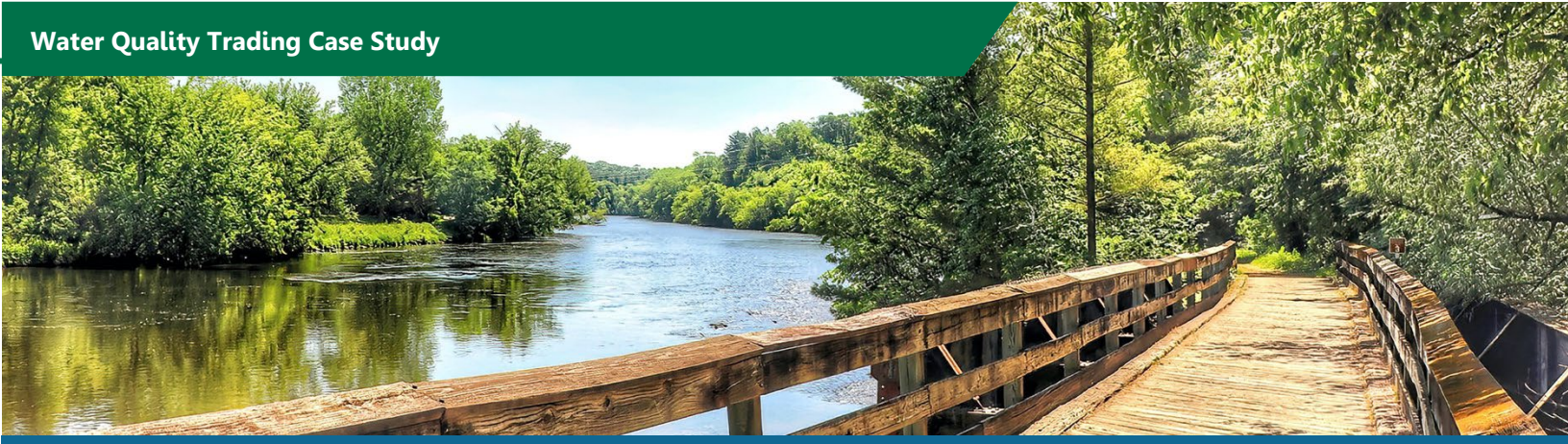

Wisconsin's Statewide Water Quality Trading Program

Overview

In 1997, the Wisconsin legislature identified three pilot areas to implement water quality trading: the Red Cedar River watershed, the Fox and Wolf River basin, and the Rock River basin. The first pilot project involved the city of Cumberland who was able to comply with more stringent total phosphorus limits in its Wisconsin Pollutant Discharge Elimination System (WPDES) permit by successfully traded with agricultural nonpoint sources in the Red Cedar River watershed.

Type of Trading

Point Source–Point Source, Point Source–Nonpoint Source

Pollutant(s) Traded

Phosphorus, total suspended solids

Basis for Trading

New statewide numeric water quality standard for phosphorus

Participants

Municipal and industrial WPDES permittees, nonpoint sources, and third-party credit exchanges/brokers

In December 2010, Wisconsin adopted a statewide numeric water quality criterion for total phosphorus. The prospect of more stringent permit effluent limits renewed interest in using water quality trading as a compliance option with wastewater treatment systems across the state. During the same year, the Wisconsin Department of Natural Resources (WDNR) assembled a stakeholder group of interested parties to develop a trading framework. In 2011, Wisconsin established the legal framework for statewide water quality trading and, in 2020, the Wisconsin legislature authorized a central clearinghouse for water quality credit trading. As of 2023, water quality trading plans in Wisconsin focus on phosphorus and total suspended solids; however, the state's implementation guidance states that the "WDNR will consider any pollutant parameter for trading except bioaccumulative chemicals of concern" (WDNR, 2020a).

Eligible Trading Partners

Municipal and industrial permittees may use trading in Wisconsin to demonstrate compliance with water quality–based effluent limits. Trading may occur directly between point sources, between point sources and nonpoint sources, or indirectly through third-party credit exchanges or brokers (WDNR, 2020b).

