



# 319/Clean Water Partnership/ Total Maximum Daily Loads Semi-Annual Report for Reporting Year 2010

Doc Type: Semi-Annual Report

Reporting Period:  January 1 through June 30 (Due August 1)  
 July 1 through December 31 (Due February 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: Middle Fork Crow River Watershed Restoration and Enhancement Project Continuation
2. Project sponsor: Middle Fork Crow River Watershed District
3. Project representative: Chad Anderson
4. Email address: Chad@mfcrow.org
5. Loan sponsor (if applicable): Same as above
6. Contract number: B40796 Loan number: SRF0169
7. MPCA Project Manager: Margaret Leach
8. Contract start date: 3/9/10 Contract end date: 6/30/13
9. Best Management Practice (BMP) Name (Refer to BMP List): (357) Barnyard Run-Off Control, (393) Filter Strip, (410) Grade Stabilization Structure, (412) Grassed Waterway, (647) Habitat Development/Management, (643) Habitat Restoration, (472) Livestock Exclusion, (590) Nutrient Management, (329C) Residue Management, (570) Runoff Management System, (350) Sediment Basin, (580) Streambank and Shoreline Protection, (606) Subsurface Drain, (638) Water/Sediment Control Basin, (657) Wetland Restoration, (possible BMPs)

10. **319/Clean Water Partnership (CWP) only** - Nonpoint Source (NPS) Category (Refer to NPS Definition of Categories):

	Primary	Secondary	Others
Category (name only)	(1000) Agriculture	(7400) Flow Regulations/Modification	<b>8592 (Other Historical Pollutants), 4000 (Urban Run-off Stormwater)</b>

11. **319/CWP only** - NPS Functional Category (Refer to NPS Definition of Categories):

	Primary	Secondary	Others
Category (name only)	(11) BMP Design/Implementation	(101) Local (Specific Target) Education/Information Programs, (201) Nonpoint Source Program Overall Coordination	<b>(510) Water Quality Trend Assessment, (600) BMP Effectiveness Monitoring, (620) Watershed Assessments</b>

12. Waterbody type (refer to NPS Waterbody Type): LK, RI, RS, ST

13. Hydrologic unit code (12 digits): 07010204 Latitude-longitude: 45 7'38"N/94 31'40" W

14. **319/ CWP only:** Type of pollutant(s) addressed (refer to NPS Pollutants): (2210) Algal Growth/Chlorophyll, (910) Phosphorus, (1100) Sedimentation-Siltation, (2100) Suspended solids, (2500) Turbidity (2200) Plants (Noxious Aquatic)

15. Ecoregion (refer to NPS Ecoregion): 5100 (North Central Hardwood Forest)

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 Middle Fork Crow River watershed 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 (Phase I CWP, Oct 2002; updated by Wilson et al, 2004). This project continues the efforts initiated under the previous Clean Water Partnership grant to protect high quality lakes and restore 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 will harness internal loading in lakes where this is a significant problem.

The scope of the 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 seasonal (temporary) stations. 3) Improve water resources by assisting individuals, groups and units of government to implement best management practices. The fourth element of this grant allows for the overall administration of the grant project.

March-June 2010:

**Education and outreach:** The first 3 months of grant implementation were heavily focused on the education component. Several water quality lessons were planned with the teachers from the 4<sup>th</sup> grade class at ACGC elementary, 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grade classes in New London-Spicer, and 7<sup>th</sup> and 8<sup>th</sup> grade classes at BBE; in total, lessons were delivered on 10 occasions. An open house was held in honor of the 5<sup>th</sup> Anniversary of the establishment of the MFCRWD, in which approximately 50 people attended; displays of the CWP Continuation grant and other projects were on display. An Earth Day event sponsored in-part by the MFCRWD was attended by approximately 800 people; a display of MFCRWD activities was put together and presented by staff. An article outlining the District's education activities, the collaborative donation by the Diamond Lake Association and the availability of cost share funds under the grant was written by MFCRWD staff and published in the Association's newsletter. A presentation on shoreland restoration activities in the MFCRWD was put together and delivered to approximately 20 members of the public at the DNR's "Our Water, Our Choices" conference. One article about the District's education efforts with the BBE school was written for submittal to the Belgrade, MN newspaper (publishing pending). One article summarizing 2009 lake water quality results was written for the Green Lake Association (publishing pending). One water quality lesson was delivered to children at the Spicer Library hour. One staff member attended the Minnesota Erosion Control Association's annual conference. **Monitoring:** Preparatory work for the monitoring season was completed (ordering supplies, attending MPCA-required equipment training, arranging volunteers for the season, establishing monitoring plan, planning and delivery of training session for volunteers, etc.). Equipment was installed at permanent monitoring stations. Monitoring was conducted by MFCRWD staff and volunteers on area lakes on 35 occasions and on area streams/river on 70 occasions (including replicate and blank samples). Two MFCRWD staff members canoed the upper reaches of the watershed to examine springtime flow conditions. **BMPs:** A kickoff meeting for the Belgrade stormwater project was held with most potential partners present. Assistance was provided to the cities of Spicer and New London on their respective shoreland restoration projects. Additional stabilization on a private owner's shoreline was provided, and live stakes were installed at a shoreland restoration project. Site visits to property owner inquiries of 10 potential projects were conducted; cost share contracts for 4 BMP projects were signed, including three shoreland restoration projects on private property and one stormwater management project with the City of Belgrade. One site inspection for a septic upgrade was conducted. **Administration:** Regular grant administrative duties were carried out as required, including budget monitoring and project tracking. The CWP Continuation work plan was submitted to the MPCA project manager and approved.

