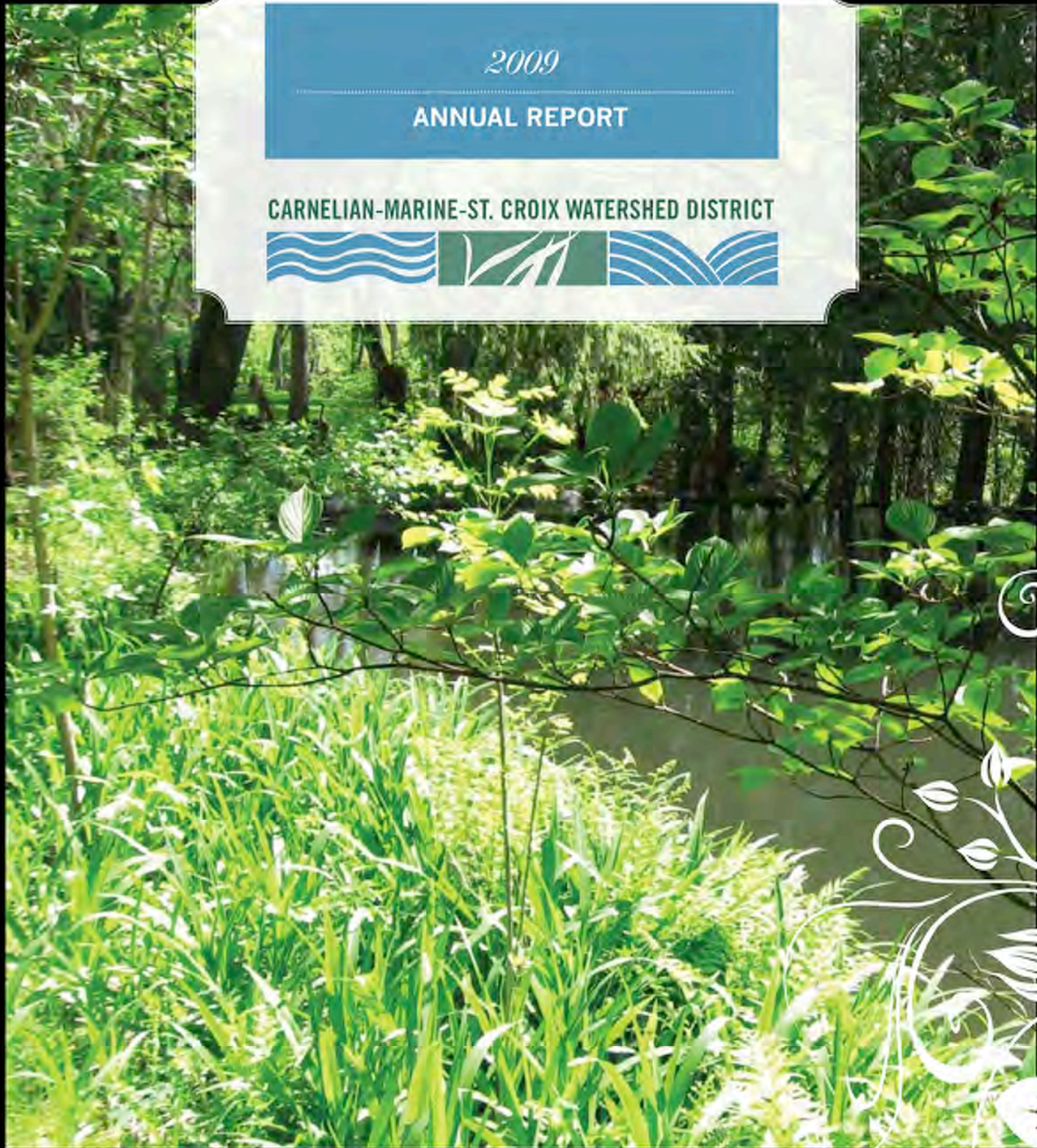


2009

ANNUAL REPORT

CARNELIAN-MARINE-ST. CROIX WATERSHED DISTRICT



**CARNELIAN-MARINE-ST CROIX WATERSHED DISTRICT
WASHINGTON COUNTY, MINNESOTA
ANNUAL REPORT
FOR THE PERIOD JANUARY 1 – DECEMBER 31, 2009**

Pursuant to Minnesota Statutes, 103D.351 and 103D.355 and Minnesota Rules Chapter 8410, Metropolitan Area Local Water Management we hereby submit the Annual Report of the Carnelian-Marine-St. Croix Watershed District (CMSCWD) for the year ending December 31, 2009. For more information, contact:

Carnelian-Marine-St. Croix Watershed District
P.O. Box 188 Scandia Place II
21150 Ozark Avenue
Scandia Minnesota 55073
jimshaver@cmscwd.org
651-433-2150

LETTER FROM THE PRESIDENT

Overall 2009 was a very busy year. The Board of Managers held many public meetings and workshops. We put the finishing touches on Rule Updates, Wetland Management Plans, and our 10-year plan. A great many people need to be thanked for attending meetings, reviewing and commenting on our plans, and supporting our efforts. We look forward to seeing these plans adopted in 2010.

The mission of the District is to protect and preserve the quantity and quality of water dependant resources within our boundaries (as set in the 2008 District Strategic Plan). While most agree on the mission, not everyone is likely to agree with every portion of the rules and plans we adopt. People have different opinions on what is important and how best to accomplish our mission. With the new rules and plans, we hope everyone will become more aware of the importance of wetlands, groundwater, and storm water. All of the water that falls from the sky hits the ground and carries traces of everything it encounters into our lakes, rivers, streams, and groundwater. While we all want to protect these resources, everything we do, from tilling the soil on our farms, to constructing buildings, roads and bridges, can pollute our water. The Watershed District Managers are doing what we believe will strike the best balance between our needs as property owners and the needs of our water dependant resources.

For the next few years, we will focus our efforts on cleaning up lakes listed as impaired by the Federal Government. We will investigate the causes of impairment on twelve (12) lakes and then develop and implement plans to clean up each of them. The District is fortunate to be the recipient of Federal and State grants to help offset the cost of this massive effort. We are also working with property owners to establish and/or energize lake homeowners associations to help with identifying and prioritizing these efforts.

The watershed is blessed with an abundance of high quality water resources. We look forward to working directly with many of you in the year ahead to find ways to improve this quality even more.

