



## 2014 ANNUAL ACTIVITY REPORT AND FINANCIAL STATEMENT









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Vermillion River Watershed  
Joint Powers Organization  
14955 Galaxie Avenue  
Apple Valley, MN 55124  
Phone: 952-891-7000  
[www.vermillionriverwatershed.org](http://www.vermillionriverwatershed.org)

April 2015





# ACTIONS BY THE VERMILLION RIVER WATERSHED JOINT POWERS BOARD IN 2014

## January

VRW 14-00: Election of Officers

VRW 14-03: Authorization to Execute a Joint Powers Agreement with Dakota County Soil and Water Conservation District (SWCD) for Services in 2014

VRW 14-04: Appointments of John Glynn and Gregory Cuomo to the Vermillion River Watershed Planning Commission (WPC)

VRW 14-05: Authorization to Amend the Joint Powers Agreement with the City of Rosemount for Cost Share of the Rosemount/Flint Hills Ravine Restoration Project

## February

VRW 14-08: Authorization to Execute a Joint Powers Agreement with Scott SWCD for Services in 2014

VRW 14-09: Delegation of Contracts Authority Granted to the Vermillion River Watershed Joint Powers Board (VRWJPB) by the Joint Powers Agreement to the VRWJPO Administrator

VRW 14-10: Appointment of Applicant to the Vermillion River WPC

VRW 14-11: Authorization to Execute a Grant Agreement with Friends of the Mississippi River (FMR) for Vermillion River Stewards Program in 2014 and Amend the VRWJPO 2014 Budget

VRW 14-12: Authorization to Pay VRWJPO Expenses for the Winter Parking Lot/Sidewalk and Road Maintenance and Summer Turfgrass Maintenance Workshops

VRW 14-13: Approval to Release a Request for Qualifications (RFQ) for Consultant Services in 2014-2015

## March

No action items; information items only

## April

VRW 14-18: Approval of Proposed Amendments to the VRWJPO 2014 Budget

VRW 14-19: Authorization to Submit 2013 VRWJPO Annual Activity Report and Financial Statement to the Minnesota Board of Water and Soil Resources (BWSR)

## CONTENTS

Introduction 1

Board Members, Staff, and Consultants 2

2014 Work Plan 6

□ Administrative 10

□ Monitoring and Data Analysis 11

□ Public Outreach and Communication 15

□ Inventory Assessment 20

□ Capital Improvement Projects 21

□ Feasibility/Preliminary Studies 23

□ Evaluation and Policy 24

□ Regulatory Review and Regulation 25

□ Coordination with Other Agencies 26

□ Watershed Restoration and Protection Strategy 27

□ Wetland Banking 28

2015 Work Plan 29

2014 Financial Statement 31

### Appendices:

- I. Requests for Qualification, Requests for Proposals
- II. Vermillion River Monitoring Network 2014 Report Summary
- III. Stewardship Grant Guidelines
- IV. Fact Sheets on Capital Improvement Projects, WRAPS
- V. Public Communication about the Vermillion River Watershed
- VI. WRAPS Civic Engagement Plan

VRW 14-20: Authorization to Execute a Contract with Wenck Associates, Inc., for Fish Sampling in 2014 to Support the VRWJPO Biomonitoring Plan

VRW 14-21: Approval of the VRWJPO Submittal to the BWSR for the Biennial Budget Process for 2016-17

VRW 14-22: Approval of VRWJPO Consultants List for 2014-2015

VRW 14-23: Authorization to Support the 2014 Metro Area Children's Water Festival

VRW 14-24: Authorization to Amend the Agreement with the U.S. Geological Survey (USGS) for Operation and Maintenance of the Gaging Station at Blaine Avenue

#### May

VRW 14-27: Authorization to Amend the VRWJPO 2014 Budget to Allocate Funds to Acquire a Property for Wetland Restoration in Development of a Wetland Bank.

#### June

VRW 14-30: Authorization to Submit a Proposal for a Clean Water Partnership Grant to the Minnesota Pollution Control Agency (MPCA) for the Trees Aiding Water Quality Improvement Project

VRW 14-31: Granting a VRWJPO Permit to David Cook for a House and Garage Construction Project on a New Parcel in Eureka Township

#### July

VRW 14-34: Authorization to Schedule a Public Hearing to Receive Comments on the Draft VRWJPO 2015 Budget

VRW 14-35: Approval of the VRWJPO Stewardship Grants for Local and Community-based Water Quality Improvement Events and Activities

VRW 14-36: Granting a VRWJPO Permit to Guy Flickinger for a Shed Construction Project in Eureka Township

VRW 14-37: Granting a VRWJPO Permit to Annar Karlsen for a Shed Construction Project in Eureka Township

#### August

VRW 14-40: Conduct a Public Hearing to Receive Comments on and Adoption of the Preliminary VRWJPO 2015 Budget and Vermillion River Watershed Management Tax District Levy

VRW 14-41: Appointment of a Commissioner to the Vermillion River WPC

VRW 14-42: Granting a VRWJPO Permit to Matt Sullivan for a Garage Construction Project in Eureka Township

#### September

No resolution items

#### October

VRW 14-50: Authorization to Execute a Joint Powers Agreement with Dakota County Environmental Resources for Groundwater Monitoring, Studies, and Public Outreach and Communication Services in 2015

VRW 14-51: Adoption of the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Precipitation Frequency Estimates to Guide Design and Review of Stormwater Infrastructure

VRW 14-52: Granting a VRWJPO Permit to William Funk for a Pole Shed Construction Project in Eureka Township

**December**

VRW 14-47: Adoption of 2015 VRWJPB Meeting Schedule

VRW 14-53: Adoption of Final VRWJPO 2015 Budget

VRW 14-54: Authorization to Amend the VRWJPO 2014 Budget to Support the Watershed Plan 2015 Update







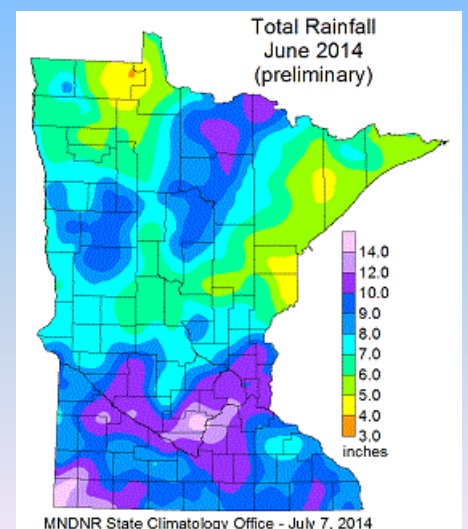
## INTRODUCTION

The Vermillion River winds through rural, suburban, and urban landscapes from its headwaters in Scott County to its confluences with the Mississippi River at Hastings and Red Wing. The river drains 335 square miles of land, and 20 cities and townships are entirely or partly within the watershed boundary. Approximately 49 miles of the Vermillion River main stem and tributaries are designated trout streams, making the river a unique natural resource among rapidly growing metropolitan areas throughout the nation.

In 2002, Dakota and Scott Counties signed a Joint Powers Agreement to form the Vermillion River Watershed Joint Powers Organization (VRWJPO) and manage the watershed as required by Minnesota law (Minn. Stat. Chapter 103B.201). A Vermillion River Watershed Joint Powers Board (VRWJPB), consisting of two Dakota County Commissioners and one Scott County Commissioner, makes decisions about administering the watershed, implementing the Watershed Plan, and undertaking activities to preserve and improve water quality, quantity, and safety. A nine-member citizen advisory Watershed Planning Commission (WPC) supports and advises the VRWJPB in developing and implementing the Watershed Plan. The VRWJPO also consults with a Technical Advisory Group (TAG), consisting of local and state government partners, to discuss emerging scientific, technical, and policy impacts on the Vermillion River Watershed.

## Record-setting June Rainfall ...

According to the Minnesota Department of Natural Resources, June 2014 was the **wettest month on record** in Minnesota – and the record goes back to 1871. The average monthly precipitation total for June in Dakota County is normally 4 to 4.5 inches. In June 2014, Dakota County precipitation totals ranged from 9 to 12 inches. June records were set statewide – from Luverne to International Falls.



The VRWJPO is staffed with an administrator from Dakota County and a co-administrator from Scott County; other Dakota and Scott county employees serve as VRWJPO staff.

The counties' respective Soil and Water Conservation Districts (SWCDs) provide extensive marketing and technical assistance services for the VRWJPO, and additional technical or specialized services are provided through contracts with consultants.

Dakota and Scott counties established special tax district levies within their portions of the watershed to provide the primary funding for watershed planning and activities. This *2014 Annual Activity Report and Financial Statement* summarizes the VRWJPO's activities in 2014 and its plans for 2015 on behalf of the citizens of the Vermillion River Watershed.

## Vermillion River Watershed Joint Powers Board (during 2014)

- ▣ Commissioner Mike Slavik, Dakota County District 1 (Chair), 701 5th Street West, Hastings, MN 55033
- ▣ Commissioner Tom Wolf, Scott County District 2 (Vice-chair), 19225 Foxfield Drive, Prior Lake, MN 55372
- ▣ Commissioner Paul Krause, Dakota County District 6 (Secretary/Treasurer), 18099 Judicial Way N., Lakeville, MN 55044

## Watershed Planning Commission (during 2014)

A nine-member WPC consisting of citizens of the watershed appointed by the VRWJPB advises the Board regarding its duties under the Joint Powers Agreement. The WPC is responsible for guiding implementation of the Watershed Plan, annual work plan, and budget. The WPC also recommends actions regarding disputes that occur over the elements of the Joint Powers Agreement. The WPC members during 2014 were:

- ▣ Joe Beattie, Chair, 12770 200<sup>th</sup> Street East, Hastings, MN 55033
- ▣ Ken Betzold, 1950 220<sup>th</sup> Street East, Farmington, MN 55024
- ▣ Greg Cuomo, 12771 Dover Drive, Apple Valley, MN 55124
- ▣ Jackie Dooley, 313 Walnut Street, Farmington, MN 55024
- ▣ John Glynn, 939 Hopewell Lane, Apple Valley, MN 55124
- ▣ Mark Henry, 1535 230<sup>th</sup> Street West, Farmington, MN 55024
- ▣ Ron Mullenbach, 9816 211<sup>th</sup> Street West, Lakeville, MN 55044



**Thanks to Dedicated WPC Members**  
*Commissioners Joe Beattie and Jackie Dooley stand up for the environment in daily life*

At the close of 2014, two Vermillion River Watershed Planning Commission (WPC) members ended their terms after years of active and dedicated service.

Joe Beattie, a Hastings High School science teacher who takes his classes into the field and out on the water, ended his second 3-year term on the WPC, after serving as chair in 2014. Joe and his students have participated in restoration projects and civic engagement activities to improve public awareness and interest in the watershed.

Jackie Dooley, a Farmington gardener with a lively and inquisitive interest in watershed issues, ended her three-year term on the WPC at the end of 2014. Jackie also served on the Watershed Engagement Team (WET) to help the VRWJPO develop methods to increase public awareness and action related to impaired waters in the watershed. She frequently asked practical, down-to-earth questions in WPC meetings and maintained a commitment to the artistic, aesthetic, and restorative power of the environment in people's lives – "love of the environment for its own sake."

Joe and Jackie enriched the lives of WPC members, VRWJPO staff, and communities in the watershed. We are grateful for their service, inspiration, and friendship.



- Andrew Stehr, 5226 215<sup>th</sup> Street East, Hampton, MN 55031
- Vacancy (Scott County)

## VRWJPO Administrators and Staffing

The VRWJPO is housed in the Dakota County Environmental Resources Department, and Dakota County is responsible for its overall administration. Each county provides a VRWJPO co-administrator to work on watershed issues, and other Dakota and Scott county staff provides support for specific projects.

- Mark Zabel, VRWJPO Administrator (Dakota County),  
14955 Galaxie Avenue, Apple Valley, MN 55124, Phone: 952-891-7011, Fax: 952-891-7031,  
[mark.zabel@co.dakota.mn.us](mailto:mark.zabel@co.dakota.mn.us)
- Melissa Bokman, VRWJPO Co-administrator (Scott County),  
200 Fourth Avenue West, Shakopee, MN 55379, Phone: 952-496-8887, Fax: 952-496-8496,  
[mbokman@co.scott.mn.us](mailto:mbokman@co.scott.mn.us)
- Travis Thiel, Watershed Specialist (Dakota County),  
14955 Galaxie Avenue, Apple Valley, MN 55124, Phone: 952-891-7546, Fax: 952-891-7031,  
[travis.thiel@co.dakota.mn.us](mailto:travis.thiel@co.dakota.mn.us)
- Paula Liepold, Water Education Specialist (Dakota County),  
14955 Galaxie Avenue, Apple Valley, MN 55124, Phone: 952-891-7117, Fax: 952-891-7031,  
[paula.liepold@co.dakota.mn.us](mailto:paula.liepold@co.dakota.mn.us)
- Katherine Carlson, Water Resources Specialist (Dakota County),  
14955 Galaxie Avenue, Apple Valley, MN 55124, Phone: 952-891-7086, Fax: 952-891-7031,  
[katherine.carlson@co.dakota.mn.us](mailto:katherine.carlson@co.dakota.mn.us)

## Legal Consultant

The VRWJPO employs the services of the Dakota County Attorney's Office for consultation on legal and contractual matters, including revisions to the Watershed Plan, Rules, and Standards. The current attorney assigned to the VRWJPO is:

- Helen Brosnahan, Assistant County Attorney, 1560 Hwy. 55, Hastings, MN 55033, Phone: 651-438-4404, [helen.brosnahan@co.dakota.mn.us](mailto:helen.brosnahan@co.dakota.mn.us)

## Technical Advisory Group (TAG)

The TAG consists of agencies and organizations with interest and expertise in watershed issues. The TAG generally meets quarterly to discuss projects and policies from a scientific and technical perspective.

Representatives include, but are not limited to:

- ❑ Cities and townships within the Vermillion River Watershed;
- ❑ Dakota and Scott counties;
- ❑ Dakota and Scott County SWCDs;
- ❑ Metropolitan Council;
- ❑ Minnesota Pollution Control Agency (MPCA);
- ❑ Minnesota Department of Agriculture (MDA);
- ❑ Minnesota Department of Health (MDH);
- ❑ Minnesota Department of Natural Resources (DNR);
- ❑ Minnesota Board of Water and Soil Resources (BWSR);
- ❑ Natural Resource Conservation Service (NRCS);
- ❑ Environmental Consulting Firms;
- ❑ University of Minnesota Extension;
- ❑ Friends of the Mississippi River (FMR); and
- ❑ Other interested parties.

## Consultants

The VRWJPO enters into contracts with Dakota and Scott County SWCDs to perform services, including design and implementation of Capital Improvement Projects, water-quality monitoring, database management, reporting, and other tasks.

- ❑ Brian Watson, Manager, Dakota County SWCD, 4100 220<sup>th</sup> Street West, Suite 102, Farmington, MN, 55024, Phone: 651- 480-7777, Email: [brian.watson@co.dakota.mn.us](mailto:brian.watson@co.dakota.mn.us)
- ❑ Troy Kuphal, Manager, Scott County SWCD, 7151 West 190<sup>th</sup> Street, Suite 125, Jordan, MN, 55352, Phone: 952-492-5425, Email: [tkuphal@co.scott.mn.us](mailto:tkuphal@co.scott.mn.us)

In 2014, the VRWJPO issued a **Request for Qualifications** to develop a general consultant list for 2014-2015. The VRWJPB approved the consultant list at its April 24, 2014, meeting and the list will be in effect through December 2015 (see page 5 for 2014-2015 consultants list). The Request for Qualifications issued in 2014 is included as Appendix I.

As part of the Watershed Restoration and Protection Strategy (WRAPS) investigation, the VRWJPO is working with Wenck Associates, Inc., and both the environmental consultant and VRWJPO expenses are being paid by the MPCA using Clean Water Funds. WRAPS civic engagement planning and activities performed by VRWJPO staff in 2014 are also being reimbursed by the MPCA.

## Consultant List for 2014-2015

Consultant	Contact	Street Address	City	State	Zip Code
Barr Engineering	Len Kremer	4700 W. 77 <sup>th</sup> St., #200	Edina	MN	55435
Bolton & Menck, Inc.	William Douglas	1960 Premier Drive	Mankato	MN	55601
Cardno JFNew	Mark Pranckus	P.O. Box 1528	Eau Claire	WI	54703
Emmons & Olivier	Brett Emmons	651 Hale Avenue N.	Oakdale	MN	55128
Houston Engineering	Chris Otterness	6901 E. Fish Lake Rd., #140	Maple Grove	MN	55369
Howard R. Green Co.	Jonathon Kusa	2550 University Ave. W.	St. Paul	MN	55114
Hydromethods	Kent Brander	1551 Livingston Avenue #104	W. St. Paul	MN	55118
Inter-Fluve Inc.	Marty Melchior	301 S. Livingston St. #200	Madison	WI	53714
Limno-Tech Inc.	Hans Holmberg	7300 Hudson Blvd. #295	Oakdale	MN	55128
MSA	David Wierzba	60 Plato Blvd. E. #140	St. Paul	MN	55106
Stantec Consulting	Bradley Schleeter	2335 Hwy. 36 West	St. Paul	MN	55113
Tetra Tech Environ.	Scott Tracy	P.O. Box 61	Stillwater	MN	55082
TKDA	Patrick McLaron	444 Cedar Street, #1500	St. Paul	MN	55101
Wenck Associates	Joe Bischoff	1800 Pioneer Rd. Creek Ctr.	Maple Plain	MN	55359

## Decisions Are Made by Those Who Show up



The Vermillion River Technical Advisory Group (TAG) usually meets quarterly; however, the TAG met 10 times in 2014 to work on the Watershed Plan update and the impaired waters process. The Vermillion River Watershed Planning Commission (WPC) meets monthly and in 2014 advised the board and staff during critical stages of the Watershed Plan update and Watershed Restoration and Protection Strategy (WRAPS). Interested citizens attended six “Community Conversations” to help decide the watershed’s issues and priorities during the next 10 years. Colleagues from Dakota and Scott Counties volunteered to facilitate these small group discussions. Thanks to all who contributed to these efforts to improve the watershed.



## 2014 WORK PLAN ACTIVITIES

In 2014, VRWJPO activities continued to focus on two major planning projects that will have a significant impact on the Vermillion River Watershed's future.

**Watershed Plan Update:** Throughout 2014, the VRWJPO updated the Vermillion River Watershed Plan, the 10-year implementation plan governing the activities of the VRWJPO. An important feature of the update is the involvement of stakeholders and citizens in setting the course for the VRWJPO's future. Three "Community Conversations" (held in Hastings, Farmington, and Elko New Market in spring 2014) welcomed the public's input on issues and priorities for the watershed in the next 10 years. The participants reviewed and helped prioritize a draft list of issues developed from previous stakeholder input and provided substantial comment. The feedback was influenced by recent actions by the Minnesota Department of Natural Resources (DNR) to more closely examine and possibly restrict water appropriation permits for agricultural irrigation within 1.5 miles of the Vermillion River trout streams.

A few "take home" messages for the VRWJPO from the Community Conversation participants: agricultural producers want the cost of water-quality improvement to be fairly allocated and economically viable; groundwater quality and quantity are high priorities among all stakeholders; protecting sensitive biological resources is a low priority among all stakeholders, in part because of more stringent standards and regulations for trout streams; and climate change is a low priority issue, even though stakeholders and citizens recognized its impacts on intense storm events and river flow rate and volume fluctuations.

In a second round of Community Conversations in fall 2014, participants reviewed revised issues, as well as draft goals and objectives. Moderators asked for suggested action steps to achieve various goals and objectives within their communities. The TAG discussed the technical issues and developed consensus. Drafts of Watershed Plan sections on current and future conditions (physical and biological conditions, water quality and quantity, land-use) were begun in 2014.

### Watershed Plan Issues and Priorities

The following 10 issues, in order of priority as rated by participants in community and stakeholder groups, will be at the center of the updated Watershed Plan.

- A. Surface water quality is threatened or impaired.
- B. Water-quality improvement competes with other public, private, and individual priorities. There is a perception that costs of improving water quality are not allocated fairly.
- C. Groundwater quality is at risk, with known contamination above health risk limits for nitrate in some areas.
- D. Increasing consumption of groundwater threatens the future water supply.
- E. Changing precipitation patterns, decreased rainwater infiltration, and increased stormwater runoff have contributed to more intense fluctuations in river flow rate and volume.
- F. While watershed residents generally place high value on water quality and quantity, public awareness and specific knowledge is lacking on the impacts of daily activities and appropriate stewardship actions.
- G. Several federal, state, and local agencies manage specific aspects of water protection, and limited coordination and communication among these agencies can create inefficiencies and cause confusion.
- H. The Vermillion River Watershed JPO is a "young" organization in a dynamically changing landscape and has not always been able to fill gaps and address new opportunities.
- I. Sensitive biological resources -- plants, fish, insects, and wildlife -- in the Vermillion River are not as healthy as those in reference rivers.
- J. Minnesota's climate is getting warmer and wetter, which poses a threat to water quality, wildlife, and infrastructure.

**Watershed Restoration and Protection Strategy:** The MPCA and VRWJPO completed the Phase II WRAPS investigation in 2014. Draft total maximum daily loads (TMDLs) have been determined and submitted to the U.S. Environmental Protection Agency (EPA) for approval. The VRWJPO is meeting with elected and appointed officials in the cities and townships to outline the Waste Load Allocations (WLA) for incorporated areas with Municipal Separate Storm Sewer System (MS4) permits, and the Load Allocations (LA) for unincorporated areas to achieve cooperatively. The primary stressor, turbidity, comes from both overland flow of stormwater and in-stream/in-lake bedded sediment disturbances. Secondary stressors include lack of dissolved oxygen, hydrologic alteration, temperature, and altered habitat. The final WRAPS will be drafted and public noticed in 2015. The WRAPS strategies will then be incorporated into the updated Watershed Plan.

While making progress on these two major planning efforts, the VRWJPO has followed up on other 2014 work plan priorities, including:

**Biomonitoring and State Standards:** For a few years, the VRWJPO has worked with the MPCA to demonstrate, through biomonitoring results and trends, the need for change in the classification of Vermillion River Watershed 2A streams or site-specific standards for fish and macroinvertebrates that are achievable in the watershed's streams. The MPCA is exploring better correlation between the DNR stream designations and the MPCA stream classifications, upon which water-quality standards are based. The MPCA also suggested that the VRWJPO develop recommendations to the MPCA about how to protect and improve fish and macroinvertebrates in its "cool" water streams for consideration as an interim goal.

**Shoreland Protection and ShoreHolders:** Dakota County's Land Protection staff protects farmland, shoreland, and natural areas through acquiring permanent conservation easements, including several along the Vermillion River Corridor. The VRWJPO staff assisted with marketing shoreland easements (ShoreHolders) in 2013, but changes in Environmental Resources Department management and enhanced land protection staffing eliminated the need for the VRWJPO's direct involvement. Five Vermillion River shoreland easement acquisitions are in progress and are scheduled to close in 2015; each will feature a 150-foot vegetated buffer.

**Nitrate Reduction:** Public concerns about nitrate have been elevated, especially in the eastern half of the watershed, following the results of the Targeted Townships Nitrate Sampling events conducted by the Minnesota Department of Agriculture (MDA) in cooperation with Dakota County. Samples from 741 private drinking water wells revealed that 223 had nitrate levels exceeding the 10 mg/L health risk limits established by the Minnesota Department of Health (MDH). Dakota County Communications Department cooperated with Dakota County Environmental Resources staff in a "Test the Waters" campaign to raise awareness about the issue and offer nitrate testing services. Data from the 2014 Vermillion River Monitoring Network report also shows a substantial increase in nitrate in surface waters in the South Branch, a primarily agricultural subwatershed. The VRWJPO continues to seek cooperators for installation of bioreactors or other nitrate reducing practices and the completed WRAPS will propose a number of nitrate-reduction strategies for South Branch surface waters.



**Wetland Banking:** The only wetland bank located within the Vermillion River Watershed sold its final credits in 2014, and the VRWJPB allocated \$500,000 of the Capital Improvement Program (CIP) budget for development of a wetland bank. This allocation was made possible by a large lump sum from the Fiscal Disparities Program, which provides tax-sharing among metro area government entities, accrued over several years. VRWJPO staff, Dakota County SWCD, and other interested partners are using the VRWJPO inventory of restorable wetlands to identify and restore a wetland area for use as a wetland bank.

**Scott County CIP Projects:** Scott County and Scott SWCD completed a subwatershed assessment of the Vermillion River headwaters area in Elko New Market and New Market Township in 2014. The assessment identifies potential CIP projects and will be used to approach landowners about implementing best management practices and provide financial support through cost share.

**Civic Engagement:** The VRWJPO supports watershed education, awareness, and outreach activities. However, the WRAPS civic engagement process created more opportunities to engage and inspire action among a wider range of stakeholders. In addition, the VRWJPB approved a Stewardship Grant program to provide funding for cities, townships, nonprofit organizations, businesses, and citizen groups planning water-quality awareness, engagement, and action projects. The grant program was launched in 2015.

