Agenda

Vermillion River Watershed Planning Commission
March 13, 2019 - 3:30 p.m., Conference Room 334
Dakota County Western Service Center, Apple Valley, MN

1. Call to Order

2. Audience Comments on Items Not on the Agenda
   *(please limit audience comments to five minutes)*

3. Approval of Agenda

4. Approval of Minutes from the January 9, 2019, Meeting

5. Business Items
   a. Review and Consider Draft Recommendations from the Ad-Hoc Group
      Addressing Implementation of Vermillion River Watershed Joint Powers Organization Standards in the Rural Areas of the Watershed
      Action
      Information
   c. Presentation on Hydrodynamic Separators and How They Work
      Information

6. Updates
   a. Chairperson’s Report

7. Adjourn

Action

Other Information

Next Meeting Date: April 10, 2019 at 3:30 p.m.
Dakota County Western Service Center, Room 334, Apple Valley, MN

Please confirm your attendance by contacting Jen Dullum at 952.891.7086 or via e-mail at jennifer.dullum@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
January 9, 2019 - 3:30 p.m.
Dakota County Western Service Center, Room 334, Apple Valley, MN

WPC Members in Attendance
Chuck Clanton  Mark Henry  Tony Wotzka  Josh Borton

Staff in Attendance
Mark Zabel, VRWJPO  Mark Ryan, VRWJPO  Jen Dullum, VRWJPO  Travis Thiel, VRWJPO

Others in Attendance
Curt Coudron, SWCD  Mac Cafferty, City of Lakeville  Georg Fischer, Dakota County

1. Call to Order
The meeting was called to order by Mark Zabel at 3:30 p.m., and opened with the recital of the Pledge of Allegiance.

2. Audience Comments on Items Not on the Agenda
None

3. Election of 2019 Vermillion River Watershed Planning Commission Officers

Motion by Commissioner Rohrenbach to nominate Commissioner Miller as chair of the Vermillion River Watershed Planning Commission (VRWPC).

Mark Zabel called for any other nominations three times. There were none.

Seeing as there was only a single nominee, Mark Zabel asked if there was any objection from members to elect Commissioner Miller as chair for 2019 by acclamation. There was no objection.

Commissioner Miller then presided as Chair.

Motion by Commissioner Clanton to nominate Commissioner Henry as vice chair of the VRWPC.

Commissioner Miller called for any other nominations three times. There were none.

The VRWPC cast a unanimous aye to elect Commissioner Henry as vice chair for 2019.

b. Approval of Agenda

Motion by Commissioner Wotzka, second by Commissioner Borton, to approve the agenda. The agenda was unanimously approved.
4. Approval of Minutes

Motion by Commissioner Clanton, second by Commissioner Rohrenbach, to approve the minutes of the November 28, 2018 meeting as amended. The minutes were unanimously approved.

5. Business Items
a. Recommendation to Execute a Joint Powers Agreement with Dakota County Soil and Water Conservation District (SWCD) for Services in 2019

Mark Zabel introduced Curt Coudron from the Dakota County Soil and Water Conservation District, who was in attendance to present their 2019 work plan and budget. Curt began by thanking the Commissioners for their 2018 support and then provided a line-by-line description of the 2019 work plan.

There were numerous questions about the Landscaping for Clean Water (LCW) program. Commissioner Rydeen asked about the average attendance per workshop. Average attendance for an introductory workshop is about 40 participants. A design workshop is limited to about 15 households so that there is enough individual attention to each participant/household.

Commissioner Rydeen asked about the total number of residents reached through the courses annually. Curt replied that in any given year, LCW usually reaches 400 people in the introductory classes, with 100-125 designs completed. Of those, 60-75 projects are typically installed

Commissioner Rydeen noted that the LCW program sounds like a great program but with a $30,000 budget seems like a lot to spend only to reach 600-700 people. Curt noted that it is a large staff commitment. The alternative would be staff working one-on-one with residents to install projects. There is a definite value in working in a group setting; however, increasing the group size decreases the individual attention that participants receive. Commissioner Clanton inquired if there was an upfront cost to participants; there is a $25 fee per household for the design workbook for the design class. Commissioner Rydeen wondered if charging participant would be an option for lowering the overall costs. Curt believes this could be a deterrent to participation, particularly if charging for the introductory classes.

