

CLEAN WATER PARTNERSHIP CONTINUATION

WATERSHED FINAL REPORT

Middle Fork Crow River Watershed Restoration and Enhancement Project

By

Margaret Johnson, District Interim Administrator

July 24, 2013

This project was conducted in cooperation with the State of Minnesota Pollution Control Agency.

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Grant Project Summary

Project title: Middle Fork Crow River Watershed Restoration and Enhancement Project Continuation
Organization (Grantee): Middle Fork Crow River Watershed District
Project start date: 3/9/2010 Project end date: 6/30/2013 Report submittal date: 7/30/2013
Grantee contact name: Margaret Johnson Title: Administrator
Address: 189 Coutny Road 8 NE
City: Spicer State: MN Zip: 56288
Phone number: 320-796-0888 Fax: _____ E-mail: Margaret@mfcrow.org
Basin (Red, Minnesota, St. Croix, etc.): Upper Mississippi River Basin County: Pope Kandiyohi, Stearns, Meeker,

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: \$350,000 Final total project costs: \$922,054.03
Matching funds: Final cash and in-kind: \$525,506.53 Final Loan: \$46,550.47
Contract number: 5768-02 MPCA project manager: Maggie Leach

Executive Summary of Project

The Middle Fork Crow River watershed is approximately 275 square miles and contains a number of economically and ecologically important lakes with increasing population and development pressures. The hydrology of the watershed has been highly altered with nine dams creating reservoirs rather than natural lake systems, 15 ditches totaling nearly 140 miles of open channels, and a significant number of drained or filled in wetlands. The land use pressures and hydraulic changes have led to the degraded water quality for many of the lakes, while others are in need of protection from non-point sources of pollution. This project continued focus on protecting high quality lakes and restoring lakes with poor water quality by: working to restore the hydraulic regime by restoring wetlands, providing educational opportunities that link people to the resources, implementing best management projects in areas identified as ecologically sensitive to reduce non-point pollution sources, and targeting specific lake management projects identified in the diagnostic studies which harnessed internal loading in lakes where this is a significant problem.

The scope of this project is to improve and preserve water quality throughout the watershed focusing on three major efforts. 1. Provide educational programs which engage citizens in active resource management. 2. Continue to examine the overall water quality of the watershed via permanent river and lake monitoring stations as well as season (temporary stations). 3. Improve water resources by assisting individuals, groups, and unit of government to implement best management practices.

Along with our partners, successes of the project include increased education and outreach, monitoring, analysis and evaluation, and implementation of BMP's including, agricultural and rural land use; wetland, streambank, and shoreland restoration, and stormwater and urban BMPs.

Project Goals

- 1st Goal: This project aims to continue improving water quality by utilizing a comprehensive approach that involves citizens actively engaging in their local resources through monitoring, providing educational opportunities in all age groups and interests.
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- 2nd Goal: Implementing BMP projects in areas with the greatest impact in improving water quality where needed and protecting hose resources with good water quality.
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- 3rd Goal: The project continues the monitoring efforts established during the two diagnostic studies and previous Clean Water Partnership grant. Monitoring at existing and newly identified locations will continue to be important in determining local contributions to the continued degradation and impairment of these waters.
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Results

- 1st Result: Hundreds of area students have been taught through the Districts integrated STREAM program. Local volunteers continue to gain knowledge of local monitoring practices and continue to serve as land stewards of our District Lakes and streams.
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- 2nd Result: A total of 19 BMP projects were installed including 15 shoreland restoration/stabilization project. One massive stormwater project with the City of Belgrade, two septic upgrades, and one stabilization project. All projects focus on reducing sedimentation and non-point runoff. Technical assistance given to the City of Spicer, the City of New London, and multiple private landowners regarding land use.
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- 3rd Result: All samples will be analyzed at certified labs, results will be submitted to STORET and annual evaluation of monitoring data will be conducted to spot trends, identify hot-spots or emerging issues, determine impacts of land-use improvements implemented by this project, and report annually on the state of the waters to our stakeholders.
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Body of Main Report

Section I – Work Plan Review

❖ Approved changes:

2010: Amended Work Plan Submittal in November of 2010 includes the line item addition “Low interest loans will also be available for necessary purchases to be made by lake association to aid with their aquatic invasive species control programs.”

