

WFDMR TMDL Implementation Project

Final Report

Jan Voit

August 31, 2015

Project Sponsor:

Heron Lake Watershed District

Contributing Sponsors:

Nobles, Jackson, Murray, Cottonwood, and Pipestone Counties

Nobles, Jackson, Murray, Cottonwood, Martin, and Pipestone Soil and Water Conservation Districts

Minnesota Soybean Growers Association

Board of Water and Soil Resources

Department of Natural Resources

Grant Project Summary

Project title: WF Des Moines River TMDL Implementation Project
Organization (Grantee): Heron Lake Watershed District
Project start date: 10/1/2011 Project end date: 08/31/2015 Report submittal date: 08/31/2015
Grantee contact name: Jan Voit Title: District Administrator
Address: PO Box 345
City: Heron Lake State: MN Zip: 56137
Phone number: 507-793-2462 Fax: 507-793-2253 E-mail: jan.voit@mysmbs.com
Basin (Red, Minnesota, St. Croix, etc.): Des Moines County: Nobles, Jackson, Murray, and Cottonwood

Project type (check one):

- Clean Water Partnership (CWP) Diagnostic
- CWP Implementation
- Total Maximum Daily Load (TMDL) Development
- 319 Implementation
- 319 Demonstration, Education, Research
- TMDL Implementation

Grant Funding

Final grant amount: \$190,248.00 Final total project costs: \$384,543.06
Matching funds: Final cash: \$0.00 Final in-kind: \$149,767.38 Final Loan: \$44,527.68
Contract number: Project ID: 37241 MPCA project manager: Katherine Pekarek-Scott

Executive Summary of Project (300 words or less)

General description of the project area:

Through this grant, the Heron Lake Watershed District (HLWD) and county staff completed a Level III Feedlot inventory of eighty percent of the feedlots in the West Fork Des Moines River (WFDMR) watershed. This was 43 sites in Cottonwood County, 142 sites in Nobles County, 190 sites in Jackson County, and 221 sites in Murray County for a total of 592 sites. The inventory is instrumental to gage the need to address feedlots and ultimately decrease the bacteria concentrations in the watershed.

The Watershed Coordinator hired through the grant promoted the project and sought additional funding for implementation. Project partners hosted a one-day manure management workshop for 31 feedlot owners and operators, distributed 1,102 project brochures, created a website, conducted seven semi-annual meetings, and held five meetings with county feedlot officers (CFOs).

The *WFDMR TMDL Implementation Project Level III Inventory Results* summarizes the objective, methods, results, types of feedlots, feedlot compliance, obstacles, unexpected outcomes, and conclusions. The results show that non-compliant feedlots are located throughout the entire watershed. Every county in the watershed has high-polluting feedlots that need to be addressed to control the E.coli levels in surface waters. The trend continues that the large feedlots expand while small or outdated feedlots have high rates of attrition. A new age of technology and a new generation of conservation-minded farmers are encouraging sound management practices. The summary report was uploaded to the HLWD website, distributed to the CFOs, and shared with Soil and Water Conservation District (SWCD) and Natural Resources Conservation Service (NRCS) staff in the WFDMR watershed.

Five feedlot environmental upgrades were completed, four in Murray County and one in Jackson County. The projects involved four landowners in the WFDMR watershed. In addition, a Clean Water Fund (CWF) grant was secured to implement a feedlot fix in Murray County.

Goals (Include three primary goals for this project.)

1st Goal: Conduct an intensive, onsite inventory and inspection of eighty percent of the feedlots in the watershed through a strong partnership with four counties and the HLWD.

2nd Goal: Increase the knowledge of 50 feedlot operators through a one-day workshop.

3rd Goal: Increase public awareness of the WFDMR TMDL Project through the development of a brochure and website.

Results that count (Include the results from your established goals.)

1st Result: Eighty percent of the feedlots in the watershed were inspected through a strong partnership with four counties and the HLWD.

2nd Result: 31 people attended the manure management workshop – 19 people short of the project goal.

3rd Result: 1,102 brochures were distributed to feedlot owners and operators and a webpage dedicated to the project was developed on the HLWD website.

Picture (Attach at least one picture, do not imbed into this document.)

Description/location: Mason Township Feedlot Fix and Filter Strip

Acronyms (Name all project acronyms and their meanings.)

- AC and TC – Advisory and Technical Committees
 - AU – Animal Units
 - BMPs – Best Management Practices
 - BWSR – Board of Water and Soil Resources
 - CE – civic engagement
 - CFO – county feedlot officer
 - CWF – Clean Water Fund
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- CWP – Clean Water Partnership
 - DHIA – Dairy Herd Improvement Association
 - DNR – Department of Natural Resources
 - DO – dissolved oxygen
 - EAW – Environmental Assessment Worksheet
 - EPA – Environmental Protection Agency
 - EQIP – Environmental Quality Incentives Program
 - FSA – Farm Service Agency
 - GIS – Geographic Information System
 - HEI – Houston Engineering, Inc.
 - HLWD – Heron Lake Watershed District
 - HSPF – Hydrologic Simulation Program Fortran
 - LiDAR – Light Detection and Ranging
 - LMSA – Liquid Manure Storage Area
 - MDA – Minnesota Department of Agriculture
 - MinnFARM – Minnesota Feedlot Annualized Runoff Model
 - MMPs – manure management plans
 - MPCA – Minnesota Pollution Control Agency
 - MVTL – Minnesota Valley Testing Laboratories
 - MWP – Major Watershed Project
 - NPDES – National Pollutant Discharge Elimination System
 - NRCS – Natural Resources Conservation Service
 - P – phosphorus
 - PEBC – Prairie Ecology Bus Center
 - PEDV – Porcine Epidemic Diarrhea Virus
 - PERA – Public Employees Retirement Association
 - RFP – request for proposals
 - RIM – Reinvest In Minnesota
 - SWAG – Surface Water Assessment Grant
 - SWCD – Soil and Water Conservation District
 - SWPTSA – Southwest Prairie Technical Service Area
 - SWROC – Southwest Research and Outreach Center
 - TMDL – Total Maximum Daily Load
 - UM – University of Minnesota
 - WFDMR – West Fork Des Moines River
 - WMP – Watershed Management Plan
 - WRAPS – Watershed Restoration and Protection Strategy

Partnerships (Name all partners and indicate relationship to project)

- Heron Lake Watershed District: project sponsor, project staff, project administration, and inkind contribution
- Board of Water and Soil Resources: attendance at semi-annual meetings as inkind contribution
- Cottonwood County: project staff and inkind contribution
- Cottonwood SWCD: attendance at semi-annual meetings as inkind contribution
- Department of Natural Resources: attendance at semi-annual meetings as inkind contribution
- Jackson County: project staff and inkind contribution
- Jackson SWCD: attendance at semi-annual meetings as inkind contribution
- Martin SWCD: attendance at semi-annual meetings as inkind contribution
- Minnesota Soybean Growers Association: attendance at semi-annual meetings as inkind contribution
- Murray County: project staff and inkind contribution

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- Murray SWCD: attendance at semi-annual meetings as inkind contribution
 - Nobles County: project staff and inkind contribution
 - Nobles SWCD: attendance at semi-annual meetings as inkind contribution
 - Pipestone SWCD and County: attendance at semi-annual meetings as inkind contribution
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Work Plan Review

1. Work Plan Changes

1.1. Work Plan Change #1: July 26, 2012

HLWD staff met with Katherine Pekarek-Scott, Minnesota Pollution Control Agency (MPCA) on June 28, 2012 to review the grant work plan. Staffing changes and budget needs were the basis for the following changes.

- Objective 1, Task B: changing Water Plan Coordinator to Environmental Office for each of the seven counties. It has been determined that the county feedlot officers and additional environmental office staff in some of the counties will be assisting with the manure management workshop, so the change from specifying the water plan coordinators was needed.
- Objective 3, Task A: changing the end date from December 2014 to August 2015 in the first and seventh bullets. Due to staff changes and that the watershed coordinator did not enroll in the health insurance plan, those funds will be used to extend the watershed coordinator position through 2015.
- Objective 3, Task A: Reducing the watershed coordinator wages and benefits for 2011 by \$2,000. Because the grant was not executed until December 2011, the funds allocated for 2011 wages and benefits were not used. \$2,000 from this task was moved to a line item for training.
- Objective 3, Task A: Adding a line item for training and a budget of \$2,000. CFOs have requested the watershed coordinator take part in a new CFO workshop in 2012. The watershed coordinator will also attend the Board of Water and Soil Resources (BWSR) Academy in 2012, 2013, and 2014. A budget of \$2,000, transferred from what was allocated for 2011 wages, was set to pay for registration fees, hotel stays, and meals per the contracted rate.

1.2. Work Plan Change #2: May 3, 2013

During the planning session for the Manure Management Workshop on April 4, 2013, it was determined that the following budgetary changes were necessary.

- Objective 1, Task B: adding MPCA and University of Minnesota (UM) Extension Service staff as part of the manure management workshop. It has been determined that MPCA and UM Extension staff will be speaking at the manure management workshop, so travel funds were necessary for UM Extension staff.
- Objective 3, Task A: Reducing the watershed coordinator wages and benefits for 2012 by \$198.00. Because the watershed coordinator is not participating in the health care plan, there are funds for benefits that were not expended in 2012. \$198.00 was moved from this task to a line item for travel in Objective 1, Task B.

1.3. Work Plan Change #3: July 17, 2013

During the process of planning the Manure Management Workshop, it was determined that the following changes were needed.

- Objective 1, Task B: adding additional funds for advertising the manure management workshop. It has been determined that the newspaper advertising costs were greater

than originally projected. The costs for printing and mailing the newsletter were less than originally projected.

- Objective 1, Task B: Reducing the newsletter postage costs by \$400.00 to \$370.00 \$4,000.00 was moved from this task to the line item for newspaper.

1.4. Amendment #1: January 6, 2015

The Original Grant Contract was amended to rebudget between tasks, decrease the inkind, and add loan dollars. The total contract amount remains the same. Details can be found in the work plan narrative.

