



Environment and Natural Resources Trust Fund (ENRTF)

M.L. 2013 Work Plan

Date of Status Update Report:

Date of Next Status Update Report: January 31, 2014

Date of Work Plan Approval: June 11, 2013

Project Completion Date: June 30, 2016

Is this an amendment request? no

PROJECT TITLE: Heron Lake Sediment and Phosphorus Reduction Implementation Projects

Project Manager: Jan Voit, District Administrator

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Location: Portions of Nobles, Jackson, and Murray Counties within the Heron Lake Watershed District

Total ENRTF Project Budget:

ENRTF Appropriation: \$122,000

Amount Spent: \$0

Balance: \$122,000

Legal Citation: M.L. 2013, Chp. 52, Sec. 2, Subd. 05c

Appropriation Language:

\$122,000 the first year is from the trust fund to the Board of Water and Soil Resources for an agreement with the Heron Lake Watershed District for public outreach and installation and monitoring of water quality improvement projects. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

I. PROJECT TITLE: Heron Lake Sediment and Phosphorus Reduction Implementation Projects

II. PROJECT STATEMENT:

The Heron Lake watershed, approximately 472 square miles, within portions of Nobles, Jackson, Murray, and Cottonwood Counties in southwestern Minnesota, is in dire need of water quality improvement for the benefit of public health, welfare, recreation, and the enhancement of wildlife habitat. Once known as the “Chesapeake Bay of the West”, Heron Lake and its watershed had clean water, fertile soil, lush vegetation, and abundant wildlife. At the turn of the century, market hunting was common because waterfowl was plentiful. As the landscape changed, wetlands were drained, streams were channelized, sod was broken for farming, and the waters became polluted. Currently, these lakes face severe algae blooms, loss of rooted aquatic vegetation, fewer migratory waterfowl, rough fish impacts, reduced water clarity, and flooding, similar to other rural, agricultural areas. Point and nonpoint source pollution, intensive tillage, non-compliant septic systems, feedlots, and urban stormwater runoff must be addressed to reduce sediment and phosphorus loading in North Heron Lake and South Heron Lake. The highly competitive requests for Clean Water Partnership and Clean Water Assistance grants have left the Heron Lake Watershed District (HLWD) in short supply of the funds needed to complete these unique and incredibly necessary projects. This proposal involves the HLWD working cooperatively with agency partners and private citizens to complete extensive projects for the protection and enhancement of water quality and wildlife as part of the effort to reestablish what was lost.

Heron Lake, a public water of the State of Minnesota, is impaired for phosphorus. Decreasing the amount of phosphorus and sediment entering Heron Lake would be a valuable first step in reducing water pollution. The HLWD Watershed Management Plan (WMP) and county water plans recognize on-the-ground best management practices as being the most effective way to address these problems.

The overall goal of this project is improved water quality, which is the HLWD’s number one priority. Goals to improve water quality will be achieved through the installation of two streambank stabilization projects, three water and sediment control basins, two bioretention basins, and one bioretention basin. These projects would reduce sediment and phosphorus to Heron Lake by 300 tons per year and 315 pounds per year, respectively. Water samples would be collected and analyzed over a three-year period and compared to data gathered since 1996 as a mean to determine project effectiveness. The results of these efforts would be summarized in a newsletter distributed to approximately 3,500 HLWD residents, agency personnel, and legislators. A one-day field day will be held in an effort to reach 50 watershed landowners and share information regarding water quality improvement and what can be done to assist in pollution-reducing projects.

Completion of projects to reduce nonpoint source pollution is crucial to the success of the HLWD’s efforts. Personal contact will be made with landowners to offer technical assistance and information about available funding. The HLWD will work cooperatively with agency partners and private citizens to complete projects. By providing cost-share funds for conservation practices, project sponsors believe there will be healthier habitats for wildlife and more effective filtering areas, complementing environmentally-friendly farming practices.

III. PROJECT STATUS UPDATES:

Project Status as of January 2014

Project Status as of July 2014

Project Status as of January 2015

Project Status as of July 2015

Project Status as of January 2016

IV. PROJECT ACTIVITIES AND OUTCOMES:

ACTIVITY 1: Project Implementation

Activity Status as of January 2014

Activity Status as of July 2014

Activity Status as of January 2015

Activity Status as of July 2015

Activity Status as of January 2016

Final Report Summary

Description:

Heron Lake is included on the 303(d) list for phosphorus impairment. Decreasing the amount of sediment and phosphorus entering public waters within the Heron Lake watershed would aid in meeting pollution reduction goals.

According to the Minnesota Department of Natural Resources, 2006, *Tomorrow's Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife*, Comprehensive Wildlife Conservation Strategy, land ownership within the HLWD is 2.7% public and 97.3% private. If one or more of the projects described below fails to go through due to unforeseen circumstances, an alternative project with similar pollutant reductions will be found within the watershed. HLWD staff will do their utmost to secure projects on publicly-owned lands or public waters.

Through this effort, the HLWD will install two streambank stabilization projects, three water and sediment control basins, two bioretention basins, and one bioretention basin. These projects would reduce sediment and phosphorus to Heron Lake (protected waters number 32-57) by 300 tons per year and 315 pounds per year, respectively. Cooperators will provide 25% cash match in order to receive grant funds. This also secures their commitment to practice installation and land use change.

