December 31, 2013

Red River Basin River Watch Annual Report

Red River Basin River Watch actively engages youth in long-term monitoring and exploration activities in their local watersheds using current technology, training and applied science.

Danni Halvorson
Director - Education
International Water Institute

Contents

Introduction

This report fulfills the final evaluation reporting requirements for the Clean Water Legacy River Watch Project from April 2012 through December 2013. The Red River Watershed Management Board is the project sponsor with lead coordination and project management provided by the International Water Institute. The purpose of this report is to provide a summary of progress towards meeting the identified outcomes within the FY 2012 – 2013 Clean Water Fund Work Plan.

Program Overview

The Red River Basin River Watch was initiated in 1995 as a pilot project involving four schools in the Sand Hill River watershed. As of 2013, the River Watch program includes 25 schools/communities monitoring and exploring over 150 sites on rivers, creeks and ditches in northwest Minnesota and North Dakota.

River Watch Objectives

1. Increase understanding of water and human land use interactions.
2. Develop technical, research, and critical thinking skills in students and citizens.
3. Expand available water quality data sets for the Red River Basin.
4. Provide opportunities to monitor the health of local watersheds.

Operational Overview

Basic Field Parameters Monitored: pH, conductivity, turbidity, dissolved oxygen, transparency, stage level, and water and air temperature.
Sampling Sites: 4-16 sites are sampled per school. Staff from the local Soil and Water Conservation District, Watershed District and River Watch Program, assist with site selection.
Sampling Frequency: Once a month during open water months of April/May through Oct/Nov.
Sampling Team: From 4 to 12 students. Some schools use an application process. Utilizing mixed grades (8-12) is helpful for continuity and experience.
Sampling Event: Calibrate equipment and assemble materials before driving out to sampling sites. Collect measurements, record field observations at each site. Return to school. Clean and store equipment, make copies of data sheets, enter data and forward to resource managers.

Program Features

- Training, oversight and coordination to ensure data quality.
- An on-line data site (http://riverwatch.umn.edu) provides accessible and immediate data management tools allowing for a full experience of collection, reporting and analysis.
- Annual Youth Forum for participants to present their data analysis to their peers, natural resource managers and the public. Education sessions provided on emerging watershed issues, science topics, and technology tools. Poster judging and awards ceremony.
- Professional support to develop news releases, presentations, build research skills, and develop outreach programs and activities such as river clean-ups and storm drain stenciling.

Progress and Evaluation

Red River Basin River Watch actively engages youth in long-term monitoring of their local watersheds using current technology, training and applied science. In 2012 Clean Water Legacy funding was secured to expand and enhance the River Watch Program. Three main objectives were identified for implementation in 2012 – 2013.

Expand and Enhance Objectives

1. Build program rigor and consistency.
2. Increase awareness and knowledge of local land use and watershed connections.
3. Assist in provision of Science, Technology, Engineering and Math (STEM) education and engagement opportunities through watershed science.

The remainder of this report discusses the project progress in meeting the tasks and measureable outcomes of the expanded River Watch activities from April 2012 through December 2013 (21 months).

OBJECTIVE 1: Develop a standardized framework for program implementation to build rigor and consistency with communities currently involved in River Watch, while expanding monitoring and engagement opportunities.

Task A: Develop strategic watershed water quality monitoring plans in partnership with local resource managers and education partners for three pilot watersheds**.**

Task B: Establish guidelines and implement a two track program for River Watch participation.

Task C: Expand and develop macroinvertebrate monitoring options for RW teams and citizen groups using kits, a check out and training system and basic protocols.

Measurable Outcomes:

1A1 *Inventory of all river monitoring sites and monitoring resources for three pilot watersheds by December 2012.*

1A2 *Developed rationale or purpose for each River Watch monitoring site and its' fit with overall watershed monitoring and education needs and plans by February 2013.*

1A3 *River Watch monitoring plans developed and finalized for three watersheds by April 2013.*

1B1 *Certification program defined and implemented for participation in River Watch monitoring—to be in place by April 2013. Final program guidelines, training materials, training sessions held, and alternative certification methods will be reported as part of Final Report due 12/31/2013.*

IB2 *Number of participants certified and data submitted to MPCA EQIS by RW monitoring participants will be reported as part of Final Report due 12/31/2013.*

1B3 *Track 2 participation guidelines developed and offering of resources and activities made available on-line by April 2013.*

1C1 *Six (6) macroinvertebrate kits assembled and a system developed for checkout by River Watch participants by September 2012.*

1C2 *Training in macroinvertebrate methods, safety, identification and field protocols developed. Ongoing over contract period, completed by October, 2013.*

1C3 *Resources (modules, videos, print) developed and/or located to connect macroinvertebrate findings with water quality issues. Ongoing over contract period, completed by October, 2013.*

1C4 *Teacher evaluation of ease of use, problems, highlights of kit experience collected, as well as pre/post surveys for students. Ongoing over contract period, completed by October, 2013. Results will be reported as part of Final Report due 12/31/2013.*

Objective 1 Progress:

- An inventory of all river monitoring sites was completed for three pilot watershed districts; Bois de Sioux, Sand Hill, and Middle River Snake River Tamarac River. The inventory areas encompass five 8-digit HUC watersheds within the Red River Basin. Site inventory was included for review in attachments in Interim Report. The inventory of monitoring resources by watershed district will be completed post face to face meetings with district personnel scheduled to take place in early February 2013.

- Attached as Appendix A is a summary of water quality monitoring sites for the Sand Hill Watershed District with notes on monitoring plans to be undertaken by the various monitoring partners for the 2014 monitoring season. The East Polk Soil and Water Conservation District is preparing a map and summary list of additional sediment catch basins being installed in the Winger area to help address the turbidity impairment in that river reach. Based on their locations, the Win-E-Mac River Watch team may adjust locations of their monitoring sites and/or pick up additional sites to help measure the impact of these sediment basins.

- Funding for water quality monitoring is not included in the River Watch Clean Water Legacy appropriation for 2014 – 2015. However, It is the intent of IWI to layout River Watch watershed monitoring plans (watershed wide) similar to Sand Hill Watershed

District example provided in the above bullet discussion. Water quality monitoring activities will continue by River Watch teams in 2014 and 2015 with program funding support from the Red River Watershed Management Board.

- While the Buffalo-Red watershed district was not identified as one of the three pilot watersheds where specific coordination would match resource management needs with River Watch resources, IWI personnel coordinated monitoring plans between the Buffalo-Red Watershed District and the Barnesville River Watch team, resulting in the Barnesville RW team conducting monitoring at 6 sites in 2012 and 2013 as part of a comprehensive water quality study. The Barnesville RW team carried out all aspects of monitoring including preservation and shipment of samples to RMB lab for analysis.

- Established the guidelines and began implementation of a two track program for River Watch participation. Guidelines are posted in a downloadable pdf format on the IWI website, www.iwinst.org/education/participate and were also included the Interim Report as a program overview attachment.
- Guidelines for macroinvertebrate sampling have been developed along with six macroinvertebrate kits. A kit check out system is in place for River Watch participants. The guidelines and list of kit materials have been assembled into the document submitted with the Interim Report, "Overview of Aquatic Macroinvertebrate Sampling."

- A macroinvertebrate training workshop was held on August 7th, 2012. Twelve attendees participated including six River Watch teachers, five staff from local watersheds who work with River Watch schools, and one U of M Extension educator. See previously submitted Interim Report attachments for agenda and items covered during the workshop.

- On-site macroinvertebrate training was provided to two River Watch schools in 2012 and four schools in 2013. IWI staff presented sampling methods, importance of macro sampling, and how to use macros as water quality indicators. Students learned how to determine the relative "health" of their stream by using IBI methodology. Staff also accompanied schools into the field for collection of macros using a macro kit assembled by IWI.

- Formal evaluation of ease of use and problems associated with the use of the assembled macroinvertebrate kits was not conducted. However, relevant evaluation comments received from students and educators during outings are listed below.
    - ✓ "The river is a much better classroom than the school classroom". Student quote.
    - ✓ Would like a simple laminated dichotomous key similar to what Laura Bell demonstrated during the training session.
    - ✓ Macro kits are great but they need to be accompanied by a resource professional when we use them. Teachers are not comfortable on their own delivering the material and protocols to students.

OBJECTIVE 2: 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.

Task A: Establish capacity and structure of Red River Explorers Paddling Program to allow RW teams and community members to safely explore and document river conditions.

Task B: Lead six guided river ecology excursions each summer (2 each in June, July, and August), done as paired outings on three streams in the Red River Basin. Each paired outing will consist of a first descent by an adult team with an emphasis on scouting the proposed river reach and training the adults in safety and paddling skills. The second outing will be with adults and youth on the same reach of river at which time the field documentation of watershed conditions will occur.

Task C: Develop three on-line 'river story' modules connecting physical, chemical, and biological indicators of watershed health through photos, videos, monitoring data and stories from the guided river excursions and supplemented by additional inquiry and investigation that arises from the river experiences.

Measurable Outcomes:

2A *Red River Explorers Program in place to facilitate access to streams for eco-excursions. Equipment, training, and engagement program piloted in 2012 and fully operational in 2013.*

2B *Twelve guided river ecology excursions in the Red River Basin, of which six will utilize GPS and mapping/photo documentation of baseline geomorphology and recreation conditions. Reporting will include number of trip participants,*

river reaches covered, documentation of river conditions, and a summary of comments by participants regarding impact of experience on their interest in rivers and watershed issues. Results to be included as part of Final Report due 12/31/2013.

2C1 *Incorporation of three 'river story' modules into RW classroom outreach and for presentation and discussion to engage community audiences. To be completed by November 2013 and included in Final Report due 12/31/2013.*

2C2 *Evaluation (self-reported) of changes in knowledge, attitude and perceptions of local rivers after engaging in river story modules. Both print and on-line methods. To be completed by November 2013 and included in Final Report due 12/31/2013.*

Objective 2 Progress:

- Kayaks and gear are in place through cooperative arrangement with University of MN Extension. Conducted initial pilot testing on 6/8/12 using iPads and a GPS Bad Elf Kit app to document sampling sites, conditions, and an on-water river route on a reach of the Sand Hill River in the Fertile area. All the information was downloaded into Google Earth to allow a virtual watershed tour.
- Coordinated training with Minnesota Extension at Red Lake Watershed District office on 6/26/12 for River Watch teachers and students and staff assisting RW schools in use of iPads and geotagging digital cameras to use in documenting watershed conditions through the River Explorers program. See attached "Nikon CooPix SOPforGeoTagImages."
- Provided input on development of a "River Explorers" app for web-based or mobile devices to compliment the River Explorers program.
- The Grygla River Watch team was the first "River Explorer" team to document a reach of river with iPads and digital cameras. The team along with IWI and MN Extension staff made up a contingent of 11 kayaks, paddling a reach of the Thief River where the Grygla team's monitored waters flow into. All images taken (culverts, bank sloughing, erosion, garbage, wildlife, etc.) were geotagged for reference. A digital summary report was provided to the Red Lake Watershed District which was able to use photos taken of culverts immediately to verify field conditions for a mapping project they were working on. See attached "REJournal~Thief River~081712" as example of River Explorer's Journal that will be created for each trip which provides detailed documentation of participation and conditions encountered.
- Also attached are two reports of river reaches ("Wild Rice R. scouting~Mahnomen area" and "Red Lake R scouting~Fisher to EGF") that were scouted but were not able to be paddled due to low water levels in 2012. The massive wild fire near Karlstad also resulted in cancellation of a planned river trip with the Tri-County RW team based in Karlstad and cold weather didn't allow a planned outing by the Thief River Falls team on the Thief River. These and several other teams are ready to go in 2013. If water levels remain low, special emphasis will be to do trips early in 2013 while water levels are higher.