- Objective 1. Task B. The amount for travel was reduced from \$198.00 to \$185.32, a reduction of \$12.68.
- Objective 2. Task B. The amount allocated for brochure publication was \$900.00. The actual cost was \$526.94, a reduction of \$373.06.00.
- Objective 2. Task D. \$1,236.24 was moved to this new task for mailing manure management information packets to landowners.
- Objective 3. Task A. The amount originally allocated for wages was reduced from \$168,580.00 to \$135,000.00, which totaled \$33,580.00.
- Objective 5. Task A. \$32,729.50 was moved to a new objective for construction of feedlot environmental upgrades.
- Project inkind was reduced from \$163,835.00 to \$149,503.75, a reduction of \$14,331.25. This was done to accurately reflect inkind contributions from project partners.
- Objective 4. Task A. \$44,527.68 in low interest loan funds were added to the project to assist in meeting inkind match requirements.

1.5. Change Order 4: July 20, 2015

- Objective 2 Task A Website: move \$112.62 from Objective 3 Task A Travel to cover the website hosting cost.
- Objective 2 Task D Landowner Newsletter: move \$371.35 from Objective 3 Task A Travel to cover the bulk publication and mailing costs for a newsletter summarizing project results. Reallocate the remaining \$74.74 from Objective 2 Task D Landowner Mailing to Landowner Newsletter.
- Objective 5 Task A Feedlot Environmental Upgrades: move \$9,252.10 from Objective 3 Task A Wages and Benefits to cover the costs of feedlot fixes.

2. Activities and Tasks

Objective 1: Feedlot Management and Education

Task A: Conduct Level III Inventory

On November 21, 2011, the HLWD hosted a Project Development meeting with Rock County, MPCA, and DNR staff to learn about the components of a Level III inventory as well as Rock County's feedlot inventory successes and failures. Recommendations were given to assist in the inventory component of the grant. Meeting minutes can be found in **Appendix 1**.

On December 8, 2011, the HLWD hosted a project Kickoff Meeting. The purpose of the meeting was to discuss the grant work plan and the intricacies of conducting the Level III feedlot inventory with project partners. Staff from Cottonwood SWCD, Nobles County, Jackson County,

Murray County, DNR, MPCA, and the HLWD was in attendance. Meeting minutes can be found in **Appendix 1**.

The Watershed Coordinator visited with the CFO to schedule feedlot inspections approximately two weeks prior to conducting the inspections. During this visit, the inspection date was scheduled and the inspection sites were selected. Depending on the feedlot sizes, types, and locations, four to ten inspections were scheduled for a single day. The CFO printed out the Water Quality Feedlot Detail Report from the MPCA’s Delta database to gather information about the feedlots. Letters were drafted to send to each producer, notifying them of the date and time of their inspection. The TMDL project brochure was also included with the letter and both were mailed to the feedlot producers. Some CFOs preferred not to schedule a time for the individual inspections to offer more flexibility during the day of the inspections. Sites were viewed from county GIS programs to gather information about the layout of the sites and a map of the feedlot was printed. Some CFOs preferred to also drive by the sites prior to the inspection. A four-week rotation was established with the counties to ensure CFOs were not overwhelmed with the increased work load. Detailed information regarding feedlot inspections can be found in **Appendix 7**. **Table 1** contains a summary of the number and types of feedlots inspected by county.

Table 1. Number and Types of Feedlots Inspected

Type of feedlot	County				Total	Percent
	Cottonwood	Jackson	Murray	Nobles		
Open feedlot	32	100	137	56	325	54%
Deactivated	0	17	14	46	77	13%
No open feedlots	5	22	22	8	57	10%
Zero discharge	6	49	46	29	130	22%
Under 10 animal units	0	2	2	3	7	1%
Total	43	190	221	142	596	100%

Lauren Michelsen met with Lloyd Kalfs, Cottonwood CFO on January 11, 2012 to select feedlot sites within the WFDNR watershed in Cottonwood County and attended Cottonwood County Comprehensive Local Water Management Plan revision meeting.

A feedlot site visit was arranged on January 19, 2012. The event was held at Steve Salentiny’s farm site in Murray County. In attendance were Al Langseth, Nobles CFO; Ben Crowell, Jackson CFO; Jon Bloemendaal, Murray CFO; Lloyd Kalfs, Cottonwood CFO; Katherine Pekarek-Scott, MPCA; Brent Riess, MPCA; Mike Skoglund and Russ Hoogendorn, SWPTSA; and Margaret Peeters, HLWD. Discussion was held regarding conducting a Level III inventory including inspection form and procedure, MinnFARM and compliance regulations.

A project letter was drafted to inform SWCD and NRCS staff in Nobles, Jackson, Murray, and Cottonwood Counties for a potential influx of feedlot permits. Letters were customized for each county to ensure accuracy. The letter was sent via email on June 8, 2012. Nobles and Cottonwood County were not included because Ed Lenz, Nobles SWCD District Technician and Lloyd Kalfs, Cottonwood CFO and SWCD employee are already fully aware of the project workload. The letter can be found in **Appendix 1**.

Kiel Tschumperlin attended Jackson County Commissioner Meeting on June 26, 2012 at 9:00 am. Jan Voit, HLWD Administrator, delivered the HLWD annual report and Kiel Tschumperlin, WFDNR Watershed Coordinator, provided an overview and updated the county commissioners on the WFDNR TMDL Implementation Project. Ben Crowell, Jackson CFO, was also present at the meeting.

Kiel Tschumperlin attended the Nobles County Commissioner Meeting on July 3, 2012 at 9:00 am. Information on the WFDNR Implementation Plan was given to the commissioners to inform them of the goals and direction of the project.

Kiel Tschumperlin attended the Cottonwood County Commissioner Meeting on July 10, 2012 at 9:30 am. Information on the WFDNR Implementation Plan was given to the commissioners to inform them of the goals and direction of the project. Lloyd Kalfs, Cottonwood CFO was present to answer questions regarding the inspection process. Following the commissioner meeting a feedlot inspection was conducted with Lloyd followed by running a MinnFARM.

Kiel Tschumperlin attended the Murray County Commissioner Meeting on July 17, 2012 at 9:00 am. Information on the WFDNR Implementation Plan was given to the commissioners to inform them of the goals and direction of the project. Jon Bloemendaal, Murray CFO was present. Following the commissioner meeting, a meeting with Jon Bloemendaal was held to choose feedlot inspection sites for the week of July 23–27, 2012. The question of whether feedlot fixes were required under the grant was brought up at this meeting.

Kiel Tschumperlin spoke with Katherine Pekarek-Scott, MPCA on August 1, 2012 at 10:00 am to discuss agenda items for the CFO meeting scheduled for August 7, 2012. When to make feedlot corrections, the process of ranking feedlots, correct protocol for reporting inkind, how the inspection process has been going thus far, and potential improvements to the current system were discussed. The current BWSR grant round and potential funding sources were also discussed.

Kiel Tschumperlin met with Katherine Pekarek-Scott, MPCA and Jan Voit, HLWD Administrator on August 7, 2012 at 11:00 am to discuss the work plan for September through December in detail. It was determined that Jan and Kiel are responsible for the formatting of the final report. Kiel is responsible for planning a semi-annual meeting in September and holding the semi-annual meeting in October. He is also responsible for refining and updating master feedlot lists for each county.

A total of 5 CFO meetings were held at the HLWD office to discuss the process, and problems that would arise and to keep consistency in the project. Meeting minutes can be found in **Appendix 6**.

Kiel Tschumperlin attended Regional CFO Meeting in Redwood Falls on September 6, 2012 at 9:30 am. Topics included: Manure Application Inspection Issues; Precision Agriculture; Spill Response; and LiDAR. CFOs from Meeker County to Rock County attended the meeting. It was a good opportunity to meet new people and hear what is going on in other counties.

Kiel Tschumperlin met with Jon Bloemendaal, Murray CFO; Russ Hoogendoorn and Mike Skoglund, SWPTSA, and Craig Christensen, Murray SWCD on May 31, 2013 at 9:30 am to discuss construction of a manure storage basin for a landowner using EPA 319 grant dollars. The purpose of the meeting was to draft a design that will meet NRCS standards and be appealing to the landowner while keeping his costs as low as possible. The landowner was very interested in

acquiring cost share in hopes that he would be able to save money on the project. The landowner provided input on the design and what he would like from the project. Another meeting will be setup with the landowner when a more accurate estimate is drafted.

Kiel Tschumperlin e-mailed a list of feedlots that have pollution potential based on MinnFARM rating to Ed Lenz, Nobles SWCD on June 18, 2013. Ed reported the findings to the SWCD board. He also wanted to be aware of what is being discovered during feedlot inspections. Ed will take part in implementing feedlot fixes, so providing him with up-to-date information on our findings is important.

Kiel Tschumperlin and Amanda Schultz met with Becky Alexander, Cottonwood CFO on June 23 at 10:00 am to introduce the new Watershed Coordinator.

Kiel Tschumperlin and Amanda Schultz met with Jon Bloemendaal, Murray CFO on June 24 at 10:30 am to introduce the new Watershed Coordinator.

Kiel Tschumperlin and Amanda Schultz met with Jake Grages, Jackson CFO on June 25 at 9:00 am to introduce the new Watershed Coordinator and to conduct feedlot inspections. A total of four inspections were conducted.

Kiel Tschumperlin and Amanda Schultz met with Al Langseth, Nobles CFO on June 26 at 9:30 am to introduce the new Watershed Coordinator.

Amanda Schultz drafted an Executive Summary for the project. It is entitled *WFDMR TMDL Implementation Project Level III Inventory Results*. The document is contained in **Appendix 10**.

Obstacles and Lessons Learned

The process for conducting the inventory was discussed at length with the CFOs. Meetings were held with the CFOs as needed throughout the grant period. Because there was good communication, no difficulties were encountered in the inventory process.

Task B: Host a manure management workshop

The August 7, 2012 CFO meeting raised questions regarding the Manure Management Workshop. Jon Bloemendaal, Murray CFO explained that the Corn and Soybean Growers Association might have funds available to assist in a manure expo field day similar to the Rock River Manure Expo Field Day held on July 31, 2012. More will be done in the future to pursue this option.

Kiel Tschumperlin sent an e-mail to Doug Bos, Rock County SWCD on August 29, 2012 to gain information on the costs and planning involved in the Rock River Manure Expo Field Day. The purpose of the e-mail was to determine the feasibility of a manure expo field day being held in the WFDMR Watershed next year.

