April 7, 2022

Red River Basin River Watch 2021 Annual Report

Red River Basin River Watch employs a watershed-based, cross-curricular approach to learning. We strive to introduce students to their local watershed, allowing them to connect to the world around them both upstream and downstream. We do this by educating students in their home watershed as well as connecting them with schools throughout the basin.

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Director - Education
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Program Overview

River Watch (RW) enhances watershed understanding and awareness for tomorrow's decision-making through direct hands-on, field-based experiential watershed science. Schools throughout the Red River of the North Basin participate in a variety of unique and innovative watershed engagement opportunities suited to their school, community, and watershed needs. Classroom and outdoor activities are designed to address Minnesota education initiatives, including:

- ✓ Build capacity of local communities to protect and sustain water resources
- ✓ Provide education and outreach to inform Minnesotans' water choices
- ✓ Encourage citizen and community engagement on water

Support from the Red River Watershed Management Board and local watershed districts has built an effective and popular watershed education program across the Red River of the North Basin that focuses on water quality. Since program inception, RW teams from schools throughout the Red River Basin have collected water quality data used by the MN Pollution Control Agency to complement the state's assessment of surface waters. Clean Water funds enable the International Water Institute (IWI) to build on this established and popular RW foundation by providing additional opportunities for participants to understand how to protect and improve MN's valuable water resources, including:

Water Quality Monitoring:

Collect and record conditions at local rivers and streams using state-of-the-art scientific methods and equipment. Grab samples and real-time monitoring.

Annual River Watch Forum:

Annual event challenging students to learn and share about emerging local watershed issues.

Macroinvertebrate Monitoring:
Macroinvertebrate monitoring provides additional insights on watershed and ecosystem health.

River Explorers:

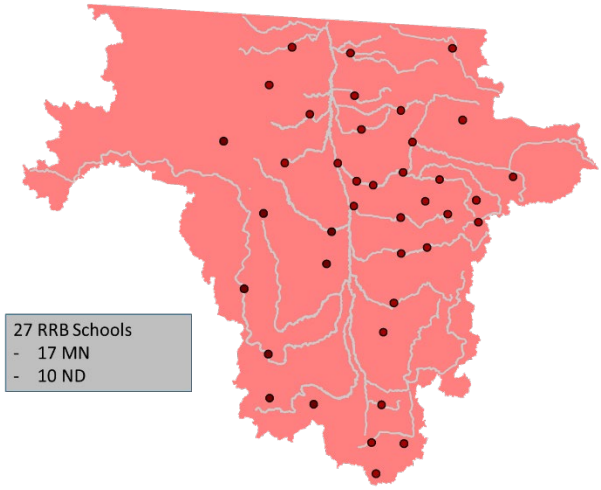
Guided kayak excursions on local rivers to observe and document watershed conditions.

River of Dreams:

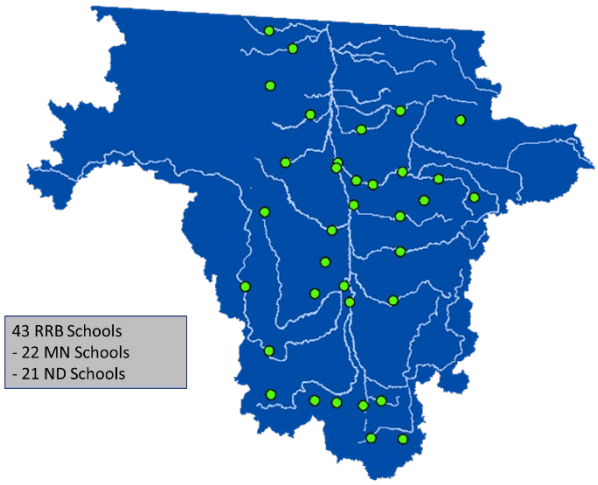
A cross-curriculum watershed education program tailored to elementary students.

Participating Schools

River Watch



River of Dreams



Project Progress

This report is for the Clean Water Legacy Red River Basin River Watch Project covering January 2021 through December 2021. The Red River Watershed Management Board is the project sponsor with lead coordination and project management provided by the International Water Institute. The remainder of this report is organized by activities undertaken in 2021. The 2020 – 2021 Clean Water Fund Work Plan is included as *Attachment A*.

Outdoor Education and Covid-19

Some of the busiest weeks of the year for our River Watch Teams are the weeks between the start of the school year and the formation of ice on the rivers. Though last fall was not full of large in-person events like it has in the past, it remained one of the busiest seasons of the year, an exciting change of pace after an abrupt ending to the spring programming in 2020.

