


**Minnesota Pollution
Control Agency**

 520 Lafayette Road North
St. Paul, MN 55155-4194

Federal Section 319 Project Work Plan

Doc Type: Contract/Grant

MPCA Use Only	
Swift #:	92819
CR #:	8588

Project Title: Greater Blue Earth River Basin Drainage Partnership

1. Project Summary:

Organization: Greater Blue Earth River Basin Alliance (GBERBA)
Contractor contact name: Kay Gross
Title: GBERBA Administrative Coordinator
Address: 339 9th Street
 Windom, MN 56101
Phone: (507) 831-1153 ext. 3
Fax: (507) 831-2928
E-mail: Kay.Clark@windomnet.com

Subcontractor(s)/Partner(s):

Organization: Blue Earth, Brown, Cottonwood, Faribault, Freeborn, Jackson, Le Sueur, Martin, Watonwan, and Waseca Counties
Type of organization: Local Drainage Authorities/Staff and Soil & Water Conservation Districts
Project manager: Kay Gross
Address: 339 9th Street
 Windom, MN 56101
Phone: (507) 831-1153 ext. 3
Fax: (507) 831-2928
E-mail: Kay.Clark@windomnet.com

MPCA contact(s):

MPCA project manager: Paul Davis
Title: Southwest Watershed Project Manager
Address: 12 Civic Center Plaza, Suite 2165
 Mankato, MN 56001
Phone: (507) 344-5246
Fax: (507) 389-5422
E-mail: Paul.A.Davis@state.mn.us

Major watershed(s):

Major watershed/HUC Code: Blue Earth 07020009, Le Sueur 07020011, Watonwan 07020010
Latitude/Longitude for project: 43.865239, -95.117127
County: Blue Earth, Brown, Cottonwood, Faribault, Freeborn, Jackson, Le Sueur, Martin, Watonwan, and Waseca

Project start/End dates: January 25, 2016- August 31, 2019

Project Funding Type (check one):

Section 319 Development, Education or Research TMDL Implementation

Grant Amount: \$145,600.00

Proposed Cash Match Funds: \$104,000.00

Proposed In-kind Match Funds: \$25,600.00

Proposed Loan Funds: \$0

Total project cost: \$275,200.00

The following six questions refer to the lists on the Minnesota Pollution Control Agency (MPCA) website under “Semi-Annual Budgeting and Reporting Forms” at <http://www.pca.state.mn.us/index.php/water/water-types-and-programs/water-nonpoint-source-issues/clean-water-partnership/reporting-requirements-for-clean-water-partnership-section-319-and-clean-water-fund-projects.html>

Best Management Practices (BMPs): Grade Stabilization Structure (side-inlet control)

Primary and Secondary Categories of Pollution:

	Primary	Secondary	Others
Category (name only)	Agriculture	Non-irrigated crop production	

Nonpoint Source (NPS) Functional Category:

	Primary	Secondary	Others
Category (name only)	BMP Design/Implementation	Sediment Control	

Waterbody type: 99 : County and Judicial Drainage Systems

Type of pollutant(s) (use name, not code #s): Sedimentation-Siltation, Dissolved Oxygen (Low), Alteration (Flow)

Ecoregion: Western Corn Belt Plains

2. Statement of Problems, Opportunities, and Existing Conditions

As of 2010, thirty-nine stream reaches in the Greater Blue Earth River Basin (GBERB) were listed as impaired for turbidity. Located in Southern Minnesota, the GBERB consists of the Blue Earth, Le Sueur, and Watonwan major watersheds. Agricultural row crops dominate the landscape with 85% of the land use in the basin. Not only are the DNR protected waters conveying water but so are the additional 719 miles of public open ditches that extend into headwater areas. Achieving water quality goals in the 39 impaired stream reaches of the GBERB requires protection of ditches in headwater areas.

Agriculture drives the economy of Southern Minnesota and productive farming is greatly dependent on adequate drainage. The subsurface and surficial drainage network of the region relies on deep, wide ditches that conduct water away from cultivated fields. Most of the public drainage systems were established by hand over 100 years ago, and today these are the same structures that are being utilized to convey exponentially more water than they were originally designed for. The drainage area of the Blue Earth River has almost doubled due to extensive tile drainage of depressional areas that formerly stored surface runoff. The fact that the contributing volume of water added to the drainage system has increased ultimately means that bank erosion (both in-ditch and in-river) is occurring more than historically shown.

