Agenda

Vermillion River Watershed Planning Commission

July 13, 2022 – 4:00 p.m., In-person and Teleconference via Zoom

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 April 13, 2022 Meeting — Action
6. Business Items
   a. Recommendation to release VRWJPO Plan Amendment to Plan Review Authorities for 30-day Public Review — Action
   b. Update on the Dakota County Agricultural Chemical Reduction Effort (ACRE) and Monitoring Well Network — Information
   c. Report on Measurable Outcomes as Identified in the 2016-2025 Vermillion River Watershed Management Plan — Information
7. Updates
   a. Chairperson's Report
   b. Staff Updates
8. Adjourn — Action

Please note, the July 13, 2022 Watershed Planning Commission meeting will take place **in-person** in Conference Room A at the Extension and Conservation Center, 4100 220th Street West, Farmington Minnesota **and via teleconference** on the web-based application, Zoom.

Join Zoom Webinar

Please click the link below to join the webinar:
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Other Information

Next Meeting Date**: August 10, 2022** at 4:00 p.m.

Please confirm your attendance by contacting Mark Zabel at mark.zabel@co.dakota.mn.us
You will be notified if the meeting is cancelled due to an anticipated lack of quorum.

Minutes

Vermillion River Watershed Planning Commission Meeting
April 13, 2022 – 4:00 p.m.
In-person and Zoom Videoconference

WPC Members in Attendance		Staff in Attendance	Others in Attendance
Mark Henry	James Kotz	Mark Ryan, VRWJPO	Curt Coudron, Dakota County SWCD
Josh Borton	Andy Riesgraf	Brita Moore-Kutz, VRWJPO	
Steve Hamrick		Mark Zabel, VRWJPO	
Chuck Clanton via teleconference			

1. **Call to Order**

The meeting was called to order at 4:00 p.m.

2. **Election of officers**

Mark Zabel opened nominations for Chair. Josh Borton nominated Mark Henry as Chair. Mark Henry nominated Chuck Clanton as Chair. There was some discussion about whether either of them was accepting their nomination. Both indicated a willingness to serve. After further discussion Commissioner Clanton withdrew leaving Commissioner Henry as the lone nominee. Mark Henry was elected Chair by acclamation. Chair Henry then nominated Chuck Clanton as Vice-chair. There were no other nominations and Chuck Clanton was elected Vice-chair by acclamation.

3. **Roll Call**

All members present.

4. **Audience Comments on Items Not on the Agenda**

None.

5. **Approval of Agenda and Minutes**

Chair Henry asked for approval of the agenda. Commissioner Clanton asked if there were no minutes listed for approval on the agenda. The January meeting did not have a quorum of

members present and so there was no meeting. Commissioner Clanton pointed out that the minutes of the previous meeting presented in the January meeting packet would still require approval. The minutes from the November 17, 2022 meeting of the Vermillion River Watershed Planning Commission were added for approval.
Chair Henry requested any adjustments to the minutes as presented. Upon hearing none, Chair Henry called for a motion to approve the minutes of the November 17, 2021 meeting of the WPC.

Motion by Commissioner Clanton, second by Commissioner Borton, to approve the agenda, and minutes of the November 17, 2021 meeting, as distributed. The agenda and minutes were approved by a 6-0 vote.

6. Business Items

a. Recommend Approval of Proposed Amendments to the Vermillion River Watershed Joint Powers Organization (VRWJPO) Draft Revised 2022 Budget

Mark Zabel introduced the draft budget document showing proposed amendments to the Final VRWJPO 2022 Budget. These amendments are based on carryover funds from underspending in the previous year and new grants awarded since adoption of the Final VRWJPO 2022 Budget on December 2, 2021. Mark went through the document highlighting each line where a change had occurred and explained the reason for the change. The overall result of proposed amendments to the budget is an increase in revenues from $1,942,600 to $2,693,350, a total increase of $750,750, an increase in expenses from $1,753,060 to $2,464,010, a total increase of $710,410, with a cash reserve of $229,340.

Motion by Commissioner Kotz, second by Commissioner Riesgraf, recommending approval of the amendment to bring the budgeted total expenses in 2022 to $2,464,010 and total revenue to $2,693,350 with a cash reserve of $229,340 was unanimously approved by a 6-0 vote.

b. Recommendation to Approve Vermillion River Watershed Joint Powers Organization (VRWJPO) Consultant List for 2022-2023

Mark Ryan presented the list of consultants whose application met the requirements of the Request for Qualifications (RFQ). Mark Ryan commented that the VRWJPO does the RFQ process every two years to meet the requirements set out by the Minnesota Board of Water and Soil Resources. Commissioner Riesgraf asked whether this list represents all consultants that we might use and how new consultants are accessed. Mark Zabel described the purpose of BWSR's requirement and how the VRWJPO then uses the consultant list, but that the list does not limit our access to consultants as the VRWJPO can use the Request for Proposals (RFP) process for larger projects or for projects with specific service needs. Commissioner Clanton suggested that the services (five areas) listed in the RFQ be shown with the list of consultants so that it is evident to those accessing the document as to what services are available through these consultants (i.e. a checklist). Mark Ryan commented

that we will consider that, though it is not something that the VRWJPO had done in the past or would be required by Statute. Commissioner Clanton commented that since this is a public document the information cold be used as a resource for outside parties looking to access certain services. Commissioner Borton pointed out that consultants on the list would have the opportunity to subcontract for services that they don't directly support. Mark Ryan acknowledged that consultants do use that approach when responding to an RFP. Commissioner Kotz asked if any of these firms are located within the watershed. Mark Ryan responded that he was not aware if any of these firms were officed locally within the watershed, but that could be a future consideration in trying to access local firms.

Motion by Commissioner Borton, second by Commissioner Hamrick, recommending approval of the list of qualified professional consultant services for 2022-2023, was unanimously approved by a 6-0 vote.

c. Recommend Authorization to Submit 2021 VRWJPO Annual Activity Report and Financial Statement to the Board of Water and Soil Resources (BWSR)

Brita Moore-Kutz presented a summary of the VRWJPO Annual Activity and Financial Report. Brita noted that a change to the report for this year was a formatting to an ADA compliant accessible format to make it readily available to screen readers. Commissioner Borton noted that his address should be corrected. Brita agreed to make that correction before presenting to the VRWJPB. The WPC members commented that the report was well done, thorough and complete. Mark Zabel noted that the report is a BWSR requirement that calls for its submittal within 120 days of the end of the VRWJPO fiscal year, which is the calendar year. The report will need to be submitted to BWSR by the end of April 2022.

Motion by Commissioner Clanton, second by Commissioner Kotz, recommending VRWJPB approval and submittal to the Minnesota Board of Water and Soil Resources of the VRWJPO Annual Activity Report and Financial Statement, was unanimously approved by a 6-0 vote.

7. Updates

a. Chairperson's Report

Chair Henry mentioned Joe Duggan has been advocating a bill at the Minnesota State Capitol supporting the promotion of enhanced CRP/CREP for riparian areas. There was some discussion about CRP (Conservation Reserve Program – implemented through the United States Department of Agriculture) and the challenges around getting conservation practices implemented on the land.

b. Staff Updates

Curt Coudron provided an update on several projects and programs of the Dakota SWCD. Curt highlighted the Landscaping for Clean Water Program as the workshops for the introductory course have been completed and the program will be moving into the design course soon.

Brita Moore-Kutz reported that efforts for outreach in direct public contact like tabling events were lacking in 2021 mainly due to COVID. This year and this month (being Earth Month and Earth Day being April 22nd) the VRWJPO will be participating in several events, one in Farmington and one in Lakeville. Another event involves students from the School of Environmental Studies with a live staking on North Creek in Farmington. Brita has been coordinating with the "We Are Water" development with Dakota County. Displays will be at two locations, the Pleasant Hill Library in the City of Hastings and at the Visitor Center at Lebanon Hills Regional Park. Events and activities are being planned for both locations. The eNewsletter was sent out recently and included several articles and a few yard management tips for Spring.

Curt Coudron followed up with a note that the Dakota SWCD is holding their Tree Sale at the Dakota County Fairgrounds County Building on April 20, 21, and 22.

Mark Ryan reported that Apple Valley is a new partner in the Irrigation Audit Program and so we will be seeing some water conservation implementation in three participating cities this year (Lakeville and Rosemount again are the other two). Mark Ryan also reported having attended the Spring Township Officer's meeting on March 19th where he talked about the need for updating ordinances for Water Resource Management (to implement the VRWJPO Standards). Mark also mentioned that the Manager for the Empire Wastewater Treatment Plant presented information about biosolids management at that meeting and has a copy of an information sheet to share with Commissioner Clanton with his prior interest in the subject. Mark mentioned that staff have been coordinating with the Dakota SWCD on a subwatershed assessment on the Lower Mainstem Vermillion River South – which encompasses the tributaries flowing to the Vermillion River from the south for an area generally between highways 52 and 61. Something new in the subwatershed assessment will be assessing projects for nitrate reduction to help with this local concern.

Mark Zabel provided an update on the wetland bank and the sale of wetland bank credits. Dakota County was allocated credits for the Braun Wetland bank (Wetland Bank #1740) a portion, 5.1066 acres of credit, for public sale on behalf of the VRWJPO. The VRWJPO is offering those credits for mitigation of wetland impacts at a cost of $37,000 per acre credits for replacement of impacts that occur within the watershed, and $45,000 per acre credits for replacement of impacts that occur outside the watershed. Mark Zabel recently sent letters to all the local units of government that implement the Minnesota Wetland Conservation Act (WCA) within the watershed, informing them of the development of Wetland Bank #1740 and the availability of wetland credits. Since then there have been three inquiries for a total of 3.212 acres of credit. Two are from inside the watershed and one, for 0.24 acres, from outside the watershed. If all three of these requests go through to completion it would generate $120,764 of revenue. Mark gave a brief explanation of how WCA manages for wetland impacts through mitigation and the options available for permit applicants to mitigate their impacts – which may include obtaining credits from a wetland bank. Mark described the recent restoration of the Braun Wetland through a partnership between BWSR, Dakota County, and

the VRWJPO (financially) toward developing a wetland bank. If these requests go through the VRWJPO would have approximately 1.9 acres left and then we will have to wait until next year for the next performance evaluation, certification, and release of credits. Mark Henry commented that the area of this wetland was once called Lake Eleven as it was in Section 11 of Castle Rock Township. Mark Henry also shared that Blaine Avenue which runs along the western edge of this wetland was originally constructed as a dirt road by hauling load after load of sand and gravel out onto the ice in Winter to build up a roadbed through the wetland. Chair Henry noted that the restoration of this wetland may also provide some treatment for nitrates going to the South Creek tributary to the Vermillion River.

Commissioner Clanton commented that he had heard that the Field Biology Class at Hastings High School is not continuing. Staff noted that Joe Beattie had resigned his position at Hastings High School as the Biology Teacher and is now teaching at Inver Hills Community College. Commissioner Clanton suggested the VRWJPO consider appointing people who own land (but who do not live) in the watershed as WPC members in order to broaden the opportunity for people who have an interest to serve. Mark Zabel said that he believed that the residency requirement is set out in the Joint Powers Agreement that established the VRWJPO and will verify that requirement and discuss with the Vermillion River Watershed Joint Powers Board.

8. Adjourn

Motion by Commissioner Hamrick, second by Commissioner Borton, to adjourn the meeting at 5:22 p.m. The motion passed on an 6-0 vote.

6a. Recommendation to Release Vermillion River Watershed Joint Powers Organization Watershed Management Plan Amendment to Plan Review Authorities for 30-day Review Period

Meeting Date:	7/13/2022	
Item Type:	Regular-Action	
Contact:	Travis Thiel	
Telephone:	952-891-7546	
Prepared by:	Travis Thiel	
Reviewed by:	N/A	N/A

PURPOSE/ACTION REQUESTED

- Recommendation to release Vermillion River Watershed Joint Powers Organization Watershed Management Plan amendment to plan review authorities for 30-day review period

SUMMARY

Vermillion River Watershed Joint Powers Organization (VRWJPO) staff have prepared a Watershed Management Plan (Plan) Amendment (Attachment A) for consideration by the Vermillion River Watershed Joint Powers Board (VRWJPB) and its stakeholders. VRWJPO staff request a recommendation from the Vermillion River Watershed Planning Commission to release the Plan amendment to the plan review authorities for review and comment for at least 30 days for receipt of comments.

The Implementation Plan section of the Plan is being revised to incorporate additional activities from the Vermillion River Watershed Restoration and Protection Strategy (WRAPS) that were not originally incorporated when the Plan was adopted 2016. Other revisions include updates to reflect additional information and studies completed since the Plan was adopted, provide additional specificity to existing Implementation Plan activities, and assumptions regarding future Watershed-Based Implementation Funding (WBIF) grants revenues.

The Minnesota Board of Water and Soil Resources (BWSR) has provided a preliminary review to determine if the proposed Plan amendment would be considered a minor or major plan amendment as there are different review requirements depending on the type of amendment. The BWSR has indicated this project should follow the process for a minor plan amendment as written in Minnesota Rule 8410.0140 (Rule). The Rule requires that the organization must send copies of the amendments to the plan review authorities for review and comment allowing at least 30 days for receipt of comments.

As required by the Rule, deletions to the Plan are identified in strikethrough and additions are identified as underlined. For ease of viewing the revisions in the proposed amendment, entire tables are stricken, and new tables have been underlined rather than trying to blend stricken language and new language in the same tables.

EXPLANATION OF FISCAL/FTE IMPACT

None.

Supporting Documents: Attachment A-VRWJPO Plan Amendment **Previous Board Action(s):**

RESOLUTION

6a. Recommendation to Release Vermillion River Watershed Joint Powers Organization Watershed Management Plan Amendment to Plan Review Authorities for 30-day Review Period

WHEREAS, the VRWJPO adopted its current Watershed Management Plan (Plan) in 2016 and is required to implement the plan over a ten-year period; and

WHEREAS, amendments to the plan are required to accommodate changes to the Plan over the course of implementation during the ten-year period; and

WHEREAS, staff have identified the need to amend the Plan to incorporate changes to the Implementation Plan section of the plan; and

WHEREAS, the Implementation Plan section of the Plan is being revised to incorporate additional activities from the Vermillion River Watershed Restoration and Protection Strategy (WRAPS) that were not originally incorporated when the Watershed Plan was adopted in 2016, plus other revisions that include updates to reflect additional information and studies completed since the Plan was adopted, provide additional specificity to existing Implementation Plan activities, and assumptions regarding future Watershed-Based Implementation Funding (WBIF) grants revenues; and

WHEREAS, the Minnesota Board of Water and Soil Resources (BWSR) determines whether an amendment is considered a minor or major plan amendment, and this dictates the review process that is required for the amendment; and

WHEREAS, BWSR has provided a preliminary review of the proposed amendment and has indicated it should follow the minor amendment process; and

WHEREAS, Minnesota Rule 8410.0140, Subpart 2 requires that the organization must send copies of the amendment to the plan review authorities for review and comment allowing at least 30 days for receipt of comments.

NOW, THEREFORE, BE IT RESOLVED, the Vermillion River Watershed Planning Commission recommends the release of the Plan amendment to the plan review authorities for review and comment for at least 30 days for receipt of comments.

Section 7: Implementation Plan

7.0 Introduction

This section describes the Implementation Plan, as well as how activities were selected for implementation within the 10-year timeframe of the 2016-2025 Vermillion River Watershed Management Plan.

The implementation section of the Plan identifies specific, measurable actions necessary to achieve goals identified in Section 6: Goals, Objectives, and Actions.

These actions were suggested during the public involvement process or taken from the Vermillion River Watershed Restoration and Protection Strategy (WRAPS), geomorphic assessments, subwatershed assessments, partner Capital Improvement Plans (CIPs), and other previously completed planning documents.

The process of "blending" action steps from so many different sources into a coherent implementation plan was a challenge. An implementation table containing all recommended actions individually would be exhaustive, duplicative, and lacking in focus and priority.

The VRWJPO contracted with Emmons & Olivier Resources (EOR) to develop a process for an implementation plan. The VRWJPO wanted an implementation plan that would be true to source materials (WRAPS, geomorphic assessments, etc.) as well as the priorities expressed by stakeholders and the public.

Figure 7.0.1: VRWJPO Implementation Plan Development Process summarizes the steps taken to achieve the implementation plan.

An action in Section 6: Goals, Objectives, and Actions in the Implementation Plan are statements of intent by the VRWJPO. Implementation depends on future decisions by the Vermillion River Watershed Joint Powers Board (VRWJPB), which budgets for and authorizes initiatives. In many cases, implementation requires participation of other parties.

The VRWJPO is committed to regular evaluation of its programs, projects, and capital improvements. The VRWJPO will periodically (at least every two years) review its progress towards implementing this Plan. In response to feedback, new information, changes in priorities, or new technical approaches, the VRWJPO may revise or amend the Implementation Plan.

In 2022, VRWJPO staff reviewed the implementation activities for each subwatershed and made adjustments to each subwatershed management plan to reflect items that were not originally incorporated from the WRAPS, outcomes of new assessments and studies, and other knowledge gained as the Plan was implemented up until 2022. These changes demonstrate flexibility and adaptation based on the needs of the water resources in the VRWJPO.