Discussion was held at the CFO meeting on February 7, 2013 about potential topics and dates regarding the manure management workshop. Nothing was discussed in detail. A meeting will be setup at a later date to finalize the details of the workshop.

On March 7 and 8, 2013, Kiel Tschumperlin researched potential workshop topics along with potential sponsors. Names and contact information was recorded for various organizations prepare for the Manure Management Workshop Planning Meeting slated for April 4, 2013.

On March 14 and 15, 2013, Kiel Tschumperlin reviewed documents pertaining to manure management techniques, nutrient management, and manure application. The purpose of this

was to determine which strategies are most pertinent to the producers in the watershed and how to maximize what attendees take away from the workshop. Topics will be discussed further at the Manure Management Workshop Planning Meeting.

Kiel Tschumperlin conducted research on April 4, 2013 prior to the manure management planning meeting. Research consisted of finding potential speakers and topics for the meeting, calculating costs, and finding names and contact information for local groups such as the Corn and Soybean Growers, Cattlemen, and Pork Producers.

Kiel Tschumperlin held a Manure Management Planning Meeting on April 4, 2013 at 10:30 am in the HLWD office. The purpose of the meeting was to choose the date, time, location, speakers, topics, food options, sponsorship, and target audience for the manure management workshop this summer. It was determined that the workshop would be held on Wednesday, July 31, 2013 at 10:00 am in the Heron Lake Community Center. Food will be purchased from Hy-Vee. The Cattlemen's Association and Pork Producers will be asked if they are willing to supply a grill and be in charge of the grilling at the workshop. Topics and speakers for the workshop include: Kiel Tschumperlin, HLWD, providing background information on the project; Wayne Cords, MPCA, speaking on setbacks, emergency response, record keeping requirements, and proper manure sampling techniques; Jose Hernandez, UM Extension, speaking on P-management and economics; and Andy Nesselth, Extended Ag Services, Inc., speaking on grid soil sampling, precision agriculture, and its economics. The regional representative for the Minnesota Corn Growers was contacted for sponsorship. Sponsorship was granted in the amount of five hundred dollars from the Corn and Soybean Growers of Cottonwood, Jackson, and Nobles Counties. The target audience for the workshop will be all producers in the watershed with an emphasis on smaller producers. Kathy Henderscheidt, Nobles County, acquired fifty manure sampling kits for distribution at the workshop from MVTL and fifty from DHIA. Manure record keeping forms will also be provided at the workshop. Other local crop consultants will be contacted and offered a booth at the workshop.

Kiel Tschumperlin e-mailed the regional representative for the Minnesota Corn Growers Association on April 4, 2013 to ask for sponsorship.

Kiel Tschumperlin worked on the Manure Management Workshop Planning Meeting minutes on April 5 and April 8, 2013.

Kiel Tschumperlin met with Jim Nesselth and Andy Nesselth, Extended Ag on May 6, 2013 at 9:00 am to discuss the manure management workshop. The purpose of the meeting was to ask Extended Ag if they would present on grid soil sampling and other precision agriculture topics at the manure management workshop on July 31, 2013. Andy Nesselth agreed to present on the topics discussed.

On June 12, 2013, Kiel Tschumperlin contacted a landowner in regards to providing a grill for the workshop. The landowner stated that he was unsure if he will be able to attend the workshop. He will be contacted in early July to confirm attendance.

Kiel Tschumperlin worked on a newsletter for the Manure Management Workshop on June 12, 13, 18, 19 and 20, 2013. The newsletter will be sent to all feedlot operators. An agenda was also drafted for distribution at the workshop. The agenda will be posted in local businesses prior to the workshop. The newsletter was sent to the printer for formatting and design on June 24,

2013. The printer returned several drafts for pending approval. The final newsletter design was sent to the printer on June 27, 2013.

Kiel Tschumperlin completed a mailing list of feedlot operators in the watershed on June 27, 2013. The mailing list consists of 607 producers. Newsletters will be distributed to all producers on the mailing list. The mailing list will be sent to the printer in early July.

Kiel Tschumperlin met with Gordon Olson, Cottonwood County Planning and Zoning Administrator on June 24, 2013 at 3:30 pm to acquire a watershed map for Cottonwood County. The map will be used to draft the mailing list for the manure management workshop.

Kiel Tschumperlin met with Al Langseth, Nobles CFO on June 27, 2013 at 9:30 am to revise the Nobles County mailing list for the workshop. The master feedlot list had several sites on it that were longer registered feedlots and the list needed to be finalized.

Kiel Tschumperlin worked on the Manure Management Workshop flyer on July 1 and 2, 2013. The flyer was prepared to display at local businesses in the watershed.

Kiel Tschumperlin drafted the news release for the workshop on July 2, 8, and 9, 2013. The news release was finalized on July 9. It was sent to the local papers on July 24 once all quotes were received. The change order allowed for advertising in several local papers.

Kiel Tschumperlin called a producer on July 9, 2013 to inquire if he would grill for the noon meal at the workshop. He initially confirmed that he would, but later called back and declined. Another producer was pursued.

Kiel Tschumperlin contacted local crop consultants and agricultural dealers on July 9–11, 2013. They were contacted to be invited to the workshop to be available to answer questions about their products or services for producers. Companies who carry liquid and solid manure equipment were targeted. Local consultants who work with nutrient management and MMPs were also targeted. E-mails and phone calls were continued back and forth until the workshop.

Kiel Tschumperlin drafted the post-workshop survey on July 15–17, 2013. The survey was finalized on July 17. It was formatted to determine the size of a producer's operation, how producers currently manage their farming operation, and what they may change based on the information presented in the workshop. It was also used to gauge how much attendees learned.

Kiel Tschumperlin hung flyers in local businesses in the eastern and southern portions of the watershed on July 17, 2013. The purpose of hanging the flyers was to target areas where farmers generally do business.

Kiel Tschumperlin hung flyers in local businesses in the western and northern portions of the watershed on July 18, 2013.

Kiel Tschumperlin met with Al Langseth, Nobles CFO on July 24, 2013 to hang flyers at local businesses. A producer was also contacted to do the grilling for the noon meal at the manure management workshop. Kiel and Al met with the producer to confirm his attendance at the workshop.

Kiel Tschumperlin e-mailed workshop speakers on July 25, 2013 to confirm their attendance at the workshop.

Kiel Tschumperlin contacted Worthington Hy-Vee on July 25, 2013 to place the food order for the workshop. The food will be picked up on July 30.

Kiel Tschumperlin drafted and finalized the presentation for the workshop on July 29 and 30, 2013.

Kiel Tschumperlin met with Windom Hy-Vee on July 29, 2013 to discuss potential options for a donut order for the workshop.

Kiel Tschumperlin picked up the food for the workshop on July 30, 2013 from the Worthington Hy-Vee. All supplies that could be pre-ordered were acquired for the workshop. The Heron Lake Community Center was setup for the event. Surveys and handouts were printed.

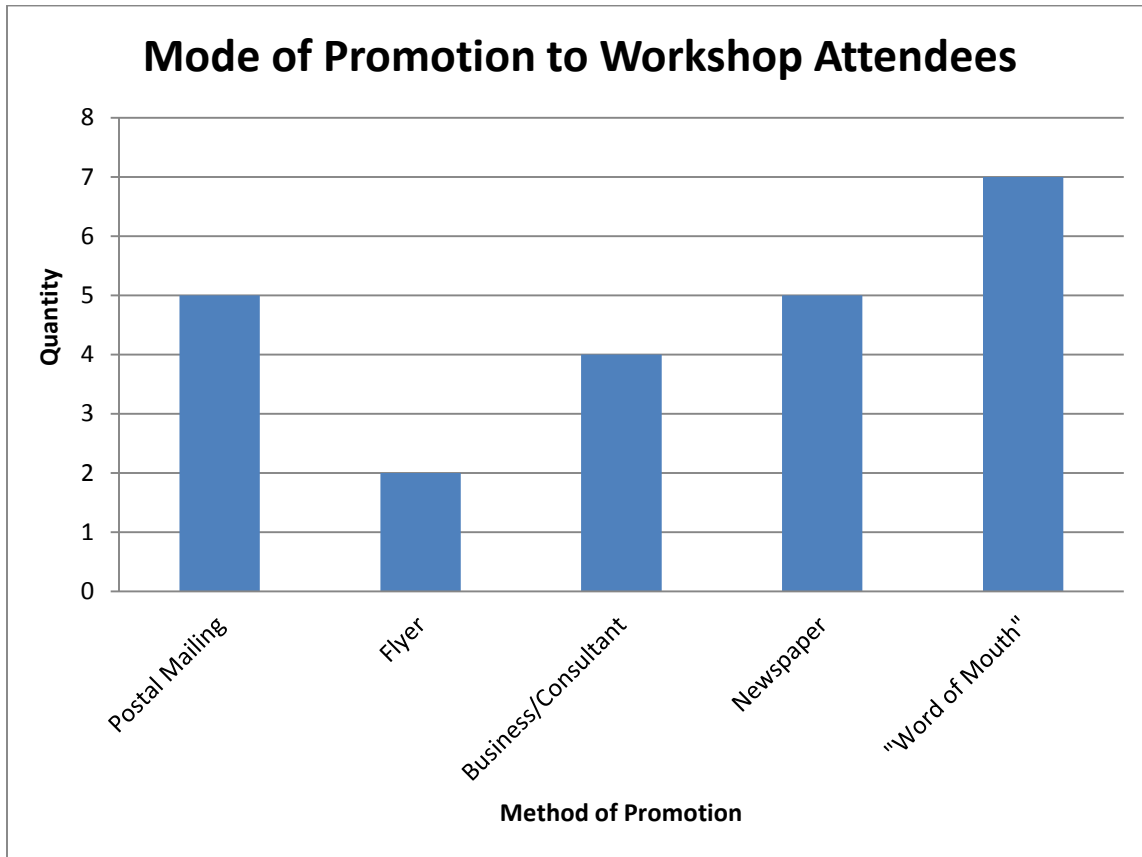
Kiel Tschumperlin picked up donuts for the workshop in the morning of July 31, 2013.

