




# **Water Quality Credit Trading**

**A new opportunity for  
wastewater treatment operators  
to reduce compliance costs.**



# HOW CAN TRADING WATER QUALITY CREDITS CUT COSTS AND IMPROVE WATER QUALITY?

## HERE'S AN EXAMPLE:

As a wastewater treatment plant operator, you may need to increase your nutrient removal capabilities to meet the requirements of a Total Maximum Daily Load or TMDL. Effluent limits for phosphorus in your new permit could require costly facility upgrades.

As an alternative to these costly hardware upgrades, new rules being developed in Minnesota allow you to partner with farmers in your watershed who can deliver even greater water quality improvements at a lower cost.

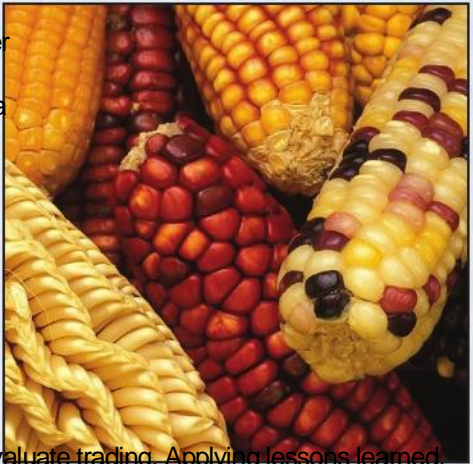
Farmers can often reduce phosphorus and sediment economically by implementing Best Management Practices (BMP). One BMP is reduced tillage. By limiting tillage, more of last year's crop residue is present to hold soil in place, reducing erosion and sediment runoff. Since phosphorus readily attaches to soil particles, limiting soil erosion also reduces the amount of phosphorus entering streams in your watershed. Reducing tillage can come at a cost to the farmer including new equipment and reduced yields during initial transition years and under some weather conditions.





By investing in water quality trading "credits" generated by these farmers, you can save dollars you might have otherwise spent on facility upgrades, help defray farmer costs and improve water quality in your watershed above and beyond what your upgrades would have accomplished.


New rules being developed for water quality credit trading will create a consistent and predictable permit process for trading and facilitate lower compliance costs. To date, the State of Minnesota has implemented



three permits to evaluate trading. Applying lessons learned, the new rules will formalize trading activities, streamline the permitting process and open up trading to others across Minnesota.

These rules, drafted by the Minnesota Pollution Control Agency, will increase options for reducing costs and advancing environmental protection. Although it may be a year or more before these new draft rules are finalized, trading options may be available for your facility now.

By encouraging a broader range of BMPs in Minnesota watersheds, more pollutant impacts can be addressed than if wastewater treatment facilities were the only focus. Environmental benefits provided by agricultural BMPs include sediment load reduction, water and land habitat restoration, and stream shading which lowers stream temperatures, increases dissolved oxygen and improves fisheries. BMPs can also alter runoff patterns, returning stream flows to near pre-development conditions and reducing stream bank erosion.




## TRADING SUCCESSES IN MINNESOTA

The Minnesota River Basin has banked successful "Point Source-Nonpoint Source" trades. Several years ago, Rahr Malting Company and Southern Minnesota Beet Sugar Cooperative were facing prohibitive costs to meet wastewater effluent limits for phosphorus. Excess nutrients from multiple sources were generating too much algae, consuming dissolved oxygen necessary for other aquatic life. Strict effluent limits were imposed to improve low dissolved oxygen levels in the Minnesota River.

These food processors purchased trading credits generated by farmers upstream who reduced their phosphorus runoff at a fraction of the cost the processors would have incurred. As a result, these companies were able to affordably expand production and deliver a net gain in water quality. The trades resulted in nutrient reductions that surpassed initial water quality goals, creating a net environmental benefit in addition to the cost savings.

## WHO CAN TRADE TO IMPROVE WATER QUALITY AND REDUCE COMPLIANCE COSTS?

Municipal and industrial wastewater dischargers, ethanol plants, food processing plants and others. Anyone discharging phosphorus in the National Pollutant Discharge Elimination System (NPDES) and receiving Water Quality Based Effluent Limits has the potential to benefit. New and expanding facilities discharging into waters with fully allocated TMDLs can also use trading credits to offset their load and receive an allocation to discharge. These facilities may also use trading credits prior to the development of a TMDL to offset any new pollutant load to the impaired water resource.