Economic, regulatory, scientific, and societal issues likely to affect the Vermillion River Watershed in the coming year include:

- ▣ **Economic recovery, especially in the housing market.** The VRWJPO has identified opportunities to improve natural hydrology, stormwater management, and habitat in development proposals being submitted to the cities. Look for more cost-share water-quality protection and improvement projects taking place concurrently with new development. The VRWJPO has also identified and will cost-share restorations completed concurrently with Dakota County Transportation projects.
- ▣ **Riparian buffers.** Current Minnesota law requires that agricultural areas adjacent to lakes, rivers, and streams identified as DNR public waters are required to have a buffer strip of permanent vegetation 50 feet wide, unless the areas are part of a resource management system plan. Buffers have become an issue of focus after Governor Mark Dayton took a strong and unexpected position on the issue early in the 2015 Legislative Session. Dakota County has successfully enforced the existing 50-foot buffer requirement in the county's unincorporated areas, a fact that has not gone unnoticed in news reports. How this current attention to buffers will affect the 2015 Legislative Session, other counties, incorporated cities that have not enforced the buffer requirement, or the VRWJPO is not clear.



- **NOAA Atlas 14.** The VRWJPB adopted the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 8, precipitation frequency analyses as the basis for design of stormwater infrastructure. These precipitation analyses will change the way engineers and others design and operate infrastructure, such as new culvert and stormwater pond projects. Weather anomalies (extreme rainfall, drought, record-breaking temperatures, or humidity) have affected the watershed in each of the past three years. Building resiliency in stormwater infrastructure is important, but building resiliency in watershed hydrology, habitat, and other infrastructure to weather extremes may be a larger conversation.
- **Advances in communication technology.** The rapidly increasing use of social media, Skype, videoconferencing, and other communication methods has empowered individuals to organize civic awareness, engagement, and action – locally, nationally, and internationally. Civic engagement has also become a popular topic of discussion and a focus area for many government, civic, and social groups. The VRWJPO may benefit from this engagement, by finding more partners or cooperators for water-quality protection or improvement efforts, for example. The challenge for the VRWJPO and other small organizations is to keep up with the technology, the trends, and the overall conversation.

#### Groundwater Quantity Issues Take Center Stage in 2014

The Minnesota Department of Natural Resources (DNR), under Minn. Stat. 103G.265, is required to manage water resources to ensure an adequate supply to meet long-range seasonal requirements for domestic, agricultural, fish and wildlife, recreational, power, navigation, and quality control purposes.



DNR's greater scrutiny of agricultural irrigation permits within 1.5 miles of the Vermillion River's trout streams caught many landowners off guard; many attended the VRWJPO Watershed Plan "Community Conversations" to register their concerns and affirm that water quantity issues are a high priority for agricultural irrigators. The issue drew statewide attention.

Throughout 2014, the DNR developed streamlined processes for issuing appropriation permits, increased communication with landowners with irrigation permits, and resolved some landowners' specific concerns. A water use (appropriation) permit from DNR Waters is required for all users withdrawing more than 10,000 gallons of water/day or 1 million gallons/year (some exemptions). For more, visit: [www.dnr.state.mn.us/waters/watermgmt\\_section/appropriations/permits.html](http://www.dnr.state.mn.us/waters/watermgmt_section/appropriations/permits.html)

## ADMINISTRATIVE

Administrative responsibilities include: staff recruitment, hiring, training, and supervision; coordinating and documenting VRWJPB meetings, decisions, and directions; coordinating and documenting WPC and TAG meetings, decisions, and recommendations; managing the budget; setting priorities and developing work plans; managing contracts; reporting; and seeking funding. In 2014, the VRWJPO:

- Coordinated and documented 11 VRWJPB meetings, for which Requests for Board Action and draft Joint Powers Agreements were prepared, presented, and submitted to the Board members.
- Conducted annual election of officers (Res. No. VRW 14-00).
- Coordinated and documented 12 WPC meetings.
- Reappointed Gregory Cuomo of Apple Valley and John Glynn of Apple Valley to the WPC for three-year terms (Res. No. VRW 14-04). Appointed Mark Henry of Castle Rock Township to the WPC for a three-year term (Res. No. 14-10). Appointed Ken Betzold of Castle Rock Township to the WPC for a three-year term (Res. No. VRW 14-41).
- Coordinated 10 meetings of the TAG focused on draft portions of the Watershed Plan and on study results from the WRAPS, including proposed waste load allocations (for incorporated areas) and load allocation (for unincorporated areas).
- Managed and reported on the VRWJPO budget, providing expense reports (including staff costs) and treasurer's reports for Board approval at VRWJPB meetings. Amended the 2014 budget to reflect increase in grant agreement with Friends of the Mississippi River for the Vermillion Stewards program. Amended the 2014 budget following reconciliation of the 2013 budget to reflect carry forward amounts, new opportunities, and changing circumstances (Res. No. VRW 14-18). Amended the 2014 budget to reflect increased effort on the Watershed Plan update (Res. No. VRW 14-54). Amended the 2014 budget to allocate \$500,000 to obtain property or easements for a wetland bank.
- Submitted the *2013 Annual Activity Report and Financial Statement* to BWSR (Res. No. VRW 14-19).
- Completed VRWJPO quarterly progress reports for the VRWJPB and County management.
- Developed a proposed 2015 Work Plan, budget, and special tax district levy for public hearing and VRWJPB approval (Res. No. VRW 14-34, VRW 14-40) and final 2015 budget (Res. No. VRW 14-53).
- Set VRWJPB 2015 meeting dates (Res. No. VRW 14-47).
- Continued the planning process for the update of the Vermillion River Watershed Plan, including two series (spring and late fall) of three "Community Conversations" (Hastings, Farmington, and Elko New Market) to identify issues and priorities and respond to goals, objectives, and actions.
- Applied for a BWSR Clean Water Fund grant to launch a tree-planting program for riparian areas to provide soil stabilization, shading/cooling, dissolved oxygen improvements, and habitat.
- Provided orientation sessions for new VRWJPB members, new WPC members, and new staff working with the VRWJPO on administrative issues such as contracts and finances.

## MONITORING AND DATA ANALYSIS

Water quality and quantity monitoring data are essential for effective management of the Vermillion River Watershed. Surface water and groundwater monitoring allow the VRWJPO to determine the current condition of the resource, any trends (positive or negative) occurring over time, highest priorities for protection and restoration, and the effectiveness of water-quality improvement activities. The following activities reflect the VRWJPO's commitment to evidence-based watershed management.

- **Vermillion River Monitoring Network** – Dakota and Scott County SWCDs sample, maintain, and upload information to statewide databases from the Vermillion River Monitoring Network, reporting annually to the VRWJPO and citizens on the river's condition and trends. The SWCDs' staff collected water samples and monitored for ammonia, nitrate/nitrite, total Kjeldahl nitrogen, total phosphorus, dissolved phosphorus, total suspended solids (TSS), volatile suspended solids, pH, turbidity, chlorophyll, *E. coli*, hardness, dissolved oxygen, and conductivity. Nitrate and TSS pollutant loads were calculated using the FLUX stream load computation tool (Walker, 1999) for the 2014 monitoring season (March-November), for each monitoring station and/or associated tributary. Water temperature is continuously monitored throughout the summer months using automated temperature loggers at approximately 30 locations. A summary of results for the 2014 monitoring season are included as Appendix II, *Vermillion River Monitoring Network 2014 Report* Executive Summary.

The VRWJPO and SWCDs will be making changes in the monitoring network, some in response to changes in the monitoring activities of partners, others based on need for increased information in some areas and less information in others. The VRWJPO, utilizing Dakota SWCD's monitoring services, will be conducting less stream gaging within the watershed. In response to potential impacts to the quantity of water within the Vermillion River from groundwater withdrawals via appropriations, the DNR is conducting an intensive watershed monitoring effort. The DNR will be performing the stream gaging at five of the seven stations previously gaged by Dakota SWCD. The DNR will also be installing two new stream gaging stations within the watershed as part of this effort.

Dakota SWCD will be installing fewer temperature data loggers throughout the watershed. In the past, approximately 30 loggers were installed throughout various reaches of the river and tributaries. With a robust dataset collected to date, the VRWJPO has a good understanding of the temperature dynamics within the watershed's reaches, and is only planning to collect temperature at monitoring stations where other data will be collected as part of the monitoring network.

- **Biomonitoring Plan** – In 2014, the VRWJPO continued implementing the watershed's Biomonitoring Plan, developed in 2009 to provide both baseline data and an ongoing assessment of the watershed's health through fish sampling (with the DNR), and biological and habitat monitoring (with Dakota County SWCD) at 14 locations throughout the watershed. The VRWJPO now has five continuous years of fish and macroinvertebrate sampling and scoring results on the fish and macroinvertebrate Indices of Biological Integrity (IBIs) confirm the stress on the biological communities being measured. The greatest stressor on aquatic life is turbidity, which injures fish and macroinvertebrates, carries pollutants on particles, and

impairs the ability of aquatic species to find prey or food sources. See more in the **Watershed Restoration and Protection Strategy (WRAPS)** section of this report.

Macroinvertebrate monitoring provides a window on water quality that is extremely valuable in assessing stream health. Macroinvertebrates are sensitive to ecosystem changes, live in an ecosystem more than a year, can't escape changes in water quality, and can be collected easily and inexpensively. Low IBI scores at Vermillion River Watershed sites are driven by an abundance of pollution-tolerant species and a limited number of pollution-sensitive species.

Overall, the 14 monitoring sites within the Vermillion River Watershed show consistency in scores under the new MPCA Statewide IBI scoring protocol. In general, the warm water streams in the Southern Headwaters Category had consistently high scores (not impaired) and showed very little variation in the scores from year to year. The monitoring reaches within the Southern Coldwater and Southern Streams categories also scored consistently under the new IBI protocol, in general scoring as impaired, with little variation across monitoring years.

In recent discussions, the DNR has reported that recent trout data indicates fewer numbers of trout are being caught within the watershed. In comparing this information to the full fish community data that's been collected, the decrease in numbers of trout caught is consistent with an overall decrease in the number of fish caught in recent years. The causal factor is being investigated as part of the biomonitoring effort in 2015.

- ▣ **Drinking Water Monitoring** – Dakota and Scott Counties manage several ongoing programs to monitor and address water quality in private drinking water wells. Dakota County has widespread issues with nitrate and pesticide detections in private drinking water wells in the rural parts of the County, especially around the City of Hastings. In 2013, a special monitoring project conducted in conjunction with the Minnesota Department of Agriculture (MDA), the Targeted Townships Groundwater Monitoring, increased concerns about nitrate in the County and watershed.

The age of the wells had a distinct impact on the nitrate results. Of those wells sampled in 2013, wells constructed before 1974 (i.e., before the Minnesota Department of Health Well Code), 70 percent had high nitrate; of those constructed between 1974-1988, 24 percent had high nitrate; and of those constructed since 1989, when MDH delegated the well program to Dakota County, only 6 percent had high nitrate.

In 2014, the MDA requested assistance from Dakota County Environmental Resources to lead a second Targeted Township Sampling event that expanded the range of sampling and followed up on problem areas. Using an independent lab, Dakota County mailed more than 2,800 test kits and surveys to private well owners in 12 cities and townships. An estimated 675 well owners returned samples. Between the 2013 and 2014 projects, two-thirds of the private well owners in Dakota County (5,566 of approximately 8,200) were given the opportunity to have their wells tested for free; 1,458 (18 percent) took advantage of the opportunity. Between 2013 and 2014, the

participation rate went up (from 24 percent to 29 percent) and the results improved (33 percent of the wells tested in 2013 exceeded the drinking water standard for nitrate; 21 percent of the wells in 2014 exceeded the standard). See Figure 1: Targeted Townships Results Summary 2013-14, page 13. Figure 2: 2013-14 Aggregated Well Results, page 14, provides an overview of where the highest nitrate levels have been found and the relative distribution of private well testing results. The “Test the Waters” campaign has increased awareness watershed-wide about nitrate contamination of groundwater; nitrate contamination of surface water is a growing concern in the watershed. The strategies to prevent or reduce nitrate contamination will be common to both efforts. Dakota County has prepared a Community Drinking Water Profile for each participating city and township. At the township level, the results will be used to educate farmers and the public about the extent of the problem in each community.

**Figure 1: Targeted Townships Results Summary, 2013-2014**

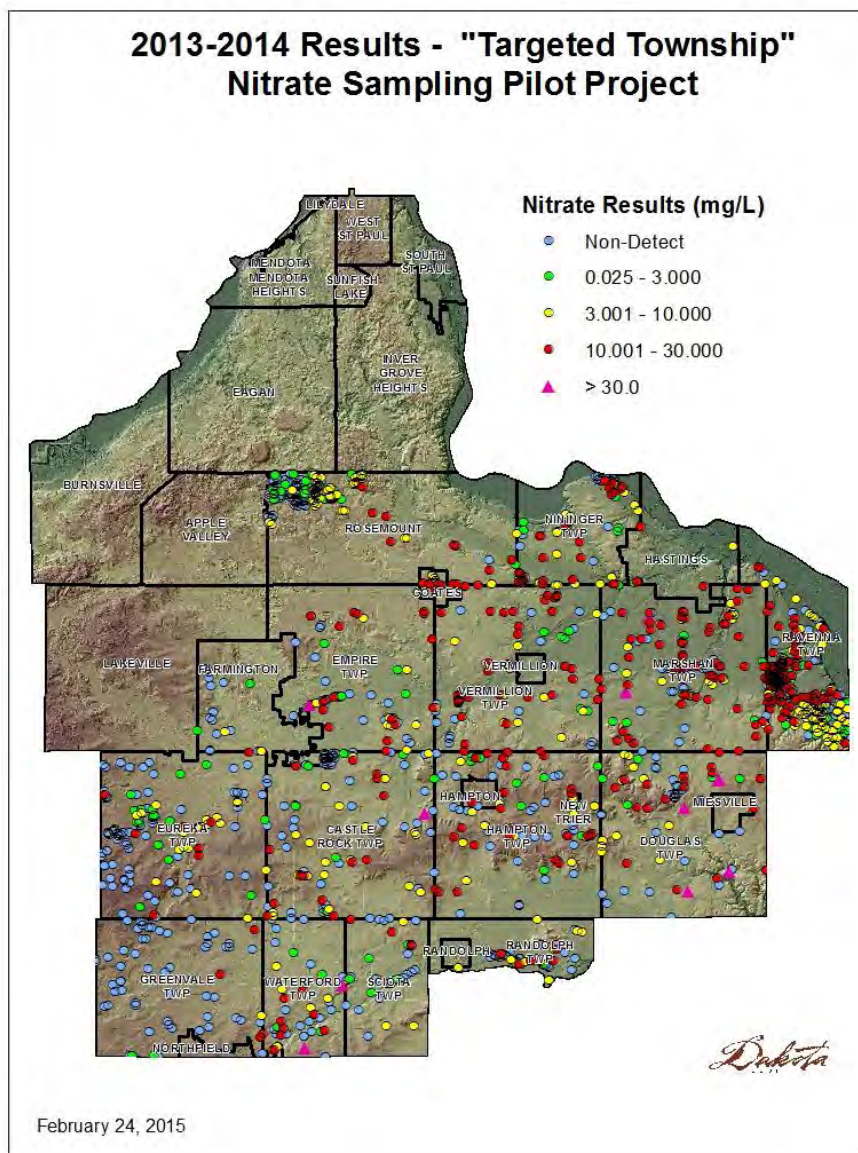
Name	# of Households on Private Wells	# of Samples	% Response	# of Samples exceeding 10 mg/L Nitrate	% of Samples Exceeding 10 mg/L Nitrate
Castle Rock Twp.	473	102	22%	15	15%
City of Coates	55	11	20%	6	55%
Douglas Twp.	250	67	27%	23	34%
Empire	220	58	26%	17	29%
Eureka	525	120	23%	8	7%
Farmington	80	18	23%	1	6%
Greenvale	283	58	20%	3	5%
Hampton Twp. and City	326	82	25%	25	30%
City of Hastings	40	2	5%	1	50%
Marshan Twp.	401	115	29%	62	53%
Nininger Twp.	301	88	29%	31	35%
Randolph Twp.	231	52	21%	6	13%
Ravenna Twp.	804	295	37%	112	38%
Rosemount	528	161	30%	9	6%
Sciota Twp.	121	30	25%	4	13%
Vermillion Twp.	417	83	20%	37	45%
Waterford Twp.	202	42	21%	11	26%
TOTAL FOR STUDY AREA	5257	1384	26%	371	27%
Kits mailed outside study area	309	74	24%	11	15%
TOTAL	5566	1458	26%	382	26%



## New Names for Ancient Aquifers

Several aquifers beneath the Vermillion River Watershed were formed in the Paleozoic Era's Cambrian Period, roughly 541-485 million years ago: the Jordan Sandstone, St. Lawrence-Franconia Formation, the Ironton-Galesville Sandstone, the Eau Claire Formation, and the Mt. Simon-Hinckley Formation. This geologic nomenclature was recently changed in Minnesota, and the "new" aquifer is the Tunnel City/Wonewoc Formation. This consists of the St. Lawrence Formation, Tunnel City Group (formerly Franconia), Wonewoc Sandstone (formerly Ironton-Galesville), and Eau Claire Formation. "Wonewoc" is a Native American term that translates, roughly, to "howling hills." It is also the name of a town in Juneau County, Wisconsin, incorporated in 1878.

Tunnel City Group/ Wonewoc Aquifer	
Old Name	New Name
St. Lawrence-Franconia Formation	St. Lawrence Formation
	Tunnel City Group
Ironton-Galesville Formation	Wonewoc Sandstone
Eau Claire Formation	Eau Claire Formation



**Figure 2: Aggregated Well Testing Results, 2013-2014**

- ▣ **The Ambient Groundwater Quality Study** is a county-wide drinking water monitoring program partially supported by the VRWJPO, with sampling events occurring every other year. These wells are tested for general water-quality parameters, nitrate, pesticides and pesticide breakdown products. In 2013, 65 Ambient Groundwater Study wells were sampled as part of the ongoing study that began in 1999. This past year, the well samples were analyzed for general chemical parameters: pH, dissolved oxygen, specific conductance, iron, alkalinity, nitrate, nitrite, fluoride, chloride, sulfate, total Kjeldahl nitrogen, calcium, magnesium, sodium and total organic carbon. Twenty-six of the 65 wells were selected to have water samples analyzed for list of 33 pharmaceuticals and list of acetamide and triazine herbicides, including herbicide breakdown products, used to control weeds on soybean and corn crops. Because some of the wells have 13 years of water-quality data, statistically significant trends can be identified; trend analysis is being conducted on the nitrate, pesticides, chloride, sulfate and sodium data. A draft report will be available in 2015.
- ▣ **Maintaining Monitoring Infrastructure** – The VRWJPO provides cost share to maintain the USGS Blaine Avenue flow-gaging station and contracts annually with specialists at the DNR for assistance with maintenance and rating-curve development at its seven other automated flow-monitoring stations.

## PUBLIC OUTREACH AND COMMUNICATION

Communicating the value of clean water to stakeholders and citizens continues to be a critical part of the VRWJPO's mission and civic engagement has taken on a greater importance in watershed processes. The VRWJPO has maintained its previous outreach efforts while adding new strategies to increase awareness and action among the public, especially about impaired waters.

Communication efforts in 2014 focused on two major goals: increase public awareness and civic engagement to restore impaired waters, and encourage active participation by citizens and stakeholders in development of the Vermillion River Watershed Plan update. (Details of these large-scale public outreach and communication initiatives are covered in the **Watershed Restoration and Protection Strategy** and **Evaluation and Policy** sections of this report.)

A new Stewardship Grant is designed to help civic organizations, groups, businesses, and communities to develop awareness, education, and action projects locally to improve water quality and quantity. The Vermillion River Watershed Joint Powers Board (VRWJPB) authorized grants for eligible organizations and projects in July 2014 (VRW 14-35) to take effect in 2015. Interested groups can receive up to \$5,000 for clean-ups, storm drain stenciling, habitat improvement, rooftop disconnection, and other local projects that benefit water quality or quantity. The guidelines for applicants are included in Appendix III.

Public outreach and communication takes many forms, including ensuring that the public understands what a watershed is, how the Vermillion River Watershed is different from other watersheds, what problems exist, how we can work together to find solutions, how citizens can engage in protecting the

watershed, and what resources are available to assist in achieving watershed goals. Among the outreach and communication programs partially funded or conducted by the VRWJPO in 2014:

- ❑ **Wetland Health Evaluation Program (WHEP)** – Participating cities each select up to four wetlands to be monitored each season by trained volunteers. The Minnesota Pollution Control Agency trains volunteer teams on wetland monitoring protocols, as well as macroinvertebrate and plant identification. The program turns volunteers into “citizen scientists”; it is an excellent opportunity for environmental education and natural resource information gathering.

In 2014, ten cities participated in WHEP, monitoring 31 different wetlands. Six wetlands were monitored for the first time in 2014. Volunteers collected data on the macroinvertebrates and plants that live in the wetlands, identified the species, and used the Index of Biotic Integrity (IBI) to estimate the health of each wetland. Ten wetlands rated excellent for invertebrates and one rated excellent for vegetation.

Overall, wetland conditions for invertebrates improved in 34 percent of wetlands and didn’t decline in any of the wetlands sampled. Vegetation improved in 20 percent of the wetlands monitored, while 13 percent showed declining vegetation. WHEP volunteers donated more than 1,630 hours in training, sample collection, and sample identification in completing this valuable monitoring. Teams report to the sponsoring cities on wetland health within their jurisdictions at the end of the monitoring cycle.

Cities can use the information to identify high-quality wetlands that may need protection, track changes in wetland health following restoration projects or new stormwater inputs, or identify invasive species that may threaten wetland health.

#### Invasive Species: Notes from the Front Lines

- ❑ Dakota and Scott Counties received grants from the DNR in 2014 to develop programs to reduce the spread of aquatic invasive species or AIS (such as zebra mussels). The purpose is to prevent the introduction of new AIS, prevent further spread of AIS, and reduce the impact of AIS. These programs will be developed and implemented in 2015.
- ❑ In 2014, the Minnesota Department of Agriculture (MDA) identified a tree infested with emerald ash borer during a routine visual inspection at Lebanon Hills Regional Park in Eagan. Dakota County is just the latest stop in the migration of the invasive, tree-killing insect from eastern Asia.
- ❑ The Wetland Health Evaluation Program (WHEP) 2014 report identified invasive species in 31 wetlands monitored by volunteers. Purple loosestrife (*Lythrum salicaria*) was found in three percent of the wetlands, Reed canary grass (*Phalaris arundinacea*) in 81 percent, and oriental mystery snails (*Bellamya* species) in four wetlands.
- ❑ Vermillion Stewards volunteers took aim at invasive plants in several parts of the watershed, including buckthorn removal in the Rosemount Preserve; dame’s rocket removal at the Karpen Preserve in Hastings; and cow vetch and spotted knapweed removal in Sand Coulee Scientific and Natural Area (SNA) in Marshan Township.



**Oriental  
mystery snails**

- **Vermillion River Stewards Program** – Vermillion River Stewards Program is implemented by the Friends of the Mississippi River (FMR) and partially funded by the VRWJPO. Volunteers participate in hands-on stewardship and educational programs throughout the Vermillion River Watershed. These include native plantings, seed collection, river cleanup events, and educational tours of interesting natural resource areas. The program provides a great way for watershed residents to actively help protect the Vermillion River. The Stewards program involves partnerships with local cities, SWCDs, schools, and other civic and youth organizations.



Rosemount High School Students pulling buckthorn in the Rosemount Preserve in 2014. *Photo: FMR*

In 2014, FMR organized nine public and private stewardship events and six educational events or tours with 376 total

participants spending 440 volunteer hours on learning about the watershed and participating in events. FMR surveys volunteers annually, and of the volunteers who responded, 43 percent live in the Vermillion River Watershed.

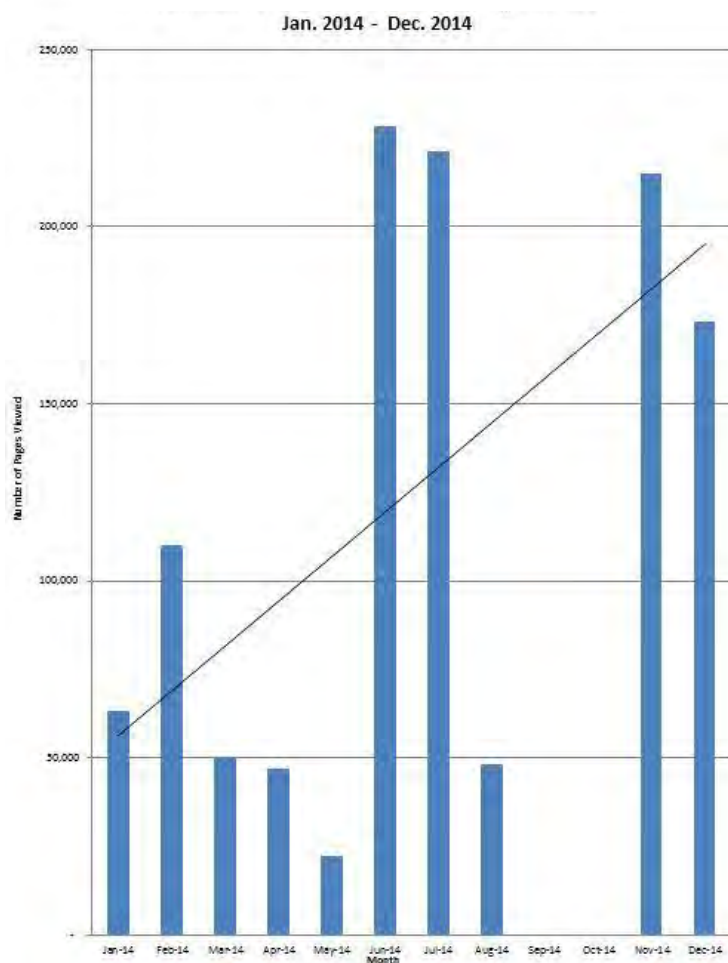
- **Vermillion River Watch** – In 2014, Dakota SWCD continued working with educators and students at Rosemount and Hastings High Schools to collect macroinvertebrates and habitat data, identify macroinvertebrates, and compare species type and abundance to biological metrics. This is a successful way to interest students in scientific disciplines and engage them in protecting and improving water resources.
- **Blue Thumb Workshops, Technical and Financial Assistance** – The VRWJPO maintained its support in 2014 for the popular Blue Thumb – Planting for Clean Water program (implemented by Dakota and Scott SWCDs) to educate citizens about the benefits of raingardens in improving water quality and assisting to design and install raingardens. Dakota SWCD held six introductory Blue Thumb workshops that attracted 132 residents and seven design workshops with 82 people attending in 2014. This effort resulted in 55 project designs, 18 applications for Blue Thumb grants, 18 projects funded, and 12 raingardens, shoreline restorations, or native garden projects completed. The Blue Thumb program drives 80 percent of Dakota SWCD's inquiries for larger urban conservation projects in the watershed, and is the most effective outreach tool for reaching residents with an interest in hands-on implementation of their own water-quality projects. Scott SWCD also offers Blue Thumb workshops and native prairie planting workshops that cover the Elko New Market/New Market Township portion of the watershed. Fact sheets showing Blue Thumb and other projects are contained in Appendix IV.



