to put forth in an administrative rule revision. Two [Lean Six Sigma](#) projects co-sponsored by the Lakes & Rivers Section will streamline the grant application process and make it easier for groups to apply for grants to improve shoreland health.

## Education and Outreach

- In April 2013, the [Lakes Partnership](#) hosted the 35th annual [Wisconsin Lakes Convention](#) in Green Bay.

The Convention offered interactive workshops, full-group (plenary) sessions, a poster session and over 35 concurrent sessions. The theme was "We're All In This Together: Celebrating Diversity." Attendees totaled 488 from nine different states and 59 Wisconsin counties.

- In June 2013, the [Lakes Partnership](#) co-sponsored and participated in a one-day Northwestern Lakes Conference in Spooner with multiple concurrent session attended by over 200 people.



Read about the team effort to remove water hyacinth, water lettuce and parrot feather, aquatic invasive species from the Mississippi River at: <http://dnr.wi.gov/About/documents/Water/WQMRAIS.pdf>

- Four issues of [Lake Tides](#) were distributed to over 26,000 people. Archived copies can be viewed at <http://www4.uwsp.edu/cnr/uwexlakes/laketides/>
- 167 partner groups in 54 counties helped inspect 17,752 boats to improve boater compliance in preventing the spread of [aquatic invasive species \(AIS\)](#) during the 2013 July 4th weekend [Landing Blitz](#).

## Lake Restoration & Grants

- Green Lake County, in partnership with Big Green Lake Sanitary District and the [Green Lake Association](#), received a [State Lake Protection Grant](#) for \$200,000 matched with \$400,000 in federal funding to install 17 agricultural best management practices on two impaired tributaries. The projects are expected to

prevent over 1,000 pounds of phosphorus from entering the 7,000-acre lake that supports a two-story fishery. The lake is part of the Upper Fox River TMDL project (see page 3) and plans are underway to better model the Green Lake sub-watershed for fine-tuning the lake's nutrient budget.

- A two-day Advanced Lake Leaders Seminar was held in September 2013 for 30 citizen and local government leaders focused on better understanding environmental attitudes and the social barriers to improving shoreland conditions. The group was used as a focus group for designing more effective shoreland restoration and protection grant programs.

*\$2.8 million in grants were awarded in 2013 to local communities for aquatic invasive species (AIS) prevention and control; over \$2.5 million was awarded for Lake and River Planning and Implementation Projects.*

## Aquatic Invasive Species

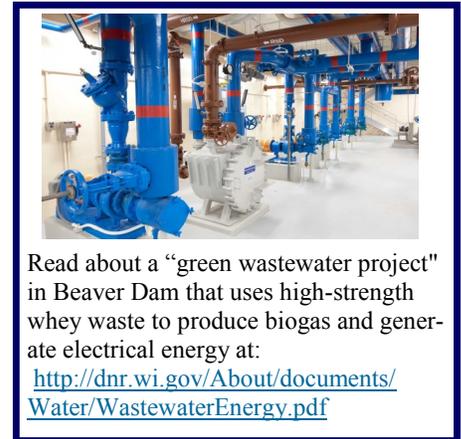
- The DNR was the first agency in the state to take on [lean government](#) projects, and [Clean Boats, Clean Waters](#) Grants was one of DNR's first successes. DNR staff used "Lean" tools to find creative ways to make the grant process less work for lake groups and DNR staff. Read more about this success story at: <http://dnr.wi.gov/About/documents/Water/WQLakeGrants.pdf>.
- In the fall of 2013, the [New Zealand mudsnail](#) was discovered in routine samples collected from [Black Earth Creek](#) in western Dane County in 2012. A rapid response team was formed to develop AIS decontamination guidelines, outreach strategy and a monitoring program. The DNR will continue monitoring to define the distribution of the mudsnail.

# Wisconsin Pollutant Discharge Elimination System (WPDES) Permit Program Success Stories

The cornerstone of water quality protection in the federal Clean Water Act is controlling pollutants in wastewater discharges. [Wisconsin Pollutant Discharge Elimination System \(WPDES\) Permits](#) help control the types and amounts of pollutants discharged into the state's waters and applied to the land. Proper treatment and control of wastewater, septage and biosolids are critical in protecting public health, and maintaining the quality of our surface waters and groundwater.

Several customer service improvements were initiated during 2013. WPDES permit drafters created a new "fact check" step to provide an opportunity for permittees to check the data and information in their proposed permit before it is public noticed. Staff developed guidance for permittees to help plan for future permits that implement phosphorus reductions through [adaptive management](#) and [water quality trading](#).

Managers and staff met with trade organizations such as the Wisconsin Cheese Makers Association and the Midwest Food Processors Association, Inc., to help assess cost-effective discharge options to meet nutrient limits in WPDES permits. Additional accomplishments are featured below.



## **Phosphorus Rule Implementation**

- The Water Division sponsored a "Phosphorus Summit" on June 27, 2013, in Madison and invited key stakeholders and USEPA to listen to each other's concerns about the implementation of the phosphorus rules. Approximately 60 people attended the summit. Phosphorus stakeholder meetings will be held on an annual basis.
- DNR informed all WPDES permittees subject to phosphorus regulations of their projected phosphorus limits to enable planning for their future permit reissuance.
- Staff improved website functions and developed outreach and education material for externals such as the phosphorus implementation [webinar series](#), [the Adaptive Management Handbook](#) and the [Water Quality Trading How to Manual](#).
- Factsheets were developed to summarize: [Adaptive Management](#), [Water Quality Trading](#) and the [Phosphorus Rule](#).