Cooperators will also sign agreements for each practice to ensure the projects will remain in place. The conservation contract specifies that the cooperator is responsible for any and all maintenance or repair required to certify that the project is functioning to its maximum water quality and wildlife potential. The HLWD will serve as the oversight authority for all projects and will conduct annual inspections to ensure compliance. The completed projects will provide water quality benefits for public waters in Minnesota.

Local funds are not sufficient to implement these projects. Without ENRTF, **none** of the projects will be implemented and **none** of the education opportunities will be undertaken. The goals to reduce pollution in public waters of Minnesota will not be met.

1. Okabena Creek Streambank Stabilization Projects. Work with Southwest Prairie Technical Service Agency (SWPTSA), contractors or Minnesota Conservation Corps (MCC), and cooperators to design and install two streambank stabilization projects by implementing five J-hook weirs and one diversion. The projects will be installed in **Section 31 of Alba Township on Jack Creek, which is a public water defined as a natural and altered watercourse with a total drainage area greater than two square miles in area**. A Department of Natural Resources (DNR) Protected Waters Permit is required for this project. An application for permit has been submitted and approved. Projects will be designed to Natural Resources Conservation Service (NRCS) specifications.

J-hook weirs are an upstream directed, gently sloping structure composed of natural materials and are designed to reduce streambank erosion. The structures can include a combination of boulders, logs, and root wads. They are positioned on the outside of stream beds where erosion is occurring in the near-bank region. Recirculation of the water flow from the near-bank does not cause erosion.

The vane portion of the structure occupies one-third of the width of the channel, while the “hook” occupies the center third. Water velocity is decreased in the near-bank region and the center third of the channel. Backwater is created only in the near-bank region. The small vane angle gently redirects water velocity from the near-bank region, reducing active bank erosion. The “hook” portion of the vane produces a long, deep, wide pool, providing energy dissipation and holding cover for fish.

A diversion will be implemented to resolve severe bank erosion by re-sloping the sloughing bank, establishing perennial vegetation, and diverting the water to prevent the streambank from saturating and eroding. The project will be installed in **Section 31 of Alba Township on Okabena Creek, a public water defined as a natural and altered watercourse with a total drainage area greater than two square miles in area.** A DNR Protected Waters Permit is required for this project. An application for permit has been submitted and approved.

- Project participation requires 25% cash match and signing an agreement that states the project will remain in place for a minimum of 50 years.
 - Time frame: July 1, 2013 to August 31, 2013
 - Person(s) responsible: HLWD technician, HLWD summer interns, and contracted project construction.
2. Graham Lakes Bioretention Basin. Work with SWPTSA, contractor or MCC, and cooperator to install one bioretention basin to treat overland runoff before entering **West Graham Lake (protected waters number 53-21)**, a public water body integral for boating and fishing within the Heron Lake watershed. Projects will be designed to NRCS specifications.

Bioretention basins are landscaped depressions or shallow basins used to slow and treat on-site stormwater runoff. Stormwater is directed to the basin and then percolates through the system where it is treated by a number of physical, chemical and biological processes. The slowed, cleaned water is allowed to infiltrate native soils or is directed to nearby public waters.

- Project participation requires payment of 25% cash match and signing an agreement that states the project will remain in place for a minimum of 50 years.
 - Time frame: July 1, 2013 to December 31, 2013
 - Person(s) responsible: HLWD technician, HLWD summer intern(s), and contracted project construction
3. Water and Sediment Control Basin. Work will also be done with NRCS, contractors, and cooperators to design and install one water and sediment control basin project in Section 17 of Graham Lakes Township to reduce water pollution entering **Jack Creek, a public water defined as a natural and altered watercourse with a total drainage area greater than two square miles in area.** Projects will be designed to NRCS specifications.

A water and sediment control basin is a small earthen ridge-and-channel or embankment built across (perpendicular to) a small watercourse or area of concentrated flow within a field. They are commonly built in a parallel series with the first ridge crossing the top of the watercourse and the last ridge crossing the bottom, or nearly so. They are designed to trap agricultural runoff water and sediment as it flows down the watercourse; this keeps the watercourse from becoming a field gully and reduces the amount of runoff and sediment leaving the field.

- Project participation requires payment of 25% cash match and signing an agreement that states the project will remain in place for a minimum of 20 years. NRCS estimates the actual lifespan of this practice to be 20 years. Because of their effectiveness at trapping sediments and pollutants, these practices require maintenance after that amount of time.
- Time frame: July 1, 2013 to November 30, 2013
- Person(s) responsible: HLWD technician, HLWD summer intern(s), and contracted project construction

4. Fulda Lakes Biodetention Basins. Work with SWPTSA, contractor or MCC, and cooperators to design and install two biodetention basins in Section 35, Bondin Township, Murray County to provide treatment and flood storage by capturing 87 acres of overland runoff before entering First and Second Fulda Lakes (protected waters number 51-21 and 51-20). These basins are located within the shoreline area of **First Fulda Lake (protected waters number 51-21)**. Projects will be designed to NRCS specifications.