- Publications** – In 2014, the VRWJPO moved to strengthen the watershed’s e-newsletter and discontinue the print version to save costs. The newsletter is provided to interested residents in the watershed twice a year (see Appendix V for the Spring and Fall 2014 issues). The staff is building the e-mail list by adding contacts who sign up during VRWJPO meetings and events and others interested in receiving the newsletter. The newsletter is posted online, where readers can access other related material. The VRWJPO’s beneficial activities and educational messages are also featured in news media reports, internal and external newsletters, and other publications. The VRWJPO and Dakota County SWCD summarize each capital improvement project completed with VRWJPO cost share (Appendix IV) and develop Frequently Asked Questions fact sheets to explain watershed standards and policies to citizens.

- Website** – The VRWJPO has continued to build its website in 2014 to provide easily accessible information about the watershed to a wide range of users. The page views of the site increase each year (see Figure 3). (Note: The September and October 2014 data were artificially high because a wiki site attached to the website was under development and constant design.) The site features an up-to-date calendar of VRWJPO meetings, volunteer opportunities, and public events. An interactive map shows users where the VRWJPO has implemented or cost-shared capital improvement projects. The “Doing Business” web pages provide VRWJPB and WPC agendas and minutes, frequently asked questions (FAQs) about policy issues, instructions on permit application, criteria for cost sharing projects, and other helpful information. On the “Learn” web pages, visitors can find out about monitoring data, assessments, and studies. The website has been very successful in conveying information to users, as indicated by the number of web pages viewed over time. At the suggestion of users, the VRWJPO drafted an improved website structure to incorporate more educational information for citizens and other stakeholders.

**Figure 3: Website Page Views in 2014**





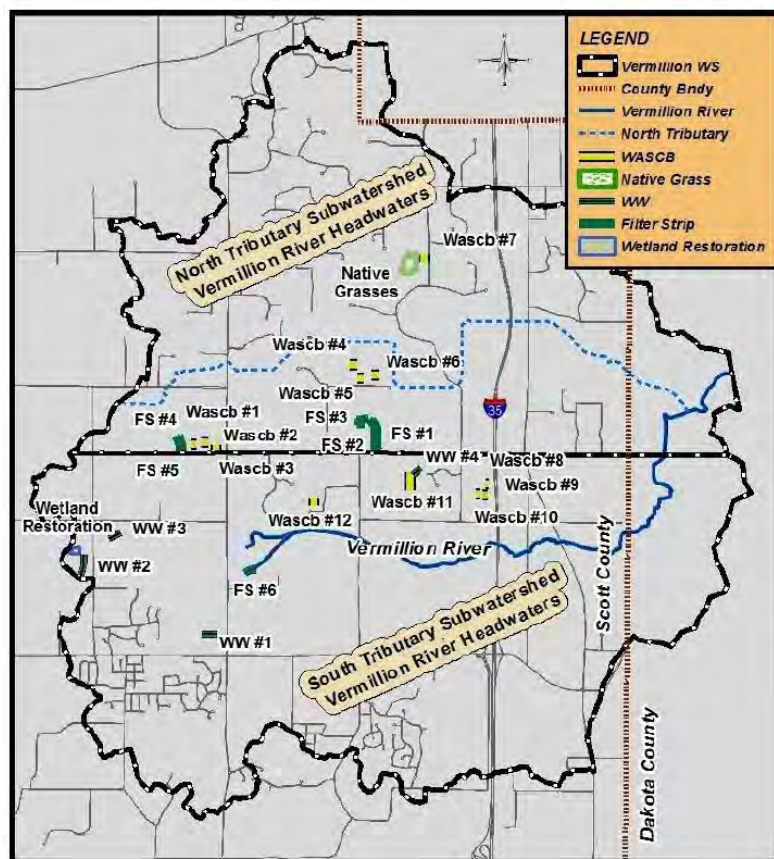
- **Fifth Annual Vermillion River Watershed Tour** – VRWJPB, Scott and Dakota County commissioners, and other elected officials toured locations where they could observe best management practices and projects cost-shared by the VRWJPO. On September 5, 2014, local and state officials visited: the Rosemount/Flint Hills Ravine Restoration project, which includes a grade-control structure, a pond, an infiltration area and revegetation that has reduced sediment runoff to the Mississippi River by an estimated 82 tons/year; Scheel Blue Thumb Rain garden in Apple Valley, a 150-square-foot rain garden that provides roof and lawn runoff treatment and infiltration for 375 gallons of water; Stormwater Retrofit at Steve Michaud Park (formerly North Park) in Lakeville, a biofiltration practice that captures and treats the first half inch of runoff from approximately 2.14 acres of parking lot and streets; and Lake Marion South Ponds Retrofit in Lakeville, which uses an iron-enhanced sand filter to remove phosphorus from 6.2 acres of stormwater runoff.
- **Agricultural Outreach** – Dakota County partners with the University of Minnesota Extension to work with agricultural producers on: management of fertilizers and pesticides; demonstration projects; the Annual Crops Day and Field Day events, bringing together farmers with experts in agricultural sciences for an all-day discussion of issues and trends; a newsletter with information about effective agricultural strategies; and other efforts to improve water quality and land conservation. In 2014, the VRWJPO did not provide funding for the agricultural outreach, but has consulted with the agricultural educator on issues involving impaired waters, groundwater appropriations, and 2014 monitoring data from the South Branch, where high levels of nitrate have been documented in surface water.
- **Community Event Participation** – In 2014, the VRWJPO participated in the City of Farmington’s Earth Day/Arbor Day Celebration and the City of Lakeville’s Earth Day Celebration, providing a watershed display focusing on impaired waters in each jurisdiction. The VRWJPO participated in the Hastings Birding Festival in 2014, focusing on mercury impairments and the threat of mercury to waterfowl. The grand opening of the new Dakota County Whitetail Woods Regional Park gave the VRWJPO an opportunity to meet local citizens, direct attention to the park’s stormwater management features, and discuss impaired waters.
- **Partnership Building and Collaborative Efforts** – The VRWJPO supports WaterShed Partners, a coalition of watershed organizations, cities, and interest groups providing effective water-oriented messages to the general public. The VRWJPO provided in-kind support for workshops by Fortin Consulting Inc., one on winter parking lot and sidewalk maintenance (October 1, 2014) and another on summer turfgrass maintenance (March 19, 2014). Dakota County staff took a leadership role in the Children’s Water Festival, and the VRWJPO provided financial support for schools in the watershed participating in the popular event.
- **Scott Clean Water Education Program** – Scott SWCD focused activities, outreach, and publicity on the overall theme of “Clean Water Starts with Me.” The native plant focus by Scott SWCD at both the New Prague Business Expo and Scott County Earth Day celebrations drew hundreds of interested residents.

## INVENTORY/ ASSESSMENT

The VRWJPO supports inventories of land, water, and groundwater features and investigates the causes and status of existing or emerging issues. Projects begun, continued, or completed in 2014:

- ❑ **Watershed Restoration and Protection Strategy Investigation (WRAPS)** – The WRAPS Phase II investigation was completed and pollutant load reductions were calculated. See the WRAPS section of this report for more information.
- ❑ **Subwatershed Analysis for the Vermillion River Headwaters** – Scott SWCD completed an assessment in 2014 focused on identifying and assessing potential sites where best management practices could reduce nutrient and sediment loading to the Vermillion River Headwaters. The SWCD used the Revised Universal Soil Loss Equation (RUSLE2) and the BWSR's pollution reduction calculator spreadsheets in the assessment, as well as completing field reconnaissance of the various sites. Potential projects were prioritized by weighing installation/construction costs, existing land use/land management practices, maintenance, and ability to serve multiple functions.

Scott SWCD identified 24 potential BMP projects, ranking them by cost/pound of phosphorus/year. Costs of achieving phosphorus reductions ranged from \$10 to \$378 per pound. Figure 4 shows locations of headwaters projects for the “south tributary” (usually considered the main stem of the Vermillion River) and north tributary. The VRWJPO can use these assessment results to prioritize projects for implementation or cost-share.



**Figure 4: Potential Locations for CIP Projects in the Vermillion River Headwaters**

## CAPITAL IMPROVEMENT PROJECTS

The VRWJPO wants to ensure that Capital Improvement Projects (CIPs) with direct and observable benefits to water quality, quantity, and safety are identified and developed. Through cost-share programs, the VRWJPO provides assistance and incentives for Local Government Units and other partners seeking effective solutions to local water-quality problems. In 2013, the VRWJPO updated its CIP cost-share process to establish two application periods for proposals and to make the process more competitive. As part of developing an updated Watershed Plan, the VRWJPO is including a prioritized CIP as part of the implementation section.

In 2014, CIPs included:

- ▣ **Dakota SWCD Cost Share Programs** – Dakota SWCD receives funding from the VRWJPO to implement a variety of cost-share programs to improve water quality. These include:
  - **Blue Thumb Grant Program** – Blue Thumb combines incentive funding with training and technical assistance to make it easy for Dakota County residents to plan and install native gardens, raingardens, and stabilized shorelines. See page 17 for more details about the successes of the Blue Thumb project.
  - **Conservation Initiative Funding Program** – Developers interested in installing practices that protect water quality, improve habitat, manage stormwater, and prevent erosion can receive up to \$20,000 for project costs. The Dakota SWCD cost-shared one development project in 2014. A 560-square-foot raingarden build at the Riverview Elementary School captures and infiltrates runoff from the roof and surrounding landscape. The funding from the VRWJPO was \$3,065 of the \$4,715 total project costs.
  - **Incentive Payment Practice Program** – This program leverages state and federal dollars to improve feedlots and other agricultural land. The Dakota SWCD provided technical assistance on three projects in 2014: grassed waterway in Vermillion Township (prevents 80 tons of soil and 116 pounds of phosphorus from going downstream each year); grassed waterway in Eureka Township (prevents 16 tons of soil and 8 pounds of phosphorus from going downstream each year); and water and sediment control basins in Eureka Township (prevents 58 tons of soil and 13 pounds of phosphorus from going downstream each year). The VRWJPO provided \$4,125 of the total cost of \$19,986, and the Clean Water Fund provided \$7,875.

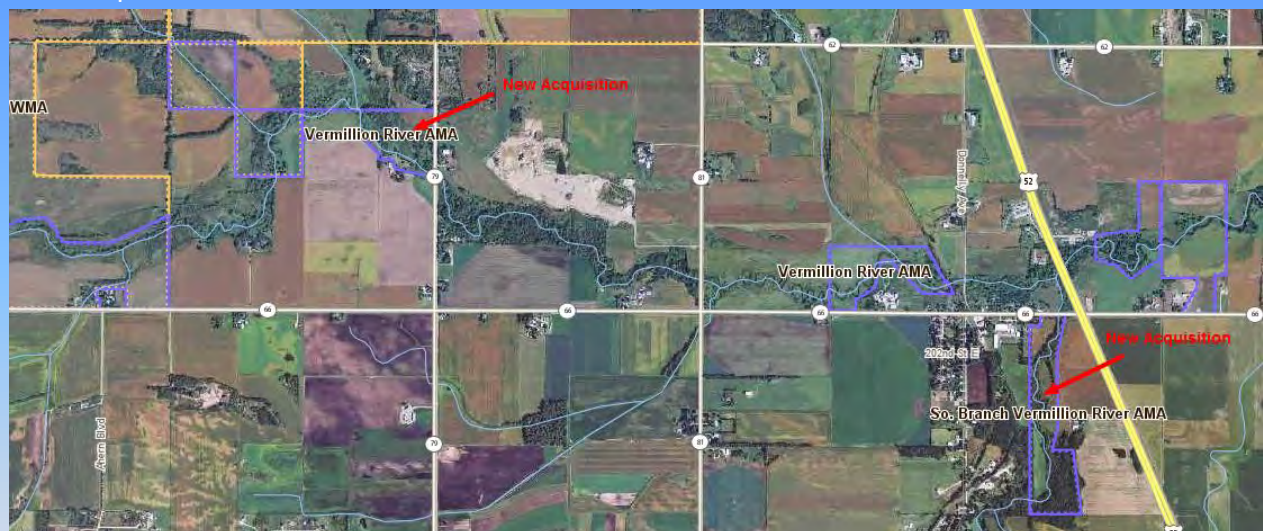
Cost-share projects completed with Dakota SWCD assistance and VRWJPO funding are listed below. Fact sheets describing these projects in more detail are available in Appendix IV.

- 14-CIF-02: Riverview Elementary Raingarden, Farmington
- 13-IPP-06: Sauber Grassed Waterway, Eureka Township
- 13-IPP-10: McNab Water and Sediment Control Basins, Eureka Township
- 14-IPP-08: Tix Grassed Waterway, Vermillion Township
- Hegg Residential Raingarden, Apple Valley

- Kelash Residential Raingarden, Apple Valley
  - Jayawardena Shoreline Planting, Apple Valley
  - Vigesaa Residential Native Garden, Farmington
  - Nelson Residential Native Garden, Hampton
  - McGregor Residential Raingarden, Hastings
  - Peterson Residential Raingarden, Hastings
  - Nelson Residential Raingarden, Lakeville
  - Clayburn Residential Raingarden, Lakeville
  - Perry Residential Native Raingarden, Lakeville
  - Mills Residential Raingarden, Lakeville
  - Schulz Residential Raingarden, Lakeville
- **Rosemount Cost Share Joint Powers Agreement** – The VRWJPO entered a joint powers agreement with the City of Rosemount in 2007, which required cost share related to the storm drainage improvement project commonly referred to as Eagan Project 905R, a major project that involved Dakota County’s Lebanon Hills Regional Park stormwater management. The VRWJPO agreed to cost share in a principal amount of \$544,829, to be repaid over ten years in ten equal annual installments of principal with interest being paid on each principal payment at the rate of four percent per year. In 2014, the VRWJPO continued to provide these cost-share payments.

The VRWJPO, City of Lakeville, and Trout Unlimited have been planning shoreland restoration projects on South Creek, which have been carried forward into 2015.

#### DNR Acquires 2 Miles of Vermillion River and South Branch Shoreline



In 2014, the Minnesota Department of Natural Resources (DNR) purchased two properties (almost 100 acres total) along the Vermillion River and the South Branch. The two parcels become part of the DNR’s Vermillion River Aquatic Management Area, which will be open to fishing, hunting, and bird-watching – while providing wildlife habitat and stream buffers to help improve water quality. Restoration activities for the new parcels are underway.



## FEASIBILITY/PRELIMINARY STUDIES

Projects depending upon VRWJPO funds or support often require feasibility or preliminary studies to determine whether they are practical, cost effective, and implementable. The Dakota County and Scott County SWCDs are integral to this effort, providing marketing, technical assistance, and preliminary design consultations to project proposers. In 2014, the VRWJPO focused on the WRAPS investigation. (See the WRAPS section of this report for more information.) Other feasibility studies included:

- ❑ The VRWJPO is working in partnership with Dakota County Transportation Department's planned upgrade of County Road 64. A section of Middle Creek remeandered by the DNR was not connected because the new channel was constructed at a higher elevation than the existing channel, raising concerns about upstream flooding. The VRWJPO and Transportation assessed the feasibility of various options to connect the remeandered reach during the road construction process. Joshua Petersen, Dakota County Environmental Resources engineer, worked with Transportation staff to arrive at an acceptable design. The project will go forward in 2015.
- ❑ Mattamy Homes is proposing the Avonlea residential development project in Lakeville, and the company is interested in stormwater re-use irrigation systems and other opportunities to integrate environmentally beneficial and sustainable features into the development. The developer also wants to promote physical fitness and environmental quality. VRWJPO staff and the developer are discussing the feasibility of a wetland restoration to achieve an open-water wetland and more water-quality storage than is required by the VRWJPO or City of Lakeville. Trails in the wetland area could include fitness stations and possible education kiosks. Those aspects of the development that go above and beyond stormwater requirements may be eligible for cost share by the VRWJPO.
- ❑ The VRWJPO and the City of Lakeville are looking at the feasibility of a possible CIP project that would be incorporated into the proposed reconstruction of Hamburg Avenue in the Air Lake Industrial Park area. The potential to incorporate infiltration practices into the highly impervious area would reduce sediments in runoff; reduce runoff volume and, therefore, temperature; help recharge groundwater; and provide efficiencies in mobilization. If the proposal goes forward, it will be brought to the VRWJPB for authorization to cost share.
- ❑ The VRWJPO and City of Apple Valley are discussing a phosphorus reduction project in conjunction with a development currently underway near McNamara Pond. The plan is to complete development and install phosphorus reduction technologies during pond installation. McNamara Pond is one source of high levels of phosphorus in East Lake.
- ❑ The VRWJPO worked with cities on a proposal that would reduce nutrient loading to lakes within the watershed (such as Lake Alimagnet) that are fully developed and do not have sufficient space to install nutrient reduction best management practices (BMPs). Currently, cities perform street sweeping as part of their MS4 permits. This practice removes sediments and yard waste that add nutrients to stormwater. With intensive street sweeping (weekly or every other week) rather than spring and fall street sweeping, the entire waste load reduction required under the WRAPS could be achieved. To do this, cities have suggested cost share for street sweeping equipment and/or city staff hours to do the intensive sweeping. The cost for a pound of phosphorus removal would be estimated at \$600, a low cost compared to most other options.



## EVALUATION AND POLICY

The Vermillion River Watershed Plan will be updated in 2015-2016, and the VRWJPB authorized staff to begin that process in 2013. During 2014, the VRWJPO worked intensively on the Watershed Plan update, particularly the community involvement for identifying key issues and priorities for the watershed. The activities and progress in 2014 include:

- Launching a spring series of “Community Conversations” with people living in the watershed to explain the process, validate and prioritize issue statements, identify missing issues, and build relationships with local communities. Meetings in the cities of Hastings, Farmington, and Elko New Market drew many participants from the agricultural community with concerns about water quantity issues related to changes in the Minnesota Department of Natural Resources (DNR) process for issuing water appropriation permits for agricultural irrigation. While water-quantity issues dominated the conversations, most participants recognized the importance of surface water quality, extreme fluctuations in river volumes and rates, and public outreach and communication. Participants also wanted costs of environmental improvement to be shared equally and fairly. An analysis of the feedback from stakeholders and watershed residents resulted in ten issues prioritized by participants and captured in the draft Issues and Priorities section of the Plan. Goal statements based on the issues and priorities served as a framework for developing objectives and actions.
- The VRWJPO hired a consultant in early 2014 to evaluate the watershed’s regulations in comparison to other comparable watershed management organizations in the Twin Cities metropolitan area. The analysis and recommendations provided the Watershed Plan team with a range of possibilities to incorporate into watershed planning, processes, and standards.
- The Watershed Plan team completed the assessment sections of the draft plan, including the watershed’s existing and future physical and biological environment; current and projected water quality and quantity; and existing and future land use.
- In 2014, members of the Technical Advisory Group (TAG) met on ten occasions to review, critique, and supplement draft Goals, Objectives, and Actions (GOA). The Watershed Planning Commission (WPC) also worked through the detailed objectives and actions. A key Watershed Plan team member from Dakota County Office of Planning organized and streamlined the GOA, removed duplication, clarified language, and established a framework that is the center of the Plan.
- During a late fall series of Community Conversations, the VRWJPO sought feedback on the GOA to validate goals and objectives. The team also asked participants for specific actions and strategies they thought would work in their local communities.
- The VRWJPO administrator wanted to develop a Watershed Plan “wiki” that would allow interested parties to comment on the Watershed Plan while it was being drafted. Using open source software from Mediawiki, the staff developed a wiki site that was a part of the Vermillion River Watershed website. Early drafts of several sections were placed on the wiki for comment. The VRWJPO announced the wiki’s availability to the VRWJPB, TAG, and WPC members and encouraged them to explore and comment. The board and advisory group members had substantial concerns about the wiki’s safety and security, intensive maintenance needs, and complexity of use. These concerns were confirmed when the wiki was hacked and the watershed website breached as well. The wiki

was taken down within a few days of its introduction; it was a learning experience for the Watershed Plan team.

- ▣ The community involvement aspects of the Plan took substantial staff resources, which were well-spent and productive, but required a budget amendment (Res. No. VRW 14-54). Two parts of the Plan that staff viewed with trepidation were the Implementation Plan (usually a complex matrix assigning timelines and dollar amounts to specific objectives and actions) and a prioritized Capital Improvement Program (CIP). The VRWJPB authorized staff to issue a Request for Proposals to commission an environmental consultant to draft the Implementation Plan matrix and CIP.

Throughout 2014, the VRWJPO kept in touch with Board of Water and Soil Resources (BWSR) representatives to make certain that all conditions required by both existing rules and proposed new rules would be met. A draft version of the Watershed Plan will be provided to stakeholders for review and comment in late 2015.

## REGULATORY REVIEW AND REGULATION

In 2014, the VRWJPO continued to implement the Watershed Rules in Eureka Township, issuing five permits for land-disturbing activities and evaluating the necessity for permits in several additional cases. Other regulatory review and regulation issues that emerged in 2014 include:

- ▣ **Regulatory Review and Analysis for Watershed Standards and Rules** – The VRWJPB authorized a contract with Emmons & Olivier Resources (EOR) to compare the VRWJPO regulations to those of other comparable watershed management organizations and make recommendations about changes in the Standards or Rules that would be increase efficiency or more effectively protect and improve watershed resources. Here are some of the major recommendations:
  - Improve agricultural runoff quality by 1) increasing inducements to producers to achieve widespread adoption of BMPs, such as the voluntary Minnesota Agricultural Water Quality Certification Program; and 2) endorsing the Minnesota Department of Agriculture’s Nitrogen Fertilizer Management Plan.
  - Reduce and improve urban runoff by updating provisions that address source, rate, and volume control by 1) fostering civic engagement and community efforts to prevent water pollution through source control; 2) adding stormwater rate controls for public safety to minimize shock loading and destructive runoff force during intense storms; 3) adopting NOAA’s Atlas 14; 4) evaluating rate controls for 100-year storm events and multi-day wet periods; 5) adopting portions or all of the Minimal Impact Design Standards (MIDS); and 6) adding policies for minimizing soil disturbance and compaction and minimizing and disconnecting urban impervious surfaces.
  - Integrate WRAPS pollutant-reduction goals into the next generation Watershed Plan.
  - Integrate past 10 years of stream monitoring results into classifications of trout stream reaches.

- Improve buffer zones that protect water from intense urban and agricultural impacts, particularly around trout-stream reaches, land-locked lakes, and wetlands.
  - Protect wetland storage volumes for groundwater recharge.
  - Combine and restructure rules to be consistent with those of other watersheds, particularly for drainage and floodplain alterations.
- ▣ **Hydrologic Model Development and Implementation of Peak Flow Standards** –The VRWJPO provided cost-share assistance for the Cities of Farmington and Lakeville, which was carried forward into the VRWJPO 2014 Budget. These local updates were completed in 2014.
  - ▣ **Complaint Response on NPDES Construction Permit Violation** – The VRWJPO staff responded to a complaint about insufficient erosion and sediment control at the CAPX2020 Electrical Substation. Adequate erosion and sediment control was promptly installed in response to the complaint.
  - ▣ **Plan Review** –The VRWJPO reviewed Land Alteration Plans (LAPs) affecting 40 acres or more, at intercommunity flow points, and proposals for alterations along the river or tributaries. In 2014, VRWJPO reviewed six plans from local governments and other partners, including large residential developments planned adjacent to tributaries that drain to Middle Creek in Lakeville and a Dakota County road reconstruction project in Eureka Township.

## COORDINATION WITH OTHER AGENCIES

In collaboration with other government agencies, the VRWJPO works to eliminate duplication of effort, leverage resources, instill consistency, share knowledge and expertise, and make each public dollar go further in achieving water quality, quantity, and safety goals. Coordination efforts in 2014 included:

- ▣ **Assistance with Local Reviews, Oversight, and Coordination with Other Agencies** – The watershed includes all or part of 20 separate jurisdictions, each of which has land-use authority. As local government units have been implementing Local Water Management Plans, issues have arisen that require consultation. Consultations in 2014 have included discussions with Metropolitan Council Environmental Services on upgrades to the Empire Wastewater Treatment Plant; discussions with Dakota County Parks and the DNR on a planned trail alignment at the Spring Lake Park Reserve; and support for the Lake Marion-South Creek Regional Greenway plan.
- ▣ **Serving on Work Groups Considering Local, State, or National Policy Issues** – The political and scientific landscape of water policy is subject to frequent change and reconsideration, and the VRWJPO staff plays a role in these discussions. Paula Liepold, water resources educator, worked with a Dakota County “Measure and Improve” team to integrate greater civic involvement expertise into County programs.

