The St. Croix/Red Cedar River Basin Farmer-Led Watershed Council Project:

Utilizing Performance-Based Farmer-Led Watershed Councils to Reduce Phosphorus Runoff, Improve Water Quality and Enhance Agricultural Productivity

Project objectives: To improve water quality in the Red Cedar and St. Croix River basins through reduced phosphorus and sediment loading; to increase farmer knowledge about, and engagement with, water quality issues, including the adoption of conservation practices; to develop leadership around water quality among farmers in the selected sub-watersheds; and to develop a unique collaborative model of water quality improvement through farmer engagement that can be replicated in watersheds throughout the Upper Mississippi River Basin and nationwide.

Project approach: Phosphorus (P) pollution reductions and the expansion of farm conservation activities will occur by way of an innovative, farmer-directed conservation incentives program. Four Farmer-Led Watershed Councils are up and running in Pierce, Polk, St. Croix and Dunn Counties. Each council receives an annual pool of funding ($17,000 in 2014, provided by the Minneapolis-based McKnight Foundation), with which they can design a conservation incentives program that achieves water-quality goals. The farmers themselves determine the best paths to conservation success within their watershed, and recruit and encourage other farmers to participate. County Land Conservation Department staff and University of Wisconsin-Extension staff work closely with the farmer councils to provide technical assistance, facilitation, resource information and education, as well as monitor the project's outcomes.

Project partners:

- Dunn County Land Conservation Division
- Pierce County Land and Water Conservation Department
- Polk County Land and Water Resources Department
- St. Croix County Land and Water Conservation Department
- UW-Extension
- Wisconsin DNR
- Wisconsin Farmers Union

BACKGROUND

The St. Croix and Red Cedar River Basins, situated in west central Wisconsin, each contain several impaired waterways. The two basins include fourteen total maximum daily load (TMDL) projects The land base in these basins is predominantly agricultural. Farming systems that create excess nutrient and sediment run-off are a primary source of pollution. According to the U.S. Geological Survey, agriculture sources contribute more than seventy percent of the nitrogen (N) and phosphorus (P) pollution to the Gulf of Mexico via the Mississippi Basin.[1] Because these basins drain into the Mississippi River, strategies to decrease agriculture's contribution to nutrient and sediment pollution would have a significant impact on improving water quality in the Upper Mississippi River Basin (UMRB) and further downstream.

There have been many attempts to reduce P and other nonpoint source (NPS) pollutants within these basins, with mixed results. Strategies to-date have largely focused on the development of technical tools for assessment and improvements. However, those strategies have missed the

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human social factors – farmers internalizing the need for better water quality, and making long-term coordinated management decisions based on that internalization – necessary for the widespread diffusion of those tools and sustainable water quality improvements.[2]

The U.S. Environmental Protection Agency recognizes the importance of citizen participation in successful long-term NPS strategies.[3] The lack of progress in meeting NPS reduction goals in the affected basins reinforces the need for innovations to better engage farmers in environmental management. In Iowa, a Farmer-Led Watershed Council model that combines performance-based environmental management with farmer leadership and civic engagement has resulted in significant improvements in the Soil Conditioning Index (SCI) and Phosphorus Index (P index), and has reduced nitrogen use and sediment delivery, all due to participants' management changes.[4] This successful innovation, which has been replicated in several sub-watersheds in northeast Iowa with similar success, serves as the model for our project.

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These Iowa successes have occurred in relatively small watersheds of USGS Hydrological Unit Code (HUC) 12 or similar scale. Farmer councils were developed in each watershed. Iowa State Extension provided technical and financial resources to allow the farmers to determine the best conservation mechanisms for improved water quality. In each watershed, farmers developed a set of performance-based incentives that they encouraged all farmers within the watershed to adopt. The co-development of farmer leadership alongside strong technical support and facilitation has led to wide participation within the watersheds, increased adoption of conservation practices, and long-term commitment to these management strategies by farmers. The projects are all ongoing.

Our project, made up of four pilot sub-watersheds ranging from about 7,000 to 33,000 acres in the St. Croix and Red Cedar River basins, shares the approach with Iowa. Because of existing conservation partnerships developed over years, we have a significant opportunity to observe the effectiveness of this innovation across watersheds, as we are leveraging the technical and financial resources of county, state and non-governmental partners. This is a unique opportunity to improve UMRB water quality and to further develop and promote a model for farmer engagement that can be spread to other watersheds nationwide.

INNOVATIONS

We consider this project innovative for the following reasons:

1. Farmers decide the best paths to water quality and conservation goals, and then conservation partners provide them with the technical resources to get there.

2. The partnership is combining technical conservation practices with civic engagement and farmer-leadership development strategies at a watershed level.

3. The project involves leveraging multi-level and multi-location collaboration, including county conservation departments, university Extension, the WI Department of Natural Resources and non-governmental organizations.

METHODS

The project is based on a model of civic engagement that develops knowledge and creates leadership and action on water quality by farmers. Farmer-Led Watershed Councils now exist in four target sub-watersheds in Pierce, Polk, St. Croix and Dunn Counties. These sub-watersheds were selected because they have both high P-loads as well as a critical number of farmers receptive to leading projects which educate and involve their local farm community in soil conservation and phosphorus runoff reductions.