Sincerely, Steve Kronmiller President

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CARNELIAN-MARINE-ST. CROIX WATERSHED DISTRICT OFFICERS

The Carnelian-Marine-St. Croix Watershed District (CMSCWD) conducts business at its monthly meetings, which take place on the first Monday of the month at the Scandia Community Center at 6:30 PM. The annual meeting was held September 14, 2009. The budget was set and the following officers were elected:

Steven Kronmiller, President
13450 188th St. N.
Marine, MN 55047 651-433-4042
Term expires: 6/21/2012

Richard S. Caldecott
33 Moonlight Bay
Stillwater, MN 55082 651-439-7385
Term expires: 6/21/2011

Victoria Dupre, Secretary/Treasurer
13510 Norell Ave. N.
Stillwater, MN 55082 651-439-8266
Term expires: 6/21/2011

Jason Husveth
17085 Olinda Trail N
Marine on St. Croix, MN 55047
Term expires: 6/21/2010

John T. Bower
12405 Otchipwe Ave. N.
Stillwater, MN 55082 651-430-2793
Term expires: 6/21/2010

John Lennes
16720 Norell Ave N
Marine on St. Croix, MN 55047
Term expires: 6/21/2010

Thomas Polasik
14420 94th Street N
Stillwater, MN 55082
Term expires: 6/21/2010

ADMINISTRATOR

James Shaver
21150 Ozark Ave. N
P.O. Box 188
Scandia, MN 55073
651-433-2150

CONTRACTORS

- Attorney: Raymond O. Marshall, of Lawson, Marshall, McDonald & Galowitz, 3880 Laverne Ave. N., Lake Elmo, MN 55042, 651-777-6960
- Engineer: Dan Fabian of Emmons & Oliver Resources (EOR), 651 Hale Ave. N., Oakdale, MN 55128, 651-770-8448, ext. 235
- Accountant: David McCord, Ltd. 1940 Greeley St. S., Suite 101, Stillwater MN 55082, 651-430-9424
- Support and Communication Services: Debbie Meister and Sarah Clark of MMC Associates, 1312 Portland Avenue, Saint Paul, MN 55104, 651-647-6816
- Newspaper: St. Croix Valley Press is the legal newspaper for the District. Notices are also published in the Country Messenger.

CITIZEN ADVISORY COMMITTEE

Scott Alexander
14141 Paris Ave. N.
Stillwater, MN 55083

Harold Johnson
18599 Layton Ave. N.
Marine, MN 55047

Jessica Parcheta
11252 Norell Ave. N.
Stillwater, MN 55082

Kate Carlsen
10611 Mendell Ave. N.
Stillwater, MN 55082

Larry Kennedy
13997 St. Croix Trl. N.
Stillwater, MN 55082

Pete and Elsie Riehle
11080 Norell Ave. N.
Stillwater, MN 55082

Rex Ewert
19650 Orwell Ave. N.
Marine MN 55047

Sally Leider
23229 St. Croix Trl. N.
Scandia, MN 55073

Diane Rohan
16980 Northridge Ave. N.
Marine, MN 55047

Burt Fisher
19490 Orwell St. N.
Scandia, MN 55407

Kris Levine
9880 Stonebridge Trl.
Stillwater, MN 55082

Jim Schoeller
14211 St. Croix Trl. N.
Stillwater, MN 55082

Mark Forliti
19710 Orwell Ave.
Scandia, MN 55047

Dave and Lynn Linder
18980 Olinda Ave.
Marine, MN 55047

Bruce Swensen
22161 Oldfield Ave.
Scandia, MN 55073

Maurice Grogan
11425 155th St. N.
Marine, MN 55047

Fran and Ann Michaud
12080 Lakamaga Trl.
Marine on St. Croix, MN
55047

Dean Tharp
14089 Oakhill Rd.
Stillwater, MN 55082

Stephen Huberty
19323 Orwell Ave. N.
Marine, MN 55047

Gary Orlich
14777 197th St. N.
Marine, MN 55047

Dana Vogen
21621 Oldfield Ave. N.
Scandia, MN 55073

Dave Hume
14939 Old Marine Trl. N.
Marine, MN 55047

Jack Parcheta
11345 Neal Ave. N.
Stillwater, MN 55082

Larry Whitaker
625 Pine Cone Trl.
Marine, MN 55047

Bob Iverson
14463 Oldfield Rd.
Stillwater, MN 55082

Mike White
13310 188th St. N.
Marine, MN 55047

WETLANDS CONSERVATION ACT TECHNICAL EVALUATION PANEL

Craig Wills, Minnesota Department of Natural Resources (DNR) Area Hydrologist; Ken Powell, Senior Wetland Specialist, Board of Water and Soil Resources (BWSR); Melissa Arikian, EOR Natural Resource Specialist; Jyneen Thatcher, Washington Conservation District (WCD); Jim Shaver, CMSCWD; Melissa Doperalski, DNR; Mark Cleveland, DNR; Doug Norris, MN.

TECHNICAL ADVISORS

- Craig Wills, DNR Area Hydrologist
- Amy Carolan, WCD Natural Resource Specialist
- Jay Riggs, WCD Manager
- Erik Anderson, WCD Water Resource Specialist
- Melissa Lewis, BWSR Board Conservationist
- Debbie Meister, Amy Middleton, Sarah Clark, MMC Associates (education, outreach)
- Melissa Arikian, EOR, Natural Resource Specialist
- Dan Fabian, EOR, Engineer

FINANCIAL INFORMATION

The Watershed District's assets include checking accounts and a certificate of deposit. The monetary assets are comprised of the following funds: Administrative Fund, Maintenance Fund, Survey and Data Fund and General Fixed Assets Fund. The District owns real property, easements, and office and water monitoring equipment. The accountant keeps the records in a computer ledger and in paper form, which is subject to inspection at any time. The records are kept at the District office and at the accountant's office.

The District contracted Peggy Ahola Ltd., CPA to audit the District's financial activities and to advise on accounting procedures and practices. The District kept its assets in the Security State Bank of Marine. Deposits in excess of \$250,000 are secured by the bank's pledging of qualified government securities. The assets of the District are invested in interest bearing checking and surety accounts, and a certificate of deposit for gravity pipe maintenance.

The District's financial activities are audited once a year as required by law with audit copies sent to the following:

- Minnesota Department of Natural Resources Commissioner
- Minnesota Department of Natural Resources Director of Division of Waters
- Board Conservationist, Minnesota Board of Water and Soil Resources
- Minnesota State Auditor
- Washington County Board of Commissioners

The District's budget for 2009 was set at the November 3, 2008 regular meeting and was \$595,450. The District's budget for 2010 was set at the September 14, 2009 meeting and was \$652,600 while the levy remained virtually unchanged. The approved budgets and levy requirements are forwarded to the Washington County Auditor to be collected from the residents of the District.

The District had a beginning cash balance of \$437,642 on January 1, 2009.
The District had an ending cash balance of \$443,685 on December 31, 2009.
The cash balances consist of the Checking account \$314,502
Surety account \$58,060
Gravity Pipe Reserve account \$71,123

Please refer to the 2009 audit report when available on our website (www.cmscw.org) for more specific financial information.