**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.**

**Water Quality Goals:** This project aims to improve water quality by utilizing a comprehensive approach that involves citizens actively engaging in their local resources through monitoring, provides for educational opportunities in all age groups and interests, and implements BMP projects in areas with the greatest impact in improving water quality where needed and protecting those resources with good water quality. The goals for specific lake and stream areas are provided below. Lakes with non-degradation goals are currently well within ecoregion values. Stream and watershed loading reductions are aimed at preserving high quality waters and enhancing those in need of rehabilitation.

**Lake Water Quality Status and Goals**

Lake	TP Status and goal	Secchi Status and Goal	Chlorophyll a Status and Goal	Overall Goal
Calhoun	↓ from 33 to 25 ppb	↑ from 5 to 8 feet	Remain at < 10 ppb	Improve
Diamond	↓ from 87 to <50 ppb	↑ from 5 to > 7 feet	↓ from 47 to <12 ppb	Improve
Elkhorn	Remain at 20 ppb	Remain at > 9 feet	Remain at < 10 ppb	Non-degradation
George	Remain at 28 ppb	Remain at >10 feet	Remain at < 10 ppb	Non-degradation
Green	Remain at < 20 ppb	Remain at 10 +/- 1.5 feet	Remain at 3-6 ppb range	Non-degradation
Long	Remain at 21 ppb	Remain at 9.5 feet	Remain at 6 ppb	Non-degradation
Monongalia	↓ from 38 to <35 ppb	↑ from 6 to 7 feet	Remain at < 10 ppb	Improve
Nest	↓ from 44 to <25 ppb	↑ from 7 to 8 feet	↓ from 13 to <12 ppb	Improve

**Stream Total Phosphorus Loading Reduction Goals by Watershed Area**

Watershed area	Current TP Range	Goal TP Range	Percent Reduction
Upper Watershed	75-90	56-67	25%
Nest Lake Watershed	51-60	38-45	50%
Calhoun Watershed	193-219	96-109	50%
Alvig Slough Watershed	132	66	50%
Diamond Lake Watershed	>200	108	50%

**Education and Outreach Goals:** Nine visits to area elementary and high schools per school year to implement water quality classes into school curricula. Two educational wksp/year offered to area residents; one volunteer training wksp/year with 10-12 citizens collecting stream and lake data; continued maintenance, development and improvement of the District website; 8-10 newsletters and/or newspaper articles; annual report of results and progress.

**Monitoring and Evaluation:** Monitoring efforts will continue at 14 stream/river sites and at 7 lake sites (these numbers may change as needed); frequency will range from 7-17 times per year, while lake monitoring will be conducted from 7-12 times per year. To promote additional interest in lake water quality monitoring, some local lake associations are increasing the frequency of sampling on their lakes by contributing 50% of the laboratory costs. To encourage volunteerism and watershed activism, much of the water quality monitoring will be conducted by locally trained volunteers. All water quality samples will be analyzed at certified labs and results will be submitted to STORET.

**Best Management Practice Goals:** Various agricultural, rural, shoreline, riparian, urban, stormwater and residential best management practices will be considered. Between 10 and 20 projects installed each year, depending on complexity and costs. Focus will be on reducing sedimentation and non-point runoff to reach the overall project reduction and protection goals. Up to \$200,000 in low interest loans will be available to increase landowner participation.