Our schools operated in a variety of models in 2021, allowing us to socially distance outside, meet over video calls, and prepare new virtual interactive activities. River Explorers kayaking trips lend themselves especially well to social distancing and after two autumns with high water, this year's paddling season was especially appreciated. IWI staff was able to take groups paddling on eight tributaries as well as the Red River itself. Trips spanned across the Red River Basin from the Red Lake River in Red Lake, MN to the Tamarac River in Marshall County. Alongside River Explorers trips, RW teams were able to conduct macroinvertebrate sampling and water quality monitoring throughout the Red River Basin.

26th Annual Forum – Just Around the River Bend

The 26th Annual River Watch Forum was a huge success! With 20 schools participating from across the Red River Basin, we hosted a three-week virtual forum from March 8th to March 26th. From first-year River Watch Teams to those who have been involved for 26 straight years, each team geared up for a new challenge each week.

Challenge #1: Water Quality of the Red River

River Watch staff collected a 'snapshot' of water quality along 300 miles of the Red River by collecting field data and collecting water samples for further analysis at a lab. This dataset was then given to schools with the task of matching the data to one of the 14 locations on the map.

Challenge #2: Macroinvertebrates of the Red River Basin

River Watch teams were able to collect and identify macroinvertebrates last Fall. This provides and in-depth understanding of the biological component of rivers and streams. For this activity, each team had to identify several macroinvertebrates from five separate locations and to calculate a Pollution Tolerance Index for each location.

Challenge #3: Sharing and Preparing

After a few weeks of tough challenges, Week 3 was all about sharing a fun River Watch memory for a social media contest and preparing for 2021 summer and fall activities. Check out the winners and their Social Media posts below.

Red Lake Falls River Watch, for the first time in their 23 years as a team, took home 2021 River Watch Forum **Gold Award**.

Climax-Shelly River Watch received the 2021 River Watch Forum **Silver Award**, for the second year in a row.

The **Minto** River Watch Team, which has been active since 2007, took home the 2021 River Watch Forum **Bronze Award**.

The competition was pretty tight with this year's River Watch Forum. With little room for score interpretation, there were several who scored incredibly well but didn't quite make the top three. **Honorable Mention** River Watch Teams; Norman County East, Campbell-Tintah and Lakota.

River of Dreams

Due to school closures and social distancing guidelines in 2020, group canoe launches were pushed back into 2021. In response, our teachers had to adapt accordingly and we have been working to support whatever alternative works best for them and their classrooms.

A majority of our 2020 participants canoe releases happened in 2021. Other schools opted to have students launch their canoes with their family and share photos with one another.

Even though programming looked a little different in 2020, canoes launched in recent years continue to make their way to Hudson Bay.

2021 River of Dreams activities began in a virtual setting with pre-recorded local watershed information activities designed to engage the students in learning watershed vocabulary followed by an interactive Zoom session that takes students around their local watershed illustrating how they connect to the rest of the world around them.

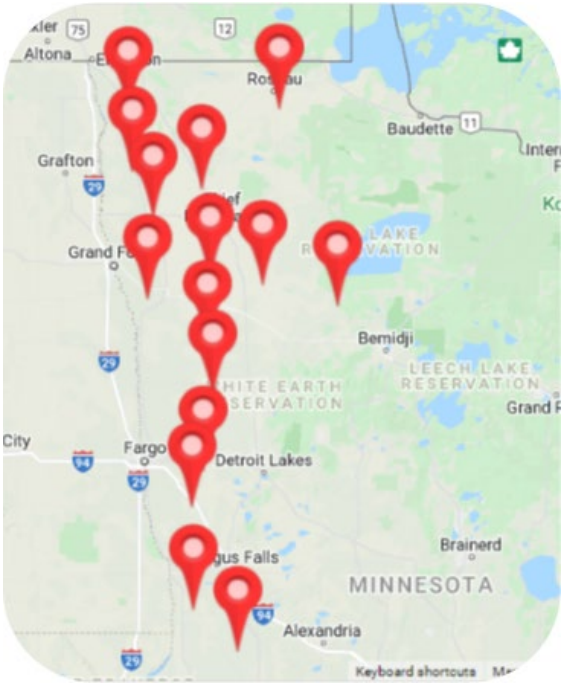
2021 canoe release activities were in person with 22 schools, 45 classrooms, and 867 students.