Commissioner Miller asked if the program has shown continual growth and how the SWCD markets the program. Curt stated that in 2007 when the program started, three projects went in the ground. In 2018, that number was 68, so the program is growing. The SWCD has city partners who get the word out in their city newsletters, mailings, and social media. The VRWJPO spreads the message as well. Curt believes that word of mouth is the number one way that participants find out about LCW. Mac Cafferty said the City of Lakeville saw a large increase in the LCW program using the Nextdoor App. The SWCD is working on videos for cable access with the City of Rosemount for 2019.

Commissioner Borton asked if there was any follow-up on past projects. In 2018, staff revisited 2007 and 2013 projects and found that 90-95% were still in good to excellent condition. The ones that were not in good to excellent condition were because the property had been sold. The SWCD will be reaching out to those homeowners with educational materials in 2019. Commissioner Rydeen said it sounds like a good program.

Curt Coudron went on to explain other portions of the SWCD/ VRWJPO programs, including the water quality and flow monitoring program. Commissioner Rydeen asked if monitoring data analysis
was done in-house at the SWCD. Curt said that most of the data analysis is done in-house but some of the flow monitoring data get sent to the Minnesota Department of Natural Resources (MNDNR) for more complex analysis.

Curt ended by stating that work plan and budget is a not to exceed amount of $257,000. There is a new line-item for $4,000 for in-classroom presentations for K-12 and an increase of $1,600 for a new LCW maintenance workshop. The VRWJPO will be billed as costs are incurred.

Motion by Commissioner Borton, second by Commissioner Clanton, to recommend executing a Joint Powers Agreement with Dakota County Soil and Water Conservation District (SWCD) for Services in 2019.

b. Recommendation to Execute a Joint Powers Agreement with Scott Soil and Water Conservation District (SWCD) for Services in 2019

Mark Zabel presented a work plan and budget for the Scott Soil and Water Conservation District (SWCD) paralleling that of Dakota County Soil and Water Conservation District. Mark went over each line-item for the Commissioners.

Commissioner Miller noted that the budget does not seem to show great changes from the previous year. Mark noted that since this work plan and budget was prepared, the SWCD is requesting an increase to the water quality monitoring line item. Also, due to a request from the VRWJPO, the SWCD is also requesting an increase in funding for GIS work to quantify measurable outcomes encompassed within the Watershed Plan. Commissioners Miller and Clanton asked for clarification on the requested increase. Mark stated that the SWCD will bill the VRWJPO as costs are incurred. He is not willing to increase the budget at this time as the request came after the adoption of the VRWJPO final budget for 2019. The VRWJPO can amend the budget if there comes a point where additional funding is needed.

Commissioner Henry asked how much land area Scott County encompasses of the Watershed. Mark Zabel replied that it is 3.6% of the Watershed. Commissioner Henry noted that the Scott SWCD budget is roughly 20% of the budget of the Dakota County SWCD. Mark Zabel stated that the Scott SWCD typically does not spend all the funds they budget.

Motion by Commissioner Miller, second by Commissioner Clanton, to recommend executing a Joint Powers Agreement with Scott Soil and Water Conservation District (SWCD) for Services in 2019.

c. Presentation on the 2018 Homeowners Association Irrigation Audit Program

In 2018 the VRWJPO partnered with the City of Lakeville on a homeowners association (HOA) irrigation audit program. Two HOAs took part in the audit. This program achieved water quantity goals set in the Watershed Plan and in Lakeville’s Water Management Plan. This pilot study serves as a model if the VRWJPO were to do this program in the greater watershed. Findings presented show that not only will there be municipal water savings, but that money could be saved by HOAs as well. Travis Thiel then went over his presentation.