2013: Staff changes at the Middle Fork Crow River Watershed District include an addition of a new Administrator, Margaret Johnson and a new Hydrologic Technician, Mike Behan.

2013: Grant change order. “Move \$2055.88 within task 1, \$4255.94 within task 2 and %5200 within task 4 for a total of \$11,531 or 1% of total project costs (\$924,300). Funds were not moved between tasks, no new tasks were added and no tasks were deleted.”

❖ Activity and Tasks

○ **Education and Outreach:**

- 2013: The STREAM (Student-Targeted-Resource-Education-Awareness and Management) program has proven to be very successful in engaging hundreds of young students in water quality issues. District staff has been able to continue to work with area teachers to introduce water quality topics into their classrooms. We were able to work with 4th, 5th, 7th and 8th grade students from the three different School Districts (Belgrade - Brooten - Elrosa, New London - Spicer, and Atwater - Cosmos - Grove City) within the watershed. The activities covered topics such as learning about the water cycle, investigating macroinvertebrates, erosion, stormwater, and sampling water from local streams and ponds. To increase the diversity of activities the Watershed District teamed with Prairie Wood Environmental Learning Center (PWELC) to share supplies and staff time.
 - 2012: Six lessons delivered to 4th -7th grade including one field trip
 - 2012: Helped teacher receive grants for additional classroom equipment
 - 2012: Youth Day Camp: Partnering with PWELC, CROW and MFCRWD
 - 2012: two lessons with 4th grade, five with 5th grade and two with 8th grade at NL-S
 - 2012: Partner with CROW to get Science Museum into area classrooms
 - 2011: Three Lessons with ACGC 4th grade
 - 2011: One with BBE’s 6th grade
 - 2011: Three lessons for 4th grade, four lessons for 5th grade, and three lessons for 10-12th grade at NL-S
 - 2011: Two lessons at ACGC with 5th grade
 - 2011: Two lessons at BBE with 5th grade, and two with 6th grade
 - 2010: 10 lessons given to 4th-8th grade at ACGC, NL-S, and BBE
 - 2010: 2 lessons delivered to children at Spicer Library
 - 2010: 2 lessons to 4th grade, ACGC
 - 2010: 2 lessons to 9th-11th grade in NL-S
 - 2010: One lesson for 5th grade at NL-S
- 2013: Citizen involvement in water related issues is key to sustaining a high quality resource in the future, to excite people about our local water resources we partnered with the Crow River Organization of Water and PWELC to put on a canoe trip on Monongalia Lake. To help promote the District’s activities and CWP-related information we participated in the annual Earth Day event and the Willmar Ag show. We are able to reach out to a large audience by participating in these events; the attendance rate for both events is around 500 people.
 - 2012: Prairie Pothole Day presentation
 - 2012: Shoreland restoration presentation at MN Erosion Control Association conference
 - 2012: Willmar Agriculture show
 - 2012: Earth Day event at PWELC
 - 2012: Annual Open House at District Office
 - 2012: George Lake Association meeting presentation
 - 2012: Kiwanis Club meeting presentation
 - 2011: Earth Day event at PWELC
 - 2011: Annual Open House at District Office
 - 2011: Willmar Agriculture show
 - 2011: Long Lake, George Lake, Green Lake, Diamond Lake Association meetings attended by staff
 - 2011: Darkhouse and Angling Association Meeting presentation
 - 2011: Shoreland restoration project presentation delivered to MN Crow River Work Group
 - 2011: CWP Continuation presentation was prepared and delivered to the MFCRWD Citizens Advisory Committee
 - 2010: Shoreland Restoration presentation
 - 2010: Annual Open House at District Office