Final Progress Report: *the following is provided in a narrative format to provide a more comprehensive overview of the details of the operations and activities associated with the River Explorers program.*

The River Explorers (RE) Program, coordinated by the International Water Institute, provides equipment and training to allow river related recreational experiences by River Watch teams and community participants. The program is designed to connect youth and community to local waterways; document and share riverine conditions with resource managers; promote inquiry, learning, and further involvement in local watersheds; encourage physical activity; instill a sense of place for local residents and promote tourism through river excursion activities.

IWI staff promoted the RE program at the 2013 River Watch (RW) Forum held on March 20, 2013 at the UofM-Crookston campus with 16 River Watch schools attending and 175 in attendance. One of the concurrent sessions focused on the program with information provided about kayak trip options, how to plan a trip, paddling and safety skills, what to look for to help understand river dynamics, and equipment that will be used for paddling and documentation of watershed conditions. Participants also shared their paddling experiences and ideas for kayak trips in their local watersheds.

Staff from IWI and RE partners from UofM-Crookston (Laura Bell), MN Extension/4-H (Margo Bowerman), Red Lake Watershed District (Jim Blix), and RW school representation (Thief River Falls RW team) attended a training session on April 19, 2013 at the Bemidji State University pool provided by BSU Outdoor Program Center staff. Basic kayak paddling techniques and safety skills were covered including capsize response and rescue. Safety equipment options were reviewed which served as a guide for subsequent purchase of these items for the RE program.

IWI staff began identifying river trip options and scouting (paddling) potential river reaches for RE trips. Watershed conditions were documented including geotagged photos, river stage levels, and summary notes on river accesses, tree snags, fence

obstructions, time of travel, and other observations useful for planning RE trips. Maps were made using the Google Earth path tool to identify distances between access points. Other information such as USGS stage and flow data was also gathered as part of pre-trip planning.

As trips with River Watch schools were planned, all the above information was assembled into a RE Pre-trip planning document that was shared with the RE team and participant trip leaders. This included contact information for trip leaders, participants, and emergency responders, route maps, logistical/timing details, and suggested preparations for a river trip. Examples will be provided with this final report.

All trip participants were required to fill out a Personal Health Inventory to alert RE organizers to any medical conditions that might need attention and other information to help in responding to possible medical emergencies. A separate liability and photo release form was also required to be completed and signed by all trip participants. Copies of these forms are included in this final report.

For conduct of the actual trips, IWI staff and partners coordinated delivery of equipment at the start point of each trip and assisted with proper fitting of life jackets and positioning of foot pegs in the kayaks. Basic techniques were covered while still on shore with additional tips provided throughout the on-water portion of the trips. RE trip leaders carry safety equipment (throw ropes, tow lines, bilge pumps, and medical kit) on each trip with a minimum of two RE adult leaders on each trip. Two or three waterproof digital cameras with geotagging capacity are provided to students to document watershed conditions and general trip activities. These are collected at the end of the trip and some photos have been shared via Flickr and others by flash drive transfer. Work is still being done on editing all the images into more useful subsets of the most relevant photos for various audiences and presentation formats.

Post-trip reports are being prepared for each trip taken which includes number of participants, start and end points, access conditions, distance traveled, time of travel, water level, watershed conditions, and overall trip comments. Examples of trip reports are included with this final report. Alternative formats for display of this information are being considered, with various audiences in mind including resource managers who are more interested in items such as bank conditions, culverts, and erosion whereas the general public is more interested in information related to recreational use of the river such as access points, distances, time of travel, water levels, and snags/rocks.

Six school teams and one 4-H group participated in RE trip outings in 2013 in addition to the Grygla RW team in 201 as shown in table below. A total of 106 participants joined in these outings inclusive of students and teachers plus a minimum of two IWI, UMC, and/or MN Extension staff leading each trip. The groups explored a total of 35 river miles on seven different reaches of five rivers (Buffalo, Clearwater, Red Lake, Sand Hill, and Thief). Each trip is unique in how it is conducted to accommodate group size, time schedules, and river conditions. As example is an outing by the Climax RW team exploring their local reach of the Sand Hill River via use of chest waders due to low water and tree snags precluding paddling. They nevertheless explored, collecting macroinvertebrates and mussel shells for a reference collection for “their” reach of the Sand Hill R. This is an example of how the RE program can be considered in a broader context of local watershed explorations to raise awareness of local conditions and generate interest in further river trips.

RIVER EXPLORERS: GROUP TRIPS LED 2012-2013

Date	Group Name	Participants	Water Body	Location	Miles	Total Miles
8/17/2012	Grygla RW	11	Thief R	Marshall CR12 to Marshall CR2	5.0	55.0
8/19/2013	Bagley RW	11	Clearwater R	Clearwater CR2 to Clearwater CR21	3.7	40.7
8/22/2013	Clay County 4-H	10	Buffalo River	Clay CR31 to 220th St	2.8	28.0
9/16/2013	EGFks Public EnvSci-I	10	Red Lake R	Hwy 220 bypass to Red R confluence	5.0	50.0
9/16/2013	EGFks Public EnvSci-II	8	Red Lake R	Hwy 220 bypass to Red R confluence	5.0	40.0
9/26/2013	Waren-A-O RW	19	Red Lake R	1 to 5 miles north of Thief River Falls	4.0	76.0
10/9/2013	Climax RW	12	Sand Hill R	upstream of US 75 in Climax (waders)	0.5	6.0
10/16/2013	Fisher RW	12	Red Lake R	Polk CoRd 15 to 2.0 miles upstream	4.0	48.0
10/16/2013	EGFks Sacred Hrt RW	13	Red Lake R	Red R. confluence to 2.5 miles upstream	5.0	65.0
	TOTALS	**106**			**35.0**	**408.7**

As noted above, before taking a group on a river trip, the route is scouted primarily for safety reasons—snags and fast current, as well as for low water or other impediment as well as to check out adequate access and determine time and distance estimates. Over 150 miles were covered by scouting trips in 2013 as summarized in the table below. More detailed trip notes including the above trip variables have been documented along with photos of the reaches scouted which will provide invaluable trip planning information for the 2014 paddling season.

RIVER EXPLORERS: DRAFT INVENTORY OF RIVER REACHES WITH PRELIMINARY SCOUTING

Date	Water Body	Location	Miles	Notes
4/29/2013	Sand Hill R	Polk CR10 near Rindal	4.0	put-in at Polk CR10 bridge--paddled upstream & back at spring flood period--river out of bank
4/30/2013	Sand Hill R	Bear Park to Krogstad bridge	3.3	No beaver dams or tree snags in this reach
5/3/2013	Sand Hill R	Norman CR20 to Bear Park	2.3	No beaver dams or tree snags in this reach, flood stage, easy paddle, much waterfowl
5/3/2013	Sand Hill R	Polk CR107 to Norman CR20	4.7	No beaver dams or tree snags in this reach, flood stage, easy paddle, MUCH waterfowl
6/2/2013	Clearwater R	Terrebonne to Red Lake Falls	19.0	no tree snags, passage good at current water level
6/7/2013	Clearwater R	Clearwater CR2 to Clearwater/Beltrami CoRd17	7.2	Two fences, one dock an issue, but manageable. Very nice river reach.

6/27/2013	Red Lake R	Gentilly Bridge to Central Park	11.8	low water and high winds made for tough paddle. Clear passage though.
6/27/2013	Red Lake R	Central Park to Hwy 75 bypass boat access	4.5	Less scenic reach through Crookston, but good points of interest--rock dam, riprap, etc.
7/7/2013	Clearwater R	Clearwater CR23 to Beltrami CR22	5.7	second portion from CR17 to CR22 had many tree snags-not dangerous at low water
7/8/2013	Sand Hill R	MN Hwy32 to West Mill Rd	3.3	low water but nice river reach under tree canopy, through Fertile gold course
7/10/2013	Sand Hill R	Bear Park to Krogstad bridge	3.3	getting choked with vegetation, good waterfowl
7/15/2013	Sand Hill R	US Hwy 75 to Red R confluence	3.7	several large tree snags and muddy-difficult
7/15/2013	Red R	SandHR confluence to Belmont Park	3.3	large mainstem-easy paddle but VERY muddy landing
7/18/2013	Buffalo River	Landfill Rd to Buffalo Riv State Park	6.0	very pretty reach, but too many snags and fast water for beginner's easy/safe passage
7/22/2013	Red Lake R	Gentilly Bridge to old Otter Tail dam site	4.3	scraping bottom often, but still passable
7/25/2013	Red Lake R	Crookston Dam to Hwy 75 bypass boat access	2.3	still passable through "chute" below rock dam
8/3/2013	Red Lake R	St. Hilaire to Red Lake Falls	21.5	low water, many boulder fields and fast water. Would not recommend for beginners.
8/11/2013	Wild Rice R	Norman CR29 to MN Hwy32	3.6	low water, had to drag through couple spots, but nice-easy to get out and get through
8/15/2013	Clearwater R	Clearwater CR2 to Clearwater CR23	3.7	re-scout for Bagley RW outing--water levels still OK to get through
8/20/2013	Buffalo River	Clay CR31 to 220th St	2.8	some tree snags, but at low water can safely work through them-firm bottom.
8/20/2013	Buffalo River	US Hwy 10 at Hawley to Clay CR31	2.4	some tree snags, some garbage, could be route for team and for Adopt-A-River cleanup
8/25/2013	Sand Hill R	Polk CR1 E. of Winger to US59 S. of Winger	6.2	no tree snags, but narrow, winding channel. Ducks, deer, flowing well; all passable (verify mileage)
9/20/2013	Sand Hill R	MN Hwy 32 to Nature Ctr Rd	1.4	Low water and last half had boulders and rock ledges to get through. Safe water level
9/24/2013	Red Lake R	Penn CR7 (Smiley Bridge) to MN1 boat access in TRF-confluence w/ Thief R	12.3	low water level, but OK current. Had to pole through some areas.
10/8/2012	Moose R	MN Hwy 89 north of Grygla to Marshall CR 131	5.6	no tree snags, water level OK, channelized reach. No sand bars/resting spots

10/8/2012	Thief R	Marshall CR 2 to Marshall CR 77 (Hillyer site)	4.3	no tree snags; low water, but passable, scenic
		TOTAL MILES SCOUTED	**152.5**	

Specific river stories were not developed as anticipated during this grant period. Far more effort than anticipated was needed to lay a solid foundation for the program with special emphasis on safety and making sure of sound logistics. The focus of the river trips in 2013 was more in getting out and figuring out how to do the river trips, scouting needs, testing equipment, developing paddling skills, getting a sense of group dynamics in a field setting, and overall logistical planning. While watershed conditions were observed and documented, more focus will be placed on this aspect of the program in 2014.

In brief discussion following each paddle trip as gear is cleaned and loaded at the end of an outing, the students without fail have all indicated they would be very interested in doing further paddle outings. For many it was their first time paddling and most also did not expect to find the rivers as enjoyable and pleasant as they were found to be. More structured watershed documentation and roles of students will be instilled as part of the follow-up outings. A survey will also be developed for 2014 to better gage student knowledge, attitude, and interest in rivers.

Work is continuing on editing of geotagged digital images and videos shot during the 2013 paddling season. An example of a scouting report incorporating photos with a Google Earth map can be seen here, *Clearwater River Scouting Report*. Discussion is ongoing regarding exploring options for best sharing this information including populating the UofMn River Atlas website, http://riverlife.umn.edu/river-atlas/, with River Explorer information. American Rivers also has a website for sharing river stories that is being considered, http://www.americanrivers.org/initiatives/blue-trails/riverstories/. Also options of securing a student intern through the CURA CAP program to assist with sharing Red River Basin information similar to what is available for the Minnesota River, http://mrbdc.mnsu.edu/minnesota-river-basin-overview, is being explored.

More funding has been leveraged through the Northwest Regional Sustainable Development Partnership to support the River Explorer program and utilize it to raise watershed awareness to a broader community. Thus, separate from and supported by separate funding sources, the kayaks and gear were successfully used by a number of other entities in other venues. This included providing paddling instruction and paddling at science camp activities at Florian Reservoir with 4th-6th grade students from Stephen-Argyle and Warren-Alvarado-Oslo; 4-H Youth camp at Lake Bronson; and White Earth Science Camp at White Earth Lake. The kayaks were also instrumental as part of the IWI Summer RW Teacher Training and were used on outings by the following groups as well: NW RSDP Natural Resources Committee, UofM-Crookston Natural Resources faculty, UofM-Crookston Natural Resources Club, and the Crookston Area Chamber of Commerce. Through these various users, approximately 200 additional participants were able to gain exposure to the possibilities of this water based recreation experience and gain a better appreciation of watershed conditions.