To summarize, the maintenance of these two irrigation systems is an issue. Proactive maintenance is probably a good investment for the HOAs to commit to. ‘À la carte options, especially at Orchard Meadows, are probably the best option for the HOAs to consider, based on the demographic and the level of issues observed. Both HOAs have the potential to save considerable groundwater and
contribute savings to our healthy aquifer. The VRWJPO is considering replicating this auditing program with some changes again in the City of Lakeville in 2019 before considering options to roll a program out in the entire Watershed and servicing other cities.

Commissioner Clanton asked if it is reasonable to think that HOAs will adopt ‘option 4’ as shown in the presentation, which involves turning off defunct irrigation systems to save money to put toward a new system. Commissioner Borton commented that they won’t want brown or dead grass. Travis replied that grass left dormant long enough will die at some point, however, grass can tolerate long stretches without water and will come back to life with a modest amount of rain. Commissioner Clanton mused about how long it will be until lawn watering is banned. Travis noted water quality benefits of a healthy lawn consist of capturing leaching nutrients and erosion control.

Commissioner Borton asked how old the HOAs were. Both developments were constructed in the mid-1990’s. Commissioner Miller asked how the VRWJPO could scale this project up to golf courses or businesses. Both Travis and Mac replied that golf courses already incorporate a lot of reuse but they both see an opportunity for business, industry, and commercial applications. Commissioner Borton asked if these irrigation systems were using municipal water. Travis indicated they are.

Commissioner Rydeen wonders if there are programs for HOAs for grant funding or assistance to cover the capital improvements identified. The VRWJPO is working with the City of Lakeville on a plan for 2019. Together the VRWJPO and the City are determining what would be paid for and how much would be paid to cost-share improvements. Commissioner Rydeen asked where water conservation ranks in the VRWJPO Watershed Plan. Water conservation is a goal in the groundwater section of the plan. Commissioner Rohrenbach questioned car and truck washes and how water might be reused at those facilities. In many situations, the water is discharged to the sanitary sewer. In some cases the water is recycled and reused. Those facilities could be another area to consider in the future.

d. **Presentation on the East Lake Carp Tracking Project**

Travis Thiel began this presentation by thanking Dakota County for the aquatic invasive species (AIS) grant for carp tracking. East Lake is impaired for nutrients. Nutrients are coming from both outside the lake and from sediments on the lake bottom. Carp are bottom feeders and release nutrients when they filter sediments to search for food on the bottom of the lake, which causes an internal water quality problem. The VRWJPO also wants to know where the carp are coming from. Travis then went through his slide presentation.

In summary, the work done by Carp Solutions identified that there was a considerable number of carp in East Lake, and alarmingly, that there were even more goldfish in the lake. The tracking element of the work was inconclusive as to whether carp were reaching North Creek, as there was always at least one fish that couldn’t be found with the radio signal tracker at each tracking event. Some fish were not found in the lake during one tracking event, but then were found back in the lake during a later event.

Commissioner Clanton asked if the goldfish were human induced. Travis said that he believes so. Georg Fischer noted that goldfish in the lake seem to outnumber the carp 30-1, and are very large. Georg asked if maybe the problem in the lake is the goldfish and that the outcome of the project should be to eradicate the goldfish from East Lake. The VRWJPO and the City of Lakeville will be working with the Minnesota Department of Natural Resources to determine if the goldfish
population is the real problem in the lake. Together they will be discussing recommendations and treatment options. Commissioner Rydeen asked if the goldfish are equally destructive as the carp. Travis does not know. They are destructive since they are bottom feeders like carp and they can tolerate poor water quality conditions. Georg noted that in the winter fish kill there was a lot of large carp, bass, and northern, but no goldfish, leading him to believe that they can survive harsh conditions.

Commissioner Clanton asked if the carp tracking identified where the carp were coming from. Based on the data collected, the carp appear to be reproducing in the lake. It was assumed at the beginning of the project that the carp were moving through North Creek. Commissioner Wotzka questioned regarding the depth of East Lake. Mac Cafferty replied that there are two separate bays, the deepest area is about eight to nine feet deep. There seems to be a sideways movement of groundwater in the north bay so that the ice may be thin or missing in winter.

