Meeting Agenda: Vermillion River Watershed Community Advisory Committee (CAC)

Date and Time: **May 13, 2026, 4:30 p.m.,** in-person at the Dakota County Extension and Conservation Center and virtually via Microsoft Teams

Note: Some CAC members may be participating in this meeting via interactive technology, in compliance with Minn. Stat. 13D.04 (Open Meeting Law).

1. Call to Order	
2. Roll Call	
3. Audience Comments on Items Not on the Agenda *(please limit audience comments to five minutes)*	
4. Approval of Agenda	Action
5. Approval of Minutes from the February 11, 2026, meeting	Action
6. Business Items	
a. Presentation on 2025 Results from the Vermillion River Monitoring Network	Information
b. Site Visit Immediately Following the Meeting to North Creek in Empire Where an Upcoming Improvement Project will be Completed	Information
7. Updates	
a. Chairperson's Report	
b. Staff Updates	
8. Adjourn	Action

Please note that the May 13, 2026, CAC meeting will take place in person in Conference Room A at the Dakota County Extension and Conservation Center, 4100 220th Street West, Farmington, Minnesota, and virtually via Microsoft Teams. CAC members may participate in the meeting via interactive technology.

Microsoft Teams information

Join: https://teams.microsoft.com/meet/27726405929390?p=UcmKUsuJwbhTNdHqA4
Meeting ID: 277 264 059 293 90
Passcode: R2qd6z24
Dial in by phone: +1 651-273-3070,,405142055# United States, Hastings
Find a local number
Phone conference ID: 405 142 055#

Other Information

Next meeting date: Wednesday, August 12, 2026, at 4:30 p.m.

Please confirm your attendance or absence to brita.moore-kutz@co.dakota.mn.us or (952) 891-7967 by noon on the day before, including whether you are attending in person or virtually. You will be notified via email by noon the day of the meeting if it is canceled.

Meeting Minutes: Vermillion River Watershed Community Advisory Committee (CAC)

Date: February 11, 2026

Prepared by: Brita Moore-Kutz, Communications and Outreach Specialist for the Vermillion River Watershed Joint Powers Organization (VRWJPO)

Location: In-person at the Dakota County Extension and Conservation Center, Farmington, MN, and virtual via Microsoft Teams

All votes were conducted by roll call in compliance with Minn. Stat. 13D.04 (Open Meeting Law).

Attendees

CAC Members

- Brad Blackett
- Kevin Chamberlain
- Alex Franzen
- Jim Kotz
- Andy Riesgraf (attended virtually due to work schedule)
- Tom Sauer
- Sandy Weber

VRWJPO Staff

- Travis Thiel, Administrator
- Kelly Perrine, Senior Watershed Specialist
- Jeff Dunn, Water Resources Engineer
- Brita Moore-Kutz, Communications and Outreach Specialist

Others

- Curt Coudron, Dakota County Soil and Water Conservation District (SWCD) Project Management Supervisor
- Mark Henry, Castle Rock Township resident and former CAC member

Agenda Items

1. **Welcome of New Community Advisory Committee Members and Member Introductions**

2. **Call to Order**

The meeting was called to order following the introductions.

3. **Elections of CAC Chair and Vice Chair**

Sandy Weber nominated Kevin Chamberlain as CAC Chair, seconded by Jim Kotz. Chamberlain was elected Chair on a 7-0 vote.

DRAFT

Kevin Chamberlain nominated Sandy Weber as CAC Vice Chair, seconded by Brad Blackett. Weber was elected Vice Chair on a 7-0 vote.

4. Roll Call

All members present except Steve Hamrick and John Nicolai.

5. Audience Comments on Items Not on the Agenda

None.

6. Approval of Agenda

Motion by Sandy Weber to approve the agenda, seconded by Andy Riesgraf. Motion carried on a 7-0 vote.

7. Approval of Minutes from the November 19, 2025, Meeting

Motion by Alex Franzen to approve the minutes, seconded by Brad Blackett. Motion carried on a 6-0 vote, with Sandy Weber abstaining.

8. Business Items

a. Presentation on Wetland Banking and Direction from the Vermillion River Watershed Joint Powers Board Regarding the Vermillion River Watershed Joint Powers Organization Wetland Banking Policy

Travis Thiel explained the VRWJPO's wetland banking policy, how it relates to the Minnesota Wetland Conservation Act (WCA), how regulators determine if a given area is a wetland, and the responsibilities of developers to avoid, minimize, and/or replace impact on wetlands in a project area. The VRWJPO requires that projects impacting wetlands within the VRWJPO that cannot be avoided or minimized be replaced by purchasing wetland bank credits within the watershed, if VRWJPO has credits available.

Brad Blackett asked about a former golf course in Apple Valley that was previously designated as wetland but had that designation removed. The area is now residential and incorporated into Apple Valley's stormwater system. Kelly Perrine said it could have been considered an "incidental" wetland, meaning that the area didn't have wetland characteristics originally but became one when converted to a golf course. Such wetlands are not subject to WCA and hence can more easily be developed. The same can be true for road ditches.

Travis showed an aerial map of the location of the Braun wetland bank in the South Branch Vermillion River subwatershed. In 2021, Dakota County, VRWJPO, and the Minnesota Board of Water and Soil Resources (BWSR) collaborated to restore a wetland on the Braun family property in Castle Rock Township that had been in agricultural production. The Dakota SWCD provides support with vegetation management. The VRWJPO has sold 10.25 credits from the Braun wetland bank and has 18 credits available as of Feb. 11, 2026.

The VRWJPO wetland bank policy determines the price per credit. Revenue from the bank is used to recoup the initial investment and for future wetland bank restoration projects; however, this money is incorporated into the larger VRWJPO general fund rather than a restricted account for wetlands only.

DRAFT

Staff had received direction from the Vermillion River Watershed Joint Powers Board (VRWJPB) to formalize and restrict the fund balance from wetland credit sales to banking projects.

Information only.

b. Summary of Projects and Activities as Reflected Within the Draft 2026-2035 Vermillion River Watershed Management Plan

Jeff Dunn and Kelly Perrine shared a series of Capital Improvement Program (CIP) projects, both ongoing and planned, and how they factor into the draft 2026-2035 Vermillion River Watershed Management Plan (WMP). Activities discussed:

- Vermillion River Monitoring Network
- Enhanced Street Sweeping Study
- Watershed-Based Implementation Funding stormwater treatment projects at Firelight Way (Lakeville), 4th St. and Willow St. (Farmington), and 15th St. and Bailly St. (Hastings)
- VRWJPO Partner Project Maintenance Program and Policy
- North Creek culvert replacements in Farmington and Empire
- SWCD cost-shares for rural/agricultural soil health and urban landscapes (Landscaping for Clean Water)
- VRWJPO Stewardship Grant Program
- East Lake invasive fish management
- Supporting Dakota County in implementing groundwater sustainability projects

Information only.

c. Update on the Status of the Draft 2026-2035 Vermillion River Watershed Management Plan

Kelly explained that the draft 2026-2035 WMP had been submitted to the BWSR and other state review agencies for a final 90-day review. Since the last CAC meeting, VRWJPO staff had replied to 186 comments from the 60-day stakeholder review and held a public hearing with the VRWJPB. The next step is to present the WMP to the BWSR Central Region Committee on April 6 to obtain a recommendation that the full Board approve the WMP. If successful, the BWSR will vote on approval of the WMP on April 22.

Information only.

9. Updates

a. Chair's Report

No updates.

b. Staff Updates

Curt Coudron

- The landowner cost-share projects in the VRWJPO made significant reductions in watershed pollutant loads in 2025. Curt estimated that projects reduced total suspended solids by about 1,500 tons/year, total phosphorus by about 2,000 lbs./year, and nitrate by 30,000 lbs./year, benefiting streams, wetlands, lakes, and groundwater.

DRAFT

- Landscaping for Clean Water workshops begin at the end of February, with Introductory, Design, and Maintenance classes, and $400 grants and technical assistance available to those who complete the design class. There is also a shoreline-specific class for those interested in restoring shoreline on their property. The classes are held in cooperation with the watersheds and cities in Dakota County.

Brita Moore-Kutz

- CAC members are encouraged to view a video series on the BWSR website about watershed governance.

10. Adjournment

Motion by Jim Kotz to adjourn, seconded by Sandy Weber. Motion carried on a 7-0 vote.