The following attachments related to River Explorers Program are included in Appendix B:

1. IWI RiverWatch PHI form 2013 (personal health form)
2. IWI RiverWatch Release Form 2013 (liability/photo release form)
3. Bagley RivExp081913~Clearwater R (trip planner)
4. REJournal-Thief R-092613-WarrenAO (post-trip report)
5. Warren A-O-RivExp 092613~Thief R Pre-Trip Planner
6. REJournal~Sand Hill R~071513
7. Buffalo R 082213~Clay Co 4-H Pre-trip Planner
8. Buffalo R 082213~Clay Co 4-H Post-trip Report

OBJECTIVE 3: Assist in provision of Science, Technology, Engineering and Math (STEM) education and engagement opportunities through watershed science.

Task A: 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 integration will be held for RW teachers and youth leaders. A summer training session will be held for teachers to provide extended learning opportunities on watershed topics such as river ecology, watershed impairments, and flooding.

Task B: 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.

Measurable Outcomes:

3A *2-3 regional fall kick-off events in both 2012 and 2013; and minimum of one teacher summer 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 teacher training documenting participation, materials presented, and evaluation summary from participants.*

3B1 *River Watch Forum presented in March 2013 with keynote speaker and concurrent sessions focused on emerging watershed education and research. Poster displays of assigned research topic and special investigations by RW teams in collaboration with research partners.*

3B2 *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 April 2013 and included in Final Report due 12/31/2013.*

Objective 3 Progress:

- Three regional fall kick-off events were held for River Watch teams. Two events were held in October and one in December of 2012. Kick-off participants participated in a team building activity along with receiving presentations on data visualization, natural resource projects, drought forecasting, and the 2013 River Watch Forum team challenge. In all 16 River Watch teams participated in the kick-off events. A copy of the 2012 agenda for the fall team kick-off events was submitted with the Interim Report.
- Three regional fall kick-off events were planned for River Watch teams in 2013. However, due to scheduling conflicts only one kick-off has been held to date. Two events were postponed until January 2014. Six River Watch teams attended the event that was held November19, 2013 in Thief River Falls, MN. Kick-off participants participated in a team activity along with receiving training on watershed delineation, river trip planning, box plots, Designated Use Assessments, and the 2014 River Watch Forum team challenge. A copy of the 2013 agenda for the fall team kick-off events is included in Appendix C.
- A summer training session for teachers was held July 30-31, 2013 at the University of Minnesota, Crookston. Five teachers and five River Watch coordinators attended the event. The topics and activities for the two day training were framed around the "River Explorers" theme. Participants attended sessions on River Dynamics – Geomorphology & Stream Processes, MN DNR online Watershed Health Assessment Framework tool, River Explorers kayak outing, Changing Conditions of Watersheds/Streams, Groundwater Models, Measuring Watershed Health, and an open forum evaluation. Copies of the River Explorers 2013 Summer Teacher Session agenda and evaluation are attached in Appendix D.
- The 2013 River Watch Forum was held Wednesday, March 20, 2013 on the campus of the University of Minnesota, Crookston. The 2013 forum was attended by 175 participants including 125 school participants (students and teachers) plus 50 presenters, judges, resource managers, others. River Watch teams attending this event were given a team challenge topic that they were to display in poster board format. The teams were then judged on their poster content and presentation of poster material with awards being given out. I have attached the 2013 Forum Team Challenge criteria and a resulting poster from the Campbell River Watch team that received the Manager's Choice Award in Appendix E. The remaining posters can be viewed on the web at http://www.iwinst.org/education/river-watch-forum/school-water-quality-posters . Also included in Appendix E are copies of the 2013 River Watch Forum Planner (used by the schools in preparation for the forum), the 2013 Forum Program, and two evaluation pieces one from Survey Monkey and another from the 2013 Forum Teacher break-out session.

OBJECTIVE 4: Project Management and Reporting

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

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

- 1/15/2013 Interim report to MPCA
- 2/15/2013 Interim report and initial evaluation results to the:
- Commissioners of Education and the Pollution Control Agency,
- Legislative Natural Resources Finance and Policy Committees, and
- K-12 Finance and Policy Committees

12/31/2013 Final report including final evaluation results to entities identified for 2/15/2013 report above.

Measurable Outcomes:

- This final report fulfills the reporting requirements of this objective.

- 2013 Invoices have been gathered and organized. A final reimbursement request will be submitted prior to January 31, 2014 and will be complete through December 31, 2013. Below is a final summary of the project budget.

Project Budget	MPCA Grant Funds Available	Total MPCA Funds Expended	Total Remaining Balance	% Budget Expended
Objective 1: Rigor	$86,101.00	$82,596.44	$3,504.56	96**%**
Objective 2: River Recon	$69,400.00	$62,790.56	$6,609.44	90%
Objective 3: Educate and Engage	$32,499.00	$29,668.10	$2,830.90	91%
Objective4: Project Mgmnt&Reporting	$12,000.00	$12,000	$0	100%
TOTAL PROJECT BUDGET	$200,000.00	$187,055.10	$12,944.90	94%

Summary

Past support for Red River Basin River Watch (RW) from the Red River Watershed Management Board, local watershed districts, and other regional partners has built a solid watershed education foundation across the Red River Basin. The International Water Institute (Institute) RW program trains students to monitor physical and chemical conditions of local rivers using standard operating procedures that yield scientific data which are used by MN Pollution Control Agency for surface water assessment. RW team data collected at over 150 sites on Rivers, streams, and agricultural ditches in the Red River Basin.

The 2012-2013 River Watch Clean Water Fund project has enabled the Institute to build on this solid watershed education foundation by providing additional learning opportunities that complement the core physical and chemical monitoring done by RW teams with our resource agency partners. These new learning opportunities are designed to instill concepts of water stewardship and a more comprehensive understanding of watersheds to protect and improve Minnesota's valuable water resources.

The Institute provided training and information materials for students to engage in macroinvertebrate monitoring. Macroinvertebrate monitoring engages students through hands on learning during field visits. Students use macroinvertebrate kits to collect organisms and discover what lives in the stream providing a good indication of relative health. These results are correlated with their past and ongoing physical and chemical results to provide a more comprehensive understanding of stream and watershed health.

The River Explorers program provides opportunity to explore their local waters by paddling down local river corridors to see first-hand what the conditions and factors that influence the water quality results that they have been measuring. Students use current geo-spatial and communication technologies to document and share conditions that they discover with their local resource managers, leading to further dialogue and activities to address issues.

Clean Water Funds also allow the Institute to provide additional training and support for RW program participants and enhance important science, technology, engineering, and math (STEM) skills that are a critical need for preparing students for 21st century jobs and challenges.

Progress toward meeting each of the objectives reported herein provides evidence that the River Watch Project is making substantial headway towards meeting its goals of developing program rigor and consistency, increasing awareness of watershed connections, and providing STEM watershed education activities. 2014 project activities will continue to develop the critical thinking and human resource capacity of our youth which is critical to protecting and improving the natural resource capital of Minnesota.

APPENDICES

Appendix A: Sand Hill Watershed District Monitoring Site Summary for 2014 monitoring season

Sand Hill Watershed District Water Quality Monitoring Sites - Projected Sampling Status for 2014 sampling season

Local Name:	Station ID:	US to DS	Station Name:	Waterbody Name:	Hydrologic Unit Code (HUC):	Period of Record:	Lat	Lon	Flow gage	Prj. WPLMN	Prj. MPCA	Prj. RW	Prj. CSM	NOTES
FOS05	S003-139	1	SAND HILL R AT 345TH AVE SE, 4.5 MI SW OF FOSSTON	Sand Hill R	9020301	2001 through 2012	47.51950	-95.76781				Fos	1	If possible, find RW/citizen monitors to pick this site back up as it represents headwaters area and is often oxygen impaired.
FOS20	S003-138	2	SAND HILL R AT 200TH ST SE, 6 MI SW OF FOSSTON	Sand Hill R	9020301	1995 through 2012	47.54718	-95.83208				Fos	1	If possible, find RW/citizen monitors to pick this site back up as it represents upstream area potentially impacted by ag (channelized upstream)
WEM10	S003-143	3	SAND HILL R AT 185TH ST SE, 5.5 MI SE OF MCINTOSH	Sand Hill R	9020301	1995 through 2013	47.57003	-95.86446			1	Fos	1	Long-term RW monitoring site picked up by Win-e-Mac school when Fosston dropped out. Good to do as it is generally good WQ vs turbidity impaired reach downstream.
CD16	S003-131	4	CD #16 AT CSAH-31, 5.4 MI SSE OF MCINTOSH	Polk CD16	9020301	1995 through 2004	47.57214	-95.86626				Fos	1	Dropped due to consistent good water quality. Consider picking up again for 2-3 years to verify if conditions still good.
Sletten	S003-499	5	SAND HILL R AT CSAH-1, 4.3 MI E OF WINGER, MN	Sand Hill R	9020301	2004 through 2013	47.54264	-95.89595					1	Continue with CSMP monitoring by local area SWCD personnel as this is upstream site before turbidity impairment begins.
WEM15	S004-198	6	SAND HILL R AT 150TH ST SE CROSSING, 2 MI ESE OF WINGER	Sand Hill R	9020301	2005 through 2013	47.52639	-95.93894				WEM	1	Continue with RW monitoring which begain in response to noticeable increasein turbidity in Winger area. Conservation BMPs have been implemented-hope monitoring will help show effectiveness.
WEM20	S003-144	7	SAND HILL R AT 120TH ST SE, 2.8 MI SW OF WINGER	Sand Hill R	9020301	1995 through 2013	47.50923	-96.00321				WEM	1	Continue with RW monitoring as this is site that showed dramatic decline in transparency due to changes in farm program and loss of CRP.
SH107	S006-559	8	Sand Hill River at CR107 2.5 Miles SW of Winger, MN	Sand Hill R	9020301	2011 through 2012	47.49915	-96.01873			1			Was temporary site for SHWatershed Intensive Monitoring Project. Very poor water quality. WEM RW samples upstream and downstream of site.
WEM30	S004-199	9	SAND HILL R AT CSAH-7 CROSSING, 7.6 MI SW OF WINGER	Sand Hill R	9020301	2005 through 2013	47.47359	-96.0407				WEM	1	Continue with RW monitoring to determine effectiveness of sediment catch basins installed upstream to address turbidity impairment in this reach.
Rindal	S003-141	10	SAND HILL R AT CSAH-10, 9 MI SE OF FERTILE	Sand Hill R	9020301	2001 through 2013	47.500919	-96.13143				Fert	1	RW will continue to monitor as this site is where DO impairment is worst, but also lowest turbidity-natural conditions.
Lewis	S003-140	11	SAND HILL R AT CSAH-1, 5.2 MI E OF FERTILE	Sand Hill R	9020301	1999 through 2013	47.52830	-96.16957	MNDNR through 2013	1	1	Fert	1	Will be dropped as major load monitoring site post-2013. RW will continue to monitor. Area where Sand Hill R recovers from low DO upstream. Safety concerns with traffic--use all precautions.
SHGF	S006-560	12	Sand Hill River at 110th Ave SE 2.5 miles NE of Fertile, MN	Sand Hill R	9020301	2011 through 2012	47.55109	-96.23796			1			Was temporary site for SHWatershed Intensive Monitoring Project. Seems to have similar good water quality conditions as downstream sites in the Fertile area.
FB15	S000-706	13	SAND HILL R AT RD BTN S20/29 0.5 MI W OF FERTILE	Sand Hill R	9020301	1980 through 2013	47.52889	-96.29339				Fert	1	Continue with RW monitoring. Considered to be downstream site to assess any impacts by City of Fertile (storm drains, golf course..)
FB20	S003-136	14	SAND HILL R AT 350TH AVE SW, 4 MI SW OF FERTILE	Sand Hill R	9020301	1995 through 2013	47.51416	-96.34191	MNDNR	1			1	Discontinued RW monitoring as this site will be long-term WQ and flow site representing beach ridge transition area of Sand Hill R.
Kittle	S004-187	15	KITTLESON CK AT 330TH AVE SW CROSSING, 5.6 MI W OF FERTILE	Kittleson Ck	9020301	2003 through 2013	47.54298	-96.40133	MNDNR	1	1		1	This is only tributary site to Sand Hill River to be monitored as agency long-term WQ and flow site. RW could consider dropping this site and picking up Belt10.
SHDrop	S004-188	16	SAND HILL R AT 340TH AVE SW, 5.6 MI ESE OF BELTRAMI	Sand Hill R	9020301	2006 through 2013	47.52844	-96.44095				Fert	1	RW will continue to monitor this site which is below confluence with Kittleson Ck and 2nd drop structure--beginning of channelized reach of Sand Hill R.
SH213	S004-648	17	SAND HILL R AT 110TH ST SW (CR-213), 3 MI SE OF BELTRAMI	Sand Hill R	9020301	2008 through 2013	47.52820	-96.49450				Fert	1	RW will continue to monitor this site that is in channelized reach below all 4 drop structures. Generally meets turbidity standards.
Belt 10	S003-130	18	SANDHILL R AT MN-9, .5 MI SO OF BELTRAMI	Sand Hill R	9020301	1997 through 2010	47.53543	-96.53131				Fert	1	Not currently monitored by RW teams due to distance. If possible, see if Fertile could pick up. About the eastern edge of turbidity impairment.
CL1A	S004-186	19	SAND HILL R AT 240TH ST SW CROSSING, 7.5 MI SE OF CLIMAX	Sand Hill R	9020301	2003 through 2013	47.55675	-96.77206			1	Clmx	1	Continue with RW monitoring. Good site at end of channelized reach as river re-enters natural channel to Red.
CD73	S004-185	20	CD-73 AT 240TH ST SW CROSSING, 4.8 MI SE OF CLIMAX	Polk CD73	9020301	2005 through 2013	47.56730	-96.77206				Clmx	1	Generally no flow, but on Climax RW route--continue to try to monitor to assess ditch system contributions in Red River lake plain.
CD46	S004-182	21	CD-46 AT 240TH ST SW CROSSING, 3 MI SE OF CLIMAX	Polk CD46	9020301	2005 through 2013	47.59204	-96.77196				Clmx	1	Generally no flow, but on Climax RW route--continue to try to monitor to assess ditch system contributions in Red River lake plain.
CD6E	S004-183	22	CD-6 AT 240TH STREET SW CROSSING, 2 MI E OF N EDGE OF CLIMAX	Polk CD6	9020301	2005 through 2013	47.61453	-96.77174				Clmx	1	Generally no flow, but on Climax RW route--continue to try to monitor to assess ditch system contributions in Red River lake plain.
SH1	S002-099	23	SAND HILL R AT US-75 ON NORTH END OF CLIMAX	Sand Hill R	9020301	1996 through 2013	47.61209	-96.81482	USGS	1	1	Clmx	1	Primary pour point site for load study. Long-term USGS gaging station. RW continue for comparing results from their other sites on same day.
CL20	S003-134	24	SAND HILL R AT MN-220, 0.5 MI W OF CLIMAX	Sand Hill R	9020301	1995 through 2013	47.60777	-96.82697				Clmx	1	Continue with RW monitoring. Considered to be site on downstream edge of any City of Climax influences (storm drains, old garbage dump..)
RRNiel	S000-563	25	RED R OF THE N ON CSAH-12.6 MI W OF NIELSVILLE	Red R	9020301	1978 through 2013	47.52722	-96.87111					1	Sand Hill enters RR between this site and RR10. Climax RW monitors to see if SH has noticable turbidity contribution. Consider dropping as it is similar to RR10. Monitor new tile drains in area.
RR10	S003-142	26	RED R AT CSAH-7, 2.2 MI W OF CLIMAX	Red R	9020301	1995 through 2013	47.607774	-96.85504				Clmx	1	Climax RW will continue to monitor as comparison of Red R main stem to Sand Hill conditions.