Carnelian-Marine-St. Croix Watershed District

2009 Budget

Approved at the November 3, 2008 Regular Meeting

<u>Budget Item</u>	<u>From Prior Years</u>	<u>Interest, Grants, Fees</u>	<u>Tax Levy</u>	<u>Total Budget</u>
Engineering		5,000	45,000	50,000
Administrator			70,000	70,000
Taxes, Benefits, Expenses			31,700	31,700
Manager Per Diem			11,500	11,500
Operations	(20,400)		65,900	45,500
Professional Fees			16,100	16,100
Total Operating Budget	(20,400)	5,000	240,200	224,800
Channel Maintenance			4,000	4,000
Met Council Outlet		6,150		6,150
Wetlands Management			5,000	5,000
Lake Mgmt/Implementation Projects		26,000	28,000	54,000
Water Monitoring			71,000	71,000
BMP Program		5,000	54,500	59,500
Conservation Easements			5,000	5,000
TMDL	(30,000)	41,000		11,000
Strategic Plan Activities			25,000	25,000
Education/Outreach			48,000	48,000
Interest	-	-		
Rules Update	2,000		2,000	2,000
Plan Amendment	<u>72,000</u>	<u> </u>	<u>8,000</u>	<u>80,000</u>
Total Projects Budget	42,000	78,150	342,000	370,650
Total Budget	23,600	83,150	488,700	595,450

Carnelian-Marine-St. Croix Watershed District

2010 Budget

Approved at the September 14, 2009 Annual Meeting

<u>Budget Item</u>	<u>From Prior Years</u>	<u>Interest, Grants, Fees</u>	<u>Tax Levy</u>	<u>Total Budget</u>
Engineering			50,000	50,000
Administrator			70,000	70,000
Taxes, Benefits, Expenses			28,500	28,500
Manager Per Diem			11,500	11,500
Operations			31,600	31,600
Professional Fees			17,500	17,500
Contingency Reserve			<u>15,000</u>	<u>15,000</u>
Total Operating Budget			224,100	224,100
Channel Maintenance			4,000	4,000
Met Council Outlet			7,000	7,000
Wetlands Management			5,000	5,000
Lake Mgmt/Implementation Projects			21,500	21,500
Water Monitoring			70,000	70,000
BMP Program	2,000		63,000	65,000
Conservation Easements			--	--
Watershed Management		45,000	45,000	90,000
TMDL		103,000		103,000
Strategic Plan Activities			20,000	20,000
Education/Outreach	15,000		28,000	43,000
Interest			-	-
Rules Update			--	--
Plan Amendment			--	--
Total Projects Budget	17,000	148,000	263,500	428,500
Total Budget	17,000	148,000	\$487,600	\$652,600

WATERSHED GOVERNANCE

The expanded District has been in place for one year. The Personnel Committee conducted a performance review of the Administrator with input from local governments, the Washington Conservation District and others.

Water Consortium: Administrator Shaver continued to represent the District on the Consortium, a county-wide committee of local water units, cities and townships, state

and local natural resource agencies and County Departments to work on surface and groundwater issues that cross local water unit boundaries.

Groundwater Advisory Committee:

Administrator Shaver replaced Manager Caldecott, serving on the Groundwater Advisory Committee. The committee makes recommendations to the Washington County Commissioners on groundwater issues.

2009 ACTIVITY REPORT AND PROJECT UPDATE

2010 Watershed Management Plan: Board workshops and meetings with the Technical Advisory Committee and Citizen Advisory Committee were held throughout the year to provide input and direction on the draft 2010 Plan. At the December 7, 2009 regular meeting, the Board approved the draft Plan and began the formal review process. Formal adoption of the Plan is expected in 2010.

Watershed Rules: In 2007, the District began the process of revising rules. The Board held a series of 12 workshops and six Citizen Advisory Committee and Technical Advisory Committee meetings to gather input and identify areas of concern. The Board elected to concentrate on the following areas: 1) Stormwater Management; 2) Erosion Control; 3) Lake, River, Stream and Wetland Buffer Requirements; 4) Shoreline and Streambank Alterations; 5) Watercourse and Basin Crossings; 6) Floodplain and Drainage Alterations; and 7) Wetland Management.

Throughout 2008 and 2009, the District worked with agencies and local government units (LGUs) to revise the draft rules. At the December 7, 2009 regular meeting, the Board approved the draft Rules and began the formal review process. Formal adoption of the Rules is expected in March 2010.

Falls Creek: With input from the District, Minnesota Department of Transportation installed an infiltration basin on the west side of Highway 95 to reduce erosion in Falls Creek and decrease sediments flowing to the St. Croix River.



This specially-landscaped area will capture and filter stormwater flowing off of Highway 95.

Total Maximum Daily Load (TMDL):

The District's TMDL Phase I Report was approved by the Minnesota Pollution Control Agency (MPCA) and the TMDL Phase II Draft Report was completed in September. The reports address the nine impaired lakes— East Boot, Fish, Goose, Hay, Jellum's, Long (Scandia), Loon, Louise, and South Twin—due to excess nutrients.

Channel Maintenance: With the help of local contractors, Board members continued to monitor water levels and clear debris and beaver dams from both the Big Marine/Carnelian Creek and the Silver Creek subwatershed drainage areas. Monitoring is also done at the Turtle Lake weir to further reduce the possibility of flooding and to try to maintain adequate downstream water levels.



Silver Creek is a unique spring-fed creek that travels through a number of District waters before entering the St. Croix River at Fairy Falls.

Silver Creek Stream Corridor

Management: The District purchased the herbicide triclopyr in bulk to distribute to landowners in the corridor interested in treating buckthorn stumps. Additionally, the District received a Washington Conservation District grant to do invasive species removal along the creek.

Trophic Status Index (TSI) Mapping of District Lakes: The District contracted

with A.W. Research Laboratories to provide TSI monitoring of District lakes. The TSI summarizes several measurements of water quality into one index allowing the District to compare the water quality of our lakes relative to one another and to compare the historic/future data as a measure of degradation or improvement.

Carnelian Creek / Ozark Trail Projects:

A project to improve Ozark Trail and mitigate stormwater from the road has been ongoing. In May 2008, May Township paved the road. With funding from the District, Washington Conservation District installed native plants and contractor Roger Rydeen conducted restoration work along the culvert. In 2009, with funding from Great River Greening and the Minnesota Department of Natural Resources, culvert stabilization, eradication of invasives and native plantings were completed.

Square Lake Park Project: Construction to install raingardens, pervious pavers, and other stormwater devices began on this project, with crews from Washington County Parks providing their time and labor in this collaborative effort with the District and the Minnesota Department of Natural Resources. The project will be completed in June 2010 with the installation of interpretive signage to educate park visitors.

Square, Long and Sand Lakes Project:

The District received a two-year grant from the MPCA to work with homeowner lake associations to identify BMP projects that will help achieve lake water quality goals.

Big Marine Lake: Lake residents worked with the District to apply for and receive a Minnesota Department of Natural Resources (DNR) grant for detection and eradication of Eurasian watermilfoil. The residents are continuing to work with both the DNR and the District to develop a Lake Vegetation Management Plan, form a lake association and secure a DNR permit to allow for treating milfoil in 2010.

OUTREACH AND EDUCATION ACTIVITIES

Newsletter: MMC Associates produced and mailed spring and fall issues of *Watershed Update*, the District's newsletter that keeps residents informed of the District's activities. The newsletters included information about lake water quality trends, what a watershed district does, how revenues are raised and spent, the BMP Program, watershed events, invasive species and watershed tips.

Watershed Wisdom: The District conducted watershed education in local schools through the Watershed Wisdom Program. Directed by educator Sally Leider, the program works with fifth-grade classes at Marine and Scandia schools linking St. Croix Valley youth with educators, scientists, artists and naturalists to inspire stewardship of the St. Croix Watershed. The program is a model of *place centered experiential education* where learning about one's own "backyard" builds lasting commitments to preserving watershed health and river stewardship. Developing an affinity for the natural world at a young age fosters an ethic of caring, which is crucial to protecting and restoring local watersheds. Through the program, students learned:

- Concept of watershed
- Ecological or watershed address
- Water flowage and drainage patterns in our watershed
- Tributaries of the St. Croix
- Identification of water bodies in our own "backyard"
- Watershed mapping
- Best practices for a healthy watershed (home and school)

Envirothon: The District sponsored a Forest Lake High School Envirothon team competing in a statewide problem-solving natural resources competition.