A biodetention basin is installed to reduce gully erosion in a natural watercourse, provide temporary storage of storm water to trap sediment and pollutions, and reduce the negative impacts from flooding. The detention basin has an orifice level with the bottom of the basin so that all of the water eventually drains out and it remains dry between storms.

The Fulda community has requested funding and technical assistance from the HLWD to employ efforts to improve the Fulda Lake system's aesthetics and recreational value. First Fulda Lake (protected waters number 51-21) and Second Fulda Lake (protected waters number 51-20) are designated protected waters within the City of Fulda. The DNR and Murray County implemented in-lake management that included replacing the fixed-crest dam with a variable-crest structure, manipulating water levels, fish eradication, and fish stocking.

This project would be installed in Section 35 of Bondin Township on **First Fulda Lake (protected waters number 51-21)** as a means to reduce sediment and phosphorus entering the lake system and provide flood storage during storm events.

- Project participation requires payment of 25% cash match and signing an agreement that states the project will remain in place for a minimum of 50 years.
- Time frame: July 1, 2013 to November 30, 2013
- Person(s) responsible: HLWD technician, HLWD summer intern(s), and contracted project construction

5. Water and Sediment Control Basin. Work with NRCS, contractors or MCC, and cooperators to design and install two water and sediment control basin projects in Section 25 of Fenton Township to reduce water pollution entering **Jack Creek, a public water defined as a natural and altered watercourse with a total drainage area greater than two square miles in area**. Projects will be designed to NRCS specifications.

A water and sediment control basin is a small earthen ridge-and-channel or embankment built across (perpendicular to) a small watercourse or area of concentrated flow within a field. They are commonly built in a parallel series with the first ridge crossing the top of the watercourse and the last ridge crossing the bottom, or nearly so. They are designed to trap agricultural runoff water and sediment as it flows down the watercourse; this keeps the watercourse from becoming a field gully and reduces the amount of runoff and sediment leaving the field.

- Project participation requires payment of 25% cash match and signing an agreement that states the project will remain in place for a minimum of 20 years. NRCS estimates the actual lifespan of this practice to be 20 years. Because of their effectiveness at trapping sediments and pollutants, these practices require maintenance after that amount of time.
- Time frame: July 1, 2013 to November 30, 2013
- Person(s) responsible: HLWD technician, HLWD summer intern(s), and contracted project construction

Summary Budget Information for Activity 1:

ENRTF Budget: \$93,000
Amount Spent: \$ 0
Balance: \$93,000

Activity 1 Completion Date: December 31, 2013

Outcome	Completion Date	Budget
1. Stabilize 1,050 feet of streambank through the installation of two streambank stabilization projects to reduce sediment loads to streams and to prevent loss of streambank vegetation and fish and wildlife habitat.	August 31, 2013	\$16,118
2. Install one bioretention basin, 1.4 acres in size, allowing for 5.7 acre-feet of potential storage and slowing infiltration to receiving waters.	December 31, 2013	\$38,975
3. Install one water and sediment control basins along a Graham Lakes tributary, approximately 2,400 feet, to trap overland runoff and reduce gully erosion by controlling flow and releasing water slowly to drainage area.	November 30, 2013	\$8,890
4. Install two bioretention basins to provide treatment and flood storage by capturing 87 acres of overland runoff before entering First and Second Fulda Lakes.	November 30, 2013	\$14,157
5. Install two water and sediment control basins along Jack Creek tributary, approximately 2,200 feet, to trap overland runoff and reduce gully erosion by controlling flow and releasing water slowly to drainage area.	December 31, 2013	\$14,860

The approach to these projects is further delineated in **Attachment 1**.

ACTIVITY 2: Monitoring

Activity Status as of January 2014

Activity Status as of July 2014

Activity Status as of January 2015

Activity Status as of July 2015

Activity Status as of January 2016

Final Report Summary

Description:

The HLWD will provide water quality monitoring and continuous site preservation through this endeavor.

- Collect 20 water samples at three different sites, spring through fall each year. The data will be analyzed to determine the effectiveness of installed projects.
- Time frame: July 1, 2013 to June 30, 2016
- Person(s) responsible: HLWD technician and HLWD summer intern(s)

Summary Budget Information for Activity 2:

ENRTF Budget: \$26,000

Amount Spent: \$ 0

Balance: \$26,000

Activity 2 Completion Date: June 30, 2016

Outcome	Completion Date	Budget
1. Take event-based water samples for 200 samples during the grant period. The goal of the monitoring effort is to obtain sufficient accurate data to provide valuable information to the public regarding project effectiveness.	June 30, 2016	\$ inkind
2. Analyze water samples for total suspended solids, suspended volatile solids, turbidity, e.coli, dissolved orthophosphorus, nitrate-nitrite nitrogen, total kjeldahl nitrogen, ammonia nitrogen, and total phosphorus. Dissolved oxygen, pH, and temperature will also be measured with each collection.	June 30, 2016	\$26,000

ACTIVITY 3: Public Education

- Activity Status as of January 2014**
- Activity Status as of July 2014**
- Activity Status as of January 2015**
- Activity Status as of July 2015**
- Activity Status as of January 2016**
- Final Report Summary**

Description: The HLWD will provide effectiveness information to the public through outreach and education.

