

Snake-Middle River Watershed Restoration and Protection Strategy Phase I Report

Grant project summary

Project title: Snake-Middle River Watershed Restoration and Protection Project
Organization (Grantee): Middle-Snake-Tamarac Rivers Watershed District (MSTRWD)
Project start date: 5/19/2014 Project end date: 6/30/2016 Report submittal date: 8/1/2016
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Basin (Red, Minnesota, St. Croix, etc.) /Watershed & 8 digit HUC:: Snake River - 09020309 County: Marshall, Polk, Pennington

Project type (check one):

- Clean Water Partnership
- Total Maximum Daily Load (TMDL)/Watershed Restoration or Protection Strategy (WRAPS) Development
- 319 Implementation
- 319 Demonstration, Education, Research
- TMDL/WRAPS Implementation

Grant funding

Final grant amount: \$185,000 Final total project costs: \$
Matching funds: Final cash: \$ Final in-kind: \$ Final Loan: \$0.00
MPCA project manager: Denise Oakes

For TMDL/WRAPS development or TMDL/WRAPS implementation projects only

Impaired reach name(s): Snake River, Middle River
AUID or DNR Lake ID(s): Snake: 09020309-501, 502, 503, 504, 506; Middle: 09020309-505
Listed pollutant(s): Dissolved Oxygen, Turbidity
303(d) List scheduled start date: _____ Scheduled completion date: _____

AUID = Assessment Unit ID
DNR = Minnesota Department of Natural Resources

Executive summary

Problem

The Snake River Watershed is located in the Red River Basin in northwestern Minnesota that originates approximately six miles west of the City of Newfolden and flows generally in a southwesterly direction where it intersects with the South Branch Snake River. There are no natural lakes in the watershed. The most predominant land cover in the watershed is cultivated land. The watershed is drained by intermittent streams and ditches that usually cease to flow by approximately the second week in June each year. The Snake River from its mouth upstream almost to Warren has been channelized and extensively modified; it provides little functional aquatic habitat, is relatively unstable, and has limited natural riparian area. The South Branch of the Snake River also has areas that have been modified and are unstable. The flashy hydrology and high sediment loads in the watershed generally reduce the stability of channels. The Middle River, from its mouth to Argyle, has eight to nine miles of straight or straightened channel that provide little functional aquatic habitat and limited natural riparian area. At the start of this project there were six impaired reaches in the watershed, with 11 individual impairments.

Waterbody improved

Phase I of this two-phased project focused on gathering and synthesizing data, identifying data gaps, acquiring data, and developing a deeper understanding of watershed conditions. This phase also involved developing a civic engagement plan and implementing civic engagement activities.

Project highlights

A comprehensive Watershed Conditions Report was developed. Following that, a monitoring plan was developed. This report identified gaps and steps required to fill those gaps. The data was gathered through the MPCA's Intensive Watershed Monitoring (IWM) Effort which was analyzed and compared it to the original report. This data and analysis was incorporated it into the Watershed Conditions Report. Significant field data was collected as part of the stream channel analysis efforts, including Bank Erosion Hazard Index (BEHI) and Near Bank Stress (NBS) measurements. Used a weight of evidence approach to create a sediment budget classifying sediment. The sediment budget will help refine and focus assessment and analysis of potential Best Management Practices (BMP) scenarios, ensuring that future implementation is focused on the critical areas of the watershed, while addressing the main sources of sediment to the Snake River. Completed the conceptual sediment budget which details these pieces. Developed a civic engagement plan and implemented various portions of that plan including holding a community meeting and developing a story map to provide outreach to a larger community.

Results

The results of this phase of the project were the development of reports based on acquired data and the implementation of civic engagement activities.