Sand Hill Watershed District Monitoring Site Summary for 2014 monitoring season:

Watershed Pollutant Load Monitoring Network (WPLMN)--3 sites (field and lab samples--up to 35 events/yr inclusive of QA/QC and winter samples beginning in 2014). These sites also will have ongoing flow monitoring to allow for load calculations.

River Watch (RW): 20 sites total. Fosston-4 sites; Win-E-Mac-3 sites: Fertile-6 sites; Climax-7 sites (field parameters 4-7 times/yr). Also unofficial macroinvertebrate monitoring, mussel shell inventory, and kayak exploration to document river conditions.

Citizen Stream Monitoring (CSM): 1 site in addition to RW sites that are also considered to be in CSM program.

Appendix B: River Explorers Program

Personal Health Inventory

River Watch Program
International Water Institute

The International Water Institute (IWI) is glad to have as many people as possible participate in our programs. Please be aware that our trips may operate in areas far from hospitals and advanced medical support. It is important that you realize that in activities conducted in the outdoors help may be hours away. Rescue may be difficult and very expensive. By obtaining the most detailed and correct medical information possible from the trip participants and through rigorous pre-trip planning we can avoid serious medical events.

Please print everything clearly. All information will remain confidential.

Name_____
(Last) (First) (MI)

Address_____
(Street) (City) (State) (Zip)

Home Phone_____ Social Security number_____
(Area code)

Sex_____ Height_____ Weight_____ Birthdate_____
(Month/Date/Year)

Emergency Contact:

Name_____ Relationship_____

Address_____
(Street) (City) (State) (Zip)

Home Phone_____ Cell _____Work Phone_____

Do you have health insurance? Yes_____ No_____

Name of health insurance company_____

Policy number_____

NOTE: IWI does not provide health/medical insurance for course participants; you are responsible for health care costs incurred during the course of the trip.

Please list specific items after each question.

Please list all allergies (drugs, insects, food) _____

Are you currently taking any medications? Please list_____

Do you have any dietary concerns (vegetarian, lactose intolerance, food allergies)?

Explain_____

For your safety and the safety of other participants accurate information is needed on the items below.

Please put a check next to all conditions experienced within the last 5 years.

____Hearing problems
____Vision (glasses, contacts, blindness)
____Dizzy spells, fainting, convulsions
____Motion sickness
____Chronic pain (arthritis, muscle or joint stiffness)
____Diabetes
____Neck or back problems
____Other_____
____Broken bones, dislocations
____Chest pains or cardiac irregularities
____Shortness of breath, asthma
____High blood pressure
____Knee, shoulder, ankle or other joint problems
____Stomach, kidney, bladder, other internal problems

If you have answered yes to any of the questions above please explain below and include (continue on the back of this form as necessary):

1. Does this condition result in restrictions in your ability to perform any task?
2. What are the specific symptoms that you experience with this condition?
3. How often do symptoms or the condition occur and how severe are they?
4. How do you care for the symptoms of this condition?

_____
_____
_____
_____
_____

Do you have any other condition requiring the use of prescription drugs? If so, explain

_____

Other medical difficulties or health concerns?

_____

Have you been hospitalized in the last year? If so, explain

_____

The above information is accurate to the best of my knowledge:

_____
(Participant Signature) (Date)

_____
(Parent guardian signature- If participant is under 18) (Date)

IWI RIVER WATCH PROGRAM CONSENT TO TREATMENT

In the event that I should for any reason require any minor medical or surgical treatment and/or medication during the course of attendance at or participation in any IWI outdoor activity, I authorize such physician or medical staff as the IWI River Watch Program staff to appoint or designate, carry out the necessary treatment, or take me to the emergency room of the nearest hospital. I further authorize the hospital and its medical staff to provide treatment deemed necessary by them for my well-being.

_____
(Participant Signature) **(Date)**

_____
(Parent guardian signature- If participant is under 18) **(Date)**

International Water Institute
River Watch Release Statements
Please return this form to the International Water Institute, 650 NP Ave #110, Fargo, ND 58102

Association (School or Organization): _____

Participant Phone: _____**Cell:**_____

Participant Name:_____

Email: _____

Mailing Address: _____

Photo Release. We/I give permission to the International Water Institute and its employees or representatives to take photographs, video, or audio footage of participants and/or their property for use in any media format, now or hereafter known for future educational programs to help promote River Watch. We/I release to the International Water Institute all rights to exhibit this work publicly or privately in an educational/promotional format without compensation or additional consideration. *NOTE: For information about opting out of the photo release, please contact International Water Institute Education Director at danni@iwinst.org.*

Waiver and Release. We/I agree that all activities and use of all facilities relating to participation in River Watch activities shall be undertaken at the sole risk of the participant/family and that the Board of Directors of the International Water Institute, its officers, representatives, agents, employees, and participants of any River Watch program shall not be liable for any claims, demands, injuries, damage, actions or causes of action, whatsoever, to me, my family, or my property arising out of or connected with participation in River Watch programs/events or the premises where the programs/events occur and we/I do hereby expressly forever release, discharge, and hold harmless the Board of Directors of the International Water Institute, its officers, representatives, agents, employees, and participants of the River Watch program from all such claims, demands, injuries, damage to person or property, actions or causes of action, including but not limited to all acts of active or passive negligence on the part of the International Water Institute, any River Watch program, their servants, agents, or employees. We/I do not, however, release these individuals and entities from liability for intentional, willful or wanton acts and this release shall not be construed to include such acts.

By signing below, the parent/guardian agrees to each of the above statements on his or her own behalf and on behalf of the participant; the participant, if eighteen years or older, agrees, on his or her own behalf, to each of the above statements.

Participant Signature: _____ Date:_____

Parent/guardian Signature: _____ Date:_____

Bagley RW River Explorers~Clearwater River~Aug 19, 2013

Date: Monday, July 19, 2013

Time: Meet Bagley RW Explorer's Team at put-in point at 12:45 p.m. On river approx.. 1:00-4:00 p.m.

Location: Clearwater River crossing of Clearwater CoRd2, approx. 4 miles north of Shevlin, MN (Shevlin is about 6 miles east of Bagley on US Hwy2)

Participants/Phone Contact: Bagley RW (7) inclusive of RW Advisor/Bagley HS Science Teacher Jill Bakken-218-368-5982; Wayne Goeken-218-280-0516; Asher Kingery-701-331-9259-IWI; Alisha Mosloff-218-686-4418 (TOTAL: 10) additional participant options: Jim Blix, BSU Profs, Laura Bell.

Emergency Contacts: Clearwater Co. Sherriff Dept: 218-694-6226 / control@co.clearwater.mn.us. They have been called alerting them to this trip and trip planner emailed to them. Call them back when we get off the river to let them know our status.
Sanford Bagley Medical Center: 218-694-6501.

Route Notes/Planning Considerations:

Beginning access at Clearwater River crossing of Clearwater CoRd 2 approx 4 miles north of Shevlin—paved canoe access is on east side of CoRd 2, just downstream of bridge on south side of river. Will pass through culverts at gravel road crossing-253rd Ave (site of BG13 sample site) at about the two mile mark. Continue 1.7 miles to end of trip access at Clearwater CoRd 23. Total distance of 3.7 miles.

Low traffic volume roads so relatively safe to use road crossings for access.

This reach of the Clearwater River has been scouted twice, on June 7, 2013 and August 15, 2013. Most recent 8/15 scouting found channel very passable, more vegetation choked with wild rice at far upper reach but can easily pass through. One beaver dam that can be passed over and one dock obstruction that will need to get out and drag kayaks around. One wire across stream that can be easily passed under. Good access/exit spots at road crossings. No good gravel/sand bars to get out for a break and explore. Some shallow areas that allow wading. Firm bottom. TapeDown reading at put-in at downstream side of CR2 on 6/7/13 was 11.08'; on 8/15/13 it was ?nearly same—Asher insert data here?). Tapedown reading on upstream side of CR23 on 6/7/13 was 9.50'; on 8/15/13 it was ?Asher insert?