Figure 7.0.1: VRWJPO Implementation Plan Development Process

Step 1: Compile Potential Implementation Activities	Step 2: Evaluate Implementation Activities	Step 3: Identify Watershed-wide Implementation Activities	Step 4: Develop Subwatershed Management Plans	Step 5: Prioritize Implementation Activities
Populated table with implementation activities found in the Goals, Objectives, and Actions (GOA), WRAPS, geomorphic assessments, Vermillion River Headwaters assessment, and others.	Sorted implementation activities by VRWJPO role: Administration and Operations; Coordination and Collaboration; Land and Water Treatment; Monitoring and Assessment; Public Communication and Outreach; Regulation; and Research and Planning.	Implementation activities that could occur anywhere within the watershed are included in the Implementation Plan Summary ("the big table").	Implementation activities that are unique to a specific area were identified in individual subwatershed management plans.	Implementation activities in individual subwatershed were prioritized by the VRWJPO. Estimates were made of the percentage of VRWJPO funding and effort that would be expended on each subwatershed.
Evaluated whether specific activities had been implemented; if yes, removed them from the table.	Made certain that implementation activities (now sorted by VRWJPO role) were assigned a goal and objective to track its origins in the GOA.	Implementation activities that are currently being performed or are ongoing responsibilities were grouped in one line item in "the big table" – Staff Function.	Implementation activities identified in geomorphic assessments were cross-referenced with projects in member communities' CIP to see if there was overlap and an opportunity to partner.	Ensured that all implementation activities had been evaluated, prioritized, and included in "the big table," with cost estimates based on the VRWJPO's annual budget projections over the next 10 years.
Contacted member communities (cities, counties) to request Capital Improvement Plans to identify opportunities for collaboration.		Implementation activities assumed to be new functions or projects of the VRWJPO are listed separately in "the big table."	After filling in each subwatershed management plan, total annual costs for implementation activities was calculated for that subwatershed and included in "the big table."	

7.1 Subwatershed Management Plans

The development of specific subwatershed management plans allows the VRWJPO to prioritize its projects among various subwatersheds based on resource conditions, impacts on other subwatersheds, or other issues. For example, a water quality improvement project implemented in an upstream subwatershed will benefit the resources downstream.

The VRWJPO staff developed a prioritization for subwatersheds based on these factors. (See Figure 7.1.1: Subwatershed Priorities.) The priority factor is the percentage of available project funding to be allocated for projects in specific subwatersheds to fund identified projects.

Figure 7.1.1: Subwatershed Priorities

Subwatershed	Priority Factor
Upper Main Stem	25
South Creek	20
North Creek	15
South Branch Vermillion	15
Middle Creek	10
Middle Main Stem	7
Lower Main Stem	5
Mississippi River Direct	3

Implementation projects depend on a variety of factors, including partner participation, opportunity, and available staff time. The annual budget allocations for projects in each subwatershed are contingent on VRWJPB approvals.

After implementing the Plan for five years, the subwatershed management plans were adjusted in 2022 to reflect challenges with project opportunities, challenges and opportunities finding cooperative landowners, newly identified projects based on current data, and new grant funding sources.

This adjustment to the subwatershed management plans results in changes in the proposed funding allocation for each subwatershed. The proposed funding allocation does not fully align with the priorities identified in Figure 7.1.1 based on challenges with project opportunities in each subwatershed.

The subwatershed management plans (Figures 7.2 through 7.9) consist of all of the potential projects that have been identified for the given subwatershed. The categories highlighted in beige represent those projects identified in geomorphic ~~or subwatershed~~ assessments. For example, Figure 7.3 South Creek Subwatershed, includes a category "Culvert/crossing" that includes several specific projects identified in the South Creek geomorphic assessment.
The projects in white are those that are recommended in the WRAPS, partner CIP plans, projects identified in a subwatershed assessment, or other planning documents.

Clearly, the VRWJPO will not be able to complete all of the projects listed in the subwatershed plans within its current budget structure. Each of the subwatershed management plan figures includes funding estimates based on:

- ≈ All potential projects that have been identified within the subwatershed.
- ≈ ~~A prioritized list of projects to be completed within the subwatershed given a $500,000 annual capital improvement budget.~~
- ≈ A prioritized list of projects to be completed within the subwatershed given the VRWJPO's existing annual budget, after watershed-wide initiatives have been allocated.

It should be noted that the costs for activities identified as nutrient management practices and agricultural BMPs anticipated to be just a fraction of the costs required for these practices and will need to be supplemented by State or other local funding.

Consultants and staff developed cost estimates for each activity in the subwatershed plans. Cost estimates were identified in the geomorphic assessments; the VRWJPO used the mid-range of the cost estimates in the subwatershed management plans. To reduce project costs, the VRWJPO will continue to collaborate with partners.

Consultants and staff reviewed the capital improvement programs or other planning documents of local partners to determine where work within the watershed is being proposed.

Some proposed partner projects – such as road reconstruction, facility upgrades, or residential developments – can be significantly improved by installing stormwater management or treatment practices concurrently. Partners can incorporate BMPs that protect infrastructure, reduce impacts of new impervious surface, reduce and treat stormwater, build resilience to weather events, and add landscape interest.

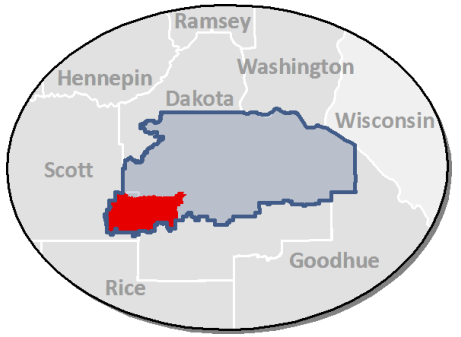
VRWJPO cost share funding can provide partners these benefits at a reduced cost. At the same time, the VRWJPO achieves its water and land improvement goals while working efficiently and economically in concert with activities already underway.

7.2 Upper Main Stem Subwatershed

The Upper Main Stem Subwatershed is the top priority for implementation projects. The subwatershed includes two reaches of the Vermillion River (520 and 517). Potential projects are shown in Figure 7.2.1.: Upper Main Stem Subwatershed Management Plan.

Figure 7.2.1: Upper Main Stem Subwatershed Management Plan

~~Upper Main Stem Subwatershed Management Plan~~	~~Original Scenario (All Activities)~~	~~500K Annual Scenario 1~~	~~Current Balance Scenario~~
~~Vermillion Headwaters Subwatershed Assessment BMPs~~	~~$ 137,720~~	~~$ 137,720~~	~~$ 137,720~~
~~Bemis Wetland Project~~	~~$30,000~~		
~~***Subtotal***~~	~~$ 137,720~~	~~$ 137,720~~	~~$ 137,720~~
~~*Culverts/crossings*~~	~~*$ 500,000*~~	~~*$ 1,112,280*~~	~~*$ 406,030*~~
~~*Riparian buffers*~~	~~*$ 250,000*~~		
~~*Natural Channel Restoration*~~	~~*$ 250,000*~~		
~~*Streambank stabilization*~~	~~*$ 750,000*~~		
~~*Additional projects identified in future geomorphic assessment*~~	~~*$ 500,000*~~		
~~*Future Geomorphic Subtotal*~~	~~*$ 2,250,000*~~		
~~**Ten Year Total Budget (25% of total)**~~	~~**$ 2,417,720**~~	~~**$ 1,250,000**~~	~~**$ 543,750**~~



Upper Main Stem Subwatershed Management Plan (2022 Amendment)	**Estimated Cost**
Vermillion Headwaters Subwatershed Assessment BMPs	$125,000
Wetland restoration and water storage practices • Bemis Wetland Project	$50,000
Bacteria reduction practices (e.g. septic, livestock, etc.)	$20,000
Subtotal	**$195,000**
Stream channel improvements • Culverts/crossings • Riparian buffers • Natural Channel Restoration • Streambank stabilization • Additional projects identified in future geomorphic	$300,000
Budget Total	**$495,000**

A geomorphic assessment has not been conducted for this subwatershed, so dollar amounts shown for these activities (shaded beige in the figure) were estimated based on expenditures found in other, similar subwatersheds. ~~Note that the dollar amount to be spent on projects~~

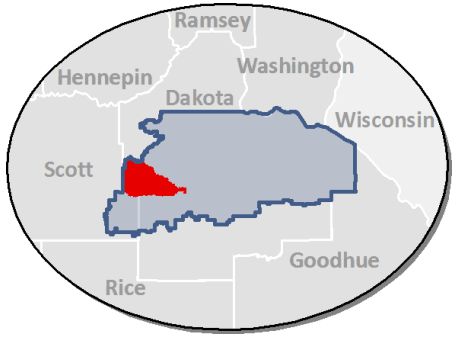
~~identified in the geomorphic assessments is lumped for the two budget scenarios.~~ The specific geomorphic assessment projects to be conducted will be determined based on the evaluation criteria and priorities established within the assessment.

7.3 South Creek Subwatershed

The South Creek Subwatershed was identified as one of the top priorities for implementation projects. The subwatershed includes impaired reach 527 and Lake Marion. Potential projects are identified in Figure 7.3.1.: South Creek Subwatershed Management Plan.

Figure 7.3.1: South Creek Subwatershed Management Plan

~~South Creek Subwatershed Management Plan~~	~~Original Scenario (All Activities)~~	~~500K Annual Scenario 1~~	~~Current Balance Scenario~~
~~Bacteria Feasibility Study~~	~~$ 25,000~~		
~~Bacteria Project~~	~~$ 125,000~~		
~~BMP retrofits Lakeville downstream of Marion Lake.~~	~~$ 300,000~~	~~$ 300,000~~	~~$ 300,000~~
~~BMPs for Hamburg Ave. re-construction in reaches 570, 715~~	~~$ 150,000~~		
~~***Subtotal***~~	~~$ 600,000~~	~~$ 300,000~~	~~$ 300,000~~
~~*Bank Stabilization*~~	~~*$ 18,750*~~	~~*$ 700,000*~~	~~*$ 135,000*~~
~~*Culvert/crossing*~~	~~*$ 131,250*~~		
~~*Infastructure/Bank Stabilization*~~	~~*$ 18,750*~~		
~~*Infrastructure*~~	~~*$ 393,750*~~		
~~*Natural Channel Restoration*~~	~~*$ 2,343,750*~~		
~~*Riparian Management*~~	~~*$ 1,087,500*~~		
~~*Geo Morph Subtotal*~~	~~*$ 3,993,750*~~		
~~**Ten Year Total Budget (20% of total)**~~	~~**$ 4,593,750**~~	~~**$ 1,000,000**~~	~~**$ 435,000**~~



South Creek Subwatershed Management Plan (2022 Amendment)	**Estimated Cost**
South Creek BMP retrofits • BMP retrofits from South Creek Downtown/ Industrial Park SWA • BMPs for Hamburg Ave. re-construction	$200,000
Lake Marion Protection Stormwater Improvements	$50,000
Subtotal	**$250,000**
Stream channel improvements • Bank Stabilization • Culvert/crossing • Infrastructure/Bank Stabilization • Infrastructure • Natural Channel Restoration • Riparian Management • Geo Morph Subtotal	$391,200
Budget Total	**$641,200**

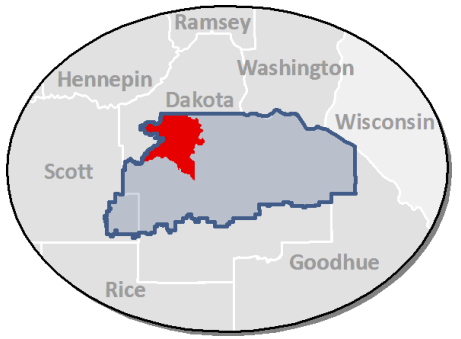
The projects highlighted in beige were identified in the geomorphic assessment that was done for South Creek, available on the VRWJPO website. ~~Note that the dollar amount to be spent on projects identified in the geomorphic assessments is lumped for the two budget scenarios.~~ The specific geomorphic assessment projects to be conducted will be determined based on the evaluation criteria established within the assessment.

7.4 North Creek Subwatershed

The North Creek Subwatershed was identified as one of the top priorities for implementing projects. The subwatershed includes three impaired reaches of North Creek (545, 670 and 671). Potential projects are identified in Figure 7.4.1.: North Creek Subwatershed Management Plan.

Figure 7.4.1: North Creek Subwatershed Management Plan

~~North Creek Subwatershed Management Plan~~	~~Original Scenario (All Activities)~~	~~500K Annual Scenario 1~~	~~Current Balance Scenario~~
~~Bacteria Feasibility Study~~	~~$ 25,000~~		~~$ -~~
~~Bacteria Project~~	~~$ 75,000~~		~~$ -~~
~~SW Storage in Headwaters~~	~~$ 300,000~~	~~$ 150,000~~	~~$ 150,000~~
~~SW Retrofits: Pilot Knob~~	~~$ 275,000~~	~~$ 125,000~~	~~$ 125,000~~
~~Assess weirs/dams and backwaters~~	~~$ 85,000~~	~~$ 85,000~~	
~~**Subtotal**~~	~~**$ 760,000**~~	~~**$ 360,000**~~	~~**$ 275,000**~~
~~*Bank Stabilization*~~	~~$ 37,500~~		
~~*Crossing/culvert*~~	~~$ 937,500~~		
~~*Grade Stabilization*~~	~~$ 281,250~~		
~~*Infrastructure*~~	~~$ 150,000~~	~~$ 390,000~~	~~$ 51,250~~
~~*Natural Channel Restoration*~~	~~$ 731,250~~		
~~*Riparian Management*~~	~~$ 187,500~~		
~~*Geo Morph Subtotal*~~	~~$ 2,512,500~~		
~~**Ten Year Total Budget (15% of total)**~~	~~**$ 3,085,000**~~	~~**$ 750,000**~~	~~**$ 326,250**~~



North Creek Subwatershed Management Plan (2022 Amendment)	**Estimated Cost**
Alimagnet Lake External Load Phosphorus Reduction BMPs • Enhanced Street Sweeping • Public land water quality improvements • Stormwater retrofits	$25,000
Alimagnet Lake Internal Load Phosphorus Reduction BMPs • Lake Alum or Drawdown Feasibility Study • Lake Alum Treatment or Lake Drawdown • Fisheries Management • Lake Shoreline and Buffer Improvements	$400,000
East Lake External Load Phosphorus Reduction BMPs • Stormwater Improvement or retrofit BMPs from North Creek/East Lake SWAs • Enhanced Street Sweeping • Lake Shoreline and Buffer Improvements	$100,000

East Lake Internal Load Phosphorus Reduction BMPs • Fisheries Management • Fish barrier • Lake Alum Feasibility Study • Lake Alum Treatment	
North Creek Stormwater Improvement BMPs • Stormwater Improvement BMPs from North Creek/East Lake SWA • Dodd Blvd Stormwater Treatment BMP • Foxborough Park Area Stormwater Retrofit Projects • Buffer Improvements	$75,000
Long/Farquar Lake stormwater improvements BMPs • Stormwater improvement BMPs from Long/Farquar TMDL Implementation Plan	$100,000
Subtotal	**$900,000**
Stream channel improvements • Bank Stabilization • Culvert/crossing • Infrastructure/Bank Stabilization • Infrastructure • Natural Channel Restoration • Riparian Management • Geo Morph Subtotal	$50,000
Budget Total	**$950,000**

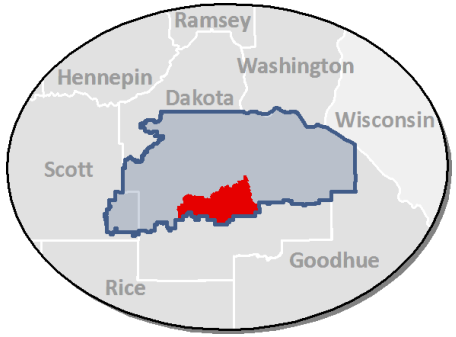
The projects highlighted in beige were identified in the geomorphic assessment that was done for North Creek and its tributaries, available on the website. ~~Note that the dollar amount to be spent on projects identified in the geomorphic assessments is lumped for the two budget scenarios.~~ The specific geomorphic assessment projects to be conducted will be determined based on the evaluation criteria established within the assessment.

7.5 South Branch Vermillion Subwatershed

The South Branch Vermillion Subwatershed was identified as one of the top priorities for implementing projects. The subwatershed includes South Branch reach 707. Potential projects are identified in Figure 7.5.1.: South Branch Vermillion Subwatershed Management Plan.

Figure 7.5.1: South Branch Vermillion Subwatershed Management Plan

~~South Branch Vermillion Subwatershed Management Plan~~	~~Original Scenario (All Activities)~~	~~500K Annual Scenario 1~~	~~Current Balance Scenario~~
~~Woodchip bioreactors and other N removal BMPs~~	~~$ 75,000~~	~~$ 75,000~~	~~$ 75,000~~
~~*Riparian Buffers*~~	~~*$ 250,000*~~	~~*$ 250,000*~~	~~*$ 125,625*~~
~~*Natural Channel Restoration*~~	~~*$ 100,000*~~	~~*$ 100,000*~~	~~*$ 125,625*~~
~~*Culverts/crossings*~~	~~*$ 50,000*~~	~~*$ 50,000*~~	~~*$ 50,000*~~
~~Ten Year Total Budget (15% of total)~~	~~$ 475,000~~	~~$ 475,000~~	~~$ 376,250~~



South Branch Vermillion Subwatershed Management Plan (2022 Amendment)	Estimated Cost
Woodchip bioreactors and other N removal BMPs	$75,000
Nutrient management practices • Cover crops • Perennial crops	$15,000
Best management practices identified in South Branch Vermillion SWA	$134,700
Wetland Restoration and Water Storage Practices	$244,400
Subtotal	**$469,100**
Stream channel improvements • Riparian buffers • Natural Channel Restoration • Culverts/Crossings	$136,700
Budget Total	**$605,800**

~~A geomorphic assessment has not been conducted for this subwatershed yet so the dollar amounts shown for these activities (shaded beige in the figure) were estimated based on expenditures found in other, similar subwatersheds. The specific geomorphic assessment projects to be conducted will be determined based on the evaluation criteria and priorities established within the assessment.~~

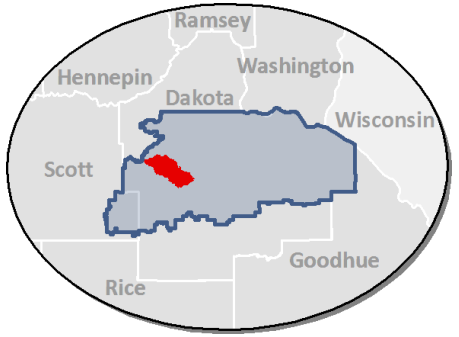
A geomorphic assessment was conducted by the Minnesota Department of Natural Resources in 2020. The assessment was not conducted in the same manner as other geomorphic assessments conducted by the VRWJPO that focus on project identification, and this assessment primarily focused stream classification based on field surveys and visual observations. As a result, it is more difficult to develop an implementation plan for stream channel improvements, but VRWJPO staff identified potential projects and estimated costs based on the information available.