Market Driver

WPDES permit limits on phosphorus and total suspended solids currently drive interest in water quality trading in Wisconsin (WDNR, 2020a).

Trading Mechanisms

Trading is implemented through WPDES permits. In 2013, WDNR released two guidance manuals: *Guidance for Implementing Water Quality Trading in WPDES Permits*, most recently updated in 2020, and *A Water Quality Trading How To Manual*. These documents define the protocols for establishing trading provisions in WPDES permits and make recommendations for developing successful trading strategies.

WDNR encourages permittees to first review compliance alternatives and determine if trading is feasible and economical. In evaluating feasibility, the permittee determines the pollutant offset needed, identifies potential trading partners, and evaluates the availability of credits. Permittees pursuing trading as a compliance option must submit a notice of intent to WDNR. The permittee must develop a trading strategy upon approval of the notice of intent. Once the permittee has identified partners and developed a trading strategy, it must develop and implement trade agreements. Trade agreements between the credit user and generator specify the location of trading BMPs, BMP description and duration, the amount of credit being generated, and other pertinent details of the trade (WDNR, 2020a).

A trading plan and checklist must be submitted to WDNR. The specific content of the trading plan depends on the source of credits, but plans generally must include detailed information about the trade, including identification of the trading partners, amount and type of credits, and how and when the credits will be generated. The requirements of the trade, including the approved trading plan, must be built into the WPDES permit before trading may be used to demonstrate compliance with a water quality–based effluent limitation. Incorporating the requirements of the trade into permit development or modification provides an opportunity for public comment on the trading plan (WDNR, 2020a).

The permittee must submit a BMP registration form after the BMP has been installed to ensure BMPs identified in the trading plan have been properly installed and are effective. This information is used to track implementation progress, verify compliance, and perform audits (WDNR, 2020a).

In 2020, the Wisconsin legislature passed a law requiring state agencies to identify a third party to operate a water quality trading clearinghouse for the purpose of buying and selling water quality credits.

Credit Generation

WDNR encourages permittees to identify significant pollutant-generating sites that offer the most cost-effective credits to provide economic benefit and ease of trading partnerships. The permittee using credits to comply with its WQBELs is required to quantify the pollutant reductions used to generate the credits. The quantification method depends on the type of facility generating the credits. Point source credit generators must accept a lower effluent limit than their WPDES permit would otherwise provide. The difference between the pollutant loads that would be achieved by complying with the original WQBEL and the lower WQBEL is the amount of pollutant reduction that can be used to generate credits. Municipal separate storm sewer systems (MS4s) and other permitted stormwater

sources are the exception; these are treated as nonpoint sources for purposes of quantifying load reductions.

The most frequently used nonpoint source BMPs are conversion of row crops to perennial prairie vegetation, streambank stabilization, stormwater practices, buffer strips, and cropping practices. All nonpoint source BMPs must conform to a National Resources Conservation Service or WDNR performance standard. The reductions made by these agricultural and urban BMPs represent the credit that is generated, subject to applicable trade ratios (WDNR, 2020a, 2013).

All nonpoint sources can generate long-term credits (this excludes permitted stormwater sources, which are only treated as nonpoint sources for the purpose of quantifying load reductions). Long-term credit is given for all nonpoint source reductions in non-TMDL areas. In areas with an applicable TMDL load allocation, long-term credit is given for reductions beyond the load allocation as long as the practice is installed, active, and maintained. Nonpoint sources in TMDL areas can generate interim credits for reductions made to comply with TMDL load allocations as long as the pollutant load is reduced to meet an "interim floor." The interim floor represents an achievable pollutant load reduction based on implementation of BMPs. The interim floor is a pollutant load that is less than the current, pre-BMP pollutant load and more than the pollutant load defined by the applicable TMDL load allocation. If the nonpoint source meets the interim floor, all pollutant reductions from the current load to the TMDL load allocation are eligible to generate interim credits. Additional reductions beyond the TMDL load allocation are eligible to generate long-term credits. Interim credits are available for the life of the practice or up to 10 years. Once an interim credit has expired, it must be replaced with new interim or long-term credits (WDNR, 2020a).

