

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

LCCMR ID: 083-C3+4

Project Title: Decision Support Tools for Assessing Drainage Impacts

Category: C3+4. Technical Assistance and Community-Based Planning

Total Project Budget: \$ \$115,000

Proposed Project Time Period for the Funding Requested: 2 yrs, July 2011 - June 2013

Other Non-State Funds: \$ 0

Summary:

Improve wetland protection and landowner certainty by providing standardized drainage lateral effect calculation methods and improving the capabilities of local government staff to evaluate drainage projects for wetland impacts.

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Sponsoring Organization: Board of Water and Soil Resources

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Location

Region: Statewide

Ecological Section: Statewide

County Name: Statewide

City / Township:

<input type="checkbox"/>	Funding Priorities	<input type="checkbox"/>	Multiple Benefits	<input type="checkbox"/>	Outcomes	<input type="checkbox"/>	Knowledge Base				
<input type="checkbox"/>	Extent of Impact	<input type="checkbox"/>	Innovation	<input type="checkbox"/>	Scientific/Tech Basis	<input type="checkbox"/>	Urgency				
<input type="checkbox"/>	Capacity	<input type="checkbox"/>	Readiness	<input type="checkbox"/>	Leverage	<input type="checkbox"/>	Employment	<input type="checkbox"/>	TOTAL	<input type="checkbox"/>	%

2011-2012 MAIN PROPOSAL

PROJECT TITLE: Decision Support Tools for Assessing Drainage Impacts

I. PROJECT STATEMENT

The overall goal of this project is to improve wetland protection and landowner certainty by establishing standardized drainage lateral effect calculation methods and improving the capabilities of local government staff to evaluate drainage projects for wetland impacts. The project will build on existing drainage tools and Soil Survey information (previously funded by LCCMR) to create a conservation tool to quantify the hydrologic effects of drainage. The project will result in statewide drainage estimates for each soil type and drainage method, the development of a web-based lateral effect calculator, and consistency between local, state, and federal wetland protection programs in evaluating the effects of drainage projects. Local governments, landowners, and the state's wetland resources will all benefit from increased certainty regarding the impacts of proposed drainage activities. Properly assessing the impacts of drainage on wetlands will also improve the targeting and value of conservation programs by providing a more accurate estimate of the functional gains achieved by restoration.

A significant amount of drainage activity has occurred in recent years, particularly in the agricultural areas of Minnesota. This drainage activity, which includes the installation of new drainage tile and ditches as well the maintenance or enhancement of existing drainage systems, is expected to continue. When a drainage tile or ditch is installed, it lowers the water table for a certain distance laterally to each side (referred to as "lateral effect"), depending on the depth and method of drainage, soil characteristics, and various other parameters. Local governments are responsible for reviewing these drainage activities to determine impacts to wetlands for compliance with state and local wetland protection requirements.

Currently, many drainage projects are completed without adequate review, leading to the unaccounted for loss of wetlands, enforcement actions against the landowner, or appeals of Wetland Conservation Act (WCA) decisions due to disagreements on drainage impacts. Local governments typically do not have the ability to adequately assess the impacts of proposed drainage projects on wetlands. Staff rarely have the necessary expertise in engineering, access to accurate soil porosity properties and related data, or the time and funding needed to perform the calculations. This impedes the ability to adequately review proposed drainage projects and provide assistance to high volumes of landowner requests, particularly on agricultural land.

This is a cooperative partnership between the Board of Water and Soil Resources (BWSR), USDA's Natural Resources Conservation Service (NRCS), the University of Minnesota (U of M), and the St. Paul District of the US Army Corps of Engineers (Corps). The project is also consistent with the recently signed Memorandum of Agreement between BWSR and NRCS for implementation of WCA and the "Swampbuster" provisions of the federal farm bill.

II. DESCRIPTION OF PROJECT ACTIVITIES

Activity 1: Calculation of Standardized Drainage Impact Estimates Budget: \$30,000
Drainage lateral effect estimates will be completed for each soil type in each county by drainage type and depth based on a consistent standard calculation method determined by NRCS, the Corps, and the U of M. This information will be posted on the BWSR website and be provided to local governments across the state in the form of standardized lateral effect tables. They will provide a default estimate of the lateral effect of various drainage activities.

Outcome	Completion Date
1. Calculation of lateral effect estimates by soil type and drainage method for each county, assembled in tables and posted on the BWSR website.	March 2012

Activity 2: Development of Web-Based Drainage Effect Calculator Budget: \$70,000

A user friendly web-based lateral effect calculator will be developed that utilizes an integrated link to the existing Soil Survey database to interpret site-specific information provided by the end-user. Access to a greater number and significance of variables will provide greater accuracy in calculation. The link to the existing Soil Survey database will provide for easy support and long-term maintenance, which will be accomplished through an interagency agreement.

