Environment and Natural Resources Trust Fund
2009 Phase 2 Request for Proposals (RFP)

LCCMR ID: 039-B1

Project Title: Root River Small Watershed Implementation and Evaluation Project

Total Project Budget: $ $394,500

Proposed Project Time Period for the Funding Requested: 3 Years, July 2009 to June 2012

Other Non-State Funds: $ $540,000.00

Priority: B1. Reduce Soil Erosion

First Name: Kevin **Last Name:** Kuehner

Sponsoring Organization: MN Dept. of Ag

Address: 912 Houston St NW
Preston MN 55965

Telephone Number: 507-765-4530

Email: Kevin.Kuehner@state.mn.us

Fax:

Web Address: www.mda.state.mn.us

Region:	County Name:	City / Township:
SE	Fillmore, Houston, Mower, Winona	

Summary: This project will demonstrate innovative and cost-effective approaches for controlling agricultural non-point source pollution. Land use/management changes will be linked to water quality improvements at multiple watershed scales.

Main Proposal: 1008-2-023-proposal-2009_main_proposal_RootRiver_KKuehner_Final.doc

Project Budget: 1008-2-023-budget-RFP_2009_Budget_RootRiver_KKuehner_Final2.xls

Qualifications: 1008-2-023-qualifications-Project_Manager_Qualifications_RootRiver_KKuehner

Map: 1008-2-023-maps-2009_map_RootRiver_KKuehner_Final.doc

Letter of Resolution:

MAIN PROPOSAL

PROJECT TITLE: Root River Small Watershed Implementation and Evaluation Project

I. PROJECT STATEMENT

Southeast Minnesota and the Root River Watershed are home to some of the most ecologically significant natural resources in Minnesota. The watershed is currently impaired for turbidity and observed nitrate-nitrogen concentrations are of concern particularly in designated trout streams. The relationship between agricultural Best Management Practices (BMPs) and observed water quality trends in the region is not well understood. Monitoring is typically conducted at large scales in which confounding factors prohibit the quantification of individual practices. Information is needed that links edge-of-field or farm observations to water quality at the watershed outlet.

This project will quantify agricultural non-point source pollution reductions at multiple scales resulting from the implementation of BMPs. The project will be conducted in 3 small-scale watersheds (less than 2,500 acres). In addition, 3 additional nested field/farm-scale watersheds (<500 acres) will be monitored within the selected sub-watersheds to evaluate selected BMPs. Results will be used to demonstrate and inform the effects of BMP implementation on water quality within the larger watersheds. In an effort to ensure transferability of the study findings to other areas of Southeastern Minnesota, the watersheds will be located within the two main geomorphic regions of the southeast: eroded glacial till and karst geology. Innovative approaches to increase voluntary BMP adoption will be implemented in the watersheds.

II. DESCRIPTION OF PROJECT RESULTS

Result 1: Edge of field/farm and small watershed monitoring. **Budget: $**238,000

Intensive stream water monitoring will be conducted to calculate sediment and nutrient changes as a result of the pre- and post treatment phases of the project. Special emphasis will be placed on setting up the projects to facilitate long-term monitoring, evaluation and follow-up (>10 years). Budget includes funds for analysis, equipment, and monitoring technician for three years; however, the monitoring equipment could be utilized as part of a long-term monitoring strategy. The Nature Conservancy (TNC) will provide additional funds for monitoring at both scales.

Deliverable	Completion Date
1. Determine baseline water quality at field/farm and watershed scales.	**6/31/2011**
2. Determine water quality response to specific conservation practices at the field/farm scale.	**6/31/2011**
3. Calculate sediment and nutrient flow weighted mean concentrations and loads.	**6/31/2012**

Result 2: Watershed and field assessments of sediment and nutrient delivery. **Budget:** $100,250

Multiple tools will be employed to characterize sediment and nutrient sources and transport pathways at the field and watershed scales. These tools include: digital terrain analysis of vulnerable areas using LiDAR topographic data; reach-scale stream surveys; farmer interviews; and risk assessment tools such as the phosphorus index.