One of the key innovations of this project is the leading role farmers will play, a strategy based on the successful participatory models of resident-led watershed projects developed by Iowa State Extension and others. The project coordinator (employed by University of Wisconsin-Extension) and the county conservationists will provide technical support, education and facilitation to the farmer councils, as well as a small pool of money, but will not dictate to farmers the best course of action to achieve water quality goals. The councils will decide how best to approach the task of water quality improvement in their watershed. They will have the freedom to select which conservation practices to incentivize, to create monitoring and evaluation plans, and to devise outreach strategies that are tailored to the particulars of their watersheds. In this way, farmers in the councils will become not only conservation leaders within their watersheds, but also strong advocates for the adoption of conservation practices and resources in their farm communities. This type of participatory approach has achieved sustained reductions in P and other water pollutants.

This project combines the considerable strengths of the partners with current watershed management TMDL goals in a groundbreaking collaborative. Conceptually, it draws from research and resources on civic engagement from the University of Minnesota, Iowa State University's sociological work on farmer-led, performance-based watershed projects, and the concept of landscape disproportionality analysis from the University of Wisconsin.[5] Project partners have created a local- and county-led watershed management implementation project partnership within the Red Cedar and St. Croix River (WI portion) Basins. Because of the reach of the many partners involved in this collaboration, it anticipates an increasing adoption of both the participatory model as well as the conservation practices themselves beyond the pilot watersheds and throughout the river basins.

Specifically, our methods are as follows:

Objective 1: Developing farmer-led councils in four pilot watersheds. The project coordinator from UW-Extension and staff from the Land Conservation Department offices in each of the four counties that contain the watersheds are working closely to facilitate and develop the farmer-led councils. Farmer councils have been meeting regularly since February 2013.

Project Personnel

DUNN COUNTY:

Dan Prestebak, Conservationist; Amanda Hanson, Conservation Planner

PIERCE COUNTY:

Rod Webb, Conservationist

POLK COUNTY:

Tim Ritten, Conservationist; Eric Wojchik, Conservation Planner

ST. CROIX COUNTY:

Bob Heise, Conservationist; Kyle Kulow, Conservation Planner

UW-EXTENSION:

Julia Olmstead, Outreach Specialist/ Project Coordinator; Paul Kivlin, Nutrient Management Specialist

Objective 2: Phosphorus-loading inventories in each watershed. To measure our progress, as well as for the farmer council to target the biggest P contributors, county conservation staff and UW-Extension nutrient management specialists will work with farmers to do P indexing on as many fields as possible within the watershed. The P Index assigns a number – 0, 1, 2, 4, 8 or 16 – to each of the conditions which can affect phosphorus losses, where 0 is the lowest P loss potential and 16 is the highest P loss potential. This is completed according to the probability of P loss from the site. Council members will take the lead to encourage non-participating or hesitant farmers to get involved.

Objective 3: Measurable reductions in phosphorus runoff. Several of the incentives we suggest to the farmer councils will result in P pollution reductions, including improved manure management, grass waterways, cover crops and grid sampling for precision agriculture methods. We will be able to track these reductions via annual P index assessments as well as by leveraging already existing edge-of-field water monitoring sites that are located in each watershed. We will also encourage farmers to target conservation activities to the heaviest contributors to P loading within the watersheds.

Objective 4: Increased adoption of conservation practices by farmers within the watershed. The farmer councils will determine which conservation practices are most useful and attractive to farmers within the watershed. They will create an incentives program before the start of the growing season, which will offer small amounts of compensation for farmers to adopt conservation practices. Farmers will be able to choose from a suite of incentive options the council has put together, which can include, but is not limited to: cover crop trials, corn stalk nitrate testing, nutrient management planning, manure spreader calibration, grass waterways, phosphorus indexing, grid sampling and bioreactors. A key component of the project model is the leadership taken by farmers in influencing each other. The council farmers will play a lead role in encouraging other farmers to become involved, using field days, mailings to other farmers, and one-on-one conversations.

Funding:

Staffing time: WI DNR provides funding for the project coordinator's position via UW-Extension, and supports ¼ staff time in each county LCD via a Lakes Grant (this is matched by the county for ½ FTE toward project).

Conservation incentives: The McKnight Foundation (a private, Minneapolis-based foundation) has provided a two-year grant of $100,000 total for the councils.

[1]Alexander, Richard B., Richard A. Smith, Gregory E. Schwarz, Elizabeth W. Boyer, Jacqueline V. Nolan and John W. Brakebill. 2008. "Differences in Phosphorus and Nitrogen Delivery to the Gulf of Mexico from the Mississippi River Basin." *Environmental Science & Technology* 42(3):822-830

[2]Morton, Lois Wright and Chich Yuan Weng. 2009. "Getting to Better Water Quality Outcomes: The Promise and Challenge of the Citizen Effect." *Agriculture and Human Values* 26(1):83-94

[3]U.S. EPA. 2008. *Handbook for Developing Watershed Plans to Restore and Protect Our Waters.* USEPA. Office of Water Nonpoint Source Control Branch. EPA 841-B-050005

[4]Morton, Lois Wright and Jean McGuire. 2011. "Getting to Performance-Based Outcomes at the Watershed Level" in *Pathways for Getting to Better Water Quality: The Citizen Effect* edited by L.L.W. Morton and S.S. Brown. New York: Springer.

[5]Nowak, Pete, Sarah Bowen, and Perry E. Cabot. 2006. "Disproportionality as a Framework for Linking Social and Biophysical Systems." *Society and Natural Resources* 19:153-173

Farmer-Led WATERSHED COUNCIL

For More Information:

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