Kiel Tschumperlin hosted the Manure Management Workshop in the Heron Lake Community Center on July 31, 2013. The event began with registration at 9:30 am. Presentations were scheduled to begin at 10:00 am. Kiel kicked off the workshop with a presentation on the background of the TMDL Implementation Project. Jose Hernandez, UM Extension, presented on P management and the economics of manure. Andy Nesseth, Extended Ag Services, Inc., presented on grid sampling techniques and the economics of precision agriculture. Wayne Cords, MPCA, presented on manure sampling techniques and application setbacks, manure record keeping requirements, and emergency response. There were 31 people, including staff that attended the workshop. It is estimated that there were about 10-11 livestock producers at the workshop. An exact amount is not known because not all producers stayed for the entirety of the workshop. There were three or four attendees that had no livestock but raised crops. There were two individuals from local agencies that setup a table to advertise. The remaining individuals were speakers or local staff. In speaking with attendees, they were impressed with the quality of the speakers and spoke highly of them. The workshop concluded at 2:00 pm.

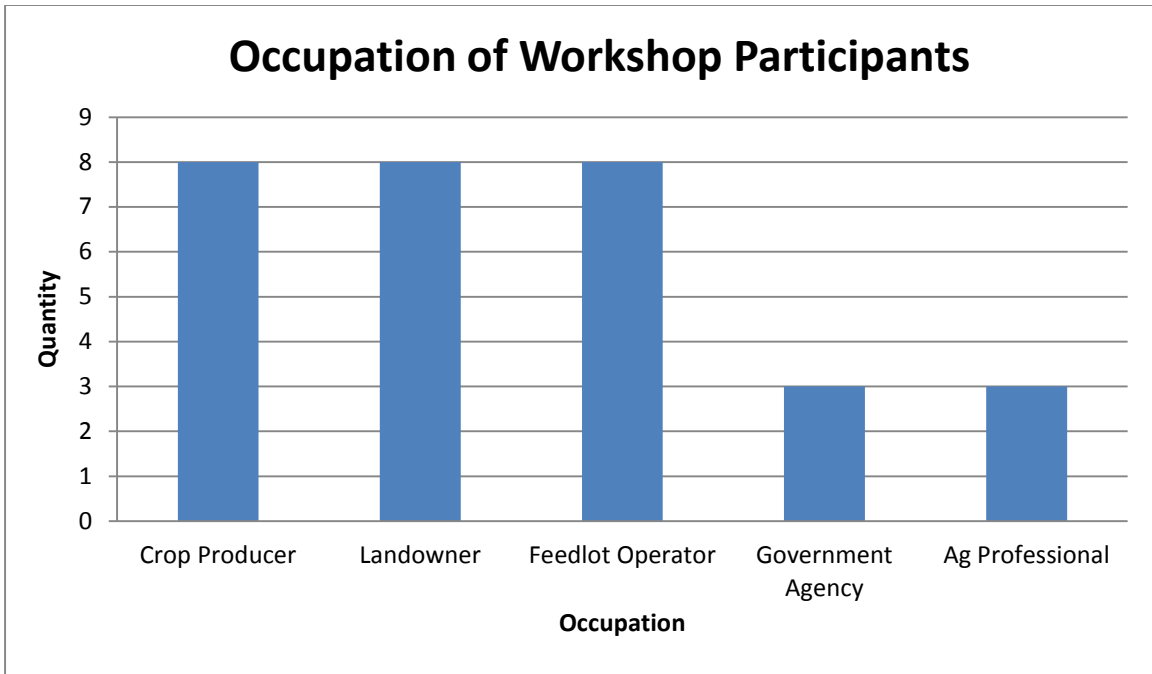
Kiel Tschumperlin reviewed surveys from the manure management workshop on August 1, 2013. Results were compiled for producer size, primary occupation, animal types, and how each individual heard about the workshop. The results are shown in **Figure 1**.

Figure 1. Manure Management Workshop Survey Results

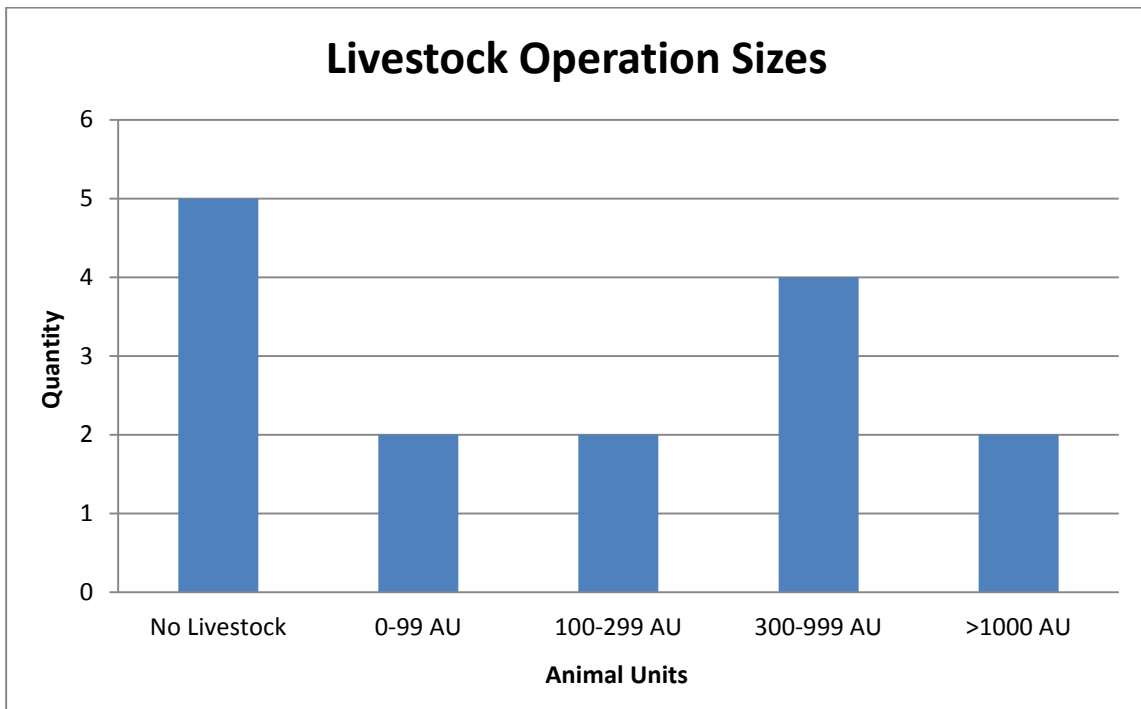
Of the 20 individuals registered, 15 returned surveys. Surveys indicated that attendees did learn about manure management practices. The survey results are represented in the charts below.



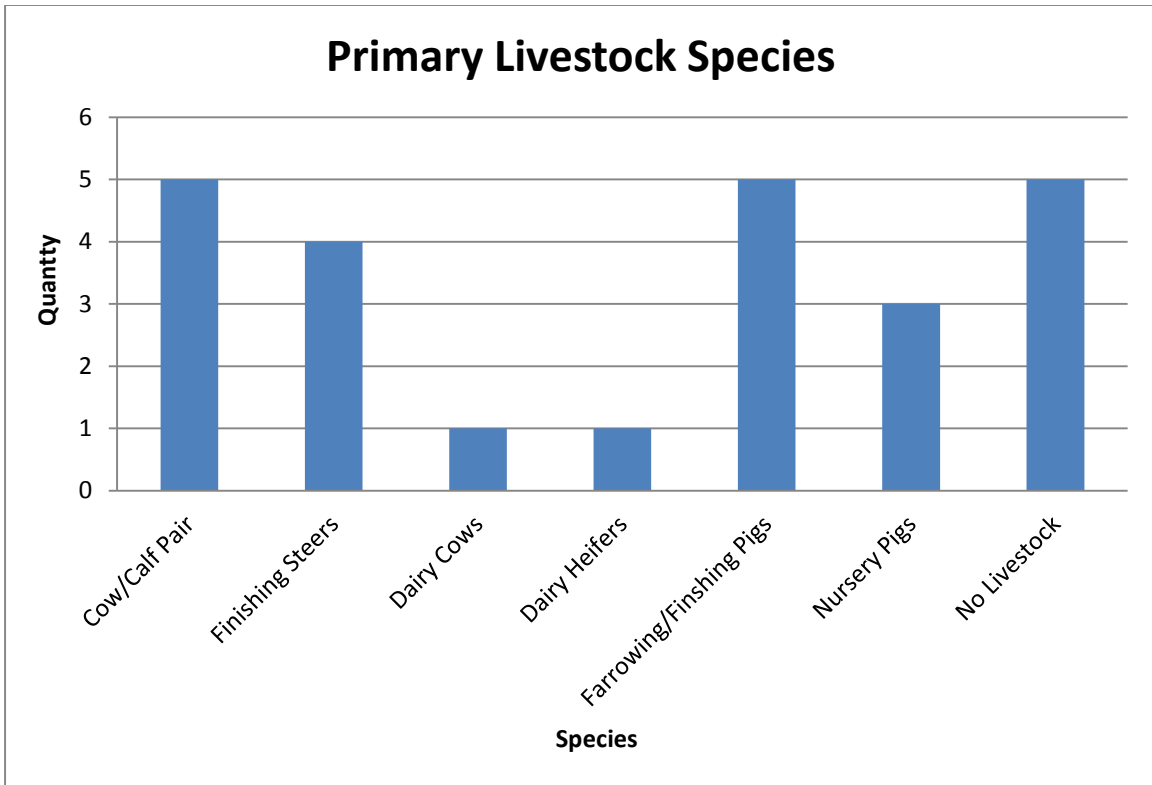
The primary method of promotion for the workshop was “word of mouth” with seven people indicating this is one way they heard about the workshop. Another five individuals indicated they heard about it through the newspaper and the postal mailing. Methods of promotion were a “check all that apply” option, meaning that individuals may have heard of the workshop from multiple sources. Flyers proved to be the least effective method in promoting the workshop.



The primary occupations for workshop attendees were feedlot operators and crop producers. These categories may overlap because it was a “check all that apply” option.



The most common AU category for agricultural producers was 300-999 AU with four attendees indicating they have 300-999 AU. Five individuals indicated they had no livestock. These individuals were comprised of government staff, agricultural consultants, crop producers, and landowners.



The primary livestock species were cow/calf pairs and farrowing/finishing pigs. Five individuals indicated they had no livestock. Multiple species of livestock may have been selected by each producer.