Next Meeting

Date: May 13, 2026

Time: 4:30 p.m.

Location: In-person at the Dakota County Extension and Conservation Center and virtually via Microsoft Teams

DRAFT

6a. Presentation on Monitoring Results from the Vermillion River Watershed Monitoring Network

Meeting Date: 5/13/2026
Item Type: Regular-Information
Contact: Kelly Perrine
Telephone: 952-891-7002
Prepared by: Travis Thiel

Purpose/action requested

- A summary presentation will be provided on 2025 results from the Vermillion River Monitoring Network.

Summary

Water quality and flow data collected through the Vermillion River Monitoring Network (VRMN) provides staff and stakeholders with information needed to make informed decisions on the water quality issues facing the Vermillion River and its tributaries. It also allows staff to prioritize resource needs and make recommendations to allocate budget to address those needs appropriately. Staff from the Dakota County Soil and Water Conservation District (SWCD) will provide a presentation summarizing monitoring results. Annual reports from the VRMN can be accessed here.

Explanation of fiscal/FTE impact

No fiscal impact.

Supporting Documents:

Attachment A. VRMN 2025 Monitoring Summary

RESOLUTION

6a. Presentation on Monitoring Results from the Vermillion River Watershed Monitoring Network

Information only.

Monitoring

The Vermillion River Monitoring Network (VRMN) assesses water quality, quantity, and biological conditions in the Vermillion River Mainstem and tributaries. Staff from the Dakota County SWCD collect samples from the water between spring snowmelt (typically mid-March) and November 1 and continuously monitor water temperatures. In 2025, 211 unique water quality samples were analyzed, and fish monitoring sampled 1,370 fish. Monitoring data and trends from 2016-2025 are described in Appendix B of the 2026-2035 Vermillion River Watershed Management Plan (WMP).

Chemical Monitoring

Eight sites on the Vermillion River and tributaries serve as VRWJPO chemical and physical monitoring stations. A ninth station is located near the Vermillion Falls in Hastings, part of the Metropolitan Council's Watershed Outlet Monitoring Program (VRWOMP), that monitors river stage, stream discharge, temperature, and specific conductance. Samples are analyzed for compliance with State standards for the following:

Total Suspended Solids

State standard: 10 mg/L or lower for 2A streams; 30 mg/L or lower for 2B streams

Significance: Total suspended solids (TSS) are suspended particles in the water. Sources may include, but are not limited to, eroded soil, sediment, decaying vegetation, and algae.

- All stations' samples, except VR807's, met the standards during baseflow conditions.
- As expected, TSS concentrations were much higher during runoff and snowmelt events. VR804, NC801, NC808, and VRWOMP showed the greatest fluctuations.
- Over the 2016-2025 WMP, TSS concentrations improved in the six subwatersheds that host a monitoring station.

Total Phosphorus

State standard: 0.15 mg/L or lower

Significance: Excess total phosphorus (TP), an essential life element for plants, can lead to eutrophication and increased algae growth. High TP often correlates with areas lacking in stormwater runoff treatment.

- Samples generally met the standard at all stations in 2025, with some exceptions at runoff and snowmelt events.
- Over the 2016-2025 WMP, stations NC801 and NC808, both on North Creek, and VR803 and VRWOMP, both in the Lower Mainstem subwatershed, showed improvement in TP concentrations. VR807 in the Middle Mainstem subwatershed held flat. VR24 near the headwaters had a strong spike in TP readings in 2024.

Nitrate

State standard: 10 mg/L or lower for 2A streams

Significance: Nitrate is a form of nitrogen that poses a risk to human health in high concentrations in drinking water. Elevated nitrate in groundwater is correlated with porous soils, artificial drainage, and agricultural chemical use.

- All samples collected in 2025 met the state standard.
- The station on the South Branch Vermillion River, SB802, has had the highest nitrate concentration since 2001. This is likely related to agricultural practices and soil conditions in these areas.
- Nitrate readings in the Lower Mainstem Vermillion River subwatershed, just downstream of the South Branch, have increased along with the South Branch's nitrate increases.

Dissolved Oxygen

State standard: 7 mg/L and above for class 2A (coldwater) reaches; 5 mg/L and above for class 2B (warmwater) reaches

Significance: Dissolved oxygen (DO) is a marker of a stream's habitability for sensitive fish species. The MPCA designates whether streams are class 2A or 2B.

- All stations met the standards for both 2A and 2B stream sites during baseflow conditions.
- Low DO concentrations after individual runoff events were found at several sites. The median runoff DO levels did not meet the standard at four 2A sites.
- Historically, the two North Creek stations have had the lowest recorded DO levels during baseflow. NC801 had the lowest individual reading in 2025.
- VR24, near the headwaters in Scott County, and VRWOMP, the lowest site in the watershed, had the highest DO variations of all sites during baseflow conditions. VR804 and VR807, Middle Mainstem sites in Farmington, had the greatest variations during runoff conditions.

Chloride

State standard: Impairment either if two or more samples exceed 230 mg/L over three years, or if one sample exceeds 860 mg/L

Significance: Chloride impairments can occur in surface water and groundwater due to winter de-icing salt overuse on concrete surfaces, water softeners, agricultural practices, or other activities. Chloride was added to the analysis suite in 2019 in response to growing concerns in the Twin Cities Metro Area.

- Monitoring was limited in 2025 with two samples collected during baseflow conditions, one sample following a runoff event, and two at snowmelt. 23 chloride samples were collected at the VRWOMP site in 2025.
- Sites on North Creek and South Creek, the most urbanized subwatersheds, have shown the highest levels of chloride in the watershed since monitoring began.

Chlorophyll-a

State standard: 35 mg/L or lower

Significance: Chlorophyll-*a* is an indicator of nutrients (nitrogen or phosphorus, for examples) in surface water. This can come from algae. Chlorophyll-a was added to the analysis suite in 2019 due to its inclusion in the MPCA's water quality assessment process for rivers and streams.

- No 2025 samples exceeded the state standard.

- Not enough data to determine trend.

Escherichia coli

State standard: No more than 10 percent of samples in one month exceeding 126 most probable number (MPN) of organisms per 100 mL

Significance: Escherichia coli (*E. coli*) is an indicator for the general number of disease-causing pathogens in the water. Levels are often higher after runoff events and may result from septic system discharge, agricultural runoff, livestock, urban runoff, and sediment. The VRWJPO conducts *E. coli* tracing monitoring to inform potential source areas.

- VR24 in New Market Township has consistently had the highest concentration of E. coli of all VRMN stations since source monitoring began there in 2016. Annual geometric means at this location are consistently twice as high than all other monitoring stations. Levels peaked at VR24 in 2021, which was a drought year, and have been decreasing since that year.
- The other sites have been trending upward since 2002, even with a slight decrease in *E. coli* levels in 2024.
- In 2025, staff met to discuss the potential for Scott County staff to perform septic system compliance inspections within proximity to the VR24 monitoring station to rule out noncompliant systems as a source of elevated levels. Scott County staff determined that, without an observable system discharge visible from the river, a compliance inspection cannot be required.

Flow Rate Monitoring

Three agencies coordinate with the VRWJPO for measuring stream stage height and discharge:

- The VRWJPO provides cost share for the operation of the United States Geological Survey (USGS) Blaine Avenue gaging station near Empire, which has the longest continuous record of flow rates in the watershed. Real-time stage height and stream discharge data is available from the USGS station. This information can be accessed at https://waterdata.usgs.gov/mn/nwis/uv?site_no=05345000.
- The DNR manages stream gaging stations alongside the chemical monitoring stations in the VRWJPO. Additionally, one real-time stream gaging station is located in Lakeville, near the intersection of Dakota County Roads 23 and 78.
- The VRWOMP station near the Vermillion Falls in Hastings monitors stage height and stream discharge as well. Data from there can be accessed on the Metropolitan Council website.

Biological Monitoring

For the duration of the 2016-2025 WMP, the VRWJPO followed the Biomonitoring Plan adopted in 2008, observing fish, macroinvertebrates, and aquatic habitat conditions. Biomonitoring took place at select sites each year, rotating sites monitored to have each site monitored every two or three years. Due to a variety of factors, biomonitoring activities are proposed to be scaled back in the 2026-2035 WMP.

Fish and Macroinvertebrates

The health of fish and macroinvertebrate communities are gauged by indexes of biological integrity (IBI). An IBI value below the threshold indicates impairment per the MPCA.

