



State of Minnesota River Watch Report
01/15/2022

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Minnesota Board of Water and Soil Resources

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Report Purpose

This report provides a framework to develop, implement, and fund a statewide River Watch program. Per ML 2021, 1st Special Session, Chapter 1, Article 2, Section 6(r), the legislature has directed the following:

(r) The board, in consultation with an advisory group consisting of one representative from the Department of Natural Resources, one representative from the Association of Minnesota Counties, one representative from Friends of the Minnesota Valley, and one representative from the Red River Watershed Management Board, must study the development, implementation, and funding of a statewide river watch program. By January 15, 2022, the board must submit a report with recommendations and proposed legislation to the chairs and ranking minority members of the house of representatives and senate environment finance and legacy committees.

This report was prepared for MN BWSR by the International Water Institute, a non-profit organization focused on watershed education and research. Report review and guidance were provided by an advisory group (Table 1).

Table 1. Advisory Group Members¹.

| River Watch Study Advisory Group | | |
|----------------------------------|---------------------------------------|-----------------------|
| Rob Sip | Red River Watershed Management Board | Executive Director |
| Ted Suss | Friends of the Minnesota River Valley | Executive Director |
| Nick Kludt | MN DNR | Fisheries Specialist |
| Angie Becker Kudelka | MN BWSR | Assistant Director |
| Brian Martinson | Assoc. of MN Counties | Env. Nat. Res. Policy |

¹ MPCA was also invited to review the report.

Background

A River Watch program is generally defined in Minnesota as water quality monitoring which is conducted by volunteers, usually school-aged youth. In practice, River Watch includes a comprehensive suite of classroom and outdoor experiences that build awareness of watershed connections, increase knowledge of water quality principles, and instill a sense of place in the local environment.

River Watch History: River Watch (RW) launched as a pilot in 1994 (Sand Hill watershed, Red River of the North Basin) to engage students and citizens in watershed education through water quality monitoring. The pilot spurred two key River Watch program efforts in the late 1990s: 1) Red River Basin River Watch program; 2) and Rivers Council of Minnesota River Watch program with a focus on the Upper Mississippi, Minnesota, and Rainy River Basins. Since 1994, The International Water Institute and Red River Watershed Management Board have supported Red River Basin RW schools. The Rivers Council of Minnesota disbanded in 2009 and has not provided services since. Currently, Hennepin County and the Friends of the Minnesota Valley offer limited RW programming to school-age youth.

Red River Basin River Watch Program: Today, the International Water Institute coordinates the only comprehensive River Watch (RW) program in Minnesota. The International Water Institute's [Red River Basin RW](#) has grown to become a comprehensive watershed education continuum incorporating cross-curriculum and grade-span education programming through a suite of available activities tailored to give students a deeper understanding of water resources. Red River Basin RW is delivered through teams comprised of students and teachers led by [International Water Institute Education](#) staff. River Basin RW uses state-of-the-art scientific equipment participants are trained to use and maintain. Field-based monitoring experiences provide students with a unique perspective of their watershed and allow them to investigate real-world conditions in their community.

In addition to water quality monitoring, Red River Basin RW employs [macroinvertebrate sampling](#), [River of Dreams](#), and [River Explorers](#) programming to connect students to their watershed through science, geography, technology, and communications. Macroinvertebrate monitoring activities help understand and measure ecosystem health and its relationship to water quality. River Explorers connects macroinvertebrate and water quality monitoring to entire stream ecosystems through planned kayak trips that provide a unique perspective of the river and allow students to see the real-world connections to eroding banks, pools, and riffles. River of Dreams targets younger (4th - 5th grade) students who learn watershed terminology and understand their watershed through designing and launching a 14" cedar canoe that can be tracked online as it travels throughout the watershed. During the summer months, RW opportunities are also available for teachers and students to attend training that directly connects to the classroom. And finally, the annual [RW Forum](#) provides students opportunities to also take part in small group sessions, present findings and share experiences from the previous year's research projects, and explore emerging resource issues presented by keynote speakers.

The [Red River Basin RW Annual Report 2020](#) is provided as an example of an advanced RW program. The report details yearly activities and program costs.