In "Point Source-Point Source" trading, NPDES-regulated dischargers can trade with other point sources that have met and surpassed their effluent reduction requirements.

In "Point Source-Non-Point Source" trading, regulated point sources can trade with non-regulated sources of phosphorus and nitrogen including agriculture. Farmers can earn credits to trade by reducing nonpoint source nutrient and sediment runoff from their farmland through voluntary BMPs. Trading credits are calculated based on expected reductions.

## WHO RETAINS LIABILITY FOR DELIVERING POLLUTANT REDUCTIONS?

The NPDES permitted buyer is liable in the event that a BMP should fail to deliver the expected reductions. The buyer or a broker can build redundancy into the overall trading plan to help ensure sufficient credits will be available. Contractual agreements between the buyer and the seller or credit broker address liability or indemnification issues. Contract termination terms are also spelled out in these private contracts.



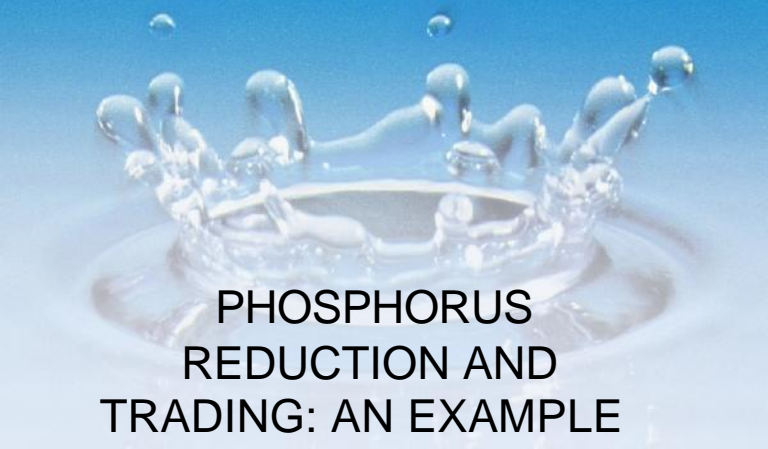
A graphic showing a splash of water droplets against a blue background, with the text overlaid on it.

## WHAT KEY ATTRIBUTES DEFINE WATER QUALITY TRADING CREDITS?

Credits are pollutant reductions that are:

- Surplus - over and above what's required of the operation generating the credits. The surplus may be determined by reviewing permits, TMDL allocations, historic practices or minimum expectations for performance.
- Expressed as a unit of mass over time (e.g., pounds of sediment reduced per year).
- A measurable, repeatable unit determined by monitoring, or calculated using an accepted method, model or standardized equation (e.g., USDA's Revised Universal Soil Loss Equation can be used to estimate field erosion rates)





# PHOSPHORUS REDUCTION AND TRADING: AN EXAMPLE

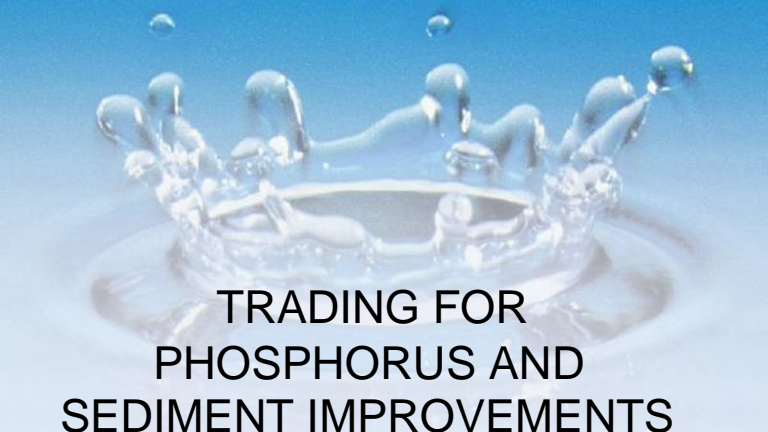
A farmer runs a livestock operation near a river that is encroaching on his farmland due to extreme erosion during flood periods.



Engineering and construction costs to protect the operation are more than he can afford alone, so he enters into a phosphorus credit trade with a wastewater operator. The operator buys credits the farmer generates by investing in bioengineering to stabilize the streambank and by fencing out livestock from the protected area. Phosphorus credits are calculated based on the reduction in erosion.