Partnerships

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Randy Huelskamp	Conservation Program Manager	West Polk Co. NRCS	randy.huelskamp@mn.usda.gov	218-281-1445 ext. 3
Gail Larson	Volunteer - Newfolden River Committee	Restoration	gail.larson90@gmail.com	218-745-5154

Section I - work plan review

Change(s) to the work plan:

The only change to the work plan was to shift some of the hours designated to the Middle Snake Tamarac Watershed District to the consultant to complete some of the planned civic engagement activities. The Watershed District's lead staff working on civic engagement left the organization shortly after the start of the project.

Objective 1: WATERSHED CONDITIONS REPORT

Task A: Bibliography of Data Sources. Gathered and reviewed relevant existing data and reports. Compiled short summaries of the content of each information source into a bibliography. Data sources included soils, topography, land cover and land use, demographics, water quality, stream flow, and point sources.

Task B: Data Gaps. Data gaps were identified in respect to three goals: 1) evaluation of impairment status for 303(d) listings; 2) completion of total maximum daily load (TMDL) studies and development of WRAPS; and 3) development of HSPF watershed model.

Task C: Watershed Conditions Report. Summarized and evaluated data collected in Task A to characterize the current conditions of the watershed. Water quality trends of priority water bodies were identified, along with summaries of water quality and flow data, potential stressors to the biological integrity of the water bodies, identify potential pollutant sources, and information gaps.

Objective 2: CIVIC ENGAGEMENT

Task A: Civic Engagement Plan. Developed a comprehensive civic engagement plan that incorporated a variety of outreach and engagement opportunities using both traditional and innovative approaches, including meetings, local media, websites, written materials, and social media. Stakeholder analysis was performed and communication tactics developed for those audiences.

Task B: Civic Engagement Plan Implementation

Conducted the activities and strategies outlined in the civic engagement plan to the extent possible due to staffing changes at the MSTRWD. Activities included a kick-off event, two project update meetings with the MSTRWD board, and the development of GIS based storymap. RESPEC had regular updates with local partners so that those local partners were then able to communicate project goings-on with their boards and constituents. Additionally, RESPEC worked with a local volunteer organization to develop additional story map pages for the Newfolden River Restoration Volunteer Committee.

Task C: Civic Engagement Effectiveness Report. This report was not fully completed due to extenuating circumstances. The report will be finalized in Phase 2. The recommendations, although not formally written in a report, are included in the Phase 2 project work plan.

Objective 3: DETERMINED ADDITIONAL MONITORING AND WATERSHED ASSESSMENT NEEDS

Task A: Monitoring and Assessment Needs. Determined the additional monitoring and assessment components that needed to fill the data gaps identified in Objective 1.

Task B: Future Monitoring Recommendations. Developed a plan with recommended monitoring, studied and data collection that would address the data gaps identified in 1.B.

Objective 4: SEDIMENT BUDGET TO GUIDE FUTURE IMPLEMENTATION EFFORTS

Task A: GIS Based Watershed and Stream Channel Analysis. Performed a GIS analysis to estimate channel migration rates, calculated the stream power index for the watershed, and determined critical locations in the watershed to focus on as part of Task 4B.

Task B: Field Reconnaissance of Stream Channel Condition. Coordinated with MN DNR to perform field reconnaissance to collect data (Bank Erosion Hazard Index (BEHI) and Near Bank Stress (NBS)), that allowed for better characterization of stream conditions.

Task C: Sediment Fingerprint Sample Collection. Two sampling locations were identified and equipment was installed. This Task was not successful in that one of the two locations was either vandalized or broken. The other sample was collected, but not in a method that followed QAQC protocol. Ultimately these anticipated results were not included in the analysis for Task D.

Task D: Development of a Conceptual Sediment Budget. A weight of evidence approach was used to create a sediment budget classifying sediment as either upland, near channel, or channel. The sediment budget helps to refine and focus assessment and analysis of potential Best Management Practices (BMP) scenarios.