I Currently....	Number (Out of 11)	Percentage
Grid Sample	3	27.3%
Test Manure at Least Every Four Years	6	54.5%
Variably Apply Manure	2	18.2%
Keep Manure Records or Maintain MMP	6	54.5%
Follow Required Setbacks	8	72.7%
Incorporate Manure	6	54.5%

Surveys from landowners, feedlot operators, and crop producers indicated that 27.3% grid sample, 54.5% test manure at least every four years, 18.2% variably apply manure, 54.5% keep manure records or maintain MMP if required, 72.7% follow required setbacks, and 54.5% incorporate manure.

As a Result of the Workshop I Plan to....	Number (Out of 11)	Percentage
Test Manure at Least Every Four Years	4	36.4%
Grid Sample	5	45.5%
Change How I Apply Manure	3	27.3%
Change When I Apply Manure	2	18.2%
Keep Manure Records or Maintain MMP	7	63.6%

Practice Zonal Application of Manure	3	27.3%
Observe Setbacks to Sensitive Features	7	63.6%

After attending the workshop, 36.4% of these individuals plan to test their manure, 45.5% plan to grid sample, 27.3% plan to change how they apply manure, 18.2% plan to change when they apply manure, 63.6% plan to keep manure records or develop a manure management plan if required, 27.3% plan to practice zonal application, and 63.6% plan to observe the required setbacks to sensitive features when applying manure.

Obstacles and Lessons Learned

Kiel Tschumperlin was primarily responsible for planning and preparation of the Manure Management Workshop. There were no major difficulties encountered in the process.

Objective 2: Project Promotion

Task A: Website

An outline for the website was drafted in early 2012. The website will include information about county conservation programs; a listing of maps within the WFDNR watershed that relate to land use, feedlots, and monitoring; links to websites of SWCDs within the watershed, government agencies, and educational links; watershed monitoring data; and past and current meetings and events. The website will be updated as information changes.

Margaret Peeters created a webpage for the project on the HLWD website. The webpage can be accessed on the HLWD’s home page at www.hlwdonline.org. Click on the WFDNR TMDL tab.

The following information was added to the website throughout the duration of the project: project brochure, advertisement for the Watershed Coordinator position, minutes of the semi-annual meetings, a map of the WFDNR watershed, a feedlot photo, a description of the WFDNR TMDL Implementation Plan, semi-annual reports, links to water quality data and MPCA load study information, and educational materials for producers regarding manure management.

On June 11, 2012, a website tracker was established to count the number of visitors visiting the HLWD website. The tracker shows the number of page loads, unique visits, returning visits, and first time visits. Information can be viewed daily, weekly, monthly, quarterly, or yearly.

On June 13, 2012, a website tracker was established to specifically count the number of visitors to the WFDNR TMDL tab on the HLWD website. The tracker shows the same information as the HLWD website tracker.

E-mailed Paul Pettit, on June 14, 2012 regarding how to add a new template on the HLWD website to increase the accuracy of the WFDNR TMDL tab website tracker.

A different website tracker was installed on June 25, 2012 in hopes of only tracking the number of visitors to the WFDNR TMDL tab versus tracking the number of visitors to the HLWD website. Unfortunately, this did not work. Other avenues will be pursued as time allows.

Reconfigured the layout of the WFDNR TMDL tab on August 15, 2012. The website would not allow the formatting desired. Further troubleshooting options will be explored in the future.

Worked on the website on July 16, 2013. Attempts were made at trying to implement a new web counter for the website.

Task B: Brochure

Work was done on several versions of brochures for Nobles, Jackson, Cottonwood, and Murray counties, including separate brochures for NRCS and BWSR programs. Each brochure included a description of conservation programs offered in each county, map of the WFDNR watershed, and current incentive programs available. These brochures were not required for the project work plan.

Jan Voit, HLWD Administrator, created a project brochure and distributed it to partners for review and approval. The brochure can be found in **Appendix 4**.

The brochure was updated to include the new Watershed Coordinator's name and contact information.

On June 12, 2012, the brochure was sent to Katherine Pekarek-Scott, MPCA, for final approval and for permission to be distributed to landowners following feedlot inspections.

On June 13, 2012, Katherine Pekarek-Scott, MPCA, approved the brochure for printing and distribution.

On June 28, 2012, Jan Voit, HLWD Administrator, e-mailed the brochure to the print shop requesting copies within the budget of \$900. The brochure was sent and submitted for printing on June 28, 2012. A total of 1,500 copies were printed.

Brochures were distributed to area businesses, CFOs of Cottonwood, Murray, and Nobles County to be available at their respective county fairs, and included with landowner letters in hopes of ensuring all landowners receive a brochure. Another objective is that landowners will be better educated about the goals and direction of the WFDNR TMDL Implementation Project.

Updated CFO contact information was collected for changes that need to be made to the back panel of the brochure. Materials were ordered on January 15, 2015 to update the contact information on the brochures. Updated contact information was printed and attached to the brochures on January 26. The revised version of the brochure can be found in **Appendix 4**.

The brochure was revised a third time in 2015. This version was included with the producer mailing and can be found in **Appendix 9**.

Task C: Conduct semi-annual meetings

A total of seven semi-annual meetings were held with the AC and TC. The purpose of the semi-annual meetings was to provide members with updates on activities related specifically to this grant, as well as other TMDL implementation efforts. Jan Voit led the first meeting on May 9, 2012. Kiel Tschumperlin held meetings on October 24, 2012, May 2, 2013, December 10, 2013 and June 17, 2014. Amanda Schultz held meetings on December 11, 2014 and July 29, 2015. All meetings took place at the Heron Lake Senior Citizens' Center. All planning meeting minutes, invitations, presentations and meeting minutes can be found in **Appendix 5**.

Task D: Landowner mailing

On September 11, 2014, Jon Bloemendaal, Murray CFO; Al Langseth, Nobles CFO; Jared Morrill, Cottonwood CFO; Katherine Pekarek-Scott, MPCA; Amanda Schultz and Jan Voit, HLWD met. Attendees discussed the progress of inspections and the changes that have been made to the amendment for the WFDNR TMDL Implementation Project. Funds will be allocated in the amendment for mailing manure management information to watershed landowners. The amendment was approved on January 6, 2015.

A mass mailing to all feedlot operators within the WFDNR watershed with information about manure management and feedlot fix options was compiled throughout January and February 2015. The final packets were sent to the post office and mailed to producers on February 23 and 24, 2015. The materials in the mass mailing can be found in **Appendix 9**.

A newsletter containing the final results of the feedlot inventory was drafted in July and August of 2015. The document was mailed on August 13, 2015. The newsletter can be found in **Appendix 8**.

Obstacles and Lessons Learned

The only obstacle in the process was inaccurate address information. Of the 562 packets mailed, 13 were returned because the addresses were incorrect. These inaccuracies occurred because not all of the inspections had been completed and the address database had not been completely updated.

Objective 3: Project Oversight

Task A: Watershed coordinator

During their time as Watershed Coordinator, Lauren Michelsen, Kiel Tschumperlin, and Amanda Schultz participated in HLWD monthly board meetings to provide an update on the progress of the project. They also attended HLWD advisory committee meetings and any special meeting that was required. Lauren Michelsen attended the HLWD monthly meeting on February 23, 2012. A performance review was conducted. She was suspended with pay. Meeting minutes can be found on the HLWD webpage.

The Watershed Coordinator also attended multiple County Commissioners meetings, Local Water Plan meetings, planning and zoning meetings, and other county meetings as necessary to either provide an update on the project or to stay updated on county proceedings.

Multiple meetings took place with the HLWD staff, MPCA project manager, and each watershed coordinator. These meetings were to discuss the work plan, roles and responsibilities, and any concerns about moving the project forward. Kiel Tschumperlin continued to ask questions about and refine the use of the MinnFARM software. Kiel Tschumperlin and Amanda Schultz were involved with multiple meetings on enhancing the water quality in the watershed. These meetings included other watershed projects and acquiring information for funding on overlapping projects.

Kiel Tschumperlin and Amanda Schultz attended multiple trainings and workshops for continued professional development. These include “Basics of Using LiDAR Data” workshop, Rock River Manure Expo Field Day, multiple BWSR Academy, Aquatic Invasive Species Meeting, CFO Regional Meeting, Foundations of Agronomy Workshop, eLINK training, CWF Webinar, Winter Crops and Soils Day, Crop Nutrient Management Conference, Commercial Animal Waste Technician Workshop, Protecting Farmland and Improving Water Quality with Structural Practices, Sustainable Corn Soil & Water Management Field Day, Hawk Creek Watershed Project Alternate Side Inlet Field Day, Terrain Analysis webinar, “Explaining Stream Behavior to Landowners”webinar, Cover Crop Field Day, Winter Crops Day and Small Grains Program, Missouri River Basin Spatial Analysis Workshop, Manure and Nutrient Management in Tile Drained Lands webinar, Civic Engagement Support Group, and Tillage Systems Field Day.

Other administration activities were also completed including attending meetings and completing amendments and change orders to the work plan.

Jan Voit conducted personnel matters for the Watershed Coordinator position. Lauren Michelsen resigned on March 5, 2012. The HLWD held a special meeting on March 12, 2012. The purpose was to have a detailed review of the project and how the entities involved function as partners. Jan Voit was directed to advertise for the position. She met with project partners to review the job description and advertisement. The position was advertised and interviews were conducted. Kiel Tschumperlin began his duties on June 4, 2012. Jan Voit distributed email correspondence to AC and TC members announcing the hiring of a new Watershed Coordinator. Jan Voit organized information for the Watershed Coordinator position that included the position description, grant work plan, manager and staff orientation document, HLWD Writing Guidelines, personnel policy, Form W-4, PERA enrollment, health insurance enrollment, and timesheet process. Kiel Tschumperlin submitted his resignation on April 17, 2014 and the same process took place. Amanda Schultz began on June 23, 2014. Amanda Schultz submitted her resignation on July 13, 2015. After completing all tasks in the project work plan, August 20, 2015 was her last day.

Kiel Tschumperlin met with Mike Jordan from the *Lakefield Standard* newspaper on June 11, 2012 at 3:00 pm as a way for the surrounding area to be introduced to the new Watershed Coordinator. Mike asked questions regarding duties, past information, and what Kiel hopes to accomplish as the Watershed Coordinator.