Students in the Watershed Wisdom program show their work on dragonfly habitats and life cycles. They also had a chance to share the results of their efforts at Millstream Days on May 17.

Volunteer Stream Monitoring: By studying benthic macroinvertebrates— small bottom dwelling animal organisms that live all or part of their lives in streams and rivers — volunteers can help determine baseline stream health, monitor long-term trends and detect changes in the stream that may be attributed to changes in the watershed. Seventh- and eighth-grade students, teachers and other volunteers from Crosswinds Middle School in Woodbury have been monitoring Silver Creek since the fall of 2002.

Since 2008, volunteers called the Arcola Stream Assessment and Protection Monitoring Group have been monitoring Arcola Stream. With training and equipment from the District, the group meets monthly to collect water samples and monitor the water level, water temperature, velocity, flow, turbidity, ph, dissolved oxygen and phosphate and nitrate levels. They also do a rudimentary test for e-coli.

Workshop: In August, the District and Comfort Lake-Forest Lake Watershed District co-hosted a Small Acreage Grazers Workshop. Almost 40 small ranchers attended.



KEY PROGRAMS • BEST MANAGEMENT PRACTICES (BMP)

The Carnelian Marine St. Croix Watershed District continued to promote and implement its Best Management Practices (BMP) program in 2009. The CMSCWD board approved twelve projects, allocating \$27,375.00 in cost-share funds.

Funding Approach

The program provides a three-tiered funding approach: 1) plant grants are available for residents interested in purchasing native plants for a water quality improvement project. A maximum of \$500 per project is available through this program. 2) Individual cost-share grants are available for residents taking on a qualifying water quality improvement project such as installing a raingarden or a shoreline buffer planting. The individual cost share grant typically provides 50 percent cost-share, with a maximum dollar amount of \$5,000. 3) Grants are available for Local Government Units (LGU) such as municipalities to provide monetary assistance to address resource issues. There is no set cost-share limit for LGU projects, but each is reviewed individually.

BMP Subcommittee

In 2009 the Carnelian Marine St. Croix Watershed District appointed three managers to serve on the Best Management Practices Subcommittee. Managers on the 2009 BMP subcommittee were Tom Polasik, John Bower, and Jason Husveth. Administrator Jim Shaver and Amy Carolan of the Washington Conservation District also served on the subcommittee. The BMP subcommittee was responsible for reviewing and ranking Best Management Practices proposals and providing the full board with project funding recommendations. The BMP subcommittee met four times during 2009 to review and rank eighteen potential BMP project proposals.

2009 Status Report

The CMSCWD Board of Managers approved funding for twelve projects in 2009 (18 projects were reviewed by the BMP subcommittee). The following approved projects were all individual cost-share grants:

- Native buffer planting on Square Lake
- Two raingarden projects on Big Carnelian Lake
- Slope stabilization project off of Oakhill Rd, Scandia (Clapp's Stream)
- Prairie restoration and buffer planting off of Holms St., Marine on St. Croix (unnamed stream and St. Croix River)
- Stream buffer planting within the Croixside Development, Marine on St. Croix (Willow Brook)
- Ravine Stabilization near Old Deer Trail, Stillwater (Silver Creek)
- Vegetated Swale near Nason Hill Rd., Marine on St. Croix (St. Croix River)
- Bluffland erosion control in Marine on St. Croix (St. Croix River)
- Wetland buffer planting near 127th St., Stillwater (Carnelian Creek)
- Lake Buffer Signage on Big Marine Lake
- Goose Lake Boat Launch Improvements

BMP PHOTO GALLERY



Existing turf grass was converted to native buffer plantings along Willow Brook in the Croixside Development.



A strategically placed culvert directs water under the asphalt driveway into a natural depression. Prior to the project, all runoff (from County Road 11 and upstream properties) flowed down the impervious driveway and into Big Carnelian Lake.



A series of raingardens were installed to address an erosion issue on Big Carnelian Lake.



A prescribed burn was completed around a wetland adjacent to Carnelian Creek to help remove turf grass in preparation for a native seeding. Seeding was completed in the late fall of 2009. Grow-in maintenance will continue in 2010. CMSCWD partnered with the Washington Conservation District on a BWSR Native Buffers Grant for this project.



KEY PROGRAMS • PERMIT PROGRAM

The District continued to implement its permit and review program. The permit program prevents future problems that would require large expenditures of District funds to correct, or mitigates the affects of land use decisions that would degrade water quality or increase sedimentation in District waters. The fee schedule adopted in November 2005 remained the same in 2009. The District continued to coordinate its review and permit program with the other state, county and local government agencies. It is not the intent of the CMSCWD to add an additional layer of government to the resident application process and the District works with these agencies in an attempt to streamline the process. The CMSCWD permits all subdivisions and land disturbing activities within 1000 feet of its lakes, streams and wetlands that may impact those resources. In 2009 much of the permit activity was carried out by District engineer Dan Fabian and District Administrator Jim Shaver, with oversight from District managers. A description of each District Comment and Permit is included below.

District Comments:

Comment 08-011: Property on Big Marine Lake. The property owner is filling in a stream/ditch on a property he owns and installing a culvert extension that connects to City storm sewer to pick-up flows. All work apparently without any permits from any agencies. No District or City permits were issued for this project. Property owner was provided a permit application form by District Administrator which has been partially filled out but the application lacks the additional design information needed for review and is consider incomplete. He attended the December District Board meeting to explain his situation. Managers directed staff to work with the property owner to compete his permit application. Refer to Permit 09-014 for additional information.

Comment 09-001: Tiller Corporation EAW for Proposed Zavoral Mining Operation in Scandia. Project is being proposed by the Tiller Corporation and is identified as the Zavoral Site in Scandia Minnesota. Scandia is the responsible government agency for preparation of the Environmental Assessment Worksheet (EAW). They requested District comments on the EAW that was prepared by Sunde Engineering. District provided comments that are summarized as follows.

Proposed project involves re-opening a currently dormant mining operation on the Zavoral property, mining the property and restoring the property, including currently un-restored portions of the site that had previously been mined by others. Proposed project will increase the mining area by an additional 8-acres and to an additional depth of about 15-ft. Portions of the project site are located within the St. Croix River District and scenic easement area. No new mining is proposed within that area but approximately 4-acres of previously disturbed area will eventually be restored when mining is completed.

This area of the District contains significant, unique high value resources both within and adjacent to the parcel boundaries as well as nearby that could have been better identified in the EAW. For example, Zavoral's Creek, a St. Croix tributary that (according to the Lower St. Croix Spring Creek Stewardship Plan) contains naturally reproducing brook trout, runs through a portion of this site and is not mentioned in the EAW. The Creek is located outside of the proposed mining area. Scandia was the responsible government agency for preparation of the EAW. Following completion of the EAW and public input process the City determined that the proposed project would require preparation of an Environmental Impact Statement (EIS). District Administrator is participating in EIS review process.

Comment 09-002: County dewatering of Panorama Avenue runoff from low area to Big Carnelian Lake. Week of March 17, 2009, District received complaint about dewater into Big Carnelian Lake. District site visit determined reason for pumping was to alleviate County's concern for flooding of 201-system sanitary lift station as well as low lying buildings. District Administrator followed up on this issue with Township and property owner. Refer also to Comment 09-011 which pertains to flooding experienced by property owner.

