

**Environment and Natural Resources Trust Fund
2010 Request for Proposals (RFP)**

LCCMR ID: 035-A3

Project Title:

Mapleton Area Agricultural/Urban Runoff Water Quality Treatment Analysis

LCCMR 2010 Funding Priority:

A. Water Resources

Total Project Budget: \$ \$485,000

Proposed Project Time Period for the Funding Requested: 4 years, 2010 - 2014

Other Non-State Funds: \$ \$400,000

Summary:

The project will improve water quality, enhance ecological value, and provide a model/tool for agricultural drainage improvements. The results will be beneficial to producers and the environment on future projects.

Name: Craig Austinson

Sponsoring Organization: Blue Earth County Drainage Authority

Address: 410 Jackson Street
Mankato MN 56001

Telephone Number: (507) 304-4253

Email: Craig.Austinson@co.Blue-Earth.mn.us

Fax: _____

Web Address: www.co.blue-earth.mn.us

Location:

Region: SE

County Name: Blue Earth

City / Township: Mapleton and Beaford Townships

_____ Knowledge Base	_____ Broad App.	_____ Innovation
_____ Leverage	_____ Outcomes	
_____ Partnerships	_____ Urgency	_____ TOTAL

MAIN PROPOSAL

PROJECT TITLE: Mapleton Area Agricultural/Urban Runoff Water Quality Treatment Analysis

I. PROJECT STATEMENT

As crop prices rise from interest in renewable energy and bio-fuels and 100-year old rural drainage systems deteriorate, the market has experienced a surge in demand for new and improved drainage systems. These upcoming agricultural system projects are faced with a unique and valuable opportunity to implement conservation practices while considering agricultural economics. This project serves to provide a demonstration and model for these future projects across the state and focuses on Blue Earth County Ditch 57 (BEC57) (watershed # 32065), which is part of the Le Sueur River Minor Watershed of the Minnesota River Basin Major Watershed in Blue Earth County, Minnesota. This watershed is comprised of agricultural land and the entire City of Mapleton.

The main goals of this project include: 1) improve water quality by reducing soil erosion and nutrient loading by providing storage/treatment, improving drainage, and increasing ditch storage capacity; 2) enhance ecological value and increase critical land and habitat by adding vegetative buffer strips and obtaining conservation status of lands through permanent easements; 3) provide a unique demonstration project dealing with MN drainage laws that have examined alternative strategies that satisfy the collective needs of public waters and property owners by considering both economic and environmental costs and benefits; and 4) develop a tool for landowners, land managers, planners, and conservationists as a model for future agricultural drainage projects across the state as many outdated and failing ditch systems seek funding for upgrade and repair.

Through meetings with local stakeholders, property owners, and agricultural producers, three main strategies were identified to meet these goals in the BECD57 watershed by constructing storage/treatment along with the drainage improvements. One strategy includes increased channel treatment within an improvement to a portion of open ditch. Another strategy is to construct an approximate 7-acre storage basin to hold runoff from the agricultural and urban areas in order to temporarily reduce peak flows in the system and off-treatment of runoff. The final strategy includes restoring a wetland basin to provide storage and treatment for the system. Monitoring and analysis of the development and implementation of the project will include flow and turbidity, Total Suspended Solids, and the effects on nitrogen, phosphorus, e.coli bacteria, pH, DO, Chlorophyll-a, and BOD.

By achieving these goals through these strategies, the project will create a unique opportunity to potentially increase yield for producers while also improving drainage and water quality, increase land and habitat by providing storage/treatment areas, and improve the overall quality of the Minnesota River Basin.

II. DESCRIPTION OF PROJECT RESULTS

Result 1: Provide storage and treatment for agricultural and urban runoff to improve water quality

Budget: \$190,000*

Deliverable

- | | Completion Date |
|---|------------------------|
| 1. Construct In Channel treatment in a new drainage ditch | November 31, 2010 |
| 2. Construct a surge basin for storage and treatment of agricultural and urban runoff | November 31, 2010 |
| 3. Restore a 40 acre wetland basin which will store and treat Agricultural runoff | November 31, 2010 |

* \$721,800 will be paid for by others to construct portions of the system

Result 2: Monitor and Analyze how the proposed strategies improve water quality and reduce peak flows

Budget: \$260,000

Deliverable

- | | Completion Date |
|---|------------------------|
| 1. Develop Base Flow Report in a new drainage ditch | August 30, 2010 |
| 2. Complete assessment of multiple treatment options and how they benefit a diverse watershed and improve water quality | February 28, 2014 |
| 3. Provide model for future Drainage Projects in the Minnesota River Basin | February 28, 2014 |

Result 3: Provide documentation on how the drainage/treatment system could be incorporated into Drainage Law
Budget: \$10,000

