

November 2021

Water Quality Trading Pilot Project North Fork Crow River Watershed Final Report



DEPARTMENT OF
AGRICULTURE



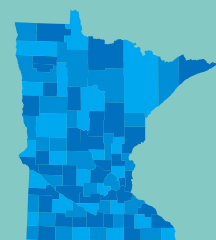
MINNESOTA POLLUTION
CONTROL AGENCY



BOARD OF WATER
AND SOIL RESOURCES



CLEAN
WATER
LAND &
LEGACY
AMENDMENT



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Contributors/acknowledgements

Thank you to the partners and stakeholders that attended meetings, provided feedback, and participated in this project. The complete list is included in Appendix A.

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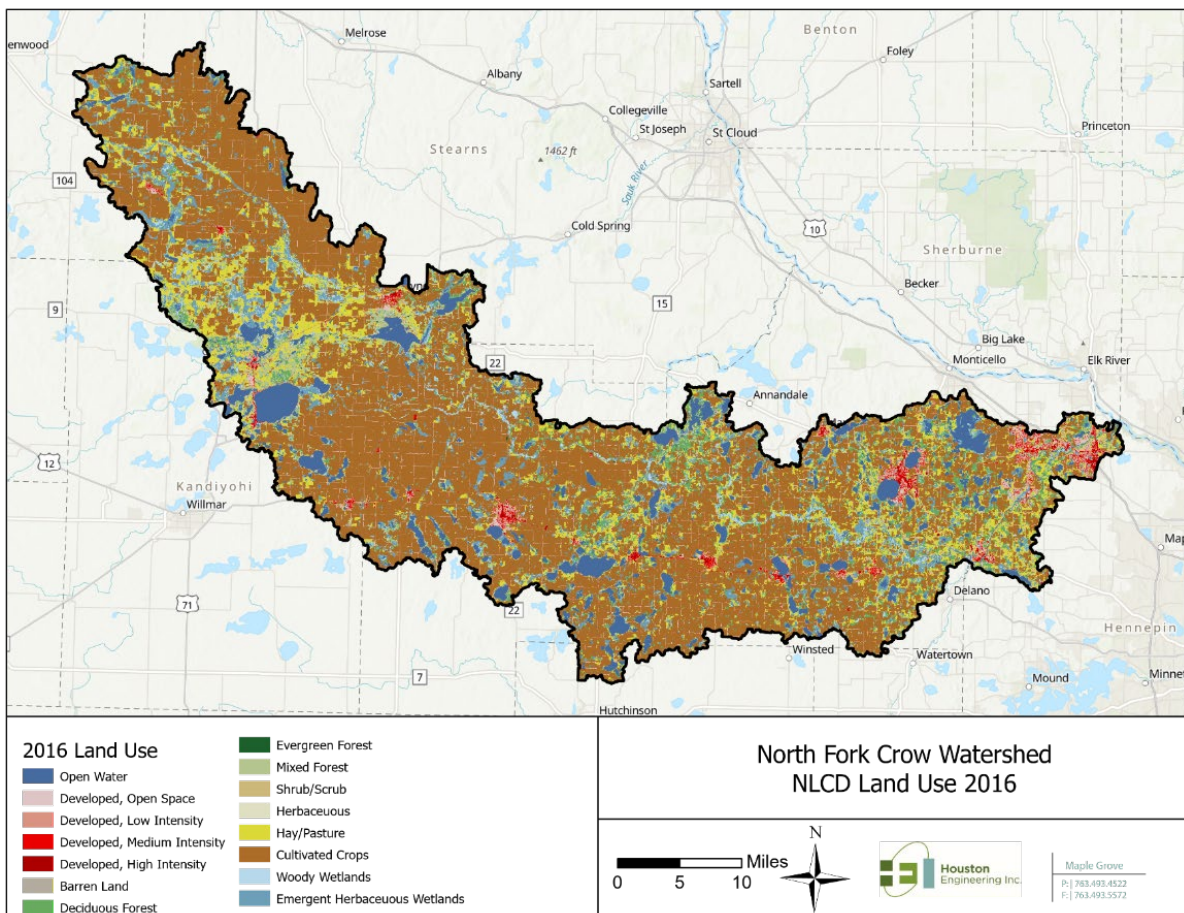
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Background/Project Purpose

After the Ag/Urban Partnership forum in December 2020, the Minnesota Pollution Control Agency (MPCA), the Board of Water and Soil Resources (BWSR), and the Minnesota Department of Agriculture (MDA) initiated a pilot project aimed at working with local partners within the North Fork Crow River watershed to support the development of water quality trading projects within the watershed. The purpose of this project was to discuss water quality trading opportunities with NPDES/SDS permittees, local resource managers, and agricultural producers within the watershed, to better understand the challenges in identifying and developing trade proposals, and identify how state agencies and local partners can work together and provide the tools and resources necessary to yield positive results (i.e. make local connections, identify innovative solutions, and partner in water quality (WQ) trading opportunities). Moving forward additional work will be needed to identify, develop, and implement water quality trading projects within the watershed.

The North Fork Crow River watershed was chosen for this pilot project based on a variety of factors. The watershed includes a mix of wastewater treatment plant (WWTP) and municipal separate storm sewer system (MS4) permittees with current or upcoming phosphorous and total suspended solids effluent limits or wasteload allocations (WLAs) that will require pollutant load reductions. These pollutants are good candidates for water quality trading agreements between the point and nonpoint source sectors. The watershed is also home to several highly competent local natural resources management organizations and is predominantly agricultural land (72%).



Land use map from the draft North Fork Crow River Watershed TMDL report

The North Fork Crow River Water Planning Partnership (NFCRWPP) completed a comprehensive watershed management plan (CWMP) through the One Watershed One Plan program (1W1P) in 2018. The CWMP developed implementation strategies that are prioritized and targeted, will result in measurable resource improvements, and is currently being implemented. The mix of active point source phosphorous reduction goals and local nonpoint source planning and implementation activities made this an ideal watershed to engage in conversations on how these local partners could work together to utilize water quality trading as an option to achieve their collective pollutant reduction goals within the watershed.

This report provides a summary of the project, the feedback received, and recommendations for the tools, processes, and/or resources needed for the state agencies to provide support to water quality trading projects in Minnesota. Although this project was focused on the North Fork Crow River watershed, any tools or resources developed as a result of this project will be applicable throughout the state.

Project Overview

The project partners identified and invited to participate in the pilot project included NPDES/SDS Permit holders (both Wastewater and Stormwater), local natural resources managers (SWCDs and watershed districts), State Agency staff (BWSR, MDA, and MPCA), agricultural producers, agricultural commodities representatives, engineering consultants, and environmental organizations. A complete list of the project partners is included in Appendix A.

A project kick-off meeting was held on April 26, 2021. All project partners were invited to a virtual meeting to learn about the project, its goals and deliverables. The meeting also provided time for attendees to ask questions and provide some initial feedback to agency staff.

After the initial kickoff meeting, sector specific meetings (Wastewater, Stormwater, and Nonpoint source), were held throughout the summer/fall 2021. The sector specific meetings included topics that were specific to the interests and needs of each sector and provided time for more focused conversations and feedback on barriers that they face and how water quality trading could benefit the work of each sector. After each meeting a follow up survey and/or calls were made to collect additional feedback from meeting participants. Some more focused meetings took place at the request of external stakeholders and for additional information gathering purposes for agency staff. A more detailed summary of each meeting and the information gathered is included in the next section of this report. All feedback collected throughout the project is included in Appendix B - F.

Project Activities

Kickoff Meeting

A virtual project kickoff meeting was held on April 26, 2021. Sixty-eight people were invited to participate. Forty-four participants representing municipal wastewater and stormwater utilities, watershed districts, soil and water conservation districts and environmental advocacy organizations attended the meeting. Board of Water and Soil Resources, Minnesota Department of Agriculture and Minnesota Pollution Control Agency staff also participated.

North Fork Crow River Watershed Pilot Kickoff Meeting Agenda

Topic	Time	Presenter
Introduction: What is the purpose, the goals of the project and why the North Fork Crow River Watershed?	9:00 a.m.	Nicole Blasing (MPCA)
What are our programs and how are they related; an overview of the project partners.	9:15 a.m.	Nicole Blasing (MPCA) Marco Graziani (MPCA) Shaina Keseley (BWSR) Brad Jordahl Redlin (MDA)
What is Water Quality Trading?	9:45 a.m.	Marco Graziani (MPCA)
How can Water Quality Trading help us integrate our programs and connect point and nonpoint sources efforts to protect and improve water quality?	10:00 a.m.	Marco Graziani (MPCA)
Discussion/questions - What's in it for you?	10:15 a.m.	Nicole Blasing (MPCA) Joel Peck (MPCA)
Next steps from the agency perspective	10:45 a.m.	Nicole Blasing (MPCA)

Presentations by BWSR, MDA and MPCA staff provided information about the scope and purpose of the pilot project, state agency program overviews and connections to the pilot project, and provided an overview of water quality trading. Feedback was collected during the meeting using Mentimeter and the meeting chat. Following the meeting, a survey was sent out to all stakeholders to get feedback on interest in participating in the project. The discussion phase of the meeting was very active with many questions, particularly through the meeting's chat. Detailed written responses to the questions and comments provided after the meeting are included in Appendix B.

Key Takeaways:

- Many questions about the mechanics and details of water quality trading:
 - Baselines
 - Trade ratios
 - Eligible trading areas
 - Project funding sources and credit eligibility
 - Eligible trading area delineation
 - Responses to the Mentimeter survey indicated that there was a lot of interest in learning more about water quality trading, the process, and to see examples of outcomes/projects.
- Several concerns about program implementation:
 - Low likelihood of success based on past experience, are there new "drivers" that increase the odds?
 - Trading is not part of the watershed's 1W1P. The types of "State ideas" add to local water resource manager's workload without providing many additional resources.
 - Exploitation of Minnesota Agricultural Water Quality Certification Program.
 - Allowing point sources to continue to pollute.
- Opportunities:
 - Similarities to wetland banking program.
 - Erosion control opportunities in the watershed.
 - Compatibility of existing flow reduction goals and trading.
 - Responses to the Mentimeter survey indicate that many meeting participants are interested in the role of water quality trading facilitators or buyers.

Wastewater Sector Meeting

An in-person wastewater sector meeting was held on July 14, 2021, at the Otsego Prairie Center in Otsego, Minnesota. Thirty-four people were invited to participate. Approximately a dozen participants representing municipal wastewater utilities and engineering consultants attended the meeting. Board of Water and Soil Resources, Minnesota Department of Agriculture and Minnesota Pollution Control Agency staff also participated.

Wastewater Sector Meeting Agenda

Topic	Time	Presenter
Introductions, Meeting Purpose, & Purpose of Pilot Project	10:00 a.m.	Nicole Blasing (MPCA)
Review Water Quality Trading Basics, and Potential Credit Demand	10:20 a.m.	Marco Graziani (MPCA)
What is happening with the Nonpoint Sources in the Watershed?	11:05 a.m.	Shaina Keseley (BWSR) and Brad Jordahl Redlin (MDA)
Agricultural BMP & Watershed Management Based Credit Potential.	11:20 a.m.	Bruce Henningsgaard (MPCA)
North Fork Crow River Modeling Tool	11:45 a.m.	Emily Brault (MPCA)
Lunch provided by MPCA	12:15 p.m.	
Water Quality Trading Funding Alternatives	12:45 p.m.	Joel Peck (MPCA)
Discuss your ideas for WQ Trading	1:00 p.m.	Group conversation with MPCA, MDA, BWSR

Presentations by BWSR, MDA and MPCA staff provided an overview of the pilot project's scope and purpose and focused more specifically on potential water quality trading demand, ongoing nonpoint source best management practice (BMP) implementation in the watershed, potential agricultural and watershed management BMP credit supply, water quality modeling support for trading and available funding alternatives. The meeting ended with a thoughtful discussion of potential trading options, opportunities and obstacles for the wastewater sector. Follow-up calls were made to wastewater meeting participants to get additional information on level of interest and barriers they see in utilizing a water quality trade to meet their permit limit. The information collected from the follow-up calls is located in Appendix C.

Key Takeaways:

- Several wastewater utilities are interested in participating in water quality trading as buyers. Many would be interested in simpler point source to point source trades but generally recognize that the availability of point source generated credits in the watershed is limited. There was also some interest in generating credits for sale to other point sources.
- Timing is important for wastewater permittees. They need to know their pollutant reduction requirement and be actively working on identifying options to comply in order to engage in discussions on water quality trading. The ideal time is while their permit is being reissued with a new pollutant limit, or shortly thereafter.
- Understanding that trading has potential to limit the escalation of operational costs in the future, more so that it's potential to avoid the need for future facility upgrades.
- Concerns about the applicability of nonpoint source generated credit to summer only river eutrophication standards based phosphorus effluent limits. Robust discussion of this issue has eased these concerns and provided more clarity.

Nonpoint Source Sector Meeting

A virtual nonpoint source sector meeting was held on September 9, 2021. Thirty-nine people were invited to participate. Approximately 30 participants representing counties, Soil and Water Conservation Districts, watershed districts, environmental organizations and the agricultural sector attended the meeting. Board of Water and Soil Resources, Minnesota Department of Agriculture and Minnesota Pollution Control Agency staff also participated.

Nonpoint Source Sector Meeting Agenda

Topic	Time	Presenter
Introductions, Meeting Purpose and Purpose of Pilot Program	9:00 a.m.	Nicole Blasing (MPCA)
Program Connections - MAWQCP and Comprehensive Watershed Management Plans	9:10 a.m.	Brad Redlin (MDA) Marcey Westrick (BWSR)
Point Source Requirements and Potential Credit Demand	9:20 a.m.	Nicole Blasing (MPCA)
Review WQ Trading Basics, and Potential Roles of LGUs	9:40 a.m.	Marco Graziani (MPCA)
Break	9:55 a.m.	
Agricultural BMPs & Watershed Management Based Credit Potential	10:05 a.m.	Bruce Henningsgaard (MPCA)
North Fork Crow River Modeling Tool - Scenarios	10:25 a.m.	Emily Brault (MPCA)
Discuss your ideas for WQ Trading	11:00 a.m.	Group Discussion
Wrap up and next steps	11:55 a.m.	Nicole Blasing (MPCA)

Presentations by BWSR, MDA and MPCA staff provided an overview of the pilot project's scope and purpose and focused more specifically on potential nonpoint source water quality trading credit supply, water quality modeling support for trading and available funding alternatives. Discussion centered largely on the role of Local Governmental Units (LGUs) in water quality trading. A summary of additional questions and comments from the meeting's chat feature are available in Appendix D. Feedback from the follow-up survey is located in Appendix F.