- HLWD staff will analyze monitoring data and prepare results.
- HLWD staff will draft a newsletter to publicize project data and the field day that will be distributed to 3,500 watershed residents, agency personnel, and legislators.
- HLWD staff will create a project brochure and gather information for packets to distribute at the field day.
- HLWD staff will plan and host one field day. Participants will travel to three different project sites. The goal is to reach 50 people.

Summary Budget Information for Activity 3:

ENRTF Budget: \$3,000
Amount Spent: \$ 0
Balance: \$3,000

Activity 3 Completion Date: June 30, 2016

Outcome	Completion Date	Budget
1. Analysis of water quality data will be used to determine project effectiveness.	June 30, 2016	\$ inkind
2. Publicize project data and detailed information regarding project installation and practice requirements for future restoration endeavors through a newsletter distributed to 3,500 watershed residents, agency personnel, and legislators.	April 30, 2016	\$2,100
3. Summarize project results in a brochure to be distributed at the field day.	April 30, 2016	\$900
4. Plan and host one field day highlighting three different project sites, reaching 50 people.	June 15, 2016	\$ inkind

V. DISSEMINATION:

Description: The HLWD will provide project information through the following:

- Monitoring results will be summarized in a brochure that will be distributed at the field day.
- A newsletter will be drafted to publicize project results and the field day.
- A field day will be held to explain the project and provide the public with results.
- Information regarding the grant will be contained on the HLWD website at www.hlwdonline.org.
- Results will be made available to the Legislative-Citizen Commission on Minnesota Resources (LCCMR) through semi-annual, annual, and final reports.

- Activity Status as of January 2014**
- Activity Status as of July 2014**
- Activity Status as of January 2015**
- Activity Status as of July 2015**

**Activity Status as of January 2016
Final Report Summary**

VI. PROJECT BUDGET SUMMARY:

A. ENRTF Budget:

Budget Category	\$ Amount	Explanation
Professional/Technical/Service Contracts:	\$93,000	Southwest Prairie Technical Service Agency for engineering and technical assistance (\$9,000) Contractor(s) (yet to be determined) for materials, stabilization, and earthwork (\$84,000)
Printing:	\$3,000	3,500 newsletters @ \$0.60/each (\$2,100) Brochures (\$900)
Other: Laboratory Analysis	\$26,000	200 samples @ \$130/sample
TOTAL ENRTF BUDGET:	\$122,000	

Explanation of Use of Classified Staff: N/A

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

Number of Full-time Equivalent (FTE) funded with this ENRTF appropriation: N/A

Number of Full-time Equivalent (FTE) estimated to be funded through contracts with this ENRTF appropriation: N/A

B. Other Funds:

Source of Funds	\$ Amount Proposed	\$ Amount Spent	Use of Other Funds
Non-state			
Landowner Cash Match	\$27,827	\$0	Landowner cash contribution to project costs
Heron Lake Watershed District	\$33,000	\$0	Flow measurement contract with DNR
Heron Lake Watershed District and Nobles, Jackson, and Murray Soil and Water Conservation District Personnel	\$25,201	\$0	Administrator (\$7,875), Watershed Technician (\$7,500), Interns (\$6,720), Travel to sites (\$2,065), Soil and Water Conservation District (SWCD) Managers (\$1,050)
TOTAL OTHER FUNDS:	\$86,037	\$0	

VII. PROJECT STRATEGY:

A. Project Partners:

Brian Nyborg, Jackson SWCD, Ed Lenz, Nobles SWCD, and Howard Konkol, Murray SWCD will provide technical assistance for project installation and field day. Appropriation amount: \$0

Russ Hoogendorn, SWPTSA will provide engineering services and technical assistance for project installation and field day. Appropriation amount: \$9,000

Ross Behrends, HLWD Watershed Technician and HLWD Summer Interns will assist with project installation, water quality monitoring, and field day. Appropriation amount: \$0

Jan Voit, HLWD Administrator will receive the funds, administer the grant, and create the brochure and newsletter. Appropriation amount: \$0

B. Project Impact and Long-term Strategy:

HLWD implementation and education efforts are strongly rooted in the HLWD WMP, grant work plans, and our rules and regulations as a means to address nonpoint source pollution. Obtaining funds from the LCCMR through the ENRTF assures that implementation and education endeavors will continue through the middle of 2016.

The establishment of long-term monitoring sites has enabled HLWD to focus monitoring efforts and gather intensive data. It is apparent that weather patterns greatly affect the water quality indicating that areas in need of protection still exist. Grant funds secured from the LCCMR through the ENRTF will ensure that monitoring will continue through June of 2016.