## WATERSHED RESTORATION AND PROTECTION STRATEGY (WRAPS)

The VRWJPO, MPCA, and consultant Wenck Associates completed the first phase of the WRAPS investigation in 2013, which was focused on identifying stressors that cause biotic impairments – the lack of proper diversity or quantity of fish and macroinvertebrates. The stressor identification process and refinement of candidate causes were completed. The detailed investigation results are available on the MPCA website, at [www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/tmdl-projects/lower-mississippi-river-basin-tmdl/project-vermillion-river-watershed-restoration-and-protection-strategy-multiple-imp.html](http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/tmdl-projects/lower-mississippi-river-basin-tmdl/project-vermillion-river-watershed-restoration-and-protection-strategy-multiple-imp.html).

During Phase II, undertaken in 2013 and 2014, the VRWJPO and MPCA identified causes of bacterial impairments in the river, as well as causes of nutrient impairments in Lake Alimagnet (Apple Valley) and East Lake (Lakeville). In addition, the consultant worked on Total Maximum Daily Load (TMDL) calculations for total suspended solids (TSS, a measure of turbidity) and preliminary allocations. In March 2014, the VRWJPO presented preliminary information about load allocations to the TAG. The nutrient budgets for Lake Alimagnet and East Lake were discussed in preliminary form. In October 2014, the VRWJPO submitted the draft Total Maximum Daily Load (TMDL) allocation report to the MPCA for review and comment. Since that time, the VRWJPO has been meeting informally with staff from the cities with waste load allocations (WLA) to discuss strategies to reduce pollutant loads.

The MPCA provided funding and consultation for the VRWJPO to conduct civic engagement research, planning, and implementation on a parallel track with the WRAPS investigation. As one of the early watersheds undertaking a watershed-wide TMDL, the MPCA looked for a more strategic approach in engaging citizens in the planning process, developing stewardship values and attitudes that would support efforts to restore impaired waters, and working with communities and networks on WRAPS implementation.

- The VRWJPO completed a community capacity assessment in 2014 that included human dimensions data to characterize the watershed's residents. This briefing book provided a detailed description of the impairments and why they mattered, land use and management information, demographics, attitudes and values surveys, existing community networks, and other data to help clarify who would be most responsive and interested in impaired waters restoration activities.
- The Watershed Engagement Team (WET), a group of selected representatives of community interests and networks, met monthly through 2013 to learn, teach staff, discuss options, and plan strategies. The VRWJPO empowered the WET to make decisions about what would work best in selected focus areas and integrated those decisions into the interim civic engagement plan, which was completed in 2014 and is included as Appendix VI.
- The VRWJPO implemented parts of the civic engagement plan, incorporating impaired waters messages into a wide range of conversations, publications, and events. In 2014, events and meetings included: Hastings Area Birding Festival, City of Farmington Earth Day/Arbor Day Celebration, City of Lakeville Earth Day Celebration, Dakota County Parks Earth Day Celebration, Vermillion Stewards Kick-off Meeting for 2014, Lake Alimagnet Association Spring Meeting, Vermillion River Watershed Tour, Grand Opening of Whitetail Woods Regional Park, meeting with

Dakota County Parks and Libraries to integrate water information into existing programming, consulting with the Hmong American Farmers Association on water issues, meeting with 4H team leaders, approaching the Chambers of Commerce and Dakota County Technical Institute.

- Beginning in late 2014, the VRWJPO scheduled meetings with elected or appointed officials in each community with a proposed WLA (incorporated areas) or load allocations (unincorporated areas) to discuss the pollutant-reduction goals. Each jurisdiction received a fact sheet describing the specific impairments, protection priorities, restoration priorities, and BMPs that would be effective in reducing pollutants in local areas (see Appendix IV).

The VRWJPO and MPCA will send the TMDLs to the U.S. Environmental Protection Agency for approval in early 2015 and complete the WRAPS and place it on public notice in summer of 2015.

## **WETLAND BANKING PROGRAM**

Wetland restoration was identified by stakeholders as a high priority for the VRWJPO through a mid-term Plan evaluation process. Suitable locations for potential wetland restoration projects emerged as the result of Dakota County SWCD's Restorable Wetland Inventory for the VRWJPO. The VRWJPO has shown interest in developing a wetland banking program as a means to 1) restore drained or degraded wetlands; 2) provide mitigation credit opportunities for unavoidable impacts to wetlands within the watershed; and 3) financially support future wetland restorations from proceeds of the sale of VRWJPO-established wetland bank credits. In 2014, the VRWJPO allocated \$500,000 to the potential establishment of a wetland bank within the watershed.

Partners including the Dakota County SWCD, Dakota County Environmental Resources Department, and the Minnesota Board of Water and Soil Resources (BWSR) have been actively pursuing possible wetland restoration/wetland bank opportunities within the watershed. The need is urgent, as there is currently no wetland bank available to access wetland mitigation credits within the watershed.



## 2015 WORK PLAN

The VRWJPO Work Plan and Budget for 2015 maintain core activities: administration, monitoring and data analysis, public outreach and communication, inventory/assessment, feasibility/preliminary studies, evaluation and policy, regulatory review and regulation, consultation with other agencies, and grant-funded activities.

The VRWJPO's highest priorities in 2015 include:

- Completing the draft **Watershed Restoration and Protection Strategy (WRAPS)**, after which the Minnesota Pollution Control Agency (MPCA) will put it on public notice. Final adoption by the Vermillion River Watershed Joint Powers Board (VRWJPB) will take place in 2015. VRWJPO staff is in discussion with cities and townships about implementing the strategies identified in the WRAPS (some suggested and supported by local jurisdictions) to achieve waste load allocations (WLA) and load allocations (LA) for impaired waters. The WRAPS will be incorporated into the updated Vermillion River Watershed Plan in 2016. The VRWJPO will seek funding for high priority BMP implementation projects in 2015.

The VRWJPO has made progress in developing relationships with potential partners in watershed protection and restoration through implementing the WRAPS **Civic Engagement** Plan. This effort will continue in 2015, when new collaborations with Dakota County Parks, Southern Dakota County Sportsmen's Association, the Vermillion Stewards, and lake associations may get underway.

- Drafting the updated **Watershed Plan** and sending it out for stakeholder review. The draft Plan's goals, objectives, and actions were determined with substantial public and stakeholder involvement. Among the changes the Plan is likely to include: a prioritized Capital Improvement Program; more VRWJPO-led project implementation; specific review processes for jurisdictions implementing permit programs; specifically identified Plan-based outcomes; possible alterations in monitoring programs; and supporting demonstration projects for nutrient and sediment reduction, retrofits of existing stormwater management structures, and re-use of stormwater and process water. Stakeholders also asked for changes in the way the VRWJPO implements the Watershed Plan, seeking greater consideration of economic impacts of watershed actions; clearer directions to citizens about how to most efficiently get things done by understanding the roles of the many agencies and organizations working in the watershed; and improving the VRWJPO's processes.
- Continuing and enhancing the **Biomonitoring Program** to provide current and reliable data on conditions and trends, as well as to inform management decisions on policies and standards toward the long-term maintenance and improvement of factors influencing the biology of the river. Information developed through implementing the Biomonitoring Plan may assist in decisions at the state level about management goals and standards in the Vermillion River Watershed. The VRWJPO will work with a consultant in 2015 to evaluate the existing monitoring site results in an effort to make necessary adjustments to further improve data gathering and information development.

- Partnering with other agencies to build a **wetland banking** system. The VRWJPO will participate in the restoration and process development of a wetland bank in the watershed. The goal is to use the initial investment to provide wetland credits for local government and developers to purchase, and using the proceeds to fund additional wetland restorations. A wetland bank is a multi-year planning proposition, but support among local government units is strong and the VRWJPO expects to see definitive progress in 2015.
- Promoting streambank buffers, vegetation, and tree planting to improve water quality by reducing erosion, filtering sediment and nutrients, reducing stream temperatures, and improving habitat. The VRWJPO has developed a **Trees Aiding Water Quality (TAWQ)** project/program, for which implementation funding is being sought in 2015.
- Increasing prospective **headwaters CIP projects** in the Scott County portion of the watershed, following the completion of the Vermillion River Headwaters Subwatershed Assessment. Scott County and Scott SWCD have identified and prioritized 24 potential BMP implementation projects.
- Building more relationships with diverse interests in the watershed and moving more people along a communication continuum from **water-quality awareness to involvement to action**. The VRWJPO has established an identity, multiple channels of communication, opportunities for civic engagement, and grant possibilities for groups taking action to improve the environment. In 2015, the VRWJPO plans to reach out to more individuals and groups. Strategies for achieving enhanced community engagement in 2015 include improving the VRWJPO website, providing more frequent e-newsletter updates, and promoting the Stewardship Grant program for local events and actions.
- Listening, learning, and paying attention to rapidly evolving water regulation, science, technology, and **high-profile issues**. In 2014, groundwater quality and quantity concerns dominated public discussion in the watershed. Through that discussion, both citizens and environmental agencies learned and processes improved. In 2015, the “hot topic” could be aquatic invasive species, streambank buffers, emerging contaminants, new water-quality standards, drought, or bioreactors. Even if these issues are not within the VRWJPO’s authorities, they provide opportunities to talk about water quality and quantity and collectively find creative solutions.

## FINAL 2014 VRWJPO BUDGET AND WORK PLAN

Category	Budget Item	Amount
Administrative	1) Administrator and Specialist	130,000
	2) Scott County Staff Time	8,000
	3) Other Dakota County Staff Time	30,000
	4) Legal Support	25,000
	5) Miscellaneous Expenses (Per Diem, Mileage, Postage)	9,000
	6) Training, Conferences, Certifications	3,000
	7) Office Equipment Purchases	3,000
	<b>Subtotal</b>	<b>208,000</b>
Monitoring and Data Analysis	1) Vermillion River Monitoring Network (Dakota)	
	a) Staff Time (Sampling, Maintenance, Downloading)	31,000
	b) Data Analysis, Database Management, Reporting	16,000
	c) Water Quality Sample Analysis and QA/QC Samples	27,510
	d) Equipment and Supplies	11,000
	2) Vermillion River Monitoring Network (Scott)	13,500
	3) USGS Cost Share for Blaine Avenue Station	8,010
	4) DNR Flow Gaging Assistance	16,000
	5) Biomonitoring Plan	
	a) Biological and Habitat Assessments	13,000
	b) Electrofishing	18,000
	6) South Branch Groundwater Study	3,000
	7) Ambient Groundwater Study (Alternate Years)	0
	8) Monitoring Program Review and Evaluation	13,000
	9) Lower Vermillion Turbidity Monitoring	7,000
	<b>Subtotal</b>	<b>177,020</b>
Public Outreach and Education	1) Communication and Outreach Staff	50,000
	2) Wetland Health Evaluation Program Cost Share	3,000
	3) Vermillion River Watch Program	13,000
	4) Vermillion River Stewards	25,000
	5) Scott County Outreach Efforts	5,025
	6) Vermillion River Signage, Map Updates	5,000
	7) Newsletter, Mailings, Web Site, Communication Materials	25,000
	8) Blue Thumb Workshops	25,200
	9) Children's Water Festival Support	1,000
	10) Watershed Partners	5,000
	11) Watershed Tour	1,500
	12) South Branch Initiative BMP Marketing	20,000
	13) Building Inspectors Workshop	3,250
	<b>Subtotal</b>	<b>181,975</b>
Inventory Assessment	1) General GIS Support	12,000
	2) Scott SWCD Inventories and GIS Support	8,000
	3) Scott County Staff	2,000
	<b>Subtotal</b>	<b>22,000</b>

Category	Budget Item	Amount
Capital Improvement Projects	1) Rosemount Cost Share	76,280
	2) Cost Share Programs in Dakota County (SWCD)	147,000
	a) Encumbered 2013 Dakota County Projects (SWCD)	0
	3) Cost Share Programs in Scott County (SWCD)	40,900
	a) Encumbered 2013 Scott County Projects (SWCD)	0
	4) Buffer and Floodplain Easements 2014	200,000
	5) South Creek Restoration Projects	35,000
	6) Cost Share Competitive Grants	600,000
	<b>Subtotal</b>	<b>1,099,180</b>
Feasibility/Preliminary Studies	1) Design of Restoration Projects in South Creek, Headwaters	75,000
	2) Preliminary Design, Tech. Asst, Marketing (Dakota SWCD)	40,000
	3) Preliminary Design, Tech. Asst., Marketing (Scott SWCD)	20,000
	4) South Branch Bioreactors	10,000
	5) Watershed-wide WRAPS	20,000
	6) South Branch Wetland Restoration Design	10,000
	<b>Subtotal</b>	<b>175,000</b>
Evaluation and Policy	1) Dakota SWCD Incentive Program Policy Assistance	4,000
	2) Scott County Staff	5,000
	3) VRWJPO Staff	30,000
	4) Plan Development Support	25,000
	<b>Subtotal</b>	<b>64,000</b>
Regulatory Review and Regulation	1) Dakota SWCD Assistance with Plan Review	20,000
	2) Scott SWCD Assistance with Plan Review	1,000
	3) Implementation of Peak Flow Rate Standards (Local Asst.)	90,000
	4) Engineering Assistance and Review	15,000
	5) Scott County Assistance and Review	2,000
	6) VRWJPO Local Program Assistance	35,000
	7) Regulatory Program Evaluation and Review	25,000
	<b>Subtotal</b>	<b>188,000</b>
Coordination with Other Agencies	1) Coordination Efforts by Scott County SWCD	2,725
	<b>Subtotal</b>	<b>2,725</b>
BWSR Clean Water Fund Grant, Rosemount/Flint Hills	1) Administration, Management, Coordination, Reporting (Carryover)	25,000
	2) Construction, BMPs, Stabilization (Carryover)	100,000
	<b>Subtotal</b>	<b>125,000</b>
Vermillion River WRAPS	1) Administration, Management, Reporting, Coordination	10,000
	2) Civic Engagement	30,000
	3) Sample Collection, Equipment Installation, Maintenance	5,000
	<b>Subtotal</b>	<b>45,000</b>
Total Expenditures		<b>2,287,900</b>
Cash Reserve		<b>734,683</b>
TOTAL ANNUAL EXPENSES		<b>3,022,583</b>

## 2014 FINANCIAL STATEMENT

Dakota County, Minnesota

### Statement of Revenues, Expenses, and Changes in Fund Balance

Vermillion River Watershed

For the Year Ending December 31, 2014

Revenues	
Dakota County Levy	\$861,518
Scott County Levy	
Interest on Investments	23,253
Permits	530
Intergovernmental	74,694
TOTAL REVENUE	\$959,995
Expenditures	
Administrative	
Evaluation/Policy Development	
Monitoring/Data Analysis	
Public Outreach/Communication	
Coordination with Other Agencies	
Regulatory Review/Regulation	
Inventory/Assessment	
Feasibility/Preliminary Studies	
Capital Improvement Projects	
TOTAL EXPENSES	\$926,383
Excess of Revenue Over/Under Expenses	\$33,612
Other Financing Sources	
Net Change in Fund Balance	\$33,612
Fund Balance January 1, 2014	\$1,953,184
Fund Balance December 31, 2014	\$1,986,796





## APPENDIX I: REQUESTS FOR QUALIFICATIONS AND REQUESTS FOR PROPOSALS

The VRWJPO issued one Request for Qualifications in 2014 to develop a consultant list for fiscal years 2014-2015.

### **VRWJPO Request for Qualifications (RFQ): Engineering and Environmental Professional Services**

The Vermilion River Watershed Joint Powers Organization (VRWJPO) uses outside consultants to provide Engineering and Environmental professional services for water resources management projects.

The VRWJPO Board is requesting any firm interested in providing services to the VRWJPO, submit in electronic pdf format, a letter of interest, a list of related work/projects/clients, a list of key personnel and their qualifications, and a current fee schedule. Information should be limited to four (4) pages total. Those firms selected will be placed in a pool of professional service consultants for the calendars years 2014-2015.

Contact Travis Thiel at (952) 891-7546 or the email address below if you have questions about the RFQ. Information must be submitted no later than 4:00 p.m. Friday, April 11<sup>th</sup>, 2014 to:

[travis.thiel@co.dakota.mn.us](mailto:travis.thiel@co.dakota.mn.us)



## APPENDIX II: VERMILLION RIVER MONITORING NETWORK 2014 REPORT SUMMARY

(See [www.vermillionriverwatershed.org](http://www.vermillionriverwatershed.org) for the complete report after June 1, 2015.)

### **Monitoring Network Summary, *Jessica Van der Werff, Dakota SWCD***

The Vermillion River Monitoring Network is extensive; it spans more than a decade and includes strategically placed stations throughout the watershed (see map and Table 1). A wide variety of chemical, physical, and biological parameters are monitored with relatively high frequency (see Table 2). With this broad and powerful dataset, the Vermillion River Watershed Joint Powers Organization (VRWJPO) has been able to thoroughly characterize the Vermillion River and its tributaries through the annual Vermillion River Monitoring Network Report and the soon-to-be-finalized Watershed Restoration and Protection Strategies. This summary attempts to capture the water quality conclusions of those reports, but cannot replace the detailed analysis and interpretation in the full versions of the reports. Visit [www.vermillionriverwatershed.com](http://www.vermillionriverwatershed.com) to access the most recent updates of these reports.

### ***Weather***

Spring 2014 was wetter than average while late summer and fall saw the opposite, with below average rainfall and low stream flow. At the Minneapolis/St. Paul airport, the 30-year average precipitation for April through October was 24.20 inches and the 2014 precipitation total for April through October was 30.02 inches. In June, the rainfall total was more than double the 30-year average, totaling 11.36 inches. The uncharacteristically wet spring caused the annual precipitation amount to be above average, even with a dry summer and fall. Since weather plays a big role in interpreting the health of a stream, flow is continuously monitored at all active stations.

### ***Chemical Monitoring***

Annual and historical data are used in combination to fully understand long term trends. Many of the monitored parameters are within standards and indicate a healthy condition in the Vermillion River and tributaries. Non-ionized ammonia ( $\text{NH}_3$ ) can be particularly toxic to fish and macroinvertebrates (aquatic bugs and other animals without backbones), and measurements in the Vermillion River are very low. Another form of nitrogen called nitrate ( $\text{NO}_3$ ) is also quite low, except at one station on the South Branch of the Vermillion River which has a significant pollutant load compared to other stations in the network. High nitrate levels in drinking water pose a human health risk and also stress aquatic biota. The other primary nutrient monitored is phosphorus, which is at an acceptable level for most monitoring stations, except during spring snowmelt. Phosphorus is a limiting nutrient for plants, meaning that if it becomes available, plants (including algae) will use it to grow in size and/or number. Chlorophyll, which is used as a proxy to measure algal biomass, is generally very low at all stations. Lastly, pH levels at each station are within an acceptable range. Although pH is not considered a pollutant itself, it can serve as an indicator for other pollutants' potential to cause damage to aquatic plants and animals.

Some parameters were detected at undesirable levels. *Escherichia coli* (*E. coli*) bacteria levels are high in many streams of southeast Minnesota and the Vermillion River and its tributaries are no exception. Additionally, *E. coli* bacteria pose a human health risk. While nitrate levels are meeting the drinking water standard at all sites, high levels measured at the station on the South Branch of the Vermillion River (Station SB802) are of concern and are likely related to the agricultural land use and coarse-textured soils that dominate the contributing subwatershed. Nitrate leaches into the ground and is carried to the stream through shallow groundwater. Further analysis of nitrate data in the South Branch of the Vermillion River suggests that nitrate pollution is on the rise. Low dissolved oxygen concentrations and high levels of suspended solids (contributing to turbidity, i.e., cloudy water) following runoff events were also common stressors at several sites.

### **Temperature**

Since the Vermillion River is home to a thriving brown trout population, there is great interest in maintaining cold water temperatures suitable for a healthy brown trout fishery. Many of the monitoring stations in the network are on cold water reaches of the river and its tributaries and thus, specific summer (June through August) temperature criteria for brown trout can be applied. Two stations, VR24 and VR803 (see map) are considered warm water reaches and are not compared against these temperature criteria. For most stations, median temperatures are optimal or tolerable; however, it is not uncommon for temperatures to spike into a temperature range which leads to a high mortality rate. During July in particular, stream temperatures approached the brown trout chronic exposure limit (Bell, 2006).

### **Biological Monitoring**

The MPCA developed biological indices to evaluate the health of the macroinvertebrate community in the Vermillion River. Results for 2014 are mixed, indicating a healthy macroinvertebrate community at some sites, such as the DNR Wildlife Management Area (an area on the Vermillion main stem where a stream restoration was completed). Other sites indicate impairment due to low species diversity and an abundance of pollution-tolerant species. Habitat assessments were completed using the MPCA's Minnesota Stream Habitat Assessment protocol to further evaluate and understand the biological integrity of various stream reaches. These assessments revealed that most sites have a score of 'fair' with three of the 12 sites earning a consistent score of 'good'.

### **Conclusions**

The Vermillion River has some areas with good water quality, but there is a lot of room for improvement, particularly with regard to sources of nitrogen, low dissolved oxygen, *E. coli* bacteria, temperature, and suspended solids that contribute to cloudy water. By measuring each of these parameters individually, along with the health of the biological community, we can better understand the impact of various pollutants, gauge our successes in water resource management, and plan for future restoration and protection efforts. A Water Restoration and Protection Strategy (WRAPS) is currently being finalized by the Vermillion River Watershed Joint Powers Organization (VRWJPO), with funding from the Minnesota Pollution Control Agency, which will help to identify stressors to the aquatic community, identify sources of impairment, and develop strategies for remediation.

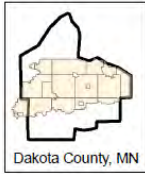


**Table 1. Station Names and General Locations**

Station Name	Location Description
VR24	Vermillion River and County 46 (Scott County)
SC806	South Creek at Flagstaff Avenue
VR804	Vermillion River and 220 <sup>th</sup> Street
VR807	Vermillion River and Denmark Avenue
NC808	North Creek upstream of Middle Creek
NC801	North Creek downstream of Middle Creek
SB802	South Branch of Vermillion River and County 66
VR803	Vermillion River and Goodwin Avenue

**Table 2. 2014 Monitoring Activities**

	Number of Active Stations	Frequency of Monitoring (Field season goes from spring snowmelt through November 1)	Total Samples Collected in 2014
<b>Chemical Monitoring</b>			
Dissolved Oxygen	8	biweekly plus runoff events	178
pH	8	biweekly plus runoff events	177
Specific Conductance	8	biweekly plus runoff events	179
Total Phosphorus	8	biweekly plus runoff events	179
Total Dissolved Phosphorus	8	biweekly plus runoff events	179
Chlorophyll	8	biweekly plus runoff events	178
Ammonia (Unionized)	8	biweekly plus runoff events	177
Total Nitrogen	8	biweekly plus runoff events	178
Organic Nitrogen	8	biweekly plus runoff events	179
Nitrate	8	biweekly plus runoff events	178
Nitrite	8	biweekly plus runoff events	178
Total Suspended Solids	8	biweekly plus runoff events	179
Total Suspended Volatile Solids	8	biweekly plus runoff events	179
Turbidity	8	biweekly plus runoff events	179
<b>Temperature and Flow Monitoring</b>			
Temperature and Flow	8	continuous (15 minute intervals)	~200,000
<b>Biological Monitoring</b>			
<i>Escherichia coli</i> ( <i>E. coli</i> ) bacteria	8	biweekly plus runoff events	177
Aquatic Macroinvertebrates	12	once in September	12
Habitat Assessments	12	once in September	12

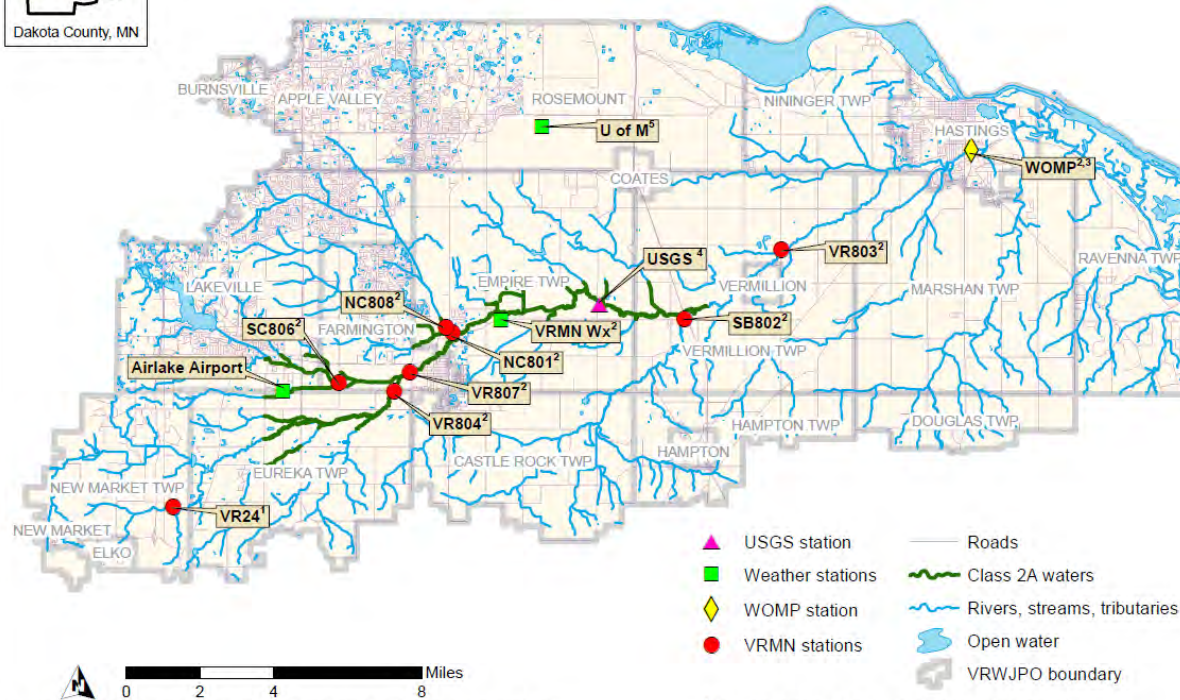


# Vermillion River Monitoring Network

## Chemistry/Flow Stations and Weather Stations



Dakota County Soil & Water  
Conservation District  
Copyright: Dakota SWCD, 2013



This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data located in various City, County, and State Offices and other sources, affecting the area shown, and is to be used for reference purposes only. Dakota County SWCD is not responsible for any inaccuracies herein contained. If discrepancies are found please contact the Dakota County Soil & Water Conservation District at 651.480.7777.

