

Environment and Natural Resources Trust Fund 2009 Phase 2 Request for Proposals (RFP)

LCCMR ID: 063-B2

Project Title: Mapleton Area Agricultural/Urban Runoff Water Quality Treatment Analysis

Total Project Budget: \$ \$485,000

Proposed Project Time Period for the Funding Requested: 4 years, July 2009 to February 2013

Other Non-State Funds: \$ \$495,000.00

Priority: B2. Reduce Peak Water Flows

First Name: Chuck

Last Name: Brandel

Sponsoring Organization: I&S Group, Inc.

Address: 1409 North Riverfront

Mankato

MN

56001

Telephone Number: 507-387-6651

Email: chuck.brandel@is-grp.com

Fax: 507-387-3583

Web Address: www.is-grp.com

Region:

SE

County Name:

Blue Earth

City / Township:

Mapleton and Beauford Townships

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.

Main Proposal: 0908-2-025-proposal-2009_main_proposal-final.doc

Project Budget: 0908-2-025-budget-Mapleton RFP_2009_Project Budget.xls

Qualifications: 0908-2-025-qualifications-Chuck Brandel Resume 9-08 and Firm Overview.pdf

Map: 0908-2-025-maps-1 Page Map of BECD 57.pdf

Letter of Resolution:

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 (BECD57) (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 will 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

1. Construct In Channel treatment in a new drainage ditch
2. Construct a surge basin for Storage & Treatment of Agricultural & urban runoff
3. Restore a 20 acre wetland basin which will store and treat Agricultural runoff

Completion Date

October 31, 2010
October 31, 2010
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 improves water quality and reduces peak flows

Budget: \$260,000

Deliverable

1. Develop Base Flow Report in a new drainage ditch
2. Complete assessment of multiple Treatment options and how they Benefit a diverse watershed and Improve water quality
3. Provide model for future Drainage Projects in the Minnesota River Basin

Completion Date

January 31, 2010
February 28, 2013
February 28, 2013

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, 2013

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

Budget: \$25,000

Deliverable

1. Provide 5 field days at site during and after construction inviting County Drainage Authorities and Land owners
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 Technical Memorandum on Partner Websites, Including updates during monitoring time frame

Completion Date

February 28, 2013

February 28, 2013

February 28, 2013

III. PROJECT STRATEGY AND TIMELINE

A. Project Partners

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

Blue Earth County Drainage Authority – review and approval of project, act as funding institution for drainage improvements

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

I&S Group, Inc. – Project Management, Provide Design, 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 to the Gulf of Mexico. The BECD57 watershed also encompasses 6,000 acres including the entire city of Mapleton (population 1662). The Minnesota River and its tributaries are impaired water for turbidity, aquatic life, fecal coliform, aquatic recreation, aquatic consumption, ect. The project impacts are to improve water quality and 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 reduce flooding in portions of the watershed. Another project impact is to 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 2009 to begin monitoring in the summer to determine the base flow and base information prior to construction beginning in spring 2010. Also easement acquisition would take place in 2009. The construction funding would be needed in early 2010 with construction being completed in fall/winter 2010. Monitoring and analysis would run through 2012, with a final report/technical memorandum being completed in early 2013.

D. Long-Term Strategy

With results being anticipated in 2013 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. 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%
I&S Group - 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): 20 Acres NRCS for Wetland Restoration by others	\$ -	
4 Acres For In-Channel Treatment	\$ 20,000	
7 Acres for Surge Pond Construction	\$ 35,000	
Restoration: 20 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 20 acre Restored Wetland	\$ 200,000	<i>Pending</i>
In-kind Services During Project Period: Land Owner Contribution to Treatment System	\$ 30,000	<i>Pending</i>
Land Owner Acquisition of Buffer Strip Along Existing Open Ditch	\$ 85,000	
Land Owner Construction of Drainage System	\$ 380,000	
Other Funds Total	\$ 721,800	

Summary:

As the lead development engineer, Chuck Brandel has planned and designed numerous residential, commercial, and industrial developments and completed several stormwater management reports for large and small watersheds. Chuck's responsibilities include project management, concept planning, cost estimating, and design. He oversees the implementation of planning studies into construction documents.

Since 2004, Chuck has been the project manager for all Blue Earth County Ditch projects.