- 2010: Earth Day event at PWELC
- 2013: Staff trained new and existing volunteers each spring by physically going out to sites and monitoring with the volunteer. In 2010 the district had 18 water monitor volunteers, in 2011 thirteen volunteers monitoring for the District, in 2012 fourteen volunteers help with the effort, and in 2013 we started the spring off with fifteen volunteers. The volunteers were also listed with gratitude in the Annual Report each year.
- District Tour to help promote BMP to the local area residents
 - 2011: One shoreland restoration workshop
- 2013: A revamping of the current district website was achieved in 2013 through the funding this grant dollars provided. We continue the promotion of our BMP and education programs on our website. We also allow our volunteers to enter their monitoring data on the website. The new and improved website contains all past and present monitoring data gather by the District technician and District volunteers.
 - 2012: Content for the new website was developed
 - 2011: Website redevelopment began
- 2013: District activities were also highlighted in the local paper by both articles about us written by local journalist and press releases about our activities. To inform lake residents about water quality results on their respective lakes, Diamond Lake Area Recreation Association, Green Lake Association, and Nest Lake Association, published articles written by MFCRWD staff in their newsletters. Staff also did PowerPoint presentations for the Diamond Lake Area Recreation Association and George Lake Association at their annual meetings.
 - 2012: Article about STREAM program, Belgrade paper
 - 2012: Published press release for Community Clean up
 - 2012: Article, Diamond Lake Association newsletter
 - 2012: Outreach article, Lakes Area Review
 - 2012: Cost Share availability, Green Lake Breeze and Diamond Lake Area Recreation Association newsletter
 - 2012: STREAM education event, Belgrade Observer
 - 2011: Two articles, Diamond Lake Association newsletter
 - 2011: One article, Green Lake Breeze
 - 2011: Article, West Central Tribune
 - 2010: Education Activities and Cost Share available, Diamond Lake Association newsletter
 - 2010: Article, Belgrade Newspaper
 - 2010: 2009 lake water quality results, Green Lake Breeze
 - 2010: 2010 water quality results, Green Lake Breeze
- 2013 Annual Report: Distributed to All District residents, County Boards, Lake Association, NRCS, SWCD, MPCA, BWSR, DNR, and other agency personnel.
 - 2013: 2012 District activities in Annual Report
 - 2012: 2011 District activities in Annual Report
 - 2011: 2010 District activities in Annual Report
- 2013: The staff and Board continued to attend several workshops and meetings that discussed issues pertinent to the Watershed District's goals and mission, some examples are Erosion Control Installer Certification classes, DNR Shoreline Group meeting, and the Minnesota Association of Watershed Districts Summer Tour.
 - 2012: Three staff to BWSR Academy
 - 2012: One staff to LiDAR training
 - 2012: Two staff to North Fork Crow River WD sustainable farming presentation
 - 2012: One staff, Erosion Control Installer Certification class
 - 2012: DNR Shoreline Group meeting
 - 2012: MN Association of Watershed District Summer Tour
 - 2012: One staff, MN Erosion Control Association meeting
 - 2011: One staff to P8 Modeling workshop
 - 2011: One staff to wetland conference, water education festival, and shoreland restoration conference
 - 2011: Two staff attended MPCA required YSI training and hydstra training
 - 2010: One staff, MN Erosion Control Association annual conference
 - 2010: One staff to FLUX workshop at UMN
 - 2010: Two staff to BWSR Academy
 - 2011: AIS awareness meeting attended by MFCRWD, GLPOA, City of Spicer, Kandiyohi County and DNR
- **BMPs:** 2013: We were able to install three shoreline restorations this spring which completed the BMP funding portion of this grant. Two of the projects were on Nest Lake and one was on Diamond Lake. We worked with the West Central Technical Service Area for the design of one of the projects. Staff has visited all BMP projects that have been installed by the District to date, landowners were contacted afterwards and discussed any maintenance needs with the project. Lake property owners have become very interested in our shoreline restoration program; staff went on several site visits and has a waiting list of property owners who are waiting for funding to restore their shoreline.