7.6 Middle Creek Subwatershed

The Middle Creek Subwatershed was identified as a lower priority for implementing projects. The subwatershed includes two impaired reaches of Middle Creek (548 and 668). Potential projects are identified in Figure 7.6.1.: Middle Creek Subwatershed Management Plan.

Figure 7.6.1: Middle Creek Subwatershed Management Plan

~~Middle Creek Subwatershed Management Plan~~	~~Original Scenario (All Activities)~~	~~500K Annual Scenario 1~~	~~Current Balance Scenario~~
~~Headwater Stream Ponds (upstream of 195th St)~~	~~$ 200,000~~	~~$ 100,000~~	~~$ 100,000~~
~~Bacteria Feasibility Study~~	~~$ 25,000~~		~~0~~
~~Bacteria Project~~	~~$ 125,000~~		~~0~~
~~Headwaters Cost Share~~	~~$ 25,000~~	~~$ 25,000~~	~~0~~
~~Connect re-constructed area in reach 547 downstream of 195th Street~~	~~$ -~~	~~0~~	~~0~~
~~***Subtotal***~~	~~$ 375,000~~	~~$ 125,000~~	~~$ 100,000~~
~~*Bank Stabilization*~~	~~*$ 56,250*~~	~~*$ 375,000*~~	~~*$ 117,500*~~
~~*Crossing/culvert*~~	~~*$ 356,250*~~		
~~*Grade Stabilization*~~	~~*$ 262,500*~~		
~~*Infrastructure*~~	~~*$ 37,500*~~		
~~*Natural Channel Restoration*~~	~~*$ 1,068,750*~~		
~~*Riparian Management*~~	~~*$ 112,500*~~		
~~*Geo Morph Subtotal*~~	~~*$ 1,893,750*~~		
~~**Ten Year Total Budget (10% of total)**~~	~~**$ 2,268,750**~~	~~**$ 500,000**~~	~~**$ 217,500**~~



Middle Creek Subwatershed Management Plan (2022 Amendment)	**Estimated Cost**
Wetland Restoration and Water Storage Practices	$75,000
Headwater Improvement Cost Share	$25,000
Subtotal	**$100,000**
Stream channel improvements • Bank Stabilization • Crossing/culvert • Grade Stabilization • Infrastructure • Natural Channel Restoration • Riparian Management	$260,000
Budget Total	**$360,000**

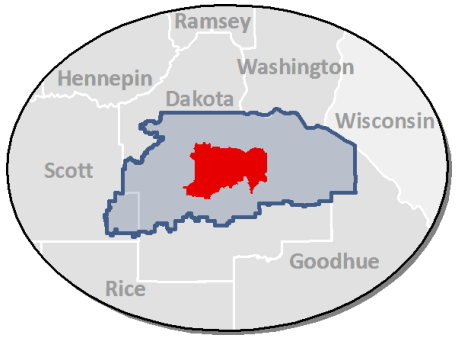
The projects highlighted in beige were identified in the geomorphic assessment that was done for Middle Creek and its tributaries, available on the website. ~~Note that the dollar amount to be spent on projects identified in the geomorphic assessments is lumped for the two budget scenarios.~~ The specific geomorphic assessment projects to be conducted will be determined based on the evaluation criteria established within the assessment.

7.7 Middle Main Stem Subwatershed

The Middle Main Stem Subwatershed was identified as a lower priority for implementing projects. The subwatershed includes Vermillion River reach 507. Potential projects are identified in Figure 7.7.1.: Middle Main Stem Subwatershed Management Plan.

Figure 7.7.1: Middle Main Stem Subwatershed Management Plan

~~Middle Main Stem Subwatershed Management Plan~~	~~Original Scenario (All Activities)~~	~~500K Annual Scenario 1~~	~~Current Balance Scenario~~
~~Study to determine SW pond temperature~~	~~$ 25,000~~	~~$ 25,000~~	~~$ 25,000~~
~~***Subtotal***~~	~~$ 25,000~~	~~$ 25,000~~	~~$ 25,000~~
~~*Bank Stabilization*~~	~~*$ 337,500*~~	~~*$ 325,000*~~	~~*$ 127,250*~~
~~*Culvert/crossing*~~	~~*$ 637,500*~~		
~~*Infrastructure*~~	~~*$ 131,250*~~		
~~*Natural Channel Restoration*~~	~~*$ 2,231,250*~~		
~~*Riparian Management*~~	~~*$ 600,000*~~		
~~*Geo Morph Subtotal*~~	~~*$ 3,937,500*~~		
~~**Ten Year Total Budget (7% of total)**~~	~~**$ 3,962,500**~~	~~**$ 350,000**~~	~~**$ 152,250**~~



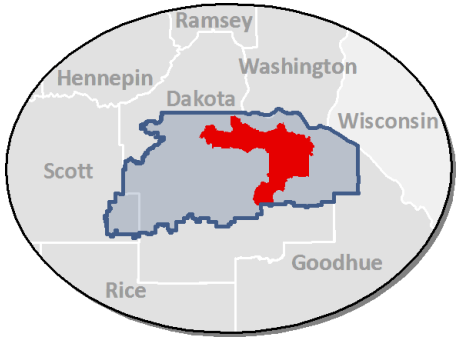
Middle Main Stem Subwatershed Management Plan (2022 Amendment)	**Estimated Cost**
Stormwater Volume and/or Pollutant Reduction BMPs • Stream temperature reduction BMPs • SW pond temperature reduction BMPs • Urban stormwater BMPs	$125,000
Nutrient management practices • Cover crops • Perennial crops	$15,000
Agricultural BMPs	$25,000
Wetland Restoration and Water Storage Practices	$75,000
Subtotal	**$240,000**
Stream channel Improvements • Bank Stabilization • Culvert/crossing • Infrastructure • Natural Channel Restoration • Riparian Management	$50,000
Budget Total	**$290,000**

The projects highlighted in beige were identified in the geomorphic assessment that was done in the Empire Flowages, available on the website. ~~Note that the dollar amount to be spent on projects identified in the geomorphic assessments is lumped for the two budget scenarios.~~ The specific geomorphic assessment projects to be conducted will be determined based on the evaluation criteria established within the assessment.

7.8 Lower Main Stem Subwatershed

The Lower Main Stem Subwatershed was identified as a lower priority for implementing projects. The subwatershed includes Vermillion River reach 692. Potential projects are identified in Figure 7.8.1.: Lower Main Stem Subwatershed Management Plan.

Figure 7.8.1: Lower Main Stem Subwatershed Management Plan



~~Lower Main Stem Subwatershed Management Plan~~	~~Original Scenario (All Activities)~~	~~500K Annual Scenario 1~~	~~Current Balance Scenario~~
~~*Riparian Buffers*~~	~~*$ 250,000*~~	~~*$ 50,000*~~	~~*$ 54,375*~~
~~Urban BMP retrofit opportunities in residential areas of Hastings~~	~~$ 450,000~~	~~$ 150,000~~	
~~*Streambank Stabilization*~~	~~*$ 250,000*~~	~~*$ 50,000*~~	~~*$ 54,375*~~
~~Ten Year Total Budget (5% of total)~~	~~$ 950,000~~	~~$ 250,000~~	~~$ 108,750~~

Lower Main Stem Subwatershed Management Plan (2022 Amendment)	Estimated Cost
Urban BMP retrofit opportunities	$37,750
Wetland Restoration and Water Storage Practices	$10,000
Nutrient management practices • Cover crops • Perennial crops	$15,000
Best management practices identified in Lower Mainstem South SWA	$45,000
Subtotal	**$107,750**
Stream channel Improvements • Bank Stabilization • Infrastructure • Riparian Management	$55,250
Budget Total	**$163,000**

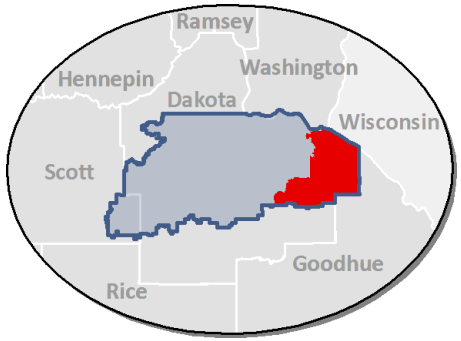
~~A geomorphic assessment has not been conducted for this subwatershed yet so the dollar amounts shown for these activities (shaded beige in the figure) were estimated based on expenditures found in other, similar subwatersheds. The specific geomorphic assessment projects to be conducted will be determined based on the evaluation criteria and priorities established within the assessment.~~

The projects highlighted in beige were identified in the geomorphic assessment that was done in the Lower Mainstem, available on the website. ~~Note that the dollar amount to be spent on projects identified in the geomorphic assessments is lumped for the two budget scenarios.~~ The specific geomorphic assessment projects to be conducted will be determined based on the evaluation criteria established within the assessment.

7.9 Mississippi River Direct Subwatershed

The Mississippi River Direct Subwatershed was identified as a lower priority for implementing projects. The subwatershed includes the Ravenna Coulees. Potential projects are identified in Figure 7.9.1.: Mississippi River Direct Subwatershed Management Plan.

Figure 7.9.1: Mississippi River Direct Subwatershed Management Plan



~~Mississippi Direct Subwatershed Management Plan~~	~~Original Scenario (All Activities)~~	~~500K Annual Scenario 1~~	~~Current Balance Scenario~~
~~Ag BMPS in Upstream Areas~~	~~$ 25,000~~	~~$ 25,000~~	~~$ 25,000~~
~~*Riparian Buffers*~~	~~*$ 50,000*~~	~~*$ 50,000*~~	~~*$ 50,000*~~
~~Urban BMP retrofit opportunities in residential areas of Hastings~~	~~$ 300,000~~		
~~*Ravenna Coulee 1, West Drainage, PP01 Grade Stabilization*~~	~~*$ 25,000*~~	~~*$ 25,000*~~	
~~Ten Year Total Budget (3% of total)~~	~~$ 400,000.00~~	~~$ 100,000.00~~	~~$ 75,000.00~~

Mississippi Direct Subwatershed Management Plan (2022 Amendment)	**Estimated Cost**
Water Storage in Upstream Areas	$10,000
Urban BMP retrofit opportunities	$37,750
Nutrient management practices • Cover crops • Perennial crops	$15,000
Agricultural BMPs	$15,000
Subtotal	**$77,750**
Stream channel Improvements • Riparian Buffers • Etter Creek improvement and ravine stabilization projects • Other ravine stabilization projects	$75,000
Budget Total	**$152,750**

The projects highlighted in beige were identified in the geomorphic assessment that was done in the Etter Creek/ Ravenna Coulees, available on the website. ~~Note that the dollar amount to be spent on projects identified in the geomorphic assessments is lumped for the two budget scenarios.~~ The specific geomorphic assessment projects to be conducted will be determined based on the evaluation criteria established within the assessment.

7.10 Implementation Plan Table

Figure 7.10.1: Implementation Plan Table uses the VRWJPO roles and Watershed Plan goals to provide cost estimates for the Section 6 actions not included in the subwatershed plans.

Those actions that can be taken by VRWJPO staff as part of current operations are included in the "Staff Function" line in the Implementation Plan Table. An annual budget of $240,000 over each of the next 10 years for staff functions encompasses many of the actions listed in Section 6.

Those actions that require additional resources (planning, development, policy, consultation, etc.) are specifically listed in the table, with cost estimates. The subwatershed plan costs are summarized and listed in the Land and Water Treatment category.

Where implementation activities are dependent upon one another (e.g. water quality improvement project dependent upon the completion of a feasibility study and/or modeling effort), the relationship is reflected in the schedule.

Implementation activities and cost estimates are taken from previous studies or projects. In other cases, the costs are estimates based on current understanding of the activity's scope. Cost estimates are shown as either a one-time cost (typical of feasibility studies and capital improvement projects) or as annual costs for ongoing programs. In general, the Implementation Plan provides a planning-level projection that can be used as a starting point for the detailed annual budgeting process.

The implementation plan table is organized by the roles of the VRWJPO as defined in Section 6: Goals, Objectives, and Actions. For each of the VRWJPO roles, the plan table provides a budget for general staff functions.

7.11 VRWJPO Financing

Dakota and Scott counties jointly fund the administration and activities of the VRWJPO, as specified in the Joint Powers Agreement (see Appendix A). The funding is provided through the counties' annual property tax levies, using the following process:

- Dakota and Scott counties provide the VRWJPO with estimates of Vermillion River Watershed Management Tax District tax capacity.
- In August, the VRWJPO staff submits a preliminary annual budget and Vermillion River Watershed Management Tax District Levy for the subsequent year to the VRWJPB.
- The VRWJPB holds a public hearing and adopts the proposed budget and levy amounts for the next year.
- In September, the Dakota County and Scott County Boards certify the preliminary levy amounts allocated to the portions of the watershed in each County according to tax capacity.
- In December, as the annual budget cycle ends, the VRWJPO staff updates the proposed budget to a final version for the subsequent year. The VRWJPB adopts the final budget and levy.
- In December, the Dakota County and Scott County Boards certify the final Vermillion River Watershed Management Tax District levy.

The Vermillion River Watershed Management Tax District levy is a primary, but not the only, source of funding for VRWJPO activities. The VRWJPO also pursues grant opportunities, partnerships, or coordinated efforts that align with Watershed Plan goals and needs. The VRWJPO may also pursue other alternative funding options as identified in Minnesota Statutes 103B, if these options are consistent with the Joint Powers Agreement.