Deliverable

1. Provide Report to Legislature on how treatment/storage options could be incorporated into new Drainage Law

Completion Date

February 28, 2014

Result 4: Provide Outreach, Education, Field Days, and Website Development

Budget: \$25,000

Deliverable

1. Provide five field days at site during and after construction inviting county drainage authorities and landowners
2. Provide multiple presentations to County Drainage Authorities, Watershed Organizations, and other organizations to demonstrate how model can be duplicated on other drainage systems
3. Post Results, Design Model, and provide Technical Memorandum on Partner Websites including updates during monitoring timeframe

Completion Date

February 28, 2014

February 28, 2014

February 28, 2014

III. PROJECT STRATEGY AND TIMELINE

A. Project Partners

Blue Earth County Drainage Authority – Project Management, Project Administration, review and approval of project, act as funding mechanism for drainage improvements

Minnesota Department of Agriculture – Co-Sponsor – Assist with Design, Monitoring, Technical Memorandum, and Presentations

Minnesota Department of Natural Resources (DNR) – Provide Review of the Proposed System

Land Owners in Blue Earth County Ditch No. 57 – Will benefit and pay majority of project costs

I&S Group, Inc. (Acting as engineer for the Blue Earth County Drainage Authority) – Provide Design, Assistance with Project Administration, Monitoring, and Technical Memorandum, and Presentations

Blue Earth Soil and Water Conservation District – Provide Review and Funding for 7 acre surge basin

Greater Blue Earth River Basin Alliance (GBERBA) – Provide Review and Funding for 7 acre surge basin

Natural Resources Conservation Service (NRCS) – Provide Funding for Wetland Restoration Project

B. Project Impact

The Blue Earth County Ditch No. 57 (BECD57) system drains into the Big Cobb River, which drains into the Le Sueur River, which drains into the Blue Earth River just before the Blue Earth River converges with the Minnesota River, which eventually drains into Lake Pepin and then the Gulf of Mexico. The BECD57 Watershed also encompasses 6,000 acres including the entire City of Mapleton (population 1,662). The Minnesota River and its tributaries are impaired water for turbidity, aquatic life, fecal coliform, aquatic recreation, aquatic consumption, etc. The project seeks to impact the area by improving water quality in the Minnesota River Basin by providing storage and treatment of both agricultural and urban runoff in the Big Cobb River Watershed while increasing yield and reducing flooding in portions of the watershed. The project will also develop a model that could be incorporated into new Drainage Law and utilized on deteriorating drainage systems as they need to be updated. A reduction of total suspended solids, nitrogen and phosphorus runoff from this area is expected. If results are positive this model utilizing a multiple treatment options could be utilized on other agricultural systems and could be incorporated into new ditch legislature.

C. Time

The funding would be needed in 2010 allowing monitoring to begin in the summer so the base flow and base information can be determined prior to construction beginning in the fall of 2010. Easement acquisition would also take place in 2010. The construction funding would be needed in summer 2010 with construction being completed in winter 2010-2011. Monitoring and analysis would run through 2013, with a final report/technical memorandum being completed in early 2014.

D. Long-Term Strategy

With results being anticipated in 2014, after 4 years of data, the monitoring of the system could continue indefinitely. This could be funded by others or taken up by another public entity or university program to determine the longer term effects of the system. If successful, this system could also be duplicated in other portions of the Minnesota River Basin, and also additional projects in this watershed could be added.