Key Takeaways:

- Several questions were raised about the details of water quality trading such as cost share project eligibility to generate credits, trade ratios and watershed scale.
- Much interest in clarifying potential roles/responsibilities of LGUs. Creation of some scenarios showing potential LGU involvement could be useful.
- LGUs have questions and concerns about compensation for staff time and effort dedicated to water quality trading.
- It may be challenging to set up a system organically between the WWTP and LGUs. Leadership/support from state agencies is critical.

Stormwater Sector Meeting

A virtual stormwater sector meeting was held on September 9, 2021. Forty-six people were invited to participate. Twenty-five participants representing cities, counties, Minnesota Department of Transportation and engineering consultants attended the meeting. Board of Water and Soil Resources, Minnesota Department of Agriculture and Minnesota Pollution Control Agency staff also participated.

Stormwater Sector Meeting Agenda

Topic	Presenter
Introductions, Meeting Purpose, & Purpose Of Pilot Project	Ryan Anderson (MPCA)
Review WQ Trading Basics, and Potential Credit Demand	Marco Graziani, Scott Fox, Anna Bosch (MPCA)
What is happening with the Nonpoint Sources in the Watershed	Shaina Keseley (BWSR) and Brad Jordahl Redlin (MDA)
Agricultural BMP & Watershed Management Based Credit Potential	Bruce Henningsgaard (MPCA)
North Fork Crow River Modeling Tool	Emily Brault (MPCA)
Water Quality Trading Funding Alternatives	Joel Peck (MPCA)
Discuss your ideas for WQ Trading <ul style="list-style-type: none">• Initial concerns• Roadblocks• Potential project ideas	Group conversation

There are 15 MS4s entirely or partially within the North Fork Crow River watershed. Nine nutrient impaired lakes and five stream reaches have either approved or pending MS4 wasteload allocations. Water quality trading could assist MS4s in meeting a WLA through the purchase of credits.

Presentations by BWSR, MDA and MPCA staff provided an overview of the pilot project's scope and purpose and focused more specifically on potential water quality trading demand, ongoing nonpoint source BMP implementation in the watershed, potential agricultural and watershed management BMP credit supply, water quality modeling support for trading and available funding alternatives. A summary of questions and comments from the meeting's session chat are available in Appendix E. Feedback from the follow-up survey is located in Appendix F.

Key takeaways:

- For water quality trading to be successful, it will be important to communicate roles and responsibilities between entities.
- There was confusion between downstream impairments versus downstream jurisdictions, so clear graphics and explanations of trading are necessary to communicate the intent.
- The most repeated concern was related to working outside jurisdictional boundaries. Attendees were not sure that cities would want to use capital improvement funds outside of the city boundaries.
- The cost benefit analysis will need to be clear for municipalities to decide to move forward with any project outside of their immediate area. Specifically, an ArcGIS online tool would be especially valuable in this regard.
- Concerns regarding the administrative requirements needed to implement and track trading activities and whether these requirements would be a burden to an MS4 Permittee were also expressed by participants.

Follow-up Meetings

The water quality trading meetings described above resulted in several requests for follow-up conversations with BWSR, MDA and MPCA staff:

- May 27, 2021 - Houston Engineering – MPCA staff met with Drew Kessler and Tim Erickson to discuss ideas for estimating WQ credit demand in the North Fork Crow River watershed. Houston is working on the watershed TMDL (including RES impairments) and participates in the ESMC/TNC pilot project as well as other ongoing Ag-Urban conversations. Discussions focused on the details of wastewater NPDES limits (short-term month to month goals) versus WLAs (long-term summer average goals) and various potential factors influencing credit demand. Also discussed potential MS4 demand and ideas for how to estimate what it might be. They do not have access to detailed stormwater models for cities in the watershed but they do have a calibrated Hydrological Simulation Program – FORTRAN (HSPF) model that can be used to develop general estimates of urban runoff volumes and pollutant loads. This is probably a good first cut but more detailed analysis would have to be done by, or in collaboration with, MS4 city staff.
- June 30, 2021 - City of Buffalo – MPCA staff met with Laureen Bodin (City Administrator), Ray Wurm (Wastewater Superintendent) and Justin Kannas (Bolton & Menk) to discuss water quality trading alternatives for the City’s wastewater and stormwater permits. Phosphorus reductions are needed from both the city of Buffalo MS4 and Buffalo WWTP and to meet applicable wasteload allocations. The City is particularly interested in working with nonpoint sources to develop projects that can benefit Buffalo Lake.
- September 27, 2021 - Truterra LLC – BWSR, MDA and MPCA staff met with Spencer Herbert and Mathew Kruger to discuss the market potential of water quality trading. Truterra works with agricultural retailers to deliver sustainable agriculture solutions in many regions throughout the state of Minnesota. During follow-up conversations, Spencer and Matt asked for assistance making contact with municipalities in areas where they have active participation by landowners. MPCA followed-up by having a series of conversations with municipal officials in various cities to verify their interest in being contacted by Truterra. Upon confirmation that they were willing to be contacted, email introductions were provided between Truterra and public works officials in the cities of Austin, Buffalo, Mankato and Rochester.
- October 1, 2021 - Wetland Banking discussion – BWSR, MDA and MPCA staff met to discuss BWSR’s wetland banking program, its goals and administration, as well as any similarities and compatibilities with water quality trading. This very informative discussion made clear that in most cases wetland banking credits are not eligible for water quality trading credits and vice versa. Wetland banking credits include water quality benefit assumptions and therefore those attributes cannot be separated and sold separately as ecosystems services. The meeting also included a detailed discussion and demonstration of the wetland banking database.
- November 1, 2021 - Centra Sota – BWSR, MDA and MPCA staff met with Amy Robak and Rebecca Schubert to discuss the connections between the Cooperative’s agricultural programs and water quality trading. Centra Sota is an Agricultural Cooperative serving central Minnesota. They are one of the agricultural retailers that works with Truterra to promote sustainable farming practices.

Tool for Optimal BMP Placement

As part of this pilot project, MPCA developed a modeling tool that can be used to evaluate the optimal credit generation location based on watershed pollutant delivery coefficient. The primary objective of this tool is to identify optimal locations for BMPs given any target water in the North Fork Crow River watershed. Additionally, the Hydrological Simulation Program – FORTRAN (HSPF) model for this watershed can provide phosphorus reductions resulting from specific BMP projects.

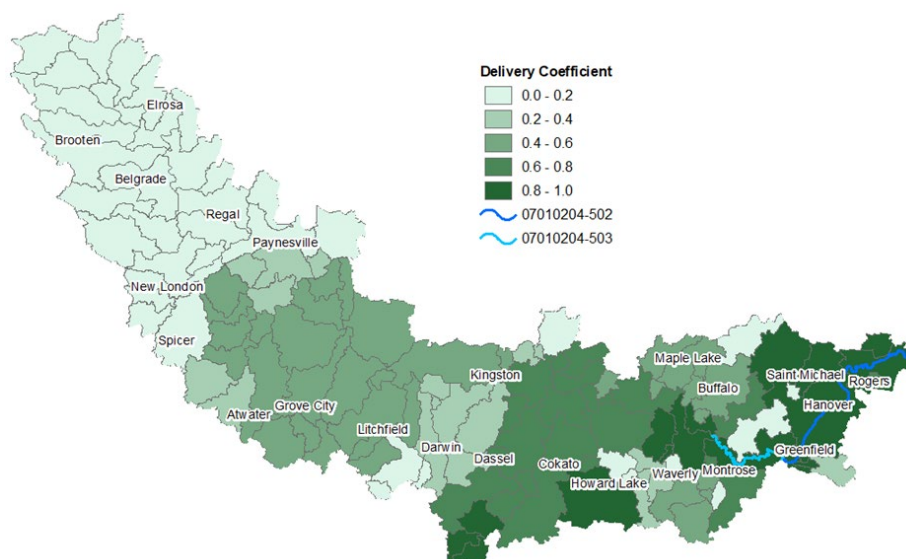
Researchers widely use HSPF models to simulate hydrology and water quality processes for a given watershed. The HSPF model was developed in the 1980s with the support of the United States Geological Survey and U.S. Environmental Protection Agency. The MPCA has a HSPF model available for almost all 81 watersheds in the State; thus, our BMP modeling tool is applicable to much of Minnesota.

We capture the phosphorus reduction achieved by a BMP in any of the 134 subwatersheds of the North Fork Crow River watershed via creating a fictitious phosphorus load and assessing how much of the load reaches the target subwatershed, containing the target water. Note, HSPF models break a HUC8 watershed into an array of “subwatersheds.” Often the HSPF subwatershed is equivalent to a HUC12, but sometimes multiple subwatersheds are within a HUC12.

Calculating the ratio of the amount of phosphorus reaching a target water subwatershed to the amount added in a given subwatershed produces a “delivery coefficient.” The higher the delivery coefficient, the better the location is for a BMP. For instance, a BMP within the subwatershed of the target water will have a delivery coefficient of one since the full phosphorus reduction from the BMP will be observed in the target water subwatershed.

To note, as explained to workshop attendees, these delivery coefficients can be calculated not only to provide information on the best BMP locations for any target water of interest, but they can also be determined based on the time period of interest (e.g., month, season, or year). Due to the temporal variability in phosphorus cycle processes, delivery coefficients will vary with time. Thus, consideration of the time period for a BMP is important. As an example, the figure below presents delivery coefficients for all subwatersheds on an annual basis. Appendix G presents BMP delivery coefficients given a monthly time frame in a tabular format.

Subwatershed delivery coefficients in the North Fork Crow River watershed given an annual time period and the watershed’s outlet, the Crow River, as a target water.



Lastly, our modeling tools allows us to make adaptations to represent a specific BMP of interest. Thus, we can determine the optimal locations for the given BMP. We presented two examples: (1) carp removal to reduce phosphorus in Buffalo Lake, (2) cover crops within the county of Glacial Lakes Sanitary Sewer and Water District (SSWD) to reduce phosphorus in the North Fork Crow River. In the future, if expanded beyond the North Fork Crow River watershed, interested parties would be able to utilize this modeling tool in order to evaluate the best location for a BMP, as well as the effect needed by the BMP to achieve a water quality goal.

Minnesota Agricultural Water Quality Certification Program (MAWQCP) Role in Water Quality Trading

Minnesota Agricultural Water Quality Certification Program staff have developed a proposal for integrating water quality trading into their program. The MAWQCP staff, structure, and relationships are well positioned to serve critical roles for the promotion of water quality trading including:

- Identification of participating sellers and the baseline conditions.
- Implementation of approved practices, including engineering and financial assistance.
- Provision of practice verification as required for project audits.

MAWQCP staff have working relationships with Soil and Water Conservation Districts, U.S. Department of Agriculture offices, and private agricultural suppliers across Minnesota to access farms and implement practices to support trading projects. An outline of relevant MAWQCP expertise and ideas for integration of water quality trading into their program are presented in Appendix H.

Recommendations

Recommendations for the tools, processes, and/or resources needed for the state agencies to provide adequate support to water quality trading projects in the North Fork Crow Watershed and throughout Minnesota were developed in response to the feedback that we heard by our external stakeholders throughout the project.

Key themes in the feedback included:

- Provide guidance, tools, and/or policy decisions to clarify key components of water quality trading (e.g. stormwater trading, funding for LGUs, cost of implementation to inform cost/benefit analysis, use of the various models/tools, etc.).
- Provide real-life scenarios/examples of water quality trading to show the roles of the various partners.
- Provide dedicated state resources (staff and tools) to support long-term implementation and integration of water quality trading programs, projects and efforts into the water programs at both the state and local levels.

The recommendations are included below and are categorized into policy decisions, short-term actions (can be completed with existing state resources), and long-term actions (needs additional state resources).

Recommendation	Project Detail	Project Type	Lead Agency
BWSR statement on project funding and credit generation	This is complete and located in Appendix I.	Policy	BWSR
Provide loan opportunities for BMPs through clean water partnership funding	Develop an alternative funding source for clean water partnership loans to allow for water quality trading BMPs to be funded through this program.	Policy	MPCA
Develop Stormwater WQ Trading Guidance	Develop MS4 trading guidance to clarify the following Municipal Stormwater trading criteria: <ul style="list-style-type: none"> - The criteria to buy or sell credits - How compliance with the MS4 minimum control measures will be determined - The eligibility of in lake work for WQ trading credit while not eligible for MS4 permit WLA credit 	Short term	MPCA – Municipal Stormwater Program
Research/Identify funding for LGUs	Research and recommend solutions to fund LGUs time spent on the development and implementation of water quality trading proposals	Short term	BWSR
Develop guidance on use of existing models/tools ¹	Research the various models/tools currently in use by point and nonpoint source partners. Develop guidance on how they can be used in WQ trading project proposals and implementation	Short Term	BWSR/MPCA/MDA
Develop BMP cost data	Develop trade cost metrics that can be used to show the cost of implementing a water quality trading project	Short Term	BWSR/MPCA/MDA
Complete demonstration project – provide example scenarios ²	Identify project partners (point and nonpoint source) within the North Fork Crow Watershed that commit to working with the state agencies on developing a water quality trading project(s). Once partners are identified complete a table top exercise and then a real life demonstration of the water quality trading scenario.	Short term	BWSR/MPCA/MDA (0.2 FTE per Agency)
Hire a state staff responsible for leading water quality trading efforts (e.g. Water Quality Trading Coordinator) ³	State leadership is needed to support water quality trading efforts throughout the state. Potential responsibilities of this position are included below.	Long Term	New - 1 FTE
Develop BMP tool into online application	The results of the HSPF model could be translated into an online tool so information may be more readily and easily obtainable by external partners as they consider water quality trading options or, if an online tool is not developed, MPCA staff could do custom scenario runs for trade proposals.	Long Term	MPCA - new 0.25 FTE

1. ACPF, HSPF, SWMM, PTMApp, etc.
2. Demonstrate the use of the BMP tool and MAWQCP trading - role scenario.
3. Water Quality Trading Coordinator (1 FTE) responsibilities would include:
 - Bridge the gap between the point source regulatory responsibilities and nonpoint source work at the state and local level, identify opportunities, and support efforts at the local level to facilitate water quality trading projects and collectively meet the goals of a watershed in a more economically feasible way.