Figure 7.10.1: Implementation Plan Table

VRWJPO Roles and Goals	Implementation Initiatives	Grant Eligibility	Costs										
			2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	10-Year Total
Administration and Operations			**$ 245,000**	**$ 245,000**	**$ 240,000**	**$ 240,000**	**$ 240,000**	**$ 240,000**	**$ 240,000**	**$ 240,000**	**$ 240,000**	**$ 240,000**	**$ 2,410,000**
	Staff Function		$ 240,000	$ 240,000	$ 240,000	$ 240,000	$ 240,000	$ 240,000	$ 240,000	$ 240,000	$ 240,000	$ 240,000	$ 2,400,000
Goal F	Establish a riparian habitat improvement program that includes tree shading in trout stream reaches	Yes	$ 5,000.00	Tree shading efforts are included within each of the individual subwatershed management plans									5000
Goal A	Use restorable wetland tools and inventories to develop partnerships and implement restoration projects.	Yes	$ -	$ 5,000.00									5000
Coordination & Collaboration			**$ 20,000**	**$ 20,000**	**$ 30,000**	**$ 20,000**	**$ 20,000**	**$ 20,000**	**$ 20,000**	**$ 20,000**	**$ 20,000**	**$ 20,000**	**$ 210,000**
	Staff Function		See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	$ -
	Collaborate with Dakota and Scott County Land Conservation staff to identify high priority riparian habitat and assist in easement acquisition and restoration or protection through cost-share and incentives		*See previous item #1 under Climate Change above*	*See previous item #1 under Climate Change above*	*See previous item #1 under Climate Change above*	*See previous item #1 under Climate Change above*	*See previous item #1 under Climate Change above*	*See previous item #1 under Climate Change above*	*See previous item #1 under Climate Change above*	*See previous item #1 under Climate Change above*	*See previous item #1 under Climate Change above*	*See previous item #1 under Climate Change above*	$ -
	Work with partners and landowners to protect wetlands and restore wetlands with strategic value in flood protection and pollutant filtration through conservation easement, fee title, tile removal, revegetation, and other techniques		*See following item*	*See following item*	*See following item*	*See following item*	*See following item*	*See following item*	*See following item*	*See following item*	*See following item*	*See following item*	$ -
Goal A	Assist Dakota County and Scott County Land Protection programs in acquiring permanent conservation easements in riparian areas in the Vermillion River Watershed		$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 200,000
	Work with landowners and other agencies to eliminate fencing across public waters and associated potential liabilities (e.g., Vermillion River and tributaries).		*See item under L&WT, WQ*	*See item under L&WT, WQ*	*See item under L&WT, WQ*	*See item under L&WT, WQ*	*See item under L&WT, WQ*	*See item under L&WT, WQ*	*See item under L&WT, WQ*	*See item under L&WT, WQ*	*See item under L&WT, WQ*	*See item under L&WT, WQ*	$ -
	Consider developing stormwater management system maintenance guidance for watershed communities		$ -	$ -	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000
	Assist with buffer acquisition, riparian plantings, shoreline restoration, acquisition and/or removal of structures that degrade the corridor		*See previous item #1 under Climate Change above*	*See previous item*	*See previous item*	*See previous item*	*See previous item*	*See previous item*	*See previous item*	$ -	$ -	$ -	$ -
~~**Land and Water Treatment**~~			~~**$ 243,475**~~	~~**$ 278,475**~~	~~**$ 313,475**~~	~~**$ 293,475**~~	~~**$ 283,475**~~	~~**$ 313,475**~~	~~**$ 288,475**~~	~~**$ 268,475**~~	~~**$ 268,475**~~	~~**$ 268,475**~~	~~**$ 2,819,750**~~
Land and Water Treatment			**$ 385,775**	**$ 420,775**	**$ 455,775**	**$ 435,775**	**$ 425,775**	**$ 455,775**	**$ 430,775**	**$ 410,775**	**$ 410,775**	**$ 410,775**	**$ 4,242,750**
	Staff Function		See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	$ -
Goal A	~~Implement activities identified in the North Creek Subwatershed Management Plan~~	~~Yes~~	~~$ 32,625~~	~~$ 32,625~~	~~$ 32,625~~	~~$ 32,625~~	~~$ 32,625~~	~~$ 32,625~~	~~$ 32,625~~	~~$ 32,625~~	~~$ 32,625~~	~~$ 32,625~~	~~$ 326,250~~
	~~Implement activities identified in the Middle Creek Subwatershed Management Plan~~	~~Yes~~	~~$ 21,750~~	~~$ 21,750~~	~~$ 21,750~~	~~$ 21,750~~	~~$ 21,750~~	~~$ 21,750~~	~~$ 21,750~~	~~$ 21,750~~	~~$ 21,750~~	~~$ 21,750~~	~~$ 217,500~~
	~~Implement activities identified in the South Creek Subwatershed Management Plan~~	~~Yes~~	~~$ 43,500~~	~~$ 43,500~~	~~$ 43,500~~	~~$ 43,500~~	~~$ 43,500~~	~~$ 43,500~~	~~$ 43,500~~	~~$ 43,500~~	~~$ 43,500~~	~~$ 43,500~~	~~$ 435,000~~
	~~Implement activities identified in the Upper Mainstem Subwatershed Management Plan~~	~~Yes~~	~~$ 54,375~~	~~$ 54,375~~	~~$ 54,375~~	~~$ 54,375~~	~~$ 54,375~~	~~$ 54,375~~	~~$ 54,375~~	~~$ 54,375~~	~~$ 54,375~~	~~$ 54,375~~	~~$ 543,750~~
	~~Implement activities identified in the South Branch Vermillion Subwatershed Management Plan~~	~~Yes~~	~~$ 37,625~~	~~$ 37,625~~	~~$ 37,625~~	~~$ 37,625~~	~~$ 37,625~~	~~$ 37,625~~	~~$ 37,625~~	~~$ 37,625~~	~~$ 37,625~~	~~$ 37,625~~	~~$ 376,250~~
	~~Implement activities identified in the Middle Mainstem Subwatershed Management Plan~~	~~Yes~~	~~$ 15,225~~	~~$ 15,225~~	~~$ 15,225~~	~~$ 15,225~~	~~$ 15,225~~	~~$ 15,225~~	~~$ 15,225~~	~~$ 15,225~~	~~$ 15,225~~	~~$ 15,225~~	~~$ 152,250~~
	~~Implement activities identified in the Lower Mainstem Subwatershed Management Plan~~	~~Yes~~	~~$ 10,875~~	~~$ 10,875~~	~~$ 10,875~~	~~$ 10,875~~	~~$ 10,875~~	~~$ 10,875~~	~~$ 10,875~~	~~$ 10,875~~	~~$ 10,875~~	~~$ 10,875~~	~~$ 108,750~~
	~~Implement activities identified in the Mississippi River Direct Subwatershed Management Plan~~	~~Yes~~	~~$ 7,500~~	~~$ 7,500~~	~~$ 7,500~~	~~$ 7,500~~	~~$ 7,500~~	~~$ 7,500~~	~~$ 7,500~~	~~$ 7,500~~	~~$ 7,500~~	~~$ 7,500~~	~~$ 75,000~~
	~~Conduct Subwatershed Assessments~~		~~$ 20,000~~	~~$ 20,000~~	~~$ 20,000~~	~~$ 20,000~~	~~$ 20,000~~	~~$ 20,000~~	~~$ 20,000~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ 140,000~~
Goal A	Implement activities identified in the North Creek Subwatershed Management Plan	Yes	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 950,000
	Implement activities identified in the Middle Creek Subwatershed Management Plan	Yes	$ 36,000	$ 36,000	$ 36,000	$ 36,000	$ 36,000	$ 36,000	$ 36,000	$ 36,000	$ 36,000	$ 36,000	$ 360,000
	Implement activities identified in the South Creek Subwatershed Management Plan	Yes	$ 64,120	$ 64,120	$ 64,120	$ 64,120	$ 64,120	$ 64,120	$ 64,120	$ 64,120	$ 64,120	$ 64,120	$ 641,200
	Implement activities identified in the Upper Mainstem Subwatershed Management Plan	Yes	$ 49,500	$ 49,500	$ 49,500	$ 49,500	$ 49,500	$ 49,500	$ 49,500	$ 49,500	$ 49,500	$ 49,500	$ 495,000
	Implement activities identified in the South Branch Vermillion Subwatershed Management Plan	Yes	$ 60,580	$ 60,580	$ 60,580	$ 60,580	$ 60,580	$ 60,580	$ 60,580	$ 60,580	$ 60,580	$ 60,580	$ 605,800
	Implement activities identified in the Middle Mainstem Subwatershed Management Plan	Yes	$ 29,000	$ 29,000	$ 29,000	$ 29,000	$ 29,000	$ 29,000	$ 29,000	$ 29,000	$ 29,000	$ 29,000	$ 290,000
	Implement activities identified in the Lower Mainstem Subwatershed Management Plan	Yes	$ 16,300	$ 16,300	$ 16,300	$ 16,300	$ 16,300	$ 16,300	$ 16,300	$ 16,300	$ 16,300	$ 16,300	$ 163,000
	Implement activities identified in the Mississippi River Direct Subwatershed Management Plan	Yes	$ 15,275	$ 15,275	$ 15,275	$ 15,275	$ 15,275	$ 15,275	$ 15,275	$ 15,275	$ 15,275	$ 15,275	$ 152,750
	Conduct Subwatershed Assessments		$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ -	$ -	$ -	$ 140,000
Goal D	Identify urban/suburban developed areas without adequate or any stormwater controls				$ 25,000								$ 25,000
	Develop outreach and cost-share incentives for homeowners, homeowners' associations and businesses in areas without stormwater controls to install stormwater rate and volume control BMPs		0	10000	10000	15000	15000	20000	20000	20000	20000	20000	150000
	Research and make recommendations about BMPs suitable for ultra-urban conditions (no room to integrate most BMPs).		$ -	$ -	$ -	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000

	Provide cost-share or other incentives for producers using cover crops or nutrient management plans		--	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 225,000

Figure 7.10.1: Implementation Plan Table

VRWJPO Roles and Goals	Implementation Initiatives	Grant Eligibility	Costs										
			2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	10-Year Total
Goal C	Research strategies for water use, re-use, or infiltration that minimize groundwater use at mining sites			$ -	$ 10,000	$ -	$ -	$ 25,000	$ -	$ -	$ -	$ -	$ 35,000
Monitoring and Assessment			**$ 202,500**	**$ 202,500**	**$ 227,500**	**$ 202,500**	**$ 192,500**	**$ 232,500**	**$ 192,500**	**$ 192,500**	**$ 192,500**	**$ 192,500**	**$ 2,030,000**
	Staff Function		See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	$ -
Goal A	Add continuous dissolved oxygen (DO) monitoring to Monitoring Network sampling for reaches listed as impaired for DO		$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 40,000
	Collect and analyze surface water quality monitoring data and report annually on condition, trends, and recommendations for improvement		$ 192,500	$ 192,500	$ 192,500	$ 192,500	$ 192,500	$ 192,500	$ 192,500	$ 192,500	$ 192,500	$ 192,500	$ 1,925,000
	Complete geomorphic assessments on the South Branch and Lower Main stem Vermillion River (Hwy 52 to Hastings).		$ -	$ -	$ 25,000	$ -	$ -	$ 40,000	$ -	$ -	$ -	$ -	$ 65,000
Public Communication and Outreach			**$ 221,000**	**$ 226,000**	**$ 231,000**	**$ 226,000**	**$ 226,000**	**$ 221,000**	**$ 226,000**	**$ 226,000**	**$ 221,000**	**$ 221,000**	**$ 2,245,000**
	Staff Function		$ 220,000	$ 220,000	$ 220,000	$ 220,000	$ 220,000	$ 220,000	$ 220,000	$ 220,000	$ 220,000	$ 220,000	$ 2,200,000
Goal E	Host VRWJPO watershed tours for elected and appointed officials to highlight demonstrations of innovative technology, successful water quality and quantity improvement practices, and restoration activities		$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 10,000
Goal B	Collaborate with partners on turf and fertilizer management workshops for facility managers of businesses, parks, schools, and others	Yes			$ 5,000		$ 5,000			$ 5,000			$ 15,000
	Continue to promote and support workshops on ice/snow management and turfgrass maintenance			$ 5,000		$ 5,000			$ 5,000				$ 15,000
	Consider facilitating a watershed- or county-wide outreach and education campaign to increase awareness about the urban and rural land use contributions to nitrate contamination of groundwater	Yes			$ 5,000								$ 5,000
Goal A	Implement outreach activities identified in the WRAPS Civic Engagement Plan												$ -
Regulation			**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 1,000,000**
	Staff Function		$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 1,000,000
Research and Planning			**$ 10,000**	**$ 35,000**	**$ 10,000**	**$ 165,000**	**$ 45,000**	**$ 10,000**	**$ 160,000**	**$ -**	**$ 10,000**	**$ 150,000**	**$ 595,000**
	Staff Function		See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	See initial Staff Function	$ -
Goal G	Propose demonstration or research projects that have the potential to protect the brown trout population from thermal impacts	Yes				$ 150,000			$ 150,000			$ 150,000	$ 450,000
Goal E	Conduct a follow-up of watershed landowners in 2017 (five years after the University of Minnesota survey).		$ -	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000
Goal B	Coordinate with other agencies to monitor condition and trends in groundwater levels and contaminant concentrations		$ 10,000		$ 10,000		$ 10,000		$ 10,000		$ 10,000		$ 50,000
Goal A	Evaluate need for new Watershed Standards on aggregate mining, if research shows potential water resource impacts	Yes	$ -	$ 25,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 25,000
	Review existing research on aggregate mining impacts on water and groundwater, in conditions comparable to the watershed.	Yes		$ -	$ -	$ -	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ 10,000
	Discuss research needs to evaluate cumulative landscape-scale impacts of aggregate mining in the watershed with partners	Yes	*See previous item*	*See previous item*	*See previous item*	*See previous item*	*See previous item*	*See previous item*	*See previous item*	*See previous item*	*See previous item*	*See previous item*	$ -
	Explore implementation of BWSR's "One Watershed, One Plan" principles as a means of addressing watershed-wide needs.		$ -	$ -	$ -	$ -	$ 25,000	$ -	$ -		$ -	$ -	$ 25,000
Goal C	Consider developing Water Conservation Standards for the watershed		$ -	$ -	$ -	$ 15,000	$ -	$ -			$ -	$ -	$ 15,000
	Review 2006 inventory of groundwater recharge areas and update, if needed		$ -	$ -	$ -	$ -	$ -	$ 10,000	$ -	$ -	$ -	$ -	$ 10,000
~~ANNUAL TOTALS~~			~~$ 1,041,975~~	~~$ 1,106,975~~	~~$ 1,151,975~~	~~$ 1,246,975~~	~~$ 1,106,975~~	~~$ 1,136,975~~	~~$ 1,226,975~~	~~$ 1,046,975~~	~~$ 1,051,975~~	~~$ 1,191,975~~	~~$ 11,309,750~~
~~TOTALS FUNDED THROUGH LEVY~~			~~$ 1,041,975~~	~~$ 1,081,975~~	~~$ 1,151,975~~	~~$ 1,096,975~~	~~$ 1,096,975~~	~~$ 1,136,975~~	~~$ 1,076,975~~	~~$ 1,046,975~~	~~$ 1,051,975~~	~~$ 1,041,975~~	~~$ 10,824,750~~
~~TOTALS FUNDED THROUGH GRANTS~~			~~$ -~~	~~$ 25,000~~	~~$ -~~	~~$ 150,000~~	~~$ 10,000~~	~~$ -~~	~~$ 150,000~~	~~$ -~~	~~$ -~~	~~$ 150,000~~	~~$ 485,000~~
ANNUAL TOTALS			$ 1,184,275	$ 1,249,275	$ 1,294,275	$ 1,389,275	$ 1,249,275	$ 1,279,275	$ 1,369,275	$ 1,189,275	$ 1,194,275	$ 1,334,275	$ 12,732,750
TOTALS FUNDED THROUGH LEVY			$ 1,184,275	$ 1,224,275	$ 1,294,275	$ 1,239,275	$ 1,239,275	$ 1,279,275	$ 882,775	$ 852,775	$ 819,275	$ 809,275	$ 10,824,750
TOTALS FUNDED THROUGH GRANTS			$ -	$ 25,000	$ -	$ 150,000	$ 10,000	$ -	$ 486,500	$ 336,500	$ 375,000	$ 525,000	$ 1,908,000

6a. Update on the Dakota County Agricultural Chemical Reduction Effort (ACRE) and Monitoring Well Network

Meeting Date:	6/8/2022	
Item Type:	Regular-Information	
Contact:	Valerie Neppl	
Telephone:	952-891-7019	
Prepared by:	Valerie Neppl	
Reviewed by:	N/A	N/A

PURPOSE/ACTION REQUESTED

- Update on the Dakota County Agricultural Chemical Reduction Effort (ACRE) and Monitoring Well Network.

SUMMARY

The 2020-2030 Dakota County Groundwater Plan (Groundwater Plan) identified agricultural chemicals, especially nitrate and crop herbicides, as a significant drinking water concern for much of rural Dakota County. Reduction of agricultural chemical contamination is a high-priority strategy in the Groundwater Plan (strategy 1B1); specifically, tactic 1B1B states that the County will "develop, adopt, and implement a Dakota County Groundwater Agricultural Chemical Reduction Effort (ACRE)."

The intent of ACRE is to reduce agricultural chemicals in groundwater to levels that no longer pose threats to human health and the environment. The ACRE Plan is being completed in partnership with farmers, the Dakota County Soil and Water Conservation District (SWCD), state, regional, and local agencies, and other local non-governmental organizations to develop prioritized, targeted, and measurable strategies.

Components of ACRE include 1) completing two rounds of stakeholder engagement to listen, test ideas, and refine plan actions; and 2) developing a long-term shallow groundwater monitoring network to evaluate progress towards goals.

Staff will discuss ACRE stakeholder engagement feedback (both engagement reports can be found at https://www.co.dakota.mn.us/Environment/WaterResources/Agriculture/Pages/agricultural-chemical-reduction-effort.aspx); ACRE draft goals, strategies, and tactics; and progress on the monitoring well network (Attachment A: Proposed Monitoring Well Network). Staff will also briefly discuss other new initiatives planned for 2022, such as the Drinking Water Treatment Pilot Grant Program.

EXPLANATION OF FISCAL/FTE IMPACT

No fiscal impact.

Supporting Documents:
Attachment A: Proposed Monitoring Well Network

Previous Board Action(s):
- ;

RESOLUTION

Information only

Update on Agricultural Chemical Reduction Effort (ACRE), Well Network, & Other Initiatives

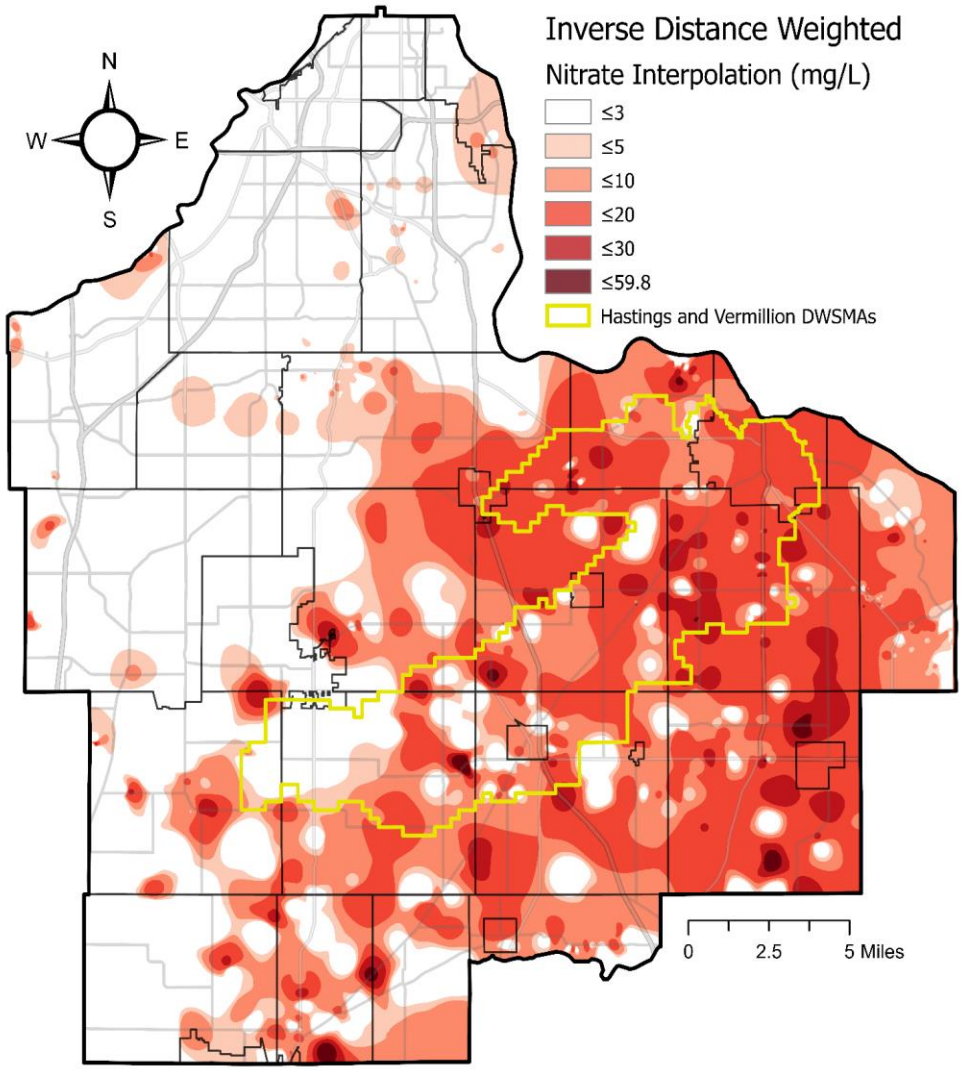
Vermillion River Watershed Planning Commission
Valerie Neppl
Environmental Resources
July 13, 2022

Overview

- **ACRE Plan**
  - Introduction
  - Research & Stakeholder Engagement
  - Goals & Outcome Measures
  - Proposed Strategies
    - » Well Network
- **Other Initiatives**
  - Water Treatment System Grant
  - Rural Water Feasibility Study

Pic: Buffer Strip

Introduction



Why develop ACRE Plan?

