319/Clean Water Partnership (CWP)/
Total Maximum Daily Loads

Semi-Annual Report for Reporting Year 2012

Doc Type: Semi-Annual Report

Reporting Period: ☑ July 1 through December 31 (Due February 1)
☐ January 1 through June 30 (Due August 1)

All information is required by U.S. Environmental Protection Agency (EPA). Do not leave blanks. This report form can be typed using your computer. Use the "tab" key to move through the fields of this form. Enter responses using text and check boxes as indicated. Keep a copy for your records.

I. General Report Information

1. Project title: Jack and Okabena Creek Sediment Reduction Project

2. Project sponsor: Heron Lake Watershed District

3. Project representative: Jan Voit, District Administrator

4. E-mail address: jan.voit@mysmbs.com

5. Funding: ☑ 319 ☐ CWP ☐ Clean Water Legacy/Clean Water Fund ☐ Other: ____________________________

6. Contract number: 55000 PRJ number: PRJ07894

7. MPCA Project Manager: Katherine Pekarek-Scott

8. Contract start date (mm/dd/yyyy): 10/1/2012 Contract end date (mm/dd/yyyy): 8/31/2016

The following six questions refer to the lists on the Minnesota Pollution Control Agency (MPCA) website following this report form:


10. Primary and Secondary Categories of Pollution:

<table>
<thead>
<tr>
<th>Category (name only)</th>
<th>Primary</th>
<th>Secondary</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hydromodification</td>
<td>Channel Erosion</td>
<td>Streambank or Shoreline Modification</td>
</tr>
</tbody>
</table>

11. Nonpoint Source (NPS) Functional Category:

<table>
<thead>
<tr>
<th>Category (name only)</th>
<th>Primary</th>
<th>Secondary</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Erosion Control Projects</td>
<td>Stream Bank Stabilization</td>
<td>N/A</td>
</tr>
</tbody>
</table>

12. Waterbody type: ST - Streams

13. Type of pollutant(s) (use name, not code #s): Sedimentation-Siltation, Turbidity

14. Ecoregion: Western Corn Belt Plains

15. Hydrologic unit code (12 digits): 071000010704 Latitude-longitude: 43°46'39"N, 95°27'44"W

16. Basin name (check all that apply): Statewide ☐

☐ Lake Superior ☐ Lower Mississippi/Cedar ☐ Upper Mississippi ☐ Minnesota ☐ Rainy ☐ Red River ☐ Des Moines ☐ Missouri ☐ St. Croix
II. Project Description

1. Project Description Summary (taken from work plan summary) – Include at least two paragraphs that briefly summarize the project scope, the processes and the events that occurred before this reporting period.

The Heron Lake watershed encompasses parts of four counties and is approximately 472 square miles in size. Land use within the watershed consists primarily of cultivated land in agricultural production. The watershed boundaries run 30 miles east and west and 17 miles north and south. Jack Creek and Okabena Creek are major tributaries to Heron Lake, flowing through nearly the entire watershed.

Water samples are collected 20 to 25 times each year at Jack Creek, Okabena Creek, and the Heron Lake outlet to determine water quality improvements. Data analysis for 2010 shows average concentrations at each site remained the same or slightly decreased. In looking at the loads, phosphorus, nitrogen, and sediment decreased at all three sites, indicating improved water quality. While there are improvements being made in water quality, more needs to be done. The HLWD is looking for alternative methods to assist in that effort.

Project sponsors plan to implement two separate streambank projects consisting of three to five J-hook weirs per project. J-hooks are a sediment reduction technique that is new to southwestern Minnesota. Limited information is available regarding use of this technique in southwestern Minnesota. A common streambank erosion control method is riprap, which is expensive and does not truly solve the problem. J-hook weirs are natural, effective, relatively inexpensive, and easily implemented. Benefits include streambank erosion control, restoration, stabilization, sediment and phosphorus reduction, habitat gain, and improved water quality. Successful implementation of this practice could lead to cost-share or incentive programs through the HLWD.

In 1992, a diagnostic study reported that in-lake loading of nutrients is a problem in the Heron Lake watershed. The report stated the major problems in this watershed are:

- Drainage and the speed of water as it travels through the watershed.
- Urban sources of pollution from point sources and stormwater runoff are a major problem in this system, particularly in the Okabena subwatershed.
- Tillage practices and lack of vegetative cover, riparian and field buffer strips, and windbreaks is another concern for the watershed.
- Compliance with feedlot rules (MN Rules 7020), ordinances and nutrient management requirements (including manure spreading), and septic waste rules (MN Rules 7080).