**3. Methods to achieve Goals:**

**Education and Outreach Goals:** The MFCRWD is working closely with local elementary and secondary school teachers to incorporate water quality education directly into the teachers' curricula. These efforts are part of an education initiative that the MFCRWD is undertaking. The initiative will be titled "STREAMS: Student-Targeted Resource Education, Awareness and Management in Schools. When appropriate education topics are identified for watershed residents, appropriate steps will be made to advertise, and if necessary, contract with consultants to assist with the delivery of the education. Website will be updated regularly and likely overhauled. Newsletters and news articles will be written by MFCRWD staff and/or newspaper staff.

**Monitoring and Evaluation:** A previously instituted volunteer monitoring program will continue - including training sessions to ensure proper collection and processing methods - allowing a number of volunteers to monitor area lakes on a schedule basis and a schedule/event basis for river/stream monitoring.

**Best Management Practice Goals:** the District's availability to cost share on qualifying best management practices and

septic upgrades will be advertised via press releases, word of mouth, presentations, newsletters and newspaper articles. Projects will be designed and implemented using qualified consultants/engineers when necessary, and funds from other organizations and grants will be leveraged to the extent possible.

### III. Semi-annual Report Information

#### 1. Project activities completed during last six (6) months according to the program elements or tasks:

**Education and outreach:** Two water quality lessons were planned and delivered to the 4<sup>th</sup> grade class at ACGC elementary and two lessons to the 9<sup>th</sup>-11<sup>th</sup> grade classes at the New London-Spicer high school. Staff are working closely with the 5<sup>th</sup> grade teacher at New London-Spicer to develop the STREAMS water quality education pilot program that will be more formal and assist teachers in meeting state education standards while teaching students about water quality issues. An article summarizing Green Lake water quality results for 2010 was published in a lake association newsletter. One water quality lesson was delivered to children at the Spicer Library hour. One staff member attended an Applied FLUX workshop through the University of Minnesota. Two staff members attended the annual BWSR Academy.

**Monitoring:** Monitoring was conducted by MFCRWD staff and volunteers on area lakes on 53 occasions and on area streams/river on 60 occasions (including replicate and blank samples). FLUX modeling was performed on chemistry and flow samples for four river sites to determine annual loading. Water quality data was submitted to STORET.

**BMPs:** One shoreland restoration project (native buffer) and two shoreland stabilization/restoration projects were completed on area lakes. Site visits to property owners' inquiries of 10 potential projects were conducted; cost share contracts for two shoreland restoration projects on private property were signed. One septic system upgrade was completed, and one inspection for a possible septic system upgrade was conducted. Inspections on more than a dozen previously implemented BMPs were completed to ensure maintenance and upkeep per cost share contract requirements. Several iterations of plans have been revised for the Belgrade stormwater project to develop a project that will provide water quality benefits while mitigating flooding problems. Staff worked with the Spicer Design Team to create and implement a maintenance plan for the shoreland restoration project at a city park. Maintenance was performed by staff on the Park Lane channel development project as part of the Memorandum of Understanding between the MFCRWD and City of Spicer; this stormwater mitigation project was funded in part with the previous CWP grant.

**Administration:** Regular grant administrative duties were carried out as required, including budget monitoring and project tracking.

#### 2. Challenges faced (optional):

One of the principal challenges faced during the current reporting period pertains to the large scale Belgrade project. This project, while containing opposing goals – water quality improvement (keeping water on the landscape) and flood mitigation (move water off the landscape) has proven to be even more difficult than the opposing goals might suggest. High water tables make infiltration possible in only select locations, topography eliminates several alternatives for water quality improvement, funding from several entities (MFCRWD, MNDOT, CROW) results in different requests, and differing regulatory entities (Stearns SWCD, Stearns Ditch Authority, MFCRWD) convolutes some issues. In spite of all these challenges, we are still hopeful that the availability of CWP monies will mean that water quality improvements will occur while the flooding issue is mitigated.