When open drainage ditches were created, the spoil from the excavation was often spread next to the ditch in a spoil bank. As ditches are periodically cleaned out, excavated material continues to be piled next to the ditch making the spoil bank higher. In many instances this spoil bank can prevent overland surface stormwater flow in low areas from entering the ditch. In this case, side inlet pipes are dug through the spoil bank to direct water into the open ditch. Unfortunately, the past and current design of these structures outlet directly at the field surface conducting tons of soil and field residue annually into the ditch and ultimately the Minnesota River. It is estimated that there are as many as 70,000 side-inlet structures in the state of Minnesota alone.

The purpose of this project is to develop a framework to implement best management practices (BMPs) on ditches in headwater areas utilizing a partnership between drainage staff and GBERBA. By replacing failing side-inlets with an alternative design, we can make strides towards our water quality and water quantity goals. The alternative inlets serve to prevent sediment and phosphorus from washing downstream and the design can also alleviate peak flows by temporarily storing stormwater. Phosphorus is of particular concern for the Lower Minnesota River dissolved oxygen impairment as

described in the Lower Minnesota River Dissolved Oxygen Total Maximum Daily Load Report (<http://www.pca.state.mn.us/index.php/view-document.html?gid=7994>). Practices that can reduce non-point delivery of phosphorus including sediment bound phosphorus will not only improve water quality in the Greater Blue Earth River watersheds but in the Lower Minnesota River as well.

Alternative side-inlets (categorized as grade stabilization structures) are an effective alternative to the classical side-inlet pipe. Instead of a horizontal pipe through the spoil bank, alternative side-inlets may utilize a drop structure with a water quality inlet on the surface. The water quality inlet allows water to temporarily pond, decreasing the stormwater's sediment carrying capacity and downstream peak flows. The protection of these ditches now will have great impacts on water quality in the future. By preventing sediment from entering the ditch, costly ditch clean-out projects will be less frequent. This will allow the ditch substrate and banks to stabilize which can generate greater vegetative coverage and fish habitat while increasing the amount of funds available in the ditch fund for future projects that could further increase the quality of the ditch system. The best management practices promoted and installed as a result of this project are consistent with the practices listed in the Lower Minnesota River Dissolved Oxygen Total Daily Maximum Load Implementation Plan (<http://www.pca.state.mn.us/index.php/view-document.html?gid=8001>; pages 17 - 22).

We feel that this partnership has a high potential for success. This project will work to extend the life of the drainage system, increase water quality, and allow farmers to realize their conservation goals while alleviating the financial burden that can often accompany them. This project will also highlight possibilities for the recently accepted amendment to drainage law stating that before drainage work can be done, the drainage authority must consider alternative measures for soil and water conservation.

3. Goals, Objectives, Tasks, and Subtasks

Goal: Utilize a partnership between GBERBA and Drainage Authorities/Staff to more efficiently deliver conservation and leverage local funds in order to decrease sediment delivery to public water resources via county and judicial ditch systems.

Objective 1: Partnership development between GBERBA and local county drainage authorities/staff to expeditiously implement conservation on county and judicial drainage systems.

Task A: Schedule and attend formal and informal business and informational meetings with GBERBA partners

Subtask 1: Maintain an open dialogue about the interworkings and processes of the respective parties. GBERBA staff and members shall aim to have a general understanding of drainage law the structure of drainage authorities within the GBERB counties. Drainage staff shall aim to have a general understanding of how SWCDs and Counties implement and deliver conservation practices to the landscape.

Subtask 2: GBERBA staff and drainage staff shall reciprocate attendance at respective party meetings.

Responsible Parties: GBERBA, Local Drainage Staff and Local Drainage Authorities

Task B: Develop program policies to implement the BMPs on local ditch systems.

Subtask 1: Maintain a clear understanding of the needs and requirements of all parties involved to develop a program policy that allows for successful BMP implementation on drainage systems.

Subtask 2: Identify a process for establishing criteria for priority project areas.

Responsible Parties: GBERBA Coordinators, Local Drainage Staff, Local Drainage Authorities, and GBERBA/SWCD Staff

Task C: Develop informational materials outlining the developed program policies to disseminate to local partners.

Responsible Parties: GBERBA

Task D: Develop a project contract outline that limits ambiguity and is easily interpreted by all parties involved.

Subtask 1: Outline the process of encumbering funds for projects

Subtask 2: Outline the process of disbursing cost-share funds

Responsible Parties: GBERBA Coordinators and Technicians

Objective 1 Timeline: January 25, 2016 to July 31, 2019

Objective 1 Cost: In-Kind: \$4,400.00

Total: \$4,400.00

Objective 1 Deliverables: Program policy, informational handouts, partnership agreement document, cost-share contract document

Objective 2: Solicit and acquire projects that fit the policy developed in Objective 1.