6. **Updates**
   a. **Chairperson’s Report**
   None

   b. **Staff Updates**
   Mark Zabel updated the Commissioners on a letter sent to the Minnesota Department of Agriculture (MDA) regarding anecdotal evidence of the lack of adherence to best management practices. The VRWJPO, Dakota County, and MDA met last week to discuss groundwater protection collaboration efforts. One of the items the group is hoping to work together on is determining the nitrate contribution the Vermillion River makes to groundwater that is flowing toward Hastings. The VRWJPO also hopes to be able to help MDA better enforce the Groundwater Protection Rule, which, at the earliest, could be signed after the end of this year’s legislative session. Fall application restrictions would not come into effect until fall of 2020. Dakota County has a nitrate problem and Dakota County is active in monitoring and finding ways to address the issue. Staff will continue to press the issue with MDA to move forward. Georg Fischer noted that there are collaborative efforts to be taken between Dakota County, the VRWJPO, and MDA.

   Commissioner Clanton asked if MDA addressed the fall application of anhydrous ammonia. They did not in a specific way, the new rule would address restrictions of fall application, but they were not clear on how that would apply to areas within Dakota County. Georg noted to MDA that Dakota County and the VRWJPO are available to help make sure that best management practices are being followed. Travis noted that MDA said they would enforce on a complaint basis. Mark Zabel stated that Dakota County’s new groundwater management plan is currently under development.

7. **Adjourn**
   *Motion by Commissioner Henry, second by Commission Rydeen, to adjourn the meeting at 5:02 p.m. The motion was unanimously approved.*

Meeting Date: 3/13/2019  
Item Type: Regular-Action  
Contact: Mark Zabel  
Telephone: 952-891-7011  
Prepared by: Mark Zabel  
Reviewed by: N/A N/A

PURPOSE/ACTION REQUESTED


SUMMARY

At its December 6, 2018 meeting, the Vermillion River Watershed Joint Powers Board (VRWJPB) adopted a scope and schedule for an ad-hoc group of stakeholders, staff, and a VRWJPB member to develop recommendations associated with the VRWJPO Standards and their implementation in the rural areas of the watershed, with an emphasis on the Erosion and Sediment Control Standard. The ad-hoc group met three times on January 30th, February 13th, and February 19th, 2019, to discuss current application of the VRWJPO Standards in the rural areas, permitting and issues around the approval and oversight of projects, and how the VRWJPO could assist Townships in implementation.

Based on the discussions held at these meetings, the ad-hoc group is making the following recommendations to the VRWJPB:

**Draft Recommendations to the VRWJPO on the Implementation of Standards**

- The VRWJPO should provide assistance to the Townships by producing a concise one page sheet that outlines the purpose and requirements of the VRWJPO Standards (similar documents could be provided for the individual VRWJPO Standards).
- The VRWJPO should develop a model form that collects all pertinent information to be included for consideration and assists Township Officials (Board, Planning Commission, Inspectors) with decision making and oversight.
- The VRWJPO should provide a “best practices” document for township maintenance activities that would be protective of water resources.
- The VRWJPO should consider amending the current Standards to include the following thresholds for land disturbing activities regulated under the Erosion and Sediment Control Standard:
  - Greater than one acre of land disturbance.
  - Land disturbance on slopes greater than six percent.
  - Greater than 100 cubic yards of imported or stockpiled material.
  - New public or private roads or driveways greater than 125 feet in length.
  - Greater than 10,000 square feet of land disturbance if commercial, industrial, or recreational use development.
  - Filling, draining, or altering of natural or artificial stormwater storage, retention, or flowage pathways.
  - Projects that could reasonably be expected to deliver sediment to adjacent properties, wetlands, or water resources.