- Coordinate, identify, and support water quality trading opportunities through the work of the various state water programs; NPDES/SDS program, TMDL/WRAPS development, comprehensive water management/1W1P, and MNAWQCP;
- Strategically connect point source NPDES/SDS permittees with nonpoint source partners and support their efforts to partner in developing water quality trading projects that achieves their pollutant reduction goals;
- Develop an electronic/online bulletin board that houses information needed to identify water quality trading opportunities and connects potential buyers and sellers.
- Develop a credit tracking system.
- Continue to work with the wetland banking program leaders to identify opportunities to adopt some of the structure, database, tracking for water quality trading purposes.

Appendices

Appendix A

Water Quality Trading Pilot Project

List of Project Partners Invited to Participate

List of Project Partners Invited to Participate

#	Name	Email	Sector
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Appendix B

Water Quality Trading Pilot Project

Kickoff Meeting – April 26, 2021

Feedback/Questions from Meeting Participants



North Fork Crow River Watershed Water Quality Trading Pilot Meeting

April 26, 2021

Questions, Comments and Responses

[10:43 AM] Weirnerman, Jason (BWSR)

Not to be a Debbie Downer, but this has been tried in this area (both North Fork and Sauk) at least twice in the past 15 years. What has changed with the partners that may lead to greater success this time around?

A few factors have changed, some are expected to change in the future, and some haven't changed at all.

- New river eutrophication water quality standards (RES) are driving more restrictive phosphorus effluent limits for wastewater treatment plants (WWTP) which may result in demand for water quality trading (WQT) credits.
- The draft Lake Pepin and North Fork Crow River RES Total Maximum Daily Loads (TMDL) include phosphorus wasteload allocations (WLAs) for permitted municipal stormwater sources (MS4s) which may result in future demand for WQT credits.
- The draft Jewitts Creek Chloride TMDL includes chloride WLAs for the City of Litchfield which will result in permit limits for the WWTP and WLAs for the MS4. Nonpoint sources are also sources of chloride (fertilizers, dust suppressants, land application). It is not clear whether there are any trading opportunities but it may be worth evaluating.
- MPCA is currently developing aquatic toxicity water quality standards for nitrate. These are expected to result in future total nitrogen effluent limits and reduction requirements for many wastewater dischargers.
- The short term goals of this pilot project are to determine how BWSR, MDA and MPCA programs can work together to support Ag-Urban partnerships. We think that water quality trading is a mechanism that can help achieve water quality goals. Coordination of point source and nonpoint source efforts towards water quality restoration and protection has potential to provide cost effective alternatives to achieve wastewater and stormwater permit requirements and accelerate voluntary nonpoint source implementation of water quality practices. We don't know whether this effort will ultimately result in the development of any trades but we think that engaging watershed partners in these conversations will advance knowledge of these issues and help us understand if and how we can make progress in this field.

[10:45 AM] Fuchs, Dennis - NRCS-CD, Waite Park, MN

What are the current point source WLAs in the NFCRW? What kind of reductions needed for future permits?

Wastewater

There are 18 NPDES permitted wastewater dischargers in the NF Crow River watershed. Of these, Faribault Foods in Cokato has ceased operations and the permit is in the process of being terminated. Wasteload allocations for several pollutants (BOD, E. coli, phosphorus and TSS) are applicable for wastewater facilities in the NF Crow River watershed (both final and draft permits and TMDLs) but phosphorus is the only pollutant that results in more restrictive permit limits for WWTPs. The two tables below illustrate recent facility performance with respect to annual Lake Eutrophication Standards (LES) and seasonal River Eutrophication Standards (RES) WLAs. Most WWTPs are capable of meeting their annual WLAs and permit limits, several would not have met their season WLAs in recent years. It is important to note two things about the RES data shown below.

1. RES WLAs and permit limits are not the same value. RES WLAs represent the long term summer average performance expectation over time. RES permit limits are typically 2.1 times larger than WLAs and represent the compliance targets that must be achieved as a June - September calendar month average. Most WWTPs shown in the RES table below would have been able to meet their summer permit limits but would not have been able to attain long term average WLA targets.

2. The wastewater data shown in these tables do not necessarily represent permit effluent limit violations. The majority of these permits already include LES based permit limits (where applicable) but most do not yet include RES based permit limits. Some permits include compliance schedules that specify future dates for the facilities to meet applicable phosphorus limits.

Wastewater - Annual Phosphorus Loads & LES WLAs

Facility	Flow Type	Annual 2018 TP	Annual 2019 TP	Annual 2020 TP	Annual 2018	Annual 2019	Annual 2020	Annual LES WLA
		(kg/yr)	(kg/yr)	(kg/yr)	(% of WLA)	(% of WLA)	(% of WLA)	(kg/year)
Annandale/Maple Lake/Howard Lake WWTP	Continuous	202	221	204	12%	13%	12%	1,636
Associated Milk Producers Inc (AMPI)	Continuous	89	8	10	562%	49%	62%	15.9
Brooten WWTP	Controlled	25	39	29	14%	21%	16%	184
Buffalo WWTP	Continuous	910	1,104	871	19%	23%	18%	4,774
Cokato WWTP	Continuous	2,110	2,426	684	210%	242%	68%	1,003
Darwin WWTP	Controlled	11	34	13	16%	49%	19%	69
Faribault Foods Inc - Cokato	Continuous	670	322	3	186%	89%	1%	360
Glacial Lakes SSWD	Continuous	1,068	1,048	813	87%	85%	66%	1,228
Great River Energy of Dickinson	Continuous	5	1	0	13%	2%	0%	41.4
Greenfield WWTP	Continuous	6	4	12	5%	3%	9%	138
Grove City WWTP	Controlled	90	14	18	29%	5%	6%	310
Litchfield WWTP	Continuous	1,092	1,177	829	32%	34%	24%	3,426
Meadows of Whisper Creek WWTP	Continuous	2	2	5	2%	2%	5%	96.7
Met Council - Rogers WWTP	Continuous	579	587	488	33%	33%	28%	1,771
Montrose WWTP	Continuous	294	394	258	27%	36%	24%	1,079
Otsego East WWTP	Continuous	199	230	159	9%	11%	8%	2,114
Rockford WWTP	Continuous	358	346	240	40%	38%	27%	899
Saint Michael WWTP	Continuous	1,157	1,286	866	43%	48%	32%	2,702

Wastewater – June - September Phosphorus Loads & RES WLAs

Facility	Flow Type	Jun-Sep 2018 TP	Jun-Sep 2019 TP	Jun-Sep 2020 TP	Jun-Sep 2018	Jun-Sep 2019	Jun-Sep 2020	Jun-Sep RES WLA
		(kg/day)	(kg/day)	(kg/day)	(% of WLA)	(% of WLA)	(% of WLA)	(kg/day)
Annandale/Maple Lake/Howard Lake WWTP	Continuous	0.65	0.60	0.77	104%	96%	122%	0.63
Associated Milk Producers Inc (AMPI)	Continuous	0.1	0.0	0.004				
Brooten WWTP	Controlled	0.06	0.00	0.00				
Buffalo WWTP	Continuous	2.46	3.22	3.02	108%	141%	132%	2.29
Cokato WWTP	Continuous	4.39	4.18	0.48	757%	721%	82%	0.58
Darwin WWTP	Controlled	0.025	0.084	0.015				
Faribault Foods Inc - Cokato	Continuous	2.79	0.42	0.00				
Glacial Lakes SSWD	Continuous	3.24	2.86	3.13	456%	403%	441%	0.71
Great River Energy of Dickinson	Continuous	0.03	0.00	0.00	15%	0%	0%	0.17
Greenfield WWTP	Continuous	0.014	0.009	0.043	11%	7%	33%	0.13
Grove City WWTP	Controlled	0.180	0.020	0.000	100%	11%	0%	0.18
Litchfield WWTP	Continuous	2.578	3.339	3.826	157%	204%	233%	1.64
Meadows of Whisper Creek WWTP	Continuous	0.007	0.008	0.032	8%	9%	36%	0.09
Met Council - Rogers WWTP	Continuous	2.78	2.24	1.33	171%	139%	82%	1.62
Montrose WWTP	Continuous	0.70	0.71	0.73	114%	114%	118%	0.62
Otsego East WWTP	Continuous	0.64	0.78	0.54	39%	47%	32%	1.66
Rockford WWTP	Continuous	1.08	1.02	0.84	131%	125%	102%	0.82
Saint Michael WWTP	Continuous	3.03	3.35	2.91	123%	136%	118%	2.47

Key

< 75% of WLA
≥ 75% of WLA
> 100% of WLA

Stormwater

The boundaries of 15 MS4s intersect the North Fork Crow River watershed but only seven of these are estimated to overlap the watershed by more than 5% of their land area.

Permit_ID	MS4_Name	MS4_Type	Estimate of MS4 Area in Watershed
MS400238	Buffalo City MS4	City or Township	100%
MS400286	Hanover City MS4	City or Township	100%
MS400253	Litchfield City MS4	City or Township	100%
MS400246	St Michael City MS4	City or Township	100%
MS400282	Rogers City MS4	City or Township	70%
MS400281	Albertville City MS4	City or Township	45%
MS400030	Loretto City MS4	City or Township	30%
MS400243	Otsego City MS4	City or Township	5%
MS400138	Hennepin County MS4	County	<1%
MS400081	Corcoran City MS4	City or Township	5%
MS400095	Independence City MS4	City or Township	5%
MS400105	Medina City MS4	City or Township	5%
MS400083	Dayton City MS4	City or Township	1%
MS400242	Monticello City MS4	City or Township	<1%
MS400170	MNDOT Metro District MS4	MNDOT	?

The following tables shows Total Suspended Solids (TSS) and Total Phosphorus (TP) EPA approved wasteload allocations (WLAs) assigned to MS4s for waterbodies within the NF Crow River watershed:

North Fork Crow and Lower Crow Bacteria, Turbidity, and Low Dissolved Oxygen TMDL (2013)

TSS

Table 3.7. Wasteload allocations for all MS4 communities that contribute directly to or are upstream of the North Fork Crow River turbidity impaired reach (07010204-503).

MS4	Area (acres)	TSS Allocation (tons/day)				
		Very High	High	Mid	Low	Dry
Buffalo City MS4	5,675	9.5	3.9	1.1	0.4	0.3
St Michael City MS4	122	0.2	<0.1	<0.1	<0.1	<0.1
Litchfield City MS4	3,435	5.7	2.3	0.7	0.3	0.2
MS4 Totals	9,232	15.4	6.3	1.8	0.7	0.5

Table 3.8. Wasteload allocations for all MS4 communities that contribute directly to or are upstream of the Lower Crow River turbidity impaired reach (07010204-502).

MS4	Permit #	Area (acres)	TSS Allocation (tons/day)				
			Very High	High	Mid	Low	Dry
Hennepin County MS4	MS 400138	52	<0.1	<0.1	<0.1	<0.1	<0.1
Loretto City MS4	MS 400030	95	0.1	<0.1	<0.1	<0.1	<0.1
Corcoran City MS4	MS 400081	1,211	1.5	0.5	0.1	<0.1	<0.1
Dayton City MS4	MS 400083	754	0.9	0.3	<0.1	<0.1	<0.1
Independence City MS4	MS 400095	2,182	2.7	0.9	0.3	0.1	<0.1
Medina City MS4	MS 400105	425	0.5	0.2	<0.1	<0.1	<0.1
Buffalo City MS4	MS 400242	5,706	7.1	2.4	0.7	0.3	0.2
Monticello City MS4	MS 400242	76	<0.1	<0.1	<0.1	<0.1	<0.1
Otsego City MS4	MS 400243	2,709	3.4	1.1	0.3	0.1	<0.1
St Michael City MS4	MS 400246	22,927	28.4	9.7	2.8	1.1	0.7
MNDOT Metro District MS4	MS 400170	52	<0.1	<0.1	<0.1	<0.1	<0.1
Litchfield City MS4	MS 400253	3,435	4.3	1.5	0.4	0.2	0.1
Albertville City	None	1,486	1.8	0.6	0.2	<0.1	<0.1
Rogers City	None	2,071	2.6	0.9	0.3	<0.1	<0.1
MS4 Totals		43,181	53.5	18.3	5.2	2.0	1.4

[2019 Modification to North Fork Crow and Lower Crow Bacteria, Turbidity, and Low Dissolved Oxygen Total Maximum Daily Load Report](#)

Table 1. New regulated-MS4 within TMDL subwatershed.

AUID	Reach Name	Current MS4s	New MS4	Impairment
07010204-502	Lower Crow River	See Tables 2.7 and 3.8	Hanover City MS4	<i>E. coli</i> , Total Suspended Solids (TSS)

Explanation of modifications: Hanover City was not regulated under the MS4 permit when the TMDL was completed in 2013. Hanover City is now a regulated-MS4 and the permitted area needs to be accounted for in the TMDL WLAs for the TMDL segment listed above. The MPCA is proposing the following modifications: Lower Crow River, AUID 07010204-502: The MPCA is shifting between 0.1 and 4.4 tons/day of total suspended solids (TSS) depending on flow zone from the LA to the MS4 WLA Hanover City (Modified Table 3.8; Modified Table 3.10).

Modified TMDL Table 3.10. Lower Crow River impaired reach TSS total daily loading capacities and allocations (modifications highlighted in yellow).

Crow River 07010204-502		Flow Zones				
		Very High	High	Mid-Range	Low	Dry
		TSS Load (tons/day)				
Total Daily Loading Capacity		763.1	273.5	75.6	29.3	19.3
Margin of Safety (MOS)		22.9	20.9	3.4	1.3	0.4
Upstream Boundary Condition (S Fork Crow River)		337.1	115.0	32.9	12.7	8.6
Wasteload Allocations	NPDES Wastewater Discharges	3.4	3.4	3.4	3.4	3.4
	MS4 Communities	57.9	19.8	5.6	2.2	1.5

North Fork Crow River TMDL Bacteria, Nutrients, and Turbidity TMDL (2015)

TSS

Table 3.7. Wasteload allocations for all MS4 communities that contribute directly to or are upstream of the Mill Creek impaired reach (07010204-515).

MS4	Permit #	Area (acres)	TSS Standard	TSS Allocation (tons/day)				
				Very High	High	Mid	Low	Dry
Buffalo City MS4	MS 400238	5,427	42 mg/L	13.36	2.53	0.50	0.09	0.03
			30mg/L	9.54	1.81	0.36	0.06	0.02

Phosphorus

Table 4.63. TMDL allocations for Constance Lake.