River Watch Continuum – 3 Tiers of RW: Successful RW programs can take multiple years to mature as teachers, administrators, staff leaders, and community members, figure out how best to implement the program. The RW Continuum was developed to create a mutual understanding between RW staff and RW school teams as to how many activities they would be able to participate in.

- Tier 1 – Each RW team in this tier will participate in one activity per year. The activities can alternate from year to year. This tier is great for RW teachers to get introduced to all RW activities and the benefits of each educational activity.
- Tier 2 - RW teams in this tier will complete at least two or more activities per year and are encouraged to complete the RW Forum Assignment. This tier creates a closer connection between RW students and their watershed.
- Tier 3 – Each RW team in this tier will complete every RW activity (e.g., monitoring, River Explorers and River of Dreams) each year and will complete the RW Forum Assignment due each Spring. This tier provides RW students across the grade span with an understanding of water resources and how communities connect and depend on those resources.

Current River Watch Programs in MN: A county by county search completed in November 2021 for active RW programs revealed that 19 of the 87 Minnesota Counties currently have RW activities occurring (Attachment A). Programs vary in size, scope, and activity levels and could be described as falling somewhere in the *River Watch Continuum*.

Our Shared Challenge

Government (Federal and State) establish laws and regulations intended to protect our water resources. Within these frameworks, local governments and landowners decide how land is used and developed, how waste is managed, how much water drains into the lakes and rivers, and whether to modify beaches or to fertilize yards. These local and personal decisions directly impact water resource quality.

With over 6,000 water quality impairments, the scope and scale of the state’s water quality problems require society to prioritize problems and adopt practical, cost-effective solutions. Unfortunately, many people lack the tools/knowledge necessary to make informed and efficient water resource decisions because the science behind water resource issues required to make informed decisions is seldom taught through a traditional classroom curriculum.

Value of a Statewide RW Program

A statewide RW program will enhance students’ and community members’ science capacity related to water quality issues by providing a base understanding of environmental factors related to these issues.

Students today are increasingly disconnected from the natural environment. RW engages students in hands-on educational programs to better understand how humans interact and affect valuable watershed resources through integrated classroom and outdoor experiences that:

- build awareness of river ecosystems and watershed connections.
- increase student capacity to make informed decisions about their environment.

- instill a sense of place highlighting the historic, economic, and ecological uniqueness of their local watershed.

RW programs increase knowledge, understanding, and appreciation of water resources through education of non-point source pollution, water quality issues, connectivity of our planet’s water supply, and how watersheds function. These programs target future decision-makers, elementary through high school-aged students, and teachers (specifically 4th – 12th grade). The majority of teachers have little or no training in water resource issues cause and effects. Teachers are more likely to teach subjects they are familiar with and understand themselves. RW will increase teacher awareness and understanding leading to more classroom activities on water issues.

Program Development Recommendations

A successful statewide RW program requires drawing on currently active and successful watershed education program models. Examples include Hennepin County River Watch, Friends of the Minnesota River Valley, and Red River Basin River Watch. Hennepin County and Friends of the Minnesota River Valley deliver programs that fall within different RW tier levels and include water quality monitoring ([MN River Valley](#)) and biological monitoring ([Hennepin County](#)). Only the Red River Basin RW ([Red River](#)) program delivers comprehensive watershed education activities covering all three RW continuum tiers.

Successful RW programs have one thing in common, they were initially developed and supported by local interests that recognized the need to inform and educate students and the community about their water resources. Funding levels required for these programs are based on the activities offered, geographic extent, and number of participants.

Since funding is the limiting factor in statewide RW expansion, a stable and predictable legislative appropriation combined with the local support of LGUs, Joint Powers, and non-profits is required. Eligible RW grant activities should target elementary through high school-aged students, teachers, and youth groups. Examples of effective RW program opportunities suited to a local school, community, and watershed needs are listed below.

- *Water Quality Monitoring:* Collect and record conditions at local rivers and streams using state-of-the-art scientific methods and equipment.
- *Biological Monitoring:* Macroinvertebrate monitoring provides additional insights on watershed and ecosystem health.
- *River Explorers:* Guided kayak excursions on local rivers to observe and document watershed conditions.
- *Annual Teacher and Student Training:* proper sampling techniques, data analysis and provide access to resources and experts in current watershed issues.
- *River Watch Forum:* Annual event challenging students to learn and share about emerging local watershed issues.
- *Real-Time Monitoring:* Students build, deploy and maintain real-time water quality monitoring stations. Data analyzed and used to characterize stream water quality.