Comment 09-003: Variance Request from lot size. Proposed project is located on Big Carnelian Lake at 14930 130th St. North. Proposed project is for construction of a building addition, new decks and walkways. Lot size of 0.86 acres does not meet the 1.5 acre required lot size per shoreland ordinance. Proposed impervious will go from 16.37 % to 16.97% of lot area. Proposed lake setback exceeds required 100-ft building setback. Project will require a District permit, refer to Permit 09-009 for additional information.

Comment 09-004: Variance Request from lot size. Proposed project is located across street from Big Carnelian Lake lots at 28 Moonlight Bay. Proposed project is for construction of a 112 ft² building addition. Lot size of 0.55 acres does not meet the 1.5 acre required lot size per shoreland ordinance. Existing impervious prior to proposed project is 13% of lot area. Proposed lake setback exceeds required 100-ft building setback. A District permit will not be required. District's primary comments were for the erosion and sediment control plan as the entire lot appears to drain down the concrete driveway to the neighbor's private stormsewer and into Big Carnelian Lake. Provided additional comments promoting the installation of stormwater BMP's to help manage and treat stormwater runoff from the property.

Comment 09-005: Variance Request from lot size, lake setback and road setback. Proposed project is located on Big Carnelian Lake at 14730 130th St. North. Proposed project is for the tear down of the existing house and construction of a new house, decks and walkways. Lot size of 0.65 acres does not meet the 1.5 acre required lot size per shoreland ordinance. Proposed impervious 18.35% of lot area. Proposed lake setback of 62.5 ft is same as existing structure and less than required 100-ft building setback. Project requires a District permit. The District provided review comments to County Board of Adjustment and Appeals. The District's primary concerns identified are for the erosion and sediment control plan due to the lots fairly steep slopes and provision of stormwater management volume control and treatment for the property. Refer to Permit 09-010 for additional information.

Comment 09-006: Variance Request from lot size and road setback. Proposed project is located across street from Big Carnelian Lake at 14886 130th St. Lane North. The District provided review comments to County Board of Adjustment and Appeals identifying the following concerns. Proposed project is for construction of garage enlargement and to reconfigure entryway of home. Lot size of 0.16 acres (half the size of a typically 1/3 acre City lot) does not meet the 1.5 acre required lot size per shoreland ordinance. Existing lot coverage per certificate of survey is at 37% which significantly exceeds the shoreland ordinance maximum of 25% of lot area. Project proposes to not increase lot coverage over existing by removing part of the existing driveway. In addition entire driveway is to be replaced with a pervious paver system to help mitigate excess lot coverage impervious area. Proposed lake setback exceeds (better than) required 100-ft building setback. Project will require a District permit. Refer to Permit 09-015 for additional information.

Comment 09-007: Building Addition Variance. Proposed project, located in City of Marine on St. Croix, is for a building addition and detached garage. District provided input on stormwater

treatment options and District permit needs to both City of Marine on-St. Croix and Homeowner. District permit will probably not be required for this project.

Comment 09-008: Building Addition Variance. District provided comments on proposed variance to City of Scandia. Proposed project is located on Big Marine Lake near the Bliss Addition. Project is for a building addition and detached garage. Project requires variances from the Scandia shoreland ordinance for lot size and lake setback. Existing property is served by 201-system for waste water. District provided comments on proposed project and requested variance to City of Scandia. A District permit is required for project. Refer to Permit 09-016 for additional information.

Comment 09-009: District provided comments to Washington County Board of Adjustment and Appeals on the Variance Request from Lower St. Croix River Bluffland and Shoreland Ordinance requirements for bluff and river (OHW) setback requirements. Proposed project is located on the St. Croix River at 14851 Riverside Avenue North, Marine on-St. Croix. Proposed project is for the tear down and rebuilding of the existing house and a building addition and a detached accessory building and associated site work. Applicant intends to reuse the existing foundation with the building addition being constructed on the building side opposite the river. Project appears to include a proposed deck on the riverside of the home. Lot size and impervious lot coverage are not identified in the information provided but do not appear to be an issue. Proposed bluff setback of about 7-ft to proposed deck is significantly less than required 100-ft building setback. (Note the actual building itself is proposed to be setback 16-ft same as existing building). Area disturbed by project appears to be greater than 1,000 ft². A District permit will be required for this project if it receives the requested variance.

District Permits:

Permit 02-033: Riprap maintenance project, located on Big Marine Lake. Purpose of project was to repair riprap previous placed in 2002 under this permit. Permit 02-033 was reactivated and a \$200 performance surety was collected. Project was completed and entire surety was returned after final site inspection.

Permit 03-044: Big Marine Store Development. Located in the Big Marine Lake Subwatershed Management Area. No new information has been received on this project. Current permit status is open. District is still waiting for the plans to provide permanent solutions to problem and as-built drawings to finalize existing permit.

Permit 06-002: Millbrook Development on South Twin Lake, (former Palmer Property). Home construction continues. Joint inspections with BCWD are continuing. Administrator submitted invoice to applicant for repayment of District expenses related to routine permit inspections. District received payment of invoice.

Permit 06-019: Tii Gavo - Major Subdivision on Big Marine Lake. District received correspondence from Developer's Engineer looking into a request for reduction in letter-of-credit. District explained that it holds a cash surety on this project and is not likely to reduce it until the site is built out. District Administrator Shaver continues to provide site observation when needed and is coordinating with City of Scandia. It will probably take several years before this development is built out and permit closed out.

Permit 07-010: Property violation on Big Marine Lake. Received a permit application for an after the fact permit which was incomplete. No additional permit submittal information has been received in the last year.

Permit 08-001: BTG and BTG-II May Township Mining Operation renewal of conditional use permit by County. We have received no additional submittal information on this development. District is currently waiting for remaining materials to complete permit application.

Permit 08-003: Tiller Corporation Scandia Mining Operation. District received and accepted additional information required by permit stipulations 2a, 2b, 2c. Applicant still needs to provide a cash surety per stipulation 2d. Administrator attended annual site visit and reminded the applicant of surety needs including follow-up correspondence.

Permit 08-008: New Home on Big Marine Lake. This project required a variance from the County Shoreland Ordinance. District provided comments under Comment No. 07-025. Administrator received a permit application in 2008 (initially considered incomplete per District Engineer's review). District received additional permit submittal information via e-mail on June 30, 2009, from applicant's engineer completing the application except for a couple minor concerns. District Engineer and staff worked with applicants Engineer on submittal requirements prior to receipt of final submittal. There was significant public comment on permit application at the July Board meeting and applicant made some additional revisions to plans and permit was issued with stipulations. To date no construction has started on this project.

Permit 08-0013: Retaining Wall by isolated wetland. Property located on Big Marine Lake. (Note wetland is not adjacent to lake). District received request for final inspection and return of surety. Administrator Shaver conducted site inspection and surety was returned.