The HLWD's general operating funds are limited and minimal in comparison to what is needed for implementation and education 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. The HLWD currently implements the following grant programs:

- Alternative Tile Intake Cost-share Program – Clean Water Partnership (CWP) Continuation Grant
- Heron Lake Sediment Reduction Demonstration Project – Environmental Protection Agency (EPA) 319 Grant
- Cover Crop Demonstration Project – North Central Sustainable Agriculture Research and Education (NCR-SARE)
- Fulda Phosphorus Reduction Initiative – EPA 319 Grant
- WFDNR TMDL Implementation Project – EPA 319 Grant
- Heron Lake Phosphorus Reduction Project – CWP Loan Program

These programs and projects help HLWD staff continue efforts for implementation and education as described in the HLWD WMP.

HLWD staff has made documentation a priority in all education and implementation efforts. This is done through various means including water quality monitoring, tracking website visits, recording meeting attendance, pre- and post-tests at workshops, photographs, and comments from meeting attendees.

C. Spending History:

Funding Source	FY08	FY09	FY10	FY11	FY12-13
Conservation Innovation Grant – Controlled Drainage Demonstration Project	26,140				
Clean Water Partnership Continuation	428,752				
EPA 319 Grant – Elk Creek Conservation Tillage	28,200				
EPA 319 Grant – Alternative Tile Intake Cost-Share Program	23,193				
EPA 319 Grant – Fulda Lakes BMP Project		55,800			
EPA 319 Grant – BMP Project for Alba Township		40,800			
CWF SWAG		6,411			
NCR-SARE – Conservation Tillage Bus Tour		1,942			
EPA 319 Grant – Conservation			17,443		

Tillage Demonstration Plot					
Clean Water Partnership – Alternative Tile Intake Cost-Share Program			36,000		
WQMP Grant – Watershed Coordinator			61,306		
EPA 319 Grant – Sediment Reduction Demonstration Project				16,500	
EPA 319 Grant – Level III Feedlot Inventory					190,298
EPA 319 Grant – Rain Garden Education					12,600
DNR subgrant from LCCMR – Lakescaping Buffer Zones and Technology Transfer				30,000	
NC-SARE – Cover Crop Demonstration Project					6,642
Clean Water Partnership – Loan Program					450,000

VIII. ACQUISITION/RESTORATION LIST:

See Acquisition/Restoration List (Attachment 2).

IX. MAP(S):

See Map (Attachment 3).

X. RESEARCH ADDENDUM:

N/A

XI. REPORTING REQUIREMENTS:

Periodic work plan status update reports will be submitted not later than January 31, 2014, June 30, 2014, January 31, 2015, June 30, 2015, and January 30, 2016. A final report and associated products will be submitted between June 30 and August 15, 2016 as requested by the LCCMR.

Attachment 1. Restoration/Enhancement and Management Plan

1. Okabena Creek Streambank Stabilization Projects

Project Description:

The HLWD will work with Southwest Prairie Technical Service Agency (SWPTSA), contractors, or Minnesota Conservation Corps (MCC), and cooperators to design and install two streambank stabilization projects by implementing five J-hook weirs and one diversion. The projects will stabilize 1,050 feet of streambank to reduce sediment loads to streams and to prevent loss of streambank vegetation and fish and wildlife habitat. They will be installed in **Section 31 of Alba Township on Jack Creek, which is a public water defined as a natural and altered watercourse with a total drainage area greater than two square miles in area.** A Department of Natural Resources (DNR) Protected Waters Permit is required for this project. An application for permit has been submitted and approved. Projects will be designed to Natural Resources Conservation Service (NRCS) specifications.

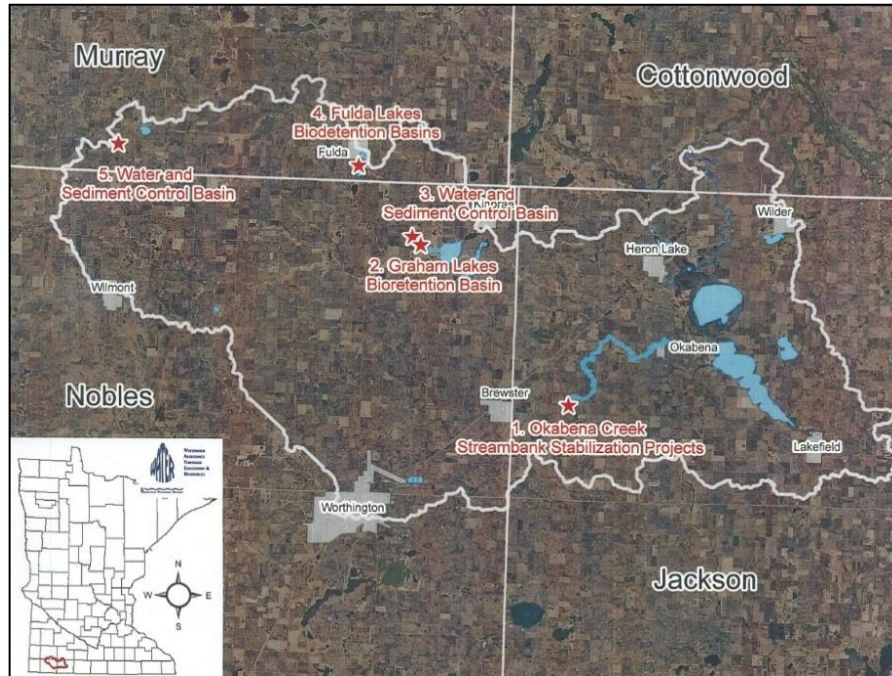
J-hook weirs are an upstream directed, gently sloping structure composed of natural materials and are designed to reduce streambank erosion. The structures can include a combination of boulders, logs, and root wads. They are positioned on the outside of stream beds where erosion is occurring in the near-bank region. Recirculation of the water flow from the near-bank does not cause erosion. The vane portion of the structure occupies one-third of the width of the channel, while the “hook” occupies the center third. Water velocity is decreased in the near-bank region and the center third of the channel. Backwater is created only in the near-bank region. The small vane angle gently redirects water velocity from the near-bank region, reducing active bank erosion. The “hook” portion of the vane produces a long, deep, wide pool, providing energy dissipation and holding cover for fish.