Groundwater Plan identified ag. chemicals as significant concern

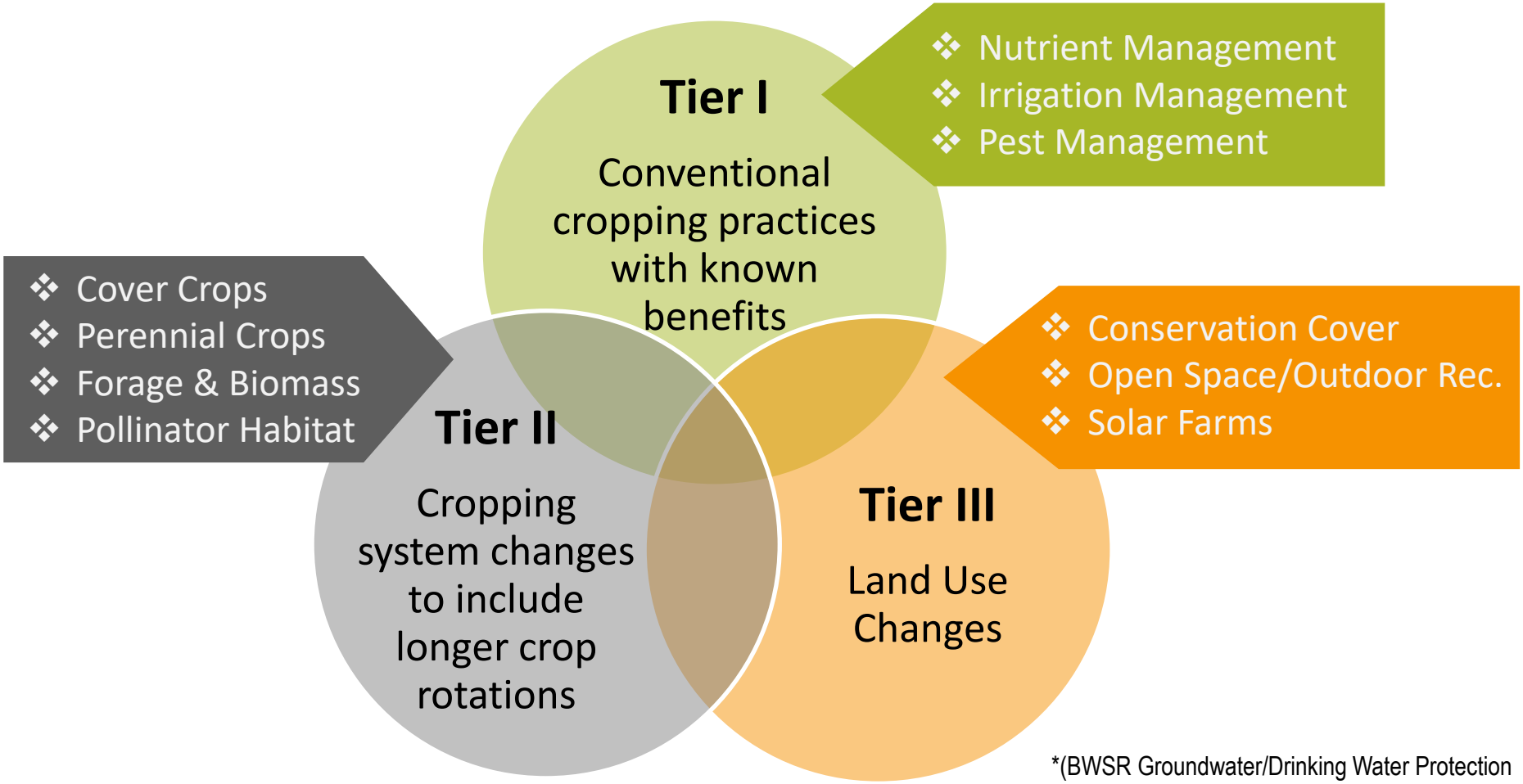
Goal 1:
Water Quality

Strategy 1B1:
Reduce Ag chemical contamination

Tactic 1B1B:
Develop & Implement ACRE

Research Summary

Groundwater/ Drinking Water Protection Practices for Agricultural Lands*



*(BWSR Groundwater/Drinking Water Protection Practices for Agricultural Lands, April 2021)

Stakeholder Engagement Summary

2-Rounds Stakeholder Engagement:

- Round 1 (Summer-Fall 2021) – input on best management practices, incentive programs, and barriers to conservation practice adoption
- Round 2 (Winter-Spring 2022) – input on draft strategies, tactics, and priorities

Engagement Methods:

- Public Website - go to www.co.dakota.mn.us, search *ACRE*
- Public Surveys – mailed survey to 3,200 landowners
- Agricultural Advisory Group –farm/ag. operation representatives
- Technical Advisory Group – state & regional agencies
- Ag. Townhall Meetings – members of ag. community
- Public Sector Meetings – local city, townships, and WMOs
- Township and WMO Board Presentations - as requested

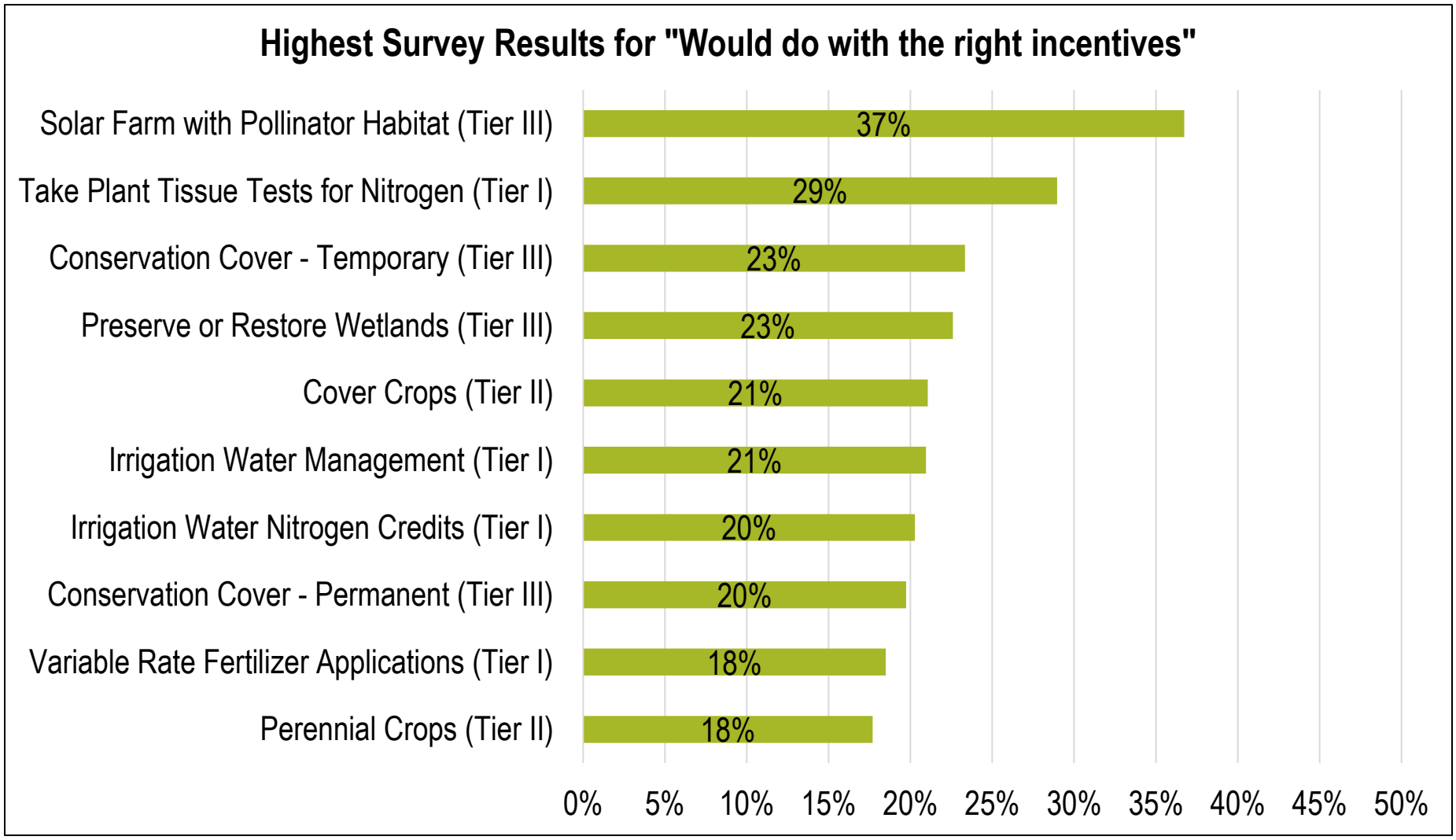
Stakeholder Engagement Summary – Overarching Themes

- **Protecting Legacy:** Farmers want to protect long-term productivity to pass down to descendants, exception is absentee landowners (33%).
- **Incentive Equity:** Consider programs that reward farmers for continuing to do the right thing, in addition to incentives for adoption of practices that benefit water quality.
- **Trusted Resources:** Top sources farmers value are SWCD, UMN Extension, and USDA.

Pic: Ag. Advisory Group Meeting

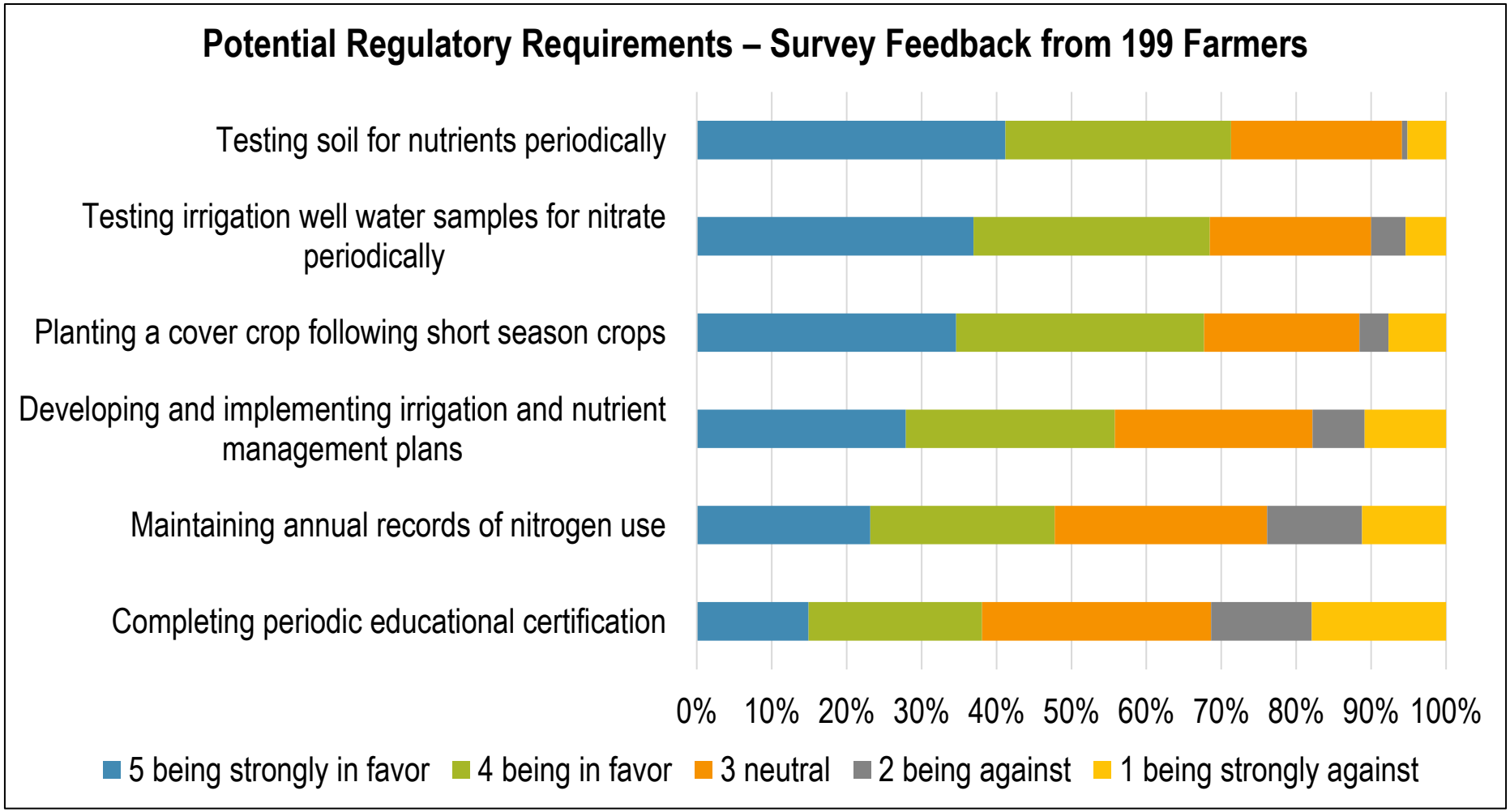
Stakeholder Engagement Summary – Overarching Themes

- **Preferred Practices:** Voluntary practices more appealing with incentives



Stakeholder Engagement Summary – Overarching Themes

- **Regulatory Caution:** If voluntary measures are unsuccessful - carefully tailor to be fair and maintain farmers' financial viability.



Draft ACRE Goal

REDUCE AGRICULTURAL CHEMICALS IN GROUNDWATER TO LEVELS THAT NO LONGER POSE THREATS TO HUMAN HEALTH OR THE ENVIRONMENT

Pic: Cover crops on corn field

Draft ACRE Goal

Draft Long-Term Outcome Measures

Nitrate

1. 5% or fewer of private drinking water wells within each township exceed 10 mg/L nitrate
2. No public water supply well exceeds or projected to exceed 10 mg/L nitrate
3. Median nitrate levels in shallow groundwater are below 10 mg/L

Pesticides

4. No private drinking water wells have pesticide concentrations that exceed 50% of drinking water guidelines

Chloride

5. Contributions of chloride to groundwater from crop fertilizer are decreasing

Strategy 1: Information for Decision Making

Ongoing or Expanded Tactics/Roles:

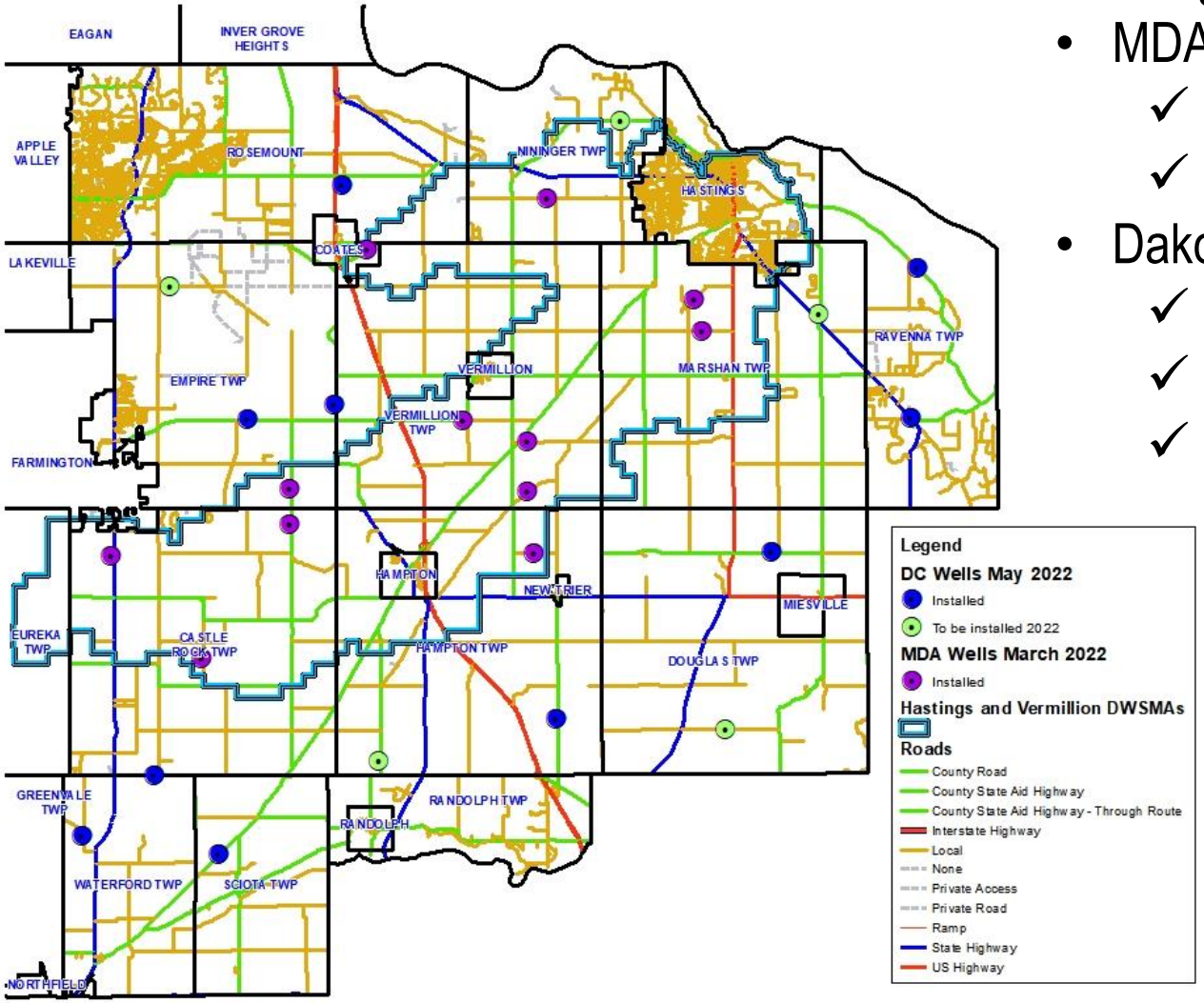
- Expand environmental well network
- Conduct groundwater monitoring – county & private wells
- Update groundwater model and nitrate leaching estimates
- Collect info on farming practices, nitrogen usage, demographic data, & costs

Potential New Tactics/ Roles:

- Develop model scenarios for practice adoption to prioritize funding

Pic: Monitoring well installation

Proposed Strategies



Strategy 1 - Well Network:

- MDA :
  - ✓ 11 wells installed (2021)
  - ✓ 4-8 wells pending (2022)
- Dakota County :
  - ✓ 7 wells installed (2021)
  - ✓ 3 installed (May 2022)
  - ✓ 5-7 wells pending (2022)

Strategy 2: Communication, Outreach, and Education

Ongoing or Expanded Tactics/Roles:

- Provide groundwater data and progress updates to farmers and rural residents
- Increase promotion of SWCD and other local, state, and federal technical and financial assistance programs
- Promote educational opportunities for farmers and ag. operators (field days, clinics, training, etc.)