Permit 08-019: Existing Driveway Wetland Fill, Property Big Marine Lake. Refer to previous 2008 engineers' reports for background information. Applicants engineer revised the plans to include a 24-inch stream culvert and two 18-inch culverts and a 15-inch culvert spread out along the road crossing of the wetland. Design also called for installation of a 100-ft rock overflow weir at elevation 945.0. District Administrator received a complete permit application including the agreed on fees. Construction was completed the week of December 1, 2008, by contractor Roger Rydeen. Project was observed by District Administrator, City Staff, and Wetlands TEP including Jyneen Thatcher and Melissa Arikian (EOR). TEP reported that wetland conditions in road were as expected. Record drawing as-builts of project were submitted by developer's engineer. A review of those drawings show that the overflow weir was constructed at only 40-ft long instead of the 100-ft long weir called for in the design. Developer's Engineer notes this was done due to Contractor concerns about the soft silty gray sands encountered and concern about road stability. Developer's Engineer also noted that additional review may be needed in the spring. Refer to Administrator's report for additional information. District is currently withholding return of surety until project can be evaluated further during spring flow conditions for compliance with permit conditions.

Permit 09-001: Wetland excavation for habitat restoration and creation. Permit application received and issued after consultation with Jyneen Thatcher, WCD, and District Engineer. Project was consistent with WCA and District Wetland Management Plan. District received request for final inspection and return of surety. Administrator conducted site inspection and surety was returned.

Permit 09-002: MNDOT Hwy 95 upgrades. Project includes mill and overlay and several open cut culvert replacements. During the review process District expressed concerns about protection of several trout streams located along that stretch of road and the District's outlet pipe to the St. Croix. Concerns were addressed with appropriate plan revisions. Final plans were received and permit issued. District received revised plans that included an additional turn lane and required stormwater management and erosion control. Plan revisions were reviewed and Administrator issued revised permit on recommendation of District Engineer.

Permit 09-003: MnDNR Gateway Trail Bridge Crossing of Hwy 15. Project involves construction of bridge abutment ramps in 2009 by MNDNR with final concrete bridge abutments and placement of historic bridge by MNDOT in 2010. District received the additional information requested in initial review of hydrologic design, erosion control measures, wetland delineation report, grading, erosion and restoration plans for temporary trail and staging area. Project originally included filling of approximately 340 ft² of the adjacent management category 2 wetland, based on initial delineation report. That impact apparently qualifies for a WCA de minimis exemption. However, the District wetland plan does not allow de minimis, so the impact needed to be mitigated at a 4:1 ratio. Staff met with DNR and an informal TEP to discuss concerns about the wetlands delineation methodology and de minimis determination, meeting included a site visit. As a result, the DNR re-delineated the edge of wetland and surveyed edge. DNR incorporated the surveyed edge into their determination of wetland impact and the revised wetland type to Type 5 (WCA de minimis of 100ft²). Impact exceeds, WCA de minimis of 100ft², so DNR is purchasing wetland credits from established wetlands bank. *District also learned during process (per BWSR opinion from attorney general) that DNR and other state agencies (except for MNDOT) are not required to get watershed district permits.* DNR staff indicated that they would still try to take into account District comments. Managers have directed Administrator to still occasionally observe construction and report any issues noticed to DNR.

Permit 09-005: Shoreland Riprap Project. Proposed project is for the installation of 100-lineal feet of riprap in accordance with DNR requirements. Project is located on Big Marine Lake. Administrator issued permit with stipulations for design in accordance with DNR requirements, erosion and sediment control and notification of District prior to and at completion of construction. Following project completion and notification by applicant, Administrator conducted site inspection on September 28, 2009 resulting in District return of surety.

Permit 09-006: MnDOT Falls Creek Infiltration Project. Administrator learned of construction project underway by MNDOT. Project is the construction of an infiltration basin for water quality treatment and protection of Falls Creek. Project will require a District permit. Administrator obtained a complete permit submittal with design computations. Based on information received and Administrator investigations project is in line with recommendations from the Falls Creek Stream Management Plan and District requirements. District issued permit.

Permit 09-007: Scandia Lilleskogen Park Wetland Restoration. Project involves construction of a water level control structure as the first step in restoring the wetland on this property and future improvements to park. District received a completed permit application for this phase of project. District permit was issued, per Engineers recommendation, with stipulations that District be invited to pre-construction meeting, copied on construction correspondence, notified at project completion and be provided copy of final as-built drawings.

Permit 09-008: Washington County Public Works 2009 Culvert Replacement Project. District received application from Washington County Public Works for the replacement of three culverts

along Manning Ave. that are part of their 2009 Culvert Replacement Program. A District permit was issued based on Engineers recommendations.

Permit 09-009: Proposed project for construction of lakeside building addition, new decks, walkways and site work. Proposed project is located on Big Carnelian Lake at 14930 130th St. North. Applicants have previously restored approximately 100-ft of shoreland on this property as part of the District's BMP Program. Lot size of 0.86 acres required a variance from Washington County Shoreland Ordinance as it does not meet the 1.5 acre required lot size per shoreland ordinance. District provided comments to County on proposed variances, refer to Comment 09-003. Proposed project exceeds 1,000 ft² of disturbance. Proposed net impervious will go from 16.37 % to 16.97% of lot area. Proposed lake setback exceeds (better than) required 100-ft building setback. Proposed project needs to provide stormwater treatment/infiltration for the additional runoff volume from new impervious areas. As part of a District request to compare existing requirements to proposed rule worksheet requirements, a volume requirement of 74 ft³ was determined. The submitted plans propose a 100 ft² raingarden, but specific design information was not provided. As part of the District review comments for this project suggestions for how applicant can meet requirements were also provided. We recommended permit approval with stipulations to address remaining concerns. **Manager action requested – None.**

Permit 09-010: Proposed project to tear down of the existing cabin and construction of a new house, decks and walkways. Proposed project is located on Big Carnelian Lake at 14750 130th St. Lot size of 0.65 acres does not meet the 1.5 acre required lot size per shoreland ordinance. Proposed impervious is 18.35% of lot area. Proposed lake setback of 62.5 ft is same as existing structure and significantly less than required 100-ft building setback. Area disturbed by project appears to be in excess of 8,000 ft². Application was incomplete as submitted. Comments were provided to County Board of Adjustment and Appeals during their consideration of variance request. Comments identified District concerns that as well as additional information needed to complete the permit application for District consideration. Project was used by District to compare existing requirements to proposed rule worksheet requirements, a volume requirement of 1,600 ft³ was determined for proposed project. Based on the District's rule comparison and review of the information submitted by applicant detailed suggestions for stormwater management practices applicant could use to meet District volume/treatment requirements were provided. Revised plans including stormwater management practices meeting District volume and water quality requirements were provided and permit was issued.

Permit 09-011: Feedlot Waste Management Project. Property is located on East Boot Lake (impaired water). District has received final plans and specifications for project from Pete Young, WCD. Final plans also include fencing to exclude livestock from lake as requested. District is a project partner providing some matching funds (\$15,000) in order to help protect East Boot Lake, which is an impaired water. Permit was issued but project has not started, in part due to increased construction costs related to some material changes to manure pit liner project.