A diversion will be implemented to resolve severe bank erosion by re-sloping the sloughing bank, establishing perennial vegetation, and diverting the water to prevent the streambank from saturating and eroding.

Restoration Plan Components

- Current conditions
 - The streambank at the proposed Okabena Creek site is eroding a rate of five feet per year accounting for over 210 pounds of sediment and 200 pounds of phosphorous polluting the stream each year. The current riparian area offers no terrestrial or aquatic habitat.
- Target state
 - This stream stabilization project is aiming to restore the stream riparian community by eliminating erosion, improving water quality, providing deep water aquatic habitat for fish, and providing a natural vegetated riparian zone to be utilized by aquatic and terrestrial species.
- Proposed restoration or enhancement methodology
 - This project will be using engineering methodology utilizing sound stream geomorphology and biological restoration components as supplied by the DNR Aquatic Habitat Specialist. These practices have proven successful throughout other parts of the state.
- Timetable
 - July 1, 2013 to August 31, 2013
- Long-term maintenance and management needs
 - Following installation of the J-Hook weirs there will be little to no maintenance needed. Possible needs may consist of re-seeding if initial seeding does not become established due to weather conditions. Additional management will be needed for weed control across the project area.
- Costs associated with long-term maintenance and management and how they will be financed
 - Cooperators will be responsible for any costs following the completion of the approved project.
- Initial restoration evaluation will be provided at completion of the appropriation as part of the final report
 - August 15, 2016

- Second restoration evaluation will be completed three years after the completion of the expenditure
 - August 15, 2019
- Describe how consideration will be given to contracting with Conservation Corps Minnesota
 - Minnesota Conservation Corp will be contacted for all project items that fall within their scope of work.
- Map



2. Graham Lakes Bioretention Basin

Project Description

The HLWD will work with SWPTSA, contractor, or MCC, and cooperator to install one bioretention basin to treat overland runoff. This 1.4 acres basin, in Section 17, Graham Lakes Township, Nobles County, will allow for 5.7 acre-feet of potential storage and slowing runoff before entering **West Graham Lake (protected waters number 53-21)**, a public water body integral for boating and fishing within the Heron Lake watershed. Projects will be designed to NRCS specifications.

Bioretention basins are landscaped depressions or shallow basins used to slow and treat on-site stormwater runoff. Stormwater is directed to the basin and then percolates through the system where it is treated by a number of physical, chemical and biological processes. The slowed, cleaned water is allowed to infiltrate native soils or is directed to nearby public waters. Similar projects within the HLWD have been shown to reduce the amount of sediment entering our public waters by 87 percent.

Restoration Plan Components

- Current conditions
 - The current area is overwhelmed by annual gully erosion and flooding that contributes several tons of sediment and several hundred pounds of phosphorus each year. This sediment and its accompanying pollutants are a large source of water quality degradation to West Graham Lake. This project will improve wildlife habitat for terrestrial and aquatic species along with benefiting all of the biota known in West Graham Lake by improving the water quality entering the public lake.
- Target state
 - The project intends to rebuild the wildlife component through the use of restoring a failed aquatic structure to provide surface water, flood storage, and an upland native buffer. The ability to capture storm water and sediments will provide a stable and healthy downstream environment.

- Proposed restoration or enhancement methodology
 - This project will incorporate all know ecological and hydrological components as described by SWPTSA Engineers.
- Timetable
 - July 1, 2013 to December 31, 2013
- Long-term maintenance and management needs
 - This retention basin will fill with sediment over time, gradually reducing its sediment and flood mitigation potential. Cooperator will be responsible for this maintenance. Following reseeding of disturbed areas, weed control will be required annually.
- Costs associated with long-term maintenance and management and how they will be financed
 - Cooperators will be responsible for any costs following the completion of the approved project.
- Initial restoration evaluation will be provided at completion of the appropriation as part of the final report
 - August 15, 2016
- Second restoration evaluation will be completed three years after the completion of the expenditure
 - August 15, 2019
- Describe how consideration will be given to contracting with Conservation Corps Minnesota
 - Minnesota Conservation Corp will be contacted for all project items that fall within their scope of work.
- Map
 - See map on page 12

3. Water and Sediment Control Basin

Project Description

The HLWD will work with NRCS, contractors, and cooperators to design and install one water and sediment control basin project. This project will be located in Section 17 of Graham Lakes Township trap overland runoff and reduce 2,400 feet of gully erosion by controlling flow and reducing water pollution entering ***Jack Creek, a public water defined as a natural and altered watercourse with a total drainage area greater than two square miles in area.*** Projects will be designed to NRCS specifications.