- <sup>1</sup> Monitored by Scott Soil and Water Conservation District
- <sup>2</sup> Monitored by Dakota County Soil and Water Conservation District
- <sup>3</sup> Owned by Metropolitan Council
- <sup>4</sup> Owned by United States Geological Survey
- <sup>5</sup> Owned by University of Minnesota

## APPENDIX III: STEWARDSHIP GRANT GUIDELINES

### Stewardship Grant Guidelines

*Letters of interest accepted year-round beginning January 1, 2015*

#### Vermillion River Watershed Joint Powers Organization

The Vermillion River Watershed Joint Powers Organization (VRWJPO) values and encourages efforts to protect, restore, manage and improve water resources in the watershed. The VRWJPO's Stewardship Grant program promotes water quality improvement by focusing on short-term events and activities. Stewardship Grants support local, specific, community-based action to protect and improve lakes, rivers, streams, wetlands, and habitat in the Vermillion River Watershed. These grants are not intended to provide permanent or on-going funding.

Events and activities funded through a Stewardship Grant should build community understanding, knowledge, and initiative related to water and natural resource issues and solutions. Events and activities should educate and engage people in the watershed and improve or protect water quality. Applicants receiving grants will increase their capacity to lead and promote water quality improvement efforts. Sponsored events and activities may include water quality education, clean up events, planting native species, or invasive plant removal, etc.

If an event/activity does not fit these guidelines, contact the VRWJPO to discuss the idea and type of support your group is seeking. Actions required by local, watershed, state, or federal agencies to comply with permits, rules, or legal requirements are not eligible for funding under this program.

#### Eligible Applicants

An applicant is eligible to receive one grant within one budget year (Jan. 1 through Dec. 31). The following are eligible to apply for a Stewardship Grant:

- Community and civic organizations, including faith-based organizations
- Non-profit organizations
- Neighborhood groups, including condominium or lake associations
- Schools
- Local units of government
- Business and professional associations

#### Geographic location

Sponsored events and activities should educate and engage people who live, learn, work, and/or recreate in the Vermillion River Watershed. Vermillion River Watershed Joint Powers Organization-sponsored events and activities must be located in the Vermillion River Watershed.

## Criteria

The following criteria should be used when planning an event/activity:

- The purpose is clear and aligned with watershed goals
- The work tasks are clearly stated and will lead to successful outcomes
- The timeline and budget are reasonable, cost effective, leverage other in-kind or cash contributions if possible, and do not exceed \$5,000 – the maximum grant amount
- The event/activity educates, engages, benefits and inspires people in the Vermillion River Watershed
- The event activity contributes to lasting changes, improved choices, or further action.

## Maximum Grant Amount

Eligible applicants may apply for any grant amount covering event/activity costs up to \$5,000. Larger projects may be eligible for funding as a Capital Improvement Project.

## How to Apply for a Stewardship Grant

- A. Submit a Letter of Interest. Applications may be submitted year-round. The letter should include:
  1. Contact Information
    - The primary applicant organization's legal name, if applicable
    - Contact person's name and title, address, phone, email
    - Name of grant signatory (the person authorized to sign a legal grant agreement on behalf of the organization/group), title and address
    - Primary applicant's website, if applicable
    - Names of partners, if applicable
  2. Description of the applicant (and any partners), and why they are interested in this event/activity.
  3. Description of the event/activity, including:
    - Who (who is involved, who is affected, and who is leading it)
    - What (what activities will take place)
    - Where (list the specific geographic area involved)
    - When (provide a brief timeline) , and
    - Why (importance of the event/activity)
  4. How will this event/activity improve water quality or natural resources? Describe how the event/activity is appropriate in size and scale for the selected area. Attach a design or plan, if applicable.
  5. How will this event/activity build community understanding, knowledge, and initiative related to water and natural resource issues and solutions?

6. How will you know if the event/activity is successful? Describe plans for evaluating the event/activity.
7. Attach a detailed cost estimate including matching funds or other resources including in-kind support dollar value estimates (time, volunteers, supplies, equipment, for example). How much money are you requesting? How will the money be used? Will the applicant be able to complete the event/activity if full funding is not received from the VRWJPO?

B. Attend a Vermillion River Watershed Joint Powers Board meeting to request the grant.

Email your Letter of Interest to [paula.liepold@co.dakota.mn.us](mailto:paula.liepold@co.dakota.mn.us). You will receive an email confirmation that your Letter of Interest was received and information on the Vermillion River Watershed Joint Powers Board meetings.

If you are unable to send your Letter of Interest by email, you may mail it or submit it in person to:

Vermillion River Watershed Joint Powers Organization  
Dakota County Western Service Center – 3<sup>rd</sup> Floor  
14955 Galaxie Ave.  
Apple Valley, MN 55124

### **Evaluation Criteria**

VRWJPO staff will review applications to determine grant eligibility, value to the watershed, and grant amount. Staff has the discretion to reject any application it believes does not accomplish watershed goals. The Vermillion River Watershed Joint Powers Board will make the final determination on grant awards and amounts at its monthly meetings.

### **Reimbursement of grant funds**

Once an application is approved, a grant agreement will be prepared by the Vermillion River Watershed Joint Powers Organization and sent to the person authorized to sign a grant agreement. The grant agreement will outline obligations of the recipient and the Vermillion River Watershed Joint Powers Organization. For events/activities with a three-month or greater lead-time, successful applicants may receive 50 percent of the total award prior to the event or activity; the remaining funds will be reimbursed up to the agreed-upon amount for documented costs. For those with less than a three-month lead time, recipients will receive a reimbursement up to the agreed-upon amount for documented costs.

### **Expectations**

Stewardship Grant award recipients are expected to:

- Acknowledge the Vermillion River Watershed Joint Powers Organization as a source of funds in publications, media coverage, and other public materials.



- Use the Vermillion River Watershed Joint Powers Organization logo, where appropriate. The logo is available for download from the Vermillion River Watershed website – [www.vermillionriverwatershed.org](http://www.vermillionriverwatershed.org).
- Submit a final report (form will be provided) summarizing the event or activity, number of attendees/participants, etc., include pictures if possible.

Questions: contact Paula Liepold, Water Resource Educator, Environmental Resources Department, Dakota County at [paula.liepold@co.dakota.mn.us](mailto:paula.liepold@co.dakota.mn.us) or 952-891-7117.

## **APPENDIX IV: FACT SHEETS ON CAPITAL IMPROVEMENT PROJECTS, WRAPS IN THE WATERSHED 2014**

### **Dakota SWCD and Blue Thumb**

- ❑ 13-IPP-06: Sauber Grassed Waterway, Eureka Township
- ❑ 14-IPP-08: Tix Grassed Waterway, Vermillion Township
- ❑ 13-IPP-10: McNab Water and Sediment Control Basins, Eureka Township
- ❑ 14-CIF-02: Riverview Elementary Raingarden, Farmington
- ❑ Hegg Residential Raingarden, Apple Valley
- ❑ Kelash Residential Raingarden, Apple Valley
- ❑ Jayawardena Shoreline Planting, Apple Valley
- ❑ Vigesaa Residential Native Garden, Farmington
- ❑ Nelson Residential Native Garden, Hampton
- ❑ McGregor Residential Raingarden, Hastings
- ❑ Peterson Residential Raingarden, Hastings
- ❑ Nelson Residential Raingarden, Lakeville
- ❑ Clayburn Residential Raingarden, Lakeville
- ❑ Perry Residential Native Raingarden, Lakeville
- ❑ Mills Residential Raingarden, Lakeville
- ❑ Schulz Residential Raingarden, Lakeville

### **VRWJPO Projects**

- ❑ Rosemount/Flint Hills Ravine Restoration
- ❑ Lake Marion Nutrient and Sediment Reduction Project (project completed 12/13)

### **WRAPS Frequently Asked Questions**

- ❑ Impaired Waters and the Watershed Restoration and Protection Strategy (WRAPS)



**JOHN SAUBER**

## GRASSED WATERWAY



### PRACTICE:

- Grassed Waterway

### BENEFITS:

- 16 tons of soil saved per year from traveling downstream
- 8 lbs. of phosphorous saved per year from traveling downstream

### PARTNERS:

- Vermillion River Watershed Joint Powers Organization
- Minnesota Board of Water and Soil Resources
- USDA - Natural Resources Conservation Service

### WATERSHED & RECEIVING WATERS:

- Vermillion River

### INSTALLATION:

- Fall 2014

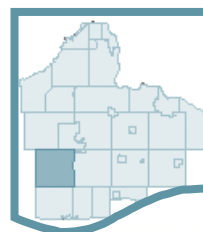
**PROJECT:** 100' of new grassed waterway will be constructed, and 400' of existing grassed waterway will be rebuilt to repair a 500'-long gully.

<b>FUNDING:</b>	<b>Total Project Cost:</b>	<b>\$1,839</b>
	<b>State:</b>	<b>\$1,125</b>
	<b>Landowner</b>	<b>\$714</b>



*Clean Water Fund:*  
*Protecting and restoring*  
*Minnesota's waters for*  
*generations to come.*

**LOCATION:**  
Eureka Township







Waterway prior to reconstruction, looking north towards 225th St. (2013)



Waterway after reconstruction, looking south west towards Dodd Blvd. (2014)



Waterway prior to reconstruction, looking south west towards Dodd Blvd. (2013)



Waterway after reconstruction, looking south west towards Dodd Blvd. (2014)



Waterway prior to reconstruction, looking south towards Dodd Blvd. (2013)



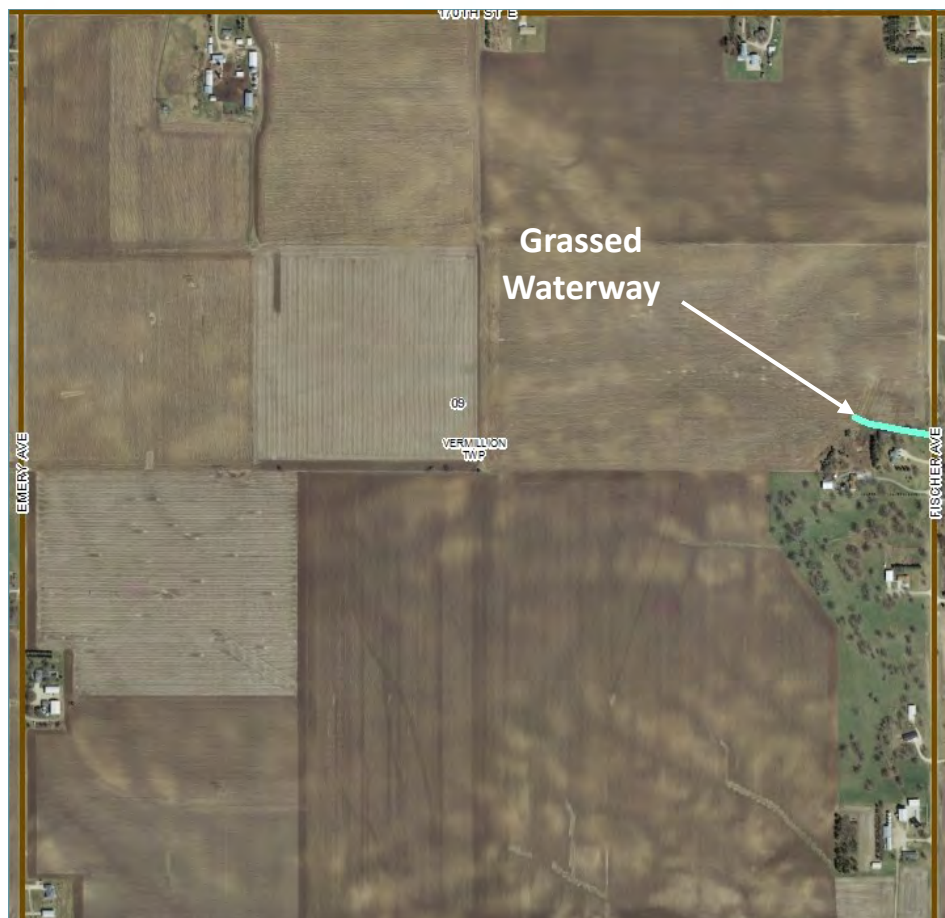
Waterway after reconstruction, looking north towards 225th St. (2014)





**ANTHONY TIX**

## GRASSED WATERWAY



### PRACTICE:

- Grassed Waterway

### BENEFITS:

- 80 tons of soil per year prevented from traveling downstream
- 116 lbs. of phosphorous per year prevented from traveling downstream

### PARTNERS:

- Vermillion River Watershed Joint Powers Organization
- USDA - Natural Resources Conservation Service

### WATERSHED

- Vermillion River

### RECEIVING WATERS:

- Vermillion River

### INSTALLATION:

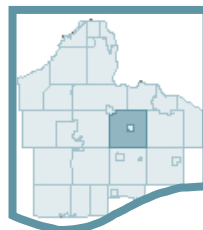
- Fall 2014

**PROJECT:** 450 feet of grassed waterway was established. The main channel was dormant seeded and stabilized with erosion control blanket.

<b>FUNDING:</b>	<b>Project Cost:</b>	<b>\$6,838</b>
	<b>Local Watershed:</b>	<b>\$4,125</b>
	<b>Landowner:</b>	<b>\$2,713</b>

### LOCATION:

Vermillion Township



**ANTHONY TIX**

# GRASSED WATERWAY

**DAKOTA COUNTY**



— SOIL & WATER —  
CONSERVATION DISTRICT



Final graded grassed waterway during seeding, looking west

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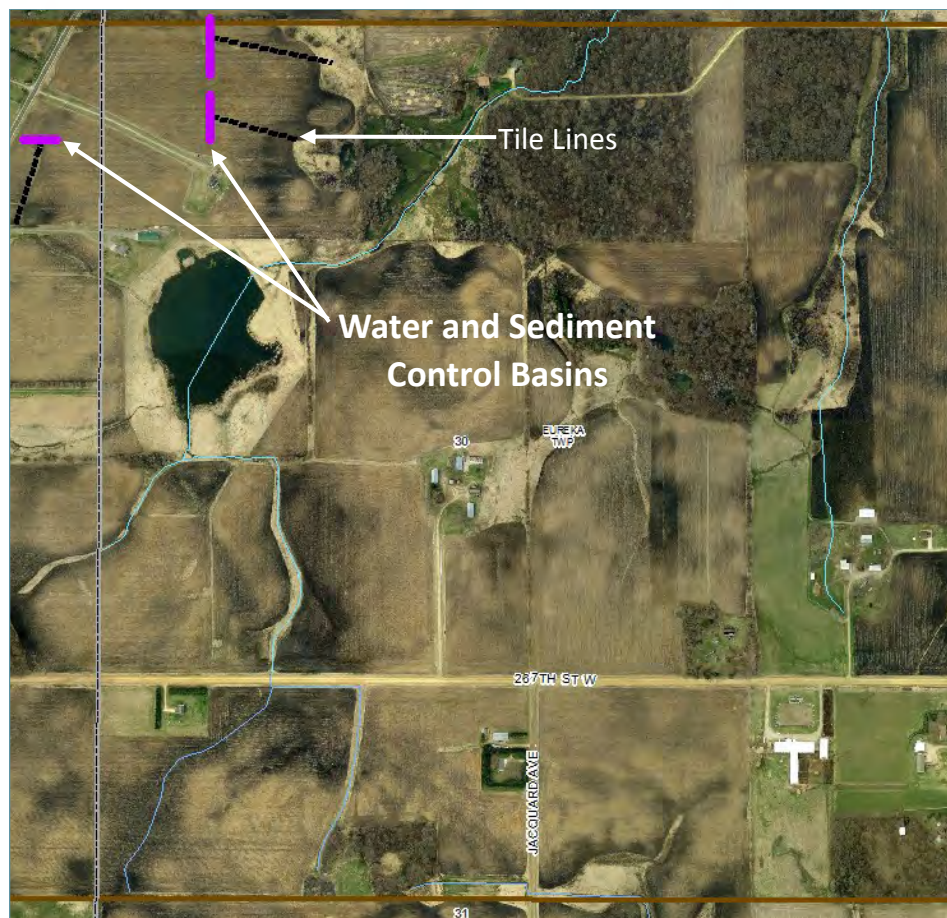


Final graded spoils site, looking northwest

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# DEBRA McNAB WATER & SEDIMENT CONTROL BASINS



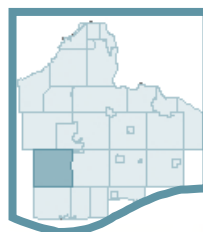
**PROJECT:** Construction of three new water and sediment control basins with tile outlets to eliminate gullies as large as 200 feet long by 3 feet wide by 0.5 feet deep which formed during heavy rain events.

<b>FUNDING:</b>	<b>State Clean Water Fund:</b>	<b>\$6,750</b>
	<b>Landowner:</b>	<b>\$4,559</b>
	<b>Total Estimated Cost:</b>	<b>\$11,309</b>



*Clean Water Fund:*  
*Protecting and restoring*  
*Minnesota's waters for*  
*generations to come.*

**LOCATION:**  
Eureka Township



## PRACTICE:

- Water and Sediment Control Basins (WASCOBs)

## BENEFITS:

- 58 tons per year of soil saved from traveling downstream
- 13 lbs per year of phosphorous saved from traveling downstream

## PARTNERS:

- Vermillion River Watershed Management Organization
- Minnesota Board of Water and Soil Resources
- USDA - Natural Resources Conservation Service

## WATERSHED AND RECEIVING WATERS:

- Vermillion River

## INSTALLATION:

- Summer 2014

# DEBRA McNAB

## WATER & SEDIMENT CONTROL BASINS



Photo 1 - North basins looking northeast after installation

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Photo 2 - North basins looking northeast after installation

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West basin looking east after installation

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# FARMINGTON AREA PUBLIC SCHOOLS

## RIVERVIEW ELEMENTARY RAINGARDEN



A raingarden is a shallow depression that captures rainwater, removes pollutants, and allows the water to soak into the ground



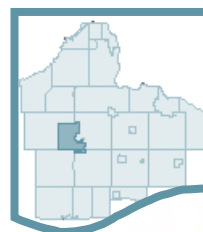
**PROJECT:** A 560 square foot raingarden was installed to capture and infiltrate runoff from the rooftop and adjacent landscaped areas.

<b>FUNDING:</b>	<b>Total Project Cost:</b>	<b>\$4,715</b>
	<b>Local Watershed:</b>	<b>\$3,065</b>
	<b>Landowner:</b>	<b>\$1,650</b>



**Clean Water Fund:**  
*Protecting and restoring  
Minnesota's waters for  
generations to come.*

**LOCATION:**  
208th Street West  
Farmington, MN



### PRACTICE:

- Stormwater Runoff Control (Raingarden)

### BENEFITS:

- Runoff volume reduction
- Phosphorus and sediment prevented from traveling downstream
- Improved water quality
- Opportunity for public outreach and education

### PARTNERS:

- Vermillion River Watershed Joint Powers Organization
- Minnesota Board of Water and Soil Resources

### WATERSHED:

- Vermillion River

### RECEIVING WATERS:

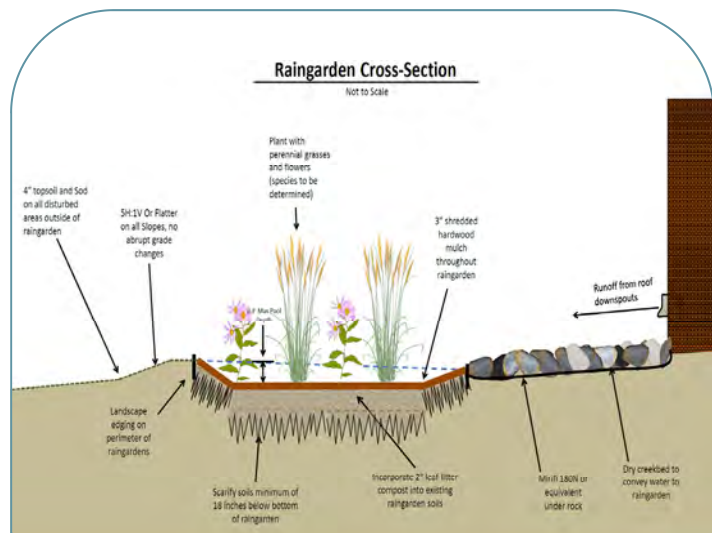
- Vermillion River

### INSTALLATION:

- Fall 2014

# FARMINGTON AREA PUBLIC SCHOOLS

## RIVERVIEW ELEMENTARY RAINGARDEN



The raingarden is designed to direct runoff from the roof downspouts, through a dry creekbed, and into the raingarden.



Existing sod was removed and grading was completed with an excavator located outside of the basin to avoid compaction of the underlying soils.



Soils were amended with compost and the basin was graded to create a shallow depression.



The raingarden was planted with native perennial plants that will also provide pollinator habitat.



HEGG

# RESIDENTIAL RAINGARDEN

DAKOTA COUNTY



— SOIL & WATER —  
CONSERVATION DISTRICT



BEFORE

A raingarden is a shallow depression that captures rainwater, removes pollutants, and soaks the water into the ground



AFTER

**PROJECT:** Installation of a 180 square foot residential raingarden

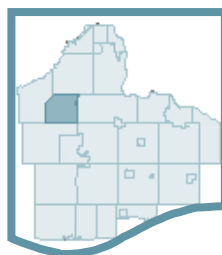
**COST:** Project materials costs estimated at \$1,141

**FUNDING:** Landowners receive a \$250 Blue Thumb grant as well as technical assistance provided by the Dakota County SWCD



**LOCATION:**

Finch Way  
Apple Valley, MN



**PROJECT:**

- Residential raingarden

**BENEFITS:**

- Runoff volume reduction
- Improved water quality
- Improved wildlife habitat
- Opportunity for public education and outreach
- Improved aesthetics

**PARTNERS:**

- Vermillion River Watershed Joint Powers Organization

**WATERSHED:**

- Vermillion River

**RECEIVING WATERS:**

- Long Lake

**INSTALLATION:**

- Summer 2014



## KELASH

# RESIDENTIAL RAINGARDEN

DAKOTA COUNTY



— SOIL & WATER —  
CONSERVATION DISTRICT



BEFORE

A raingarden is a shallow depression that captures rainwater, removes pollutants, and soaks the water into the ground



AFTER

**PROJECT:** Installation of a 160 square foot residential raingarden

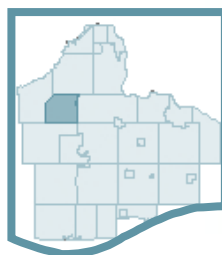
**COST:** Project materials costs estimated at \$1,543

**FUNDING:** Landowners receive a \$250 Blue Thumb grant as well as technical assistance provided by the Dakota County SWCD



### LOCATION:

Ethelton Way  
Apple Valley, MN



### PROJECT:

- Residential raingarden

### BENEFITS:

- Runoff volume reduction
- Improved water quality
- Improved wildlife habitat
- Opportunity for public education and outreach
- Improved aesthetics

### PARTNERS:

- Vermillion River Watershed Joint Powers Organization

### WATERSHED:

- Vermillion River

### RECEIVING WATERS:

- Long Lake

### INSTALLATION:

- Summer 2014





# JAYAWARDENA SHORELINE PLANTING



Shoreline planting is the use of native vegetation to protect a shoreline from existing or potential erosion



**PROJECT:** Installation of a 900 square foot residential raingarden

**COST:** Project materials cost estimated at \$1050

**FUNDING:** Landowners receive a \$250 Blue Thumb grant as well as technical assistance provided by the Dakota County SWCD

## PROJECT:

- Residential shoreline planting

## BENEFITS:

- Shoreline stabilization and erosion reduction
- Improved water quality
- Improved wildlife habitat
- Opportunity for public education and outreach
- Improved aesthetics

## PARTNERS:

- Vermillion River Watershed Joint Powers Organization

## WATERSHED:

- Vermillion River

## RECEIVING WATERS:

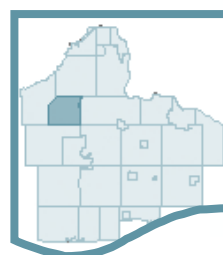
- Long Lake

## INSTALLATION:

- Fall 2014



**LOCATION:**  
Embry Way  
Apple Valley, MN







## VIGESAA

# RESIDENTIAL NATIVE GARDEN



BEFORE

A native garden, also called natural landscaping, uses plants, trees and grasses that are suitable for growth in a particular geographical area



AFTER

**PROJECT:** Installation of a 400 square foot residential native garden

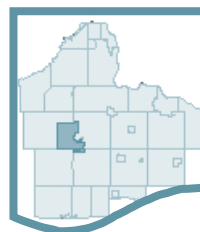
**COST:** Project materials cost estimated at \$865