The Heron Lake watershed drains to the West Fork Des Moines River (WFDMR) in Cottonwood County. The results of a WFDMR Clean Water Partnership diagnostic study, funded by the Minnesota Pollution Control Agency (MPCA), showed that approximately 58,000 tons of total suspended solids, 10 million pounds of nitrogen, and 485,000 pounds of phosphorus passed through Jackson, Minnesota in 2001.

In addition, aquatic life and aquatic recreation beneficial uses are impaired throughout the watershed. The WFDMR and Heron Lake TMDL Report was approved by the Environmental Protection Agency in December of 2008 and addressed 15 turbidity impairments, 15 fecal coliform impairments, 1 excess nutrient impairment, and 1 pH impairment. The report concluded that streambank erosion contributes 12 percent of the phosphorus loading to the WFDMR watershed in a dry year and 33 percent during a wet year. The report stated that to meet the water quality standards, a 10 percent to 86 percent reduction in bacteria, a 20 percent to 90 percent reduction in turbidity, and a 79 percent reduction in phosphorus would be needed. The WFDMR and Heron Lake TMDL Report identified streambank stabilization as a needed practice to address the turbidity impairments in the watershed.

In order to see a change on the landscape, educational efforts must be undertaken. Project partners believe that providing watershed landowners with opportunities to learn about new erosion control methods and pollution reduction, as well as demonstrating their economic and environmental benefits, will produce long-term water quality benefits for the watershed.

2. Specific Project Goals – Include numeric, quantifiable goals for environmental improvement, the number of Best Management Practices to be installed, pollutant reductions as well as programmatic and social goals.

**Overall Goal:** Increase landowner awareness of J-hook weirs, unique streambank stabilization structures, through installation at one site on Jack Creek and one site on Okabena Creek and increase public awareness and ownership of water quality problems through printed media and a mailing.

**Project Goal 1:** Implementation of two streambank restoration projects using J-hook weirs.

**Project Goal 2:** Increase ownership of water quality problems through an informative mailing targeted to landowners along Jack and Okabena Creeks.

**Project Goal 3:** Provide educational opportunities through publication of a newsletter and newspaper article to inform the public about the project.
3. Methods to achieve Goals:
   **Objective 1: Jack Creek and Okabena Creek J-hook Weir Project Installation**

   **Task A: Determine Project Sites**
   - Several reaches of Jack Creek and Okabena Creek are impaired for turbidity.
   - HLWD staff will determine project locations on Jack and Okabena Creek that allow easy access for monitoring as described in the work plan by prioritizing easy of accessibility and severity of problem. All costs associated with this task will be inkind contributions.

   **Task B: Jack Creek and Okabena Creek Site Installation**
   - Work with Southwest Prairie Joint Powers Organization (SWPJPO), contractor, landowner, and DNR to design and install two J-hook weirs. The J-hook weir is an upstream directed, gently sloping structure composed of natural materials and is designed to reduce streambank erosion. The structure can include a combination of boulders, logs, and root wads, and is located on the outside bend 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 increased in the center of the channel. Sediment transport can be maintained in 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.
   - HLWD staff will work with DNR staff to obtain the necessary permits for project installation.

   **Objective 2: Education and Outreach**

   **Task A: Monitor Sites and Collect Documentation**
   - Collect video footage of the J-hook weir sites before, during, and after installation.
   - Record each site on video and with photographs on an annual basis during high flow, medium flow, and low flow. The US Forest Service Guide to Photo Documentation (GTR-503) will be utilized.
   - Take transparency tube readings on a monthly basis from May through September in 2013, 2014, 2015, and 2016 when on site to document water quality changes.
   - Continue to take approximately 20 water samples at established sites on Jack Creek and Okabena Creek through the HLWD Water Quality Monitoring Program. Staff time for this effort is not included as inkind in the project.

   **Task B: Website**
   - Photos and video footage taken at the project sites will be posted on the HLWD website. All costs associated with this task will be inkind contributions.

   **Task C: Publicize Project Through Newsletter**
   - Highlight the project in one HLWD newsletter. Once the locations are chosen and projects are installed, a newsletter will be written that highlights the project and locations. The HLWD’s newsletter is distributed to over 3,400 addresses. All costs associated with this task will be inkind contributions.

   **Task D: Publicize Through Newspapers**
   - Submit two news articles to local newspapers. A news article highlighting the project and locations will be written at the beginning and conclusion of the project. These articles will be submitted to the Tri County News, Fulda Free Press, Lakefield Standard, Cottonwood County Citizen, and Worthington Daily Globe for publication. All costs associated with this task will be inkind contributions.