A **water and sediment control basin** is a small earthen ridge-and-channel or embankment built across (perpendicular to) a small watercourse or area of concentrated flow within a field. They are commonly built in a parallel series with the first ridge crossing the top of the watercourse and the last ridge crossing the bottom, or nearly so. They are designed to trap agricultural runoff water and sediment as it flows down the watercourse; this keeps the watercourse from becoming a field gully and reduces the amount of runoff and sediment leaving the field.

Restoration Plan Components

- Current conditions
 - This project will provide gully stabilization to an agricultural ravine that is a major source of sediment and nutrient loading to a DNR Wildlife Management Area (WMA). Upland runoff is causing a degraded wetland environment.
- Target state
 - This project aims to restore the functionality of the WMA wetland community by reducing sediment and nutrient inputs from upland runoff.
- Proposed restoration or enhancement methodology
 - The project will be designed according to the NRCS water and sediment control basin specifications.
- Timetable
 - July 1, 2013 to November 30, 2013
- Long-term maintenance and management needs
 - This practice is designed to capture sediment before entering public waters. Following large storm events they may need a simple cleanout of the deposited sediment.

- Costs associated with long-term maintenance and management and how they will be financed
 - Cooperators will be responsible for any costs following the completion of the approved project.
- Initial restoration evaluation will be provided at completion of the appropriation as part of the final report
 - August 15, 2016
- Second restoration evaluation will be completed three years after the completion of the expenditure
 - August 15, 2019
- Describe how consideration will be given to contracting with Conservation Corps Minnesota
 - Minnesota Conservation Corp will be contacted for all project items that fall within their scope of work.
- Map
 - See map on page 12

4. Fulda Lakes Biodetention Basins

Project Description

The HLWD will work with SWPTSA, contractor, or MCC, and cooperators to design and install two biodetention basins in Section 35, Bondin Township, Murray County to provide treatment and flood storage by capturing 87 acres of overland runoff before entering First and Second Fulda Lakes (protected waters number 51-21 and 51-20). These basins are located within the shoreline area of **First Fulda Lake (protected waters number 51-21)**. Projects will be designed to NRCS specifications.

A bioretention basin is installed to reduce gully erosion in a natural watercourse, provide temporary storage of storm water to trap sediment and pollutions, and reduce the negative impacts from flooding. The detention basin has a rock inlet level with the bottom of the basin so that all of the water eventually drains out and it remains dry between storms. The use of a rock inlet will provide further treatment of stormwater maximizing the water quality benefits of the project.

Restoration Plan Components

- Current conditions Currently two 36 inch open intakes are allowing large amounts of upland runoff to directly outlet into Fulda Lakes. The large influx of sediment and nutrients is affecting the aquatic fish and vegetation through increased algae blooms and turbid conditions.
- Target state
 - By limiting sediment and nutrient discharge the project will be assisting with the restoration of the aquatic community of Fulda Lakes. Both aquatic wildlife and vegetation will benefit from improved water clarity and quality.
- Proposed restoration or enhancement methodology
 - This project will incorporate all know ecological and hydrological components as outlined by SWPTSA Engineers.
- Timetable
 - July 1, 2013 to November 30, 2013
- Long-term maintenance and management needs
 - Following installation there will be the need to keep the outlet structure free of dirt and debris.
- Costs associated with long-term maintenance and management and how they will be financed
 - All costs following completion of the project will be financed by Bondin Township.
- Initial restoration evaluation will be provided at completion of the appropriation as part of the final report
 - August 15, 2016
- Second restoration evaluation will be completed three years after the completion of the expenditure
 - August 15, 2019
- Describe how consideration will be given to contracting with Conservation Corps Minnesota

- Minnesota Conservation Corp will be contacted for all project items that fall within their scope of work.
- Map
 - See map on page 12

5. Water and Sediment Control Basins

Project Description

The HLWD will work with NRCS, contractors, or MCC, and cooperators to design and install two water and sediment control basin projects in Section 25 of Fenton Township to trap overland runoff and reduce 2,200 feet of gully erosion by controlling flow and releasing water slowly reduce water pollution to the drainage area entering ***Jack Creek, a public water defined as a natural and altered watercourse with a total drainage area greater than two square miles in area.*** Projects will be designed to NRCS specifications.

A **water and sediment control basin** is a small earthen ridge-and-channel or embankment built across (perpendicular to) a small watercourse or area of concentrated flow within a field. They are commonly built in a parallel series with the first ridge crossing the top of the watercourse and the last ridge crossing the bottom, or nearly so. They are designed to trap agricultural runoff water and sediment as it flows down the watercourse; this keeps the watercourse from becoming a field gully and reduces the amount of runoff and sediment leaving the field.