Outcome	Completion Date
1. Development and posting of web-based calculator.	July 2012

Activity 3: Training for Drainage Tables and Web-Based Calculator Budget: \$15,000

BWSR will partner with NRCS, the Corps, and the U of M Wetland Delineator Certification Program (WDCP) to develop course materials and provide training. The training will consist of approximately five sessions across the state and the target audience will include staff from local governments, BWSR, DNR, NRCS, the Corps, and drainage and wetland consultants. The training will cover standardized lateral effect calculation methods, proper use of the tables and calculator, and the applicability to the implementation of wetland protection programs. Training materials will also be converted to web-served tutorials and incorporated into ongoing training efforts. The number of participants and responses will be used to evaluate the sessions.

Outcome	Completion Date
1. Development of training module and web tutorial.	September 2012
2. Completion of approximately five training sessions across MN.	June 2013

III. PROJECT STRATEGY

A. Project Team/Partners

Les Lemm, BWSR Wetland Conservation Act Coordinator (project manager); Dr. Joel Peterson, BWSR Water Resources Engineer (technical support, project oversight, and quality control); Megan Lennon, BWSR Soil Scientist (funding provided for the calculation of lateral effect estimates); Aaron Spence, BWSR GIS Specialist (funding provided for web posting and management); John Brach, NRCS State Conservation Engineer (technical support and USDA coordination); The Corps (technical and financial support will be sought from the Corps which can either reduce the amount requested or increase the scope of the project); The University of Minnesota (technical support); and WDCP (funding provided for training coordination).

B. Timeline Requirements

The project will be completed in two years (July 1, 2011 to June 31, 2013). Lateral effect calculation and creation of the web-based calculator will occur during the first year, followed by training module development and training in year two.

C. Long-Term Strategy and Future Funding Needs

The tables will be updated periodically by agency engineering staff as new soils information becomes available. Updated Soil Survey information will be automatically incorporated into the web-based calculator through a link to the NRCS website. The products resulting from this project will also improve our capabilities to assess the quality of Minnesota's wetlands and to identify long-term trends of wetland function.

2011-2012 Detailed Project Budget
Decision Support Tools for Assessing Drainage Impacts

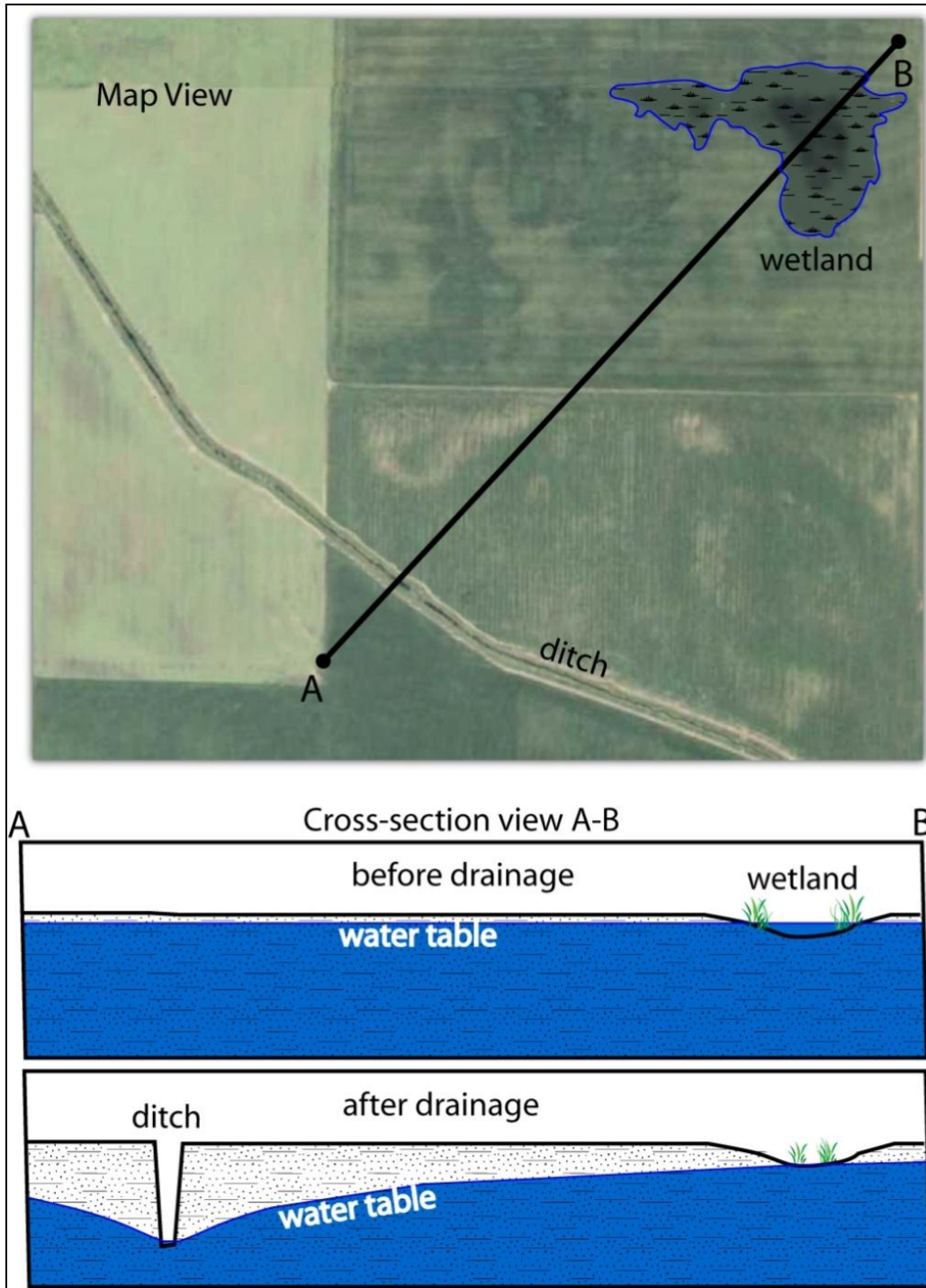
IV. TOTAL TRUST FUND REQUEST BUDGET (2 years)