Registration:

Licensed Professional Engineer
 MN (43359), NE (12061), and IA (18992)

Education:

Bachelor of Science in Civil Engineering
 Iowa State University — Ames, IA

Selected Experience:

- Blue Earth County Ditches 29, 77, 56, 35, 52, 25, 48, and 15
- Watonwan County Ditches 62 and 9
- MN Department of Agriculture - Mower County Surge Basin Design
- Natural Conservancy - Mower County Judicial Ditch 26, Two-Stage Ditch Design
- University of Minnesota SW Research & Outreach Center Agricultural Prairie Water Quality Analysis Project
- University of Minnesota SW Research & Outreach Center Wetland Construction for Treatment of Agricultural Run-off
- Wilson Creek & Bassett Pond Stormwater Study - Mankato, MN
- Country Woods Area Southeast Trunk Sewer & Watermain - Mankato, MN
- Mankato Heights Area Stormwater Management Pond - Mankato, MN
- Sohler Property Stormwater Report & Master Plan - Mankato, MN

I&S is a progressive design firm established in 1973 by two engineers, Ken Surprenant and Gene Isakson. Their goal was to provide innovative Civil, Structural, and Mechanical Engineering services to clients on time and within budget. As their clients' needs grew, I&S added Electrical Engineering, Architecture, Interior Design, Landscape Architecture, Land Surveying, and Natural Resources Management services.

I&S has grown steadily over the past ten years in our number of employees, clients, and projects. In January of 2004, I&S opened an office in Faribault, Minnesota to better serve clients in the rapidly growing I-35 Corridor. The success of the firm can be attributed to positive client relations, talented and dedicated professional staff members, as well as our ability to provide creative solutions and excellent project management services from 'start to finish'.

Established: 1973

Legal Status: S-Corporation

Principals:

Chad Surprenant, PE
 Ken Surprenant, PE
 Mary Jo Surprenant

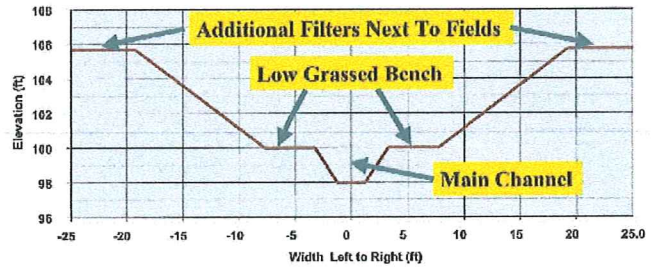
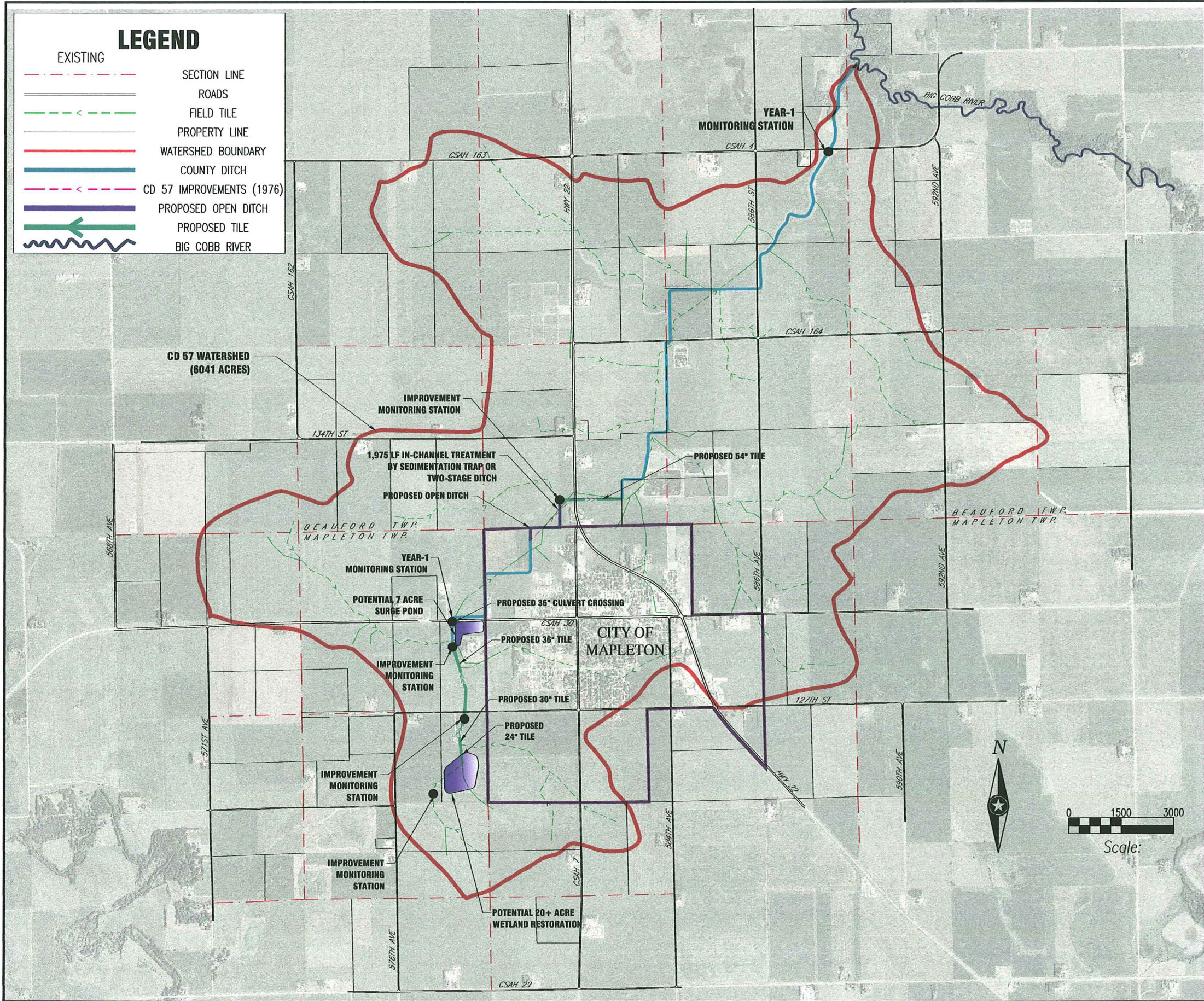
Chuck Brandel, PE
 Jason Hoehn, PE, SE