Objective 5: REVIEWED NEW ASSESSMENTS AND INTEGRATED RESULTS INTO WATERSHED CONDITIONS REPORT

Task A: Assembled Data from the MPCA's Intensive Watershed Monitoring (IWM) Effort and Compared it to the Analysis Completed in Objective 1. Performed statistical analyses, similar to that performed in Objective 1, on the updated data set to evaluate if watershed conditions, water quality status, and water quality trends changed.

Task B: Incorporated results into the Watershed Conditions Report via Addendum. Prepared an addendum to the watershed conditions report which included the updated analyses and the impairment assessment.

Objective 6: PROJECT ADMINISTRATION, COORDINATION, AND FISCAL MANAGEMENT

Task A: Quarterly Invoice Submittal and Semi-Annual Reporting. Invoices and semi-annual progress reports were submitted as required.

Task B: Project Coordination and Communication. Communication via Phone calls, emails, as well as face-to-face meetings was conducted as needed throughout the project.

Section II - Grant results

- **Measurements:** Please describe your evaluation plan and its results.
 - BEHI and NBS measurements were taken at stream locations identified through the GIS analysis and communication and review with DNR staff. This information, including a summary of critical sites is included in the stream sediment-source report.
 - A civic engagement survey was conducted among WRAPS partners to assess potential audiences, determine what potential audience's level of interest was in various aspects of watershed management, and the perceived effectiveness of various communication tools for those various audiences. The survey was taken by 9 local partners. Results indicated that the agricultural community and local government staff and boards were most important target audiences, agricultural producers should be engaged as it the project might relate to property values and flooding while state and local partners are more interested in habitat and water quality issues. Expectations for restoration potential were reasonable in that respondents goal was for improved rather than pristine water quality. Participants indicated that the most effective outreach tool for all audiences would be face-to-face meetings with direct mailings being the second most effective strategy.

- **Products:**
 - Objective 1 Products:**
 - Bibliography
 - Watershed Conditions Report

 - Objective 2 Products:**
 - Snake River Watershed storymap

 - Objective 3 Deliverables:**
 - Monitoring and assessment plan

 - Objective 4 Deliverables:**
 - Sediment budget report including submission of data and discussion of methods, results, and findings of the Bank Hazard Index analyses, field reconnaissance, and sediment fingerprint sampling, as well as the classification and identification of sediment sources and source contribution

 - Objective 5 Deliverables:**
 - Updated Snake River Watershed Conditions Report that included updated statistical analyses with data collected and any new impairments identified as part of the IWM effort and the MPCA's impairment assessment and a cover letter outlining the updates.

- **Public outreach and education:**
 - A public participation and education plan was developed for this project. However the MSTRWD staff person responsible for implementing the plan at the local level resigned and was not replaced. Therefore, the original plan was adjusted to focus more on developing relationships with local government partners. In order to generate interest in the watershed and begin a dialogue with the public, an on-line story map was created to acquaint people with the watershed, it's history, and resources. The goal is for this story-map to be expanded as the project continues and build in additional 'stories' regarding water quality and restoration efforts. The story-map has been well received and a local volunteer group dedicated additional time and funding to add another story regarding their volunteer stream restoration efforts on the Middle River. An open house was held, but was not well attended (3 citizens) likely due to reduced marketing efforts at the local level, the large geographical size of the watershed, and the lack of interest in water quality in the areas.

- **Long-term results:**
 - A partnership was developed with the Newfolden Middle River Restoration volunteer group who became interested in this project as a result of the open house and the story-map. The goal is to

- continue to leverage their interest in Phase 2.
- A partnership was developed with the DNR staff in Thief River Falls. This partnership was established when the DNR became aware of the consultant's effort to assess stream BEHI and NBS in the Snake and Middle Rivers. The result of the partnership was a team effort on site selection and splitting up the tasks for a more thorough and efficient stream assessment.
 - The most important lesson learned during Phase 1 was the need for consistent staffing or in the event that staffing cannot be maintained, there must be enough support and project understanding to maintain continuity of effort. These challenges were largely addressed and are not anticipated to be a challenge in Phase 2.

Section III - Final Expenditure Report