EXPLANATION OF FISCAL/FTE IMPACT

None.
RESOLUTION


WHEREAS, the VRWJPB has requested the development of an ad-hoc group of stakeholders to meet to discuss issues and develop recommendations related to the Watershed Standards and their implementation in the rural areas of the VRWJPO with an emphasis on the Erosion and Sediment Control Standard, and

WHEREAS, the VRWJPB directed staff to develop the parameters outlining the scope and schedule for the effective and timely formation of the ad-hoc group and completion of its objectives, and

WHEREAS, the ad-hoc group met on January 30th, February 13th, and February 19th, 2019 and developed recommendations to be presented to the VRWJPB at its February 28th, 2019 meeting for VRWJPB consideration, and

WHEREAS, the VRWJPB accepted the draft recommendations of the ad-hoc group to be shared with the Vermillion River Watershed Planning Commission and presented at the annual Spring Dakota County Township Officers Association Meeting as “Draft Recommendations to the VRWJPO on the Implementation of Standards” for further review and input.

NOW, THEREFORE, BE IT RESOLVED, that the WPC hereby approves the draft recommendations of the ad-hoc group to be shared at the annual Spring Dakota County Township Officers Association Meeting as “Draft Recommendations to the VRWJPO on the Implementation of Standards” for further review and input.

Meeting Date: 3/13/2019
Item Type: Regular-Information
Contact: Mark Zabel
Telephone: 952-891-7011
Prepared by: Jen Dullum
Reviewed by: N/A

PURPOSE/ACTION REQUESTED


SUMMARY
The 2016 – 2025 Vermillion River Watershed Management Plan includes a listing of measureable outcomes in Section 8: Outcome Measures by Sub-goal that will be used to measure general progress against the Plan Goals over the life of the Plan. The measures can be grouped into two types; activity measures that quantify the specific types and levels of 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 in water resources – in particular as related to quality and quantity.

VRWJPO staff have undertaken the identification of relevant data and information sources and the collection and analysis of these toward developing a report on the identified Outcome Measures in the 2016 – 2025 Vermillion River Watershed Management Plan. This is the first report on the outcome measures compiled since the adoption of the Plan. The intent is to provide annual updates to the reporting of outcome measures on an annual basis through the life of the current Plan.

EXPLANATION OF FISCAL/FTE IMPACT
No fiscal impact.

RESOLUTION
Information only
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. Some 2018 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 and macroinvertebrates 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).

Of the 19 samples taken, only one in the **Southern Coldwater Sites** was **above** the index of biotic integrity (IBI*) threshold over the past three years. Over the long term, there seems to be an even number of sites showing an increasing trend in IBI scores and a decreasing trend in IBI scores. There are 3 sites showing a flat trend IBI scores.
Of the three samples taken, one in the **Southern Headwaters Sites** was **above** the index of biotic integrity threshold over the past three years. Over the long term, all three sites are showing a decreasing trend in IBI scores.

Of the three samples taken, over the last three years, at the **Southern Stream Site** two were **below** the index of biotic integrity threshold and, in 2018, one received a score of 0.0. Over the long term, the two sites are showing a fairly flat trend in IBI scores. It should be noted that the 0.0 scoring site has scored relatively low in the past. It is likely that past ratings were just under the scoreable criteria of the IBI and this should not be viewed as a sudden change to extreme degradation at the site.

An IBI* (Index of Biotic Integrity) is a biologically-based, multi-metric method for measuring the integrity of aquatic systems. Since 2016 site visits for fish population trend monitoring alternates every two or three years between sites.

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

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

![Total Suspended Solids Removed](image)

*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: 238 parcels protected by buffers as of January 3, 2019
Scott County: 266 (80.85%) parcels protected by buffers as of February 25, 2019

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 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
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

2. Protect groundwater quality from contamination
OUTCOME MEASURE: Annual expenditure and cost sharing for groundwater quality protection best management practices