The VRWJPO sampled fish at four sites in September 2025. IBI thresholds and 2016-2025 trends for all stations are included in the table below (green = meets MPCA standard, red = does not meet standard):

Table 1. VRWJPO biomonitoring sites with their respective IBI thresholds, 2025 fish IBI scores, and trends.

Site	Stream Reach	IBI Threshold	2025 Score, if applicable	Trend since 2016
A02	South Creek	50		Improved
A03	South Creek	50		Worsened
A04	Upper Mainstem Vermillion River	55		Improved
A05	Middle Mainstem Vermillion River	50		Worsened
A06	Middle Mainstem	50		Steady
A07	North Creek	50		Steady
A08	Middle Mainstem	50		Worsened
A09	Middle Mainstem	50		Improved
A12	South Branch	50		Worsened
A13	Lower Mainstem Vermillion River	50		Improved
A14	Lower Mainstem	45	47.3	Improved
A15	Middle Creek	55	57.1	Worsened
13-1	Upper Mainstem	50	34.5	Worsened
13-2	South Creek	50		Steady
13-4	North Creek	50		Worsened
13-5	Middle Mainstem	50		Improved
14-1	Middle Creek	55	55.3	Improved
14-2	North Creek	45		Improved

Aquatic macroinvertebrates are organisms that lack backbones, such as snails, mayflies, dragonflies, and beetles, that live on substrates within the water for parts of their life cycles. As of this report's publication, macroinvertebrate IBI scores for 2025 are not yet available. Scores at all sites varied widely throughout the 2016-2025 WMP.

Habitat

Habitat assessments were completed using the MPCA's Stream Habitat Assessment protocol to evaluate the biological integrity of stream reaches. Of six sites monitored in 2025, five scored "fair" (yellow) and one scored "good" (green).

Table 2. VRWJPO biomonitoring sites with 2025 habitat assessment scores and trends.

Site	Stream Reach	2025 Score, if applicable	Trend since 2016
A02	South Creek		Steady
A03	South Creek		Improving
A04	Upper Mainstem		Worsening
A05	Middle Mainstem	Fair	Steady
A06	Middle Mainstem		Improving
A07	North Creek		Worsening
A08	Middle Mainstem	Good	Steady
A09	Middle Mainstem		Steady
A12	South Branch	Fair	Steady
A13	Lower Mainstem		Improving
A14	Lower Mainstem	Fair	Steady
A15	Middle Creek	Fair	Improving
13-1	Upper Mainstem	Fair	Steady
13-2	South Creek		Steady
13-4	North Creek		Steady
13-5	Middle Mainstem		Steady
14-1	Middle Creek		Improving
14-2	North Creek		Steady

Lake Monitoring

Lake water quality monitoring uses TP and Secchi transparency levels as water quality indicators. Decreasing phosphorus levels and increasing transparency levels are signs of improvement. Data is collected through the Metropolitan Council's Citizen-Assisted Monitoring Program (CAMP).

During the 2016-2025 WMP, CAMP regularly monitored Farquar, Long, Alimagnet, East, Marion, and Rebecca Lakes. The following table lists the overall trends for each lake from that time period.

Table 1. Lakes monitored by the CAMP in the Vermillion River Watershed and their water quality trends.

Lake	TP Trend	Secchi Transparency Trend
Alimagnet	Improving	Improving

Lake	TP Trend	Secchi Transparency Trend
East	Improving	Improving
Farquar	Improving	Improving
Long	Improving	Improving
Marion	Improving	Improving
Rebecca	Improving	Worsening

6b. Site Visit Immediately Following the Meeting to North Creek in Empire Where an Upcoming Improvement Project will be Completed

Meeting Date: 5/13/2026
Item Type: Regular-Information
Contact: Travis Thiel
Telephone: 952-891-7002
Prepared by: Travis Thiel

Purpose/action requested

- Staff will lead a site visit to North Creek in Empire where an upcoming channel improvement project will be constructed.

Summary

The Vermillion River Watershed Joint Powers Organization (VRWJPO) will be constructing culvert and channel improvements on North Creek in Farmington and Empire in summer 2026. These improvements will result in better stream channel connectivity and aquatic organism movement, better floodplain connection, and improved water quality and habitat. Staff will lead the Community Advisory Committee (CAC) on a site visit to North Creek in Empire where some of these improvements are proposed. The provided attachments provide data from assessment work the VRWJPO and Minnesota Pollution Control Agency have conducted that establish some of the basis for the proposed improvements.

Weather permitting, immediately following the CAC meeting, staff and CAC members will meet at 20225 Chippendale Ave W., Farmington, MN. Staff will present information on the proposed improvements. CAC members will have the opportunity to view the condition of North Creek prior to the improvement project with a tentative future site visit or photos/videos to see the post-project results.

It is strongly recommended for CAC members to carpool given limited parking room at the site and the generosity of the landowner to allow parking. It is also strongly recommended to wear appropriate footwear and attire for a minor amount of walking on rough terrain or through thick vegetation. CAC members are also encouraged to bring insect repellant.

Explanation of fiscal/FTE impact

No fiscal impact for the site visit. A construction contract for the proposed improvement project was recently awarded with a bid of $514,355. The project will be paid for by a Conservation Partners Legacy Grant, made possible through the Clean Water, Land, and Legacy Amendment, and VRWJPO Capital Improvement Program funds.

Supporting Documents:

Attachment A. MPCA 2022 Stressor Identification Update
Attachment B. VRWJPO Geomorphic Assessment Map and Identified Project Forms
Attachment C. Fact Sheet on North Creek at Hwy 3 Project

Resolution

6b. Site Visit Immediately Following the Meeting to North Creek in Empire Where an Upcoming Improvement Project will be Completed

Information only.

Vermillion River Watershed

Stressor ID Update, January 2022



Purpose

Water monitoring is essential to determining whether lakes and streams meet water quality standards designed to ensure that waters are fishable and swimmable. The stressor identification (SID) process looks at specifically why fish and bug communities are suffering. The purpose of Cycle 2 (C2) SID work is to perform SID in a way that supports follow-up watershed restoration and protection strategy (WRAPS) efforts and local water planning and implementation efforts, with an emphasis on meeting local partner needs, protection of biotic integrity, and identifying changes in biotic condition.

The Vermillion River Watershed has many opportunities for recreation such as fishing and canoeing. Identifying impairments and stressors help guide where to implement restoration best management practices and where to protect healthy streams that will help to preserve them for future generations.

What have we learned about stream health and stressors in the Vermillion River Watershed?

The Vermillion River Watershed (Figure 1) faces issues related to dissolved oxygen (DO) and eutrophication in North Creek, Vermillion River Tributary, and Trib. to Rice Lake. Proximity to development, stormwater practices, and low gradient/channelized reaches are issues that contribute to lower DO conditions as well as eutrophic streams in the studied areas. These conditions make it difficult for healthy fish and macroinvertebrate assemblages to thrive.

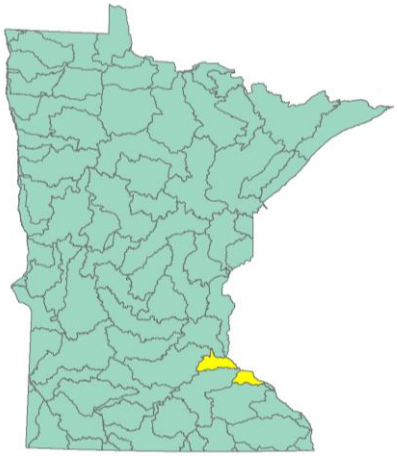


Figure 1. The Mississippi River-Lake Pepin Watershed. The Vermillion River Watershed is the northwestern half.

Habitat, altered hydrology, and connectivity were also significant issues in the watershed. The studied areas show habitat as a stressor in all three reaches, altered hydrology/connectivity in two of the reaches, while suspended solids in at least one. Stream channelization is a major contributor to the poor habitat conditions in North Creek and tributary to Rice Lake. This can lead to excess sedimentation, lack of course substrates, and limiting fish habitat features. Fixing these problem areas should be a high priority to see improvement.

Overall, in the Vermillion River Watershed there was a significant change in the Index of Biotic Integrity (IBI) values for fish or macroinvertebrates from the first cycle. Compared to 2008 results, IBI scores for both fish and macroinvertebrates increased substantially in 2018 among the monitoring stations in the Vermillion River Watershed. These results are a hopeful sign that the biological condition of rivers and streams in the watershed is improving.