- 2012: Septic upgrade in City of Belgrade
 - 2011: New Ag BMP financial incentive water drafted
 - 2011: Technical support provided to City of New London for improvement of Neer Park
 - 2011: One stormwater management project with City of Belgrade, CROW, Stearns County SWCD, MNDOT and ditch authorities
 - 2011: 6 shoreland restoration projects
 - 2011: One stream stabilization project
 - 2010: Assistance given to Spicer and New London on shoreland restoration projects
 - 2010: Stabilization on private owner's shoreline
 - 2010: Three shoreland restoration projects
 - 2010: Septic site inspection and upgrade complete
 - 2010: One shoreland restoration project, native buffer
 - 2010: Two Shoreland stabilization/restoration
- **Monitoring:** The 2013 monitoring season was organized through several activities, including the coordination of the volunteer monitoring program, creation of a monitoring schedule, organization of equipment, supplies, data, and data sheets, gaining necessary laboratory materials, and installation of equipment at stream monitoring sites. New volunteers were trained for water quality monitoring for the District, and a refresher was offered for established volunteers. District staff attended required MPCA YSI equipment training. The District acquired ownership of an existing monitoring station previously owned by the United States Geological Survey (USGS). The station had been operating under a partnership between the District and USGS, and due to budgetary restrictions the USGS needed to close it. The District recognized the value of the historical data and motioned to assume ownership of the station. A total of 29 water quality samples were collected at eight lake sites (Monongalia, Long, George, Nest, Elkhorn, Green, Calhoun, and Diamond), and a total of 21 samples were collected at five different stream sites (including replicate and blank samples). Stream data was downloaded regularly and shared with MPCA hydrologic staff. The annual District monitoring report was written, published, and distributed. A webpage with photos of District stream monitoring sites showing high and low flows was created. A final data review for 2012 submitted data to EQuIS was completed.

Lake	Site	Date	TP (ppm)	Secchi (ft)	Chl-a (ppb)	TSS (ppm)
Calhoun	CL1	5/19/2013	0.033	4.5 – 9.0	16	4
		6/3/2013	0.023		12	4
		6/17/2013	0.028		3	2
Diamond	DL3	5/23/2013	0.032	8.5	10	5
		6/4/2013	0.047		18	11
		6/17/2013	0.023		3	3
Elkhorn	EL1	5/30/2013	0.033	13.0 – 15.5	5	4
George	GeoL1	5/14/2013	0.012	17.5 – 29.0	2	2
		5/19/2013	0.014		2	1
		6/3/2013	0.017		<1	<1
		6/16/2013	0.012		2	<1
Green	GL1	5/9/2013	0.01	14.0 – 19.0	7	<1
		5/23/2013	0.016		12	5
		6/3/2013	0.019		9	2
		6/16/2013	0.008		2	3
Long	LL1	5/13/2013	0.021	9.5 - 20.5	9	2
		6/2/2013	0.014		4	<1
		6/16/2013	0.015		1	2
Monongalia	ML1	5/13/2013	0.032	7 - 7.5	9	3
		6/14/2013	0.035		14	3
Nest	NL1	5/21/2013	0.036	6.0 - 15.0	20	4
		6/3/2013	0.048		11	3
		6/17/2013	0.027		4	1

Stream site	Date	TP (ppm)	TKN (ppm)	TSS (ppm)	Transparency tube (cm)
MFC3	5/7/2013	0.034	0.64	4	>100
	6/11/2013	0.038	0.911	3	>100
MFC4	4/16/2013	0.056	1.58	5	>100
	5/7/2013	0.036	0.624	6	>100
	5/29/2013	0.046	0.967	10	96
	6/11/2013	0.041	0.978	6	>100
MFC5	5/14/2013	0.037	0.768	3	>100
CL3	4/16/2013	0.09	0.954	4	93
	5/7/2013	0.055	0.74	8	>100
	5/29/2013	0.044	0.751	7	92
	6/11/2013	0.034	0.796	2	>100
Manannah	4/17/2013	0.161	1.64	20	65
	5/7/2013	0.063	0.73	6	98
	5/29/2013	0.088	1.09	32	66
	6/11/2013	0.066	1.11	19	90
	6/4/13	0.086	0.094*	19.4	<1

Section III – Final Expenditures

Please see attached excel spreadsheet.