To view the latest River of Dreams sightings, click **here.**

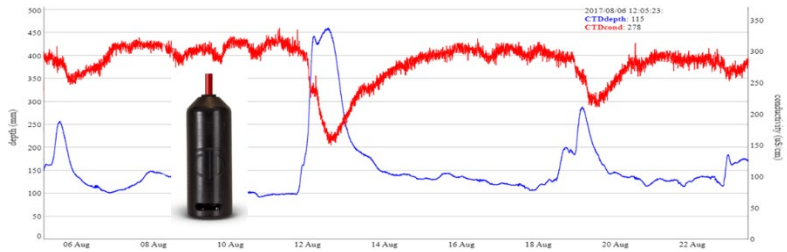
River of Dreams
Canoe Launch Program

Continuous Monitoring Stations in the Red River Basin

RW utilizes continuous monitoring stations designed by Stroud Research Center to collect data every five minutes. Stations are placed at sites close to RW Schools, teams are responsible for checking up on stations throughout the year. We currently have 10 stations with 7 of them utilized during the 2021 sampling season. To check out the data collected from our stations, visit: https://monitormywatershed.org/browse/

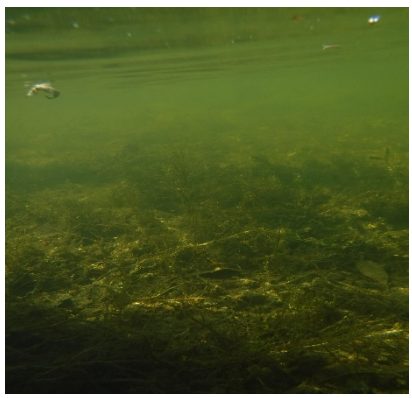


RW staff deploy stations every year; launching them in the spring and retrieving them in the fall before the ice covers the basin. RW Teams help maintain stations in their sub-watershed - ensuring that the data is compared to sonde data and that the stations stay in tip-top shape.



River Explorers

River Explorers is an educational program that was created to get students in our River Watch program out on the rivers that they sample on. While out in our fleet of kayaks, students take photos and make observations on wildlife, land use, water quality, and anything else that catches their eyes. All of this is put together to create a "story map" on ArcGIS online to share the paddling adventure with the public. We hope that helping students get out on the rivers in their watershed will lead to more members in the community recreating in their free time – a hobby that is especially relevant during a season of life where people find themselves increasingly outdoors.


Using ArcGIS Online, River Watch Teams compile maps with photos and commentary from their River Explorers Paddling Trips. In 2021, 77 students participated in 8 paddling trips covering 170 miles. If you're interested in scoping out some of the tributaries to the Red River, take a look at the River Explorers Map Gallery at the button below.

View Paddling Trips Here!

Project Management and Reporting

This final 2020 – 2021 project report was submitted to the MPCA project manager March 7, 2022. The report will also be submitted to the Commissioners of Education and MPCA, along with the Legislative and Education Committees. Invoices have been submitted quarterly and the final summary of the project budget is shown below.

Line Item	MPCA Funds Awarded	MPCA Funds Expended	Budget Expended (%)
Personnel	$252,716.00	$252,723.45	**100%**
Travel Reimbursement	$17,225.60	$17,226.13	**100%**
Equipment & Supplies	$30,058.40	$30,058.40	**100%**
Total:	**$300,000.00**	**$300,007.98**	**100%**

Attachments

Attachment A - RED RIVER BASIN RIVER WATCH 2020 – 2021 Clean Water Fund Project Work Plan and Budget

ATTACHMENT A
RED RIVER BASIN RIVER WATCH 2020 - 2021
Clean Water Fund Project Work Plan and Budget

Project Description: brief description/summary of proposed project
MN Legislative Clean Water Fund funding ($300,000) to the Red River Watershed Management Board for the River Watch Program. River Watch (RW) enhances watershed understanding and awareness for tomorrow's decision-makers through direct hands-on, field-based experiential watershed science. Schools throughout the Red River of the North Basin participate in a variety of unique and innovative watershed engagement opportunities suited to their school, community, and watershed needs.

Project start date: January 1, 2020 **Project end date: June 30, 2022**

Non-point source pollution is the leading source of water quality impacts on rivers and lakes. In the Red River Valley, as elsewhere in Minnesota, citizen involvement is crucial to identifying and reducing problems from non-point source pollution. This project will build on the foundation of the existing Red River Basin River Watch program.

