Environment and Natural Resources Trust Fund (ENRTF)
M.L. 2011 Work Plan

Date of Status Update:
Date of Next Status Update: 1/1/2012
Date of Work Plan Approval: 6/23/2011
Project Completion Date: 6/30/2014 **Is this an amendment request?** _____

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

Project Manager: Al Kean
Affiliation: Board of Water and Soil Resources
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City: St Paul **State:** MN **Zipcode:** 55155

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Location:

Counties Impacted: Statewide

Ecological Section Impacted: Lake Agassiz Aspen Parklands (223N), Minnesota and Northeast Iowa Morainal (222M), North Central Glaciated Plains (251B), Northern Minnesota and Ontario Peatlands (212M), Northern Minnesota Drift and lake Plains (212N), Northern Superior Uplands (212L), Paleozoic Plateau (222L), Red River Valley (251A), Southern Superior Uplands (212J), Western Superior Uplands (212K)

Total ENRTF Project Budget:

ENRTF Appropriation $:	150,000
Amount Spent $:	0
Balance $:	150,000

Legal Citation: M.L. 2011, First Special Session, Chp. 2, Art.3, Sec. 2, Subd. 03m

Appropriation Language:
$75,000 the first year and $75,000 the second year are from the trust fund to the Board of Water and Soil Resources to develop an alternative framework to assess drainage benefits on public systems to enhance water conservation. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

I. PROJECT TITLE: Conservation Based Approach for Assessing Public Drainage Benefits

II. PROJECT SUMMARY:

Artificial drainage exists in more than 25% of the state of Minnesota (USGS, undated). The establishment and maintenance of public drainage systems (administered under M.S. Chapter 103E drainage law) is funded by assessing costs to benefitted lands. The assessment is based on “highest and best use”, i.e. the benefits that could be attained by using the drainage system to the full potential for the associated parcel of land. This method does not directly consider actual use and associated runoff contribution to the drainage system, providing no incentive to a landowner to implement conservation practices that reduce the runoff contribution to the drainage system.

This project will develop a runoff based benefits and cost assessment framework for Chapter 103E drainage systems that can assess benefitted lands based on the use of the drainage system. The framework will be tested on a case study drainage system. In addition to providing a direct financial incentive for reduced runoff, this approach would enable the drainage authority to more easily update assessments incrementally when runoff reduction measures are adopted, presumably without using the more costly redetermination of benefits and damages methodology in Chapter 103E. This proposed framework would not change the fact that agricultural producers benefitting from a Chapter 103E drainage system are assessed to maintain the drainage system. However, it shifts the paradigm to encourage conservation (retention) of water on the landscape. It is envisioned that this framework could provide the technical basis for a pilot project and eventually an alternative assessment methodology in drainage law.

III. PROJECT STATUS UPDATES:

Project Status as of January 2012:

Project Status as of July 2012**:**

Project Status as of January 2013**:**

Project Status as of July 2013**:**

IV. PROJECT ACTIVITIES AND OUTCOMES:

ACTIVITY 1: Inventory runoff based assessment methods, prepare associated interim report, and coordinate.

Description: Conduct an inventory of how runoff based assessments or fees are prescribed and how assessments on public drainage systems are conducted in Minnesota, other states, and Canada. This inventory will be used to identify strengths and weaknesses in current methods that could be adapted for Minnesota. Results will be presented and discussed with the stakeholder Drainage Work Group.

Summary Budget Information for Activity 1:

ENRTF Budget:	**$ 6,000**
Amount Spent:	**$ 0**
Balance:	**$ 6,000**

Activity Completion Date:

Outcome	Completion Date	Budget
1. Interim report – Inventory of Runoff Contribution Based and Public Drainage System Assessment Methods.	Jan. 1, 2012	$5,500
2. Presentation and discussion with stakeholder Drainage Work Group.	March 1, 2012	$500

Activity Status as of January 2012:

Activity Status as of July 2012**:**

Final Report Summary:

ACTIVITY 2: Develop technical framework for runoff based assessment method, prepare associated interim report, and coordinate.