Kiel Tschumperlin met with Alyson Buschena, *Worthington Daily Globe*, on April 3, 2013 at 9:30 am for an interview. The purpose of the interview was to promote the Implementation Project and be published in the *Farm Market News* on April 24, 2013. A timetable was set for Alyson to meet the CFO and Kiel on site for a photo with a producer. On April 17, 2013 Alyson met Kiel and the CFO on site for a photo for the newspaper.

Task B: Reporting

The Work Plan was approved by MPCA on November 8, 2011.

The grant agreement was approved by MPCA on November 14, 2011.

All semi-annual and annual reports were submitted by Jan Voit to the MPCA by August 1 and February 1, respectively, for each year of the project. This included HLWD staff and project partners completing and submitting inkind timesheets.

Jan Voit submitted reimbursement requests on a monthly basis for the duration of the project.

Jan Voit drafted a letter to project partners summarizing the project activities that occurred in the WFDMR TMDL Implementation Project through June 2012. The letter was sent to partners on June 12, 2012.

Jan Voit began the final report on May 13, 2015. Work was done on the report on May 18, May 19, June 3, June 15, June 22, June 23, June 24, June 30, August 12, August 17, August 18, August 19, August 20, August 24, August 26, and August 31, 2015.

Obstacles and Lessons Learned

Personnel issues, as well as misinformation and confusion amongst the partners, caused strain on the partnership created for this endeavor. Lauren Michelsen resigned her position

on March 5, 2012. Two rounds of advertising and interviews were done before successfully securing Kiel Tschumperlin as Watershed Coordinator on June 4, 2012. During the hiring process, project partners met and the working relationship was regained. Kiel Tschumperlin submitted his resignation on April 17, 2014. The Watershed Coordinator position was again advertised and interviews conducted. Amanda Schultz accepted the position. She began her Watershed Coordinator position on June 23, 2014. Amanda Schultz submitted her resignation on July 13, 2015. Her final day was August 20, 2015.

Staff turnover may have caused inconsistencies with how the inspections were conducted and how the MinnFARMS were run, as components can be subjective. Time spent searching for and training a new Watershed Coordinator reduced the amount of time that could be spent working with CFOs to do inspections, further reducing the project timeline.

There were four total CFO turnovers that occurred in Cottonwood and Jackson counties. During this time feedlot inspections ceased until another employee was hired and trained for the position. This shortened the time frame available to complete the project, especially in Jackson County.

Objective 4: Septic System Loan

Task A: Loan implementation

Four septic system low-interest loans were added to the project to assist in meeting inkind match requirements as shown in **Table 2**.

Table 2. Septic System Loans

Township	County	Amount
Alba	Jackson	\$8,942.50
Heron Lake	Jackson	\$11,258.98
Summit Lake	Nobles	\$10,746.02
Seward	Nobles	\$13,580.18
TOTAL		\$44,527.68

Obstacles and Lessons Learned

When drafting the application, it was difficult to ascertain how much time and effort it would take to conduct the feedlot inspections or other aspects identified in the project. The amendment process allowed the opportunity to use match from an existing CWP Loan Program to enable meeting match requirements.

Objective 5: Feedlot Improvement

Task A: Feedlot environmental upgrades

Matt Hakeneis Feedlot Environmental Upgrade: Yard and roof water was diverted from entering the feedlot to reduce loading to Lime Creek. Approximately 245 feet of seamless gutters were installed on three buildings to capture roof water. An open tile intake was also installed upslope of the feedlot to reroute clean water under the feedlot. The tile intake is connected to 160 feet of 8 inch non-perforated tile. Before fixes were implemented, site was non-compliant with an index of 22. The site is now compliant with an index of 6. The project was completed on July 27, 2015.

Paul Henning Feedlot Environmental Upgrade: A waste separation facility and vegetated treatment area were installed to work in tandem to treat runoff, reducing loading to Okabena Creek. The waste separation facility is 24' X 44' X 4' and includes a picket box at the end of the system. Runoff is then piped to a concrete spreader that evenly distributes runoff over a 427' X 120' foot vegetated treatment area. Funds were combined with NRCS EQIP dollars to cover 75% of the cost for the project. Before fixes were implemented site was non-compliant with an index of 100. The site is now compliant with an index of 0. The project was completed on June 22, 2015.

Maury Kuehl Feedlot Environmental Upgrade: Two tile intake basins with berms were installed to capture clean water and divert it from feedlots, reducing loading to a private wetland. The west intake basin is connected to 257 feet of six inch non-perforated tile to route water north, under the feedlot. The east intake basin is connected to 521 feet of eight inch non-perforated tile to rout water east, around the feedlot. Before fixes were implemented site was non-compliant with an index of 10. The site was reduced to an index of 4 but remains non-compliant, according to MinnFARM. The project was completed on July 30, 2015.

Dale Voss-Lowville Feedlot Environmental Upgrade: A retaining wall and seamless gutters were installed to divert clean water from entering a feedlot and reduce loading to Beaver Creek. The retaining wall is poured concrete 165 feet in length along the north end of the north feedlot. Seamless gutters were installed on two sides of a feed storage shed and total 170 feet in length. Before fixes were implemented, site was non-compliant with an index of 23. These improvements, when combined with other improvements the landowner has made to the site, now make the site compliant with an index of 3. The project was completed August 8, 2015.

Dale Voss-Mason Feedlot Environmental Upgrade: A manure settling basin and vegetated treatment area was installed to reduce runoff from contributing to Beaver Creek. The basin measures 30' X 30' X 4' and will allow solids to settle out from the runoff. Solids will be cleaned from the basin periodically throughout the year and land-applied. Runoff is then spread evenly on a 50' X 75' vegetated treatment area by an apron to further treat runoff. Before fixes were implemented site was non-compliant with an index of 9. The site is now compliant with an index of 6. The project was completed August 28, 2015.

Pollution reductions were calculated for each feedlot. By August 26, 2015, all information relating to feedlot environmental upgrades was entered in eLINK.

Obstacles and Lessons Learned

Gauging producer interest in feedlot improvements is important while conducting feedlot inspections. It is easy to complete projects when producers are already interested in feedlot improvements. Unpredictable weather can impede construction and make working on short timelines difficult.

Grant Results

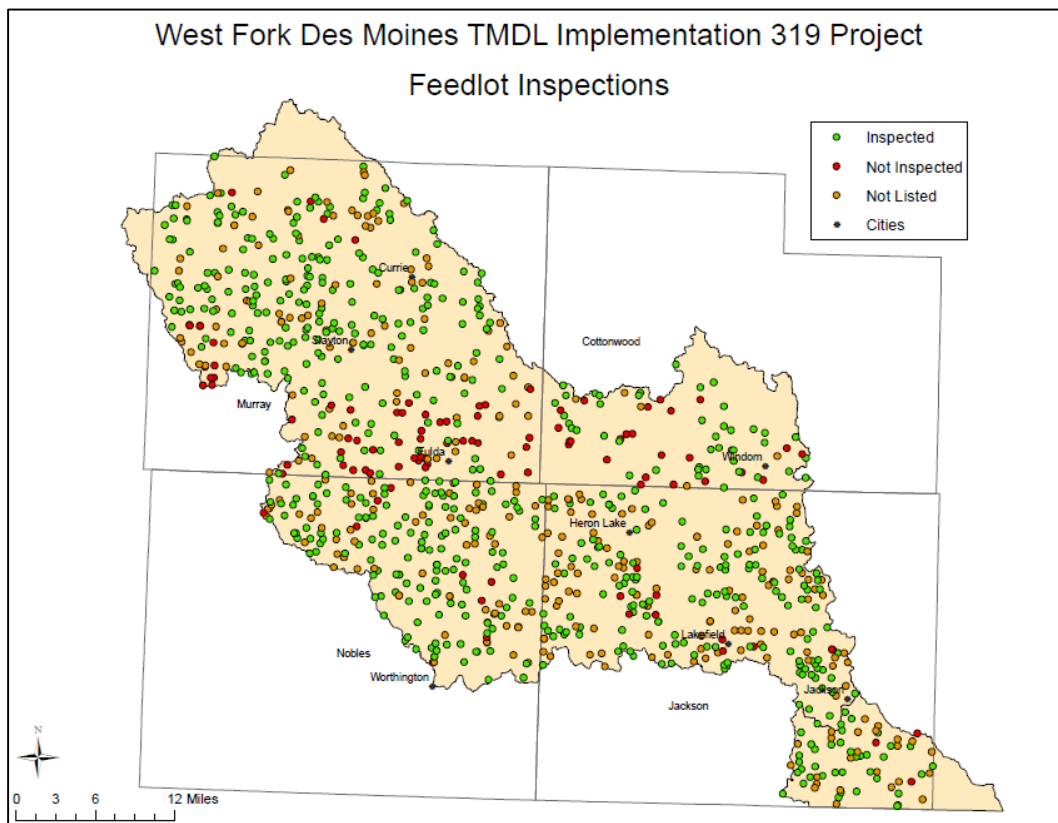
7. Measurements

Successful implementation of a grant program requires an extensive effort in recordkeeping. Section 2 summarizes the activities completed during the grant period. The methods of measured results and success are varied and dependent upon the tasks. The measurements are described below by objective and task as presented in the work plan.

Objective 1: Feedlot Management and Education

- 142 inspections were conducted in Nobles County.
- 190 inspections were conducted in Jackson County.
- 221 inspections were conducted in Murray County.
- 43 inspections were conducted in Cottonwood County.
- **Figure 2** shows the registered feedlots in the WFDMR.
- The newsletter promoting the Manure Management Workshop was sent to approximately 3,500 watershed residents, agency personnel, and legislators.
- The Manure Management Workshop was successfully implemented on July 31, 2013. There were 31 people in attendance.
- The *WFDMR TMDL Implementation Project Level III Inventory Results* was uploaded to the HLWD website, distributed to CFOs, and shared with SWCD and NRCS staff in the watershed.