The River Watch program will be delivered through an effective working partnership between local schools and communities; local, state, and federal agencies; and academic institutions throughout the Red River Basin (https://iwinst.org/mesmerize/watershed-education/). The Red River Watershed Management Board (RRWMB) will be the project sponsor with lead coordination and project management provided by the International Water Institute.

Project location:

Major watersheds:	Mustinka, Bois De Sioux, Otter Tail, Buffalo River; Upper Red River of the North, Marsh, Sandhill, Clearwater, Red Lake, Thief, Snake, Grand Marais, Tamarac, Two, and Roseau	Hydrologic unit codes:	09020101, 09020102, 09020103, 09020106, 09020104, 09020107, 09020301, 09020303, 09020304, 09020305, 09020306, 09020309, 09020311, 09020312, 09020314
Counties:	Kittson, Roseau, Marshall, Red Lake, Pennington, Polk, Beltrami, Clearwater, Mahnomen, Norman, Clay Becker Ottertail, Wilkin, Grant, Stevens, Traverse and Big Stone		

River Watch teams engage in water quality monitoring, scientific research and education initiatives across the Red River Basin, extending the amount of data available for assessing our watershed health and contributing to improved awareness and involvement in watershed management.

Work Tasks in bold below followed by *measurable outcomes in italics* directly below task.

RIVER OF DREAMS: Engage elementary students in River of Dreams (ROD) a hands-on education program focused on the valuable river resources of the Red River Basin. Provide integrated classroom and outdoor experiences that build awareness of river ecosystems and watershed connections, increase student capacity to make informed decisions about their environment, and instill a sense of place about the uniqueness of their local watershed; historic, economic, and ecological.

Work tasks/*Measureable outcomes***:**

Secure participation and implement ROD activities in 60 elementary classrooms in the Red River Basin.

- *School contacts. Solicit classrooms to be involved. Identify lead teacher and determine the number of students to be involved. Completed March 2020 (30 classrooms) and March 2021 (30 classrooms).*
- *School classrooms sessions. Hold classrooms sessions to present materials and go over program expectations. Completed April 2020 (30 classrooms) and April 2021(30 classrooms).*
- *Field sessions with ROD participants. Release of individual ROD canoes and review of watershed lessons learned by students. Completed June 2020 (30 sessions) and June 2021 (30 sessions).*
- *Teacher evaluation of implementation, problems, and highlights of ROD activities, as well as pre/post surveys of students. Completed December 2020. Results will be reported as part of Final Report due June 15, 2022.*

Purchase ROD materials, assemble classroom packets and Data entry.

- *Purchase classroom resources; books, art supplies, canoes and canoe labels. Ongoing completed November 2021.*
- *Package classroom resources for delivery including canoe assembly. Ongoing completed November 2021.*
- *Create canoe pages and enter canoe tracking information into the ROD database. Ongoing completed November 2021.*

<u>RED RIVER EXPLORERS PADDLING PROGRAM</u>: Increase awareness and knowledge of local land use and watershed connections through a Red River Explorers Paddling Program to allow RW teams and community members to "water-truth" streams in the Red River Basin, documenting local watershed conditions.

Work tasks/*Measureable outcomes***:**

Red River Explorers Paddling Program river route determinations to allow RW teams and community members to safely explore and document river conditions.

- *IWI paddling staff scout rivers at different water levels to assess safety and water levels needed for safe passage by RW student exploratory teams. Ongoing through 2021.*
- *Equipment and materials purchased for river trips and documenting field conditions. Completed July 2021.*

Lead 8 guided river ecology excursions in both 2020 and 2021 on various reaches of rivers in the Red River Basin.

- *Sixteen guided river ecology excursions in the Red River Basin, all utilizing GPS and mapping/photo documentation of baseline geomorphology and recreation conditions. Completed November 2021.*
- *Create and share information from river trips on IWI website via on-line map and multimedia reports. Reports may include the following; number of trip participants, river route and reaches covered, photo-documentation of river conditions, and a summary of observations by trip participants on river conditions and recreation suitability. Completed December 2021.*
- *Final Report to include river miles explored, number of participants and links to all of trip reports Completed June 15, 2022.*

Watershed Connections: Macroinvertebrates and outreach.

- *Provide macroinvertebrate monitoring resource materials and equipment for RW schools with assistance from IWI staff. Ongoing over contract period, completed December 2021.*
- *Produce and distribute a quarterly electronic newsletter that promotes watershed education and awareness in the Red River Basin. 8 newsletters developed over the contract period. Completed December 2021.*

STEM ASSISTANCE: Assist in provision of Science, Technology, Engineering and Math (STEM) education and engagement opportunities through watershed science.