Allocation	Source	Existing TP Load		TP Allocations (WLA & LA)		Load Reduction	
		(lbs/year)	(lbs/day)	(lbs/year)	(lbs/year)	(lbs/day)	(lbs/year)
Wasteload	Construction & Industrial Stormwater	0.9	0.003	0.9	0.003	0	0%
	City of Buffalo	0.5	0.001	0.34	0.001	0.1	29%
Load	Drainage Areas	93	0.3	54.3	0.1	39	42%
	SSTS	86	0.2	0	0	86	100%
	Atmosphere	39	0.1	39	0.1	0	0%
	Internal Load	703	1.9	125	0.3	578	82%
	MOS	--	--	11	0.03	--	--
	TOTAL	922.4	2.504	230.54	0.534	703.1	75%

Table 4.64. TMDL allocations for Pelican Lake.

Allocation	Source	Existing TP Load		TP Allocations (WLA & LA)		Load Reduction	
		(lbs/year)	(lbs/day)	(lbs/year)	(lbs/year)	(lbs/day)	(lbs/year)
Wasteload	Construction & Industrial Stormwater	29	0.08	29	0.08	0.0	0%
	City of Monticello	9.8	0.03	4.6	0.01	5	53%
	City of St. Michael	505	1.4	237	0.7	267	53%
	City of Buffalo	3	0.01	1	<0.01	2	53%
Load	Drainage Areas	2,399	8	1,129	3.8	1,270	53%
	SSTS	1,170	3.2	0	0.0	1,170	100%
	Upstream Lakes	104	0.3	69	0.2	36	34%
	Atmosphere	827	2.3	827	2.3	0	0%
	Internal Load	15,016	41	2,678	7	12,338	82%
	MOS	--	--	260	0.7	--	--
	TOTAL	20,062.7	56.32	5,235	14.79	15,088	74%

Table 4.65. TMDL allocations for Beebe Lake.

Allocation	Source	Existing TP Load		TP Allocations (WLA & LA)		Load Reduction	
		(lbs/year)	(lbs/day)	(lbs/year)	(lbs/year)	(lbs/day)	(lbs/year)
Wasteload	Construction & Industrial Stormwater	2	0.005	2	0.005	0	0%
	City of St. Michael	180	0.5	78	0.2	103	57%
Load	SSTS	80	0.2	0	0.0	80	100%
	Atmosphere	66	0.2	66	0.2	0	0%
	Internal Load	400	1.1	214	0.6	186	46%
	MOS	--	--	19	0.1	--	--
	TOTAL	728	2.005	379	1.105	369	48%

[10:52 AM] Margaret Johnson

Local Governments are charged to implement their Comprehensive Plan, in this case the North Fork One Watershed One Plan. The current plan does not touch on any program like this 'pollutant trading,' and would probably require an amendment. As a local government unit leader, I'm not convinced this type of programming will in fact enhance water quality improvements needing to be made and existing in the current 1W1P. The State needs to realize the amount of "State ideas" and efforts keep growing for the locals without many additional resources.

The basic idea behind nonpoint source water quality trading credits is that a portion of the pollutant load reductions achieved by implementation of nonpoint source BMPs can be credited toward meeting wastewater and/or stormwater permit limits. Point source demand for credits should bring additional funding for the implementation of nonpoint BMPs and generate the completion of more nonpoint BMPs within a watershed. The intent is not to create unfunded responsibilities for local units of government. We believe that there is potential for collaboration between local units of government to develop water quality solutions that are cost effective and produce greater benefits than those that are possible by increasing power consumption, chemical use and biosolids handling at wastewater treatment facilities. Among the questions that we want explore with this project are these – Can credit demand by point sources generate significant additional revenues for implementation of nonpoint source BMPs? If so, how can these funds be allocated? In addition to direct funding of BMPs, can they also be used by local units of government (or other service providers) for costs associated with participating in trading activities?

The need for a plan amendment will be dependent on the manner in which the LGUs participate in the trading program. For example, if LGUs choose to assist with projects, or facilitating conversations, there is not a need for an amendment. If they are acting as a broker or in a higher administrative capacity, a plan amendment is likely necessary, consistent with plan content requirements through identification of roles. Therefore, a plan amendment would be required only if the trading program would significantly change the priorities, goals, or actions of the comprehensive watershed management plan. If the trading program comes to fruition, Section 5.4 “Funding” and other relevant sections of the North Fork Crow Comprehensive Watershed Management Plan could be updated as part of the plan evaluation/update in 2023. It could also be addressed via the annual budget and Annual/Short-Range Work Plans.

[10:53 AM] Tara Ostendorf

What do you see as the major drivers in this region that have changed in the last 10 years within this area? New regulations that you see, influx of funding through MAWQCP? The biggest issue in the past was the lack of drivers to push trades.

Implementation of both LES and more recently RES are resulting in more restrictive phosphorus effluent limits for wastewater facilities. Timing of credit demand is an important consideration. Several facilities are planning upgrades to meet new more restrictive phosphorus limits. If trading projects are realistic alternatives during these facility planning phases, they are more likely to be realized. Other sources of potential credit demand include new chloride limits (complicated), development of new nitrate water quality standards (underway) and antidegradation regulations (a part of our water quality standards) applicable to new and expanded NPDES sources.

In terms of stormwater, there are a number of factors that have changed in the last ten years. An increased number of regulated MS4s, an ever increasing number of applicable wasteload allocations, as well as the new possibility of stormwater trading opportunities.

[10:54 AM] Steven Bot

In 2012 the City of St. Michael had a 155K construction toe wood repair project on the Crow River (worst erosion area on the Crow) and Regal Creek similar to Rohr Mauling which removed 562 lbs/yr phosphorus which we've received no credit for. Is there a way to get credit for benefit projects we've completed? Further around the same time we preserved 593 acres of WMA including conversion of 268 acres of crop land to prairie resulting with 1650 lbs/yr reductions. If the goal is truly helping the environment how can the MPCA help with credits for good deeds or do you have to have issues/negotiations before doing helpful projects? Do you see any big opportunities for trading on the Crow?

An important element of water quality trading in Minnesota is the principle of additionality which requires that nonpoint source load reductions that are credited to a point source in a point source-NPS trade would not have occurred otherwise. To this end the MPCA's [Water Quality Trading Guidance](#) includes the following:

4.1 Project eligibility for credits

Credits must be from BMPs installed after a baseline year—Trading plans need to define a baseline year after which credits can be created. The baseline year should be as current as possible and tied to the watershed analysis (e.g., a watershed modeling time series, TMDL or antidegradation analysis) used to support trading. Baseline years specified in trading plans can be updated from time to time. Trading plans may include options for limited look-back periods to bring in otherwise ineligible early action projects², typically no more than 2 years before a TMDL is approved by EPA. Any look-back credits must have clear and complete pre-project site condition information.

² Such as for credits generated by producers who have become certified through the Minnesota Agricultural Water Quality Certification Program.

We want to acknowledge the excellent [Crow River Toe-Wood Streambank Stabilization](#) project that the City of St. Michael has participated in along with the Wright County SWCD, the Crow River Organization of Waters and the Board of Soil and Water Resources and the Minnesota Department of Natural Resources in 2012. This type of project might have had the potential to generate water quality trading credits at that time, but we believe that it is now too late for it to generate credits. Clearly it occurred long ago and was not motivated by water quality trading demand, therefore it fails the additionality test.

So yes, we have to have issues/negotiations if by that you mean that MPCA wants to be involved in the permit side of credit value calculation prior to or concurrent with BMP implementation. We do believe that there are trading opportunities in the Crow, discovering whether that is true is one of the goals of this pilot project.

[10:56 AM] Kurt N - Otsego (Guest)

What would the next step be if interested in the program? Is our municipal WWTF a good fit for trading - how determined (timeframe/cost)?

Two potential paths forward:

1. Participate in further discussions as part of this pilot project to help us understand how trading can work in the watershed and how existing programs can help.
2. Look into your specific interest and consider/approach potential partners. We are definitely interested in working with you on this.

With respect to your question about the Otsego WWTF, we are not certain. It appears that the facility is able to meet its phosphorus WLAs but that doesn't necessarily mean that it is not a good fit. Discussion with facility and City staff is needed.

[11:08 AM] Loewen, Cole

How are we envisioning flow reductions working under a pollution trading scheme? One of the goals in the Comp. Watershed Mgmt. Plan is to achieve volume reduction goal of 0.75 inch reduction in runoff depth across the watershed. USGS gage on Crow River at Rockford is measuring point.

Excellent question, don't know but definitely something we should explore. Stormwater permits include volume reduction practices for post-construction stormwater management and infiltration practices are options to address some TMDL WLAs so direct flow reduction offsets might be possible. Another possibility is tied to the fact that flow is a component of pollutant load and therefore a pollutant load reduction in the watershed can be extrapolated from a reduction in stormwater flow off the landscape. Another important aspect of your question relates to the ancillary benefits associated with BMP implementation. For example, credit generating BMPs such as wetland restoration or tile drain management may be installed for to generate phosphorus or nitrate water quality trading credits but they will also provide volume reduction benefits that are not specifically "purchased" by the credit buyer.

[11:08 AM] Fuchs, Dennis - NRCS-CD, Waite Park, MN

Would farmers need to be MAWQCP certified before participating? And that would be considered "baseline". Or can BMPs implemented to get MAWQCP certified be traded?

No. The MAWQCP is an established and growing program whose participants are particularly well-suited to benefit from participating in water quality trading agreements, but certification is not required for participation.

Yes, BMPs implemented for MAWQCP certification are eligible to generate water quality trading credits as long as they meet minimum baseline and other credit generation requirements.

[11:10 AM] Margaret Johnson

Is this a goal and mission for MAWQCP? It feels like exploitation of this successful program. Do MAWQCP landowners know this is coming and their projects would be allowing the additional pollution of WWTFs or private businesses or others?

Water Quality Credit Trading is not an established mission of the MAWQCP, but within the program's overriding mission to improve and protect water quality, the mechanism of trading has been identified as a potentially intersecting technique for supporting that mission. In particular, among the program's partners at the federal level and as prioritized by each of the three Presidential administrations that have overlapped with the existence of the MAWQCP, the USDA has sought to foster water quality credit trading as an additional farm-level income opportunity to support agricultural conservation. From its inception the MAWQCP has identified trading as an additional, not replacement, financial opportunity for farms participating in the program and implementing conservation practices. Further, to support its participating farms, the MAWQCP has sought and appreciated inclusion in any planning and development efforts regarding water quality credit trading in Minnesota through the established formal partnerships the program has with the USDA, EPA, MPCA, BWSR and many others.

Water quality trading does not allow or result in the discharge of additional pollutants by permitted dischargers. Permits with trading conditions have developed for new or expanded discharges upstream of impaired waters prior the development of TMDLs or as components of pollutant load reduction plans. They may also be components of permits for new or expanded discharges to address antidegradation requirements of water quality standards or in TMDL watersheds when no wasteload allocations are available (i.e. post-TMDL). In all these cases, trade ratios applicable to each trade result in a greater pollutant load reduction from credit generating the BMPs than the credits made available to the permit so the result is less pollution than would be permitted if the entire load reduction were accomplished at the WWTP.

[11:12 AM] Johnson, Luke - NRCS-CD, Buffalo, MN

Marco mentioned that the late 90's projects are still generating credits, do the non-point projects produce credits as long as they are functioning as designed? Are there individual contracts/agreements between the landowner and buyer, or how is this system coordinated? Is there monitoring required/what is used to determine project reductions? Is a buyer needed prior to a project being constructed, or can a landowner create credits that can be purchased in the future?

Yes, nonpoint BMPs continue to generate credits as long as they are functioning as designed. It is also possible pollutant reductions from some types of BMPs may decrease or increase over time. For example, constructed or restored wetlands may sequester phosphorus for a period of time and then release it under certain conditions. Contracts and/or agreements are needed, typically between the buyer and the seller. MPCA reviews the contracts but is not directly involved in contractual agreements between buyers and sellers. Other type of contractual agreements may be possible where a broker is involved as an intermediary.

Monitoring, modeling or Best Professional Judgment are all acceptable methods for estimating credit generation. Credit generating practices must be maintained and regular inspections are required. Representative BMP monitoring would certainly be acceptable (even desirable) but is not required.

A buyer is not necessarily needed before a project is constructed but documentation of the existing condition is needed for credit value determination. For erosion control practices site specific soil sampling data are preferred. Also existing projects have a limited shelf life in terms of credit generation suitability. As noted earlier Section 4.1 of the MPCA's Water Quality Trading Guidance includes the following related material:

4.1 Project eligibility for credits

Credits must be from BMPs installed after a baseline year—Trading plans need to define a baseline year after which credits can be created. The baseline year should be as current as possible and tied to the watershed analysis (e.g., a watershed modeling time series, TMDL or antidegradation analysis) used to support trading. Baseline years specified in trading plans can be updated from time to time. Trading plans may include options for limited look-

back periods to bring in otherwise ineligible early action projects², typically no more than 2 years before a TMDL is approved by EPA. Any look-back credits must have clear and complete pre-project site condition information.

[11:13 AM] Loewen, Cole

This reminds me of the wetland banking system. It could operate like that - the landowner generates the credits for sale in a market setting. But right now it would have to work through the permitting process, right?

Yes. Most trades to date have been developed as conditions of individual wastewater permits. The one exception is the [Minnesota River Basin General Phosphorus Permit](#) (2005) which established an efficient trading system for select wastewater facilities to trade phosphorus credits. This is not directly relevant to nonpoint source credit generation except that it illustrates the fact that establishing a “marketplace” for credits did result in a substantial volume of trades for a period of time (132 seasonal trades from 2008 through 2019).

[11:14 AM] Andy Johnson

Are credit trading for water quality reductions traded on a 1:1 ratio? Are there cap limits set over time or regularly reductions over time to actually lower the pollutant levels other than offsetting them in one area for another?

No, trade ratios always exceed 1:1. [Minnesota Statute Ch. 115.03, Subd. 10](#) authorizes pollutant lading offsets and requires “...significant offset ratios for offsets between permitted sources and nonpermitted sources...”. The MPCA’s [Water Quality Trading Guidance](#) specifies the following default trade ratios but also notes that reduced trade ratios may be considered for projects that demonstrate greater certainty and increased trade ratios will be considered for projects that present greater uncertainty.

Table 1. Trade ratios in Minnesota

Default Trade Ratios		Credits Users (Buyers)
		NPDES Permittees
Credit Generators (Sellers)	Wastewater NPDES	1.1:1.0
	Stormwater NPDES	2.1:1.0
	Nonpoint Source	2.6:1.0

[11:15 AM] Johnson, Luke - NRCS-CD, Buffalo, MN

My last question was kind of getting at Cole's comment on wetland banking, can it work like that?

A very interesting question. Credit exchanges, brokerages or banks could help normalize trading practices and ultimately result in more efficient and effective trades.