The wastewater operator uses these phosphorus credits to comply with their NPDES permit requirements. Using credits provides a significant economic advantage compared to a more costly treatment facility upgrade. The farmer's operation and land values are protected.

Phosphorus entering the river is reduced beyond what treatment plant upgrades would have provided. In addition, sediment, bacteria and nitrogen runoff are reduced. Critical fish habitat oxygen levels increase due to cooling provided shading with streamside vegetation. Aquatic habitat is improved by installing channel stability structures. In the end, both parties achieve immediate operational goals and improve the watershed well beyond traditional approaches and results.



# TRADING FOR PHOSPHORUS AND SEDIMENT IMPROVEMENTS

A watershed has two TMDLs: one for excess nutrients in a lake and one for stream turbidity. Reductions in sediment loading from farmers are needed to meet the turbidity TMDL. The downstream lake TMDL requires phosphorus reductions from both point and nonpoint sources.



In this case, the farmer has already met phosphorus reduction obligations for the lake through nutrient management and reduced tillage BMPs. However, they would also like to install a vegetated "filter strip" between cultivated fields and the stream to further reduce soil erosion, sediment loading and turbidity, and improve the fishery. Loss of productive ground will cost yield and income. They decide to pay for the filter strip by selling credits representing the "surplus" phosphorus reductions the strip delivers.

Although the wastewater operator already meets its turbidity TMDL, it must further reduce phosphorus loading to comply with the lake TMDL. The operator accomplishes this by buying credits from the farmer. Thus, both farmer and point source meet their TMDL obligations at reduced cost.

A graphic showing a splash of water against a blue background. The water droplets are frozen in time, creating a crown-like shape. The text 'USEFUL WEBSITES ON TRADING' is centered over this graphic.


## USEFUL WEBSITES ON TRADING

- Minnesota Pollution Control Agency  
<http://www.pca.state.mn.us/water/wqtrading/index.html>
- Environmental Protection Agency - Water Quality Trading  
<http://www.epa.gov/owow/watershed/trading.htm>
- Environmental Trading Network  
[www.envtn.org](http://www.envtn.org)
- BMP CHALLENGE  
[www.bmpchallenge.org](http://www.bmpchallenge.org)

## WHAT ARE MINIMUM REQUIREMENTS FOR TRADING?

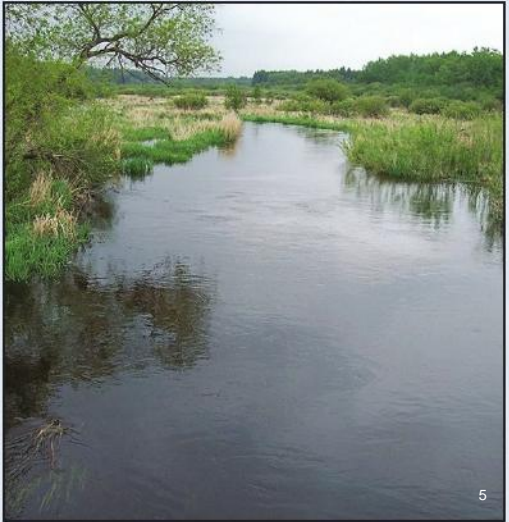
Farmers must meet baseline performance obligations before a credit can be generated. A generated credit is the predicted measure of load reduction above and beyond minimum baseline performance requirements.





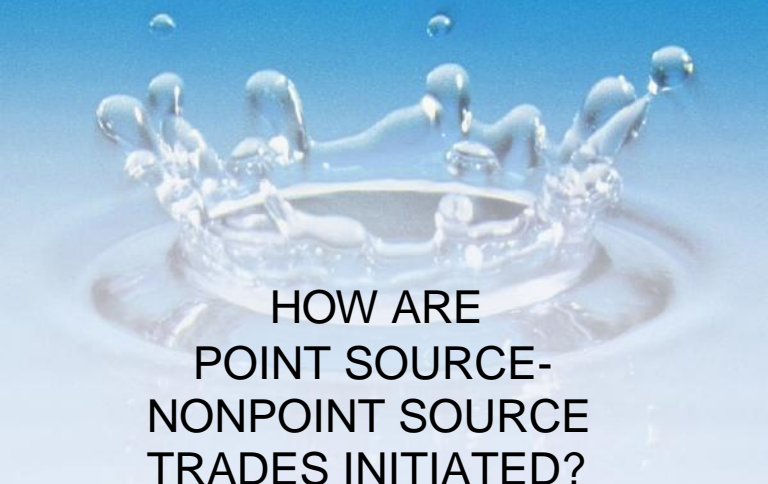
Point sources must meet applicable secondary treatment and technology-based effluent limitations before they can use credits. Likewise, a point source must first comply with a TMDL allocation goal or water quality based effluent limit and then exceed these limits to generate a credit.