Pictures

Please see attached PDF

Acronyms

ACGC: Atwater-Cosmos-Grove City
BBE: Belgrade-Brooten-Elrosa
BMP : Best Management Practices
CROW: Crow River Organization of Water
CWP : Clean Water Partnership
DLARA: Diamond Lake Area Recreation Association
DQO : Data Quality Objective
DNR : (Minnesota) Department of Natural Resources
DO : Dissolved Oxygen
EPA : Environmental Protection Agency
EQuIS : Environmental Quality Information System
FD : Field Duplicate
FLUX: Program allows estimation of tributary mass discharges (loadings) from sample concentration data and continuous (e.g., daily) flow records. Five estimation methods are available and potential errors in estimates are quantified.
GLPOA: Green Lake Property Owners Association
LIMS : Laboratory Information Management System
MDH : Minnesota Department of Health
MFCRWD : Middle Fork Crow River Watershed District
MNDOT: Minnesota Department of Transportation
MPCA : Minnesota Pollution Control Agency
NL-S: New London-Spicer
NRCS: Natural Resource Conservation Service
OP : Ortho-Phosphorus
PM : Project Manager
PWELC: Prairie Woods Environmental Learning Center
QA : Quality Assurance
QAC : Quality Assurance Coordinator
QAM : Quality Assurance Manual
QAPP : Quality Assurance Project Plan
QC : Quality Control
RPD : Relative Percent Difference
RSD : Relative Standard Deviation
SB : Sampler Blank
SWCD : Soil and Water Conservation District
TP : Total Phosphorus
TSS : Total Suspended Solids
UMN: University of Minnesota
USGS: United State Geological Survey
WQ : Water Quality

Partnerships

- Crow Organization of Water—Partner in Education activities and BMP installation
 - West Central Technical Service Area—Partner in BMP installation
 - Kandiyohi, Meeker, Pope, Stearns County NRCS—Partner in Education activities and BMP installation
 - Kandiyohi, Meeker, Pope, Stearns County SWCD—Partner in Education activities; BMP installation; Project Tracking, Project Facilitation, and Technical Assistance
 - Kandiyohi, Meeker, Pope, Stearns County Environmental Services or Planning and Zoning Departments—Partner in BMP installation; Monitoring, Analysis, and Evaluation; Project Tracking, Project Facilitation, and Technical Assistance
 - Kandiyohi, Meeker, Pope, Stearns County Water Plan Committees—Partner in Information and Outreach
 - Minnesota Waters—Partner in Education and Outreach activities
 - Pheasants Forever—Partner in Education activities
 - Ducks Unlimited—Partner in Education, Outreach; Project Tracking, Project Facilitation, and Technical Assistance
 - MN Department of Natural Resources—Partner in Education activities and BMP installation
 - MN Board of Water and Soil Resources
 - MN Pollution Control Agency—Partner in Monitoring, Analysis, and Evaluation; Administration, Reporting
 - MN Department of Agriculture—Partner in Education activities
 - MN Department of Transportation—Partner in BMP installation
 - Cities of Atwater, Belgrade, New London and Spicer—Partner in Education activities and BMP installation
 - MN Senate Districts: 13 and 18—Partner in Outreach activities
 - MN House Districts: 13A, 13B and 18B—Partner in Outreach activities
 - Prairie Woods Environmental Learning Center—Partner in Education activities and BMP installation
 - North Fork Crow River Watershed District—Partner in Education activities and BMP installation
 - Hawk Creek Watershed Project—Partner in Education activities and BMP installation
 - School Districts New London-Spicer, Belgrade-Brooten-Elrosa, Atwater-Cosmos-Grove City—Partner in Education activities and BMP installation
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