Permit 09-012: District has received a permit application from property owner (and builder Ispiri, LLC) for a proposed project located on Big Carnelian Lake at 27 Moonlight Bay North in May Township. Proposed project is for construction of a building addition, replacement garage, and elevated deck with concrete patio beneath. Project will require a variance from the Washington County Shoreland Ordinance for lot size and lake setback. Lot size of 0.77 acres does not meet the 1.5 acre required lot size per shoreland ordinance. Existing impervious lot coverage was not provided. Proposed impervious lot coverage per certificate of survey is about 24% +/- meets the shoreland ordinance maximum of 25% of lot area. Project will require volume

control and treatment of the additional stormwater runoff volume from the 2-yr and 10-yr storm events. Project **will** require a District permit. Comments were provided to applicant identifying additional submittal needs to complete permit application and additional concerns District has based on the limited information provided. Administrator, District Engineer and WCD met on-site with applicant to review comments provided and district permit submittal requirements. District is waiting to receive a completed permit application.

Permit 09-013: Riprap Project on Big Marine Lake. Original request was for riprap and sandblanket placement. Administrator met with applicant, provided assistance in design revisions so project was consistent with applicants previous permit 00-011 that included protection of ice ridge. Permit issued for placement of Riprap. **Manager action requested – None.**

Permit 09-014: Property on Big Marine Lake. Property owner is filling in a stream/ditch on a property he owns and installing a culvert extension that connects to City storm sewer to pick-up flows. All work apparently without any permits from any agencies. No District or City permits were initially issued for this project. The property owner has since received the required permits from City of Scandia. He has now paid permit application fees and permit surety. Administrator met with applicant, provided assistance in design revisions so project was consistent with submittal requirements needed to complete permit application. An after the fact Permit was issued for placement of culvert and associated work.

Permit 09-015: Property on Big Carnelian Lake. Project includes a small addition to the existing building and associated site work. Project required a variance from County Shoreland Ordinance for lot size, and impervious lot coverage. Impervious lot coverage is exceeded for both existing and proposed conditions. District had previously provided comment to the County variance process. Applicant is proposing to remove some of the existing impervious coverage by reducing the size of the existing driveway. To further mitigate impact of impervious coverage applicant is proposing to install a pervious pavement driveway. District worked with applicant on plan revisions necessary to meet requirements. District issued permit and Administrator has visited site to observe soils per permit requirements.

Permit 09-016: Building Addition Variance. Proposed project, located on Big Marine Lake near the Bliss Addition. Project is for a building addition and detached garage. District has received a permit application and issued permit. Refer to Comment No. 09-008 for additional information.

Permit 09-017: Square Lake Park BMP Demonstration and Interpretive Project. Proposed project is located in the Washington County Square Lake Regional Park and is a joint effort by the CMSCWD, County and Washington Conservation District. Project components were discussed at the October Board meeting. Complete plans and permit application were received, permit was issued, and project is being constructed.



KEY PROGRAMS: WATER QUALITY MONITORING

The Carnelian Marine St. Croix Watershed District (CMSCWD) monitored 28 lakes, six perennial streams, and one lake outlet in their 2009 water quality monitoring program. Water quality data collected over the past year provides some observations concerning the status of the lakes and streams monitored in the CMSCWD.

The number of lakes in 2009 receiving A lake grades (eight total) decreased by one, B lake grades (eight total) increased by two, C lake grades (nine total) stayed the same, D lake grades (one total) decreased by two, and F lake grades (two total) increased by one when compared to 2008. Lakes near the bottom of the grade scale have heavy summer algal blooms and dense macrophyte beds near shore. A change in land use practices in the watershed may stabilize water quality although it may not be enough to provide short-term noticeable improvements. This is the case because the water quality in a lake depends on a number of different variables such as size of the contributing watershed, depth of the lake, and the current amount of nutrients available and periodically released from the lake bottom.

In 2009 the Washington Conservation District (WCD) conducted Kendall Tau statistical trend tests on all lakes monitored within the county. For CMSCWD, as in 2008, thirteen lakes had either an increasing or decreasing trend. Fish, Long (City of Scandia), Jellum's, Big Carnelian, Little Carnelian, West Boot, and Long (May Township) Lakes all had an increasing Secchi disk transparency readings. This trend points to improving water quality. Louise, Loon, and Square Lakes had decreasing Secchi disk (SD) transparency trends, indicating declining water quality. Of the ten lakes mentioned above, only four had a corresponding total phosphorous (TP) trend. Long (City of Scandia) and Long (May Township) Lakes had decreasing TP (improving trend), indicative of the increasing SD trend and improving water quality. Louise and Loon Lakes had increasing TP (declining trend), correlating to the SD decreasing trend and declining water quality. Bass Lake had decreasing TP, but no SD trend was apparent. Silver and Hay Lakes also had decreasing TP, but no trend for SD could be determined due to the shallowness of the lakes. Carol, German, North Twin, and Turtle are also considered shallow lakes and therefore have no trend for SD. Mays, Clear, and Twin Lakes were monitored for the second year in 2009 so there are not enough data to create trends. Some lakes within the watershed that may appear to show a strong trend do so because of the limited number of years they have been monitored. Among the lakes in the watershed that have five to ten years of monitoring records, there appears to be a cycle of increasing and decreasing water quality. These short-term cycles should not be assumed to necessarily represent a long-term trend. Lake cycles vary from lake to lake and this plays a role in the number of years of data collection to justify long-term trends. Results of the 2009 lake monitoring data are summarized in Table A on the following page.

Table A: 2009 Overall Lake Grades and Trophic Status

2009 Ranking	Lake	2009 Lake Grade	2009 Trophic Status	2008 Lake Grade	2009 Trophic Status	2007 Lake Grade
1	Little Carnelian	A	Oligotrophic	A	Oligotrophic	A
2	Big Carnelian	A	Oligotrophic	A	Oligotrophic	A
3	Square	A	Oligotrophic	A	Oligotrophic	A
4	Clear	A	Oligotrophic	A	Oligotrophic	NA
5	Mays	A	Oligotrophic	A	Oligotrophic	NA
6	Twin	A	Mesotrophic	A	Mesotrophic	NA
7	West Boot	A	Mesotrophic	A	Mesotrophic	A-
8	Big Marine	A	Mesotrophic	A	Mesotrophic	B
9	Terrapin	B	Mesotrophic	A	Mesotrophic	B+
10	East Boot	B+	Mesotrophic	B-	Eutrophic	C+
11	Long (May Township)	B+	Mesotrophic	B	Mesotrophic	B-
12	Jellum's	B	Mesotrophic	C-	Hypereutrophic	C
13	Staples	B	Mesotrophic	B	Mesotrophic	B
14	North Twin	B	Mesotrophic	B	Mesotrophic	B-
15	Sand	B-	Eutrophic	C	Eutrophic	C+
16	Silver	B-	Eutrophic	C	Eutrophic	C
17	Hay	C+	Eutrophic	C	Eutrophic	C-
18	Bass	C	Mesotrophic	B	Mesotrophic	C+
19	German	C	Eutrophic	C	Mesotrophic	B
20	Carol	C	Eutrophic	C	Eutrophic	B-
21	Turtle	C	Eutrophic	C	Eutrophic	B
22	Goose	C	Eutrophic	C	Hypereutrophic	C-
23	South Twin	C	Eutrophic	D+	Hypereutrophic	D+
24	Fish	C-	Eutrophic	C-	Hypereutrophic	D
25	Long (City of Scandia)	C-	Eutrophic	B	Mesotrophic	C
26	Louise	D-	Hypereutrophic	D+	Hypereutrophic	D
27	Barker	F	Hypereutrophic	D	Hypereutrophic	D
28	Loon	F	Hypereutrophic	F	Hypereutrophic	F