Boats/Gear: Use the 10 kayaks, paddles, and life jackets available through the IWI/4H River Explorers Program. Safety kit(medical kit, tow line, floating rescue throw line). 2-3 hand pumps. Sponges. Wayne Goeken has additional kayaks/gear if needed.

Weather Forecast for 8/19/13:

Forecast at right from 1:00 pm on 8/18/13 at Fosston reporting station. Forecast for Monday's paddle time (1-4 p.m.) is for temps in upper 80s, sunny, 9 mph SW breeze, mostly sunny/clear, little precip chance.

Date	08/19												
Hour (CDT)	06	07	08	09	10	11	12	13	14	15	16	17	18
Temperature (°F)	64	65	68	73	78	82	84	86	87	89	89	89	88
Dewpoint (°F)	64	64	65	66	67	67	66	65	63	61	60	61	62
Heat Index (°F)					79	86	88	90	90	90	90	89	89
Wind (mph)	6	6	6	7	8	8	8	9	9	9	9	9	9
Wind Dir	SSW	SSW	SSW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
Gust													
Sky Cover (%)	36	32	30	28	28	27	27	27	27	26	26	26	26
Pcpn. Potential (%)	20	9	9	9	9	9	9	9	9	9	9	9	9
Rel. Humidity (%)	99	97	90	79	69	60	55	50	45	39	38	39	42
Thunder	SChc	--	--	--	--	--	--	--	--	--	--	--	--
Rain	SChc	--	--	--	--	--	--	--	--	--	--	--	--

Things to Bring (individuals): Footwear that WILL get wet and perhaps muddy—old tennis shoes work, sandals that stay secure on your feet—NO FLIPFLOP SANDALS! Clothing that can

get wet (fast drying fabric a plus, i.e. not cotton) hat, sunscreen, bug repellent, water/beverage, snacks (all refuse is packed out). Also consider: dry set of clothes/towel in dry bag or left in transport vehicle. IWI will have sun screen, bug repellent, and some water and snacks on hand. IWI will have several Nikon Coolpix waterproof cameras with geo-tagging features for the River Explorers team to use in documenting the trip. If participants want to bring their own camera, we will have some extra drybags that can be used for protection in between use, but if personal electronic gear is used, it is at the risk and responsibility of the individual owner/user. Leave personal valuables such as wallets, cell phones, keys, and other electronics at home/school/car or put in dry bag at start of river trip.

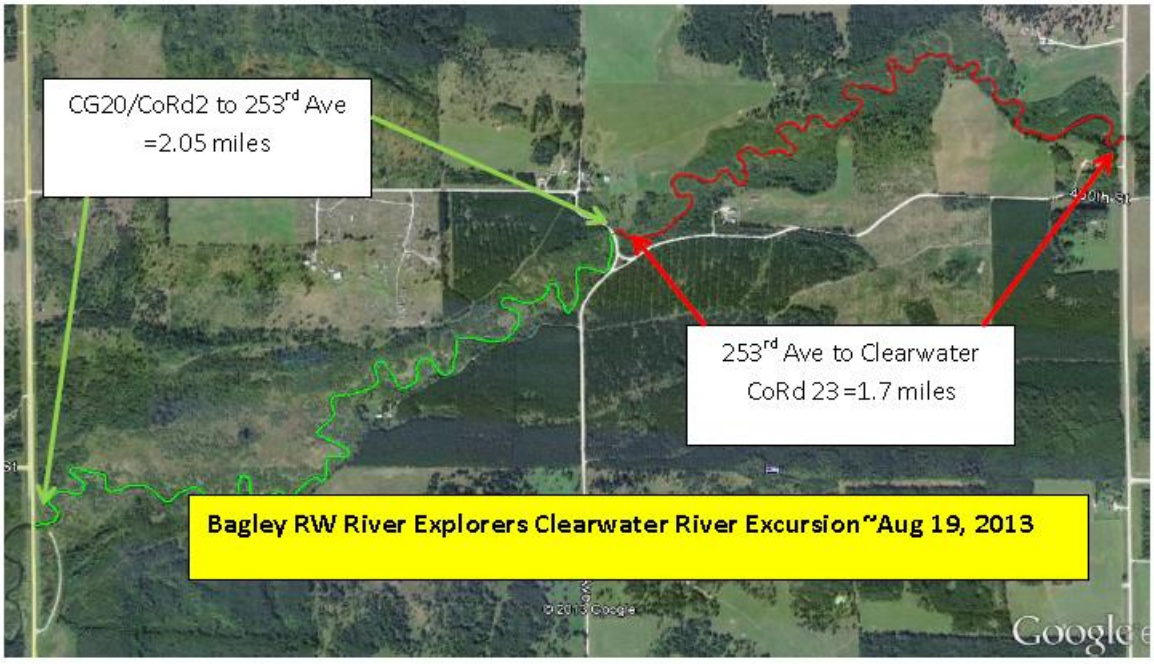
Things to Bring (leaders/group): Trip planner with all emergency contact information, maps, etc.; cell phone(s); extra water bottles; extra food; dry bags; medical kit including bee sting kit~EpiPen; garbage bags; maps; electronic gear for trip documenting; mussel collection kit (bags, sharpie marker, ruler, Write-In-Rain logbook, pencil or waterproof pen); macroinvertebrate "tools"; identification field guides (birds, plants, fish, macros, mussels, insects, trees…); secchi tube;

Documentation:

Will use Nikon Coolpix cameras to document river conditions, tributaries, plants, wildlife, mussels, etc. Work with River Explorers App under development. Prepare post-trip electronic "report" to share on-line and with Red Lake Watershed District.

Post paddle: develop news release to raise awareness of River Explorers program and RW teams exploring local waterways, documenting conditions, and in general raising watershed awareness. Evaluate mix of paddle time, exploration, documentation as well as trip planning/preparation. Get feedback from trip participants on trip experience, expectations, results, attitudes, interest in further trips, ideas for documentation on future trips, next steps to investigate more information about rivers explored, etc.

Other…



Logistics DRAFT: Clearwater River from CR2 N of Shevlin to CR23 NE of Shevlin

About 10 miles from Bagley High School to Clearwater CoRd 2 access north of Shevlin

About 3 road miles from Clearwater CoRd 2 to Clearwater CoRd 23

11:30 Wayne Goeken meet Asher Kingery and Alisha Mosloff at CR2 put-in; unload kayaks/gear

12:00 WG/AK/AM drive to CR23 endpoint and leave WG car with trailer and 2nd car that has room to transport drivers (3 people total) back to start after paddling. Return to put-in for final trip prep.

12:45 Meet Bagley crew at CR2 put-in, fit life jackets and kayak foot pegs. Pre-trip comments on route, observations to note, tasks to document trip, expectations of participants, safety and kayak basics

1:00 Disembark (with keys to downstream vehicles in dry bag!)

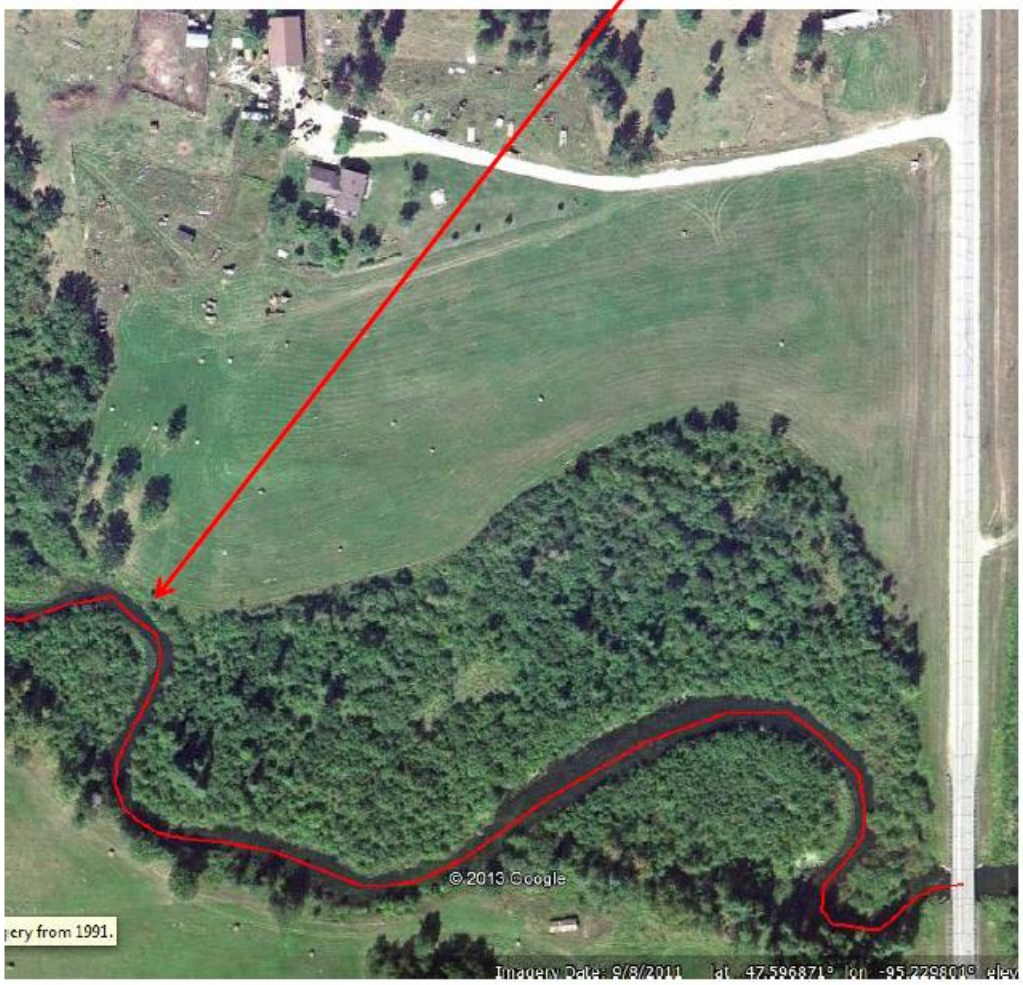
~Data collection, photo documentation, mussel collection, macroinvertebrate, and river exploration

4:00+ Reach endpoint-CR23. Wayne stays with students to clean and load boats. AK, AM, and Jill Bakken drive back to get vehicles at CR2. Download photos and trip logs to one laptop. Share via flash drive as option

4:15+ Load boats. Final thoughts/evaluation/comments. Refreshments.

The dock obstructing the channel was in place during both a 6/17/13 and 8/15/13 scouting run of this section of the Clearwater River. It is located just upstream of the Clearwater CoRd 23 crossing of the Clearwater River as shown in the attached photos. It spans the whole river channel. There is a fishing spear laying on the dock and a broken down minnow trap attached to the dock with a rope.

Email response from MN DNR State Water Trails Coordinator re: river obstructions: As for docks and fences that cross the entire river, they would both be considered a misdemeanor under MS609.74. The owner could also possibly be found liable through civil action, if an injury resulted. You can find more info on water laws here. You may want to consider contacting the local conservation officer and/or sheriff about the obstructions.



Red River Basin Explorers Journal

Name_____ Date_____

Name of Paddle Team Leaders Present _____

Number of Youth Paddlers (under 18 years) _____ Number of Adult Paddlers (18 and over)_____

Names of Paddlers:_____

_____

River Explored_____ River Miles Explored_____

Starting Point: (example: Red Lake River, 0.5 miles NE of Red Lake Falls @ Hwy 32) _____

_____

Ending Point:_____

Start Time_____ End Time_____ Total time (Active Paddling)_____

Nearest USGS Gaging Station data during paddling: Location_____ Stage____ft Discharge: ____cfs

Weather conditions **(circle one in each box)**

Sunny Partly Cloudy Overcast	Hot (>80°F) Warm (60-80°) Cool (<60°F)	Windy Breezy Calm	No rain in past 24 hrs (trace) Some rain in past 24 hrs (<1in) Heavy rain in past 24 hrs (>1in)

Watercraft used: (circle) # Canoes:__; # Kayaks:___ Purpose of trip (check all that apply): _____Scouting; ____Recreation; _____Watershed Science; _____Other:_____

Comments on Paddling Conditions (water level, tree snags, rocks in channel, etc.)