Figure 2. Registered feedlots in the WFDMR – Inspected, Not Inspected, and Not Listed



Objective 2: Project Promotion

- The HLWD website contains a webpage dedicated to the WFDMR TMDL Implementation Project. The page contains project goals and semi-annual meeting minutes. There are links to the semi-annual and annual grant reports. Statistics from the website can be found in **Table 3.**

Table 3. Website Statistics

Most Popular Articles	Created	Hits
Virtual Tour	2009-10-04 22:26:16	36900
About HLWD	2009-08-21 02:42:35	11689
Contact HLWD	2009-08-21 02:46:44	9617
Water Quality Monitoring Data	2009-09-01 05:08:19	6788
TMDL Implementation Planning Efforts	2009-09-01 03:29:47	6299
Grant Projects	2009-09-30 02:03:54	6018
Job Openings	2009-09-01 02:44:32	5521
Education Events	2012-06-07 00:00:00	4951
HLWD Newsletters	2009-09-28 02:05:52	4843
2015 Cost-Share and Loan Programs	2009-08-21 02:46:04	4826

- 1,102 WFDMR TMDL Implementation Project brochures were distributed to feedlot owners and operators. The brochure can be found in **Appendix 4.**
- Two semi-annual meeting planning sessions were held in 2012. The April 2012 session: 2 Nobles County staff; 1 Nobles SWCD staff; 1 Jackson County staff; 1 Cottonwood County staff; 1 Jackson SWCD staff; 1 MPCA staff; and 3 HLWD staff. The September 2012 session: 1 Nobles County staff; 1 Murray County staff; 1 Cottonwood County staff; 1 MPCA staff; and 2 HLWD staff
- Two semi-annual meetings were held in 2012. The May 2012 meeting: 1 Jackson SWCD staff; 3 Nobles County staff; 1 Jackson County staff; 1 Cottonwood County staff; 1 DNR staff; 1 Cottonwood SWCD staff; 3 MPCA staff; 1 Minnesota Soybean Growers Association representative; and 2 HLWD staff. The October 2012 meeting: 2 Jackson SWCD staff; 3 Nobles County staff; 2 MPCA staff; 2 DNR staff; 1 Murray County staff; 1 Cottonwood County staff; 1 Minnesota Soybean Growers Association representative; and 3 HLWD staff.
- Two semi-annual meetings were held in 2013. The May 2013 meeting: 2 Jackson SWCD staff; 2 Nobles County staff; 1 MPCA staff; 2 DNR staff; 1 Jackson NRCS staff; 1 Cottonwood SWCD staff; 2 BWSR staff; 1 Nobles SWCD staff; 1 Martin SWCD staff; 1 Minnesota Soybean Growers Association representative; 1 Murray County staff; 1 Cottonwood NRCS staff; and 3 HLWD staff. The December 2013 meeting: 1 Jackson SWCD staff; 1 Jackson County staff; 2 Nobles County staff; 2 MPCA staff; 1 DNR staff; 1 BWSR staff; 1 Nobles SWCD staff; 1

Pipestone County staff; 1 Minnesota Soybean Growers Association representative; 1 Murray County staff; and 3 HLWD staff.

- Two semi-annual meetings were held in 2014. The June 2014 meeting: 2 Nobles County staff; 1 Jackson SWCD staff; 1 DNR staff; 2 Murray County staff; 1 Cottonwood County staff; 1 Martin SWCD staff; 1 BWSR staff; 1 Pipestone County staff; 1 MPCA staff; and 2 HLWD staff. The December 2014 meeting: 2 Nobles County staff; 2 Jackson County staff; 1 Jackson SWCD staff; 1 DNR staff; 1 BWSR staff; 1 MPCA staff, and 3 HLWD staff.
- One semi-annual meeting was held in 2015. The July meeting: 2 Nobles County staff; 2 Jackson County staff; 1 Cottonwood County staff; 1 Murray County staff; 1 DNR staff; 1 BWSR staff; 1 MPCA staff; and 2 HLWD staff.
- The landowner mailing containing information about manure management and feedlot fix options was completed on February 23 and 24, 2015, reaching 562 landowners.
- The newsletter containing the results of the Level III Feedlot Inventory was sent to 562 feedlot operators on August 13, 2015.

Objective 3: Project Oversight

- Three different individuals were employed as the WFDNR Watershed Coordinator during the grant period.
- Each Watershed Coordinator was required to complete an activity report each month. These updates provided invaluable for each new coordinator. They were also beneficial for writing semi-annual and annual reports, as well as the final report.
- Cumulatively, WFDNR Watershed Coordinator personnel attended 49 HLWD meetings and events, 12 meetings with MPCA staff, seven county board meetings; four Jackson County Water Plan meetings, one Nobles County Planning and Zoning meeting, four eLINK training sessions, six HLWD Advisory Committee meetings, five CFO meetings, and two newspaper interviews.
- WFDNR Watershed Coordinator personnel had the opportunity to attend the following training sessions, workshops, and webinars: three BWSR Academies; Basics of Using LiDAR Data; Rock River Manure Expo Field Day; two Winter Crops and Soils Day sessions; two Watershed Network meetings; Crop Nutrient Management Conference; CFO Regional Meeting; Commercial Animal Waste Technician Workshop; Foundations of Agronomy; Protecting Farmland and Improving Water Quality with Structural Practices; Explaining Stream Behavior to Landowners; Hawk Creek Watershed Project Alternate Side Inlet Field Day; Sustainable Corn Soil and Water Management Field Day; six District 8 Land Use meetings; Cover Crop Field Day; Winter Crops and Small Grains Program; Missouri River Basin Spatial Targeting Workshop; two MWP meetings; and Manure and Nutrient Management in Tile Drained Lands.

Objective 4: Septic System Loan

- Four septic system replacement projects were used as match for this grant.

Objective 5: Feedlot Improvement

- Five feedlot environmental upgrades were installed through this grant. The reduction information was entered in eLINK. It can also be found in **Table 4**.

Table 4. Feedlot Environmental Upgrade Pollution Reductions

Pollution Reductions			
	Fecal coliform billion cfu/yr	Phosphorus lbs/yr	Nitrogen lbs/yr
Hakeneis	969	24	70
Henning	140	66	195
Kuehl	384	11	32
Vos - Lowville	284	15	45
Vos - Mason	190	4	12

8. Products

There have been several products produced through this grant. Below is a list of the products created and the appendices in which the products are located.

8.1. Appendix 1 – Project Development and Kickoff Meeting

- Project Development Meeting – November 21, 2011
- Project Partner Kickoff Meeting – December 8, 2011
- Letter to WFDNR partners

8.2. Appendix 2 – Manure Management Workshop

- July 2013 WFDNR Newsletter
- Manure Management Workshop Agenda
- Manure Workshop Ad
- Manure Workshop News Release
- Manure Workshop Survey
- Manure Management Workshop Flyer
- Minutes – Manure Management Workshop Planning Meeting – April 4, 2013
- Manure Management Workshop Planning Session Summary – July 2013

8.3. Appendix 3 – Website

- WFDNR TMDL webpage

8.4. Appendix 4 – Brochure

- WFDNR TMDL Implementation Project Brochure
- WFDNR TMDL Implementation Project Brochure - Revised

8.5. Appendix 5 – Semi-Annual Meetings

- Semi-Annual Meeting Planning Session – April 4, 2012
- Semi-Annual Meeting Invitation – May 2012
- Semi-Annual Meeting PowerPoint – May 9, 2012
- Semi-Annual Meeting Minutes – May 9, 2012
- Semi-Annual Meeting Planning Session – September 25, 2012
- Semi-Annual Meeting Invitation – October 2012
- Semi-Annual Meeting PowerPoint – October 24, 2012

- Semi-Annual Meeting Minutes – October 24, 2012
- Watershed Network News PowerPoint – November 13, 2012
- Semi-Annual Meeting Invitation – May 2013
- Semi-Annual Meeting PowerPoint – May 2, 2013
- Semi-Annual Meeting Minutes – May 2, 2013
- Semi-Annual Meeting Invitation – December 2013
- Semi-Annual Meeting PowerPoint – December 10, 2013
- Semi-Annual Meeting Minutes – December 10, 2013
- Semi-Annual Meeting Invitation – June 2014
- Semi-Annual Meeting PowerPoint – June 17, 2014
- Semi-Annual Meeting Minutes – June 17, 2014
- Semi-Annual Meeting Invitation – December 2014
- Semi-Annual Meeting PowerPoint – December 11, 2014
- Semi-Annual Meeting Minutes – December 11, 2014
- Semi-Annual Meeting Invitation – July 2015
- Semi-Annual Meeting PowerPoint – July 29, 2015
- Semi-Annual Meeting Minutes – July 29, 2015

8.6. Appendix 6 – CFO Meeting Minutes

- CFO Meeting Minutes – August 7, 2012
- CFO Meeting Minutes – February 7, 2013
- CFO Meeting Minutes – October 23, 2013
- CFO Meeting Minutes – September 11, 2014
- CFO Meeting Minutes – July 29, 2015

8.7. Appendix 7 – Monthly Updates

- Monthly Updates 2012 – 12 Updates
- Monthly Updates 2013 – 11 Updates
- Monthly Updates 2014 – 12 Updates
- Monthly Updates 2015 – 7 Updates

8.8. Appendix 8 – Newsletter

- Feedlot Results Newsletter

8.9. Appendix 9 – Producer Mailing

- Mass mailing producer letter
- Land Application of Manure Minimum Requirements
- Manure Application Stickers
- Manure Stockpiling – Technical Guidance
- Manure Records 100-299 AUs
- Records for 300 or more AU
- Nutrient & Manure Management Tables
- Options for Improving Open Lot Runoff
- State Cost-Share Program Fact Sheet
- WFDNR TMDL Implementation Project Brochure III

8.10. Appendix 10 – Executive Summary

- Level III Feedlot Inventory Results

9. Public Outreach and Education

HLWD staff provided information to landowners, agency personnel, and contractors through the use of one-on-one conversations, newsletter, manure management workshop, a brochure, the HLWD website, and presentations at meetings. The following section summarizes the education efforts undertaken.

In an effort to learn about the process used for their feedlot inventory, HLWD staff met with Rock County and DNR staff at the beginning of the project. Following this, a kickoff meeting was held with project partners to develop guidelines for conducting the feedlot inventory and working with CFOs.

The July 2013 newsletter highlighted the grant and manure management workshop. The newsletter was sent to 3,400 watershed residents, agency personnel, and legislators. A flyer and news release promoting the workshop were developed and distributed. An advertisement was drafted and sent to the *Tri County News* and *Daily Globe* for publication. A news release regarding the event was sent to the same papers. The main coverage for the *Tri County News* is Jackson County and Nobles County. Subscriptions total 575, with about 150 store copies available for purchase at various locations in the immediate area. The circulation for the *Daily Globe* is approximately 8,000 daily copies.