Water quality conditions did improve since the first intensive watershed monitoring in the Vermillion River Watershed as a result of collaborative efforts of local, state, and federal government entities as well as private landowners and organizations. However, the implementation of new rules and standards since then has resulted in seven total suspend solids (TSS), two DO, and one aluminum impairment.

For additional information on the updated conditions of the watershed, see the Vermillion River Watershed-Lower Mississippi River Basin: Water Assessment and Trends Update. Further reporting addressing SID work in lakes will be provided by the Minnesota Department of Natural Resources.

Part 1: Vermillion River Watershed SID Summary Results

Cycle 1 (C1) and early SID reporting in the Vermillion River Watershed was expansive. Reaches studied include portions of Vermillion River, North Creek, Middle Creek, South Creek, South Branch Vermillion River, and other small tributaries within the watershed.

Cycle 2 Stream Biological Impairment Summary

- Six fish and five macroinvertebrate impairments were added due to revisions to water quality standards, allowing the assessment of channelized streams that were not assessed in 2011 or officially recognizing proposals made in 2011 to change aquatic life class designations (i.e., warm vs cold) of certain stream reaches.
- While many streams in the watershed are impaired for aquatic life, current fish and macroinvertebrate IBI scores suggest that conditions are improving.

Cycle 2 SID: Areas of focus

The Vermillion River Watershed is a small watershed that is part of the larger Mississippi River-Lake Pepin Watershed (HUC-8: 07040001) and the SID process focused on several areas to gain additional information. The following list of streams were studied during the SID process in C2 and are further detailed in this report. These streams were selected based on impairment status, previous SID work, and local stakeholder input. Some streams needed additional information to understand stressor connections, while others needed information on source assessment for prioritization.

- North Creek (07040001-670, -671)
- Unnamed Creek/Trib to Rice Lake (07040001-697)
- Unnamed Creek/Middle Creek (07040001-721)

Part 2: Cycle 2 Stressor Identification Stream Reaches

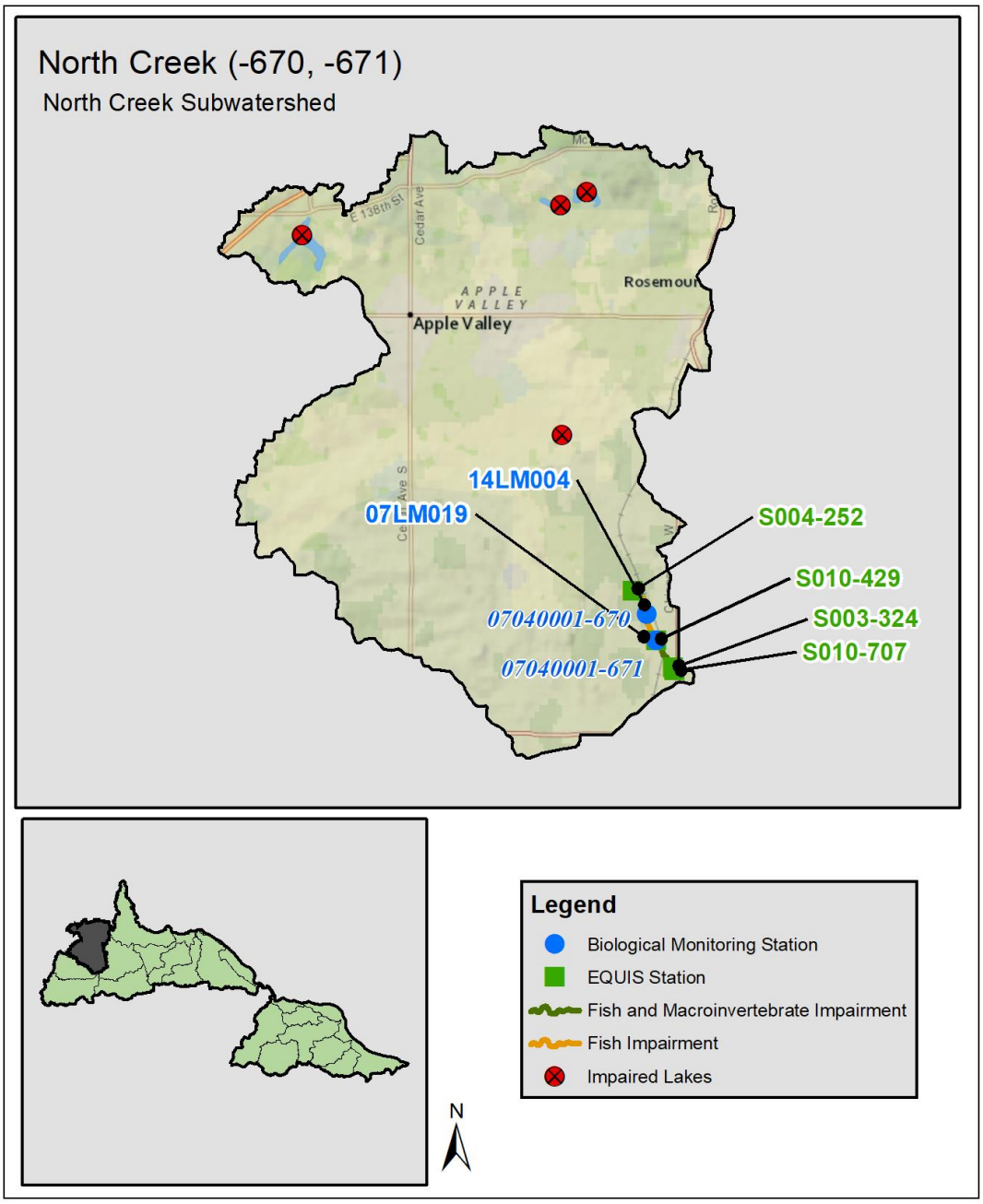
North Creek (07040001-670, -671)

Biological Community Summary

North Creek (-670, -671) is designated as impaired for aquatic life due to the fish community condition in the entire reach, while the macroinvertebrate community is also designated as impaired in the lower

portion of the reach (-671). The upper portion of North Creek is a warmwater reach, while the lower portion is a coldwater reach. Coldwater reaches do have higher water quality standards.

The fish community in North Creek was sampled five times in the upper section (-670) from 2007 through 2018 at biological stations 07LM019 and 14LM004. The Fish IBI (FIBI) score at 07LM019 was 37.8 in 2007. Site 14LM004 had five FIBI scores ranging from 0 to 46.1 from sampling events from 2014 through 2020. The samples in 2018 and 2020 both had less than 25 fish sampled, severely limiting the FIBI score. A re-meandering of the upper portion of North Creek took place in 2008 in an effort to improve the habitat conditions and the FIBI scores.



What stressors are of concern?

SID work was not completed in North Creek during C1 SID. The goal of C2 SID work was to get additional information on DO, eutrophication, nitrates, TSS, and stream transparency. Stressors found in North Creek were DO, eutrophication, suspended solids, habitat, and altered hydrology/connectivity. Nitrate concentrations were low in this reach and are not a stressor at this time.

Dissolved Oxygen	Eutrophication	Nitrates	Suspended Solids	Habitat	Alt Hydrology /Connectivity
Poor	**Poor**	**Good**	**Poor**	**Poor**	**Poor**
The lower portion of North Creek (-671) is impaired for DO. Both fish and macroinvertebrate assemblages have many poor scoring DO related metrics especially in reach (-671). This reach is currently listed as impaired for DO.	Phos concentrations were elevated in North Creek as 64 of 527 (12.1%) were above the standard. Chlorophyll A samples had 8 of 192 samples above the standard. The majority of the related bio metrics do score poorly, with the coldwater sections showing the largest negative impact.	Nitrate concentrations were very low throughout the stream reach with extensive data sampling done. Nitrate related macroinvertebrate metrics did not signal nitrate stress.	TSS concentrations were elevated in North Creek, especially with the coldwater standard (10 mg/L) applied to the lower portion of the reach. TSS related biological metrics also show negative impacts of TSS.	Habitat conditions in North Creek are improving with the re-meandering of the stream channel near site 14LM004. Further work is needed downstream to improve conditions as the habitat related metrics score poorly and the MSHA was rated as poor to fair in the reach.	There is a perch culvert located along North Creek preventing fish migration. Additionally, a significant portion of the reach has been channelized. Some efforts have been made to re-meander the channel.