<table>
<thead>
<tr>
<th>Year</th>
<th>Project</th>
<th>City</th>
<th>Project Cost</th>
<th>VRWJPO Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>Avonlea Wetland and Stream Restoration</td>
<td>Lakeville</td>
<td>$331,392</td>
<td>$207,924</td>
</tr>
<tr>
<td>2018</td>
<td>South Branch Nitrate Treatment</td>
<td>Castle Rock Township</td>
<td>$188,432</td>
<td>$0 (to date)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Acres</th>
<th>Contract Duration</th>
<th>Payment*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>80</td>
<td>One Year</td>
<td>$2,000</td>
</tr>
<tr>
<td>2018</td>
<td>100</td>
<td>Three Years</td>
<td>$10,500</td>
</tr>
<tr>
<td>2018</td>
<td>65</td>
<td>Three Years</td>
<td>$6,825</td>
</tr>
<tr>
<td>2018</td>
<td>24</td>
<td>Three Years</td>
<td>$2,520</td>
</tr>
</tbody>
</table>
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. Rates were developed by referencing neighboring SWCD programs, NRCS payments, and factoring in actual costs. Payments are not designed to cover all costs and will typically end up covering only 50-75% of the cost to implement cover crops. Programs are revisited every February, at that time staff will look at costs again to ensure they continue to be high enough to encourage participation but low enough to still have a financial commitment and buy-in from the producer.

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 Gallon Municipal Consumer](image1)

![Municipal Water Used 2016](image2)
OUTCOME MEASURE: Document number of implemented projects targeted at the highest overall water users that promote or provide for groundwater conservation

- **2016 Pilot Agriculture Version**
- **2018 Pilot Homeowners’ Association Century Ridge**
- **2018 Pilot Homeowners’ Association Orchard Meadows**

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


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

<table>
<thead>
<tr>
<th>Year</th>
<th>Project</th>
<th>City</th>
<th>Project Cost</th>
<th>VRWJPO Funds</th>
<th>Grant Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>King Park Reuse System Phase 2</td>
<td>Lakeville</td>
<td>$157,280</td>
<td>$39,390</td>
<td>$75,000</td>
</tr>
</tbody>
</table>

![Private Water Well Use](chart.png)
Goal D: Address more intense fluctuations (up and down) in river flow rate and volume

2. Address sources of increased flows
OUTCOME MEASURE: Measure number of voluntarily implemented practices that address increased flows

<table>
<thead>
<tr>
<th>Year</th>
<th>Projects</th>
<th>Acre-feet Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>3</td>
<td>35.94</td>
</tr>
<tr>
<td>2017</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>3</td>
</tr>
<tr>
<td>2017</td>
<td>1</td>
</tr>
<tr>
<td>2018</td>
<td>1</td>
</tr>
</tbody>
</table>

3. Protect floodplains and maintain the river floodway
OUTCOME MEASURE: Verify and document that all permitted activities intersecting with identified floodplains have 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

<table>
<thead>
<tr>
<th>Year</th>
<th>Projects</th>
<th>Tons per Year</th>
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<tbody>
<tr>
<td>2016</td>
<td>8</td>
<td>1,384</td>
</tr>
<tr>
<td>2017</td>
<td>5</td>
<td>200</td>
</tr>
<tr>
<td>2018</td>
<td>1</td>
<td>2</td>
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</table>
2. Increase awareness of the VRWJPO and its services
OUTCOME MEASURE: Annually track the public’s use of the website

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**Average Session Duration**

<table>
<thead>
<tr>
<th>Year</th>
<th>Minutes</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>2017</td>
<td>2</td>
</tr>
<tr>
<td>2018</td>
<td>1</td>
</tr>
</tbody>
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**Pages per Session**

<table>
<thead>
<tr>
<th>Year</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>3.5</td>
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<tr>
<td>2017</td>
<td>3</td>
</tr>
<tr>
<td>2018</td>
<td>4</td>
</tr>
</tbody>
</table>
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

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**Number of Sessions 2016**

- May: 100
- Jun: 600
- Jul: 400
- Aug: 500
- Sep: 200
- Oct: 300
- Nov: 600
- Dec: 200

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**Digital Media**

- Newsletter: 600
- Facebook: 100
- Twitter: 100
- Instagram: 100
- Flicker: 200

*photo views
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 number of participants at each event

<table>
<thead>
<tr>
<th>Year</th>
<th>Events</th>
<th>Participants*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>57</td>
<td>1,670</td>
</tr>
<tr>
<td>2017</td>
<td>61</td>
<td>2,065</td>
</tr>
<tr>
<td>2018</td>
<td>49</td>
<td>2,263</td>
</tr>
</tbody>
</table>

*It is difficult to quantify all participants at events like the Dakota County Fair and are not included in participant totals.