[11:22 AM] Margaret Johnson

Are the limiting factors to WWTF upgrades for meeting pollution standards merely the costs? Political will? We haven't really touched on the issues WWTF are having in meeting the WLA.

Capital costs are certainly part of the equation but not the only or even the most critical factor. Grant and low interest loans are available for construction projects and wastewater & stormwater infrastructure design and/or operational life cycles will eventually lead to future capital projects. No grant or loan funds are available to assist with operations and maintenance costs. Staffing, power, chemicals, increased solids handling, analytical, regulatory, engineering and legal costs and many more. A couple of critically important factors are that operational costs tend to be greater on a \$/lb basis for smaller facilities than they are for larger facilities and that pollutant reduction costs escalate sharply with declining effluent concentration targets. Section 5.6 of the [Minnesota Nutrient Reduction Strategy](#) provides a good example of these tendencies for phosphorus removal at Minnesota wastewater facilities:

² Such as for credits generated by producers who have become certified through the Minnesota Agricultural Water Quality Certification Program

5.6 Cost Analysis

An analysis of costs is provided below for both wastewater nutrient removal and agricultural BMP implementation. Costs are not presented for nitrogen removal costs in wastewater due to limited data. Literature sources were used for the agricultural BMP costs, which are documented in Section 5.3.

5.6.1 Wastewater Treatment

Costs for the vast majority (over 90 percent) of residents receiving municipal wastewater treatment range from \$7 to \$11 per pound of phosphorus removed to reach 1 mg/L concentration phosphorus in the effluent. However, removal costs escalate sharply with declining effluent concentration targets. Costs range from \$39 to \$175 per pound for removal to a 0.8 mg/L concentration and \$91 to \$344 per pound for removal to a 0.1 mg/L concentration. Table 5-16 presents the annual removal costs to treat wastewater (assumed influent concentrations of 4.5 mg/L) to 1.0 mg/L, 0.8 mg/L, and 0.1 mg/L effluent concentrations. These phosphorus removal cost estimates represent chemical phosphorus treatment by mechanical municipal wastewater treatment facilities only. Stabilization pond and industrial WWTP phosphorus removal costs are not included in these estimates.

Table 5-16. Summary of wastewater annual removal costs for phosphorus (MPCA calculations derived from Thorson 2011).

Design flow (mgd)	Population * (pop)	Annual removal cost to 1.0 mg/L ^b (\$/year)	Annual removal cost to 0.8 mg/L ^c (\$/year)	Annual removal cost to 0.1 mg/L ^a (\$/year)
0.20 - 0.49	120,386	\$3,575,501	\$5,086,379	\$13,660,247
0.50 - 0.99	194,117	\$3,104,411	\$4,665,486	\$14,351,246
1.00 - 4.99	432,637	\$5,436,306	\$9,758,993	\$25,349,659
5.00 - 9.99	225,393	\$2,059,766	\$2,869,941	\$7,003,206
10.00 - 19.99	180,851	\$1,446,127	\$2,085,178	\$4,900,305
20.00 - 39.99	506,769	\$4,052,244	\$5,812,076	\$13,916,565
40.00 - 99.99	386,265	\$3,529,904	\$4,847,735	\$12,178,169
100+	1,800,000	\$14,393,224	\$17,902,429	\$37,861,033
Total		\$37,597,483	\$53,028,216	\$129,220,430

a. Population data derived from 2010 census; assumed flows of 100 gallons/capita/day.

b. Includes both capital and operations and maintenance costs.

c. Does not assume any additional capital costs.

These costs are ultimately borne by residential, commercial, industrial and institutional users of our wastewater treatment facilities through utility rates. River eutrophication based phosphorus WLAs developed for several of the continuous discharge WWTPs in the watershed are very restrictive (0.14 to 0.4 mg/L). These are the long term summer average targets, the respective calendar month average effluent limits range from 0.3 to 0.8 mg/L. So yes, operations and maintenance costs may be significant factors.

Another potential driver may be future growth. In TMDL limited watersheds point source loads are capped. The only alternatives for future growth would be to operate at concentrations below water quality standards (i.e. do not have potential contribute to drive river concentrations above water quality standards) or offsetting new pollutant loads through trading.

New standards (i.e. nitrate) or pollutants that are not removed by WWTPs (i.e. chloride) may also motivated interest in trading.

[11:22 AM] Johnson, Luke - NRCS-CD, Buffalo, MN

How do state funded projects affect eligibility? Many of the practices we work on at the SWCD have some state funding component - like the toewood project in St. Michael that was referenced, would they still be eligible?

Yes, as long as the funding entity does not restrict credit generation for their share of the project.

[11:23 AM] Leif Fixen

I'll plug a pilot that we're launching in central MN that is testing out how the Ecosystem Service Market Consortium platform can be used to both generate and market water quality and carbon credits. The focus geography for the pilot is the Sauk river WS with a 30 mile radius around it.

<https://www.acresforwater.com/esmc>

Thank you for providing the link to the pilot project in central MN.

[11:30 AM] Leif Fixen

A quick reminder that EPA views WQ trading as a non-point source pollution strategy, and really speaks to managing a watershed to a desired water quality outcome at the lowest cost possible

Here is a link to the EPA's water quality trading webpage: <https://www.epa.gov/npdes/water-quality-trading>

[11:31 AM] Andy Johnson

It was previously mentioned with the credit quantification slide and MN River Basin BOD factors that credits might need to be purchased for any area above an impaired water body with a TMDL. An example of Starbucks purchasing credits for the Mankato area was given. Since the Crow river from the North/South Fork Crow River confluence to the Mississippi river is impaired for nutrients and TMDL draft completed this then covers 100% of the 1,400 Sq mi area of the NFCRW.

I assume that the question is about whether the entire North Fork Crow River Watershed (NFCRW) is eligible to generate credits for the Lower Crow River and whether credits can also be generated in the South Fork Crow River Watershed (SFCRW) since it is also upstream of the Lower Crow River. The answer to both those questions is a qualified yes. Credit generating pollutant reductions must benefit the target waterbody so assuming that is the Lower Crow River, BMPs in both the NFCRW and the SFCRW could be eligible. However, trading permits cannot authorize discharges that will cause or perpetuate violations of water quality standards (hot spots in trading lingo). This is relevant here because there are two RES impaired reaches in the NFCRW – 07010204-502 Crow River, South Fork Crow to Mississippi R and 07010204-503 NF Crow R, Mill Cr to South Fork Crow River Dischargers upstream of reach -503 would not be able to use credits generated in the SFCRW or in portions of the NFCRW that drain downstream of reach -503 because in doing so they would continue to contribute to the hot spot in reach -503.

Another aspect is that BMPs in some areas of the watershed will result in relatively little benefit for downstream waters because of pollutant retention in intervening lakes and wetlands. Modeling is needed to understand optimal watershed locations for credit generation.

[11:35 AM] Fuchs, Dennis - NRCS-CD, Waite Park, MN

We should have another meeting to discuss: next steps Next Steps!

That sounds great. Please include that as a suggestion for next steps in the Snap Survey.

[11:35 AM] Loewen, Cole

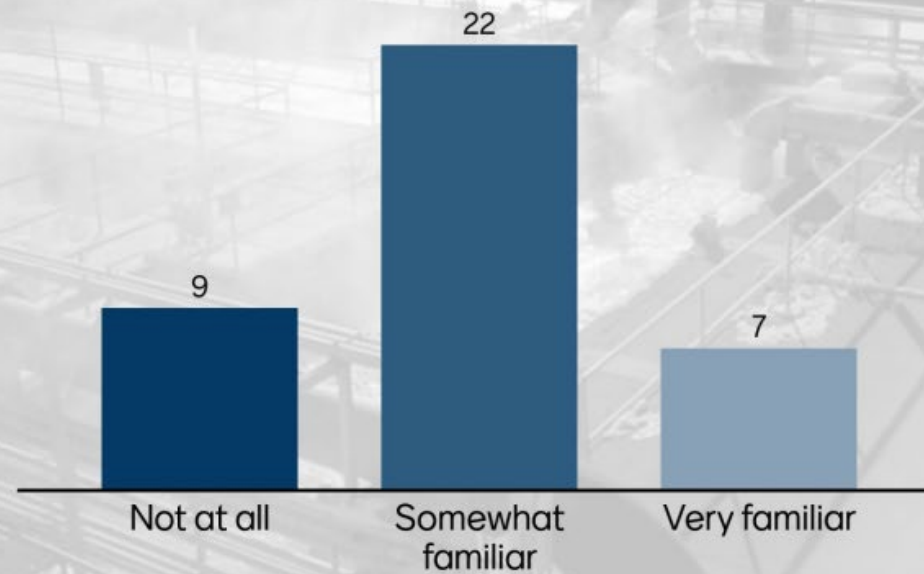
Who should we send our questions to? Marco? Nicole? Put them in the Snap Survey?

Please input your questions and comments into the Snap Survey, but you can also email any additional questions and comments to Joel Peck at joel.peck@state.mn.us. He will make sure that the intra-agency workgroup working on this project will see and respond to any questions and comments you send.

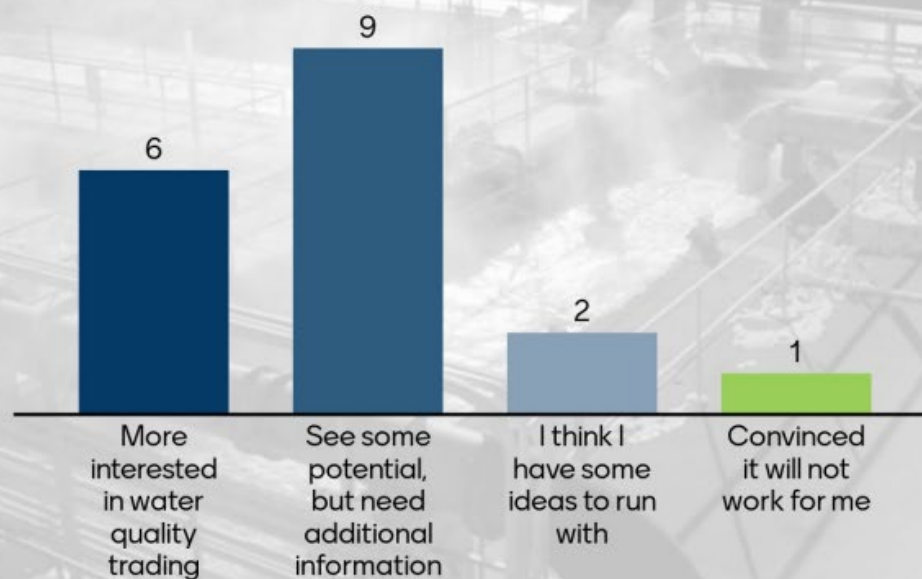
April 26, 2021 Water Quality Trading Project Kickoff Meeting
Mentimeter questions & answers – asked during the meeting



How familiar are you with Water Quality Trading?



After the presentations you've heard today are you ...



What role do you see yourself in?



Are you interested in participating in further discussions on this topic? How can we help?

Yes. Lots of questions!

Yes

Yes

Yes - interested in learning more details

Yes. More information/examples.

Yes, lets get more information on the process and begin to field buyer and seller options

I think the Wright SWCD could help with project locations.

likely leave it to the consultants

Yes. I would like another opportunity for question and answer from the various parties interested

Are you interested in participating in further discussions on this topic? How can we help?

Yes, by providing a forum to ask/answer questions - likely 2-3 more meetings are needed.

Obviously Margaret needs more information.

Yes, as I'd like to see more info on potential outcomes of this.

Yes, I would like to get more information on the process, interested parties and benefits to discuss with my Board and partners.

Eager support efforts!

Yes. I believe trading is a necessary tool to achieve the goals contained in the Comp. Watershed Mgmt. Plan. You can help by thinking beyond the permit. This Could be bigger than the regulation driving demand.

Where has this successfully been completed in the past and how

Yes, GLSSWD current npdes permit is under review. Interests would involve chloride and phosphorus trading.

The MN framework of point and non-point with CWF and 1W1P is powerful and should continue to be the basis for building an improving framework

Are you interested in participating in further discussions on this topic? How can we help?

Yes. I would like to know how trading can be coordinated with the existing ESMC pilot

April 26, 2021 Water Quality Trading Project Kickoff Meeting

Follow-up survey sent to meeting attendees – 20 responses

Q1. Are you interested in having a focused conversation with us to identify specific trading opportunities for you?	
Yes - 15 (75%)	No – 5 (25%)
Q2. If so, which if the following roles would you be interested in having a more focused conversation on?	
Seller – 4 (26.7%)	Buyer – 6 (40%)
Facilitator – 8 (53.3%)	Consultant – 2 (13.3%)
Broker – 0 (0%)	
Q3. Are you interested in attending a future workshop? If so, which of the following sectors would you be interested in?	
Agricultural – 8 (42.1%)	SWCD/WD/County Government – 8 (42.1%)
Municipal Wastewater or Stormwater – 13 (68.4%)	
Q4. Please suggest any workshop topics that you would like to see to learn more about water quality trading?	
1. All aspects in helping or being helped by working together with other communities.	
2. What is the potential market scale - both buyer and seller?	
3. I have a very basic knowledge and am interested in learning more.	
4. How the market dynamics of the trade would work. What are the incentives for the buyer?	
Q5. Please use the space below for questions you would like to have an immediate answer to or to indicate that you are interested in a smaller meeting to discuss building a WQ trading proposal specific to your facility, watershed, or agricultural work. Please include your contact information for a response.	
1. What will be used as the baseline for ag producers? What they were doing in the past? Or MAWQCP certification?	
2. Interested in smaller meeting focused on our facility	
3. What is the role of local governments? Is there a real market for these trades?	
4. What role do you see an SWCD playing? Locating projects?	
5. I sent Joel Peck my comments/questions via email on 04/27/2021.	
6. I would like to explore options for possible projects for water quality improvements to Buffalo Lake.	
7. I would like information on opportunities for our area. Please contact me. joeh@annandale.mn.us	
Q6. Do you feel that the kickoff meeting was work your time?	
Very much so – 2 (11.8%)	Yes – 8 (47.1%)
Somewhat – 2 (11.8%)	Not particularly – 5 (29.4%)
Not at all – 0 (0%)	

Q7. Any additional comments?
1. I had a calendar conflict and could not attend the 1st workshop. I am very interested in being engaged to support the process.
2. Been in this field since 2008, short time, but I had not heard of WQ trading. WQ trading sounds like it could be another piece to the puzzle. Thanks for pushing this ahead!

Appendix C

Water Quality Trading Pilot Project

Wastewater Sector Meeting – July 14, 2021

Feedback/Questions from Meeting Participants

Follow up conversations with select participants of the July 14, 2021 wastewater sector meeting.