Summary of stream health in North Creek

Additional water chemistry information throughout North Creek has provided additional focus areas for DO, eutrophication, habitat, and altered hydrology/connectivity stress in North Creek. Prioritization of future work should consider these stressor impacts at various locations in the watershed.

- A DO impairment was identified during the assessment process. DO concentrations tend drop to harmful levels and fluctuate greatly, which negatively impacts aquatic life. The impacts of stormwater runoff (low flow, stagnant water) in North Creek tributaries (Figure 2) and potential runoff from nearby agricultural fields have likely contributed to these conditions. Best management practices to prevent phosphorus from entering the stream system in this section, as well as upstream, are needed.



Figure 2: Eutrophic tributary to North Creek.

- The upstream portion of North Creek is improving in terms of habitat conditions, as a large amount of restoration and the re-meandering of the channel has taken place (Figure 3). This work can take time to show the desired results. Further downstream, the reach is still channelized resulting in lower MPCA Stream Health Assessment (MSHA) scores. Limiting the habitat in this altered section is the surrounding land use (proximity to development and agricultural fields), light stream shading, sand and detritus substrates, severe embeddedness, and fair channel development.



Figure 3: Re-meandering of upper portion of North Creek (-670).

- Altered hydrology/connectivity is a significant issue in North Creek. A field road culvert is perched (Figure 4) and acting as a fish barrier in this reach preventing fish from migrating upstream from the Vermillion River. Proper size and elevation of this culvert would improve FIBI scores upstream as well as improve habitat conditions. Additionally, continued re-meandering of the channelized sections will provide better flow consistency, reduce erosion and sediment issues, while also improve the general habitat conditions.

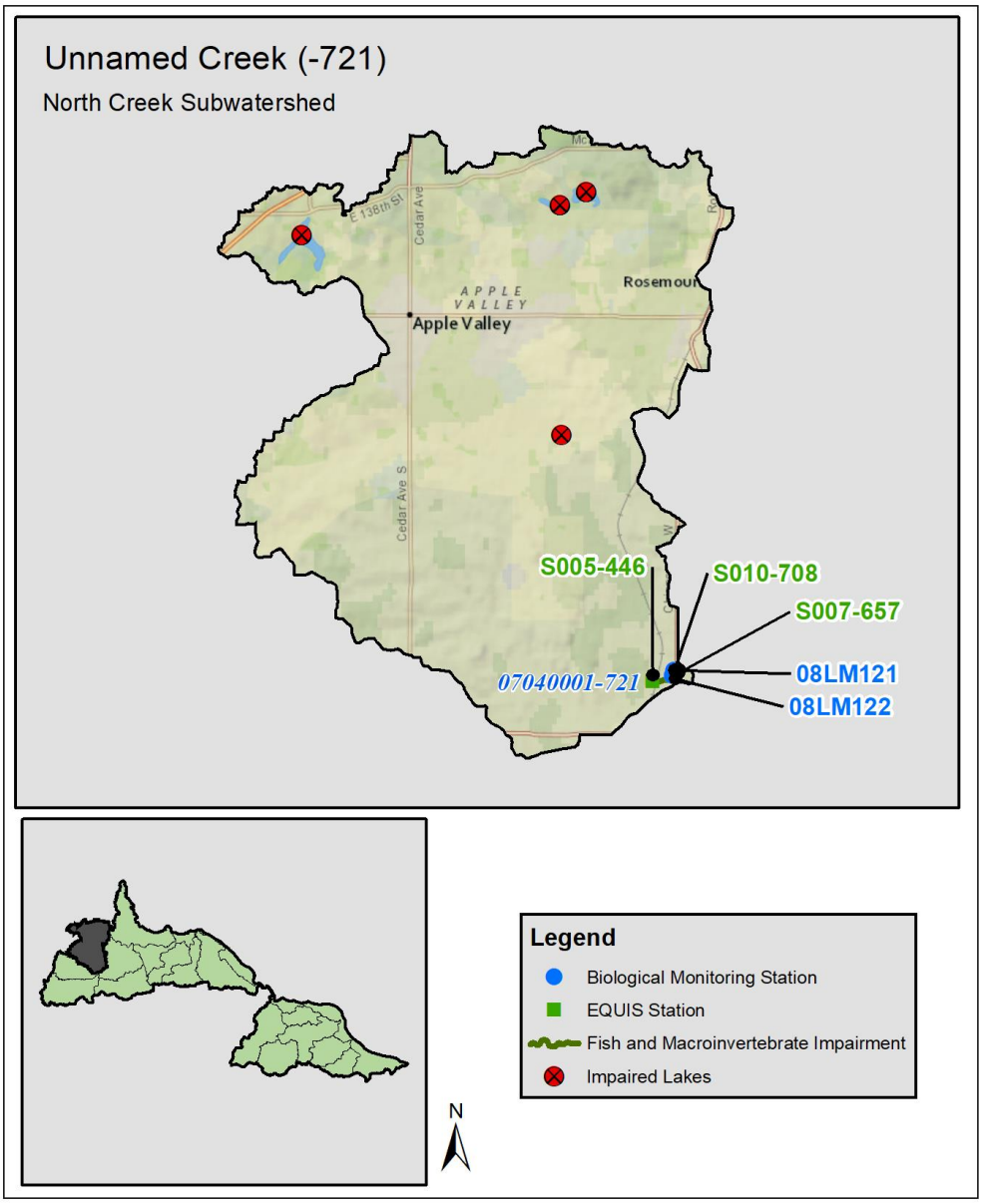

Figure 4: Perched culvert in North Creek preventing fish migration.

The upper portion of North Creek (-670) was re-meandered to eliminate some channelized portions. This restoration work has shown positive results so far as site 14LM004 was resampled for fish in 2020 and had a FIBI score of 46.1.

Unnamed Creek/Middle Creek (07040001-721)

Biological Community Summary

Unnamed Creek/Middle Creek (-721) is a 0.49 mile coldwater reach that is designated as impaired for aquatic life due to the fish and macroinvertebrate community conditions. The FIBI scores were 15.9 in 2008 and 25.3 during 2018 at site 08LM122, which were far below the FIBI class threshold of 50. The macroinvertebrate IBI (MIBI) scores at site 08LM122 were 26 in 2008 and 27 in 2018. These scores were both below their respective class thresholds.



What stressors are of concern?

SID work was not completed in Unnamed Creek/Middle Creek (Figure 5) during C1 SID. The goal of C2 SID work was to get additional water chemistry information on DO, eutrophication, nitrates, and stream transparency. Stressors found in this reach were DO and habitat. More information is needed to determine if eutrophication and suspended solids are stressors to the impaired biological communities, while nitrates and altered hydrology/connectivity were both ruled out as stressors.

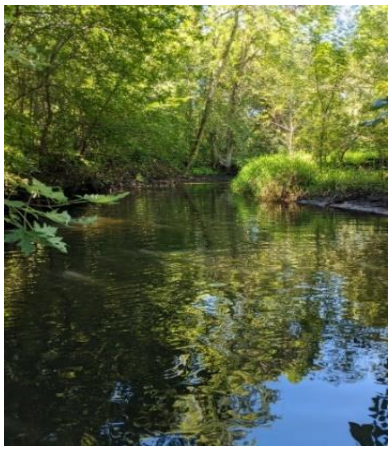
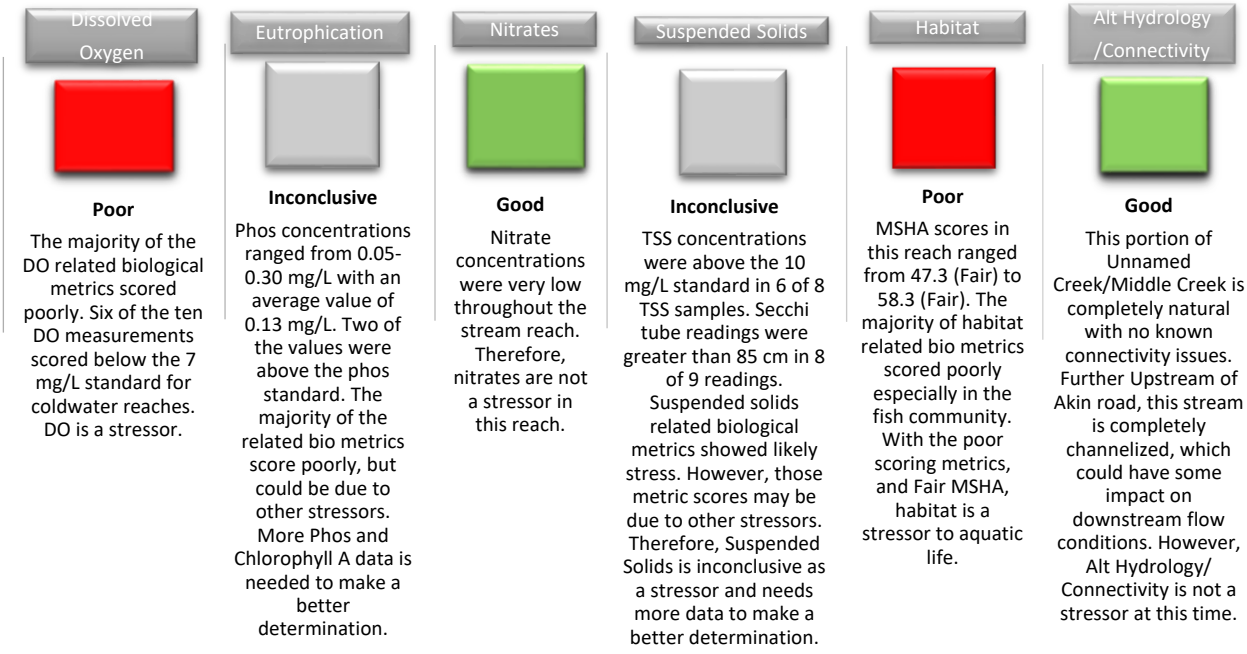