Work tasks/*Measureable outcomes***:**

Provide professional teacher development through watershed inquiry and education opportunities. Regional fall kick-off events, incorporating team building skills, local watershed project presentations and data interpretation will be held for RW teachers and youth leaders. Summer training sessions will be held for teachers and RW team captains to provide extended learning opportunities on watershed topics such as river ecology, watershed connections, and biological monitoring.

- *2-3 regional fall kick-off events in both 2020 and 2021 and one summer teacher and one summer youth training session. Summary report will be provided to document participants at regional kick-off events, topics covered, and evaluation comments from participants. A summary report will also be provided for the summer trainings documenting participation, materials presented, and evaluation summary from participants. Completed December 2021.*

Utilize the annual River Watch Forum to provide exposure to relevant research topics and an opportunity to present findings from current research involvements. Provide opportunities for youth to engage in scientific research and outreach.

- *River Watch Forum presented in February or March 2020 and 2021 with keynote speaker and concurrent sessions focused on emerging watershed education and research. Poster displays, written reports and/or video presentations of assigned research topics, service learning projects and special investigations by RW teams in collaboration with watershed partners. Completed April 2021.*
- *Summary report written to document participating RW teams/schools and highlighting awards and watersheds represented in research, with links to posters. To be completed by June 30, 2020 and June 30, 2021 and included in Final Report due June 15, 2022.*

Expand stream monitoring activities to include real-time continuous data collection. Provide opportunities for youth to engage in the construction, deployment and data analysis of continuous monitoring stations.

- *Solicit RW teams to be involved. Identify deployment locations and purchase equipment to build 7 continuous monitoring stations. Completed June 2020.*
- *School classrooms sessions. Hold 7 classroom sessions to present materials and build monitoring stations. Completed December 2020.*
- *Field sessions to install monitoring stations. Deploy 7 stations, instruct on maintenance and data download. Completed June 2020.*
- *Field sessions to download data, perform station maintenance and remove for winter storage. Visit 14 monitoring stations two times per year (maintenance and removal). Completed December 2021.*

- *Teacher and student evaluation of implementation, problems, and highlights of continuous monitoring activities. Completed December 2021. Results will be reported as part of Final Report due June 15, 2022.*

OVERSIGHT: Project Management and Reporting

Work tasks/*Measureable outcomes***:**

Track project grant-related expenditures. Compile and organize invoices, pay bills and submit for expense reimbursements in a timely manner.

- *Grant-related expenditures tracked, bills paid and expense reimbursements submitted at least quarterly.*

Track objectives, tasks, and FTE to ensure outcomes are being met. Prepare and complete reports and results from the Red River Basin River Watch program as follows:

- *Interim report and initial evaluation to Commissioners of Education, MPCA and Legislative and Education Committees by February 15, 2021.*
- *Final report of project outcomes, budget/FTE, and final evaluation results by June 15, 2022 to all entities receiving February 15, 2021 report noted above.*
- *Annual site visit with MPCA project manager in spring 2021 and 2022.*

PROJECT BUDGET:

Total Budget		
Staff total cost*		*$235,646.00*
Travel reimbursement **		*$ 22,225.60*
Equipment and supplies (see detailed list below)		*$ 42,128.40*
	Total:	***$300,000.00***

Estimated FTE: *2.25* *(Final Report shall include actual FTE)*

**** Staff rates shall not exceed the following:***	
Staff 1 rate: Monitoring and Education Spec.	*$ 42.26*
Staff 2 rate: Project Specialist	*$ 62.87*
Staff 3 rate: Education and Monitoring Spec.	*$ 36.45*
Staff 4 rate: Monitoring and Ed Director	*$ 75.70*

***Mileage billed according to the State of Minnesota Commissioner's Plan Rate*

Detailed Equipment and Supplies List			
Equipment - limited to items greater than $500 with a life expectancy greater than 1 year	***Quantity needed***	***Unit Cost***	***Total Cost***
MayFly wireless data logging system stream station	*7*	*$1,600*	*$11,200.00*
Replacement Conductivity Temp Depth probe	*2*	*$600*	*$ 1,200.00*
10" cedar canoes	*1,500*	*$ 12*	*$18,000.00*
Supplies (Field and Safety) - items less than $500			*$11,728.40*
Total:			*$42,128.40*