The Manure Management Workshop was held on July 31, 2013. The workshop provided an educational experience for feedlot owners and operators. There were 31 people in attendance.

The attendees took a survey. Results can be found in **Figure 1**. The results indicated that word of mouth was the most effective method for learning about the event. It seems that a lot of money and time was expended to promote and host this event, with very few attendees.

The survey proved to be a valuable tool. After attending the workshop, 36.4% of these individuals plan to test their manure, 45.5% plan to grid sample, 27.3% plan to change how they apply manure, 18.2% plan to change when they apply manure, 63.6% plan to keep manure records or develop a manure management plan if required, 27.3% plan to practice zonal application, and 63.6% plan to observe the required setbacks to sensitive features when applying manure.

The brochures were created as a means to promote the project. They were distributed throughout the grant period. There has been no direct contact with staff as a result of brochure distribution.

The semi-annual meetings provided a wonderful opportunity to provide first-hand information about the inventory process. Many positive comments were received following the meetings.

Informational mailings were used to distribute information to all feedlot producers. During the feedlot inventory, producers in the WFDNR watershed were sent a packet of information regarding proper manure records, handling, and application. This information can be found in **Appendix 9**.

There were many questions and confusion from producers surrounding the packets that were mailed. Although mailings are a means to distribute information to producers, it is not guaranteed that everyone will look at the material, utilize, or even understand it. To make mass mailings more beneficial in the future, providing less information more often is a better option.

The July 2015 newsletter highlighted the results of the Level III Feedlot Inventory. It was distributed to 562 feedlot operators.

Through this grant, 80.5% of the feedlots within the watershed have been assessed. However, one fifth of the registered feedlots still remain to be evaluated. In order to fully understand feedlot pollution potential in the watershed, the CFOs recommended that the remaining feedlots be included in the Level III Feedlot Inventory. CFOs will continue to work with the new Watershed Coordinator to complete the inventory through the WFDNR Major Watershed Project Phase 2. Having a complete inventory will be very beneficial to reduce open feedlot runoff. When considering remaining feedlots to inspect, the MPCA database should be consulted to ensure that all currently registered feedlots are listed and that the feedlots actually lie within the watershed boundary. An emphasis should also be placed on inspecting open feedlots.

10. Long-term Results

This grant provided the opportunity to expand partnerships to include CFOs, MPCA feedlot staff, and many feedlot producers. The working relationship with SWCD, NRCS, and DNR personnel continued.

The Level III Inventory results confirmed that the WFDNR watershed is plagued with waters impaired with high E.coli levels. Runoff from feedlots is a major contributor to E.coli in surface waters. It was determined that non-compliant open feedlots with high indexes should be targeted for implementing feedlot fixes. Starting with feedlot improvements in the headwaters and working downstream would be an efficient way to make strides in water quality improvement.

The headwaters of the WFDNR is located in Murray County. Murray County has the highest percentage of non-compliant feedlots and sites with the highest indexes. This makes Murray County an especially critical area in which to implement feedlot fixes to improve water quality in the WFDNR. Non-compliant feedlots located on stretches that are not impaired also need to be addressed. Improving these sites will ensure that these stretches do not become impaired in the future.

To help implement feedlot fixes, it is recommended that the CFOs work with producers to encourage improvement projects and identify producers who are willing to make enhancements. HLWD and SWCD staff should actively pursuing funding for feedlot fixes. CFOs, HLWD, and SWCD staff must work together to implement improvement projects on feedlots.

The final report for the WFDNR TMDL Implementation Project, as well as the *TMDL Implementation Project Level III Inventory Results*, will be submitted to agency personnel, advisory committee members, and legislators. These documents will also be posted on the HLWD website. The intent is to provide information that describes the project objective, methods employed, results, discussion, and conclusion.

If a project of this magnitude were to be done again, the methods employed for conducting the Level III Inventory would remain the same. The process that was used worked well in all four counties. If one thing could be changed, it would be that county and HLWD staff would remain the same throughout the grant period. Consistent staff would minimize the possibility of inconsistencies in how inspections are done and how MinnFARMS are run.

The HLWD’s general operating funds are limited and minimal in comparison to what is needed for education and implementation projects. In order to make the best use of general operating funds, the HLWD will continue to put forth extensive efforts to obtain outside funding. Grants and general operating levy funds help to provide opportunities for education and implementation as described in the HLWD WMP. The following project was identified through the feedlot inventory and funds were sought to specifically address the site.

- Livestock Nutrient Reduction Project – CWF Grant. Through this effort, a manure storage basin and vegetated treatment strip were installed. There were funds remaining after project completion. Other sites were sought, but none were secured. The remaining funds will be returned to BWSR.

This grant helps HLWD staff with efforts for education and implementation as described in the HLWD WMP. Staff will continue to seek funding to assist with water quality improvement efforts.

11. Final Expenditures

Table 5 contains a summary of the cash and inkind expenditures that were made to assist in these efforts during the WFDNR TMDL Implementation Project grant period.

Table 5. Final Expenditures

Cost Category	Cash Budgeted	In-Kind Budgeted	Loan Budgeted	Cumulative Cash	Cumulative Inkind	Cumulative Loan	Cumulative Total	Cash Balance	In-Kind Balance	Loan Balance	Total Balance
Objective 1: Feedlot management and education											
Task A: Conduct Level III Inventory	\$0.00	\$111,090.00	\$0.00	\$0.00	\$107,940.00	\$0.00	\$107,940.00	\$0.00	\$3,150.00	\$0.00	\$3,150.00
Task B: Host manure management workshop	\$2,685.32	\$1,671.25	\$0.00	\$2,685.32	\$1,671.25	\$0.00	\$4,356.57	\$0.00	\$0.00	\$0.00	\$0.00
Objective 1 Total:	\$2,685.32	\$112,761.25	\$0.00	\$2,685.32	\$109,611.25	\$0.00	\$112,296.57	\$0.00	\$3,150.00	\$0.00	\$3,150.00
Objective 2: Project Promotion											
Task A: Website	\$232.62	\$210.00	\$0.00	\$232.62	\$148.75	\$0.00	\$381.37	\$0.00	\$61.25	\$0.00	\$61.25
Task B: Brochure	\$526.94	\$236.25	\$0.00	\$526.94	\$236.25	\$0.00	\$763.19	\$0.00	\$0.00	\$0.00	\$0.00
Task C: Conduct Semi-annual meetings	\$0.00	\$6,915.00	\$0.00	\$0.00	\$6,915.00	\$0.00	\$6,915.00	\$0.00	\$0.00	\$0.00	\$0.00
Task D: Landowner Mailing	\$1,607.59	\$0.00	\$0.00	\$1,607.59	\$0.00	\$0.00	\$1,607.59	\$0.00	\$0.00	\$0.00	\$0.00
Objective 2 Total:	\$2,367.15	\$7,361.25	\$0.00	\$2,367.15	\$7,300.00	\$0.00	\$9,667.15	\$0.00	\$61.25	\$0.00	\$61.25
Objective 3: Project Oversight											
Task A: Watershed Coordinator	\$143,213.93	\$15,600.00	\$0.00	\$128,566.29	\$15,600.00	\$0.00	\$144,166.29	\$14,647.64	\$0.00	\$0.00	\$14,647.64
Task B: Reporting	\$0.00	\$13,781.25	\$0.00	\$0.00	\$17,256.13	\$0.00	\$17,256.13	\$0.00	-\$3,474.88	\$0.00	-\$3,474.88
Subtotal Objective 3	\$143,213.93	\$29,381.25	\$0.00	\$128,566.29	\$32,856.13	\$0.00	\$161,422.42	\$14,647.64	-\$3,474.88	\$0.00	\$11,172.76
Objective 4: Septic System Loan											
Task A: Loan Implementation	\$0.00	\$0.00	\$44,527.68	\$0.00	\$0.00	\$44,527.68	\$44,527.68	\$0.00	\$0.00	\$0.00	\$0.00
Subtotal Objective 4	\$0.00	\$0.00	\$44,527.68	\$0.00	\$0.00	\$44,527.68	\$44,527.68	\$0.00	\$0.00	\$0.00	\$0.00
Objective 5: Feedlot Improvement											
Task A: Feedlot Environmental Upgrades	\$41,981.60	\$0.00	\$0.00	\$56,629.24	\$0.00	\$0.00	\$56,629.24	-\$14,647.64	\$0.00	\$0.00	-\$14,647.64
Subtotal Objective 5	\$41,981.60	\$0.00	\$0.00	\$56,629.24	\$0.00	\$0.00	\$56,629.24	-\$14,647.64	\$0.00	\$0.00	-\$14,647.64
	Cash Budgeted	In-Kind Budgeted	Loan Budgeted	Cumulative Cash	Cumulative Inkind	Cumulative Loan	Cumulative Total	Cash Balance	In-Kind Balance	Loan Balance	Total Balance
Subtotal Objective 1	\$2,685.32	\$112,761.25	\$0.00	\$2,685.32	\$109,611.25	\$0.00	\$112,296.57	\$0.00	\$3,150.00	\$0.00	\$3,150.00
Subtotal Objective 2	\$2,367.15	\$7,361.25	\$0.00	\$2,367.15	\$7,300.00	\$0.00	\$9,667.15	\$0.00	\$61.25	\$0.00	\$61.25
Subtotal Objective 3	\$143,213.93	\$29,381.25	\$0.00	\$128,566.29	\$32,856.13	\$0.00	\$161,422.42	\$14,647.64	-\$3,474.88	\$0.00	\$11,172.76
Subtotal Objective 4	\$0.00	\$0.00	\$44,527.68	\$0.00	\$0.00	\$44,527.68	\$44,527.68	\$0.00	\$0.00	\$0.00	\$0.00
Subtotal Objective 5	\$41,981.60	\$0.00	\$0.00	\$56,629.24	\$0.00	\$0.00	\$56,629.24	-\$14,647.64	\$0.00	\$0.00	-\$14,647.64
GRAND TOTAL	\$190,248.00	\$149,503.75	\$44,527.68	\$190,248.00	\$149,767.38	\$44,527.68	\$384,543.06	\$0.00	-\$263.63	\$0.00	-\$263.63