Potential New Tactics/ Roles:

- Create a permanent Agricultural Advisory Group
- Advocate for agronomists, co-ops, retailers, and lenders to promote water quality practices
- Advocate for improved internet access
- Increase in-person communication with cities & townships
- Leverage other agencies' programs and policies

Pic: Weather Station Sign

Strategy 3: Technical Assistance

Ongoing or Expanded Tactics/Roles:

- Partner with UMN, MDA, and others to provide education & certification programs
- Increase opportunities for assistance at individual farm level w/ customized information
- Assist with completion of Nutrient Management and Irrigation Management Plans

Potential New Tactics/ Roles:

- Partner with UMN to conduct plant tissue testing
- Explore ways to assist landlords & renters implement water quality practices on rented land
- Assist beginning and “emerging” farmers

Pic: SWCD staff doing survey

Strategy 4: Financial Incentives

Ongoing or Expanded Tactics/Roles:

- Seek sources of funding for water quality incentive programs
- Increase incentives for initial adoption of water quality practices (3 years or less)
- Increase incentives for completion of Nutrient Management and Irrigation Management Plans

Potential <u>OPTIONAL</u> New Tactics/ Roles:

- Provide incentives to farmers for maintaining water quality practices (longer than 3 years)
- Provide incentives for completing MN Ag Water Quality Certification process, or scale to score

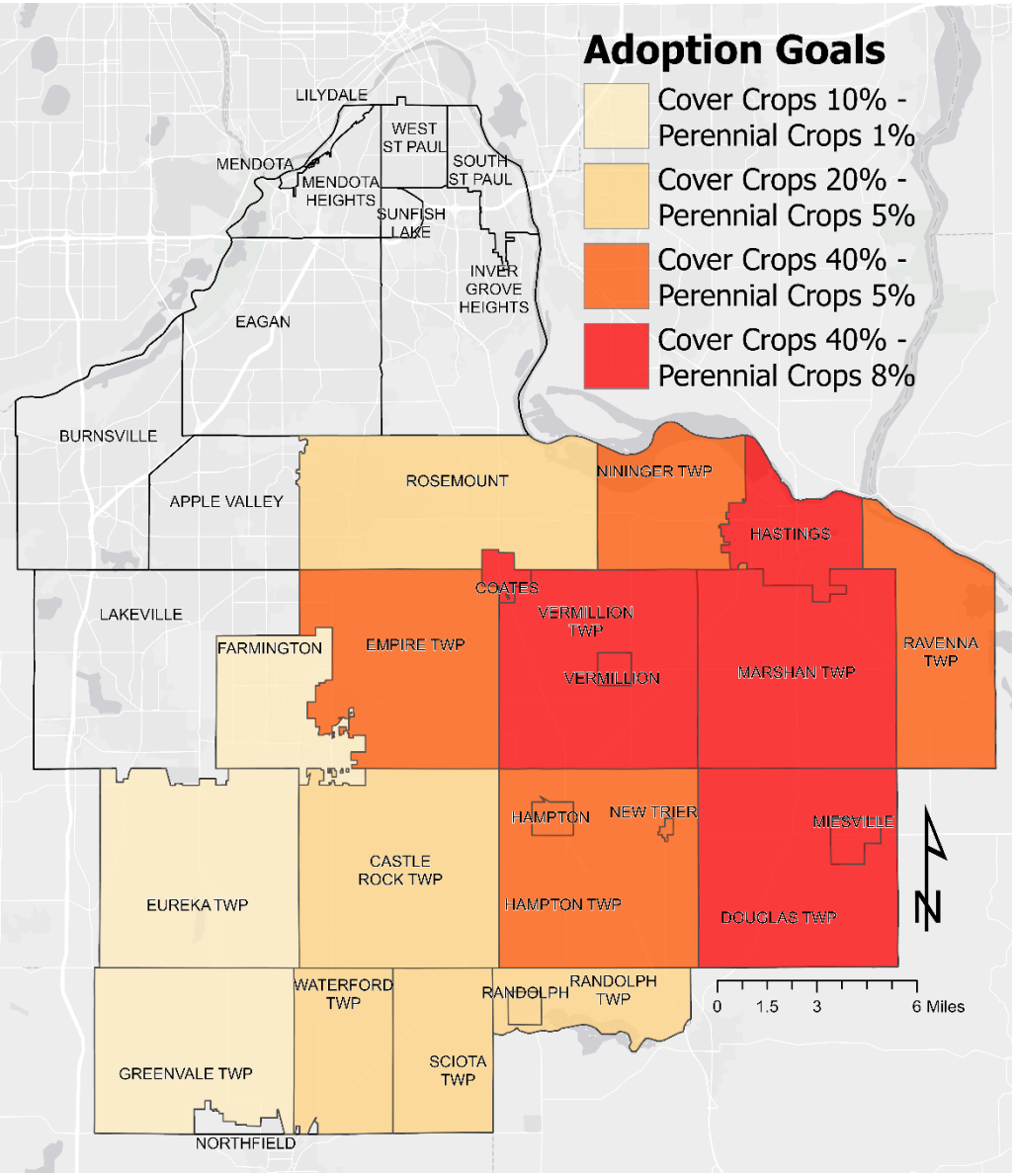
Pic: Kernza

Implementation

Targeted Practices: Interim Adoption Rate Goals

Agricultural Practice	Estimated Adoption Rates**	Interim Adoption Rate Goals
Implement Nutrient Management Plans	< 1%	25%
Use nitrogen fertilizer inhibitors or stabilizers	51%	75%
Implement Irrigation Management Plans	2%	20% of irrigated land
Plant Cover crops	4-5%	~10-40%
Plant Perennial crops	1%	~1-8%
Convert land to perennial native or non-native vegetation (permanent or temp)	< 0.1%	1%
Preserve/restore wetlands in ag. areas	< 0.2%	-

Implementation



Targeted Practices by Area:

Increase adoption of cover crops and perennials by city and township

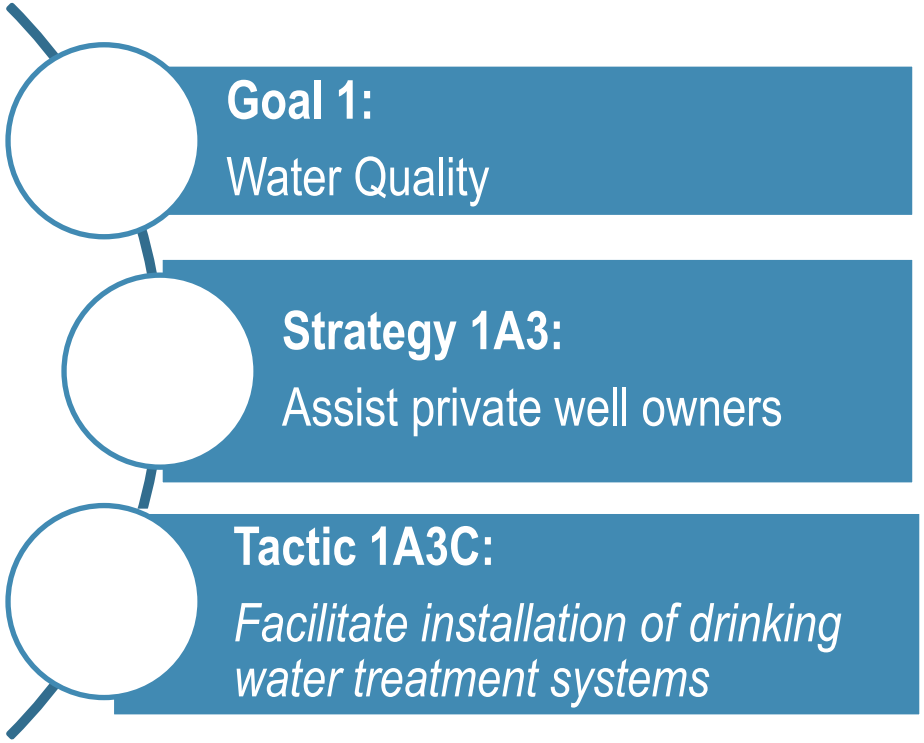
Drinking Water Treatment System – Pilot Grant Program

Purpose:

- Provide equal access to safe drinking water
- Provide 100% of cost of system and installation, not exceed $2,000 per household

Target (criteria):

- Private well is primary drinking water source; and
- Well exceeds drinking water guideline; and
- Owner meets low-income criteria per USDA – Rural Development guidelines



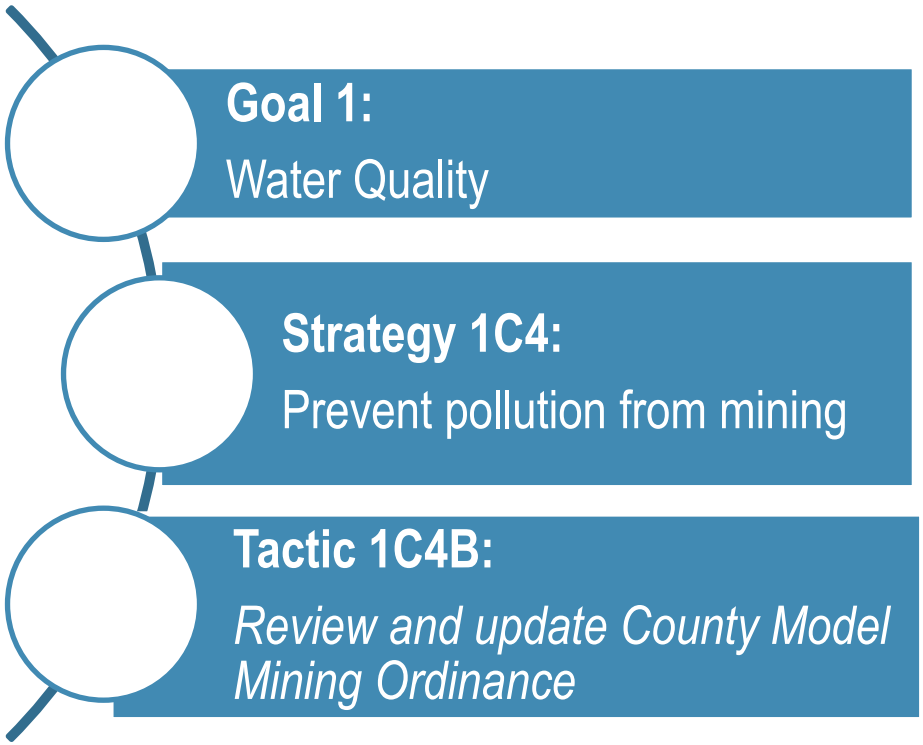
Model Mining Ordinance Project

Purpose:

- Provide updated guidance to cities and townships
- Develop updated Model Mining Ordinance for optional use

Target:

- All Dakota County cities and townships.
- Current mining operations:



- Apple Valley
- Burnsville
- Empire
- Eureka
- Hastings
- Inver Grove
- Lakeville
- Marshan
- Nininger
- Rosemount
- Sciota
- Vermillion

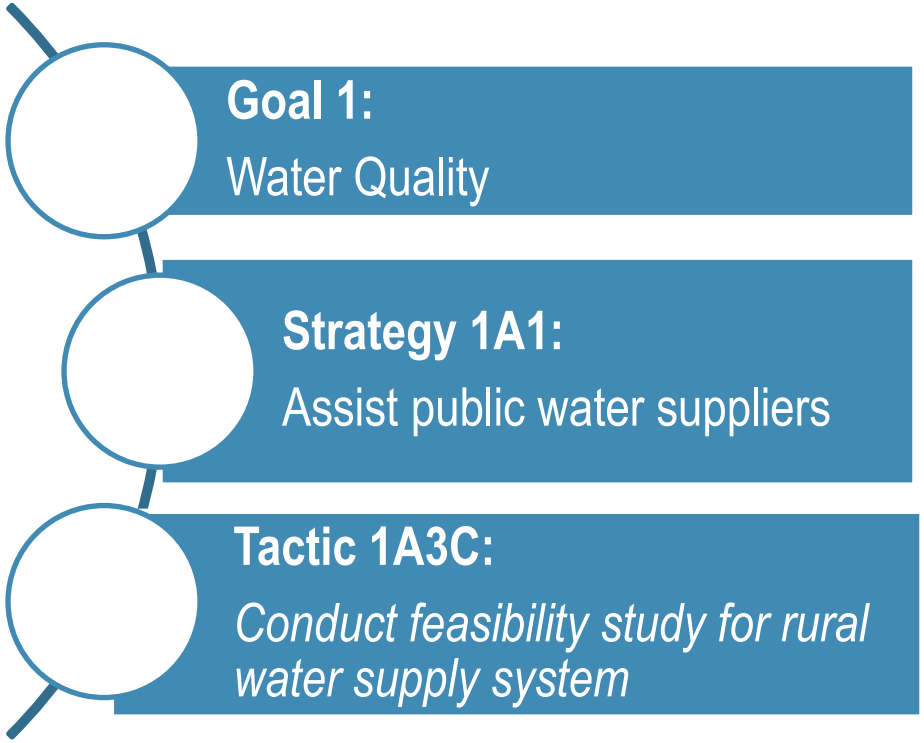
Rural Water Feasibility Study

Purpose:

- Evaluate feasibility and cost to:
  1. Extend existing public water supplies to private wells; or
  2. Establish rural water district(s)

Target (cost dependent):

- Areas with highest groundwater nitrate concentrations
- Priority in following 6-areas:
  - ❖ Hastings
  - ❖ Marshan
  - ❖ Douglas
  - ❖ Vermillion
  - ❖ Nininger,
  - ❖ Ravenna

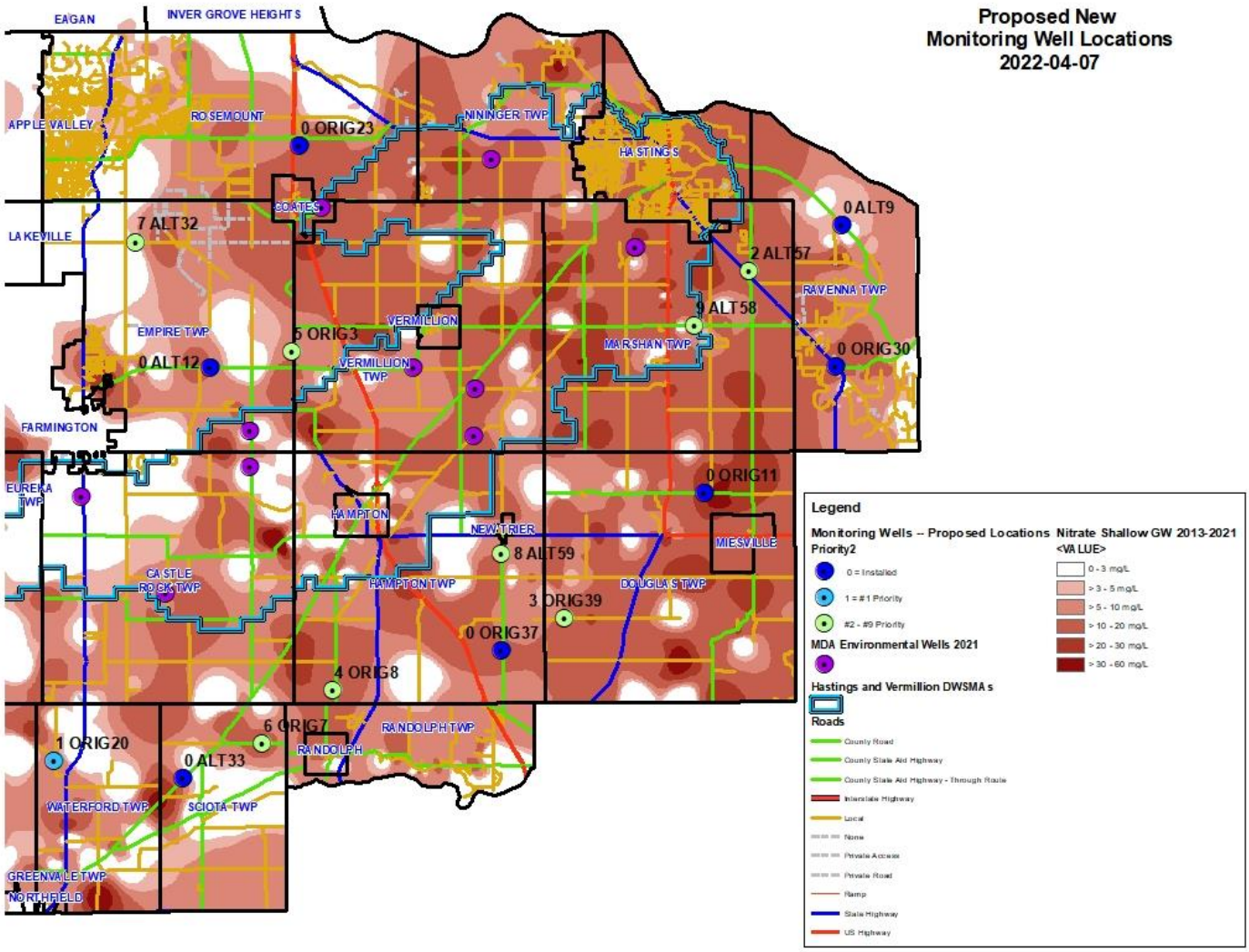


Questions?