Description: 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 periodically coordinate with the stakeholder Drainage Work Group, including one or more public drainage system viewers, during the development of the technical framework for a runoff based assessment method. The project team will also coordinate and receive input from state agencies having expertise and knowledge in drainage via the interagency Drainage Management Team (BWSR, MDA, DNR, MPCA, NRCS, UMN, MSU-Mankato).

Summary Budget Information for Activity 2:

ENRTF Budget: $ 129,000
Amount Spent: $ 0
Balance: $ 129,000

Activity Completion Date:

Outcome	Completion Date	Budget
1. Development of technical framework for runoff based assessment method.	March 1, 2013	$120,000
2. Periodic coordination with stakeholder Drainage Work Group.	June 15, 2013	$2,000
3. Interim report – Runoff Contribution Based Approach for Public Drainage System Assessments.	May 1, 2013	$7,000

Activity Status as of July 2012**:**

Activity Status as of January 2013**:**

Activity Status as of July 2013**:**

Final Report Summary:

ACTIVITY 3: Test the framework method on a case study drainage system and present project results.

Description: Using the framework method developed in Activity 2, a case study will be developed for an example drainage system showing how the methodology 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 conservation practice 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.

Summary Budget Information for Activity 3:

ENRTF Budget: $ 15,000
Amount Spent: $ 0
Balance: $ 15,000

Activity Completion Date:

Outcome	Completion Date	Budget
1. Evaluation of case study scenarios.	August 31, 2013	$10,500
2. Final report documenting the project, including the case study scenarios.	October 15, 2013	$3,000
3. Presentation of the study at appropriate venue(s) (e.g. Annual UMN Water Resources Conference, MAWD Annual Meeting, and/or AMC Annual Conference).	December 15, 2013	$1,500

Activity Status as of January 2013:

Activity Status as of July 2013**:**

Activity Status as of January 2014:

Final Report Summary:

V. DISSEMINATION:

Description: During the course of the project, periodic coordination will occur with the stakeholder Drainage Work Group, which includes representatives of more than 20 drainage stakeholder organizations and agencies, as well as with the interagency Drainage Management Team, which includes agency and university representatives. This coordination will involve dissemination and discussion of information gathered and developed to date for the project. Near the end of the project, results of the project will be presented at one or more appropriate venues that Chapter 103E drainage authorities, their technical advisors and other drainage stakeholders are likely to attend, such as the Annual UMN Water Resources Conference, MAWD Annual Meeting, and/or AMC Annual Conference. The project final report will be posted on the drainage page of the BWSR website at: http://www.bwsr.state.mn.us/drainage/index.html.

Status as of January 2012:

Status as of July 2012**:**

Status as of January 2013**:**

Status as of July 2013**:**

Status as of January 2014:

Final Report Summary:

VI. PROJECT BUDGET SUMMARY:

A. ENRTF Budget:

Budget Category	$ Amount	Explanation
Personnel:	$	
Professional/Technical Contracts:	$149,000	Contract with University of Minnesota for 1 research associate (RA) and 1 graduate research assistant (GRA) at approximately 0.4 FTE ($72,000) and 0.7 FTE ($77,000) to perform project investigation, development, reporting and presentation work under the in-kind supervision of Prof. Dr. Bruce Wilson and Assoc. Prof. Dr. Gary Sands.
Travel Expenses in MN:	$1,000	Coordination meetings with stakeholder Drainage Work Group and interagency Drainage Management Team, field work, and project presentations at appropriate venues for dissemination. For UMN RA and GRA.
TOTAL ENRTF BUDGET:	**$150,000**	

Explanation of Use of Classified Staff: N/A

Explanation of Capital Expenditures Greater Than $3,500: N/A

Number of Full-time Equivalent (FTE) funded with this ENRTF appropriation: 1.1 FTEs (over approximately 2 to 2.5 years)

B. Other Funds: (No other cash. In-kind funds below.)

Source of Funds	$ Amount Proposed	$ Amount Spent	Use of Other Funds
Non-state			
UMN	$22,000	$	In-kind technical and graduate student supervision support by Prof. Dr. Bruce Wilson and Assoc. Prof. Dr. Gary Sands
State			
BWSR, DNR, MPCA	$28,000	$	In-kind project management by Conservation Drainage Engineer and Al Kean, BWSR, and technical and review support by Greg Eggers, DNR ($4,000) and Bruce Henningsgaard, MPCA ($4,000).
TOTAL OTHER FUNDS:	**$50,000**	**$**	