**FUNDING:** Landowners receive a \$250 Blue Thumb grant as well as technical assistance provided by the Dakota County Soil and Water Conservation District



### LOCATION:

Upper 204th St. W  
Farmington, MN



### PRACTICE:

- Residential native garden

### BENEFITS:

- Runoff volume reduction
- Improved water quality
- Improved wildlife habitat
- Opportunity for public outreach and education
- Improved aesthetics

### PARTNERS:

- Vermillion River Watershed Joint Powers Organization

### WATERSHED:

- Vermillion River

### RECEIVING WATERS:

- Vermillion River

### INSTALLATION:

- Summer 2014

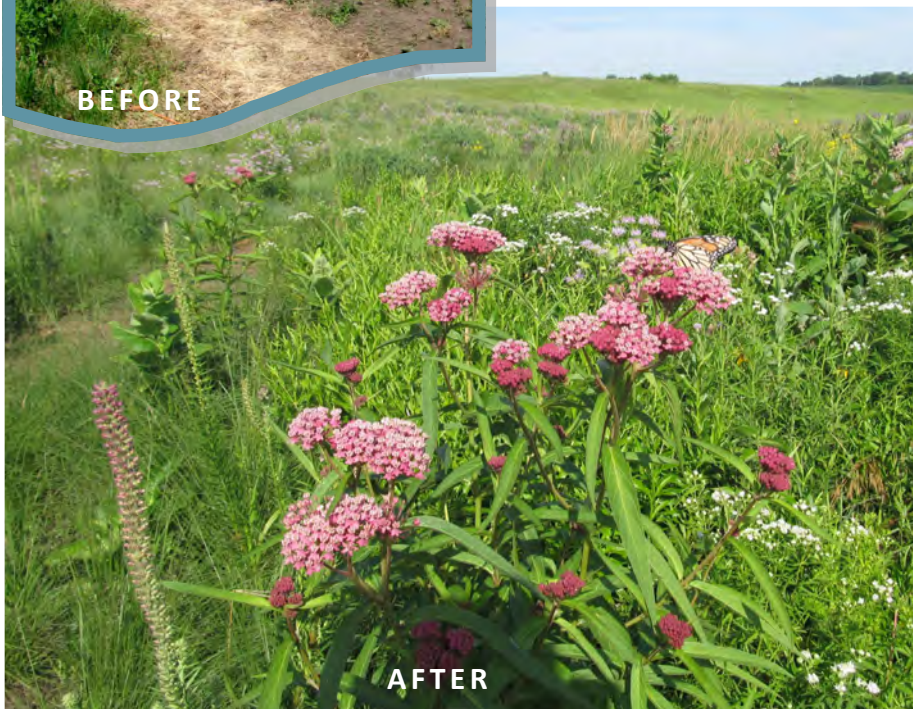


# NELSON

## RESIDENTIAL NATIVE GARDEN



A raingarden is a shallow depression that captures rainwater, removes pollutants, and soaks the water into the ground



**PROJECT:** Installation of a 240 square foot residential native garden

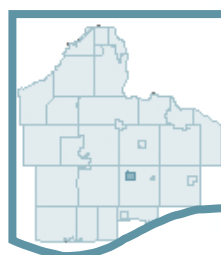
**COST:** Project materials cost estimated at \$540.00

**FUNDING:** Landowners receive a \$250 Blue Thumb grant as well as technical assistance provided by the Dakota County SWCD



**LOCATION:**

Northfield Blvd.  
Hampton, MN



**PROJECT:**

- Residential native garden

**BENEFITS:**

- Runoff volume reduction
- Slope stabilization
- Improved wildlife habitat
- Opportunity for public education and outreach
- Improved aesthetics

**PARTNERS:**

- Vermillion River Watershed  
Joint Powers Organization

**WATERSHED:**

- Vermillion River

**RECEIVING WATERS:**

- Vermillion River

**INSTALLATION:**

- Fall 2014

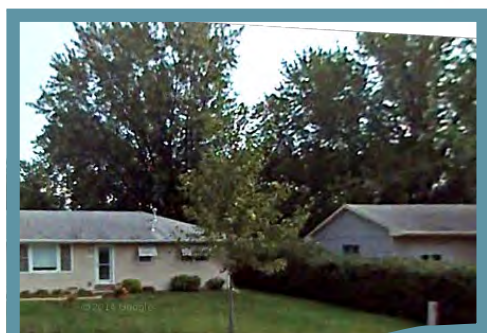






## MCGREGOR

# RESIDENTIAL RAINGARDEN



BEFORE

A raingarden is a shallow depression that captures rainwater, removes pollutants, and soaks the water into the ground



AFTER

**PROJECT:** Installation of a 180 square foot residential raingarden

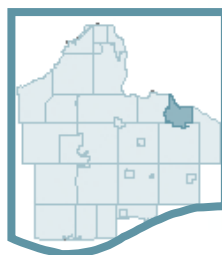
**COST:** Project materials cost estimated at \$344

**FUNDING:** Landowners receive a \$250 Blue Thumb grant as well as technical assistance provided by the Dakota County SWCD



**LOCATION:**

Maple Street  
Hastings, MN



**PRACTICE:**

- Residential raingarden

**BENEFITS:**

- Runoff volume reduction
- Improved water quality
- Improved wildlife habitat
- Opportunity for public education and outreach
- Improved aesthetics

**PARTNERS:**

- Vermillion River Watershed Joint Powers Organization

**WATERSHED:**

- Vermillion River

**RECEIVING WATERS:**

- Vermillion River

**INSTALLATION:**

- Summer 2014





# PETERSON RESIDENTIAL RAINGARDEN



BEFORE

A raingarden is a shallow depression that captures rainwater, removes pollutants, and soaks the water into the ground



AFTER

**PROJECT:** Installation of a 145 square foot residential raingarden

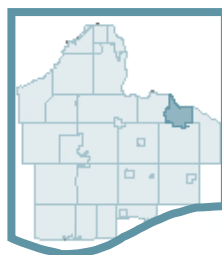
**COST:** Project materials cost estimated at \$885

**FUNDING:** Landowners receive a \$250 Blue Thumb grant as well as technical assistance provided by the Dakota County SWCD



**LOCATION:**

Roosevelt Road  
Hastings, MN



**PRACTICE:**

- Residential raingarden

**BENEFITS:**

- Runoff volume reduction
- Improved water quality
- Improved wildlife habitat
- Opportunity for public education and outreach
- Improved aesthetics

**PARTNERS:**

- Vermillion River Watershed Joint Powers Organization

**WATERSHED:**

- Vermillion River

**RECEIVING WATERS:**

- Lake Rebecca

**INSTALLATION:**

- Summer 2014





## NELSON

# RESIDENTIAL RAINGARDEN



BEFORE

A raingarden is a shallow depression that captures rainwater, removes pollutants, and soaks the water into the ground



AFTER

**PROJECT:** Installation of a 250 square foot residential raingarden

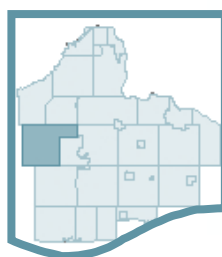
**COST:** Project materials cost estimated at \$830.00

**FUNDING:** Landowners receive a \$250 Blue Thumb grant as well as technical assistance provided by the Dakota County SWCD



**LOCATION:**

Icon Trail  
Lakeville, MN



**PROJECT:**

- Residential raingarden

**BENEFITS:**

- Runoff volume reduction
- Improved water quality
- Improved wildlife habitat
- Opportunity for public education and outreach
- Improved aesthetics

**PARTNERS:**

- Vermillion River Watershed Joint Powers Organization

**WATERSHED:**

- Vermillion River

**RECEIVING WATERS:**

- North Creek

**INSTALLATION:**

- Fall 2014





## CLAYBURN

# RESIDENTIAL RAINGARDEN



BEFORE

A raingarden is a shallow depression that captures rainwater, removes pollutants, and soaks the water into the ground



AFTER

**PROJECT:** Installation of a 282 square foot residential raingarden

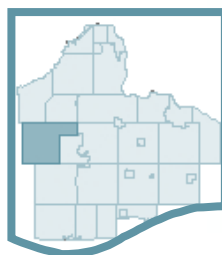
**COST:** Project materials cost estimated at \$623.00

**FUNDING:** Landowners receive a \$250 Blue Thumb grant as well as technical assistance provided by the Dakota County SWCD



**LOCATION:**

Himalaya Ave.  
Lakeville, MN



**PROJECT:**

- Residential raingarden

**BENEFITS:**

- Runoff volume reduction
- Improved water quality
- Improved wildlife habitat
- Opportunity for public education and outreach
- Improved aesthetics

**PARTNERS:**

- Vermillion River Watershed Joint Powers Organization

**WATERSHED:**

- Vermillion River

**RECEIVING WATERS:**

- North Creek

**INSTALLATION:**

- Fall 2014







## PERRY

# RESIDENTIAL NATIVE RAINGARDEN

BEFORE



A raingarden is a shallow depression that captures rainwater, removes pollutants, and soaks the water into the ground



AFTER

**PROJECT:** Installation of a 200 square foot residential native garden

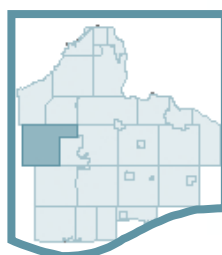
**COST:** Project material costs were estimated at \$390

**FUNDING:** Landowners received a \$250 Blue Thumb grant as well as technical assistance provided by the Dakota County Soil and Water Conservation District



**LOCATION:**

Inland Loop  
Lakeville, MN



**PROJECT:**

- Residential native raingarden

**BENEFITS:**

- Runoff volume reduction
- Improved water quality
- Improved wildlife habitat
- Opportunity for public education and outreach
- Improved aesthetics

**PARTNERS:**

- Vermillion River Watershed  
Joint Powers Organization

**WATERSHED:**

- Vermillion River

**RECEIVING WATERS:**

- North Creek

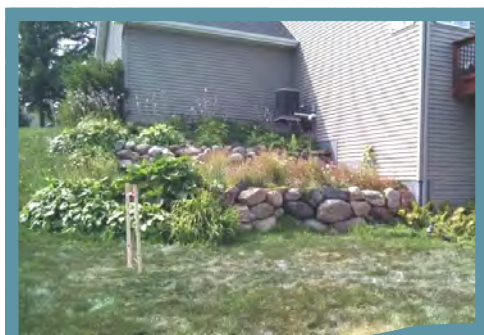
**INSTALLATION:**

- Fall 2014



# MILLS

## RESIDENTIAL RAINGARDEN



BEFORE

A raingarden is a shallow depression that captures rainwater, removes pollutants, and soaks the water into the ground



AFTER

**PROJECT:** Installation of a 150 square foot residential raingarden

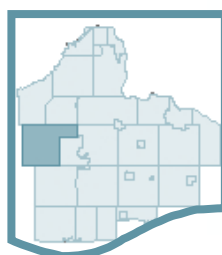
**COST:** Project materials cost estimated at \$356

**FUNDING:** Landowners receive a \$250 Blue Thumb grant as well as technical assistance provided by the Dakota County SWCD



**LOCATION:**

Jury Court  
Lakeville, MN



**PROJECT:**

- Residential raingarden

**BENEFITS:**

- Runoff volume reduction
- Improved water quality
- Improved wildlife habitat
- Opportunity for public education and outreach
- Improved aesthetics

**PARTNERS:**

- Vermillion River Watershed Joint Powers Organization

**WATERSHED:**

- Vermillion River

**RECEIVING WATERS:**

- Vermillion River

**INSTALLATION:**

- Fall 2014





## SCHULZ

# RESIDENTIAL RAINGARDEN



BEFORE

A raingarden is a shallow depression that captures rainwater, removes pollutants, and soaks the water into the ground



AFTER

**PROJECT:** Installation of a 253 square foot residential raingarden

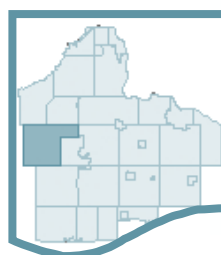
**COST:** Project materials cost estimated at \$1,284

**FUNDING:** Landowners receive a \$250 Blue Thumb grant as well as technical assistance provided by the Dakota County SWCD



**LOCATION:**

Hilldale Ave.  
Lakeville MN



**PROJECT:**

- Residential raingarden

**BENEFITS:**

- Runoff volume reduction
- Improved water quality
- Improved wildlife habitat
- Opportunity for public education and outreach
- Improved aesthetics

**PARTNERS:**

- Vermillion River Watershed Joint Powers Organization

**WATERSHED:**

- Vermillion River

**RECEIVING WATERS:**

- Vermillion River

**INSTALLATION:**

- Fall 2014





## Capital Improvement Project

# Rosemount/Flint Hills Ravine Restoration Project



Stormwater flowing through a culvert eroded a deep ravine into a steep bluff, contributing sediment to Spring Lake. A grade-control structure, a pond, an infiltration area and re-vegetation reduced sediment runoff.

Completed cooperatively by:

- City of Rosemount
- Flint Hills Resources
- VRWJPO
- Dakota SWCD
- Dakota County Parks Department
- Minnesota Dept. of Transportation



A grant from the Clean Water Fund, one of four funds established by the Clean Water, Land & Legacy Amendment, supported this project.

## Reducing sediment erosion to the Mississippi River

Water from an area near the interchange at U.S. Hwy 52 and Minnesota Hwy 55 was flowing through a culvert under a Union Pacific Railroad line and spilling onto a steep bluff face at the head of a ravine on property owned by Flint Hills Resources. The stormwater runoff accelerated erosion and ravine development and contributed sediment to Spring Lake and the Mississippi River.

Dakota County, Dakota Soil and Water Conservation District (SWCD), the City of Rosemount, the Minnesota Department of Transportation (MNDOT), Flint Hills Resources, and the Vermillion River Watershed Joint Powers Organization (VRWJPO) identified a solution: a grade control structure to convey water from the top of the bluff to the bottom, eliminating further erosion of the bluff face.

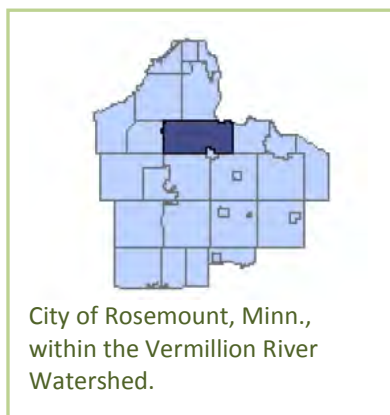
A pond located at the bottom of the structure dissipates energy, settles sediments, and promotes additional water retention. A weir structure on the upstream end of the culvert will help retain and provide for the infiltration of stormwater.

Sediment reduction to Spring Lake and the Lower Mississippi River is estimated at 82 tons/year.



*The project included a grade-control structure to take water from the top of the bluff to the bottom, where it flows into a pond designed to dissipate energy, settle sediments, and promote water retention.*

After



City of Rosemount, Minn., within the Vermillion River Watershed.



### Vermillion River Watershed Joint Powers Organization

14955 Galaxie Avenue  
Apple Valley, MN 55124  
[www.vermillionriverwatershed.org](http://www.vermillionriverwatershed.org)  
952-891-7000

The Vermillion River is a vital natural resource that is important to public health and recreation, as well as preserving unique wildlife habitats. It flows from New Market Township in Scott County, through residential and agricultural areas in central Dakota County, and cascades into a 100-foot ravine before it enters the Mississippi River near the Cities of Hastings and Red Wing, Minnesota. Throughout its journey, the river reflects urban and rural life within its 335-square mile watershed.

### Problem:

- Water from an area near the interchange of U.S. Hwy. 52 and Minn. Hwy. 55, flowing through a culvert under the Union Pacific Railroad, spilled onto a steep bluff face at the head of a ravine. This accelerated the head cut and ravine development and caused severe erosion and sediment transport to Spring Lake and the Mississippi River.

### Actions:

- Installed a grade-control structure that takes water from the top of the bluff to the bottom, eliminating flow from cutting into the ravine and transporting sediments downstream.
- Installed a weir at the upstream end of the culvert to retain and provide for the infiltration of stormwater.
- Installed a pond to dissipate energy at the bottom of the grade-control structure, settle additional sediments, and promote water retention.

### Benefits:

- Improving water quality by preventing an estimated 82 tons per year of sediment from flowing into Spring Lake and the Lower Mississippi River. The Lower Mississippi River is impaired for turbidity (suspended solids), and the project reduces sediment loading to the River.
- Stabilizing the bluff area where the Mississippi River Regional Trail, a paved biking trail, will be placed.

### Costs and contributions:

- Clean Water Fund: \$175,440 grant
- City of Rosemount: Engineering and construction management
- Vermillion River Watershed Joint Powers Organization: \$13,044 cost share
- Dakota County Parks: \$13,044 local match
- Minnesota Department of Transportation: \$18,942
- Flint Hills Resources: \$32,391 project land value match
- Dakota County Soil and Water Conservation District: Technical assistance

**Total project costs: \$252,861**

**Project completed July 2014**



## Capital Improvement Project

# Lakeville: Lake Marion Nutrient and Sediment Reduction Project



The storm sewer and three stormwater basins south of Lake Marion were reconfigured and one was updated with an iron-enhanced sand filter by the City of Lakeville to keep sediments, phosphorus, and nitrogen from draining to Lake Marion.

Completed cooperatively by:

- City of Lakeville
- Vermillion River Watershed Joint Powers Organization
- Dakota Soil and Water Conservation District

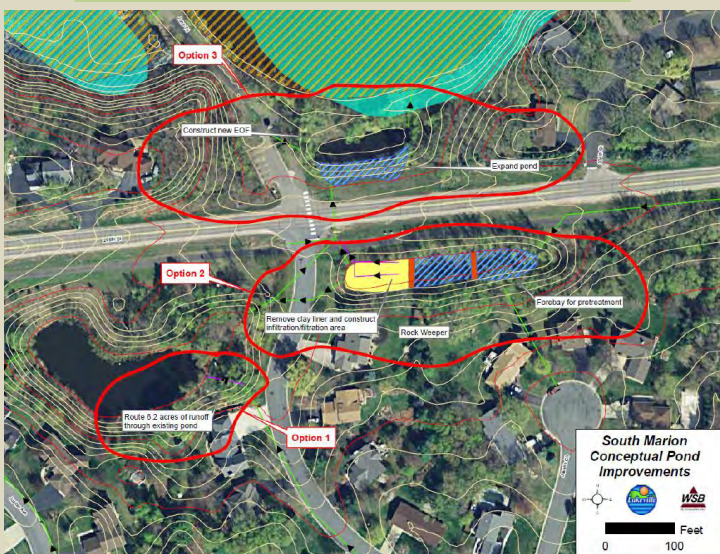
## Preserving water quality in Lake Marion

The City of Lakeville has been monitoring and implementing projects on Lake Marion for 15 years, and the water quality has been stable since 1994. To maintain this important natural resource, the city proposed a project to modify the storm sewer system and retrofit three stormwater ponds to reduce stormwater runoff and remove pollutants before they discharge into Lake Marion.

The three stormwater basins were installed with developments built in the 1980s and 1990s to handle runoff from a 73-acre residential area. The northern-most of the three basins discharges directly to Lake Marion.

The City proposed projects to improve stormwater runoff quality or quantity in all three ponds. These included:

- Redirecting 6.5 acres of stormwater runoff to the southwest pond. This oversized pond can retain and treat more stormwater than it currently receives.
- Reshaping the southeast pond into three cells and installing an iron-enhanced filtration area (shown in the yellow area in the aerial photo at left) in the one closest to Lake Marion. The iron-enhanced sand filter effectively removes dissolved phosphorus from stormwater, unlike traditional phosphorus treatments.
- Expanding the undersized north pond, reconfiguring its outlets to Lake Marion, and changing the emergency overflow. These changes prevent high water flows from scouring sediments and pollutants into the lake and allow for better treatment of pollutants.





*The iron-enhanced sand filter is an effective way to remove dissolved phosphorus from runoff.*



City of Lakeville, MN within the Vermillion River Watershed.



#### Vermillion River Watershed Joint Powers Organization

14955 Galaxie Avenue  
Apple Valley, MN 55124  
[www.vermillionriverwatershed.org](http://www.vermillionriverwatershed.org)  
952-891-7000

The Vermillion River is a vital natural resource that is important to public health and recreation, as well as preserving unique wildlife habitats. It flows from New Market Township in Scott County, through residential and agricultural areas in central Dakota County, and cascades into a 100-foot ravine before it enters the Mississippi River near the Cities of Hastings and Red Wing, Minnesota. Throughout its journey, the river reflects urban and rural life within its 335-square mile watershed.

#### Problem:

- Nutrients (phosphorus and nitrogen) in stormwater runoff pose a risk to the health of shallow lakes. Nutrients promote growth of algae and invasive plants, which then consume dissolved oxygen as plants and algae decompose.
- Lake Marion is not impaired for nutrients and has stable water quality. Preventing nutrients in runoff to Lake Marion protects existing water quality and will improve water quality over time.
- Stormwater basins south of Lake Marion provide some treatment of runoff, but substantial water-quality improvement is possible by re-routing stormwater, re-shaping the ponds, and installing new iron-enhanced sand filter technology.

#### Actions:

- Route additional runoff through the southwest pond.
- Expand the north pond, which is undersized, and re-configure its outlets and emergency overflow to prevent sediment and pollutant discharging into Lake Marion during high-flow events.
- Install an iron-enhanced sand filter in the southeast pond to remove phosphorus from runoff going into the lake.

#### Benefits:

- Improve water quality by reducing stormwater pollutants and runoff volume to Lake Marion.
- Reduce an estimated 1 million gallons of runoff volume, 1.5 tons of sediment, 10 pounds of phosphorus, and 32 pounds of nitrogen from entering Lake Marion each year.
- Implement the most cost-effective design that reduces the most pollutants per dollar spent.
- Provide a demonstration site to showcase water quality practices that reduce stormwater impacts to lakes.

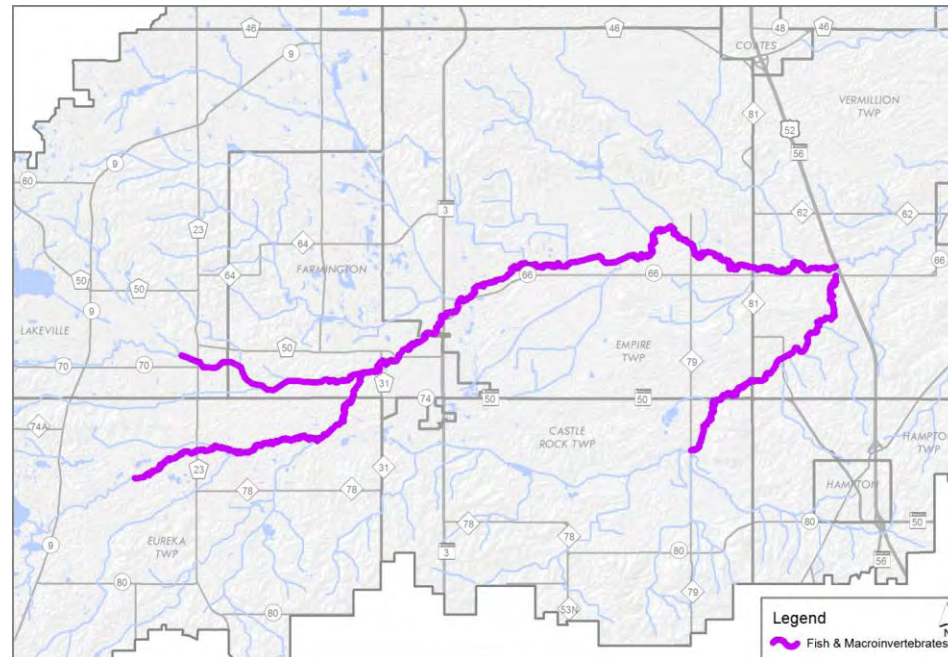
#### Costs and contributions:

- City of Lakeville: \$3,656 and in-kind planning, design, contracting, site preparation, installation.
- Vermillion River Watershed Joint Powers Organization: \$59,860 – cost share
- Dakota SWCD: technical assistance
- Clean Water Fund: \$50,000

**Project completed December 2013**



## FISH, MACROINVERTEBRATES



The Vermillion River Watershed has biotic impairments based on whether the water resource contains the right kind of living things in the right amounts for the type of water. Most reaches are impaired for fish and aquatic insects, others just for fish.

### VERMILLION RIVER WATERSHED JOINT POWERS BOARD

Commissioner Mike Slavik,  
Chair (Dakota County)

Commissioner Paul Krause,  
Vice-Chair (Dakota County)

Commissioner Tom Wolf,  
Secretary/Treasurer  
(Scott County)



### Vermillion River Watershed Joint Powers Organization

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952-891-7000

### Why should people care about restoring impaired waters?

Everyone who lives, works, or plays in the Vermillion River Watershed has an impact on its lakes and streams. Many communities benefit if the Vermillion River Watershed's impaired stream reaches and lakes are restored to a condition that is fishable, swimmable, and supports healthy aquatic life.

- Rivers and lakes buffer the effects of flood or drought on urban and rural property.
- Water resources support many kinds of life, including plants, bacteria, insects, fish, birds, and animals. These living things break down wastes, prevent soil erosion, clean the air, reduce pests, pollinate plants, serve as food, or otherwise benefit human populations.
- Rivers and lakes maintain or increase property values, boost the economic status of the community, and attract recreational users and businesses.
- Clean water resources are beautiful, attract wildlife, support healthy exercise and outdoor recreation, and improve the quality of life.