- *River of Dreams*: A cross-curriculum watershed education program tailored to elementary students. Participants learn watershed terminology and how their sub-watershed fits into their River Basin.

Successful program development across MN requires local stakeholder commitment and some structure to deliver RW programming. Grantee requirements should include local cash match and RW training in the delivery of eligible activities to ensure program consistency. Development will require an investment in coordination activities to build knowledge of program benefits and local support.

Program Implementation Recommendations

Implementation begins in mid-2022 (FY23) following a successful legislative appropriation, with the first RW grants awarded in 2024. Phase One of the grant program should then proceed for 5 years to allow for local programs to develop across the state with program review in 2030. The program implementation timeline is below.

RW Implementation Timeline Yrs. 1-8

Yr. 1 – Program development (FY23)

- Agency assigned/awarded the grant program lead.
- Grant mechanism and grant details completed.
- Funding allocated.

Yr. 2 - River Watch grant program in place (FY24)

- Release first River Watch RFP.
- Award initial grants for FY24-25 start.

Yrs. 3-8 – RW Grants available (FY25-30)

- Grants awarded and the program continues.
- Reporting and tracking progress.

Yr. 8 – Program Review (FY30)

- Review progress in program development across the state.
- Make funding and grant program adjustments if needed.

Program Funding Recommendations

Creating a dedicated statewide RW program will require several funded components and organizational considerations:

1. Create a stable funding source to develop and implement the program and assign an agency to be responsible for a legislative appropriation.
2. Assign an organization or agency as the statewide administrative lead with responsibilities to distribute resources, develop the program, assess local interest, support or hire coordinators, train, oversee and implement the program. (1.5 FTE = \$200K/year).

3. RW programs should be coordinated within each major MN Basin. *(1 FTE RW Coordinator/basin + 1-2 FTE assistants/basin @ 8 basins @ \$250K/year = \$2M/year).*
4. Use the Red River Basin RW program as the model for expansion across the State and adopt the following as eligible Minnesota statewide RW activities.
 - a. Water Quality Monitoring (River/Stream).
 - b. Biological Monitoring (River/Stream).
 - c. River Recreation/Observation/Documentation (e.g. River Explorers).
 - d. Watershed Geography Activities (e.g. River of Dreams).
 - e. Annual Forum.
 - f. Annual Teacher/Staff/Student Training.
 - g. Lab Equipment, Field Equipment, Travel (bus rental, mileage), Training, Supplies, interns, support staff will be variable depending on coverage *(8 basins @ \$150K = \$1.2M/year).*
5. Establish eligible grantees as LGUs, Joint Powers, and non-profits.
6. Require grantees to be trained and certified in the delivery of eligible RW activities and make this an eligible grant expense *(3 training events = \$45K/year).*
7. Engage Red River Basin RW to assist in MN statewide program development.
8. Engage Red River Basin RW to train and certify local RW sponsors.
9. Evaluate MN Statewide River Watch program in FY30; Make necessary funding and program adjustments.
10. Require biennial program reporting.
11. Continue engaging the Advisory Committee (Table 1) to guide grant program development and expand membership to include the Minnesota Pollution Control Agency (and others as needed).

Estimated total statewide program investment per year: \$3,445,000.

ATTACHMENT A - Minnesota River Watch Activities

November 2021

The following information is a result of an effort undertaken by the International Water Institute to find River Watch activities that are currently occurring in the counties across the state of Minnesota. The search was conducted using web resources only. This information should not be considered to be an all-inclusive summary of activities.