VII. PROJECT
Partners: STRATEGY:

A. Project Partners:

Al Kean, Chief Engineer, Board of Water and Soil Resources (project manager, providing in-kind project leadership and connection to the stakeholder Drainage Work Group and interagency Drainage Management Team)

Dr. Bruce Wilson, Professor, Department of Biosystems and Bioproducts Engineering, University of Minnesota (providing in-kind technical support and management of graduate student(s))

Dr. Gary Sands, Associate Professor, Department of Biosystems and Bioproducts Engineering, University of Minnesota (providing in-kind technical support and management of graduate student(s))

Greg Eggers, Drainage Engineer, Minnesota Department of Natural Resources (interagency Drainage Management Team member providing in-kind technical support and review)

Bruce Henningsgaard, Engineer, Minnesota Pollution Control Agency (interagency Drainage Management Team member providing in-kind technical support and review)

(None of the above paid by ENRTF)

Research associate and graduate research assistant, University of Minnesota ($150,000) (paid via ENRTF)

B. Project Impact and Long-term Strategy: The current method in Chapter 103E drainage law for assessment of public drainage system costs is based on highest and best use of benfitted lands with full potential drainage. The current assessment approach does not provide incentive for limiting or reducing runoff from land. This project will investigate and develop a technical framework for a runoff based method to assess drainage system costs, which could provide incentive for limiting or reducing runoff from benefitted lands (Phase 1). It is envisioned that a Phase 2 could involve identification of Chapter 103E drainage system(s) to implement this assessment method on a pilot basis, with associated information dissemination to drainage stakeholders about the results of the pilot.

C. Spending History: N/A

Funding Source	M.L. 2005 or FY 2006-07	M.L. 2007 or FY 2008	M.L. 2008 or FY 2009	M.L. 2009 or FY 2010	M.L. 2010 or FY 2011

VIII. ACQUISITION/RESTORATION LIST: N/A

IX. MAP(S): N/A

X. RESEARCH ADDENDUM: N/A

XI. REPORTING REQUIREMENTS:
Periodic work plan status update reports will be submitted not later than January 2012, July 2012, January 2013 and July 2013. A final report and associated products will be submitted not later than between June 30 and August 1, 2014 as requested by the LCCMR.

Attachment A: Budget Detail for M.L. 2011 (FY 2012-13) Environment and Natural Resources Trust Fund Projects

Project Title: Conservation-Based Approach for Assessing Public Drainage Benefits
Legal Citation:
Project Manager: Al Kean, Chief Engineer, BWSR
M.L. 2011 (FY 2012-13) ENRTF Appropriation: $150,000
Project Length and Completion Date: January 2014
Date of Update:

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Activity 1 Budget	Amount Spent	Balance	Activity 2 Budget	Amount Spent	Balance	Activity 3 Budget	Amount Spent	Balance	TOTAL BUDGET	TOTAL BALANCE
BUDGET ITEM	***Inventory runoff based assessment methods, prepare associated interim report, and coordinate.***			***Develop technical framework for runoff based assessment method, prepare associated interim report, and coordinate.***			**Test the framework method on a case study drainage system and present project results.**				
Professional/Technical Contracts Contract with University of Minnesota for 1 research associate (RA) and 1 graduate research assistant (GRA) at approx. 0.4 FTE ($72,000) and 0.7 FTE ($77,000) to perform project investigation, development, reporting and presentation work under the in-kind supervision of Prof. Dr. Bruce Wilson and Assoc. Prof. Dr. Gary Sands.	6,000	0	6,000	129,000	0	129,000	14,000	0	14,000	149,000	149,000
Travel expenses in Minnesota Mileage, lodging, meals for meetings, presentations and field work by UMN RA and/or GRA. ($0.50/mi. or UMN plan)							1,000		1,000	1,000	1,000
COLUMN TOTAL	**$6,000**	**$0**	**$6,000**	**$129,000**	**$0**	**$129,000**	**$15,000**	**$0**	**$15,000**	**$150,000**	**$150,000**