Task A: Prioritize projects based on need and water quality benefit

Responsible Parties: Local Drainage, GBERBA/SWCD, Drainage Staff

Task B: Approve identified priority projects for funding

Subtask 1: Drainage Authority reviews and approves prioritized projects for funding

Subtask 2: GBERBA Technical committee reviews and recommends projects for funding.

Subtask 3: GBERBA Policy board reviews the Technical committee recommendation and approves projects for funding.

Responsible Parties: Local Drainage Staff, Local Drainage Authorities, GBERBA/SWCD, GBERBA coordinators.

Objective 2 Timeline: March 1, 2016 to March 31, 2019

Objective 2 Cost: Grant: \$3,250.00
In-Kind: \$2,750.00
Total: \$6,000.00

Objective 2 Deliverables: 25-35 prioritized project locations, with pictures, maps, and project estimates.

Objective 3: Design and engineer best management practices

Task A: Adapt existing BMP designs to engineer practices to meet program goals

Subtask 1: Work to develop a standardized design that can be implemented in a wide-variety of areas and situations.

Subtask 2: Take into account landowner needs when designing the placement of the practice.

Responsible Parties: Drainage Engineers, Local Drainage Staff, Technical Service Providers, GBERBA/SWCD staff.

Objective 3 Timeline: April 1, 2016 to May 31, 2019

Objective 3 Cost: Grant: \$17,550.00
In-Kind: \$12,250.00
Total: \$29,800.00

Objective 3 Deliverables: Alternative side-inlet design criteria

Objective 4: Implement conservation drainage BMP installation

Task A: Construct conservation drainage projects according to design specifications

Subtask 1: A certified Technical Service Provider certifies that the completed project was done to approved specifications and submit an as-built as needed.

Subtask 2: Local Drainage Authority reviews and approves payment based on pre-determined cost-share rate

Subtask 3: GBERBA Technical committee reviews and recommends payment to GBERBA Policy Board

Subtask 4: GBERBA Policy Board reviews and approves payment

Responsible Parties: Local Drainage Authorities, local drainage staff, drainage engineers, GBERBA staff.

Objective 4 Timeline: May 1, 2016 to July 31, 2019

Objective 4 Cost: Grant: \$104,000.00
Cash Match: \$104,000.00
Total: \$208,000.00

Objective 4 Deliverables: 25-35 practices installed

Objective 5: Meet management and administration requirements

Task A: Project administration including submittal of monthly coordinator reports to GBERBA Technical Committee and Policy Board outlining progress on current grant activities

Responsible Parties: GBERBA

Task B: Semi-annual reporting and invoicing requirements

Responsible Party: GBERBA

Task C: Report on completed projects in Elink

Responsible Party: GBERBA

Task D: Submit the final MPCA report

Responsible Party: GBERBA

Objective 5 Timeline: January 25, 2016 to August 30, 2019

Objective 5 Cost: Grant: \$20,800.00
In-Kind: \$6,200.00
Total: \$27,000.00

Objective 5 Deliverables: Written monthly reports, semi-annual reports, and final report.

4. Measurable Outcomes

An alternate side-inlet can utilize a drop structure with a water quality inlet to improve water quality and quantity. The water quality inlet allows stormwater to temporarily pond, decreasing the water's sediment carrying capacity by as much as 95%. Twenty-seven shovel-ready projects will reduce peak downstream flows and annually prevent 27 tons of soil and sediment and 27 pounds of phosphorus from entering ditches. The trash guard of the water quality inlet also prevents field residue from entering the ditch. Additional water treatment (nitrogen) is likely with the setting of the water quality inlet in the grassed buffer of the drainage ditch. Funds for an additional 13 projects (additional estimated reductions of 13 tons/year of soil & sediment and 13 lbs/year of phosphorus) are also being requested as new critical source areas are identified.

Not only will this project produce immediate improvements in water quality, but it will grow and solidify a partnership between GBERBA and drainage staff in the basin. This partnership will open the door for communication between landowners with drainage issues and technical staff with the know-how to meet their natural resource conservation needs. Replacing failing side inlets with a more conservation-minded design is a fairly new idea. However, the more installations that occur, the more landowners will observe and understand their function and the more that drainage staff will recognize when they should be implemented.

The true successes of this project will not be measured by pollutant reductions per se, but by the willingness of drainage authorities to adopt the process of repairing ditch structures with more conservation-minded practices. The project will be seen as a success if drainage authorities and landowners understand and approve of innovative conservation practices on open ditches. Upon success of this realization, the developed partnership of GBERBA and drainage staff will expand to work on more diverse conservation projects on agricultural drainage and provide a framework for other regions in the Minnesota River Basin to initiate their own efforts.

5. Project Budget (See attachment A - Budget)

6. Gantt charts (See attachment A - Gantt)