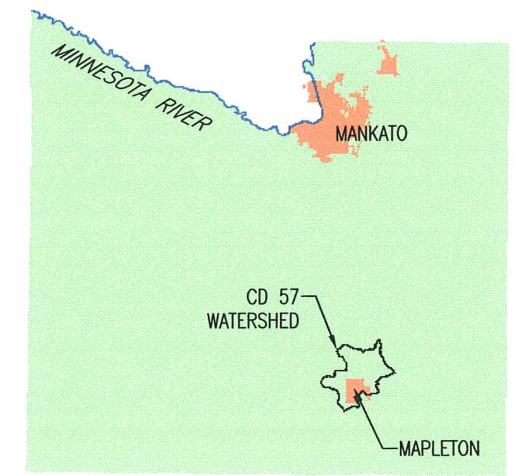
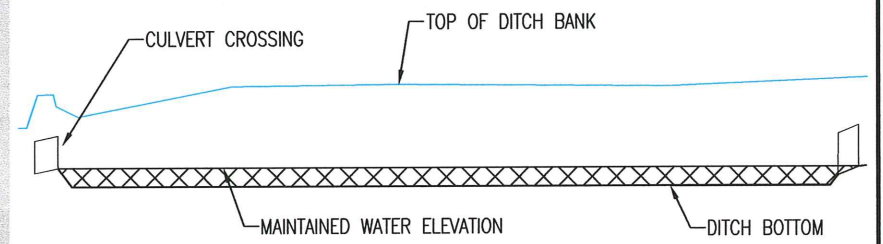
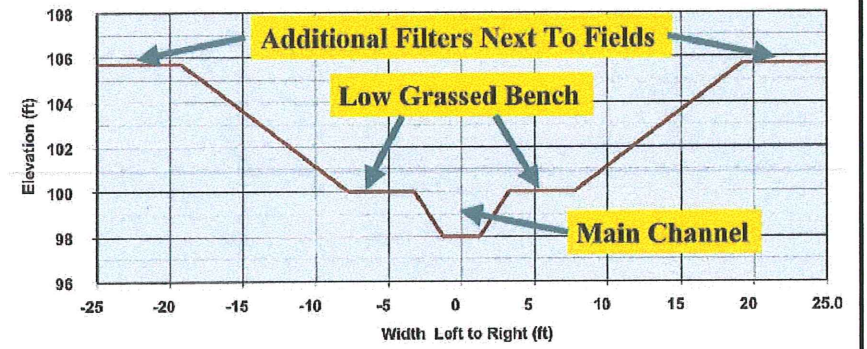
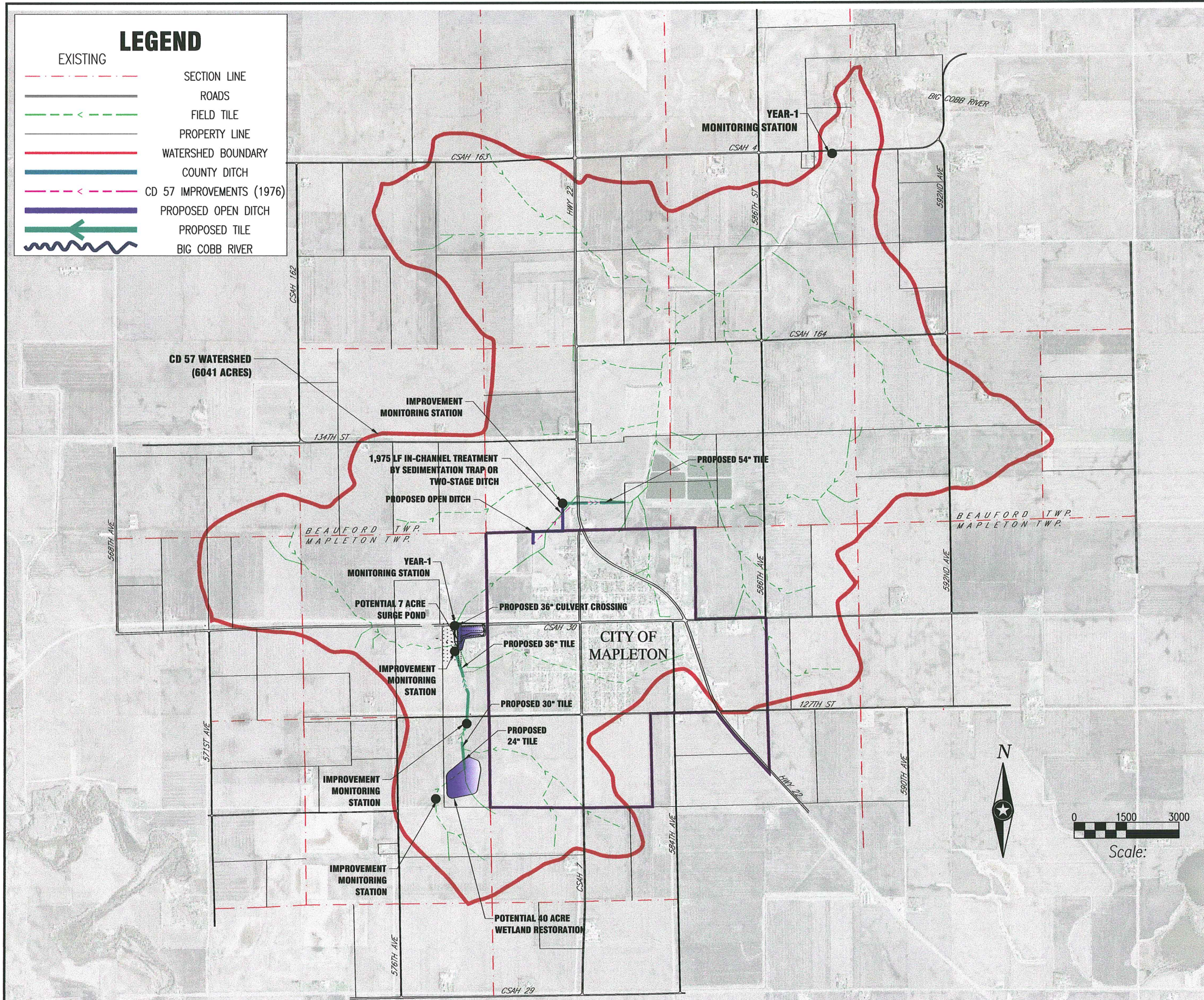
Project Budget - Mapleton Area Agricultural/Urban Runoff Water Quality Treatment Analysis