Figure 5: Unnamed Creek/Middle Creek at sampling site S007-657.



Summary of stream health in Unnamed Creek/Middle Creek

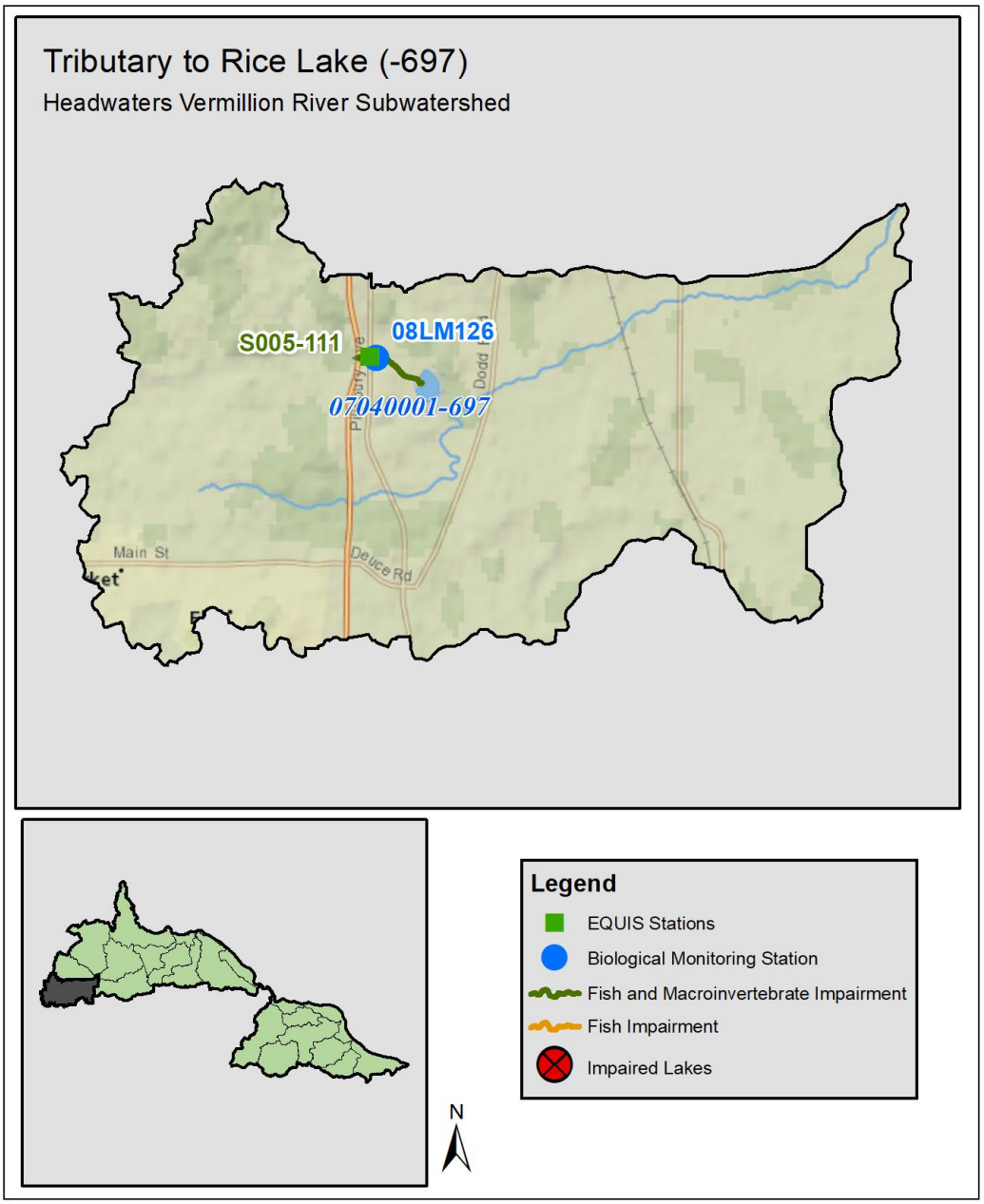
Additional biological and water chemistry information throughout Unnamed Creek/Middle Creek provided additional focus areas for DO, eutrophication, and habitat stressors. Suspended solids may be a potential stressor in the future. Prioritization of future work should consider these stressor impacts at various locations in the watershed.

- Low DO and eutrophication were issues in Unnamed Creek/Middle Creek. The proximity to row crop agriculture in the upstream portion of this reach, could be a source of the elevated phosphorus concentrations, which can lead to eutrophic conditions as well as lower DO values. Another potential source of the elevated phosphorus are the proximity of wetland areas in the upstream portion of the reach.
- Habitat conditions were considered to be fair in Unnamed Creek/Middle Creek. Limiting the habitat at site 08LM122 was the park and row crop surrounding land use, heavy bank erosion, presence of sand and silt substrates in some of the reach, moderate to severe embeddedness, sparse fish cover, and moderate channel stability. Habitat improvement projects could help further develop and provide more diversity to the biotic communities in this reach.
- Suspended Solids in Unnamed Creek/Middle Creek could potentially be an issue as well. The related biological metrics do score poorly, but that could be due to other major stressors like habitat. There is a large swing in transparency and TSS concentrations immediately following rainfall events.

Unnamed Creek/Trib to Rice Lake (07040001-697)

Biological Community Summary

Trib to Rice Lake (-697) is a 0.89 mile reach that is impaired for aquatic life use due to the low-scoring fish and macroinvertebrate assemblage scores. The lone biological monitoring site, 08LM126, located near CSAH-46, 3.5 miles SW of Lakeville had MIBI scores of 18 and 5, which are far below the class threshold of 30 leading to the impairment designation. The FIBI in this reach was 35.7 in 2018. This is above the low gradient, modified use threshold of 15. However, the biological condition gradient of this stream was very poor indicating severe degradation and the fish community consisted of mainly tolerant black bullheads. Further monitoring of this community above the FIBI could result in a de-listing of the impaired fish community.



What stressors are of concern?

SID work was not completed in Trib to Rice Lake during C1 SID. The goal of C2 SID work was to gather and analyze the biological and chemical data to determine the likely cause of stress to the impaired fish and macroinvertebrate communities. DO, eutrophication, habitat, and altered hydrology/connectivity were the identified stressors, while nitrates and suspended solids are not considered stressors to aquatic life at this time.