### For more information about:

- **The Vermillion River Watershed**, visit [www.vermillionriverwatershed.org](http://www.vermillionriverwatershed.org)
- **Impaired waters**, go to the MPCA website at [www.pca.state.mn.us](http://www.pca.state.mn.us), search "impaired waters"
- **E-mail notifications of events** or subscriptions to the VRWJPO newsletter, send an e-mail to [water@co.dakota.mn.us](mailto:water@co.dakota.mn.us)

Updated 03/2014



### Frequently Asked Questions #10



## Impaired Waters and the Vermillion River Watershed Restoration and Protection Strategy (WRAPS)

### Identifying causes of pollutants that 'impair' waters

Portions of the Vermillion River, its tributaries, and lakes in the Vermillion River Watershed are listed as "impaired" by the Minnesota Pollution Control Agency (MPCA) and the U.S. Environmental Protection Agency (EPA) under the federal Clean Water Act.

This frequently asked question (FAQ) sheet explains the term "impaired waters," and describes the study by the MPCA, the Vermillion River Watershed Joint Powers Organization (VRWJPO), and many partners to identify pollutant sources causing the impairments. The VRWJPO will develop a Watershed Restoration and Protection Strategy (WRAPS) to restore impaired waters to designated uses and prevent future impairments.

### What are 'impaired' waters?

The dictionary definition of impaired is "to make or cause to become worse; to diminish in ability, value, or excellence; to weaken or damage." Impaired waters are rivers, lakes, or streams that **do not meet one or more state water-quality standards** and are considered too affected for their designated uses.

### What are 'designated uses'?

Some designated uses for water bodies include consumption (drinking water, eating fish); aquatic recreation (swimming or canoeing, for example); and aquatic life (habitable conditions for fish, insects, and other species that live in the water).

### Who decides if waters are impaired?

The MPCA assesses water-quality data from rivers and lakes, brings a preliminary impaired waters list to the public for comment, then submits the draft list to the EPA. The EPA has final approval of the state's impaired waters list.

### Which rivers and lakes are impaired?

The Vermillion River Watershed has 16 stream reaches and six lakes that are currently listed as impaired. The maps on the following pages show existing impaired waters in the watershed.



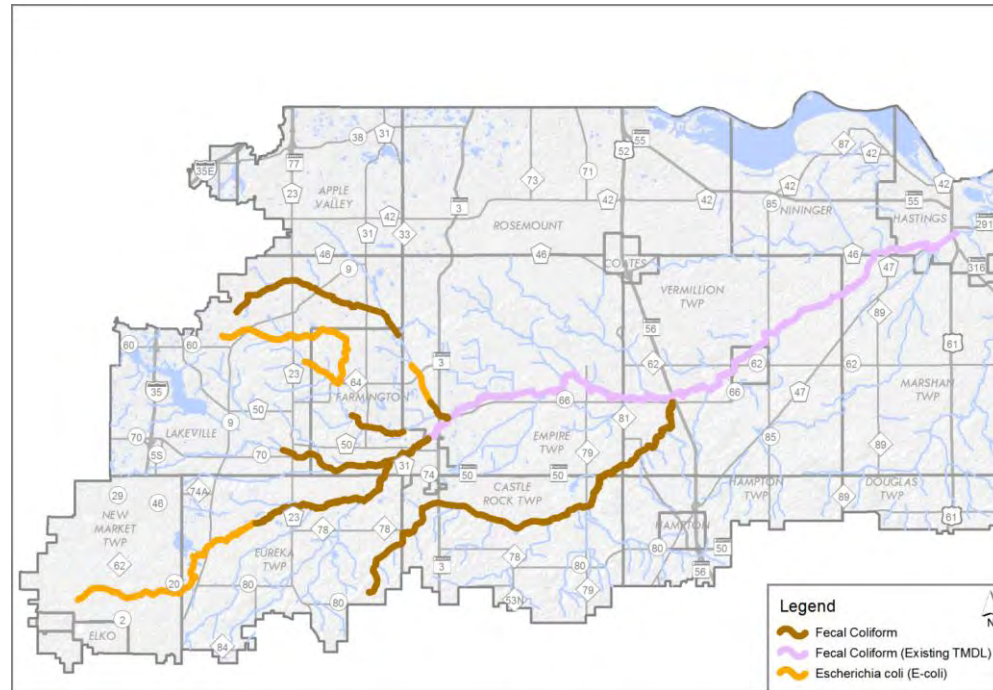
# Where are the current impairments in the Vermillion River Watershed?

(Note: These maps are at various scales, depending on the impairment)

## BACTERIA

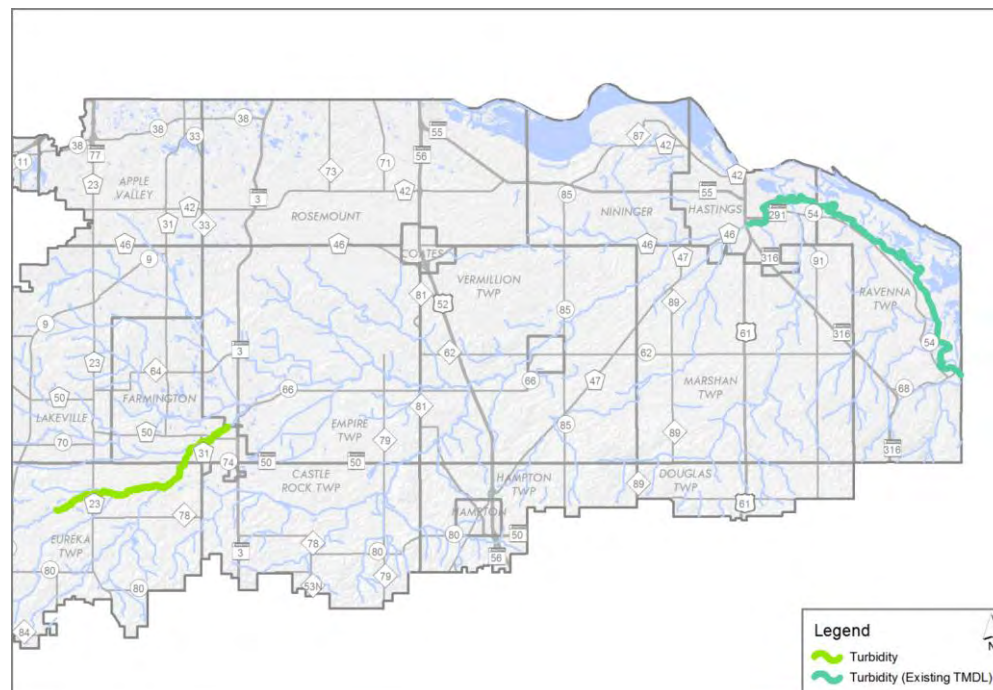
### Mercury and PCB Impairments

Some pollutants are widespread in the environment, including mercury (a toxic element) and polychlorinated biphenyls (PCBs), which are industrial chemicals. The Vermillion River Watershed has mercury and PCB impairments, including **Lake Marion** and **Lake Rebecca** (for mercury) and the Vermillion River from Hwy. 61 to the Mississippi River (for PCBs). These are being managed through a statewide plan, rather than the Watershed Restoration and Protection Strategy.



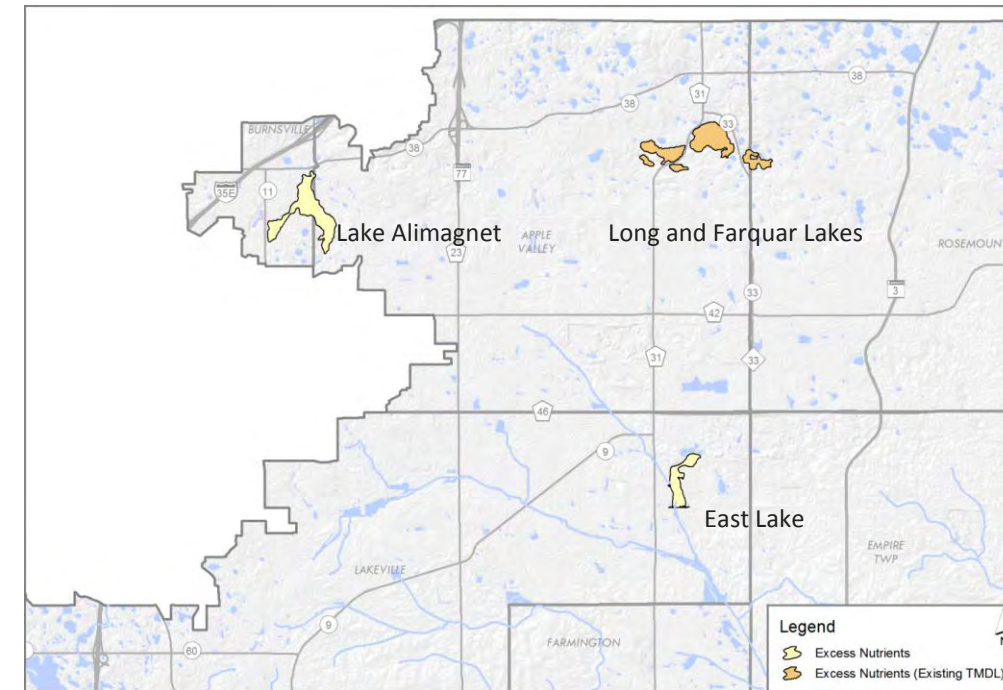
The most common pollutant causing impairment in the watershed is bacteria called fecal coliform. One type of fecal coliform, *Escherichia coli* or *E. coli*, originates in the intestines of warm-blooded organisms. When fecal coliform bacteria are at elevated levels, it indicates that other diseases that affect human health may also be present in the water.

## TURBIDITY



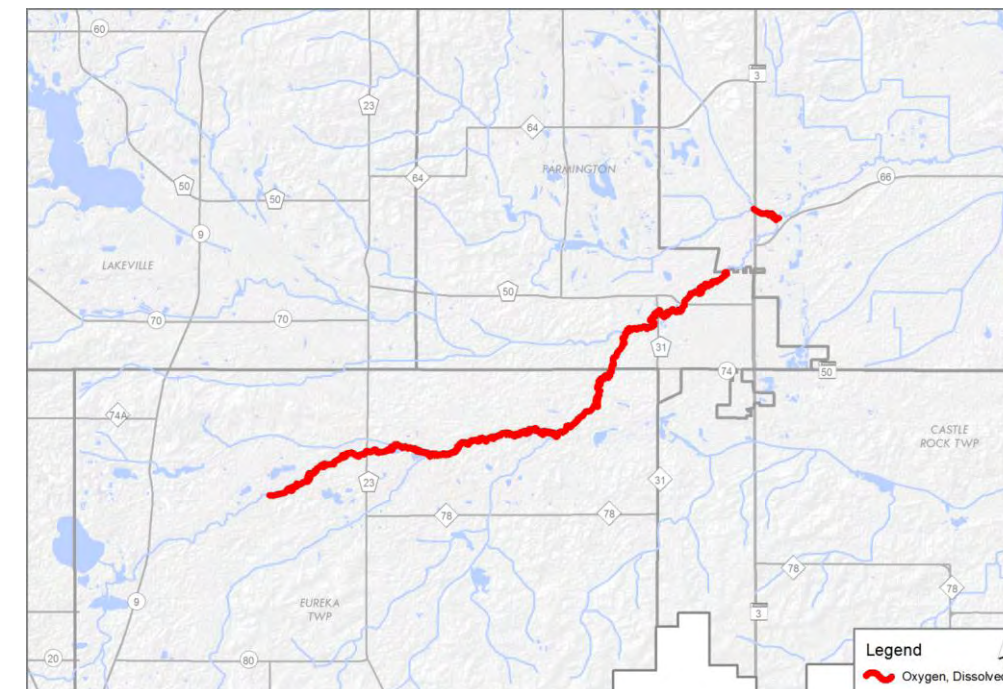
Turbidity is cloudiness or haziness in water caused by individual particles (typically suspended solids) that are generally invisible to the naked eye. Stormwater brings particles from land surfaces into water bodies. Viruses or bacteria can become attached to the suspended solid, increasing human health risk. High turbidity levels can block light from reaching lower depths of water bodies, inhibiting growth of submerged aquatic plants and other species dependent on those plants, such as fish or aquatic insects.

## EXCESS NUTRIENTS



Excessive nutrients, such as nitrate and phosphorus, are common pollutants in lakes. Nitrate pollution of groundwater affects drinking water safety. Nutrients in lakes stimulate overgrowth of algae and invasive plants. Excessive nutrients launch a cycle of deterioration in many lakes. Plants overgrow, die off, release nutrients, promote more growth, and increase turbidity, oxygen depletion, and algae blooms.

## DISSOLVED OXYGEN



If a river, lake, or stream does not have enough dissolved oxygen, fish and other aquatic organisms are stressed and less able to live and reproduce. Wastewater from sewage treatment plants often contains organic materials that are broken down by microorganisms, which use oxygen in the process. Other sources of oxygen-consuming waste include stormwater runoff from farmland or urban streets, feedlots, and failing septic systems.

## The WRAPS Process to Restore Impaired Waters

The Watershed Restoration and Protection Strategy will be based on a thorough study to determine pollutant sources and set goals to restore impaired waters and prevent future water quality impairments.

In Phase 1 of the study, the VRWJPO is investigated **what pollutants cause stress to fish and other aquatic species** and **what are the sources** of those pollutants. Further study will look at possible sources and pathways to water for nutrients (phosphorus, nitrate) and bacteria (*E. coli* and fecal coliform). The entire study is anticipated to be complete in 2014.

The next step will be comparing to calculate **how much a pollutant load has to be reduced** to achieve the water-quality standard. This calculation, called the Total Maximum Daily Load (TMDL), must be made for every pollutant. The **goal** must be met before an impaired water can be removed from the impaired waters list.

The final step will be developing a plan to restore and protect the river and lakes, including **strategies and actions** to achieve the goals for each pollutant or protect waters that already meet the goals. The MPCA approves the draft WRAPS, which also goes through public comment before becoming final.

## **APPENDIX V: PUBLISHED COMMUNICATION (REQUIRED BY PART 8410.0100, SUBPART 4)**

- ▣ VRWJPO Newsletter, Spring 2014
- ▣ VRWJPO Newsletter, Fall 2014







## Spring 2014 Newsletter

### Joint Powers Board

Commissioner Mike Slavik, Chair  
Commissioner Paul Krause, Vice-Chair  
Commissioner Tom Wolf, Treasurer

Meetings are held on the fourth Thursday of each month (except November), 1-3 p.m., at the Dakota County Western Service Center in Apple Valley.

### Watershed Planning Commission

- Joe Beattie, Chair
- Ron Mullenbach, Vice Chair
- Jackie Dooley
- John Glynn
- Andrew Stehr
- Lance Twedt
- Greg Cuomo
- Mark Henry
- Vacant (Scott County)

Meetings are held on the second Wednesday of each month, 4-6 p.m., Dakota County Western Service Center in Apple Valley.

### Vermillion River Watershed Staff

- Mark Zabel, Administrator (Dakota Co.)
- Melissa Bokman, Co-administrator (Scott Co.)
- Travis Thiel, Watershed Specialist
- Katherine Carlson, Water Resources Specialist

### Vermillion River Watershed Joint Powers Organization

14955 Galaxie Ave.  
Apple Valley, MN 55124  
952-891-7000

[www.vermillionriverwatershed.org](http://www.vermillionriverwatershed.org)

## Weigh in on the watershed

*Joint Powers Organization seeks public opinions on 10-year plan*

The Vermillion River Watershed Joint Powers Organization (VRWJPO) is looking for public input to develop the next 10-year watershed plan to improve water quality and overall health of the watershed.

The public were invited to attend “community conversation” workshops this spring. More workshops will take place this summer.

Community conversations offer opportunities for people living in the watershed to express their views about water resource issues and priorities. The first round of meetings was on issues and priorities. Each meeting will include discussions of possible strategies to achieve water resource goals. The Joint Powers Organization Board will consider citizen input into the 2015 watershed plan. The Joint Powers Board members are always open to hearing feedback and are specifically asking for public's input on the next generation plan.

More workshops will take place this summer. Stay informed of the dates for the next round of workshops by emailing [water@co.dakota.mn.us](mailto:water@co.dakota.mn.us) or calling 952-891-7000. To learn more, visit [www.vermillionriverwatershed.org](http://www.vermillionriverwatershed.org).

## Strategies for tackling the turbidity problem

The VRWJPO Watershed Restoration and Protection Strategy (WRAPS) investigation identified major causes of impairment in the watershed's rivers, streams, and lakes. It will take time to fully develop strategies to restore and protect impaired waters, but things can be done now to work on the major pollutant stress in the watershed: turbidity.

Turbidity, or cloudiness of water caused by suspended materials, is the primary factor affecting the river and tributaries' biological populations, such as fish and macroinvertebrates. Suspended materials primarily originate from sediments, with smaller amount coming from yard waste, algae, and other debris. These materials can clog vital habitat, affect aquatic species' ability to find food, cause physical damage to aquatic species, prevent sunlight from reaching aquatic plants, and cause other harmful effects. Reducing the amount of turbidity-causing materials that reach the streams is vital for improvement.

Turbidity reductions identified in the WRAPS will be both voluntary and regulatory. The WRAPS will allocate specific turbidity reduction targets to both urban and rural communities. In this case, the urban communities will be required within their MPCA approved

See next page



## **Tackling turbidity**, continued from pg. 1

stormwater permits to reduce discharged sediment by a certain percentage, based on calculations about how much each city contributes to overall load. Most cities are already working to reduce sediments and other solids with strategies such as street sweeping, construction site erosion control, and vegetation strips along waterways. Rural communities will also be allocated a reduction, and will be expected to meet the targets through voluntary best management practices, such as cover crops, reduced/no-till farming, and grassed waterways.

The VRWJPO eagerly wants to work with landowners, both urban and rural, to develop and implement solutions that can help reduce turbidity and restore impaired rivers, streams, and lakes. Programs are in place and more are being developed to provide landowners with technical assistance, cost-share, and financing options. Targeted outreach will also be employed to inform the public about the problems, and how to adopt behavior and install practices to improve our waters. If you have an interest in doing your part, please contact Watershed staff to discuss possible solutions for your property. Contact the VRWJPO at 952-891-7000, or send an email to [water@co.dakota.mn.us](mailto:water@co.dakota.mn.us).

### **Make a splash – as a Watershed Planning Commissioner from Scott County**

The Vermillion River Watershed Joint Powers Board (VRWJPB) is seeking applicants from Elko New Market and New Market Township in Scott County for one vacant seat on the Vermillion River Watershed Planning Commission (WPC). The WPC advises the VRWJPB about water quality and quantity issues, policies, and projects in the watershed. The nine-member commission represents the citizens in communities within the watershed. Commissioners serve a three-year term and attend monthly meetings. To apply for the position, visit the Vermillion River Watershed website ([www.vermillionriverwatershed.org](http://www.vermillionriverwatershed.org)) and search *planning commission*, click the following link <http://www.vermillionriverwatershed.org/watershed-planning-commission>, or call 952-891-7546.

## **Reducing erosion in Rosemount/Flint Hills ravine**

The Clean Water Fund provided a grant of \$244,000 to solve serious erosion problems in the City of Rosemount. Water from an area near the interchange at U.S. Hwy 52 and Minnesota Hwy 55 was flowing through a culvert under a Union Pacific Railroad line and spilling onto a steep bluff face at the head of a ravine. The stormwater runoff accelerated the erosion and ravine development and contributed sediment to Spring Lake and the Mississippi River.

Dakota County, Dakota County Soil and Water Conservation District (SWCD), the City of Rosemount, the Minnesota Department of Transportation (MNDOT), Flint Hills Resources, and the Vermillion River Watershed Joint Powers Organization (VRWJPO) identified a solution: a grade control structure to convey water from the top of the bluff to the bottom, eliminating further erosion of the bluff face. Ponds located at the bottom of the structure reduce scour, settle additional sediments, and promote additional water retention. A weir structure on the upstream end of the culvert will help retain and infiltrate stormwater.

Sediment reduction to Spring Lake and the Lower Mississippi River is estimated at 82 tons/year.



**Runoff from the pipe shown in this photo carved a ravine that allowed sediment to flow into the Mississippi River.**

## ‘Making university research practical and useful’

The Vermillion River Watershed Planning Commission’s (WPC’s) newest member, Greg Cuomo, brings substantial agricultural research and outreach experience to his citizen advisory role. Agriculture is a way of life in the watershed, but expanding urban development exerts pressure on land and water resources, as does the preservation of green space. The WPC is one of many places that Cuomo wants to hold “respectful and thoughtful discussions” about how to balance those values.

Cuomo is the division head of the University of Minnesota College of Food, Agricultural and Natural Resource Sciences (CFANS), where he provides oversight, strategic direction, and leadership for six regional Research and Outreach Centers, as well as the Cloquet Forestry Center, Sand Plain Research Farm and Hubacek Wilderness Research Center.



**Greg Cuomo,  
Watershed Planning  
Commissioner**

“People have passionate views about water and land rights,” Cuomo says, “and finding a place to hold a conversation is essential.” The research and outreach sites Cuomo oversees allow scientists to test their theories on the ground – and invite agricultural producers and citizens to see and discuss the results. This strategy leads to conversation and conversation can lead to change. “Farmers are trying to do the right things,” Cuomo says.

Balancing the needs of agriculture, urban development, and green space will be a challenge facing the VRWJPO in the future. As an organization with both regulatory and outreach responsibilities, the VRWJPO must separate those approaches and be clear what role it plays. Finally, with changes in the demographics of farmers, new technologies, and the sizable investment it takes to operate a farm, it is likely that farms will continue to become either larger to be able to afford the financial challenges or smaller to provide for specialized markets.

In a water state like Minnesota, where rivers, lakes, and streams are integrated into our values and culture, Cuomo has the skills and tools to help the VRWJPO succeed.

## Real estate deal: low-cost workshop on septic systems

Dakota County and the University of Minnesota Water Resource Center are hosting a **Septic Systems Workshop for Real Estate Agents and Appraisers** on Wednesday, April 23, 8:30 a.m. – 12:30 p.m., at the Dakota County Western Service Center, 14955 Galaxie Avenue, Apple Valley.

Attend this workshop to better understand onsite sewage treatment and be fully prepared to answer questions from home buyers and sellers. Earn 4.0 real estate continuing education credits, approved by the Minnesota Department of Commerce. Training topics will include onsite sewage treatment basics, illegal systems, local issues relating to property transfer, regulatory overview, disclosure and compliance inspections, and private well water test requirements.

Cost is \$30 and pre-registration and payment are required by April 16, or as soon as possible. Contact Michael Rutten at [michael.rutten@co.dakota.mn.us](mailto:michael.rutten@co.dakota.mn.us) or 952-891-7008 for more information.

## Water quality improved but river and few lakes are still impaired

One of the low points in the history of the Vermillion River occurred in 1957, when it was called “a depository for sewage and... gutted by erosion,” by Richard Dorer, State of Minnesota Conservation Department. “To think the Vermillion River used to be a wonderful trout fishing and smallmouth bass paradise. And look at it now – it’s a disgrace, an insult to intelligence and a blight upon the landscape.” In the 1950s, rivers throughout the country were polluted or dying, and the first Earth Day in 1970 was a wake-up call to the nation.

### Clean Water Act

The Clean Water Act was the direct result of the public demand for clean water. The 1972 Clean Water Act (CWA) is the primary federal law governing water pollution. Prior to 1972, many major river systems and lakes received toxic discharges from industries and raw sewage from wastewater treatment plants, called “point” or end-of-pipe pollutant sources. The CWA made it unlawful to discharge any pollutant from a point source into navigable waters without a permit. The federal point source permit restricted how much of each pollutant coming out of the pipe was allowed each year. The CWA spurred dramatic improvement in water quality; many rivers and lakes considered dead or dying gradually recovered.

### Stormwater pollution

Rainfall washes pollutants from land surfaces: roads, farm fields, urban roofs, parking lots, parks, construction sites, or animal feedlots. Stormwater runoff is nonpoint source water pollution, which is as widely distributed as rain itself. Nonpoint source water pollution is urban, rural, agricultural, residential, recreational, commercial, industrial, and governmental.

If the water meets standards and is safe for fishing, swimming, recreation, or wildlife, it is considered clean. If the water does not meet standards for its designated use, it is classified as impaired. Despite substantial improvements in the Vermillion River Watershed since the 1950s, the river and a few lakes are still impaired for several pollutants.

### What does this mean for the Vermillion River?

The VRWJPO is identifying possible sources of nonpoint source water pollutants and determining how they are getting into the watershed’s streams and lakes. The next step is calculating how much a pollutant load has to be reduced to achieve the water quality standard. This calculation, called a Total Maximum Daily Load (TMDL), is determined for every pollutant. When the river, stream, or lake meets the pollution reduction goal, it can be removed from the impaired waters list.

To bring the Vermillion River Watershed’s water bodies into compliance with the Clean Water Act, the VRWJPO will need the creative ideas and responsible choices of people who care about the health of rivers, lakes, and streams. This Earth Day, play a role in improving water resources in your area. Find out how at [www.vermillionriverwatershed.org](http://www.vermillionriverwatershed.org), search *impaired waters*. Or contact the VRWJPO at [water@co.dakota.mn.us](mailto:water@co.dakota.mn.us), phone 952-891-7000.

## Spring mix! Events include clean-ups, bird sightings, and garden plans

Now that the “snowmageddon” of winter 2013-14 is over, it’s time for spring cleaning, spring planting, and enjoying all of the rites of spring. Here are some opportunities to go out and play.