<u>BUDGET ITEM</u>	<u>AMOUNT</u>
Personnel 1: Calculation of drainage lateral effect tables and development of training materials by one classified staff paid exclusively with special project funds (BWSR Soil Scientist, 1/2 annual FTE, 74% salary and 26% benefits). July 1, 2011 to March 31, 2012.	\$ 30,000
Personnel 2: Web-posting of tables and calculator program, and development of web tutorial by one classified staff (BWSR GIS Specialist, 1/10 annual FTE, 74% salary and 26% benefits) paid exclusively with special project funds. April 1, 2012 to September 31, 2012.	\$ 7,500
Contract 1: BWSR will contract with a programming consultant for the creation of web-based application ("calculator") linked to soil survey database.	\$ 50,000
Contract 2: BWSR will contract with the U of M WDCP for training coordination.	\$ 5,000
Equipment/Tools/Supplies: Purchase and installation of web server upgrades and storage capacity needed specifically for the digital data and capacity needs created by this project.	\$ 20,000
Travel: In-state mileage, meals, and lodging for training instructors.	\$ 2,500
TOTAL ENVIRONMENT & NATURAL RESOURCES TRUST FUND \$ REQUEST	\$ 115,000

V. OTHER FUNDS

<u>SOURCE OF FUNDS</u>	<u>AMOUNT</u>	<u>Status</u>
Other Non-State \$ Being Applied to Project During Project Period: Financial support will be sought from the U.S. Army Corps of Engineers which could increase the scope of the project or decrease the amount requested.	YTBD	YTBD
In-kind Services During Project Period: Technical support and staff time from BWSR (\$12,000), NRCS (10,000), and the Corps (5,000).	\$27,000	Committed
Funding History: Previous LCCMR funding of the Soil Survey.	\$10,000,000	Completed/ in-progress
Funding History: Previous funding of the Soil Survey by NRCS and local governments.	\$30,000,000	Completed/ in-progress

Decision Support Tools for Assessing Drainage Impacts



Drainage activities often impact the local water table and nearby wetlands, even wetlands that are not directly adjacent to the ditch or tile line.

The cross-section view shows the impacts of a drainage ditch on the local water table and an adjacent wetland. Calculating the lateral effects of drainage activities is essential to determine impacts to wetlands and minimum setback distances to avoid wetland losses.

Calculating drainage lateral effects typically requires significant expertise and use of a complex formula that includes numerous variables that vary from site to site. These variables include soil type, drainable porosity, method and capacity of drainage activity, depth to impervious layers, and others. Developing standardized tables and a web-based calculator with links to specific Soil Survey data will reduce the time, cost, and expertise necessary for the routine determination of the lateral effects of drainage in and minimum setbacks to avoid wetland impacts.

DECISION SUPPORT TOOLS FOR ASSESSING DRAINAGE IMPACTS

Project Manager Qualifications and Organization Description

Project Manager

Les Lemm, Wetland Conservation Act Coordinator for the Minnesota Board of Water and Soil Resources

Education:

M.S., Natural Resources Management, North Dakota State University, 2003

B.S., Environmental and Natural Resources Management, University of Minnesota, 1995

Background:

Les has served as the WCA Coordinator for the past 2 years. Prior to that, Les served 4 years as a Board Conservationist for BWSR in the metropolitan area where he worked with WCA, local water planning, implementing soil and water conservation practices, and other resource management programs. Previous experience includes working as a Natural Resource Scientist with the consulting firm of Widseth-Smith-Nolting in Brainerd and serving as the District Manager of the Lake of the Woods Soil and Water Conservation District. Les has experience and expertise both in natural resource policy and technical procedures, including wetland delineation methods.

Organization Description

The Minnesota Board of Water and Soil Resources (BWSR) is the state soil and water conservation agency. It administers programs that prevent sediment and nutrients from entering our lakes, rivers, and streams; enhance fish and wildlife habitat; and protect wetlands. BWSR is the state's administrative agency for 91 soil and water conservation districts, 46 watershed districts, 23 metropolitan watershed management organizations, and 80 county water managers.

The BWSR mission is to improve and protect Minnesota's water and soil resources by working in partnership with local organizations and private landowners. Core functions include implementing the state's soil and water conservation policy, comprehensive local water management, and the Wetland Conservation Act as it relates to the 41.7 million acres of private land in Minnesota.