Dissolved Oxygen	Eutrophication	Nitrates	Suspended Solids	Habitat	Alt Hydrology /Connectivity
Poor	**Poor**	**Good**	**Good**	**Poor**	**Poor**
DO concentrations frequently were below the 5 mg/L minimum standard. The DO related biological metrics also scored poorly, especially in the macroinvertebrate community.	Phosphorus concentrations exceeded the 0.15mg/L in all 7 samples taken. Additionally, the majority of the eutrophication related biological metrics for both communities scored below average.	Nitrate concentrations were very low throughout the stream reach with an average concentration of 0.66mg/L. The macroinvertebrate Tolerance Indicator Value (TIV) scores were above average and a decreased amount of nitrate tolerant individuals were sampled.	TSS concentrations were predominantly low during base flow conditions. During large rainfall events, TSS concentrations do rise above the standard. The low scoring biological metrics are likely caused by other stressors, therefore, TSS is not a stressor at this time.	Habitat in Trib to Rice Lake was very poor. The presence of sand and silt substrates, along with the moderate embeddedness, and limited riparian area contributed to the habitat related metrics in the biotic communities to score low.	Trib to Rice Lake is completely channelized. This heavy amount of stream alteration results in poor habitat conditions, stream instability, as well as inconsistent flow conditions. These are likely reasons for the highly tolerant biotic communities present.

Summary of stream health in Trib to Rice Lake

Overall, Trib to Rice Lake (-697) is in poor health. The analysis of biological and water chemistry information throughout Trib to Rice Lake has provided additional focus areas for addressing eutrophication, DO, suspended solids, and habitat issues.

- The channelization of the entire stream reach likely contributes to the other stressors as well. The channelization and the low gradient nature of the reach allows for minimal flow causing an excess of silt and detritus to accumulate on the stream bed. This excess sediment covers potential coarse substrates and specialized habitats that intolerant species need to survive.
- Habitat conditions were very poor in Trib to Rice Lake. Across three visits, the MSHA (habitat) had an average score of 24. Limiting the habitat in this reach were the sand and silt substrates, the lack of coarse substrates, limited stream shading, no riffles, poor sinuosity and channel development as well as limited channel depth variability. Habitat improvement projects could help further develop and provide more diversity to the biotic communities in this reach.



Figure 6: Eutrophic conditions in Trib to Rice Lake.

- DO and eutrophication (Figure 6) were also found to be stressors in this reach. High amounts of phosphorus in addition to the slow moving, low gradient nature of the stream are significant contributors to these issues.

Part 3: Conclusion and Recommendations

Summary of Stressors

The stressors for the biological impairments in the Vermillion River Watershed are listed in Table 1. The most common stressors in the watershed during C2 SID were DO (3) and Habitat (3). Flow Alteration/Connectivity (2) and Eutrophication were also significant issues, while Suspended Solids (1) is also an issue to be improved upon in the watershed. Nitrates were ruled out as a stressor in these reaches.

Table 1: Stressor determinations for the Vermillion River Watershed during Cycle 2 SID (2020) as well as previous SID work (2004-2011) completed in the watershed.

		Stressors	Dissolved Oxygen	Eutrophication	Nitrate	Suspended Solids	Habitat	Flow Alteration /Connectivity
Stream Name	**AUID**	**Aquatic Life Impairment**						
Cycle 2 SID (2020)								
North Creek	07040001-670, -671	Fish, Macroinvertebrates	●	●	---	●	●	●
Unnamed Creek/Middle Creek	07040001-721	Fish, Macroinvertebrates	●	o	---	o	●	---
Unnamed Creek/Trib to Rice Lake	07040001-697	Fish, Macroinvertebrates	●	●	---	---	●	●
Previous SID (2004-2011)								
Vermillion River	07040001-507	Fish, Macroinvertebrates	o	---	---	●	●	o
Vermillion River	07040001-517	Fish, Macroinvertebrates	●	---	---	●	●	o
Unnamed Creek	07040001-527	Fish, Macroinvertebrates*	●	---	---	●	●	o
Unnamed Creek (Vermillion River Trib.)	07040001-667	Fish	o	---	---	●	o	o
Unnamed Creek (Vermillion River Trib.)	07040001-668	Fish, Macroinvertebrates	o	---	---	●	●	o
Unnamed Creek (Vermillion River Trib.)	07040001-671	Fish, Macroinvertebrates*	●	---	---	●	●	o
Vermillion River	07040001-692	Fish	o	---	---	●	●	o
Vermillion River, South Branch	07040001-707	Fish, Macroinvertebrates*	o	---	o	●	●	o

● = stressor; o = inconclusive stressor; --- = not an identified stressor

* New C2 impairment

Recommendations and Additional Monitoring

In the Vermillion River Watershed, the most common stressors identified were DO, eutrophication, and habitat. These stressors are largely tied to land use activities in the watershed, as well as human-caused alterations to the stream channel and flow regime. Additionally, the low gradient and wetland-like areas are also contributing to these stressors by their inability to move water through the systems allowing sedimentation, poor habitat, low DO and eutrophic conditions. Table 2 contains recommendations of possible solutions to these stressors.

Table 2. Recommended prioritization of restoration activities relative to the stressors contributing to the biological impairment in the Vermillion River Watershed.

Stressor	Priority	Comment
Habitat	High	Re-establish quality riparian corridor to increase stream stability, and stream shading. Protecting streambanks, reduce erosion and overall stream sedimentation, as well as potentially re-meandering channelized stream sections, especially in North Creek.
DO and Eutrophication	High	Utilize a variety of nutrient reducing BMPs targeting headwater reaches and tributaries. Decreasing the nutrient load in these reaches will help raise and stabilize dissolved oxygen conditions in the impaired reaches.
Flow Alteration/Connectivity	High	Evaluate and remove/replace culverts that are perched and impeding fish movement, primarily the field road culvert in North Creek.
Suspended Solids	Medium	Focus on reducing sediment input from riparian corridor and immediate stream channel (stream banks).

For more information

The WRAPS development including necessary TMDL's follow the completion of the SID process. For more information about this watershed, go to https://www.pca.state.mn.us/water/watersheds/mississippi-river-lake-pepin.

Details and specific monitoring information related to the SID analysis of this report is available, see contact person below.

Contact person

Michael Koschak

Minnesota Pollution Control Agency

michael.koschak@state.mn.us

651-757-2504

CLEAN WATER LAND & LEGACY AMENDMENT

MINNESOTA POLLUTION CONTROL AGENCY


7000
6500
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
NORTH CREEK
MIDDLE CREEK - TRIB 1
MIDDLE CREEK
PP15
PP17
PP16
PP07
PP06
PP05
PP04
PP03
PP02
PP01
PP07 Is one of the improvement locations
PP04 is one of the improvement locations
N
0
0.1
Miles
500ft Stations
Streams
Existing Retention Basins
Proposed Retention Basins
Potential Projects
Bank Stabilization
Grade Control
Bank Stabilization
Infrastructure
Culvert/Crossing
Infrastructure
Floodplain Management
Natural Channel Restoration/Relocation
Floodplain Management
Riparian Management
Grade Control
Riparian Management
Geomorphic Assessment
Potential Projects
North Creek
Sheet 01 of 19
inter·fluve
Inter-Fluve, Inc.
3602 Atwood Ave., Suite #3
Madison, WI 53714
www.interfluve.com
608-441-0342

Potential Project

PP 04

Stream: North Creek, Reach 1	Problem description: 4.5-ft corrugated metal pipe is undersized and perched about 1 ft on the downstream end. During moderate and high flows, the velocity is too high for passage and during moderate and low flows the 1-ft drop is too high for fish to jump and water depths in the culvert would be too low. Overtopping of road crossing has caused erosion on the downstream side of road. Debris has become wedged on upstream side of culvert.
Station: 2325	
Solution: Determine the necessity of this crossing and either remove or replace crossing with a more suitable culvert or bridge. If the crossing is necessary, replace existing culvert with much larger bottomless arch culvert or multiple box culverts so that the width is greater than the bankfull width of the stream.	

	Score	***Notes***
Infrastructure risk	3	
Erosion/channel stability	1	
Project complexity	5	
Location	1	
Sediment/nutrient loading	1	
Project cost	5	Less expensive to remove than to replace
Aesthetic impact	3	
Fish passage	7	The culvert is acting like a dam for fish and, being close to the mouth, is preventing all passage of fish to upstream waters.
Property Ownership	0	Unknown, possibly a private drive, but active use is unknown
Public Education	3	
In-stream Ecological Benefit	3	
Riparian Ecological Benefit	1	
Greenway Benefit	3	

Project Area Photo/Map Location

(Left to right): Stn 2300 looking upstream; Stn 2325 looking at erosion on downstream side of crossing; Stn 2350 looking downstream at culvert inlet





© 2011 Inter-Fluve, Inc.