Pollutant Trading Ratios

WDNR developed trade ratio calculations with four key components:

- **Delivery Factor:** Accounts for the changes to pollutant concentrations expected due to the fate and transport factors associated with the distance between the credit generator and credit user. Delivery factors are calculated using the U.S. Geological Survey's SPARROW model or outlined in an applicable TMDL.
- **Downstream Factor:** Accounts for local water quality impacts if the credit user is upstream of the credit generator; used to minimize the likelihood of a water quality standards exceedance in the receiving water when the credit-generating pollutant load reduction occurs downstream of the credit user's point of standards application, usually near their discharge location. The downstream factor is based on the ratio of the credit user's pollutant load to the total in-stream pollutant load at the credit user's point of standards application, usually near their point of discharge. The downstream factor allows for limited downstream trading but requires a greater offset.
- **Equivalency Factor:** Accounts for situations where trading partners discharge different forms of the traded pollutant. Not applicable to phosphorus.
- **Uncertainty Factor:** Accounts for modeling inaccuracies used to quantify load reductions. Only applicable to trades with nonpoint source credit generators.

The trade ratio specifies the amount of pollutant reduction that is equivalent to a pollutant reduction credit (WDNR, 2013; Kirsch, 2020) and is based on the four individual factors identified above. An aquatic adjustment factor is also allowed for certain aquatic habitat restoration BMPs to account for ancillary habitat benefits. The minimum trade ratio is set at 1.1:1 for point source–point source trades and 1.2:1 for point source–nonpoint source trades (WDNR, 2013). The average trade ratio from 2013–2019 was 2:1 (WDNR, 2020b).

Monitoring and Credit Validation

The provisions of all water quality trades are incorporated into the permittee's WPDES permit, with a monthly accounting process for the use of pollutant credits. WDNR requires the permittee, or a third-party inspector retained by the permittee, to conduct annual inspections of all nonpoint source BMPs and provide documentation that practices are functioning and maintained as required. WDNR conducts periodic inspections of sites that generate credits and conducts audits of third-party site inspectors (WDNR, 2022a, 2020b).

The permittee must submit annual reports that describe the status of BMPs and the overall trading project and identify any necessary changes to the trading plan. At a minimum, annual reports must include a verification that site inspections have occurred, a summary of site inspection findings, identification of noncompliance or failure to implement any terms or conditions of the permit or trading plan that have not been reported in discharge monitoring reports, any applicable practice registrations or notices of termination, the amount of credit used each month over the calendar year, and any other requirements specified in the WPDES permit (WDNR, 2020a).

Summary of Trading Activity

According to *Wisconsin's Nutrient Reduction Strategy Implementation Progress Report 2017–2019*, over 40 permittees have formally indicated through a notice of intent that they will use trading to comply with their phosphorus limits. Of these, 23 have submitted a trading plan acceptable to WDNR. The average trade ratio used is 2:1, with the average point source credit buyer purchasing approximately 400 pounds per year (lbs/year) of credits to offset its discharge, resulting in the average phosphorus reduction per trade of approximately 800 lbs/year (WDNR, 2020b).

Benefits

Water quality trading has provided point sources in Wisconsin with the flexibility to comply with their WPDES permit limits more cost effectively than installing phosphorus controls at the treatment facility. Many of the BMPs associated with water quality trading prevent multiple pollutants from entering waterways and have ancillary benefits such as atmospheric carbon reduction and improved habitat or aesthetics.

Challenges

TMDL load allocations that require significant nonpoint source reductions before credits are generated can also limit trading opportunities in some watersheds. WDNR's policy allowing nonpoint sources to generate interim credits has helped to alleviate this issue.

Resources

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