Environment and Natural Resources Trust Fund
2011-2012 Request for Proposals (RFP)

Subd: 03p

Project Title: Conservation-Based Approach for Assessing Public Drainage Benefits

Category: B. Water Resources

Total Project Budget: $ $150,000

Proposed Project Time Period for the Funding Requested: 3 yrs, July 2011 - June 2014

Other Non-State Funds (secured): $ 0

Summary:

This project will develop an alternative framework to assess drainage benefits on public systems, shifting the paradigm from a production-based approach to one that encourages and rewards water conservation.

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Sponsoring Organization: Board of Water and Soil Resources

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Location

Region: NW, Central, SW

Ecological Section: Statewide

County Name: Statewide

City / Township:

2011-2012 MAIN PROPOSAL

PROJECT TITLE: Conservation Based Approach for Assessing Public Drainage Benefits

I. PROJECT STATEMENT

Artificial drainage exists in more than 25% of the state of Minnesota (USGS, undated). Developing a runoff contribution based assessment method for Minnesota's public drainage systems (administered under Minnesota Statutes Chapter 103E) presents a unique opportunity to shift the paradigm in public drainage from a crop production based approach to an approach that encourages multipurpose stewardship of water resources.

Establishment and maintenance of public drainage systems is funded by assessing benefitted landowners. The amount of the assessment is based on 'highest and best use'. That is, the benefit that could be attained by using the drainage system. This assessment does not directly take into account actual use (runoff contribution) to the drainage system, thereby providing *no incentive to a landowner to implement a conservation plan* that would reduce the runoff contribution to a drainage system. **This project would develop a framework for public drainage system assessments to be reduced if associated runoff contributions are reduced, providing an incentive to implement conservation measures on lands contributing to public drainage systems.**

We propose to develop a Public Drainage Benefits Assessment Framework that would assess benefitted landowners in a drainage system according to their use of that system. We envision that this framework could form the basis for a pilot project and eventually an alternative assessment methodology in drainage law. In addition to providing a direct conservation incentive for reduced runoff, another benefit would include the ability to more easily update assessments incrementally, presumably without the cumbersome redetermination of benefits framework currently being used. This proposed framework would not change the fact that agricultural producers benefitting from a publicly administered drainage system are being assessed to maintain their drainage system; however, it shifts the paradigm to encourage conservation (retention) of water on the landscape. This proposed framework would provide the technical basis for an alternative assessment methodology.

II. DESCRIPTION OF PROJECT ACTIVITIES

Activity 1: Inventory runoff based assessment methods **Budget:** $6,000

Conduct an inventory of how runoff based assessments or fees are prescribed and how assessments on public drainage systems (similar to MN Chapter 103E systems) are conducted in MN, other states, and Canada. This inventory will be used to identify strengths and weaknesses in current methods than could be adapted for MN. Results will be presented and discussed with the stakeholder Drainage Work Group.

Outcome	Completion Date
1. Interim Report – Inventory of Runoff Contribution-Based and Public Drainage System Assessment Methods 2. Presentation and discussion with stakeholder Drainage Work Group	Feb 1, 2012

Activity 2: Develop Technical Framework for Runoff Based Assessment

Budget: $129,000

An alternative method for public drainage system assessment will be developed in this task by the University of Minnesota. The methodology is anticipated to be an innovative GIS tool based on land use, soils, LiDAR based topography and position in the watershed (terrain analysis) to determine relative runoff contribution to a drainage system on a parcel basis. The project team will coordinate with the stakeholder Drainage Work Group (approximately 3 meetings – more if needed), including one or more public drainage system viewers. The project team will also coordinate and receive input from state agencies having expertise and knowledge in drainage.

Outcome	Completion Date
1. Interim Report – Conservation Based Approach for Assessing Public Drainage Benefits	July 1, 2013

Activity 3: Test the Framework on a Case Study Drainage System **Budget:** $15,000

Using the framework developed in Activity 2, we will develop a case study for a selected drainage system (subwatershed scale) showing how the framework might be implemented. The case study will test three scenarios: existing conditions and two levels of conservation practice adoption to demonstrate the effect of voluntary adoption on drainage system assessment rates on a parcel basis and the effect of these two different practice adoption scenarios on drainage system water yield.