Deliverable	Completion Date
1. Critical areas with the highest probability of sediment and nutrient delivery will be identified using a combination of the following watershed assessment tools:	
a. LiDAR analysis by the University of Minnesota,	**6/31/2010**
b. Geo-referenced stream geomorphology surveys, and land use field assessments with Winona State University,	**6/31/2011**
c. Farm practice interviews with farmers,	**6/31/2010**

d. Sediment and nutrient risk assessment and management tools. **6/31/2010**

Result 3: Conservation Practice Implementation **Budget: $** 56,250

Innovative approaches to increase voluntary Best Management Practice (BMP) adoption will be demonstrated and implemented in the monitored watersheds. Some of these innovative approaches include performance based incentives. Performance based incentives are payments based on the achievement of farm level water quality performance targets created by working groups of farmers, agency staff and scientists in each watershed. A local conservation technician will be hired to effectively deliver programs to the watershed producers and project stakeholders. The Nature Conservancy will provide additional funds for working with the producers and for BMP implemented in the three watersheds.

Deliverable	**Completion Date**
1. Develop whole farm conservation plans for each producer in sub-watersheds.	**6/31/2010**
2. Implement locally acceptable and targeted conservation practices that result in significant water quality improvements at the farm and watershed scales.	**6/31/2012**

III. PROJECT STRATEGY AND TIMELINE

A. Project Partners

Minnesota Department of Agriculture (MDA) will assist in developing watershed monitoring protocols, production oriented conservation practices, watershed assessments, implementation strategies, and technical management. Fillmore County SWCD will house grant funded staff devoted to monitoring and delivering conservation programs for the project. The University of Minnesota will assist with monitoring and digital terrain modeling. Winona State University will conduct watershed and stream morphology assessments. The Nature Conservancy will contribute funds toward the project for conservation practice implementation and monitoring and will assist in project management.

B. Project Impact

This project will provide valuable information of how well improvements in farm-level environmental performance are likely to translate into actual load reductions for impaired waters of Southeastern Minnesota. It will also provide an accurate characterization of the water quality impacts of various conservation and agricultural practices within distinctly different watershed types within the Driftless Area of Southeast Minnesota. The project will also demonstrate a conservation delivery model that rewards farmers for actual improvement in water quality, not just for practices intended to improve water quality. It is intended that this model could be applied to other watersheds in the region.

C. Time

The project will need a minimum of three years to procure adequate data at the field and watershed scales. Watershed assessments, installation of monitoring equipment and baseline farming practice data will be conducted during the first year. Implementation of conservation practices will take place during the second and third years.

D. Long-Term Strategy

This proposal is the initial phase of a long-term field and watershed evaluation project. Funds will be required to adequately evaluate the response of water quality to watershed scale BMP implementation which may require 10 years or more depending upon the nature of sediment and nutrient delivery mechanisms and the magnitude and location of BMPs implemented in the study watersheds. Funding for this extended period has not yet been secured but will likely involve future TNC initiatives and on-going MDA monitoring activities.

Three Year Project Budget

IV. TOTAL PROJECT REQUEST BUDGET

BUDGET ITEM	AMOUNT	% FTE
Personnel:		
Conservation Liason-This person will work closely with each producer in the selected watersheds to increase BMP adoption. A) develop voluntary participation contracts B) work with producers to help select optimal management strategies to performance incentives. The project will try to utilize existing soft funded positions at the Fillmore SWCD.	$ 97,500	50%
Monitoring Technician-This person will be responsible for the collection of water quality samples, QA/QC procedures, downloading and managing the data, maintaining the monitoring equipment and quantification of water quality improvements resulting from BMPs placed on the land at the farm and watershed scales. The project will try to utilize existing soft funded positions at the Fillmore SWCD.	$ 75,000	50%
Contracts:		
Fillmore SWCD: Project adminstration and management assistance, travel costs, and printing costs necessary for project.	$ 15,000	
University of Minnesota: Equipment Installation and Calibration. Contract to assist with monitoring equipment installation and troubleshooting	$ 28,000	
University of Minnesota: Digital terrain analysis using LiDAR data to identify vulnerable areas.	$ 20,000	
Winona State University: Reach-scale stream survey will be performed at reference sites developed for this study. At each site, characteristics such as channel morphology, local stream gradient, valley morphology, vegetation, sediment type and size, and channel bed forms will be measured. These analyses will be coupled with water quality data and observations of associate land use, nutrient management, and remotely-sensed assessments.	$ 31,500	
Equipment/Tools:	$ -	
Watershed and field/farm water quality/flow monitoring equipment. This amount will allow for at least 3 watershed scale monitoring sites and 3-5 field/farm monitoring sites.	$ 62,500	
Water Quality Analysis. Samples will be analyzed for sediment, nutrients and some pesticides at the Minn. Dept of Health Laboratory. Flow weighted mean concentrations and yields will be calculated.	$ 65,000	
TOTAL PROJECT BUDGET REQUEST TO LCCMR	$ 394,500	