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Volunteers</th>
<th>Volunteer Hours</th>
<th>Wetlands Monitored</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>76</td>
<td>1,996</td>
<td>17</td>
</tr>
<tr>
<td>2017</td>
<td>83</td>
<td>2,171</td>
<td>16</td>
</tr>
<tr>
<td>2018</td>
<td>61</td>
<td>1,135</td>
<td>22</td>
</tr>
</tbody>
</table>
Vermillion Stewards Events

<table>
<thead>
<tr>
<th>Year</th>
<th>Events</th>
<th>Volunteers / Participants</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>10</td>
<td>245</td>
<td>286.5</td>
</tr>
<tr>
<td>2017</td>
<td>9</td>
<td>177</td>
<td>337.5</td>
</tr>
</tbody>
</table>
| 2018 | 8      | 195                       | 162 volunteer hours  
                                          | 158 education hours |

Master Water Stewards Participants

<table>
<thead>
<tr>
<th>Year</th>
<th>Participants</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>3</td>
<td>0 (volunteer hours not required in first year)</td>
</tr>
<tr>
<td>2017</td>
<td>4</td>
<td>0 hours reported</td>
</tr>
<tr>
<td>2018</td>
<td>2</td>
<td>16.5</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Projects</th>
<th>Acre-feet Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>3</td>
<td>35.94</td>
</tr>
<tr>
<td>2017</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

OUTCOME MEASURE: Report outcome of evaluation of standards compliance*

<table>
<thead>
<tr>
<th>Year</th>
<th>Community Compliance Checks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>16</td>
</tr>
<tr>
<td>2017</td>
<td>17</td>
</tr>
<tr>
<td>2018</td>
<td>to be completed in 2019</td>
</tr>
</tbody>
</table>
OUTCOME MEASURE: Annually track implementation of voluntary or innovative best management practices that mitigate thermal impacts

Vermillion Corridor Acquisitions/Restorations

Zero partnered or sponsored protection acquisitions and/or restorations occurred in the Vermillion corridor in 2016, 2017, and 2018.

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

All 11 sites monitored since 2016 are showing positive IBI and increasing positive trends for macroinvertebrate populations.

An IBI* (Index of Biotic Integrity) is a biologically-based, multi-metric method for measuring the integrity of aquatic systems. Since 2016 site visits for macroinvertebrate population trend monitoring alternates every two or three years between sites.
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

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>2</td>
</tr>
<tr>
<td>2017</td>
<td>2</td>
</tr>
<tr>
<td>2018</td>
<td>0</td>
</tr>
</tbody>
</table>
5c. Presentation on Hydrodynamic Separators and How They Work

Meeting Date: 3/13/2019
Item Type: Regular-Information
Contact: Mark Ryan
Telephone: 952-891-7596
Prepared by: Mark Ryan
Reviewed by: N/A

PURPOSE/ACTION REQUESTED

• A presentation on hydrodynamic separators and how they work

SUMMARY
Capital Improvement Projects completed by the Vermillion River Watershed Joint Powers Organization (VRWJPO) are increasingly incorporating the use of hydrodynamic separator technology for water quality improvement. These systems are treatment devices built into the storm sewer system to remove primarily coarse solids, sediment, and other pollutants. Use of the structures can be as a pre-treatment device upstream of other stormwater best management practices or as stand-alone treatment devices prior to outlets to surface waters. As a result of their position in the storm sewer, they are often hidden from view and less relatable to the public after construction.

VRWJPO staff members will share a brief presentation explaining the treatment systems, how they work, and provided some examples of projects on which they have been used or specified in the Vermillion River Watershed and Dakota County. This item is strictly a learning presentation and is in response to the Watershed Planning Commission’s (WPC) request for more background information on the activities and practices of the VRWJPO.

EXPLANATION OF FISCAL/FTE IMPACT
No fiscal impact.

RESOLUTION
Information only