   **Task E: Landowner Mailing**
   - HLWD staff will be responsible for identifying property adjacent to Jack Creek and Okabena Creek, compiling a list of addresses, drafting a letter regarding streambank erosion control, and mailing the letter to identified landowners. All costs associated with this task will be inkind contributions.

   **Objective 3: Administration**

   **Task A: Complete Reporting Requirements**
   - The District Administrator will be responsible for grant administration according to grant agreement guidelines. All aspects of the J-hook weir installation, education, and outreach will be completed by HLWD staff and project partners. The District Administrator will ensure that semi-annual, annual, and final reports are submitted in a timely manner. All costs associated with this task will be inkind contributions.

   **III. Semi-annual Report Information**

   **1. Project activities completed during last (6) months according to the program elements or tasks:**
   Objective 2. Task E: Ross Behrends compiled a database of Jack Creek and Okabena Creek landowners. The database was completed and mailing labels created on December 11, 2012.
Objective 2. Task E: Jan Voit drafted a memo and completed a landowner mailing on December 13, 2012.
Objective 2. Task E: To date, seven landowners have responded with interest in participating.
Objective 3. Task A: On October 15, 2012, MPCA requested that grant work plan be reviewed. The narrative and timeline were revised to reflect an October 2012 start.
Objective 3. Task A: The grant agreement was approved on November 9, 2012.
Objective 3. Task A: The annual report was submitted on December 27, 2012.

2. Challenges faced (optional):
The HLWD was notified about the grant award on June 21, 2011. The work plan was drafted and submitted by the due date of July 12, 2011. The grant agreement was not completed until November 9, 2012. Due to the 16 month delay, no landowner contacts were made until after the 2012 construction season ended.
The HLWD Resource Technician accepted another position in April of 2012. This staff person was responsible for video, photo, and transparency tube monitoring, as well as the website. The loss of the staff person will affect the HLWD’s ability to complete project tasks.

3. Summary of monitoring data collected:
None.

4. Have all monitoring stations been established in STORET? ☒ Yes ☐ No ☐ N/A

5. Is the data being routinely submitted for storage into STORET? ☒ Yes ☐ No ☐ N/A

6. Is the data being annually entered into E-Link? ☐ Yes ☒ No ☐ N/A Last submittal date:

7. Identify any significant findings and results of the project to date, as well as any unanticipated findings:
None.

8. Describe specific (quantifiable, if possible) results achieved during this period:
None.

<table>
<thead>
<tr>
<th>Phosphorus Load Reduction:</th>
<th>lbs./year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen Load Reduction:</td>
<td>lbs./year</td>
</tr>
<tr>
<td>Sediment Load Reduction:</td>
<td>lbs./year</td>
</tr>
</tbody>
</table>

9. Summarize any work plan changes:
None.

10. List anticipated activities for next six (6) months:
Objective 1. Task A: Determine project locations on Jack and Okabena Creek that allow easy access for monitoring.
Objective 1. Task B: Work with SWPJPO, contractor, landowners, and DNR to design and install two J-hook weirs.
Objective 2. Task A: Collect video footage of the sites before, during, and after installation.
Objective 2. Task A: Take transparency tube readings on a monthly basis in May and June.
Objective 2. Task A: Take water samples in April, May, and June.
Objective 2. Task B: upload photos and video footage to website.
Objective 2. Task C: Publicize project through a newsletter.
Objective 2. Task D: Publicize project through newspaper article.
Objective 3. Task A: Submit annual report.

11. List all products (documents, pamphlets, videos, maps, etc.) produced in this reporting period:
- Memo to landowners
- Landowner database
- Jack Creek mailing labels
- Okabena Creek mailing labels

IV. Expenditure Information for this Period

Provide a copy of your work plan budget showing cumulative expenditures and budget balances by work plan objective and task.

☒ Expenditure Report attached

<table>
<thead>
<tr>
<th>Complete the table below:</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Grant Amount:</td>
<td>$20,600.00</td>
</tr>
<tr>
<td>Total Match Amount (if applicable)</td>
<td>$21,184.00</td>
</tr>
<tr>
<td>Total Project Amount:</td>
<td>$41,784.00</td>
</tr>
<tr>
<td>Cumulative Grant Expenditures through this period:</td>
<td>$0.00</td>
</tr>
</tbody>
</table>
Cumulative Match Expenditures through this period: $1,808.10

Total Cumulative Expenditures through this period: $1,808.10

Date form completed: December 27, 2012

Please submit to: Your project manager