Outcome	Completion Date
1. Final Report Documenting Project and Case Study Scenarios	Dec 15, 2013
2. Presentation of Study at a key venue (e.g. Annual Water Resources Conference)	Dec 15, 2013

III. PROJECT STRATEGY

A. Project Team/Partners

Al Kean, Board of Water and Soil Resources (project manager, providing in-kind support);

Dr. Bruce Wilson, Dr. Gary Sands, University of Minnesota (in-kind technical support and managers of graduate students, LCCMR funds for graduate student/research assistant support)

Greg Eggers, MDNR (in-kind technical support and review)

Bruce Henningsgaard, MPCA (in-kind technical support and review)

B. Timeline Requirements

The project is anticipated to require 3 years to complete (July 1, 2011 through June 2014).

C. Long-Term Strategy and Future Funding Needs

We anticipate that the current proposal is Phase 1 of a two-phase project. The second phase would entail identification of a drainage system to implement this framework on a pilot project basis. Phase 2 is dependent on identification of a willing partner, which is premature at this point and thus no long-term funding requirement has been determined.

2011-2012 Detailed Project Budget

IV. TOTAL TRUST FUND REQUEST BUDGET 3 years

BUDGET ITEM	AMOUNT	% FTE
Personnel: In-kind services.	$	-
Contracts: University of Minnesota - funding for 1 research associate and 1 graduate research assistant at approx. 0.4 FTE and 0.7 FTE to perform work under the in-kind supervision of Dr. Wilson and Dr. Sands.		
Univ. of Minnesota - Bioproducts and Biosystems Engineering (Activities 1-3) Research Associate: Salary and expenses + Fringe benefits	$ 72,000	40%
Univ. of Minnesota - Bioproducts and Biosystems Engineering (Activities 1-3) Graduate Research Assistant: Salary and expenses + Fringe benefits	$ 77,000	70%
Travel: In-state mileage and per diem for meetings and case study field work.	$	1,000
TOTAL ENVIRONMENT & NATURAL RESOURCES TRUST FUND $ REQUEST	$	150,000

V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
In-kind Services During Project Period: (Percents denote % FTE) BWSR Staff Time: (5% Cons. Drainage Engr., 2% Kean) $20,000 University of Minnesota Staff Time: (3% Wilson, 3% Sands): $22,000 DNR Staff Time: $4,000 MPCA Staff Time: $4,000	$ 50,000	Committed

2011-2012 Project Manager Qualifications and Organizational Description

PROJECT TITLE: Conservation Based Approach for Assessing Public Drainage Benefits

Project Manager Qualifications

Allan Kean, M.S., P.E., serves as Chief Engineer and manager of the Technical Services Section of the Minnesota Board of Water and Soil Resources, including associated supervision, financial management and leadership of 16 staff. Mr. Kean has served as a section manager for BWSR since 1992.

Mr. Kean served as project manager and editor for preparation of the "*Public Drainage Ditch Buffer Study, February 2006*" and the "*Drainage Records Modernization Guidelines, September 2008*", which involved contracts with the University of Minnesota, Water Resources Center and the Minnesota State University, Mankato, Water Resources Center. He currently serves as project manager for an EPA Section 319 research, education and demonstration project (Drainage System Side Inlets to Improve Water Quality).

Since 2006, Mr. Kean has served as facilitator of the stakeholder Drainage Work Group, which involves more than 20 associations, organizations, agencies and academic institutions having a focus on science-based mutual understanding and consensus recommendations regarding drainage policy and drainage management. He has facilitated development of consensus recommendations for updates of Minnesota Drainage Law (M.S. Chapter 103E) and has provided testimony to support adoption by the Legislature. This LCCMR project is in response to discussions of the Drainage Work Group regarding drainage system assessments.

As project manager, Mr. Kean will be responsible for oversight of project team and advisory committee establishment, facilitate coordination with stakeholders, and ensure project completion within budget and on schedule.

Organizational Description

The mission of the Board of Water and Soil Resources is to "improve and protect Minnesota's water and soil resources by working in partnership with local organizations and private landowners". This project will support BWSR's mission by providing a technical framework for improved multipurpose management of the extensive public drainage infrastructure throughout much of Minnesota's agricultural lands, which is a critical aspect of land use practices to detain runoff and improve water quality in Minnesota.

M.S. Section 103B.101, Subd. 13 directs BWSR to work with drainage stakeholders to foster mutual understanding and provide recommendations for drainage system management and related water management, including recommendations for updating the drainage law in Chapter 103E and other related provisions. Section 103D.711, Subd. 5 directs BWSR to provide advisory review of watershed district engineers' reports, including projects involving public drainage systems. BWSR also facilitates the interagency Drainage Management Team. Therefore, BWSR is well positioned to lead this project.