Potential Project

PP 07

Stream: North Creek, Reach 2	Problem description: 3.5-ft corrugated metal pipe under dirt farm road is about 2 ft higher on upstream end and is undersized. Water velocity is very high through the pipe and is likely a complete fish passage barrier during most flows. A deep (5 ft) scour hole has been created on the downstream end with associated recirculation eddies and sand bars.
Station: 5375	
Solution: Replace or if still necessary, replace with bottomless arch or partially buried box culvert. Culvert should be sized so that the width is greater than the bankfull width of the channel.	

	Score	*Notes*
Infrastructure risk	3	
Erosion/channel stability	1	
Project complexity	5	
Location	1	
Sediment/nutrient loading	1	
Project cost	5	Less expensive to remove than to replace
Aesthetic impact	3	
Fish passage	7	The culvert is acting like a dam for fish
Property Ownership	0	Unknown, private property farm crossing
Public Education	3	
In-stream Ecological Benefit	3	
Riparian Ecological Benefit	1	
Greenway Benefit	3	

Project Area Photo/Map Location

(Left to right): Stn 5300 looking upstream at culvert; Stn 5380 looking downstream at culvert inlet





© 2011 Inter-Fluve, Inc.

Capital Improvement Project
Empire: North Creek Culvert Improvements at State Highway 3



Figure 1. Upstream end of the field access road culvert on North Creek slated for replacement. The photo demonstrates the sharp acceleration of the stream velocity as it enters the culvert.

The North Creek tributary of the Vermillion River runs through highly developed areas in the cities of Lakeville and Farmington, and portions of the creek are Minnesota Department of Natural Resources (DNR)-designated trout stream – a rare combination of circumstances. Preserving and improving aquatic habitat in this stream reach is one of the primary missions for the Vermillion River Watershed Joint Powers Organization (VRWJPO).

Upstream of State Highway 3 in the City of Empire, existing creek crossings disconnect stream reaches and make them impassable by fish and other aquatic organisms. The creek is significantly over-widened and shallow in the project area due to erosion from high stream velocities, which limits available habitat.

The VRWJPO plans to reconnect the stream segments by replacing an undersized, perched culvert at a field access road with properly sized and placed box culverts and modifying an existing culvert at a residential driveway to deepen continuous stream flow. The intent is to reduce stream velocities and provide passage for fish and other organisms. This will be combined with natural stream narrowing and bank stabilization techniques to secure eroded stream banks and improve aquatic habitat.

A Conservation Partners Legacy (CPL) grant from the DNR will support this project.

3/2026

Partners:

- VRWJPO
- Minnesota DNR

Installation (anticipated): Summer 2026

Location: Empire

Subwatershed: North Creek

Costs and Contributions (anticipated):

- VRWJPO: $121,550 (cash), $18,263 (in-kind)
- Conservation Partners Legacy Grant from DNR: $500,000

Benefits:

- Replacing the perched culvert will provide access to deeper stream flows, narrower channels, and vegetated stream banks well-suited for fish and macroinvertebrate habitats and recreational opportunities.
- The project will complement other work done upstream, such as a remeander project near 190th St W and a concurrent culvert replacement near Denali Way.



Figure 2. Downstream end of the pipe culvert slated for replacement at the field road.



Figure 3. Downstream end of the culvert at the driveway crossing, which will be modified to deepen normal flow conditions.

A Conservation Partners Legacy grant from the Outdoor Heritage Fund, one of four funds established by the Clean Water, Land & Legacy Amendment, supports this project.

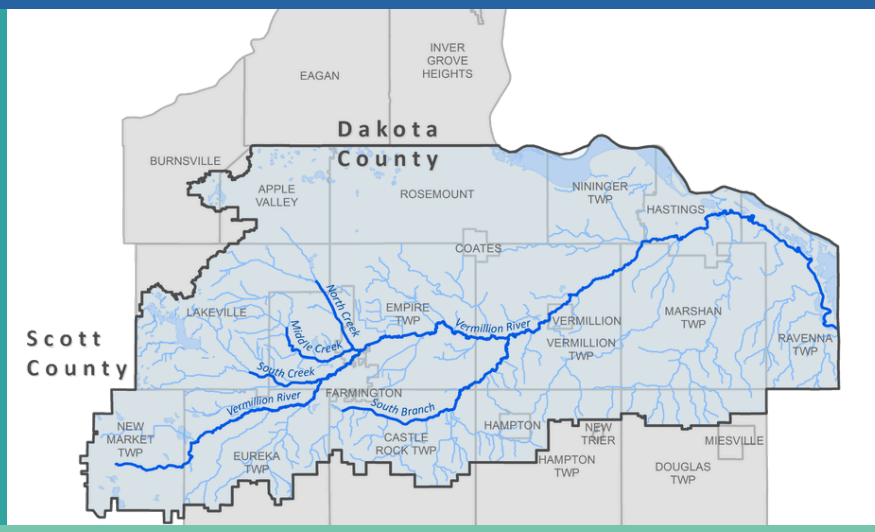
VERMILLION RIVER WATERSHED

2025 Activities and 2016-2025 Watershed Management Plan Highlights

Collaboratively providing education, science, and support to restore and protect the Vermillion River Watershed's natural resources for all who live, work, and play within its boundaries.

Who We Are

The Vermillion River Watershed Joint Powers Organization (VRWJPO) is the largest geographic watershed in the Twin Cities Metropolitan Area. We are a watershed management organization under a joint powers agreement between Dakota and Scott counties. With more than 50 miles of Minnesota Department of Natural Resources-designated trout stream, changing land uses, and curious people, there's opportunity around every streambank.





What We Do

Under the direction of the Joint Powers Board and guidance of the Community Advisory Committee and Technical Advisory Committee, VRWJPO staff create and execute the Watershed Management Plan (WMP). The WMP guides everything from water monitoring to stormwater standards to social media goals, as well as best management practices recommended by research and studies.

Top Stories of 2025

- **2026-2035 Watershed Management Plan:** Submitted the draft WMP for a 60-day review period, responded to 186 comments from 10 organizations, and revised the WMP and VRWJPO Standards. *The new WMP has been adopted as of April 22, 2026!*
- **East Lake Invasive Fish Barrier and Removals:** Total of ~9,600 lbs. of carp and goldfish removed over summer and fall 2024 and 2025, potential reduction of in-lake total phosphorus by 75 lbs./year
- **Alimagnet Lake Alum Treatment:** Continued improvements stemming from 2024 treatment - some of the "best ever" water quality monitoring results from the lake, per the City of Burnsville

CLEAN WATER LAND & LEGACY AMENDMENT
YOUR Clean Water Fund AT WORK

2025 Vermillion River Watershed Joint Powers Board Members

Scott County Commissioner Tom Wolf, Chair
Dakota County Commissioner Bill Droste, Vice Chair
Dakota County Commissioner Mary Liz Holberg, Secretary-Treasurer



Landscaping for Clean Water and Lawn Watering Wisdom video marketing campaign (above): Nearly 300,000 people saw ads featuring Greg, Lindsey, and Rosie on the Dakota County Soil and Water Conservation District social media accounts between February and September 2025, a partnership between the SWCD, Dakota County, VRWJPO, and the other Dakota County watersheds.



Farmington resident Josh Borton (above right) served on the VRWJPO Community Advisory Committee from 2017-2025, earning a hearty recognition from staff.



2016-2025 WMP By the Numbers

- **Pollutant reductions from VRWJPO projects:** 4,303 tons/year of total suspended solids, 3,031 lbs./year of total phosphorus, 21,980 lbs./year of nitrate
- **Water conservation from VRWJPO projects:** 18.82 million gallons per year of groundwater saved by implementing stormwater harvest and reuse systems for irrigation
- **Adopt-a-Drain:** 955 storm drains adopted (392 in 2025)
- **Dakota SWCD Landscaping for Clean Water projects in the VRWJPO:** 156 raingardens, native gardens, and shoreline plantings implemented (18 in 2025)
- **Community engagement:** About 17,000 people reached through workshops, field days, volunteer events, community programs, schools, watershed tours, township meetings, panel discussions, and presentations

VRWJPO Staff

Travis Thiel, Administrator
Melissa Bokman Ermer, Co-Administrator
Kelly Perrine, Senior Watershed Specialist
Jeff Dunn, Water Resources Engineer
Brita Moore-Kutz, Communications & Outreach Specialist

Vermillion River watershed
reflecting life