Aitkin County

- No River Watch Activities Found

Anoka County

- No River Watch Activities Found

Becker County

- IWI River Watch <https://iwinst.org/watershed-education/>

Beltrami County

- IWI River Watch <https://iwinst.org/watershed-education/>

Benton County

- No River Watch Activities Found

Big Stone County

- No River Watch Activities Found

Blue Earth County

- No River Watch Activities Found

Brown County

- No River Watch Activities Found

Carlton County

- No River Watch Activities Found

Carver County

- No River Watch Activities Found

Cass County

- No River Watch Activities Found

Chippewa County

- No River Watch Activities Found

Chisago County

- No River Watch Activities Found

Clay County

- IWI River Watch <https://iwinst.org/watershed-education/>

Clearwater County

- IWI River Watch <https://iwinst.org/watershed-education/>

Cook County

- No River Watch Activities Found

Cottonwood county

- No River Watch Activities Found

Crow wing county

- No River Watch Activities Found

Dakota County

- No River Watch Activities Found

Dodge County

- No River Watch Activities Found

Douglas County

- No River Watch Activities Found

Fairbault County

- No River Watch Activities Found

Fillmore County

- No River Watch Activities Found

Freeborn County

- No River Watch Activities Found

Goodhue County

- No River Watch Activities Found

Grant County

- IWI River Watch <https://iwinst.org/watershed-education/>

Hennepin County

- Hennepin County River Watch <https://www.hennepin.us/riverwatch>

Houston County

- No River Watch Activities Found

Hubbard County

- No River Watch Activities Found

Isanti County

- No River Watch Activities Found

Itasca County

- No River Watch Activities Found

Jackson County

- No River Watch Activities Found

Kanabec County

- No River Watch Activities Found

Kandiyohi County

- No River Watch Activities Found

Kittson County

- IWI River Watch <https://iwinst.org/watershed-education/>

Koochiching County

- No River Watch Activities Found

Lac qui Parle County

- Friends of the MN Valley River Watch <https://www.friendsmnvalley.org/river-watch-program>

Lake County

- No River Watch Activities Found

Lake of the Woods County

- No River Watch Activities Found

Le Sueur County

- Friends of the MN Valley River Watch <https://www.friendsmnvalley.org/river-watch-program>

Lincoln County

- No River Watch Activities Found

Lyon County

- No River Watch Activities Found

McLeod County

- No River Watch Activities Found

Mahnomen County

- IWI River Watch <https://iwinst.org/watershed-education/>

Marshall County

- IWI River Watch <https://iwinst.org/watershed-education/>

Martin County

- No River Watch Activities Found

Meeker County

- No River Watch Activities Found

Mille Lacs County

- No River Watch Activities Found

Morrison County

- No River Watch Activities Found

Mower County

- No River Watch Activities Found

Murray County

- No River Watch Activities Found

Nicollet County

- Friends of the MN Valley River Watch <https://www.friendsmnvalley.org/river-watch-program>

Nobles County

- No River Watch Activities Found

Norman County

- IWI River Watch <https://iwinst.org/watershed-education/>

Olmsted County

- No River Watch Activities Found

Otter Tail County

- IWI River Watch <https://iwinst.org/watershed-education/>

Pennington County

- IWI River Watch <https://iwinst.org/watershed-education/>

Pine County

- No River Watch Activities Found

Pipestone County

- No River Watch Activities Found

Polk County

- IWI River Watch <https://iwinst.org/watershed-education/>

Pope County

- No River Watch Activities Found

Ramsey County

- No River Watch Activities Found

Red Lake County

- IWI River Watch <https://iwinst.org/watershed-education/>

Redwood County

- No River Watch Activities Found

Renville County

- No River Watch Activities Found

Rice County

- No River Watch Activities Found

Rock County

- No River Watch Activities Found

Roseau County

- IWI River Watch traditionally but currently no schools active

St. Louis County

- No River Watch Activities Found

Scott County

- No River Watch Activities Found

Sherburne County

- No River Watch Activities Found

Sibley County

- No River Watch Activities Found

Stearns County

- No River Watch Activities Found

Steele County

- No River Watch Activities Found

Stevens County

- No River Watch Activities Found

Swift County

- No River Watch Activities Found

Todd County

- No River Watch Activities Found

Traverse County

- IWI River Watch <https://iwinst.org/watershed-education/>

Wabasha County

- No River Watch Activities Found

Wadena County

- No River Watch Activities Found

Waseca County

- No River Watch Activities Found

Washington County

- No River Watch Activities Found

Watsonwan County

- No River Watch Activities Found

Wilkin County

- IWI River Watch <https://iwinst.org/watershed-education/>

Winona County

- No River Watch Activities Found

Wright County

- No River Watch Activities Found

Yellow Medicine County

- No River Watch Activities Found