Watersheds without a TMDL may develop local policy to establish a baseline for point and non-point-source trading. The policy may be based on cropping practice history or agreed-upon



goals and expectations such as local rules and ordinances, or stewardship levels set by a governing body.

Fundamentally, the goal of any trading program is to deliver a net improvement in water quality. A trade ratio is commonly applied to address uncertainty and ensure a net water quality benefit. In Minnesota, the current draft rule specifies a trade ratio of 1.1 to 1 for point source to point source trading in the same watershed, and 3.6 to 1 in other trading situations. In other words, a farmer would have to deliver a calculated improvement 3.6 times greater than that required of the wastewater treatment operator. This trading margin ensures a net water quality benefit, addressing uncertainty in calculating actual reductions and differences in geographic location of the buyer and sellers within the watershed. These proposed trade ratio values are likely to change as the draft rules are finalized.




## HOW ARE POINT SOURCE- NONPOINT SOURCE TRADES INITIATED?

Point-source buyers and farmer sellers will likely encounter these steps during the trading process.


1. A wastewater treatment operator applies the appropriate "trading ratio" to their reduction needs to determine the volume of credits needed from farmers in their watershed.
2. Farmers will select a BMP that has been approved for trading from a conservation plan or a crop consultant.
3. The farmer installs the new BMP(s) and calculates pollutant reduction and credits using an approved method such as USDA-NRCS's Revised Universal Soil Loss Equation 2.
4. The farmer connects with a credit buyer via an aggregator, broker or individual contact, and signs a private contract to sell credits.
5. The buyer or seller registers the traded credits with the state regulatory agency or other third party.





## FREQUENTLY ASKED QUESTIONS ABOUT WATER QUALITY CREDIT TRADING:

1. What is the life of credits and what are they worth?
  - Credits are annually renewable and saleable for the life of the pollutant reduction, e.g., the life of equipment upgrades for point source to point source trades, and the life of the BMP for point source to non-point source trades. Credit value is market-driven and depends on what buyers are willing to pay.
2. If a farmer sells credits, will he or she eventually be regulated?
  - No. Farmer participation in trading has no bearing on regulations imposed on farming operations. Credits generated by farmers are typically used by a regulated, e.g., a wastewater treatment operation.
3. What happens if the seller defaults on implementing the practices?
  - The seller is likely to incur liability to the buyer as per the terms of the private contract between the buyer and seller.
4. Is the NPDES permitted buyer liable if the seller defaults or a BMP fails to generate the expected load reductions?
  - Yes. The buyer can work with a broker or aggregator who can help ensure that sufficient excess credits are available to make up for any default or failure.
5. Can conservation practices implemented by a farmer in prior years be used to generate credits?
  - The maximum age of allowable BMPs will be specified in Minnesota Pollution Control Agency's Rules and Guidance.



6. Who can buy credits?

- Any regulated facility within the same watershed as the seller.

7. What is the BMP CHALLENGE ?

- The BMP CHALLENGE is a great on-farm research opportunity that allows corn farmers to use a side-by side approach to test how BMPs perform in their own fields. The BMP CHALLENGE provides a net income guarantee which acts as an economic safety net, removing the risk of economic loss as the farmer experiments and develops competence with the BMP.

8. How Does the BMP CHALLENGE fit with trading?

- By implementing BMPs, growers reduce nutrients and/or sediment concentrations in their watershed.
- Any reduction greater than the baseline requirement can generate credits.
- These credits can then be traded with waste water treatment operators or other regulated point sources.

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PROJECT FUNDERS:



SPECIAL THANKS TO:



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Control Agency



For more information on trading opportunities in Minnesota, complete the following and mail or fax to 608 232-1440. Or contact the BMP CHALLENGE at 608 232-1425 or e-mail [info@bmpchallenge.org](mailto:info@bmpchallenge.org) or visit [www.bmpchallenge.org](http://www.bmpchallenge.org).

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