IV. TOTAL PROJECT REQUEST BUDGET

BUDGET ITEM	AMOUNT	% FTE
Personnel: Minnesota Department of Agriculture - Partner/In Kind Support	\$ -	5%
Blue Earth County Drainage Authority and I&S Group (Acting as Drainage Authorities Engineer) - Project Management, Design, Monitoring, Project Administration, Preparation of Final Reports	\$ 200,000	5%
Contracts: With Installer of Control Structures and Monitoring Equipment	\$ 10,000	
With Grading Contractor to build in Channel Treatment System and Surge Basin	\$ 75,000	
With Seeding Contractor for Seeding of Vegetative Strips along 4.1 Miles of Existing Open Ditch with Alternate Seed Mixes Potentially Used as Bio-Mass Alternatives in the Future	\$ 60,000	
Equipment/Tools: Monitoring Equipment, Control Structures, Data Loggers, and Sample Testing	\$ 85,000	
Acquisition (Including Easements): 40 Acres NRCS for Wetland Restoration by others	\$ -	
4 Acres For In-Channel Treatment	\$ 20,000	
7 Acres for Surge Pond Construction	\$ 35,000	
Restoration: 40 Acres by NRCS WRP program	\$ -	
Other:	\$ -	
	\$ -	
TOTAL PROJECT BUDGET REQUEST TO LCCMR	\$ 485,000	

V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
Remaining \$ From Previous Trust Fund Appropriation (if applicable): <i>How much Trust Fund money remains not spent or legally obligated from any previous Trust Fund appropriation for any directly related project of the proposing project, project manager, or project organization? Specify the appropriation.</i>	\$ -	<i>Unspent or Not Legally Obligated</i>
Other Non-State \$ Being Leveraged During Project Period: <i>What additional non-state cash \$ will be spent on the project during the funding period? For each individual sum, list out the source of the funds, the amount, and indicate whether the funds are secured or pending approval.</i>	\$ -	<i>Secured or Pending</i>
Other State \$ Being Spent During Project Period: Cobb River Watershed Program for construction of surge basin	\$ 26,800	<i>Pending</i>
Land Acquisition and Construction of 40-acre Restored Wetland	\$ 400,000	<i>Pending</i>
In-kind Services During Project Period: Land Owner Contribution to Treatment System	\$ 30,000	<i>Pending</i>
Landowner Acquisition of Buffer Strip Along Existing Open Ditch	\$ 85,000	
Landowner Construction of Drainage System	\$ 380,000	
Other Funds Total	\$ 921,800	



BLUE EARTH COUNTY, MINNESOTA

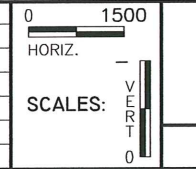
Eng. Proj. No. 07-10748 SAP Proj. No. _____
 City Proj. No. _____ Federal Proj. No. _____
 County Proj. No. _____ CAD File Name 10748 DITCH&TILE OPT
 CSAH 06/21/2009



I HEREBY CERTIFY THAT THIS PLAN WAS CREATED BY ME OR UNDER MY CLOSEST SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE _____ LIC. NO. _____

REVISIONS



MAPLETON AREA AGRICULTURAL/URBAN RUNOFF WATER QUALITY ANALYSIS
 COUNTY DITCH NO. 57
 BLUE EARTH COUNTY, MINNESOTA

SHEET 1 LCOMR ID: 035JA3

CRAIG AUSTINSON

Blue Earth County Ditch Manager



SUMMARY

Craig started with Blue Earth County in 1998 and became their ditch manager in 1999. Craig manages repairs, improvements, and assessments for 110 ditch systems throughout Blue Earth County. During Craig's tenure as Ditch Manager there has been numerous repairs and improvements that have taken place.

As a member of the Board of Water and Soil Resources, Craig has helped to implement conservation drainage practices into many ditch improvements. Craig has also developed practices for running ditch projects from start to finish. He has presented this information to many other counties and organizations.

Prior to being the Ditch Manager for Blue Earth County, Craig was a bank manager.

Blue Earth County Drainage Authority
Blue Earth County Courthouse
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