- **Blue Thumb: Planting for Clean Water Workshops (Dakota or Scott County)**

Install your own raingarden to add beauty to your yard while collecting stormwater runoff from your roof, lawn, and driveway. Learn more and register at Dakota County Soil and Water Conservation District, (651) 480-7777 or Scott SWCD, (952) 492-5425.

**Prior Lake** – Thursday, May 8, 7-8:30 pm.

**Farmington** - Wednesday, June 4, 2014, 6:15-8 p.m.

- **Hastings Area Birding Festival**

Celebrate the arrival of spring by learning about our region’s many bird species. The theme is Landscaping for Wildlife. Highlights include classes and talks, bird-banding demonstrations, guided bird trips, and a Youth Big Day Birding Competition. Fee is \$2.50 per person, or \$10 per person with a box lunch.

Saturday, April 19, 2014, 8 a.m.-5 p.m., Carpenter Nature Center, 12805 St. Croix Trail

Call the Carpenter Nature Center at (651) 437-4359 to register.

- **City of Lakeville Watershed Cleanup Day and Earth Day Celebration**

Join the City of Lakeville for an Earth Day tradition of cleaning up debris from the City’s trails, roadways, parks, and waterways. Volunteers receive a light lunch, a T-shirt (while supplies last), and participate in the Earth Day celebration to learn more about helping the earth and earn some cool earth-friendly prizes as well. All ages welcome, groups or individuals.

Saturday, April 26, 2014, 9-11:30 a.m., lunch and celebration 11:30 a.m.-1 p.m.

Central Maintenance Facility, 7570 - 179th St W. Call (952) 985-4500 to register.

- **City of Farmington Pond and Park Cleanup and Earth Day/Arbor Day Celebration**

Individuals, civic groups, businesses, clubs, youth organizations, and neighborhood groups are invited to participate in cleaning up a City-owned pond or park. The City will provide supplies and dispose of the garbage. After the cleanup, volunteers will be treated to lunch.

Saturday, April 26, 2014, 9-11:30 a.m., lunch and celebration 11:30 a.m.-1 p.m.

Rambling River Center, 325 Oak St. Call (651) 280-6845 or email [jdullum@ci.farmington.mn.us](mailto:jdullum@ci.farmington.mn.us) to register.

- **Summer Turfgrass Maintenance Workshop**

Anyone maintaining private or public grounds including parks, cemeteries, city or school grounds and property managers who write contracts should attend a free workshop to learn best management practices for lawn/turf care maintenance. You’ll have an opportunity to take a test for Minnesota Pollution Control Agency Level 1 certification for summer turf care best management practices.

Thursday, April 24, 2014, 8 a.m.-2:30 p.m.

Dakota County Western Service Center, Rm L139, 14955 Galaxie Ave., Apple Valley. Call the Vermillion River Watershed at (952) 891-7000 or email [water@co.dakota.mn.us](mailto:water@co.dakota.mn.us) to register by April 19.





Vermillion River Watershed Joint Powers Organization  
14955 Galaxie Ave  
Apple Valley, MN 55124

### Sign up for watershed on-line newsletter

Receive this newsletter in your email instead of in print: go to [www.vermillionriverwatershed.org](http://www.vermillionriverwatershed.org). Click on "Contact Us—Give Feedback" at the bottom of the page. Enter your name, email, and your mailing address. Click "Submit." Or, call 952-891-7000.

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### Apply for VRWJPO cost share by May 1<sup>st</sup>

Cities, townships, and businesses planning construction projects that offer opportunities to improve water quality, water quantity, wetlands, streams, or habitat are encouraged to apply for cost share funding from the Vermillion River Watershed Joint Powers Organization (VRWJPO).

The VRWJPO can allocate cost-share funding of up to 100 percent for projects on public properties and 50 percent for projects (or parts of projects) with direct benefits to water and land on private properties.

Staff will work with applicants on suggestions of how to integrate best management practices for water resources into the project; rank the project priority; bring the project to the Vermillion River Watershed Joint Powers Board for approval; and authorize payment on project completion.

Applications are accepted on a continuous basis, with deadlines of May 1 and November 1 each year. Find out more at [www.vermillionriverwatershed.org](http://www.vermillionriverwatershed.org), search term "capital improvement projects," or call the VRWJPO staff at 952-891-7000.

## APPENDIX VI: WRAPS CIVIC ENGAGEMENT PLAN



Civic Engagement Plan

Watershed Restoration and  
Protection Strategy  
(WRAPS)

Dec. 31, 2013

Vermillion River Watershed  
Dakota and Scott counties, Minnesota

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## Acknowledgements

### Watershed Engagement Team Members:

Mark Henry	Henry Zweber
Mac Cafferty	Jackie Dooley
Irene Jones	Tony Nelson
Jen Dullum	Terry Holmes
Clyde Rath	Maggie Karschnia
Madison Bryan	Mike Greco
Tim Collins	Chris Schaffer
Nancy Sauber	Carl Reuter

### Project Team:

Donna Rae Scheffert, Facilitator  
Mark Zabel  
Paula Liepold  
Travis Thiel  
Katherine Carlson  
Mary Jackson

### Vermillion River Watershed Joint Powers Board:

Commissioner Paul Krause, Dakota County  
Commissioner Mike Slavik, Dakota County  
Commissioner Tom Wolf, Scott County

### Watershed Engagement Guiding Principles:

The Watershed Engagement Team (WET) agreed on the following guiding principles. All civic engagement strategies must be aligned with these guiding principles.

**Respectful** - show proper deference for the views and opinions of others

**Honest** - marked by integrity, creditable, genuine

**Effective** - will result in actions that make a difference

**Adaptable** - available in an understandable manner to various audiences

**Innovative** - applies new and unique approaches to solving issues

**Accessible** - generally available to all those who wish to access or participate

**Beneficial** - shows promise of personal or community benefit

**Collaborative** - includes or is supported by various groups or individuals

**Fair** - applies to all in an equitable manner

**Factual** - is based on well-defined evidence

**Inclusive** - provides that everyone can be involved

## Summary

Protecting and improving water quality is an important function of the Vermillion River Watershed that not only addresses the Watershed's priorities, but also fulfills goals of the Watershed Restoration and Protection Strategy (WRAPS) grant from the Minnesota Pollution Control Agency (MPCA). The MPCA funded the WRAPS through the Clean Water Land and Legacy Act.

At the outset of the WRAPS grant, both MPCA and Vermillion River Watershed staff decided that civic engagement activities should be conducted concurrently with the technical or scientific activities. Phase 1 of the grant, including both technical and civic engagement objectives, ended December 31, 2013. Phase 1 consisted of identifying the candidate causes of biological stress and developing and implementing a public participation process to encourage local ownership of water quality problems and solutions. During Phase I, staff recruited a task force, called the Watershed Engagement Team, to study and evaluate the Vermillion River Watershed, impairments, stressors, community profiles, civic engagement strategies, and potential key messages.

The technical side of Phase 2 will consist of investigating bacterial and nutrient impairments, developing Total Maximum Daily Loads (TMDL) for the impaired reaches and developing the final WRAPs document and plan for implementation. The civic engagement efforts in Phase 2 will focus on implementing this civic engagement plan.

While many people are concerned about the future of the Vermillion River, others lack awareness of the river's impairments and what they can do to improve the river's health. Public awareness and concern about the Vermillion River must be substantially increased and maintained over time so that residents are willing to make and support lifestyle, landscape, and public policy changes that will promote and support restoration and protection plans for the River and its tributaries.

The purposes of this civic engagement plan are to:

- Raise awareness and concern for impaired waters with key messages to increase the relevance of the river in people's daily lives,
- Build and strengthen partnerships,
- Tap into existing networks to engage more people in developing solutions that have a broad base of support and commitment, and
- Motivate and encourage people who live and work in the watershed to make decisions and changes that will protect and restore water resources.

## Introduction

Several civic engagement strategies are outlined in this plan and have been recommended by the Watershed Engagement Team to effectively advance key messages to both internal and external audiences. Strategies range from education and outreach events to personal contacts to incentives and volunteer activities.

Repeated water quality data assessments of aquatic species, physical characteristics, and pollutants show that the river, tributaries, and lakes in the Vermillion River Watershed have the following impairments – meaning it does not to meet State water quality standards:

1. Aquatic biota: reduced numbers and diversity in fish and macroinvertebrate populations
2. Excessive turbidity
3. Lack of dissolved oxygen
4. Excessive fecal coliform bacteria, including *E. Coli*
5. Excessive phosphorus in lakes

In addition, rivers and lakes in the watershed are impaired for polychlorinated biphenyls (PCBs) and mercury, both of which accumulate in fish and other biological organisms' tissue. However, because the sources of PCBs are primarily from industrial processes and sources of mercury are primarily from air deposition – and they are statewide – the State of Minnesota is responsible for developing plans for reducing these pollutants in the environment.

While research will continue in 2014 to identify specific areas within the watershed where enhanced management methods are more acutely needed to address and correct impairments, project work so far has shown that the *biotic* impairments are likely caused by the following stressors:

- Turbidity/embedded sediments: cloudiness or haziness in water caused by individual particles (suspended solids) that are generally invisible to the naked eye. More turbidity is noticed when the water flow is high, typically following a rain storm, indicating that the turbidity is caused by stormwater runoff. (Turbidity is also an impairment.)
- Lack of dissolved oxygen: Fish, macroinvertebrates, and other water species need dissolved oxygen to live and thrive. Oxygen gets into the water primarily from the air, but also from plants – phytoplankton and algae in water produce oxygen from the sun. Fish and other water species breathe dissolved oxygen. If a river, lake or stream does not have enough dissolved oxygen, fish and other living water species may not be able to live and reproduce. (Dissolved oxygen is also an impairment.)
- Altered habitat: changes made to the environment that adversely affect ecosystem function
- Temperature: warmer water stresses aquatic species by reducing the ability of water to hold dissolved oxygen
- Hydrologic alteration: often occurs when land is developed, wetlands are filled or streams are channelized – the land loses its natural ability to filter pollutants before reaching the Vermillion River, water flows downstream faster, stormwater runoff flows directly to the river more rapidly

The implications of unchecked impairments in the Vermillion River Watershed are profound, but should come as no surprise. Potential outcomes without intervention include a river that no longer functions as a rare, sensitive ecosystem, a river that no longer supports a trout fishery, a river that has little habitat value for declining sensitive species, and a river and lakes that do not support recreation.

Protecting and restoring the Vermillion River, its tributaries and lakes in the watershed is important because, culturally, they are outstanding and defining natural features of the surrounding cities and towns – points of community pride. The water resources we have are unique, and the watershed is where we live and work. Our daily lives are intertwined with the water resources in the watershed and they are part of the place we call home.

## **Goals, Objectives, and Civic Engagement Strategies**

A multi-strategy approach or campaign that raises awareness, encourages personal commitment, promotes a sense of civic responsibility for water resources, and addresses landowner constraints through tailored education and incentives is suggested. Civic engagement will focus on raising awareness about the Vermillion River and stream conditions, identifying the water resource problems facing the Watershed and increasing public understanding of how individual and collective actions contribute to the impairments. Then, engagement efforts will focus on specific behaviors/actions individuals, businesses, schools and volunteer organizations can take to make a difference in protecting and restoring the environmental health of the river.

The goals, objectives, and potential civic engagement strategies include:

### **Goal 1: Raise awareness of and concern for the Vermillion River**

Objective 1: People are aware of the Vermillion River as a unique resource – a special feature that deserves protection and restoration

#### Potential Civic Engagement Strategies:

- Events, such as Earth Day, river or watershed cleanup – both annual and special events – especially during spring and summer.
- Stories in ag-oriented magazines and local newspapers
- Stories in newsletters, such as Scott County SCENE, Vermillion River Watershed newsletter, and Dakota County SWCD newsletter
- Vermillion River or tributary signs at road crossings



Objective 2: People are aware of the impairments and understand the need for change

Potential Civic Engagement Strategies:

- Landowner-tailored informational meetings aimed at articulating local stream conditions and problems, potential consequences
- Stories in ag-oriented magazines, local newspapers
- Annual Watershed Tour
- Demonstration sites for best management practices
- Encourage neighbors helping neighbors by pooling resources, such as time, equipment, tools, etc. to help one another install a best management practice

**Goal 2: Engage people and existing networks in developing solutions that will be effective in restoring and protecting water resources**

Objective 1: Watershed residents build and strengthen networks and collaborative partnerships through open communication and dialogue. The VRWJPO maximizes relationships with individuals, businesses, groups, organizations, local governmental units – cities, townships and counties, and governmental bodies.

Potential Civic Engagement Strategies:

- Coordinate with certified crop advisors, agronomists, businesses, groups, and organizations to build relationships that will maximize connections and networks with individuals to find solutions that will help restore and protect the river. An example is University of Minnesota Extension and Dakota County sponsored events (Field Day and Crops Day), and deliverables (Focus on Ag newsletter).
- Coordinate landowner-tailored informational meetings aimed at discovering solutions to local stream impairments
- Provide maps and information to townships that will assist them in knowing where and when building, alteration or other permits are required

Objective 2: Build on a sense of civic responsibility for water resource protection.

Potential Civic Engagement Strategies:

- Seek verbal or written pledge to change (or maintain) practices that support a healthy river system
- Issue press releases for print and web reporting percentage of landowners with buffers, raingardens, or other practices that benefit the river
- Showcase projects through an event similar to a City to Country tour that involves both rural and suburban landowners

**Goal 3: Encourage and support changes on the landscape that will, over time, restore impaired waters and protect water bodies that are not impaired**

Objective 1: Vermillion River Watershed will encourage and support changes on the landscape that will restore impaired waters and protect water bodies that are not impaired.

Potential Civic Engagement Strategies:

- Install best management practices and Vermillion River or wetland restoration projects in high visibility areas or where access is allowed, if possible. Show how these methods work to improve the river.
- One-to-one meetings with landowners
- Individualized contacts with shoreland owners to follow up with compliance to the 50-foot buffer. (Individualized, specific, and timely information will make issues more personal to landowners and, when paired with programs aimed at encouraging commitment to best practices, are more likely to result in behavior change.)
- Promotion and signage to showcase and recognize the landowner and project
- Publicize CIP cost share policy, CIP project fact sheets
- Provide incentives for pollution prevention efforts
- Promote land conservation initiatives, such as ShoreHolders, Farmland and Natural Areas Program
- Evaluate wetlands that drain to the Vermillion River and determine possibilities for restoration or improvements

Objective 2: Involve volunteers, students and teachers, libraries, and youth and faith-based organizations.

Potential Civic Engagement Strategies:

- Include individual or group service learning projects from volunteer stream monitoring to adopting road ditches to river clean-up events to raking leaves
- Promote our existing programs (Vermillion Stewards, River Watch, WHEP, etc. ) and existing programs led by cities
- Enhance education and awareness through display checkout to schools and cities (example: stormwater, groundwater model)
- Promote lesson plans used in Hastings High School (local river conditions education, outdoor classroom, and field trips) as a model for high school science instructors
- Initiate a stewardship grant program for education-supporting projects that protect or promote clean water. Eligible applicants could include communities, schools, civic groups, non-profit groups and others for projects that help people

understand the importance of protecting our water resources and learn what they can do to keep local lakes, rivers and wetlands clean.

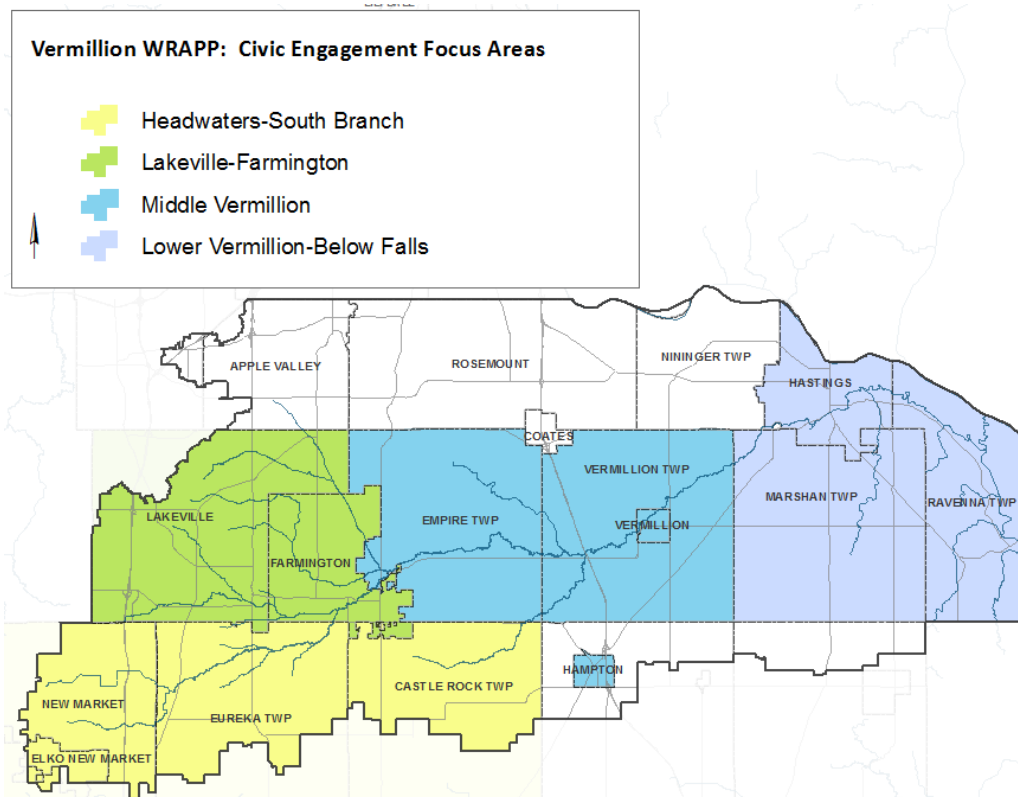
## Focus Areas

Grouping watershed communities based on similarities in water quality impairments, land characteristics and use, and demographics provides some background to develop effective civic engagement strategies for people in the Vermillion River Watershed. The following map shows four civic engagement focus areas:

- **Headwaters-South Branch:** New Market, Elko New Market, Eureka, and Castle Rock
- **Lakeville-Farmington:** Lakeville and Farmington
- **Middle Vermillion-South Branch:** Empire Township, Vermillion (city and township), and City of Hampton
- **Lower Vermillion and Below the Falls:** Hastings, Marshan, and Ravenna

People in each focus area will have the opportunity to learn about specific impairments affecting their local resources, specific challenges locally (i.e., rapid development, sparse population, large areas of public land) and specific sources of local pride and identity (i.e., local landmarks, historical significance, trophy trout destination).

Only cities and townships directly affected by the impairments are highlighted in the focus area map.



## Audiences

### Target Audiences

Target audiences are the direct recipients of our messages. They are the highest value audience because they have the closest connection to the land and water resources in the watershed. The Watershed Engagement Team (WET) studied demographics, land use, attitudes, values, beliefs, and the ways people in the watershed get information. This knowledge helped determine the civic engagement strategies most applicable to the identified target audiences, including:

- Landowners
  - Privately owned land along the Vermillion River and tributaries
  - Farmers and agricultural producers
  - Rural residential homeowners (large lot)
  - Shoreland
  - Suburban and urban residents
- Businesses
- Developers
- City and township officials in jurisdictions directly affected by impairments
  - Apple Valley
  - Castle Rock Township
  - Elko New Market
  - Empire Township
  - Eureka Township
  - Farmington
  - Hastings
  - Lakeville
  - Ravenna Township
  - Vermillion
  - Vermillion Township
- Educators/schools
- Media
  - Print
  - Broadcast
- Outdoor enthusiasts
  - members of sports and habitat groups
  - recreational fishers
- Volunteers



## Watershed Governance Audiences

Stakeholder audiences are not the prime target of our messages, but have a designated role in watershed restoration and protection in the Vermillion River Watershed.

Stakeholder audiences include:

- Vermillion River Watershed Joint Powers Board
- Watershed Planning Commission
- Technical Advisory Group
- Local and State Elected Officials
- State Agencies
- WRAPS Funder: Minnesota Pollution Control Agency

## Additional Audiences

The additional audiences are organizations or individuals that we are not necessarily targeting with our messages, but they are likely to hear, and possibly promote, our messages. The additional audiences include other agencies within and outside of Minnesota that are also undergoing WRAPS processes, cities outside of the Vermillion River Watershed.

Additional audiences include:

- Other watershed administrators
- Trusted agencies that landowners go to for information
  - Dakota County SWCD
  - Scott SWCD
  - Farm Service Agency
  - NRCS
  - University of Minnesota Extension
  - Certified crop advisors/agronomists
  - Farm Bureau
  - Minnesota Agriculture and Water Resources Coalition
  - Others
- Clean Water Council/Legislature

## Key Messages

At first, messages will be informational and educational to raise awareness and concern. The messages will evolve to reflect actions necessary to restore and protect the impaired reaches of the Vermillion River and lakes in the watershed. Linking the messages to people's values (learned through the community assessment) will be most impactful. The messages will be crafted to make sure people understand that it is primarily the practices on land that affect the water quality of the Vermillion River.

Watershed Engagement Team members created messages and ranked them in preference order:

- Canoe, fish, and swim close to home – make the Vermillion your destination. We need to keep it clean. (7)
- Clean water to wiggle your toes in – visit the Vermillion River (6)
- Our Vermillion River is flunking its annual physical. What are we feeding it? (6)
- The Vermillion River – our river, our responsibility (5)
- Vermillion River Watershed – reflecting life, requesting help (4)
- Hold on to the land you love – control erosion (4)
- The solutions range from small to large – but they can all make a difference (4)
- By working together, we can protect and improve the river for future generations (4)
- Don't lose ground to the Vermillion River. Put down some roots along the riverbank. (3)
- We have to work together – it takes more people saying yes than saying no (2)
- The Vermillion River has increased sediment in spots because of eroding banks. Water temperature needs to be cool for the trout. (2)
- Clean water, clean fish. (2)
- A nice place to visit – the Vermillion River – we need to keep it clean (2)
- Society needs to make the investment in the river – time, resources and money. (2)
- Hold on to the birds and bees – restore habitat (2)
- Catch and let go of trophy-sized trout – buffer the river (2)
- Our River's water quality is failing (it is impaired) (1)
- We can fix the problems and improve the quality of the river (1)
- This is our river. We affect it every day. We need to find solutions to make it get better every day. Connect with your city, township and county to coordinate a process to rehabilitate our river. Make it so our kids and their kids can see and enjoy a clean, clear river and enjoy the wildlife that live above and below the surface. (1)
- Respect our river, protect our river. (1)
- Hold on to oxygen in water. Reduce nutrients (1)
- Just because you're downstream of cities or towns, doesn't mean that what you do won't make a difference. (1)
- We should look for good people to become great people, thus leaders. (1)
- Fish can't breathe sludge (1)
- We will take responsibility for our river. (0)
- Resculpt the bank, plant with trees to hold the soil and cool the river by means of shade. (0)
- The Vermillion River wants you to protect its watershed. (0)
- Society has set the standards that we are attempting to reach. (0)
- The fish are dying! (0)
- There is too much dirt in the Vermillion River. (0)
- Sweep up your construction site every night. (0)
- Vermillion River – problem: polluted, eroded, ignored (0)
- If you 'dig' dirt, control erosion. (0)

## Issues and Challenges

### Knowledge, attitudes and beliefs of streamside landowners

A survey conducted by Mae Davenport, University of Minnesota, in 2011 of 750 streamside landowners in the Sand Creek Watershed and Vermillion River Watershed revealed several sociodemographic characteristics of the respondents that may be issues and challenges. Vermillion River Watershed responses only include:

1. Believe in protecting private property rights was rated “very important” to “extremely important” by 66%
2. Do not know what the water quality is in their local resource (39%)
3. When asked about their agreement with the belief that buffers reduce the value of their land, more than one-third of Vermillion River respondents (35%) were either neutral or agreed with the statement
4. Are reluctant to work with others to achieve water quality improvements and feel an obligation to work with other community members on (<52%) or talk to other community members about conservation practices (<45%)
5. Are not certain if they control future property use

On the other hand, some of the sociodemographic characteristics work in our favor. They include:

1. “Respecting the earth” was rated as the most important environmental value
2. Believe it is their personal obligation to protect water quality (>86%)
3. indicate Soil and Water Conservation Districts have influence over landowner decisions (69.5%)
4. Believe local government should be responsible for protecting water quality (82%)
5. Effects of water pollution on public health are worse than realized (>60%)
6. Streamside buffers help improve water quality (68%)
7. Buffers should be protected because they provide habitat for wildlife (>67%)
8. Concern about the consequences of water pollution for future generations (>92%), wildlife (>82%), and aquatic life (>87%)
9. Most respondents agreed that they feel a personal obligation to do whatever they can to prevent water pollution (>86%) and to use conservation practices on their land/property (84%).

### Governance – jurisdiction

- Landowners do not want to be told what they can or cannot do with their land, especially if a practice to improve water quality means taking land out of agricultural production
- Watershed residents say there are “too many hands in the river” – meaning there are a number of organizations with water resource responsibilities and residents do not understand their roles

### **Not uniform impacts between jurisdictions and neighbors**

- Not all cities and townships in the watershed are directly affected by the impairments
- Not all landowners are directly affected by impairments, downstream landowner may be more affected than a particular landowner, neighboring landowners are not affected the same – example of DNR protected water on one side of the road and not a DNR protected water classification on the other.
- Competing, perhaps contradictory, messages

### **Organizational**

- Limited budget resources
- Limited staff resources

### **Evaluation – Measuring Results**

- Measure changes in knowledge, attitudes and practices
- Positive media placements
- Vermillion River Watershed web statistics
- Event Participation
- Event Evaluations
- Alignment with Guiding Principles (See Acknowledgements page for list of guiding principles)
- Improved monitoring results
- Progress toward restoration and protection goals