Over a series of days in early August, following the point-source-specific trading workshop in Otsego, the team wanted to gauge how municipal interests were thinking about the concept of water quality trading. Uniform questions were asked to six municipal representatives:

1. Ray Wurm. City of Buffalo.

Q: Did our work spark and interest?

A: Definitely interested

Q: Would you consider trying to find trade opportunities?

A: I can see using a trade of some kind to meet our phos. Limit.

Q: Point-to-point, or point-to-nonpoint?

A: I was really only thinking about finding another facility that had excess capacity. I definitely wasn't thinking about a nonpoint trade. But, I can see how our watershed might not really have much excess in limits it supply the demand. So stream bank work might be the best way.

Q: What tools can we provide to help make that happen?

A: I definitely appreciated the emails from Marco about Lightfoot Lake, and Buffalo Lake. What would really help is giving us ideas. We don't have the time or expertise to go find opportunities, so when you find them, it's helpful to let us know.

Q: Anything else?

A: We have a new director of public works and he will probably be taking a more hands-on interest in this. His email is jason.meusbarger@ci.buffalo.mn.us

2. Joe Haller. Annandale/Maple Lake.

Q: Did our work spark and interest?

A: Yes. I'm interested in learning more. But, I don't have a specific project in mind. Where do we go from here?

Q: Would you consider trying to find trade opportunities?

A: We're at a point of design of filters. And if there was a scenario, I'd love to find a point-to-point project. I know we're going to get a PSIG grant. So, I'd like to find one, but how does that leave us long term? But, we might become a seller if we do this project.

Q: Point-to-point, or point-to-nonpoint?

A: Point-to-point, and be a seller after our project.

Q: What tools can we provide to help make that happen?

A: You could help us determine the value of the credit. If we can get some guidance on that, it would be extremely helpful.

Q: Anything else?

A: Working with Bolton&Menk

3. Corey Smith. Glacial Lakes

Q: Did our work spark and interest?

A: It does. But, I don't see any trouble meeting our new limit.

Q: Would you consider trying to find trade opportunities?

A: The projects that would be effective would be outside out county to the east, and that could be a problem getting out county board to approve expenditures outside the county.

Q: Point-to-point, or point-to-nonpoint?

A: If there was a point-to-point trade with another facility, it would be an easier sell to the county board. I would definitely be interested in buying credits.

Q: What tools can we provide to help make that happen?

A: From what I gathered, time would be the best thing for me. As more projects get underway, it will get easier.

Q: Anything else?

A: -

4. Larry Cook, Veolia Consulting Operator. Greenfield and St. Michael.

Q: Did our work spark and interest?

A: There is an interest; but very cursory. The facilities we operate are all well within the limits.

Q: Would you consider trying to find trade opportunities?

A: Not at the moment. But, possibly in the future.

Q: Point-to-point, or point-to-nonpoint?

A: Probably point-to-point. It would be easier. And when you are talking point-to-point, we are all in the same boat.

Q: What tools can we provide to help make that happen?

A: I don't know if I have an answer to that. I get the premise behind WQ trading. But, if we had an opportunity to work out the mechanism, if we could see how Rhar Malting was able to purchase credits, and how it was reflected in their permits - on paper - it would be easier.

Q: Anything else?

A: -

5. Scott Schaefer, consulting engineer with AE2S. Representing the City of Otsego.

Q: Did our work spark and interest?

A: Yes. Speaking for Otsego East, there is an opportunity to trade in the near term, but it's hard to tell in the long term.

Q: Would you consider trying to find trade opportunities?

A: And Otsego East may not need to right now. But, in the latter years, when we are building out, some non-point trades will give us breathing room with operational cost.

Q: Point-to-point, or point-to-nonpoint?

A: Short-term, point-to-point, maybe as a sell. Long-term, point-to-nonpoint to give Otsego East a buffer in operational costs.

Q: What tools can we provide to help make that happen?

A: I was never really clear about where the "Jordan"* basis would be in the North Fork Crow. Could we translate the model into something more simple? We need to make the model something that an operator could use. If there was a way to translate the reductions between the sub-basins to find reduction factors. But, with a framework to find the point-to-point trades. Try to make it simple.

Q: Anything else?

A: -

6. John Graupman, consulting engineer with Bolton & Menk, representing the City of Buffalo

Q: Did our work spark and interest?

A: Yes. We have Todd Humber who sees a lot of low hanging fruit on Stormwater. I'll be honest, I was skeptical. But hearing how RES was averaged out, I really think there may be some potential.

Q: Would you consider trying to find trade opportunities?

A: We are actively researching for Buffalo - especially in Buffalo Lake. Likely some carp removal and other activities that would really present some benefit for the city.

Q: Point-to-point, or point-to-nonpoint?

A: Nonpoint

Q: What tools can we provide to help make that happen?

A: In my mind, the ag groups have the key. We need to have commonality on that front. The five-year term to average out the reductions as the goal.

Q: Anything else?

A: -

*Jordan basis, as used here, represents the focal point of the [Lower Minnesota River TMDL - Low Dissolved Oxygen \(EPA approval 8/28/2004\)](#).

Appendix D

Water Quality Trading Pilot Project

Nonpoint Source Sector Meeting – September 9, 2021

Feedback/Questions from Meeting Participants

Nonpoint Source Meeting Questions/Answers and Comments from Meeting Participants:

September 9, 2021

Question (Q): Are BMPs cost-shared with Clean Water Funds eligible for water quality trading?

Answer (A): Yes

Q: What does LGU role really look like, how do we participate? What are LGU roles and responsibilities and what are the associated costs? Verifier commitments for example? Commitment details are needed for LUGs.

A: Marco covered some options in his presentation: what does it mean to be a broker, what administration may be involved, will an LGU get paid to administer the program (reasonable expectation that they will), timing of projects and how they can generate credits (reference to the MPCA's Water Quality Trading Guidance document).

Comment (C): One idea: create scenarios on how this system could look and what roles/responsibilities would be for LGUs, and ask LGUs to respond to those scenarios.

C: I think it will be challenging to set up a new system organically just between the WWTP and LGUs. Leadership from MPCA and other state agencies may be critical. We are already in partnership overload with the move to 1W1P and other efforts.

C: This certainly could help get projects on the ground with another financial incentive to get them done. I am concerned about some of the details to implement - exchange system, are technical costs covered by the land owner or buyer (those costs can be a substantial number), reduction verification, who is driving the system, assurances that there is a net neutral to positive gain for non-point projects to offset point sources. These can likely be answered, but they come to mind. I appreciate the conversation and I think this system has good merit, so thank you all for the time you have contributed to this project!

Q: Can an SWCD/WD ultimately get reimbursed by the municipal permit holder for all staff time costs incurred to get a project constructed?

Copy of Meeting Chat:

David Preisler (Guest)

Where is the Glacial Lakes SSWD?

Graziani, Marco (MPCA)

Spicer , New London.. the Green Lake area

[Keseley, Shaina (BWSR)

Break...back at 10:20.

David Preisler (Guest)

Is that a common trade ratio?

LeAnn Buck (Guest)

Were most of the locations within the city -- tied to public ownership vs. private enterprise?

Graziani, Marco (MPCA)

Both public and private properties

Fuchs, Dennis - NRCS-CD, Waite Park, MN (Guest)

MPCA provided the technical assistance to farmer?

Johnson, Luke - NRCS-CD, Buffalo, MN (Guest)

And even the state agencies seem to have different preferences.

Drew Kessler (Guest)

Thanks!

Fuchs, Dennis - NRCS-CD, Waite Park, MN (Guest)

Have any of the WWTF sites approached the MPCA about water quality trading project?

Fuchs, Dennis - NRCS-CD, Waite Park, MN (Guest)

Yes

Kovarik, Holly - NRCS-CD, Glenwood, MN (Guest)

If it becomes a financing component it could be another tool to get projects implemented

Leif Fixen (Guest)

Are there any non municipal permit holders expressing interest in trading? In the Crow or other watersheds?

Fuchs, Dennis - NRCS-CD, Waite Park, MN (Guest)

Agree, but minimal trading in the North Fork - Stearns upstream areas, based on SDRs, etc

LeAnn Buck (Guest)

as we continue to look for a trading program, is the initial scale or starting point viewed as with the 8 digit HUC level?

LeAnn Buck (Guest)

who paid for the projects -- the streambank restoration example?

LeAnn Buck (Guest)

Was the landowner expected to pay for the project costs with the expectations of getting reimbursed or is a publically funded?

Wozney, Brad (BWSR)

To follow up with Leann's comments, can an SWCD/WD ultimately get reimbursed by the municipal permit holder for all staff time costs incurred to get a project constructed?

Johnson, Luke - NRCS-CD, Buffalo, MN (Guest)

This certainly could help get projects on the ground with another financial incentive to get them done. I am concerned about some of the details to implement - exchange system, are technical costs covered by the land owner or buyer (those costs can be a substantial number), reduction verification, who is driving the system, assurances that there is a net neutral to positive gain for non-point projects to offset point sources. These can likely be answered, but they come to mind. I appreciate the conversation and I think this system has good merit, so thank you all for the time you have contributed to this project!

Johnson, Luke - NRCS-CD, Buffalo, MN (Guest)

Thank you, Bruce

Loewen, Cole (Guest)

Thank you for the time and the work on this. I do feel this has potential. One idea: create scenarios on how this system could look and what roles/responsibilities would be for LGUs, and ask LGUs to respond to those scenarios.

Johnson, Luke - NRCS-CD, Buffalo, MN (Guest)

I would echo Cole's last comment

Weimann, Kyle - NRCS-CD, Waite Park, MN (Guest)

Agreed. I think it will be challenging to set up a new system organically just between the WWTP and LGUs. Leadership from MPCA and other state agencies may be critical. We are already in partnership overload with the move to 1W1P and other efforts.

Afternoon MS4 Session Chat

Appendix E

Water Quality Trading Pilot Project Stormwater
Sector Meeting – September 9, 2021
Feedback/Questions from Meeting Participants

Stormwater Meeting Questions/Answers and Comments from Meeting Participants:

September 9, 2021

Question (Q): Someone asked to clarify the value of a credit- it was explained that it is based on actual data. (i.e. how much soil will be conserved and the average phosphorus content of that soil, etc).

Q: Trade ratio differences between two examples (Buffalo MS4 and Glacial Lakes SSD)

Answer (A): None, both were 2.6:1

Q: What agreements exist to formalize trade projects? Good potential for Hennepin County MS4. What guidance exists, how would it work?

Q: How would this work in a more urbanized setting?

Comment (C): Cities are funding watershed districts but capital improvement funds expended outside city limits can be a challenge.

C: Closer in to the city core the cost differential between urban and rural projects is significant, making nonpoint projects more attractive.

C: In lieu fees, changes to wetland banking are being considered.

C: Tracking and reliability. Communities need certainty that credits are secured and will not be used by someone else.

C: Fee in lieu could be a significant additional responsibility/roadblock for Cities.

Q: Can credits be generated if going above and beyond requirements with developers? This question led to a follow up conversation after the meeting, where it was clarified this was in relation to new development. The intention of the MS4 General Permit is that new developments should be neutral in regard to a wasteload allocation (WLA), but re-development- has the ability to make progress toward WLAs. The question was whether in new developments, if municipalities can meet regulatory thresholds by thinking bigger picture. (one large treatment instead of 6 stormwater basins). This does not relate to trading.

Copy of Meeting Chat:

Matt Danzl (Guest)

Sorry I haven't read through the new guidance, but how has this process looked at in more urbanized areas vs this North Fork example?

Matt Danzl (Guest)

Thanks

Todd Hubmer (Guest)

The idea that it is more effective to spend beyond the boundaries is something that many communities have requested in the past. The financial analysis and water quality impact will need to be communicated.

Cantarero, Nicolas (Guest)

Brad do you have any materials you could send out with more details/info on your MDA program?

Redlin, Brad (MDA)

We sure can, and happy to answer questions or engage in general exploration conversation. I can email first if you'd like to share your address. brad.jordahlredlin@state.mn.us

(1 liked)

Matt Danzl (Guest)

I second that comment from Teresa. The tracking is hurdle. Wetland banks use a database administered by BWSR.

Matt Danzl (Guest)

Thanks

Appendix F

Water Quality Trading Pilot Project

Nonpoint Source & Stormwater Sector Meeting – September 9, 2021

Follow-up Survey Sent to Meeting Participants

September 9, 2021 Nonpoint Source and Stormwater Sector Meetings

Follow-up survey sent to meeting attendees – 18 responses

Q1. Which of the following best represents you?	
Municipal Wastewater - 1 (6.3%)	Industrial Wastewater – 0 (0%)
MS4 – 4 (25%)	SWCD – 4 (25%)
Watershed District - 1 (6.3%)	Ag Producer – 3 (18.8%)
Consultant – 3 (18.8%)	
Q2. Did you attend one of the trading information meetings hosted by the MPCA?	
Yes – 16 (88.9%)	No – 2 (11.1%)
Q3. How interested are you are in participating in water quality trading opportunities?	
Very interested – 7 (38.9%)	Somewhat interested – 7 (38.9%)
Not particularly interested – 2 (11.1%)	Not at all interested – 2 (11.1%)
I would need more information before I could decide - 0 (0%)	
Q4. If interested, what would you need to make trading options viable?	
More information – 11 (78.6%)	Help finding trading partners – 4 (28.6%)
Technical assistance – 4 (28.6%)	Help establishing a market – 6 (42.9%)
More detailed implementation discussions (one on one, sector or other grouping) – 6 (42.9%)	
<i>*More than one answer could be selected</i>	
Other Needs:	
1. It appeared that opportunities in the upper portions of the watershed were limited.	
2. More information is needed on measuring metrics and outcomes.	
3. Identification of interested buyers.	
Q5. Interest or potential role in water quality trading:	
1 (6.7%)	Administrator: responsible for operation and maintenance of a water quality trading program, defining credit calculation methodologies, protocols, and quality standards; project review; and credit registration
2 (13.3%)	Broker: responsible for bringing potential trading partners together, including matching credit users and credit generators based on location, pollutant type, amount, and timing)
4 (26.7%)	Buyer: credit user, most likely a point source MS4 or wastewater NPDES permitted entity)
7 (46.7%)	Consultant: responsible for providing assistance with BMP siting, design, installation and/or provides periodic verification that BMP is operating as designed
1 (6.7%)	Seller: credit generator, could be a point source NPDES permitted entity or any person or organization establishing nonpoint source pollutant load reductions beyond legal requirements and baseline conditions)
Other:	
1. We don't have the staffing to take on more than that currently.	
2. As an SWCD, we know of projects, landowners, and locations.	
3. Communicating value to farmers	