Partial funding for the ACRE Plan is provided through the Clean Water Land and Legacy Amendment, distributed by the Minnesota Department of Health to Dakota County.

Pic: Old well in field

Proposed Monitoring Well Network Map



6a. Report on Measurable Outcomes as Identified in the 2016-2025 Vermillion River Watershed Management Plan

Meeting Date: 6/23/2022
Item Type: Regular-Information
Contact: Brita Moore-Kutz
Telephone: 952-891-7967
Prepared by: Brita Moore-Kutz

PURPOSE/ACTION REQUESTED

- Report on Measurable Outcomes as identified in the 2016-2025 Vermillion River Watershed Management Plan.

SUMMARY

The 2016-2025 Vermillion River Watershed Management Plan includes a list of measurable outcomes in Section 8: Outcome Measures by Sub-goal that are used to measure progress against the Plan Goals over the term of the Plan. The measures can be grouped into two types: activity measures that quantify specific types and efforts made by the VRWJPO and its partners to improve water resources; and resource measures that will be used to regularly assess the condition and trends related to water quality and quantity.

VRWJPO staff have collected relevant data and information to develop a report (Attachment A) on the Outcome Measures identified in the Plan. This report is compiled from data collected since the adoption of the Plan. VRWJPO provides periodic updates on outcome measures through the life of the Plan.

EXPLANATION OF FISCAL/FTE IMPACT

No fiscal impact.

Supporting Documents:
Attachment A: Measurable Outcomes Executive Summary

Previous Board Action(s):
- ;

RESOLUTION

6a. Report on Measurable Outcomes as Identified in the 2016-2025 Vermillion River Watershed Management Plan

Information only.

Executive Summary: 2016-2025 Vermillion River Watershed Management Plan Measurable Outcome Progress Update

As the Vermillion River Watershed Plan is implemented, a series of outcome measurements will be used to track progress against the Plan goals. These measures will be tracked and reported to the Vermillion River Watershed Joint Powers Board (VRWJPB) and the public. This is a fluid document, current as of June 16, 2022, and some numbers are not yet available.

Goal A: Protect or restore water quality in lakes, streams, and wetlands

1. Restore impaired waters and protect those currently not impaired

OUTCOME MEASURE: Water quality monitoring demonstrates a trend toward meeting water quality standards

The VRWJPO began a biomonitoring program in 2009 which samples the presence and abundance of species of fish annually. The results of this sampling provide a measure of the biological health of the stream system as indicated through an index of biological integrity (IBI)*. Since 2016, site visits for fish population trend monitoring alternates every two or three years between sites.

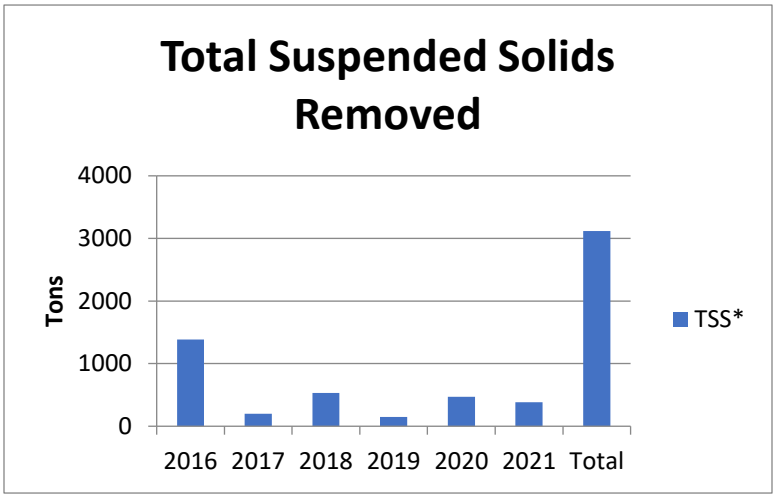
In 2020, we sampled 10 sites in the **Southern Coldwater Reach**. Four of them were impaired according to the IBI threshold. In 2021, we sampled five sites in this reach. Four of them were impaired, three of which overlapped from 2020's impairments. In two of the sites monitored in both years that turned out to be impaired, the IBI score decreased and remains below the impaired threshold. Since 2016, 13 sites have been monitored on a rotating basis. Over the long term, it appears that seven sites are showing a positive trend in IBI scores and three sites are showing a negative trend in IBI scores. There are three sites showing a mostly flat trend in IBI scores.

In 2020, we sampled no sites in the **Southern Headwaters Reach**, and we sampled two sites there in 2021. Both were impaired according to the IBI threshold. Three sites have been sampled on a rotating basis since 2016. Over time, two sites show a negative trend and one shows a mostly flat trend in IBI scores.

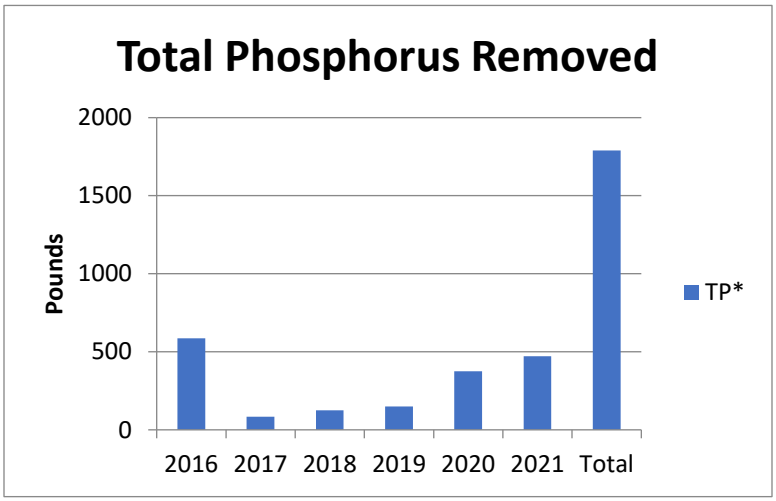
In 2020, we sampled two sites in the **Southern Stream Reach**, and none in 2021. The 2020 samples showed one site as impaired and one not impaired. Since 2016, one site has trended negatively and one positively in IBI scores.

2. Reduce non-point source pollution, erosion, and sediment

OUTCOME MEASURE: Document sediment and phosphorus reductions associated with best management practices supported by the VRWJPO



*Typical practices result in cumulative TSS removal



*Typical practices result in cumulative TP removal

3. Protect and improve the River corridor

OUTCOME MEASURE: Work with Dakota and Scott counties to annually document the DNR-protected waterways that have perennial vegetated buffers

Dakota County: 236 parcels protected by buffers as of September 1, 2020, 6 parcels non-compliant with buffers as of May 18, 2022 (based on County ordinance not State Buffer law)

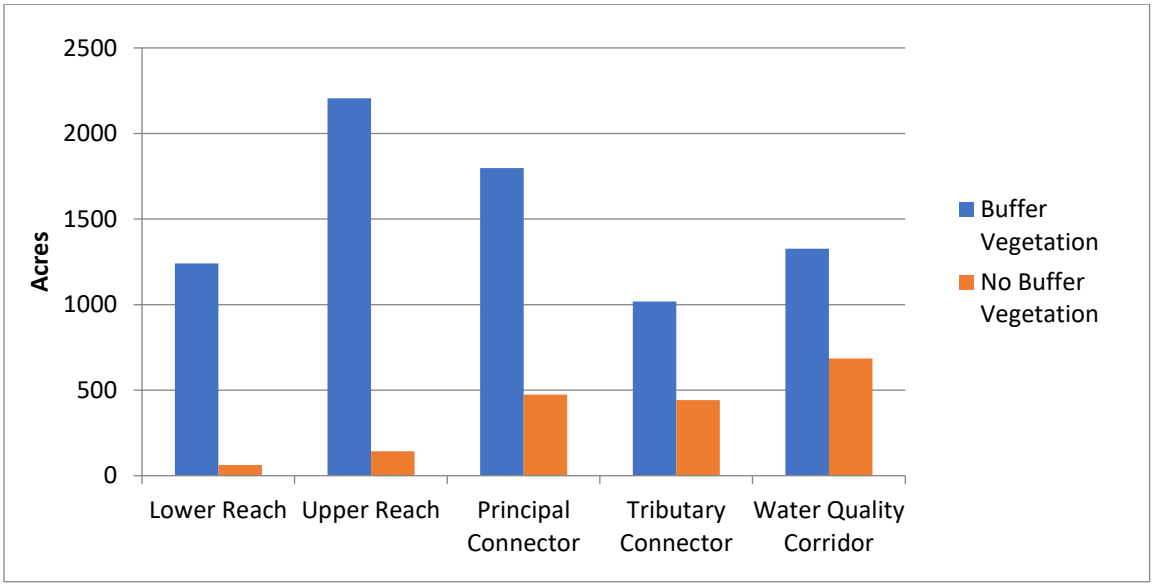
Scott County: 100% compliant with State Buffer Law as of June 2022

OUTCOME MEASURE: Document areas that meet the VRWJPO buffer standard (both those that are triggered by the buffer standard and those that are not)

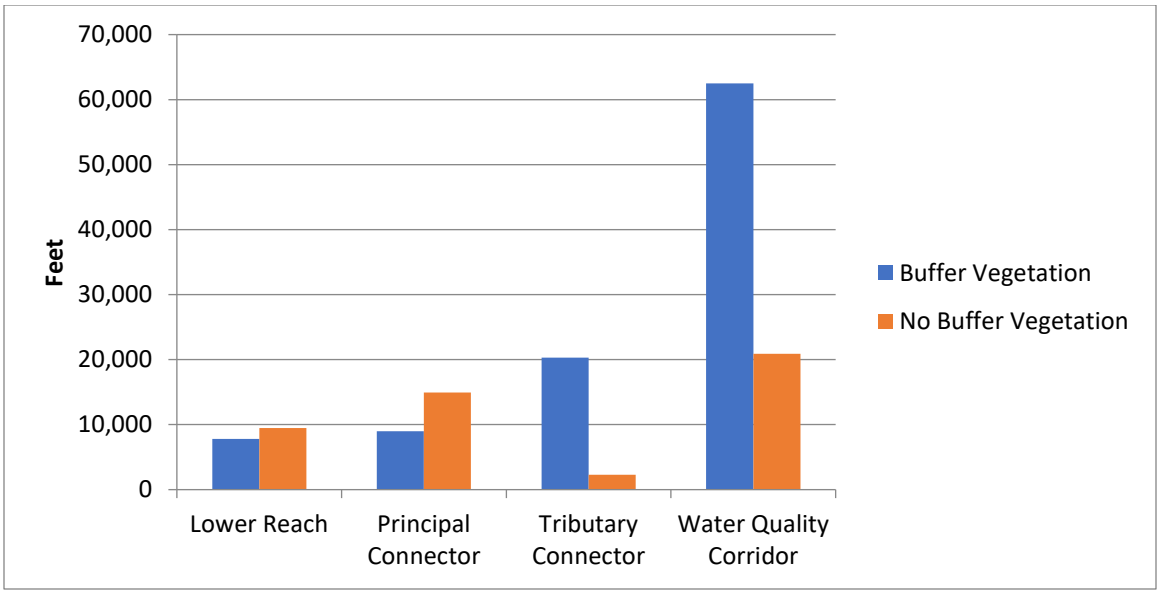
Dakota County May 2022 (after MN State Buffer Law):

Reach	Buffer Area (acres)	No Buffer Vegetation (acres)	% Buffer Vegetation
Lower	1,240.4	61.3	95
Upper	997.9	164.7	83.5
Principle	1797.4	521.4	70.9
Tributary	1,018.7	449	55.9
Water Quality Corridor	1,326.9	729.9	45

Dakota County September 2017 (before MN State Buffer Law):



Scott County February 2019:

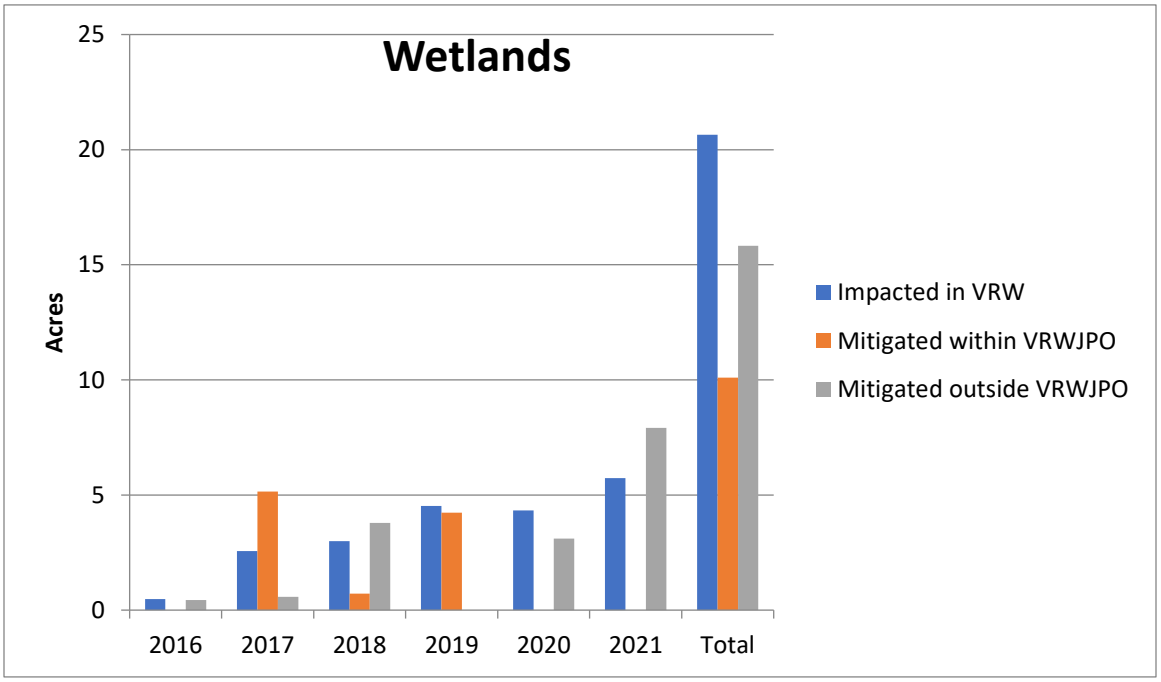


4. Protect, enhance, and restore wetlands

OUTCOME MEASURE: Document number and acres of wetlands restored

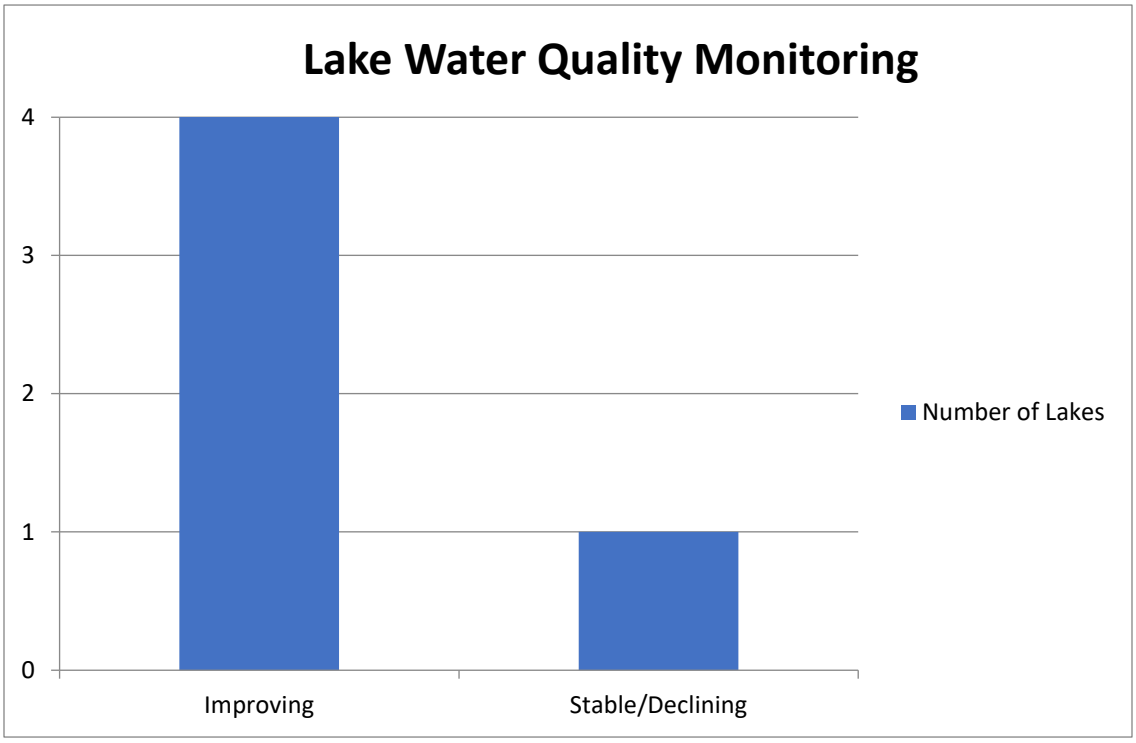
120 acres of wetlands restored in 2021

OUTCOME MEASURE: Document number and acres of known wetlands lost, altered, or impacted



5. Protect and enhance recreational lakes

OUTCOME MEASURE: Water quality monitoring of recreational lakes demonstrates a trend toward maintaining or improving water quality



*Water quality monitoring within the watershed couples phosphorus levels and transparency to provide a beneficial water quality indicator.