Stream Monitoring in CMSCWD is continuing to produce valuable baseline water-quality information. This information will be a helpful tool in determining a healthy balance of resources as the watershed district continues to experience growth and changes in land use. The total phosphorus load in the Silver Creek Watershed for 2009 was 0.04 kg/ha/yr. The Little Carnelian Lake outlet was dry the entire monitoring season and therefore no total phosphorus load was discharged to the St. Croix River from the Carnelian Creek Watershed in 2009. The total phosphorus load at Ozark Trail, the first station upstream from Little Carnelian Lake, was 0.02 kg/ha/yr. The total phosphorus load in the Gilbertson's Creek Watershed was 1.06 kg/ha/yr. The total phosphorus load in the Swedish Flag Creek Watershed was 0.04 kg/ha/yr. The total phosphorus load in the Mill Stream Watershed was 0.02 kg/ha/yr. The total phosphorus load in the Willow Brook Watershed was 0.15 kg/ha/yr. This data shows the loading for these streams is less than all the categories within the "phosphorus export coefficients estimated range by land

use” with the exception of Gilbertson’s Creek and Willow Brook, which was within the Urban and Cultivated land uses, and the Forest land use categories, respectively. The spikes in total phosphorus and total suspended solids are correlated with storm events and increased spring runoff. Further monitoring and assessment could potentially identify sources that contribute to these increased levels, or if the levels are simply part of the streams chemistry cycle.

The climate that occurred in 2009, as well as 2008, was one of below normal precipitation. This caused many lake elevations to decline through much of the summer months as they did in 2008. Water flowed at all stream monitoring sites for the entire monitoring season except Little Carnelian Outlet, which never started flowing and remained dry for the entire monitoring season. Water quality samples were collected at all stream-monitoring stations throughout the entire monitoring season. The Carnelian Creek at Ozark Trail site remains vital in our understanding of the water quality in Carnelian Creek, Big Carnelian Lake, and Little Carnelian Lake.

General Stream Site Recommendations

- Continue to monitor Carnelian Creek, Silver Creek, Gilbertson’s Creek, Swedish Flag Creek, Mill Stream, and Willow Brook to help determine potential water quality trends and water quality standard exceedances.
- Continue phosphorus loading and total suspended solid analysis on all monitored streams.
- Maintain and improve stream-rating curves with in-stream flow measurements
- Initiation of BMP projects on stream reaches where TSS and TP loadings are highest and especially higher during storm events, and assess the effectiveness of those projects.
- Provide scheduled channel maintenance in order to better regulate flows, prevent possible flooding, and allow more accurate data collection.
- Sample for heavy metals and hardness at all sites to determine if possible deposition is occurring through anthropogenic loading from nearby discharge sources.

Carnelian Creek

At Ozark Trail – Continuous Monitoring

Total phosphorus loading for this site was below the forestland use. This monitoring point receives water primarily from all points north of Big Carnelian Lake, including Bass Lake, Turtle Lake and Big Marine Lake and associated wetlands. Continued monitoring, in conjunction with in-lake monitoring of Big Carnelian Lake, will provide for a better understanding of Carnelian Creek. At this point Big and Little Carnelian Lake are the primary water bodies receiving runoff from Carnelian Creek and settle out many nutrients previous to the outlet of the watershed at Little Carnelian Lake. The streambank restoration BMP implemented by the district in 2006 encompassing this location provides additional bank stabilization, better habitat for fish and macroinvertebrates, and will further reduce loadings. The paving of Ozark Trail and directing road runoff into the raingardens before entering the creek has helped reduce road washout, and also will help to alleviate additional loads in the future. Carnelian Creek is listed as impaired for aquatic recreation and life on the MPCA’s 303d List of Impaired waters, caused by high turbidity and E.coli. Monitoring should continue at the Ozark Trail site to assess the effectiveness of these BMP projects and to assess water quality impairments.

Silver Creek

At Highway 95 – WOMP Station – Continuous Monitoring

Total phosphorus loading for this site was below the forestland use. No water bodies receive runoff from Silver Creek at this point, other than the St. Croix River. There are large amounts of groundwater that discharge from the bedrock after Silver Creek drops into the ravine downstream of Fairy Falls. As in past years, 2009 precipitation amounts varied greatly through the monitoring season and groundwater was the main water contribution during many periods. Groundwater was

the only water source at the Highway 95 site during long periods indicated by no water flowing where the creek crosses County Road 11, or at Fairy Falls.

Gilbertson's Creek

At Quinnell Ave – Continuous Monitoring

2009 marked the second monitoring season for Gilbertson's Creek since 2003, when only stage and discharge data were collected. Total phosphorus loading for this site was within the Urban and Cultivated landuse categories, which can be attributed to the fact that the watershed is only 84 acres in size and only three storm samples were able to be collected. No other water bodies receive runoff from Gilbertson's Creek other than the St. Croix River. This is a flashy stream, with the level of the stream staying relatively steady throughout the season, only rising slightly during storm events and quickly returning to base flow. Further monitoring is recommended on Gilbertson's Creek to develop water quality trends and to better assess any impacts this stream has on the St. Croix River.

Swedish Flag Creek

At the intersection of Highway 95 and Quinnell Ave – Continuous Monitoring

2009 marked the second monitoring season for Swedish Flag Creek since 2003, when only stage and discharge data was collected. Total phosphorus loading for this site was below the forestland use category and no other water bodies receive runoff from Swedish Flag Creek other than the St. Croix River. This site had relatively low flow throughout the water-monitoring season and transparency was always quite low. Swedish Flag Creek is listed as impaired for aquatic recreation on the MPCA's 303d List of Impaired waters, caused by high E. coli. Further monitoring is recommended on Swedish Flag Creek in order to develop water quality trends, to assess impairments, and to better assess any other impacts this stream has on the St. Croix River.

Mill Stream

In Marine on St. Croix, Upstream from Judd St. – Continuous Monitoring

2009 was the second year that Mill Stream was monitored by the WCD; previously the St. Croix Watershed Research Station had monitored the site. Total phosphorus loading for this site was below the forest landuse category. This site was continuously monitored with a Campbell Datalogger for stage, discharge, conductivity, and temperature, and water quality grab samples were collected. Mill Stream is a designated trout stream and no other water bodies receive runoff from this stream other than the St. Croix River. Further monitoring is recommended on Mill Stream to develop water quality trends and to better assess any impacts on the St. Croix River.

Willow Brook

In the Croixside Neighborhood Along Highway 95 – Continuous Monitoring

2009 was the second year that the WCD ran a monitoring station on Willow Brook. Total phosphorus loading for this site was below the forest landuse category. Willow Brook was continuously monitored with a Campbell Datalogger for stage, discharge, conductivity, and temperature. Water quality grab samples were also collected. Willow Brook is a designated trout stream and no other water bodies receive runoff from this stream other than the St. Croix River. This is a flashy stream with the level only rising slightly during storm events and staying relatively steady throughout the rest of the season. With limited historical data, further monitoring is recommended on Willow Brook in order to develop water quality trends and to better assess any impacts this stream has on the St. Croix River.

For additional information on water monitoring work contact the District office at 651-433-2150 or download the report at www.cmscwd.org.