#### 3. Summary of monitoring data collected:

Lake data collected (excluding replicate/blank samples):

Lake	Site	TP (ppb) --- date	Secchi (ft)	Chl-a (ppb) --- date	TSS (ppm) --date
Calhoun	CL1	26 7/11/10	Between 3.0-4.5 ft	7 7/11/10	4 7/11/10
		25 7/25/10		7 7/25/10	3 7/25/10
		32 8/8/10		8 8/8/10	7 8/8/10
		23 8/23/10		8 8/23/10	7 8/23/10
		38 9/7/10		5 9/7/10	9 9/7/10
		23 9/19/10		17 9/19/10	5 9/19/10
Diamond	DL 3	57 7/11/10	Between 1.5-3.0 ft	36 7/11/10	8 7/11/10
		127 7/25/10		72 7/25/10	17 7/25/10
		93 8/8/10		80 8/8/10	13 8/8/10
		209 8/22/10		242 8/22/10	41 8/22/10
		136 9/6/10		88 9/6/10	18 9/6/10
		98 9/21/10		62 9/21/10	14 9/21/10
Elkhorn	EL 1	15 7/8/10	Between 10-19.5 ft	3 7/8/10	1 7/8/10
		15 8/5/10		3 8/5/10	3 8/5/10
		19 9/9/10		8 9/9/10	1 9/9/10
George	GeoL 1	12 7/11/10	Between 9.0-13.0 ft	4 7/11/10	1 7/11/10
		11 7/25/10		2 7/25/10	1 7/25/10
		14 8/8/10		3 8/8/10	1 8/8/10
		12 8/23/10		2 8/23/10	2 8/23/10
		17 9/6/10		7 9/6/10	2 9/6/10
		18 9/19/10		10 9/19/10	3 9/19/10

Green	GL 1	10	7/12/10	Between 9.0-10.5 ft	4	7/12/10	2	7/12/10
		13	7/25/10		5	7/25/10	1	7/25/10
		18	8/8/10		7	8/8/10	4	8/8/10
		12	8/26/10		6	8/26/10	4	8/26/10
		16	9/8/10		8	9/8/10	3	9/8/10
		16	9/19/10		8	9/19/10	5	9/19/10
Long	LL 1	14	7/14/10	Between 9.0-19.0 ft	3	7/14/10	2	7/14/10
		14	7/25/10		3	7/25/10	1	7/25/10
		14	8/16/10		4	8/16/10	3	8/16/10
		20	8/22/10		3	8/22/10	1	8/22/10
		20	9/6/10		19	9/6/10	3	9/6/10
		19	9/19/10		34	9/19/10	4	9/19/10
Monongalia	ML 1	28	7/8/10	Between 5.5-8.0 ft	9	7/8/10	1	7/8/10
		28	8/5/10		7	8/5/10	2	8/5/10
		43	9/9/10		8	9/9/10	8	9/9/10
Nest	NL 1	28	7/11/10	Between 4.8-7.5 ft	11	7/11/10	5	7/11/10
		35	7/25/10		13	7/25/10	2	7/25/10
		29	8/10/10		9	8/10/10	4	8/10/10
		29	8/26/10		12	8/26/10	4	8/26/10
		45	9/8/10		17	9/8/10	3	9/8/10
		30	9/19/10		16	9/19/10	5	9/19/10

Annual loading was calculated at four permanent sampling locations on the Middle Fork Crow River using the water quality model FLUX. The results for years 2007-2009 are shown in the table below. Continuous flow data was not available from the MPCA for 2010 at the time of grant reporting. The Watershed District considers the results of the FLUX modeling as preliminary. Staff is still in the process of learning the model, there may be a distinct difference in readings due to an increased focus on event sampling in 2008-2009, and natural variations such as overall stream flow in each year.

Parameter	Site	2007	2008	2009
TSS	275 <sup>th</sup>	20.59 tons/yr	107.63 tons/yr	111.7 tons/yr
	MFC4	48.88 tons/yr	371.58 tons/yr	277.87 tons/yr
	CL3	311.66 tons/yr	296.18 tons/yr	531.84 tons/yr
	Manannah	137.37 tons/yr	570.09 tons/yr	1131.39 tons/yr
TP	275 <sup>th</sup>	0.22 tons/yr	1.10 tons/yr	1.11 tons/yr
	MFC4	0.55 tons/yr	2.76 tons/yr	2.1 tons/yr
	CL3	2.28 tons/yr	2.41 tons/yr	2.79 tons/yr
	Manannah	1.14 tons/yr	5.13 tons/yr	11.13 tons/yr
TKN	275 <sup>th</sup>	2.48 tons/yr	15.92 tons/yr	11.32 tons/yr
	MFC4	10.15 tons/yr	56.2 tons/yr	42.97 tons/yr
	CL3	37.73 tons/ yr	39.72 tons/yr	51.88 tons/yr
	Manannah	21.06 tons/yr	63.47 tons/yr	111.49 tons/yr