Q6. Listed below are some specific tools that could be applied to trading. Which, if any, would make trading more likely to occur? You may check more than one.	
Model trade agreements – 11 (68.8%)	Credit value calculator – 13 (81.3%)
Baseline verification – 8 (50%)	BMP credit-tracking database – 12 (75%)
User-friendly tools to identify where a BMP will achieve the best result for an impaired water body of interest – 14 (87.5%)	
Other tools you think would make trading more likely to occur:	
1. Defining which model(s) are used for reductions will be helpful once you get to that point. Numbers can be vastly different between them and that could lead to partner hesitancy on effectiveness.	
2. Truterra Sustainability Tool from Land O Lakes.	
Q7. Apart from tools suggested above, are there policy or regulatory suggestions that you can offer that would improve your ability or interest in water quality trading?	
1. Trading is not a recommended practice.	
2. Simplicity.	
3. "Guarantees" that is a net positive for the resources, not just municipalities & credit generators.	
4. Anything that can help water quality and fund projects, were in!	
5. Clear set of rules/policy for market entry/exit.	
6. Taking a look on how it can be encompassed with the current carbon market offerings with ESMC.	
7. What are the legal requirements; who would be responsible for legal advice for local gov.	
8. The State needs to be administer the program and approve transactions.	
9. Get rid of or decrease the impact of the credit coefficient for different acres upstream of buyer.	
10. Fitting NPDES or environmental review requirements as incentives.	
11. Defined technical review/pre-approval process by MPCA on potential trades.	
Q8. Are there any new or modified policy or regulatory approaches that would improve your ability or interest in water quality trading?	
1. Not sure.	
2. I appreciate the agencies asking for input on the program and engaging partners to shape the program, it will likely help with local acceptance, but it feels like we are at the point where semi-final decisions should be made on the program so we can react to what the program will be. Hopefully this survey gives enough insight on how partners feel about the program so MPCA can draft some sample program language to then discuss further with partners. My Board's ultimate response was "we'll decide once we know more".	
3. Would the costs for the BMPs be part of the agreement are are they done separately through existing public programs or both?	
4. Need to figure out a way to "seed" the market so it's easier for buyers to plan for trading.	

Q9. What do you see as the benefits of trading in your situation?	
1. Zero. Potential to cause more harm than good.	
2. Minimal.	
3. It could provide funding to implement BMPs.	
4. Addresses known issues like streambank that are hard to get funding for.	
5. As a county with limited available land within our roadway corridors and many years between reconstruction projects having the ability to trade with our municipal MS4 partners would be beneficial. Given the smaller watersheds, maybe a formal trading program isn't necessary, and we need to work out the details on a few shared projects to reach our goals.	
6. Connecting farmers with another financial resource.	
7. Encouraging additional BMP adoptions with multiple benefits.	
8. Targeted approach.	
9. Bringing value back to the farmer for their conservation efforts. Quantification of investment for municipalities.	
10. Helps get water quality BMPs on the ground that also has benefits to climate and the farm business.	
11. Showing we are meeting regulatory requirements in other ways than following the letter of rules/regulations.	
12. Primarily ag land uses in MS4, this would allow for trading opportunities with ag landowners.	
Q10. What are your concerns about implementing trading across the watershed?	
1. Complicates and confuses existing regulations and adds too much gamesmanship into standard regulations.	
2. Participation.	
3. That this could create a net negative in water quality. Point source is much easier to monitor than non-point. Long term maintenance of projects. Are we just kicking the can down the road on municipal fixes?	
4. Are we actually improving water quality by letting the WTTF have a free pass?	
5. Consistency - environmental metric impact.	
6. The backside computer work that it could take and how/if a cooperative would get involved how they would be compensated.	
7. Overselling opportunities and financial benefits to landowners if program fails or is perceived as not sustainable (or perceived as a gimmick).	
8. It needs to make a meaningful difference in the TMDL outcomes. If it is not achieving goals of removing TMDLs from MS4s I don't see the value.	
9. Funding through LGUs and private land owners/producers. Money for management coming from general watershed levy.	
10. How will reductions be quantified?	
11. Getting the administration costs down. Making sure the program is outcomes focused.	
12. No real incentives for most farmland.	
13. If it gets too complicated, too much front end work I don't think MS4s will be do it because of the time and costs associated.	
Q11. How concerned will your decision makers (board, administration, etc.) be about trading outside jurisdictional boundaries?	
Very concerned – 2 (14.3%)	Somewhat concerned – 9 (64.3%)
Not particularly concerned – 3 (21.4%)	Not at all concerned – 0 (0.0%)

Q12. Please use the space below for any additional comments or concerns:
1. It was good to examine trading but MPCA should not be promoting or encourage the practice.
2. My Board has concerns about the program in general, regardless of boundaries. They are willing to see where it goes, but there was a lot of conversation to get them to that point. I believe showing the benefit to ag producers/landowners will be necessary to get my Board to support it.
3. The concept of trading is intriguing; but seems like there are still unanswered questions and details before it can become programmatic in nature.
4. I think this is could be a great tool that would give MS4s more flexibility in meeting TMDL requirements as well as improve water resources, a win-win. I would suggest trying to make the process as transparent and streamlined as possible, MS4s don't like dealing with uncertainty.
Q13. If you would like more information or are interested in pursuing water quality trading, please include your name and email below:
1. Luke Johnson luke.johnson@usda.gov . Having all comment boxes allow more characters would be helpful.
2. Dan Nadeau daniel.nadeau@mn.nacdnet.net
3. drew.mcGovern@hennepin.us
4. Amy Robak; arobak@centrasota.com
5. Spencer Herbert - sherbert@landolakes.com
6. Leif Fixen leif.fixen@tnc.org
7. Lucas@MNMilk.org

Appendix G

Water Quality Trading Pilot Project

Monthly Delivery Coefficients

North Fork Crow Watershed HSPS Model

Monthly Delivery Coefficients – North Fork Crow Watershed HSPS Model

Monthly delivery coefficients for BMPs in the North Fork Crow Watershed given the outlet reach, the Crow River, as the water of interest.

HUC12	Subwatershed ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
70102040101	25	0.03	0.03	0.09	0.11	0	0	0.06	0.12	0.1	0.06	0.06	0.05
70102040102	1	0	0	0	0	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0	0	0	0	0
	21	0.05	0.05	0.12	0.17	0.11	0.11	0.24	0.13	0.11	0.08	0.08	0.07
	23	0.03	0.03	0.11	0.12	0	0	0.04	0.14	0.1	0.06	0.06	0.05
	30	0.05	0.05	0.12	0.18	0.12	0.12	0.27	0.12	0.11	0.08	0.08	0.07
70102040103	41	0.03	0.03	0.1	0.1	0	0	0.05	0.12	0.1	0.07	0.06	0.05
70102040104	43	0.03	0.03	0.1	0.09	0	0	0.07	0.12	0.09	0.06	0.06	0.05
	50	0.03	0.03	0.09	0.09	0	0	0.09	0.13	0.1	0.06	0.06	0.05
70102040105	61	0.03	0.03	0.09	0.08	0	0	0.03	0.12	0.1	0.06	0.06	0.05
70102040106	63	0.03	0.03	0.1	0.11	0	0	0.06	0.12	0.1	0.06	0.06	0.05
	70	0.03	0.03	0.1	0.09	0	0	0.09	0.13	0.1	0.07	0.06	0.05
	81	0.03	0.03	0.1	0.12	0	0	0.05	0.13	0.1	0.06	0.07	0.05
	90	0.03	0.03	0.1	0.09	0	0	0.06	0.12	0.1	0.07	0.07	0.05
70102040107	101	0.03	0.03	0.1	0.08	0	0	0.1	0.12	0.11	0.06	0.07	0.05
	103	0.05	0.05	0.11	0.12	0.12	0.12	0.26	0.12	0.1	0.08	0.08	0.07
	110	0.03	0.03	0.09	0.08	0	0	0.07	0.13	0.11	0.07	0.07	0.05
	120	0.03	0.03	0.09	0.04	0	0	0.05	0.13	0.1	0.07	0.07	0.05
70102040108	130	0.06	0.06	0.16	0.51	0.17	0.04	0.18	0.17	0.16	0.12	0.13	0.11
	131	0.07	0.07	0.17	0.6	0.24	0.09	0.24	0.22	0.18	0.15	0.16	0.13
	133	0.09	0.09	0.2	0.67	0.46	0.38	0.43	0.21	0.19	0.16	0.17	0.15
	140	0.09	0.09	0.2	0.7	0.49	0.42	0.46	0.22	0.19	0.17	0.18	0.15
	141	0.45	0.44	0.59	0.56	0.46	0.47	0.52	0.56	0.5	0.38	0.51	0.53
	150	0.45	0.45	0.59	0.54	0.5	0.48	0.57	0.57	0.51	0.4	0.52	0.55
70102040201	161	0.01	0.01	0.02	0.04	0.02	0	0.02	0.04	0.04	0.01	0.01	0.01
70102040202	163	0.01	0.01	0.03	0.03	0.02	0.03	0.04	0.04	0.03	0.02	0.01	0.01
70102040203	171	0.01	0.01	0.02	0	0.02	0.03	0.03	0.06	0.03	0.01	0.01	0.01
70102040204	170	0.01	0.01	0.03	0.01	0.02	0.02	0.04	0.04	0.03	0.01	0.01	0.01
	172	0.01	0.01	0.02	0.03	0.03	0.01	0.01	0.04	0.02	0.01	0.01	0.01
	173	0.01	0.01	0.03	0.02	0.03	0.02	0.05	0.04	0.04	0.02	0.01	0.01
	180	0.01	0.01	0.03	0.03	0.04	0.03	0.05	0.05	0.03	0.01	0.01	0.01
70102040205	190	0.01	0.01	0.04	0.01	0.05	0.04	0.09	0.05	0.04	0.03	0.02	0.01
	210	0.01	0.01	0.02	0.02	0.04	0.05	0.11	0.07	0.05	0.03	0.02	0.01
	220	0.01	0.01	0.02	0.03	0.04	0.01	0.08	0.07	0.05	0.02	0.02	0.01
70102040206	240	0.02	0.02	0.04	0.02	0.05	0.07	0.11	0.08	0.07	0.04	0.03	0.03
70102040207	241	0.13	0.12	0.43	1	0.53	0.76	0.73	0.43	0.28	0.21	0.26	0.23
	250	0.29	0.3	0.51	0.49	0.44	0.43	0.51	0.46	0.39	0.27	0.35	0.36
	270	0.34	0.36	0.59	0.54	0.52	0.5	0.56	0.49	0.43	0.31	0.4	0.42
70102040208	281	0.07	0.06	0.2	0.57	0.45	0.44	0.6	0.2	0.21	0.18	0.15	0.12
	282	0.07	0.06	0.2	0.6	0.47	0.45	0.62	0.2	0.21	0.18	0.16	0.12
	283	0.3	0.31	0.55	0.53	0.48	0.5	0.57	0.48	0.42	0.29	0.36	0.38
70102040209	301	0.31	0.32	0.56	0.5	0.44	0.46	0.59	0.53	0.44	0.29	0.35	0.37
70102040210	290	0.36	0.39	0.61	0.55	0.52	0.54	0.6	0.52	0.44	0.33	0.43	0.44
	310	0.38	0.41	0.63	0.55	0.56	0.59	0.63	0.53	0.45	0.35	0.45	0.46
70102040301	322	0.17	0.13	0.45	1	0.67	0.89	1	0.56	0.5	0.31	0.27	0.25
	323	0.2	0.17	0.4	0.83	0.54	0.69	0.89	0.43	0.41	0.24	0.28	0.26
	324	0.2	0.17	0.41	0.83	0.54	0.68	0.95	0.42	0.42	0.24	0.28	0.27
70102040302	325	0.39	0.37	0.54	0.53	0.44	0.55	0.65	0.58	0.51	0.36	0.42	0.45