V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State $ Being Leveraged During Project Period: The Nature Conservancy (TNC) has committed $540,000 toward the project.	$ 540,000	Secured
Other State $ Being Spent During Project Period: Approved funding for 20% FTE locally based Minnesota Dept. of Agric. (MDA) employee. MDA employee will assist with overall project/persnonnel development, coordination, and management for the project.	$ 49,920	

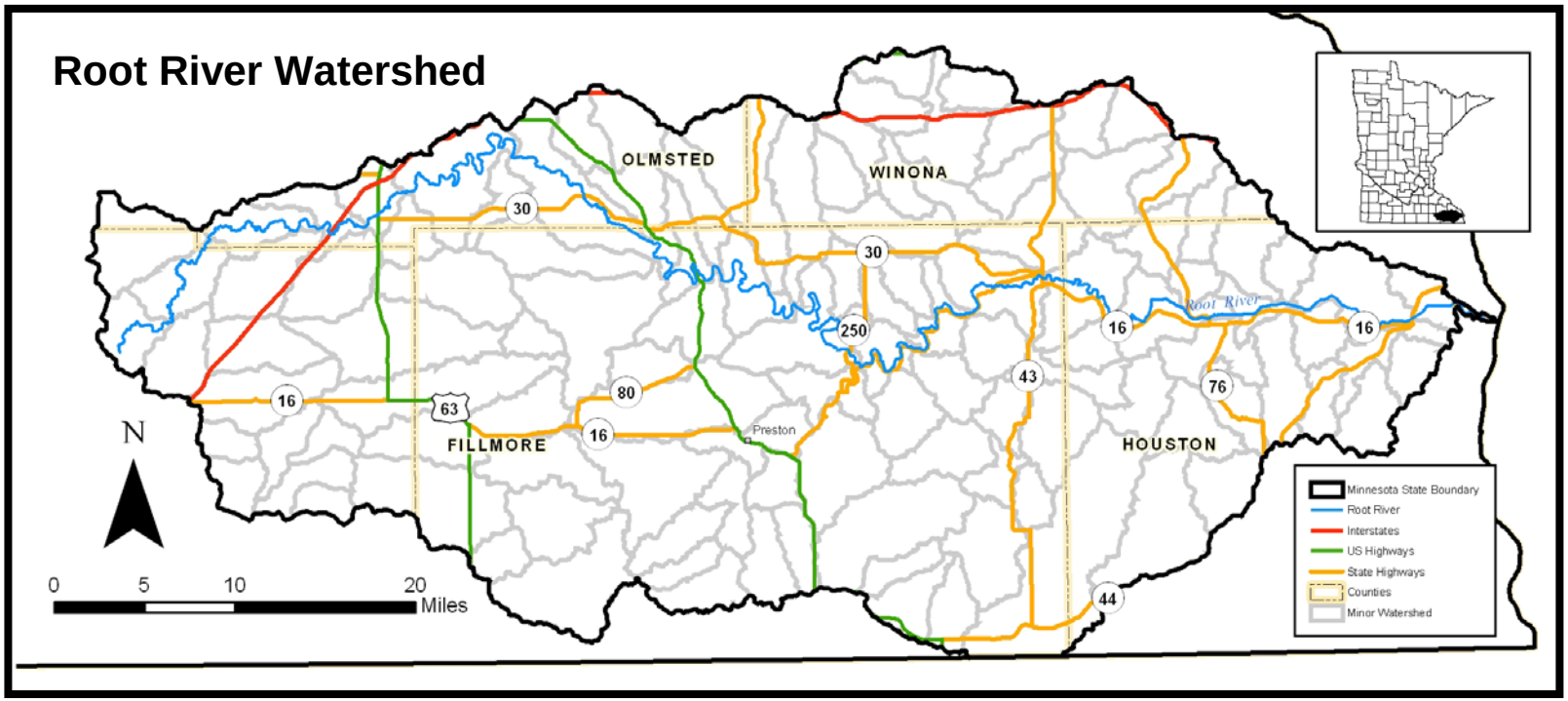
Project Manager Qualification

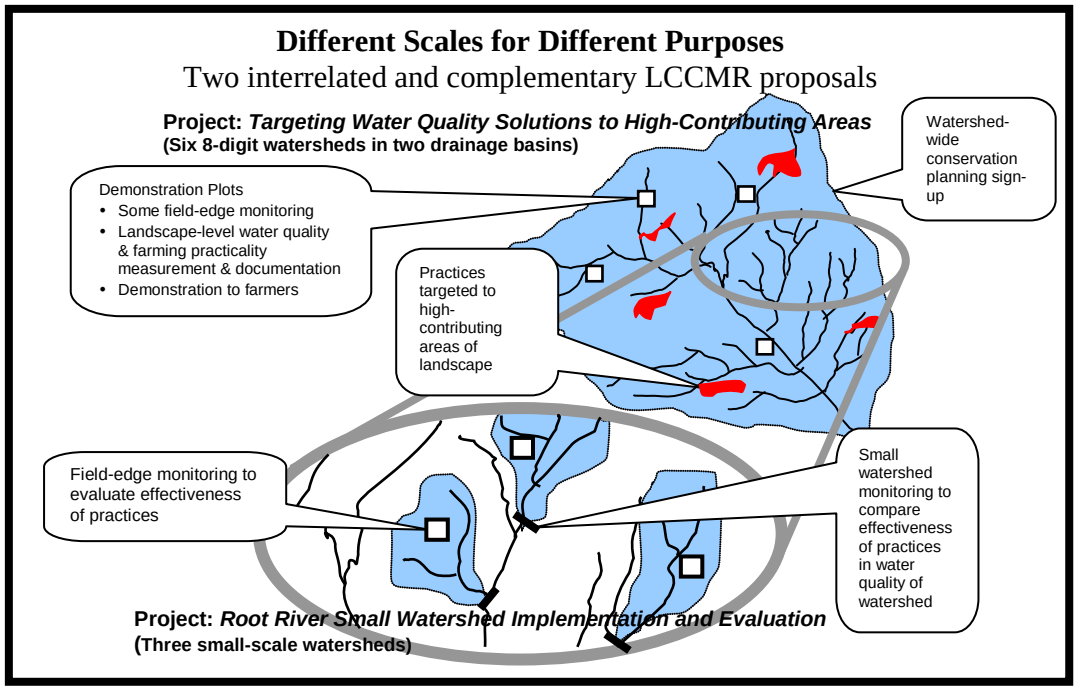
Kevin Kuehner

Kevin Kuehner will serve as the project manager for the LCCMR grant. Mr. Kuehner is a Water Quality Advisor with the Minnesota Department of Agriculture with over ten years experience managing and coordinating ecosystem and watershed based projects. Kevin's current and prior work experience as a water quality program director for the BNC Water Quality Board and administrator for the Fillmore SWCD has provided extensive water quality project management experience in several different areas. Some of those areas include: private lands management, agricultural non-point source water quality issues, source water protection, effectiveness monitoring, nutrient management, GIS application development and grant management. He has managed over six million dollars in private/public water resource protection/restoration grants for eight southern Minnesota watersheds.

Minnesota Department of Agriculture Mission

Enhance Minnesotans' quality of life by ensuring the integrity of our food supply, the health of our environment, and the strength of our agricultural economy.





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