Restoration Plan Components

- Current conditions
 - This project will provide gully stabilization to an agricultural ravine that is a major source of sediment and nutrient loading to West Graham Lake. Extensive upland runoff is affecting water quality and clarity and contributing to a decreased aquatic environment in the public lake..
- Target state
 - This project aims to restore the functionality of the Lake community by reducing sediment and nutrient inputs from upland runoff. Improving water clarity will benefit the aquatic health of the public lake.
- Proposed restoration or enhancement methodology
 - The project will be designed according to the NRCS water and sediment control basin specifications.
- Timetable
 - July 1, 2013 to November 30, 2013
- Long-term maintenance and management needs
 - This practice is designed to capture sediment before entering public waters. Following large storm events they may need a simple cleanout of the deposited sediment.
- Costs associated with long-term maintenance and management and how they will be financed
 - Cooperators will be responsible for any costs following the completion of the approved project.
- Initial restoration evaluation will be provided at completion of the appropriation as part of the final report
 - August 15, 2016
- Second restoration evaluation will be completed three years after the completion of the expenditure
 - August 15, 2019
- Describe how consideration will be given to contracting with Conservation Corps Minnesota
 - Minnesota Conservation Corp will be contacted for all project items that fall within their scope of work.
- Map
 - See map on page 12

Attachment 2. Acquisition/Restoration List

Environment and Natural Resources Trust Fund													
M.L. 2013 Acquisition/Restoration List													
Project Title: Heron Lake Sediment and Phosphorus Reduction Implementation Projects													
Project Manager Name: Jan Voit, District Administrator													
M.L. 2013 ENRTF Appropriation: \$122,000													
#	Acquisition or Restoration Parcel Name	Geographic Coordinates		Estimated Cost	Estimated Annual PILT Liabilities	County	Ecological Significance	Activity Description	# of Acres	# of Shoreline Miles	Type of Landowner	Proposed Fee Title or Easement Holder (if applicable)	Status
		Latitude	Longitude										
1	Okabena Creek Streambank Stabilization Project	43° 41' 2.794" N	95° 26' 40.281" W	\$ 16,118	n/a	Jackson	highly eroded stream banks	site preparation, project construction	0.5	0.13	private individual/ in public waters	n/a	pending
2	Graham Lakes Bioretention Basin	43° 48' 23.943" N	95° 32' 29.319" W	\$ 38,975	n/a	Nobles	flood storage and wildlife habitat	site preparation project construction	1.4	0.15	private individual/ in public waters	n/a	pending
3	Water and Sediment Control Basin	43° 48' 43.221" N	95° 32' 36.940" W	\$ 8,890	n/a	Nobles	gully erosion in agricultural field	site preparation, project construction	161	n/a	private individual/o utlets directly to public waters	n/a	pending
4	Fulda Lakes Biodetention Basins	43° 51' 23.287" N	95° 36' 10.061" W	\$ 14,860	n/a	Murray	gully erosion in natural watercourse	site preparation, project construction	55	0.17	private individual/ in public waters	n/a	pending
5	Water and Sediment Control Basin	43° 52' 7.752" N	95° 49' 45.419" W	\$ 14,157	n/a	Murray	gully erosion in agricultural field	site preparation, project construction	97	n/a	private individual/o utlets directly to public waters	n/a	pending

Attachment A: Budget Detail for M.L. 2013 Environment and Natural Resources Trust Fund Projects											
Project Title: Heron Lake Sediment and Phosphorus Reduction Implementation Projects											
Legal Citation: M.L. 2013, Chp. 52, Sec. 2, Subd. 05c											
Project Manager: Jan Voit, District Administrator											
M.L. 2013 ENRTF Appropriation: \$122,000											
Project Length and Completion Date: June 30, 2016											
Date of Update:											
ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Activity 1 Budget	Amount Spent	Balance	Activity 2 Budget	Amount Spent	Balance	Activity 3 Budget	Amount Spent	Balance	TOTAL BUDGET	TOTAL BALANCE
BUDGET ITEM	<i>Project Implementation</i>			<i>Monitoring</i>			<i>Public Education</i>				
Professional/Technical/Service Contracts											
Southwest Prairie Technical Service Agency engineering and technical assistance	9,000		9,000							9,000	9,000
Contractor (yet to be determined) materials, stabilization, and earthwork	84,000		84,000							84,000	84,000
<i>Subtotal</i>	93,000	0	93,000							93,000	93,000
Printing											
Newsletter (3,500 * \$0.60/newsletter)							2,100		2,100	2,100	2,100
Brochures (900)							900		900	900	900
<i>Subtotal</i>							3,000	0	3,000	3,000	3,000
Other											
Laboratory Analysis (200 samples * \$130/sample)				26,000		26,000				26,000	26,000
<i>Subtotal</i>											
COLUMN TOTAL	\$93,000	\$0	\$93,000	\$0	\$0	\$0	\$3,000	\$0	\$3,000	\$122,000	\$122,000

Murray

Cottonwood

4. Fuida Lakes
Bioretention Basins

Fuida

5. Water and
Sediment Control Basin

3. Water and
Sediment Control Basin

2. Graham Lakes
Bioretention Basin

Nobles

1. Okabena Creek
Streambank Stabilization Projects

Lakefield

Jackson

Worthington

Brewster

Heron Lake

Wilder

Wilmont