Goal B: Protect and restore groundwater quality

1. Track trends in groundwater quality

OUTCOME MEASURE: Compile existing information, assess its adequacy, and propose strategic improvements that will provide a comprehensive view of groundwater quality in the watershed in 2017 and 2022

Ambient Groundwater Study 2019 (dakota.mn.us) (AGQS)

Ambient Groundwater Study Appendices.pdf (dakota.mn.us)

Dakota County 2020-2030 Groundwater Plan Adopted

Chloride in private wells by municipality, 2016-2021

Chloride results (Outside faucet) – Three VRWJPO municipalities, Burnsville, Douglas Township, and Hampton Township, have had samples with the maximum chloride level (mg/L) exceed SMCL.

Dakota County Total Cyanazine Detections by Municipality and Year through 2020

Results are for the entire city or township, not just the portion in the Vermillion River Watershed. Per this study, 12 municipalities had some amount of samples that exceeded the guideline amount for total cyanazine.

The Minnesota Department of Agriculture (MDA) will be conducting widespread sampling of private drinking water wells in Dakota County for cyanazine and cyanazine breakdown products in the summer of 2022, which will significantly deepen the understanding of the extent and concentrations of cyanazine contamination the county.

In 2019, the MDA sampled 91 private drinking water wells in Scott County for cyanazine and cyanazine breakdown products. None of the wells sampled were within the Vermillion River Watershed. 17 of the 91 wells sampled (19%) exceeded the drinking water guideline for total cyanazine.

2. Protect groundwater quality from contamination

OUTCOME MEASURE: Annual expenditure and cost sharing for groundwater quality protection best management practices

Year	Project Name	Community	Subwatershed	Project Category	Project Cost	VRWJPO Funding	Grant Funds	Project Partners
2016	Avonlea Wetland and Stream Restoration	Lakeville	Middle Creek	Stream Restoration	$331,392	$207,924	$0	Lakeville, Mattamy Homes
2018	South Branch Nitrate Treatment	Castle Rock Township	South Branch	Agricultural BMP	$188,432	in-kind	$412,000	Dakota County, BWSR
2020	South Branch Denitrifying Woodchip Bioreactor	Castle Rock Township	South Branch	Agricultural BMP	$34,012	$2,029	$31,983	Dakota County, BWSR
2021	Webster Wetland Restoration	Elko New Market	Upper Mainstem	Other	$71,762	$0	$64,586	Elko New Market, BWSR

OUTCOME MEASURE: Awareness about urban and rural land-use impacts on nitrate contamination in groundwater are increased, as measured through Dakota County resident survey every 2-3 years

2019 Residential Survey

Highlights, p. 3:

- Residents voiced widespread support for using County funds to keep cities' drinking water sources free of contaminants.
- Dakota County is working on a long-range Groundwater Plan that could include various programs or regulations to protect and improve groundwater resources (the source of drinking water in Dakota County).
- Survey respondents were asked which potential programs or regulations they would support. Only 6% of respondents answered that they would not support any of them. The most popular option was using County funds to keep drinking water sources free of contaminants – 8 in 10 respondents supported this option.
- Just over half of respondents indicated they would support using County funds to protect land to limit contamination of groundwater supplies.

The 2022 survey results were presented to the Dakota County Board on June 21, 2022.

Groundwater Plan Stakeholder Engagement Findings and Direction, Appendix B of Groundwater Plan, p. 169

Agricultural Chemical Reduction Effort (ACRE) Plan Public Engagement Reports, 2021-2022: Agricultural Chemical Reduction Effort| Dakota County

3. Reduce existing levels of groundwater contamination

OUTCOME MEASURE: Measure number and amount of cost share for alternative practices and cropping systems to reduce input levels

Year	Acres	Contract Duration	Payment*
2018	80	One Year	$2,000
2018	100	Three Years	$10,500
2018	65	Three Years	$6,825
2018	24	Three Years	$2,520
2019	69.4	One Year	$1,735

Year	Acres	Contract Duration	Payment*
2019	100	One Year	$2,500
2020	68	One Year	$1,700
2020	61	One Year	$1,525
2020	60	One Year	$1,500
2020	100	One Year	$2,500
2020	58	One Year	$1,450
2020	50	One Year	$2,450
2020	52	One Year	$1,300
2020	43	One Year	$1,075
2020	88	One Year	$2,200
2021	85	One Year	$2,125
2021	120	One Year	$3,500
2021	106	One Year	$2,500
2021	30	One Year	$750

*Payout timing can vary. Assuming all acres are planted per contract the payments are listed above. Payments are $25 per acre for a one-year contract and $35 per acre for a three-year contract.

Goal C: Maintain a sustainable water supply

1. Promote conservation of groundwater

OUTCOME MEASURE: Track trends of overall water use per capita for municipal consumers, per acre usage for agriculture consumers, and number of gallons per day for industrial consumers

Per person municipal

2016 = 94.6 gallons per day
2017 = 98.7 gallons per day
2018 = 92.4 gallons per day
2019 = 83.8 gallons per day

Per acre agriculture* 2016 = 138,059 gallons per acre
2017 = 157,927 gallons per acre
2018 = 173,238 gallons per acre
2019 = 130,219 gallons per acre
*Dakota County only

Per million gallon well installations**: 2016 = 11,008 per year / 30.2 million gallons per day
2017 = 12,044 per year / 33 million gallons per day
2018 = 12,256 per year / 33.6 million gallons per day
2019 = 10,794 per year / 29.5 million gallons per day
**includes: agriculture, livestock, commercial/industrial, non-crop irrigation, power generation, etc.

(From MPARS Public Water Supply, for Dakota County):

677.2 million gallons per year industry
3,760.1 million gallons per year agriculture
6,181.7 million gallons per year water supplier services

Note: The DNR web page where these numbers are kept hasn't been updated since 2019. VRWJPO attempted to contact DNR staff for this information and is waiting for a response.

OUTCOME MEASURE: Document number of implemented projects targeted at the highest overall water users that promote or provide for groundwater conservation

Irrigation Efficiency Projects

2. Protect high-capacity groundwater recharge areas and promote infiltration, where appropriate

OUTCOME MEASURE: Track the number of acres of critical recharge areas protected via partnerships or directly by the VRWJPO

No partnered or sponsored protection projects occurred in critical recharge areas.

3. Promote re-use of stormwater and treated wastewater, where appropriate

OUTCOME MEASURE: Document the number of implemented cost share projects that re-use stormwater or treated wastewater

Year	Project Name	Community	Subwatershed	Project Type	Project Cost	VRWJPO Funding	Grant Funds	Project Partners	Reuse Vol. (MGY)
2016	King Park Reuse System Phase 2	Lakeville	North Creek	Stormwater Reuse System	$157,280	$39,390	$75,000	Lakeville, BWSR	3.1
2021	Aronson Park Reuse System	Lakeville	South Creek	Stormwater Reuse System	$369,769	$29,450	$70,550	Lakeville, Dakota County, BWSR	3,812,462

Goal D: Address more intense fluctuations (up and down) in river flow rate and volume

1. Regulate intercommunity flows

(No outcome measure determined)

2. Address sources of increased flows

OUTCOME MEASURE: Measure number of voluntarily implemented practices that address increased flows

Year	Projects	Acre-feet Reduction
2016	3	35.94
2017	0	0
2018	0	0

2019	1	?
2020	0	0
2021	2	175.8

OUTCOME MEASURE: Measure the number of stormwater retrofits in urban areas developed prior to 2006

Year	Projects
2016	3
2017	1
2018	1
2019	3
2020	2
2021	2

3. Protect floodplains and maintain the river floodway

OUTCOME MEASURE: Verify and document that all permitted activities intersecting with identified floodplains have no impacts

Zero activities permitted within VRWJPO floodplains. No impacts.

OUTCOME MEASURE: Complete research, analysis, and recommendations on water quality and quantity impacts of aggregate mining.

The impact of aggregate mining in the Vermillion River Watershed, Minnesota

4. Address erosion problem areas

OUTCOME MEASURE: Track the number of stabilization projects addressing erosion

OUTCOME MEASURE: Quantify the sediment reduction for all stabilization projects addressing erosion

Year	# of Projects	Estimated sediment reduction (tons/yr)
2016	8	1,384
2017	5	200
2018	5	558
2019	3	100*
2020	10	361
2021	6	236.14

*one project not calculated

Goal E: Improve public awareness and stewardship of water resources

1. Increase awareness of the Vermillion River, tributaries, and other waters within the watershed as unique resources

OUTCOME MEASURE: Measure people's awareness of the river, tributaries, and other waters on a regularly scheduled basis by conducting a follow-up survey to "Perspectives on Minnesota Water Resources: A Survey of Sand Creek and Vermillion River Watershed Landowners" that was completed in 2012 by the University of Minnesota

Follow-up survey was completed in fall 2021 and funded by VRWJPO. A highlight of the results was that more than 60% of respondents said that they trusted watershed management organizations like ours to help them make decisions about conservation practices on their land. Respondents largely felt a sense of individual obligation to do what they can to protect water, but were less likely to say they'd be willing to engage with other people about it.

2. Increase awareness of the VRWJPO and its services

OUTCOME MEASURE: Annually track the public's use of the website

Year	Average Session Duration (minutes)*	Pages / Session**	Annual Users***	New Users
2016 (May-Dec)	3.46	2.86	2,565	2,325
2017	2.28	2.91	5,132	4,611
2018	1.67	3.78	7,594	7,012
2019	1.28	3.59	9,892	7,683
2020	1.5	3.67	10,437	10,331
2021	0.92	3.06	15,814	15,804

*avg session duration = average length of time spent on site

**pages/session = average number of pages viewed while on site

***users = initiated at least one session

3. Maintain a clear watershed identity through consistency and quality in external communications

OUTCOME MEASURE: Complete an annual update to the communications plan

Update completed Fall 2021

OUTCOME MEASURE: Report communications plan outcomes on an annual basis

Measures in development

4. Ensure that watershed messages are available through multiple channels and media

OUTCOME MEASURE: Track the number of different types of outlets used to convey messages

Press Releases/Articles	# per year
2016	40
2017	36
2018	31
2019	34
2020	7
2021	23
Platform	**Audience (as of June 2022)**
Newsletter	1,073 subscribers
Facebook	334 followers
Twitter	237 followers
Instagram	372 followers

5. Plan and host events, such as programs, training, and outreach activities, to motivate stakeholders to make choices that will improve water resources

OUTCOME MEASURE: Annually track the number and type of events and the number of participants at each event

Year	Events	Participants*
2016	57	1,670
2017	61	2,065

Year	Events	Participants*
2018	49	2,263
2019	36	2,350
2020**	6	1,068
2021**	9	1,249

*It is difficult to quantify all participants at events like the Dakota County Fair and are not included in participant totals. In each year, we reached more people than is listed. The numbers indicate how many were tracked.

**Many events we typically attend were canceled due to COVID-19 or weather.

6. Promote civic engagement and citizen-based action on water and natural resource issues

OUTCOME MEASURE: Annually track the number of events, groups, and participants engaged in VRWJPO supported activities

Wetland Health Evaluation Program in the Vermillion River Watershed

Year	# of Volunteers	Volunteer Hours	# of Wetlands Monitored
2016	76	1,996	17
2017	83	2,171	16
2018	61	1,135	22
2019	70	1,280	14
2020	94	737	14
2021	81	1,248.75	17

Vermillion Stewards*

Year	Events	Volunteers	Hours
2016	10	245	286.5
2017	9	177	337.5

Year	Events	Volunteers	Hours
2018	7	195	162
2019	7	115	134
2020	5	89	158

*VRWJPO ended contract with Friends of the Mississippi River for Vermillion Stewards in 2021.

Minnesota Water Stewards Participants from Vermillion River Watershed

Year	Participants*	Hours
2016-17	3	0 (volunteer hours not required in first year)
2017-18	6	0 (reported)
2018-19	8	68
2019-20	11	196
2020-21	11 (2 new registered, but both dropped out)	N/A
2022	12	1 currently going through curriculum

*cumulative

Stewardship Grants

Year	Grants
2016	1
2017	0
2018	1
2019	0*

*no program budget from 2019-present

VRWJPO Attendees at Public Meetings/Events

2016: Public Hearing for Draft 2016-2025 Vermillion River Watershed Management Plan - 35 estimated attendees

Public Hearing on the Draft VRWJPO 2017 Budget - 0 attendees

2017: Public Hearing on the Proposed Amendments to the VRWJPO Rules - 0 attendees
Public Hearing on the Draft VRWJPO 2018 Budget - 0 attendees

2018: Public Hearing on the Proposed Amendments to the VRWJPO Permit Program Fee and Security Schedule - 0 attendees
Public Hearing on the Draft VRWJPO 2019 Budget - 0 attendees

2019: Public Hearing on the Proposed Amendments to the VRWJPO Standards - 4 attendees
Public Hearing on the Draft VRWJPO 2020 Budget - 0 attendees

2020: Public Hearing on Proposed Amendments to VRWJPO Rules – 0 attendees
Public Hearing on the Draft VRWJPO 2021 Budget – 0 attendees

2021: Public Hearing on Proposed Modifications to the VRWJPO Permit Fee and Security Schedule – 0 attendees
Public Hearing on Proposed Amendment for Bemis Wetland – 0 attendees
Public Hearing on the Draft VRWJPO 2022 Budget – 0 attendees

Goal F: Improve watershed resilience to changing precipitation and temperature patterns

1. Seek to maintain pre-development hydrology

OUTCOME MEASURE: Annually track cost-shared best management practices that increase storage or infiltration capacity

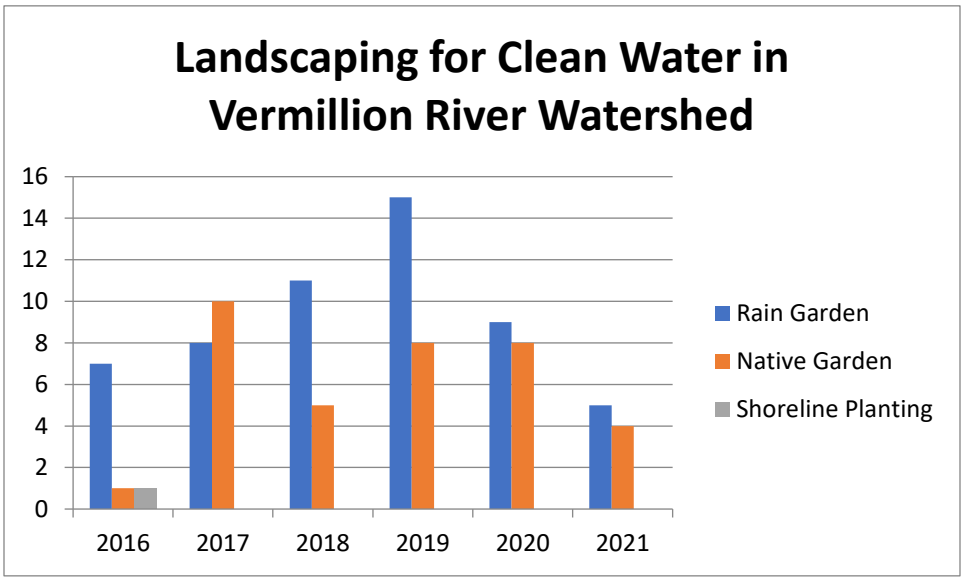
Year	Projects	Acre-feet Reduction
2016	3	35.94
2017	0	0
2018	0	0
2019	1	*
2020	0	0
2021	2	175.8

*Not yet calculated

OUTCOME MEASURE: Report outcome of evaluation of standards compliance*

Year	Community Compliance Checks
2016	16
2017	17
2018	2
2019	Data still coming in

OUTCOME MEASURE: Annually track implementation of voluntary or innovative best management practices that mitigate thermal impacts



Vermillion Corridor Acquisitions/Restorations

No partnered or sponsored protection acquisitions and/or restorations occurred in the Vermillion corridor.

Goal G: Protect or restore sensitive biological resources, such as plants, fish, insects, and wildlife

1. Monitor fish and macroinvertebrate populations in the river and tributaries

OUTCOME MEASURE: Annually report Index of Biotic Integrity (IBI) data and track trends of fish and macroinvertebrate populations

*See Goal A Sub-Goal 1 for IBI and **fish** population trends.

Since 2016, site visits for macroinvertebrate population trend monitoring alternates every two or three years between the 18 sites. Five sites have shown positive trends in macroinvertebrate IBI scores over this period.

OUTCOME MEASURE: Assess brown trout to determine population changes and annually report data

Not Completed

2. Use current research, long-range trend data, policies, and partnerships to protect habitat for native and sensitive aquatic species

OUTCOME MEASURE: Annually track riparian or instream habitat improvement projects supported by the VRWJPO

Year	Number of Projects
2016	2
2017	2
2018	2
2019	1
2020	0
2021	2