_____

_____

_____

Comments on river bank conditions (steep bank, bank slough, drainage ditch confluence, etc.)

_____

_____

_____

List any exotic and/or invasive species (document w/picture)_____

Were sandbars/beaches present for rest stops? Yes or No If so, give location(s)_____

General comments on river: water quality, recreational suitability, hazards in channel, plants, animals

_____

_____

_____

Advice for others looking to paddle this river reach:_____

_____

_____

International Water Institute River Explorers Program *River Explorer's Journal*

Thief River **Warren-Alvarado-Oslo River Watch Team** **Sept 26, 2013**

River Reach: Approx. 1 mile to 5 river miles north of Thief River Falls

Recorder Name: Wayne Goeken **Email:** wayne@iwinst.org **Phone:** 218-280-0516 **Trip Date:** 9/26/2013

Name of Paddle Team Leaders: Wayne Goeken, Asher Kingery

Number of Youth Paddlers (under 18 years of age) __16__ **Number of Adult Paddlers (18 and over)** __3___

Names of Paddlers: Wayne Goeken, Asher Kingery, Kevin Johnson-Warren-Alvarado-Oslo Science Instructor and River Watch Advisor, 16 WAO River Watch students

Starting Point: Began at Ken Johnson residence on Dewey Ave. along Thief R approx. 0.8 miles north of 8th St.E. This private access at residence of Ken Johnson worked very well for staging the start of the trip. Public access for this reach could be done at Long's bridge approx. ½ mile downstream or at Dewey Ave. bridge approx. 0.8 miles upstream.

There are no official public accesses on the entirety of the Thief River, but several public road/bridge access points are available. There is a public access on the Red Lake R just beyond confluence of Thief and Red Lake R.

Ending Point: Trail access along Thief River at Rifle Range north of Thief River approx. 3 miles. Needed to get permission to access Rifle Range property, thus not normally available to the public. Found a spot that was easy to get off river without steep bank and short distance on cross-country ski trail to vehicle/trailer access.

River Miles Explored: 4 miles TOTAL (3.4 miles to Rifle Range and then went a bit further upstream before turning around and returning. Also explored outlet area of County Ditch 18.

Start Time: 9:45 **End Time:** 2:00 **Total trip time:** 4:15 **Paddling time:** 3:15 **Stop Time:** 1:00—30 minutes for lunch break and 2 stops related to capsize assistance and bathroom break at Golf Course. Overall the pace was very leisurely.

Nearest USGS Gaging Station Location: Thief R at USGSS gaging station upstream of Pennington CoRd 77 was at 10.0 cfs and gage height of 4.60'. The median flow for this date-9/26, is 13 cfs based on 94 years of record. http://waterdata.usgs.gov/mn/nwis/uv/?site_no=05076000&PARAmeter_cd=00065,00060

Weather conditions: Mostly sunny with air temperature into the upper 70s. SE wind at 15-25 mph w/ higher gusts. Very pleasant paddling conditions for fall paddling.

Watercraft used: Used 10 kayaks, paddles, and life jackets available through IWI/4H River Explorers Program. 6 kayaks from Agassiz Environmental Learning Center. 3 kayaks from Wayne Goeken.

Purpose of trip (check all that apply): ___Scouting; _X_Recreation; _X_Watershed Science;
Other:_____

Comments on Paddling Conditions (access, water level, clarity, tree snags, rocks in channel, sandbars/rest areas, plants, wildlife sightings, garbage, land use impacts, other observations, etc.)

Paddled upstream in northerly direction due to forecast of strong south winds and in consideration of very little downstream current in Thief River. Even though low flow, water depth in this reach of river was plenty deep due to "pooled" effect from dam on Red Lake River in Thief River Falls just below the confluence with the Thief River. The river width was also more than adequate to accommodate the large number of paddlers. There were no tree snags or visible rocks in channel to impede paddlers. No sand/gravel bars were present to serve as rest areas or for exploring for macroinvertebrates or mussel shells.

The river corridor in this reach included residential areas, Thief River golf course, cultivated fields, and generally a good riparian area with grasses, shrubs, and trees which were in full fall color. The channel appeared to be quite stable with little erosion evident. Water clarity was somewhat turbid with brown, murky appearance—could not

see bottom. Some garbage was observed, especially closer to Thief River Falls in the residential area. A video monitor was floating in the river. River meanders were explained as the river had many twists and turns. The wind was not a problem due to being down in the river channel.

The group paddled upstream into County Ditch 18 for a short distance to a spot where the group stopped for lunch in a grassy shaded area along the ditch floodplain. The water was shallow and clear in this short ditch segment with tree/shrub roots exposed along the channel where high water had eroded the banks. Tree canopy completely covered the ditch in this area—a very interesting side trip off the Thief River. Not much wildlife was observed (or anyway not recorded)—but this could be due to noise from traveling in such a large group.

Since time allowed, the group paddled upstream past the Rifle Range takeout point before turning around and returning. A landing area was found that was an easy slope to get off the river and it connected to a cross-country ski trail for dragging the kayaks up to the vehicles and trailer. Students assisted a bit with cleaning up the kayaks with sponges and water brought up from the river in 5 gallon buckets.

Early on in trip, one student capsized—overreaching outside of kayak and flipped over—not due to any channel obstruction or river conditions. This occurred near an area of the river with a shallow side bay which allowed the student to get to shore and get in shallow water along river's edge to dump most of water out of kayak and then use bilge pump for final water removal. It was warm enough that this wasn't an issue for the day. By end of day, considerable splashing occurred and many students went in for a swim after done kayaking. Everyone had a very enjoyable experience and expressed interest in future kayak trips to explore their local Snake River and other rivers in the Red River Basin.

Summary: This is a good reach of river to explore by kayak at any time of the open water season as it is deep enough even at low water to paddle. At the current water level, there would be an area just a bit further upstream from the reach paddled that would have required getting out and dragging through due to rocks and shallow riffles. Human influence very much present due to proximity to Thief River Falls but still has good natural features to enjoy—and on a warm fall day with full fall colors, it was a very enjoyable outing.

Organizer's Notes: The Warren-A-O River Watch team monitors sites on the Snake River which due to very low flow this fall did not allow for paddling. The Thief River was selected as a nearby river to provide an on-water recreation experience. In addition, Warren-A-O Science Instructor/River Watch Advisor, Kevin Johnson, grew up along the Thief River (the trip start was at his parent's place on the river) and provided excellent background information and history of his "backyard." Thus the primary purpose of this trip was not necessarily to document the local watershed, but rather to introduce the students to kayaking as a means of river recreation and exploring a local watershed. Some watershed science concepts and river dynamics were covered that would apply to the Snake River. The students will be better prepared for a "next" outing where more watershed observations and documentation will be emphasized in addition to the recreation aspects.

Sack lunches were packed for all participants by the Warren-A-O school cafeteria staff. The Thief River Golf Course was very accommodating allowing use of their bathroom facilities—the manager was very pleased to see all the colorful kayaks and students enjoying the Thief River. The Rifle Range personnel were also very helpful in making their facility available for accessing the river at the end of the trip.

List any exotic and/or invasive species (document w/picture): none that were observed

LOGISTICS SUMMARY:

About 45 miles from Warren to put-in start point at Ken Johnson residence along Thief River approx. 0.8 miles north of MN 1 in Thief River Falls.

8:00 IWI staff met at Ken Johnson's place to unload kayaks/gear.

8:30 Danni & Wayne shuttled Wayne's car with small trailer and large trailer to Rifle Range exit. Scouted river access for coming off river. Returned to start point and helped Asher finish setup.

9:15 Warren RW team arrived. Pre-trip fitting of life jackets, foot pegs and basic kayak instructions/tips.

9:45 Disembark

~Data collection and river explorations

2:00 Off river at Rifle Range area. Cleaned up boats and began loading on trailer. Final thoughts/eval

Thief River mileage:

0.8 Ken Johnson place to Dewey Ave bridge
1.6 Ken Johnson place to golf course clubhouse
3.1 Ken Johnson place to CoDitch18 confluence
3.4 Ken Johnson place to Rifle Range Exit

Thief River: 09020304 HUC
Thief R USGS gage: 05076000 97 yrs of record
9/26/2013 conditions: 10.0 cfs / 4.60'

International Water Institute River Explorers Program ~ **Pre-Trip Planner**

Warren-Alvarado-Oslo River Explorers ~Sept. 26, 2013

Date: Thursday, September 26, 2013

Time: Meet Warren-Alvarado-Oslo RW paddling team at put-in point at 9:15 p.m.

Location: Thief River—begin in Thief River Falls at MN Hwy 1 DNR boat access on Red Lake River near confluence with Thief River. Paddle upstream on Thief River just past County Ditch 18 to access at Rifle Range, approx. 4.7 miles from start.

Participants/Phone: Warren-Alvarado-Oslo RW team inclusive of RW Advisor Kevin Johnson-218-686-1983 (16 students plus K.Johnson); Wayne Goeken-218-280-0516 and Asher Kingery-701-331-9259-IWI; (TOTAL: 19)
Other contacts: Red Lake Watershed District-218-681-5800. Jim Gunter-Rifle Range contact-218-681-1901. Sanford TRFalls Medical Center-218-681-4240. Pennington Co. Sheriff-218-681-6161.

Boats/Gear: Use 10 kayaks, paddles, and life jackets available through IWI/4H River Explorers Program. 6 kayaks from Agassiz Environmental Learning Center. 3 kayaks from Wayne Goeken. Life jackets, paddles, medical kit, tow line, floating rescue throw line, hand bilge pumps, sponges.

Weather Forecast for 9/26/2013: Mostly sunny, with a high near 80. SE wind at 18-25 mph w/ gusts to 38 mph.

Things to Bring (individuals): Footwear that WILL get wet and perhaps muddy—old tennis shoes work, sandals that stay secure on your feet—NO FLIPFLOP SANDALS! Clothing that can get wet (fast drying fabric a plus, i.e. not cotton) hat, sunscreen, bug repellent, water/beverage, snacks (all refuse is packed out). Also consider: dry set of clothes/towel in dry bag or left in transport vehicle. IWI will have sun screen, bug repellent, and some water and snacks on hand. IWI will have a couple Nikon Coolpix waterproof cameras with geo-tagging features for the River Explorers team to use in documenting the trip. If participants want to bring their own camera, we will have some extra drybags that can be used for protection in between use, but if personal electronic gear is used, it is at the risk and responsibility of the individual owner/user. Leave personal valuables such as wallets, cell phones, keys, and other electronics at home/school/car or put in dry bag at start of river trip.

Things to Bring (leaders/group) (will not have all of following on every trip): Trip planner with all emergency contact information, maps, etc.; cell phone(s); extra water bottles; extra food; dry bags; medical kit (we do not have bee sting kit~EpiPen); garbage bags; maps; electronic gear for trip documenting; mussel collection kit (bags, sharpie marker, ruler, Write-In-Rain logbook, pencil or waterproof pen); macroinvertebrate "tools"; identification field guides (birds, plants, fish, macros, mussels, insects, trees...); secchi tube;

Planning Considerations:

In consideration of winds forecast to be 18-26mph w/ gusts to 36 out of SE and Thief River flowing at less than 10 cfs, the plan is to paddle upstream with the wind primarily to our back. The small kayaks going into the wind take on spray from wind/waves blowing up over bow thus would be difficult/wet going into the wind with virtually no current.