4. Have all monitoring stations been established in STORET?  Yes  No
5. Is the data being routinely submitted for storage into STORET?  Yes  No Last submittal date: November, 2010
6. Is the data being annually entered into E-Link?  Yes  No Date last entered: November, 2010

7. Identify any significant findings and results of the project to date, as well as any unanticipated findings:

Many of the lakes in the watershed met the water quality goals outlined above in this report. Out of the 8 major basins in the watershed, Monongalia, George, Elkhorn, and Green lakes met the water quality goals outlined for secchi, TP, and Chlorophyll A during 2010. Nest Lake met both the secchi and Chlorophyll A goals and was close to meeting the TP goal. Long Lake met both the secchi and TP goals. Only Diamond Lake did not meet any of the water quality goals during 2010.

8. Describe specific (quantifiable, if possible) results achieved during this period:

Water quality classes were delivered to area 4<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, and 11<sup>th</sup>, grade classes on 4 occasions. One article summarizing water quality during 2010 in Green Lake was published in the Green Lake Association newsletter. One water quality lesson was delivered to 35 children at the Spicer Library hour. One staff member attended an Applied FLUX workshop. Two staff members attended the annual BWSR Academy training. Monitoring was conducted by MFCRWD staff and volunteers on area lakes on 53 occasions and on area streams/ river on 60 occasions (including replicate and blank samples). FLUX modeling was completed on 4 permanent river sampling sites. Site visits to property owner inquiries of 10 potential projects were conducted; cost share contracts for 2 shoreland restoration projects on private property were signed. 3 shoreland restoration projects were implemented on area lakes. One site inspection for a potential septic upgrade was conducted and

one septic upgrade was completed. Inspections were conducted on more than 12 previously implemented BMPs to ensure proper maintenance and upkeep.

Phosphorus Load Reduction:	4.20	lbs./year
Nitrogen Load Reduction:		lbs./year
Sediment Load Reduction:	4.44	tons/year

**9. Summarize any work plan changes:**

No additional changes to the work plan occurred during the current reporting period.

**10. List anticipated activities for next six (6) months:**

The Belgrade stormwater project is expected to be at least under construction, if not completed by the end of June, 2011. Two shoreland restoration projects on private property will be implemented as soon as weather permits. One raingarden will be installed on private property on Green Lake. Two shoreland restoration workshops will be planned and delivered to two area lake associations. One water quality day camp will be planned and delivered to area kids in conjunction with the Prairie Woods Environmental Learning Center. Additional formalization of the MFCRWD’s education initiative, “STREAMS”, will take place, and lessons in area schools will be delivered. A display with information about available funding and local water quality will be presented at the annual Earth Day celebration. Further advertising of the availability of cost share funds and low interest loans for BMPs and septic loans will occur. An agricultural BMP incentive program will continue to be developed and then advertised to appropriate audiences. Sampling by MFCRWD staff and volunteers will begin again on area lakes and streams/river. A volunteer monitoring workshop will be held to train/re-train volunteers on proper sampling procedures. Weather permitting (low flows), steps will be made to conduct the first geomorphologic assessments. Project tracking, accounting and general grants management will be conducted.

**11. List all products (documents, pamphlets, videos, maps, etc.) produced in this reporting period.**

One article about Green Lake water quality was written and published in the Green Lake Association newsletter. Two BMP cost share contracts were drafted and signed. Water quality data was compiled and submitted to STORET.

**IV. Expenditure Information for this Period**

CWP: Provide a copy of the Expenditure Report with cumulative expenditures and this period’s expenditures budget balances by work plan program element. The format for the Semi-Annual Expenditure Report is available on the MPCA Web site at: <http://www.pca.state.mn.us/publications/wq-cwp7-09.xls>.

Expenditure Report attached

CWP, 319, and TMDL - Complete the table below:	Amount
Total Grant Amount:	350,000
Total Match Amount (if applicable)	574,300 (in-kind and loan)
<b>Total Project Amount:</b>	<b>924,300</b>
Cumulative Grant Expenditures through this period:	49,688
Cumulative Match Expenditures through this period:	53,027
	*\$8,000 also spent on SRF loan granted in 2007
<b>Total Cumulative Expenditures through this period:</b>	<b>102,715</b>

Date form completed: 1/26/11

Please submit to: Maggie Leach