## **Rule Revisions and Guidance**

- Administrative rule revisions related to Sanitary Sewer Overflows (SSOs) became effective August 1, 2013. The new rule requires that all sewage collection system owners must develop and operate a capacity, management, operation and maintenance

([CMOM](#)) program as prescribed in the rules. Read more about how the rules help prevent SSOs at: <http://dnr.wi.gov/About/documents/Water/CMOMreduceSSO.pdf>

- Updated thermal guidance finalized August 15, 2013, incorporated new information and addressed comments received from permittees, environmental groups and USEPA to help permittees make informed compliance decisions regarding the thermal water quality standards which were effective October 2010.
- Guidance was completed on how to incorporate TMDLs (see page 3) in WPDES permits, including storm water permits and concentrated area feeding operations (CAFOs).
- WDNR continued to streamline the process for submitting requests for variances to water quality standards to USEPA for review and approval. New web pages were developed with information on [variance guidance documents](#).

## **Permits**

- A [Lean Six Sigma](#) project was completed on streamlining the WPDES permit process that included 82 recommendations. Implementation is ongoing.
- The Milwaukee Metropolitan Sewerage (MMSD) District WPDES permit was reissued January 8, 2013.

The reissued permit requires the installation of "green infrastructure" such as porous pavement in parking lots, rain gardens, rooftop gardens for larger buildings and swales. A goal in the installation of these practices is to provide 1 million gallons of storage capacity for storm water. These practices will help prevent overflows from Milwaukee's combined sanitary sewer system during rain events and snow melt.

- The General Permit, "Bypasses or Overflows from Sewage Collection Systems," was reissued in September 2013 to conform with new rules effective August 1, 2013.

## **Inspections and Reviews**

- 240 permitted-facility compliance inspections and 74 laboratory audits to ensure data quality were completed by program staff. 65 ballast water inspections were also completed.
- 5 audits of municipal pretreatment programs in Superior, Wausau, Oshkosh, Racine and Madison Metropolitan Sanitary District were completed. Inspections at 11 industrial user facilities outside of delegated Municipal Pretreatment Programs were also completed.
- Staff reviewed over 600 submittals of plans and specifications for wastewater treatment plant upgrades, sewer extensions and other wastewater treatment systems.

# The Bureau of Water Quality Program at a Glance

## **Bureau Description:**

The Bureau of Water Quality provides science-based monitoring, analysis, and regulation of discharges to waters of the state to protect and maintain the water quality in Wisconsin. It uses integrated management actions including:

- Strategic water quality monitoring
- Citizen monitoring training and support
- Watershed planning
- Water data management, evaluation, and analysis
- Water quality standards development
- Pollutant loading analysis and TMDL development
- Lakes partnerships coordination and education
- Lake planning and restoration grants
- Aquatic plant management
- Aquatic invasive species monitoring and grants
- Municipal / industrial wastewater sewerage system technical reviews and approvals
- Permit effluent limits calculations
- WPDES permit issuance and compliance monitoring
- Biosolids and Septage Management
- Wastewater treatment plant operator outreach and education



### **Water Quality Board Members**

Front row left to right: Mike Lemcke, Tim Ryan, Carroll Schaal, Mike Luba and Susan Sylvester. Middle row left to right: Tom Muga, Kelley O'Connor, Tim Asplund, Tom Aartila and Kathy Bartilson. Back row left to right: , Rob McLennan, Paul LaLiberte, Jim Fischer, Brian Weigel, Greg Searle, Mike Vollrath and Dan Helsel. Board members absent: Cherie Hagen and Vic Pappas.

## **Mission Statement:**

Our mission is to provide clean, safe water and the highest quality protection and treatment of water for the citizens of Wisconsin, by adhering to state and federal requirements for water quality and environmental protection.

## **Teams:** The bureau utilizes various teams to accomplish its work:

- Adaptive Management Workgroup
- Aquatic Invasives Team
- Integrated Reporting Team
- Lakes Monitoring Technical Team
- Lakes Technical Review Team
- Mississippi River Water Quality & Monitoring Team
- Rivers/Streams Monitoring Technical Team
- Rock River Recovery Implementation Team
- SWAMP Team
- SWIMS/WATERS Surface Water Data Viewer Team
- TMDL Implementation Guidance Team
- Upper Fox & Wolf Basins Team
- Wastewater Policy & Management Team
- Water Monitoring Data Integration Team
- Waterbody Oversight Steering Committee
- Water Quality Board
- Water Quality Modeling Technical Team
- Water Quality Trading Workgroup
- Water Quality-Based Effluent Limits Team
- Water Resources Policy & Management Team
- Watershed Planning Team
- Wetlands Monitoring Technical Team
- Wisconsin River TMDL Project Team



The Water Assessment Restoration and Protection (WARP) Team was created to improve coordination of multi-program watershed projects. The WARP Team includes staff from various programs to help integrate and align program goals and guidance directed at evaluating, restoring, and protecting Wisconsin's waters. Andy Morton, South Central Runoff Management Field Supervisor, and Amy Callis, Agricultural Nonpoint Source Coordinator-Runoff Management, served as the 2013 WARP Team Leaders.