Will go in at Kevin Johnson's parent's place about 1.3 miles upstream of confluence with Red Lake River and paddle upstream approx. 3.4 miles and exit at rifle range area (not official public access, permission has been obtained.) Although at low flow, the Thief R is plenty deep in this area due to

International Water Institute River Explorers Program ~ **Pre-Trip Planner**

water backed up by dam on Red Lake R downstream. Depending on timing and interest, can continue paddling upstream and then turn around and come back to rifle range exit point.

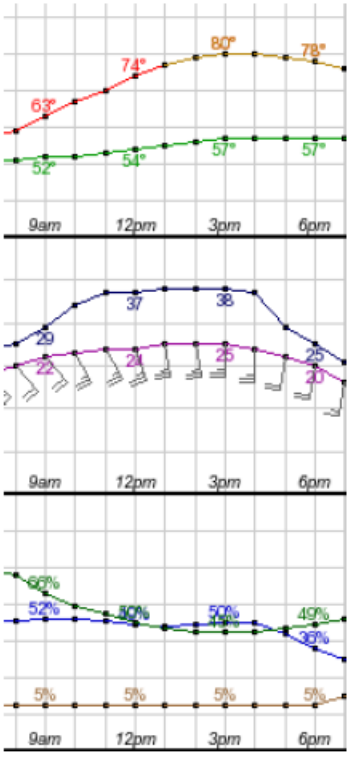
Documentation:

Will use Nikon Coolpix cameras to document river conditions, tributaries, wildlife, mussels, etc. Prepare post-trip electronic "report" to share with watershed district managers and others.

Post paddle: develop news release to raise awareness of River Explorers program and RW teams exploring local waterways, documenting conditions, and in general raising watershed awareness. Evaluate mix of paddle time, exploration, documentation as well as trip planning/preparation.

Other...

Detailed forecast for Thursday, Sept. 26, 2013



Temp(red)

Wind gusts

Wind speed (magenta)

Precip Potential (brown)

International Water Institute River Explorers Program ~ **Pre-Trip Planner**

Logistics DRAFT:

About 40 miles from Warren to put-in start point at public boat access in Thief River Falls at MN Hwy 1 at confluence of Thief River and Red Lake River.

8:00 IWI staff meet at Ken Johnson's place (0.8 miles north of 8th St E on Dewey Ave-east side of road-yellow house) to unload kayaks/gear.

8:30 Danni & Wayne shuttle Wayne's car with small trailer and large trailer to Rifle Range exit. Scout river access for coming off river. Return to start point and help Asher finish setup.

9:15 Warren RW team meet IWI staff at Ken Johnson start point along Thief River. Pre-trip fitting of life jackets, foot pegs and basic kayak instructions/tips.

9:45 Disembark

~Data collection and river explorations

1:45 (or earlier) Reach rifle range exit. Depending on timing can paddle further upstream and then return to exit. Clean up boats and get them up to trailers. Load boats. Final thoughts/eval

2:30 WAO head out and IWI crew finish racking kayaks

3:15 WAO back at Warren High School

Thief River mileage:

0.8 Ken Johnson place to Dewey Ave bridge
1.6 Ken Johnson place to golf course clubhouse
3.1 Ken Johnson place to CoDitch18 confluence
3.4 Ken Johnson place to Rifle Range Exit

Thief River: 09020304 HUC
Thief R USGS gage: 05076000 96 yrs of record

9/25/13 Thief R USGS: 2.1 cfs / 4.35'
9/26/13 Thief R USGS:
9/24/13 RedLake R in TRF@1098.42'
9/25/13 RedLakeR-High Landing USGS: 1.40'

International Water Institute River Explorers Program ~ **Pre-Trip Planner**

Larger map format to print out for tracking with compass on river

Thief River mileage:

0.8 Ken Johnson to Dewey Ave bridge
1.6 Ken Johnson to golf course clubhouse
3.1 Ken Johnson to CoDitch18 confluence
3.4 Ken Johnson to Rifle Range Exit

Red River Basin River Explorer's Journal **River Explored: Sand Hill R. and Red River**

Recorder Name: Wayne Goeken **Email:** wayne@iwinst.org **Phone:** 218-280-0516 **Trip Date:** 7/15/2013

Name of Paddle Team Leaders: Wayne Goeken, Laura Bell

Number of Youth Paddlers (under 18 years of age) __0__ **Number of Adult Paddlers (18 and over)** __2___

Names of Paddlers: Wayne Goeken, Laura Bell

Starting Point: U.S. Hwy 75 river crossing of Sand Hill R on north edge of Climax
Ending Point: boat access on the Red River at Belmont Park, Belmont County ND—approx 4 miles WNW of Climax
River Miles Explored: 7.0 miles TOTAL (3.7 miles on Sand Hill R and 3.3 miles on Red R)
Total time on river: 2:30 **Start Time:** 9:50 **End Time:** 12:20 **Paddling time:** 2:30 **Stop Time:** 0:00

Nearest USGS Gaging Station Location: Sand Hill R at Climax at US Hwy 75 at paddle time was stage of 4.66ft and discharge of 45 cfs. The median flow for this date-7/15, was 40 cfs with mean flow of 91 cfs based on 70 years of record. http://waterdata.usgs.gov/mn/nwis/uv/?site_no=05069000&PARAmeter_cd=00065,00060

Weather conditions (based on Crookston weather station): varied from partly to mostly cloudy. Temps ranged from 73-81°F. SE wind at 7 mph. Pleasant paddling weather. No rain in past 24 hours.

Watercraft used: two solo 10 foot sit-in plastic kayaks

Purpose of trip (check all that apply): _X_Scouting; ___Recreation; _X_Watershed Science;
Other:_____

Comments on Paddling Conditions (access, water level, clarity, tree snags, rocks in channel, sandbars/rest areas, plants, wildlife sightings, garbage, land use impacts, other observations, etc.)
Sand Hill R-US Hwy 75 to MN Hwy 220: Accessed river from City Park along river on east side of Hwy 75—driveway entrance north of Hwy 75 river crossing. Put in just below US Hwy 75 bridge—can be muddy, but at this water level, can manage to balance on rocks and get in with relatively little mud. Low water—scraping bottom and hitting rocks in riffle areas. Good current, but not dangerous—easy to maneuver or stop. Had to get out to drag around one tree snag blocking channel. Several other tree snags just made it through on edge of channel or managed to scooch over. Old dump site very visible with car/rusty debris/bottles/etc. in river bank. Bank sloughs, trees falling in, and erosion throughout reach. Poor water clarity—can't see bottom. Rock jetties in area of former golf course for bank stabilization. Gravel bars present at this water level—one area of river cutting gravel bar close to end of reach. Mussel shells abundant on gravel bars and along shoreline.

Sand Hill R-MN Hwy 220 to confluence with Red R: old car and old farm machinery in river and along bank just downstream of Hwy 220 bridge. Mussel shells and exposed bones on gravel bars. One large tree down that was causing major collection of debris—had to get out and work our way around this large snag area—wasn't too difficult but very soft gravel/mud bottom though—muddy/messy. Fewer gravel bars than previous reach. Several bank sloughs. Poor water clarity—can't see bottom. Worked through/got by some smaller snags without getting out of kayaks—take saw to trim up before outing with students—some sweepers could cause problems for inexperienced kayakers. Overall better water level and passage through this reach than upstream reach. Saw great blue heron and great horned owl on this reach.

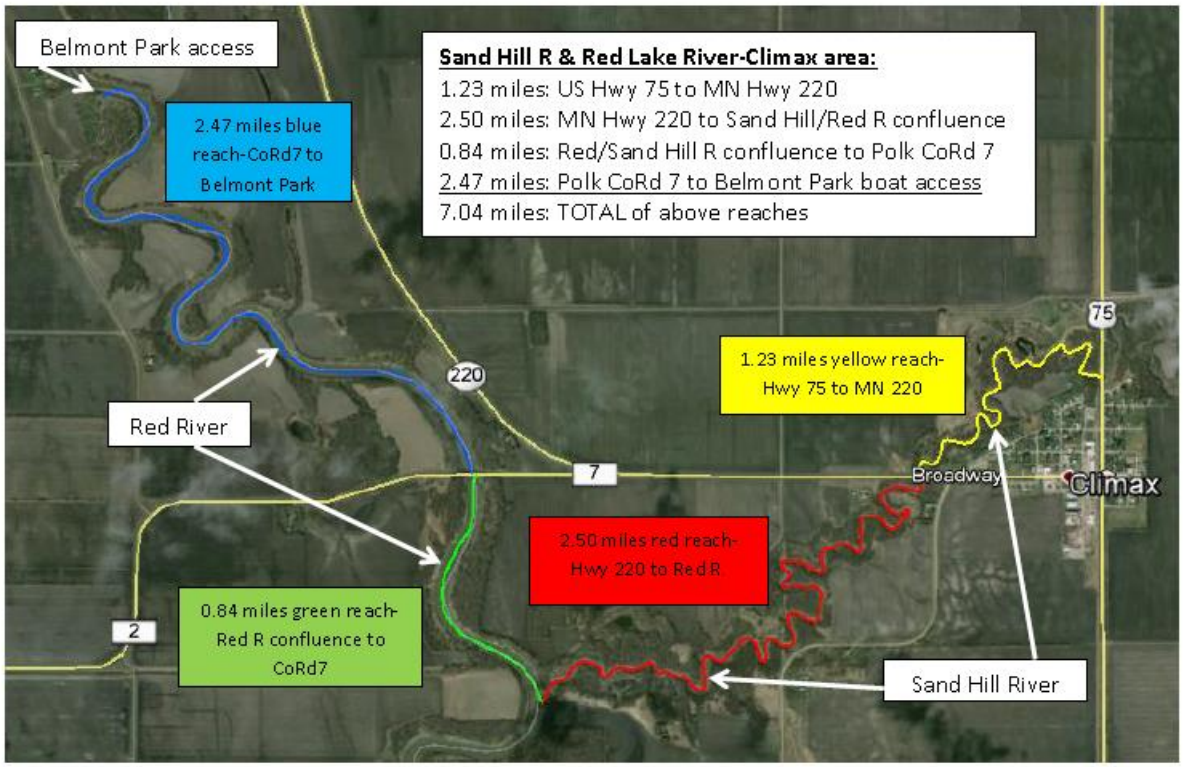
Red R—Sand Hill R confluence to Belmont Park boat access: No tree snags, wide channel, deep water, good current from rains in southern basin. Saw one-maybe two mature bald eagles and one immature bald eagle. Ice scrapes on cottonwood trees (some very high up) along riverbanks. Some recent sloughs/slumps. Muddy-poor water clarity. Very muddy getting out at boat access—soupy mud was up past shins and slippery concrete bottom. Alternative was trying to get out along bank but sank in mud up to knees. Fortunately there was a water hydrant at the park in operation and after initially getting some mud off boats and paddles by dragging on grass, used sponges and bucket to clean up gear and ourselves before loading gear. If doing trip in the fall, make sure to contact Belmont Park authorities to make sure water is still turned on and bring a garden hose w/ spray nozzle for cleanup of gear and people—allow up to an hour for getting off river and cleanup.

List any exotic and/or invasive species (document w/picture): none that were observed

Overall scouting report:

Probably not a recommended route for an outing of new kayakers. Safety would not be a great concern on Sand Hill portion but difficulty of getting through snags and mud would be. On the other hand the low water level would provide opportunity to obtain a good collection of mussel shells, bones, and document the river at low water levels (normal for this time of year based on USGS records).

Could consider clearing snags between highways 75 and 220 to make this a fun, short recreational paddle in close proximity to Climax community. It would only be about 1 ¼ river miles, but gravel bars would allow stopping for leisurely trip. At higher water levels it could be a fast trip. Would need to scout access under Hwy 220 bridge re: getting off river. Climax has a hiking trail along a good portion of this river reach which is being revitalized and the Climax Historical Society continues to develop a Heritage Village Site near the Hwy 220 end point. Could also check to see if reach from next upstream bridge to Hwy 75 (approx.. 3.4 miles) might be possible paddle option.