70102040303	327	0.49	0.51	0.62	0.6	0.52	0.62	0.66	0.59	0.52	0.39	0.51	0.55
	330	0.51	0.55	0.67	0.61	0.6	0.64	0.68	0.6	0.53	0.43	0.56	0.58
70102040304	341	0.43	0.44	0.6	0.58	0.55	0.63	0.72	0.6	0.53	0.38	0.47	0.49
70102040305	342	0.23	0.22	0.55	1	0.96	1	0.89	0.45	0.41	0.36	0.31	0.35
	344	0.22	0.22	0.54	1	0.88	1	0.8	0.37	0.32	0.32	0.29	0.33
	345	0.48	0.53	0.68	0.58	0.56	0.63	0.65	0.53	0.43	0.35	0.55	0.57
	347	0.53	0.56	0.68	0.62	0.6	0.66	0.69	0.61	0.53	0.43	0.57	0.6
70102040306	349	0.49	0.51	0.63	0.56	0.52	0.66	0.68	0.61	0.53	0.39	0.49	0.54
	350	0.54	0.57	0.68	0.62	0.63	0.66	0.68	0.63	0.56	0.45	0.58	0.61
70102040401	356	0	0	0.04	0.05	0.06	0	0	0	0	0	0	0
	357	0.06	0.04	0.05	0.08	0.16	0.42	0.31	0.19	0.09	0.1	0.09	0.07
	359	0.04	0.03	0.04	0.05	0.12	0.31	0.18	0.14	0.06	0.08	0.07	0.05
70102040402	362	0.05	0.04	0.07	0.08	0.15	0.47	0.82	0.38	0.31	0.11	0.09	0.07
	364	0.06	0.05	0.09	0.09	0.19	0.52	0.86	0.35	0.24	0.09	0.09	0.08
70102040403	365	0.11	0.11	0.12	0.29	0.27	0.41	0.73	0.24	0.13	0.12	0.13	0.12
	368	0.25	0.25	0	0.35	0.29	0.43	0.52	0.17	0.27	0.18	0.24	0.27
	369	0.32	0.27	0.05	0.37	0.25	0.36	0.6	0.54	0.48	0.28	0.35	0.37
70102040403	371	0.32	0.27	0.06	0.38	0.28	0.35	0.6	0.53	0.49	0.29	0.36	0.37
	373	0.34	0.27	0.09	0.41	0.29	0.42	0.6	0.53	0.49	0.31	0.37	0.39
	70102040404	374	0.3	0.29	0.68	1	1	1	1	0.78	0.7	0.87	0.71
70102040501	375	0.26	0.24	0.65	1	1	1	1	0.61	0.6	0.77	0.68	0.45
	376	0.26	0.24	0.64	1	1	1	1	0.62	0.61	0.77	0.67	0.45
	377	0.36	0.33	0.69	1	1	0.93	1	0.58	0.61	0.71	0.7	0.55
	70102040502	379	0.36	0.32	0.65	1	1	0.89	1	0.56	0.6	0.69	0.7
70102040503	378	0.31	0.33	0.74	1	1	0.92	0.87	0.47	0.48	0.53	0.6	0.46
	382	0.36	0.33	0.69	1	1	0.93	1	0.59	0.61	0.71	0.72	0.56
	383	0.36	0.36	0.7	1	1	0.9	0.81	0.49	0.49	0.59	0.66	0.53
	384	0.36	0.38	0.75	1	1	0.92	0.85	0.52	0.52	0.64	0.69	0.52
70102040601	352	0.03	0.03	0.03	0.05	0.05	0.2	0.25	0.33	0.22	0.05	0.05	0.08
	353	0.06	0.06	0.05	0.06	0.08	0.33	0.37	0.44	0.24	0.07	0.09	0.15
	354	0.06	0.06	0.05	0.08	0.09	0.34	0.38	0.46	0.25	0.08	0.09	0.15
	355	0.53	0.53	0.6	0.59	0.54	0.55	0.63	0.56	0.5	0.43	0.55	0.58
70102040602	390	0.61	0.63	0.72	0.68	0.68	0.71	0.72	0.66	0.6	0.53	0.64	0.66
	402	0.36	0.37	0.68	1	1	1	0.86	0.58	0.47	0.46	0.47	0.46
	403	0.64	0.65	0.72	0.71	0.7	0.69	0.72	0.67	0.62	0.57	0.67	0.69
	410	0.65	0.66	0.74	0.73	0.72	0.71	0.74	0.69	0.64	0.58	0.68	0.7
	422	0.31	0.31	0.49	0.85	0.68	0.74	0.55	0.34	0.33	0.31	0.35	0.38
	423	0.67	0.66	0.68	0.7	0.7	0.69	0.75	0.69	0.64	0.58	0.67	0.69
	430	0.68	0.69	0.76	0.75	0.77	0.76	0.78	0.7	0.67	0.62	0.71	0.72
70102040603	442	0.32	0.37	0.66	1	1	0.95	0.85	0.48	0.4	0.43	0.44	0.41
	443	0.3	0.32	0.58	1	0.95	0.93	0.87	0.52	0.44	0.46	0.47	0.41
70102040604	446	0.55	0.55	0.65	0.83	0.71	0.72	0.64	0.54	0.53	0.53	0.59	0.62
	450	0.74	0.73	0.79	0.82	0.8	0.83	0.81	0.74	0.71	0.69	0.76	0.76
	462	0.4	0.36	0.51	0.77	0.7	0.85	0.73	0.47	0.51	0.47	0.47	0.47
	463	0.58	0.56	0.68	0.73	0.7	0.77	0.78	0.71	0.64	0.59	0.62	0.61
	470	0.8	0.8	0.87	0.86	0.85	0.87	0.82	0.79	0.78	0.79	0.82	0.82
70102040605	471	0.8	0.8	0.87	0.86	0.85	0.87	0.82	0.79	0.78	0.79	0.82	0.82
	473	0.14	0.13	0.23	0.5	0.37	0.32	0.45	0.4	0.38	0.32	0.24	0.19
	474	0	0.02	0.02	0.02	0.04	0.06	0.1	0.07	0.05	0.01	0	0
	476	0.03	0.03	0.06	0.06	0.07	0.1	0.36	0.22	0.13	0.07	0.03	0.05
	477	0.15	0.14	0.23	0.49	0.41	0.37	0.47	0.42	0.42	0.33	0.27	0.24
	479	0.15	0.15	0.23	0.5	0.43	0.42	0.48	0.43	0.41	0.34	0.27	0.21
	482	0.02	0.02	0.06	0.08	0.1	0.14	0.22	0.13	0.08	0.04	0.03	0.08
	484	0.16	0.15	0.23	0.5	0.45	0.42	0.49	0.44	0.42	0.34	0.27	0.22
	485	0.78	0.77	0.82	0.84	0.81	0.8	0.81	0.78	0.77	0.79	0.81	0.81
70102040606	492	0.22	0.17	0.26	0.76	0.95	1	1	0.63	0.41	0.42	0.38	0.33

	493	0.21	0.16	0.25	0.68	0.84	1	1	0.54	0.37	0.39	0.37	0.32
	496	0.22	0.17	0.26	0.7	0.89	1	1	0.56	0.38	0.4	0.38	0.33
	497	0.22	0.17	0.26	0.68	0.86	1	1	0.56	0.38	0.41	0.38	0.32
	498	0.23	0.17	0.26	0.71	0.88	1	1	0.58	0.39	0.41	0.38	0.33
	502	0.28	0.24	0.32	0.61	0.67	0.71	0.6	0.44	0.41	0.47	0.41	0.37
	503	0.8	0.79	0.85	0.83	0.82	0.8	0.78	0.76	0.76	0.79	0.81	0.82
70102040607	511	0.2	0.2	0.36	0.66	0.75	0.88	0.71	0.42	0.5	0.55	0.37	0.32
	513	0.19	0.18	0.35	0.66	0.72	0.87	0.67	0.35	0.47	0.53	0.33	0.26
	515	0.19	0.19	0.37	0.71	0.76	0.84	0.67	0.37	0.45	0.54	0.34	0.27
	516	0.2	0.18	0.37	0.7	0.71	0.85	0.65	0.36	0.46	0.55	0.34	0.27
70102040608	522	0.04	0.05	0.08	0.07	0.12	0.14	0.12	0.07	0.06	0.04	0.05	0.06
	523	0.68	0.66	0.79	0.76	0.73	0.89	0.87	0.81	0.77	0.7	0.69	0.69
70102040609	490	0.83	0.82	0.88	0.89	0.88	0.87	0.84	0.82	0.83	0.84	0.85	0.84
	505	0.7	0.66	0.73	0.7	0.68	0.82	0.81	0.76	0.72	0.68	0.7	0.72
	508	0.53	0.53	0.65	0.85	0.86	0.84	0.69	0.57	0.64	0.65	0.61	0.59
	510	0.87	0.86	0.9	0.9	0.91	0.89	0.88	0.85	0.86	0.87	0.88	0.88
	521	0	0	0	0	0	0	0	0	0	0	0	0
	530	0.89	0.89	0.93	0.94	0.92	0.91	0.89	0.88	0.88	0.89	0.9	0.9
70102040701	941	0.07	0.07	0.11	0.2	0.38	0.51	0.27	0.12	0.1	0.08	0.12	0.13
	943	0.87	0.86	0.88	0.85	0.83	0.82	0.81	0.81	0.83	0.85	0.87	0.87
	950	0.94	0.94	0.95	0.94	0.96	0.94	0.93	0.91	0.94	0.94	0.94	0.94
	962	0.66	0.69	0.99	1	1	1	0.78	0.67	0.7	0.75	0.73	0.7
	970	0.95	0.95	0.96	0.95	0.96	0.95	0.95	0.93	0.95	0.95	0.95	0.95
70102040702	981	0	0	0	0	0	0	0	0	0	0	0	0
	982	0.63	0.59	0.68	1	1	1	1	1	1	1	0.91	0.83
	984	0.12	0.13	0.13	0.16	0.24	0.27	0.14	0.08	0.09	0.11	0.16	0.17
	985	0.93	0.93	0.94	0.93	0.92	0.93	0.94	0.93	0.93	0.93	0.93	0.94
70102040203	986	0.61	0.62	0.72	0.89	1	1	0.76	0.71	0.74	0.79	0.66	0.65
	988	0.59	0.62	0.88	1	1	0.98	0.8	0.75	0.76	0.81	0.65	0.62
	990	1	1	1	1	1	1	1	1	1	1	1	1

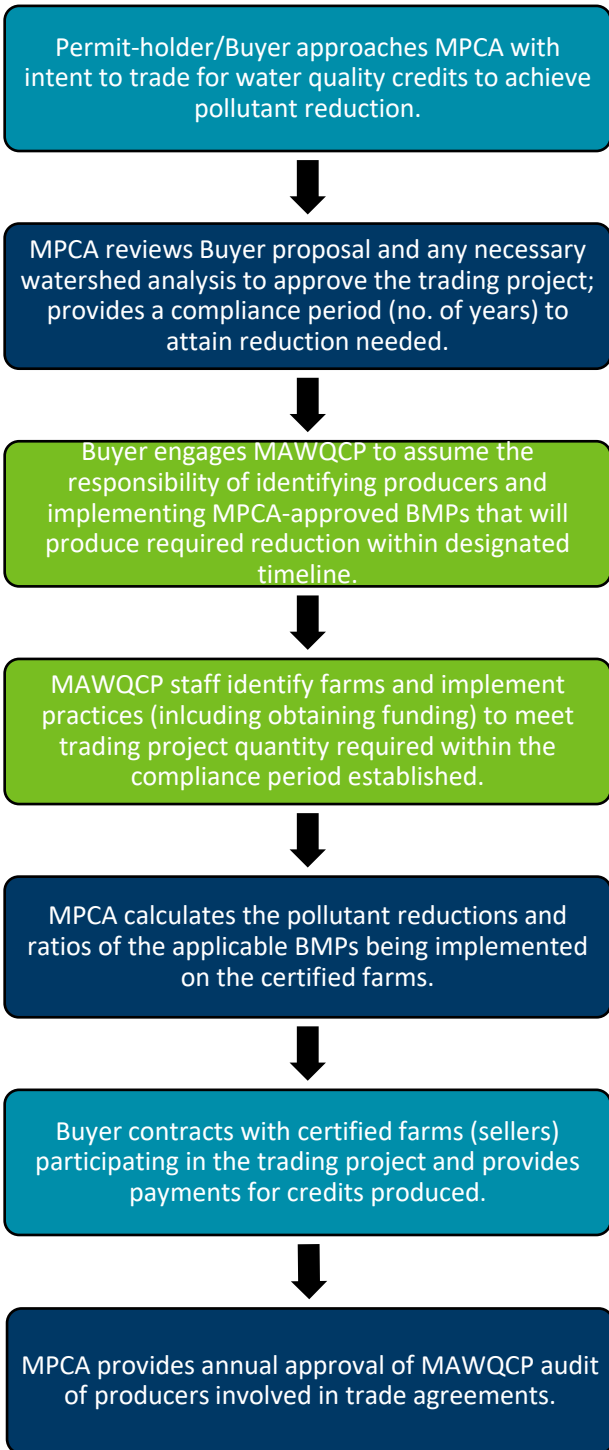
Appendix H

Water Quality Trading Pilot Project

The MAWQCP's Role in Water Quality Credit Trading

Minnesota Agricultural Water Quality Certification Program

The MAWQCP's Role in Water Quality Credit Trading



The existing staff, structure, and relationships of the Minnesota Agricultural Water Quality Certification Program provide multiple benefits to point – non-point water quality credit trading implementation in Minnesota. Under current operational structure, authority, and procedures, the MAWQCP can provide a trading project with the following critical components at no additional costs:

- Identifying participating sellers and the baseline conditions.
- Implementing approved practices, including engineering and financial assistance.
- Providing practice verification as required for project audits.

The MAWQCP staff are knowledgeable about the agricultural practices that are most effective at reducing agricultural impairments in a watershed. These staff also understand which agricultural conservation and management practices are most practical for farm operators to successfully implement within a given timeline. Furthermore, the MAWQCP already trains and employs staff who certify new producers and support existing producers in the MAWQCP. The review process and data tracking for producers who sign WQT agreements could readily be built into the existing MAWQCP audit structure.

Beyond technical knowledge and established processes, MAWQCP staff have working relationships with Soil and Water Conservation Districts, USDA offices, and private ag suppliers across Minnesota to access farms and implement practices to support trading projects. The MAWQCP certification process tracks the location, existing management, existing and new practices, and other baseline information about participating farms. Further, all new practices implemented in becoming certified are sited and recorded for verified additionality to ensure trades yield reductions within the watershed where the permit holder is located. These preexisting relationships and precisely collected data will streamline the process of identifying producers for WQT agreements.

BUYER

MPCA

MAWQCP

Appendix I

BWSR and MDA policy memos on the eligibility of State financed conservation practices to participate in ecosystems services markets

Memo

Date: November 17, 2021

From: John Jaschke, Executive Director



The Board of Water and Soil Resources (BWSR) mission is to improve and protect Minnesota's water and soil resources by working in partnership with local organizations and private landowners. As the state's water and soil conservation agency, BWSR directs, coordinates, and provides funding to local governments to help private landowners and communities meet their conservation goals. This local-state conservation delivery system provides an opportunity to partner state, federal, local, and private resources to private lands projects.

When state funds allocated to BWSR are used to install a conservation practice or management activity, it is understood that environmental benefits that result from that practice or activity may qualify for environmental credits within an environmental trading program. In this regard, under current statutory authorities, BWSR will not prohibit participants from compensation received from an environmental services market when landowners participate in a trading program utilizing state incentivized/cost-share funding, consistent with Federal criteria for use of federal dollars, to pay for practices that may be eligible to for credits.

In addition, BWSR is supportive of:

1. Developing a system to allow banking and future use of environmental credits, such as water quality credits, to encourage early adoption prior to establishment of trading criteria.
2. A system that can accommodate credits generated by both structural and non-structural practices.
3. Utilizing existing state programs and authorities as models to develop options for third party guarantors via local-state partnerships.

These points remain valid until or unless superseded by the conditions of State statutory, rule or appropriation conditions.



Memo

A handwritten signature in black ink that reads 'Thom Petersen'.

Date: July 27, 2021

From: Commissioner Thom Petersen

Re: Forgoing environmental services credits rights for MDA-funded activities

An agricultural producer or landowner who participates in Minnesota Department of Agriculture (MDA) programs and through that participation receives financial assistance from MDA for implementing agricultural conservation practices and management may achieve environmental benefits that may qualify for environmental credits under an environmental credit-trading program. MDA will not prohibit such participants from receiving compensation from an environmental services market on agricultural practices and management implemented with financial assistance from MDA and MDA asserts no direct or indirect interest in the environmental credits earning compensation. Agricultural producers or landowners receiving financial assistance from MDA for implementing agricultural conservation practices and management must maintain practices and management in accordance with the terms and commitment under the MDA financial assistance. Agricultural producers or landowners participating in MDA programs or agreements involving land or conservation activities should inform MDA of their intent to participate in an environmental services market and request a compatibility assessment when activities required under an environmental credit agreement may affect the land and conservation activities under MDA agreements.