Brian Gjerde, PE
 Mark Cipos, AIA, CID

Staff Breakdown by Discipline:

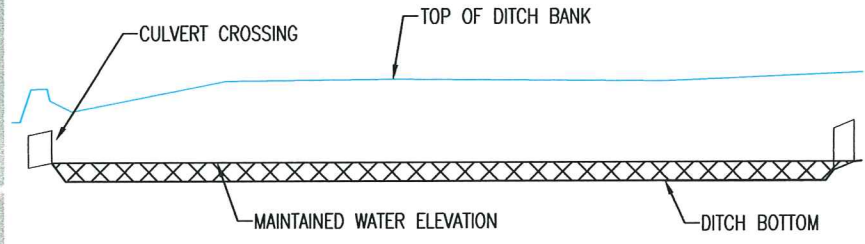
Civil Engineering	18
Land Surveying	10
Landscape Architecture	01
Natural Resources Management	03
Architecture	19
Interior Design	02
Structural Engineering	05
Mechanical/Electrical Engineering	08
Support	11





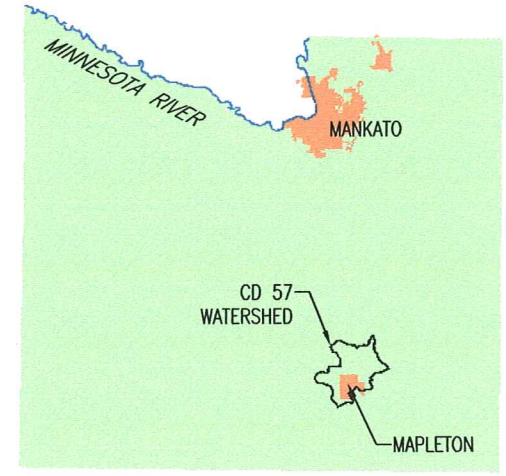
TWO-STAGE DITCH EXAMPLE

N.T.S.



SEDIMENTATION TRAP EXAMPLE

N.T.S.



BLUE EARTH COUNTY, MINNESOTA

PLOT DATE: 9/30/2008

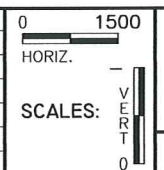
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City Proj. No.		Federal Proj. No.	
County Proj. No.		CAD File Name	10748 DITCH&TILE OPT
CSAH Proj. No.			



Offices in Mankato and Faribault, Minnesota
Mankato: 507-387-6651
Faribault: 507-331-1500
Web: www.is-ea.com

I HEREBY CERTIFY THAT THIS PLAN WAS CREATED BY ME OR UNDER MY DIRECT 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	LCCMR ID: 063-B2