International Water Institute River Explorers ~**Pre-Trip Planner: Clay County 4-H ~ Buffalo R ~ 10/22/2013**

Clay County 4H River Explorers~Buffalo River~Aug 22, 2013

Date: Thursday, August 22, 2013

Time: Meet Clay County 4H team at put-in point at 1:00 p.m.

Location: Buffalo River crossing of Clay CoRd 31 approx 1.5 miles south of US Hwy 10 at Hawley

Participants: Clay County 4H group of 5 youth (Emily and Josh Dockter, Nate and Eli Koppenhaver, and Sam Jonason) and 1 adult, Nyle Jonason; Margo Bowerman-MN Extension/4H Regional Youth Leadership; Evelyn Ashiamah-International Water Institute and Wayne Goeken-IWI. TOTAL: 9

Participant Contact: Lisa Kassen-Bauer (Clay Co. 4H) cell:218-329-6509/H:218-850-0730/O:218-299-7344; Margo Bowerman-O:218-281-8695/C:218-280-9310; Nyle Jonason-C:218-784-8292/H:218-354-7055; Evelyn Ashiamah-C:218-368-0563; Wayne Goeken-C:218-280-0516.

Emergency Contact: Clay County Sheriff Dept: 218-299-5151; Sanford Clinic in Hawley: 218-483-3564

Boats: Use 9 kayaks, paddles, and life jackets available through IWI/4H River Explorers Program. Safety kit(medical kit, tow line, floating rescue throw line). 2-3 hand pumps. Sponges.

Weather Forecast for 1-4 p.m. on 8/22/2013: Sunny, with a high near 80. East northeast wind around 5 mph becoming calm in the morning. 10% cloud cover; 5% chance of precip.; relative humidity at 28%.

Things to Bring—Individuals: Footwear that WILL get wet and perhaps muddy—old tennis shoes work, sandals that stay secure on your feet—PLEASE, NO FLIPFLOP SANDALS! Clothing that can get wet (fast drying fabric a plus, i.e. not cotton) hat, sunscreen, bug repellent, water/beverage, snacks (all refuse is packed out). Also consider: dry set of clothes/towel in dry bag or left in transport vehicle. IWI will have sun screen, bug repellent, and some water on hand. IWI will have several Nikon Coolpix waterproof cameras with geo-tagging features for the River Explorers team to use in documenting the trip. If participants want to bring their own camera, we will have some extra drybags that can be used for protection in between use, but if personal electronic gear is used, it is at the risk and responsibility of the individual owner/user. Leave personal valuables such as wallets, cell phones, keys, and other electronics at home/school/car or put in dry bag at start of river trip.

Things to Bring—Leaders/Group (not all will be included on all trips): Trip planner with all emergency contact information, maps, etc.; cell phone(s); extra water bottles; extra food; dry bags; garbage bags; maps; electronic gear for trip documenting; mussel collection kit (bags, sharpie marker, ruler, Write-In-Rain logbook, pencil or waterproof pen); macroinvertebrate "tools"; identification field guides (birds, plants, fish, macros, mussels, insects, trees...); secchi tube...

A basic medical kit will also be brought on each trip, but if individuals have anaphylactic reactions, they should bring their own bee sting kit~EpiPen. Also participants that have asthma or may require use of an inhaler should make sure they bring their inhaler along as well.

Drivers of school or personal vehicles may want to consider bringing extra towels, blankets, plastic, or some manner of seat covering in case paddlers are wet and /or muddy at end of river trip.

International Water Institute River Explorers ~**Pre-Trip Planner: Clay County 4-H ~ Buffalo R ~ 10/22/2013**

Route Notes/Planning Considerations:

The Buffalo River is low, though normal for this time of year. As of 7:45 a.m. on 8/22/13 the Buffalo River at the USGS gaging station at Hawley was at 32 cfs and gage height of 3.44'. http://waterdata.usgs.gov/mn/nwis/uv/?site_no=05061000&PARAmeter_cd=00065,00060)

The proposed route is to go from the Buffalo River crossing of Clay CoRd 31 approx. 1.5 miles south of Hawley to the next downstream (west) road crossing on 220th Street. This is a distance of approx. 2.8 miles. The route was paddled on 8/20/13 by Wayne Goeken and Evelyn Ashiamah of the International Water Institute to assess conditions. Their travel time was 1 hr 15 min. for this reach though they were not stopping for any explorations and maintained a pace that would likely be more aggressive than a group would do.

There are several tree snags that cover the channel that participants will need to get out and drag around but this can be easily done under current low flow conditions. The river bottom is generally firm. There will also be several shallow areas where participants will need to get out and pull kayaks through to deeper water downstream. These are short distances and again, very easy to get out and walk on firm river bottom—often sand and gravel. These afford opportunities to stretch and also look for bones, mussel shells, macroinvertebrates under rocks, etc.

Length of outing will depend on number/length of rest breaks taken along route and amount of time spent exploring river and documenting river conditions and trip experience. There are gravel/sand bars along the way to get out and take breaks. Consideration also of bringing bow saws (trip leaders will provide)and performing community service of clearing a passageway through tree snags that aren't too large.

Documentation:

Nikon Coolpix cameras will be available to document river conditions, tributaries, wildlife, mussels, etc. A River Explorers App is also under development to enter information. Recommend preparing post-trip electronic "report" to share with Buffalo-Red Watershed District.

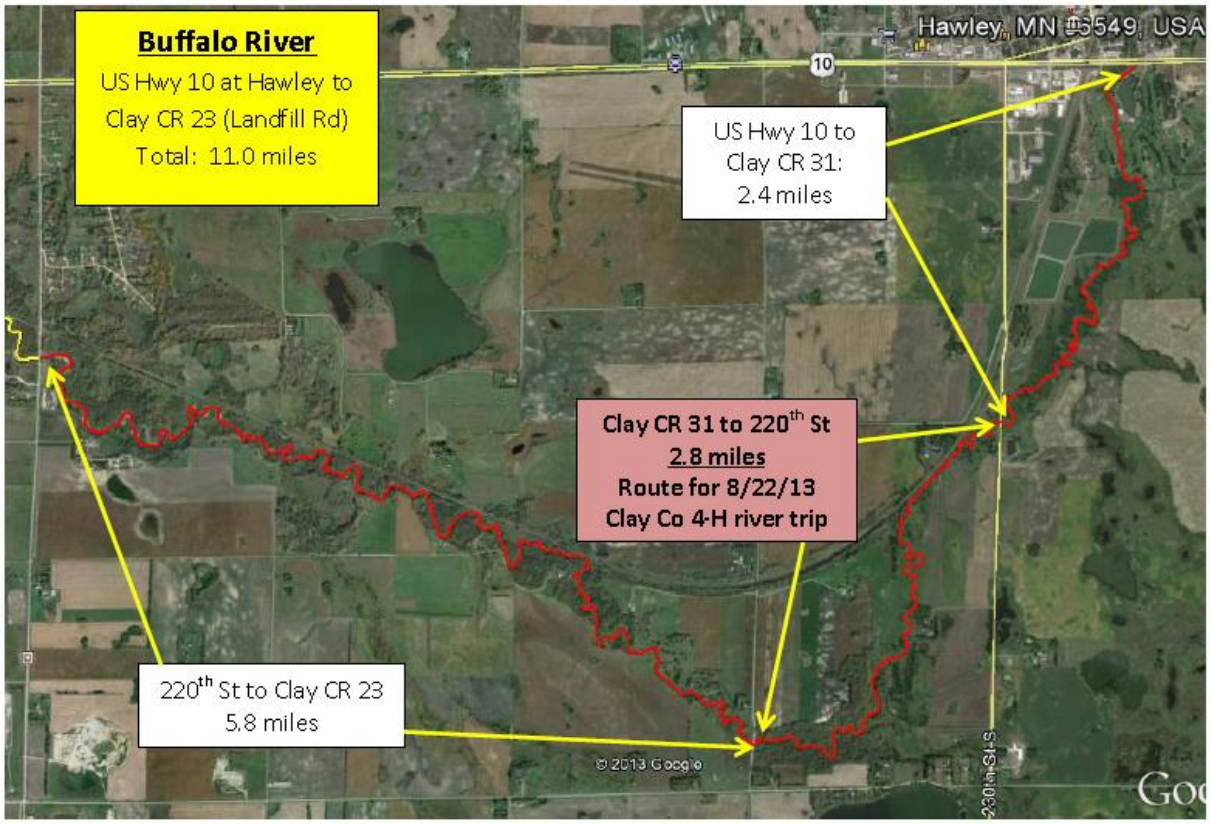
Post paddle: develop news release to raise awareness of River Explorers program and RW teams and citizen groups exploring local waterways, documenting conditions, and in general raising watershed awareness. Evaluate mix of paddle time, exploration, documentation as well as trip planning/preparation.

iPads, smart phones, or other technology tools and apps can also be used but keep in mind wet environment that they will be operated in and plan accordingly.

Other:

The Clay County 4-H team is involved with the SeaPerch Aquatic Robotics efforts. The river environment to be explored on this trip is generally too shallow to use the SeaPerch robot, but the team may do some trials with a dissolved oxygen probe that is part of the SeaPerch robotics setup.

International Water Institute River Explorers ~**Pre-Trip Planner: Clay County 4-H ~ Buffalo R ~ 10/22/2013**



Logistics DRAFT (timing and details subject to change):

About 2.7 road miles from Clay CoRd 31 to 220th Street crossings of Buffalo R.

11:15 Wayne Goeken meet Margo Bowerman at UMC Valley Tech Park and take UofMn vehicle and boat trailer to Hawley (via CoRds 14/18 to MN200 due to road construction on MN 9 north of Ada).

12:30 WG/MB arrive at put-in site on Clay CoRd 31 and unload boats and gear. Evelyn Ashiamah also arrive at this time to assist.

1:00 Clay Co 4H group arrive at Clay CoRd 31 in vehicle driven by Nyle Jonason. Lisa Kasson-Bauer also arrive with vehicle to assist with shuttle. All drivers of vehicles (WG/EA/NJ) take vehicles to end of trip take-out at 220th St to park them and LKB shuttles drivers back to put-in at CoRd31. While shuttling occurring, Margo assist youth in fitting life jackets and kayak foot pegs.

When all reassembled, provide basic instruction on kayaks, use of CoolPix Cameras and trip comments

1:20 Disembark on trip (with keys to downstream vehicles in dry bag)

~Data collection, photo documentation, mussel collection, macroinvertebrates, and river exploration

3:30+ Reach endpoint at 220th St. Clean up boats and get them loaded on trailer. Assemble and load all life jackets, paddles, and other gear.

4:00+ Boats loaded. Discussion, final thoughts/evaluation

4:15"ish" Head home

International Water Institute River Explorers ~**Post-Trip Rpt: Clay County 4-H ~ Buffalo R ~ 10/22/2013**

Clay County 4H River Explorers~Buffalo River~Aug 22, 2013

Recorder Name: Wayne Goeken **Email:** wayne@iwinst.org Phone: 218-280-0516 **Date:** 8/22/2013

Name of Paddle Team Leaders: Wayne Goeken-IWI, Evelyn Ashiamah-IWI, Margo Bowerman-MN Extension

Number of Youth Paddlers (under 18 years of age)__5__ **Number of Adult Paddlers (18 and over)** __5___

Names of Paddlers: Wayne Goeken, Evelyn Ashiamah, Margo Bowerman, Nyle Jonason, Tim Dockter, Emily Docktor, Josh Dockter, Nate Koppenhaver, Eli Koppenhaver, and Sam Jonason.

Starting Point: Clay Co Hwy 31 river crossing of Buffalo R approx. 1.5 miles south of US 10 at Hawley. Good access off rocks under bridge.

Ending Point: From Hawley, 3 miles south on Hwy 31, 1 mile west, and ¼ mile north on 220th Street. Came out on downstream side of crossing—steep bank and muddy at river edge—check to see if getting off on upstream side on rocks might be easier/cleaner.

River Miles Explored: 2.8 miles

Start Time: 1:20 **End Time:** 4:00 **Stop Time:** 0:20 **Paddling time:** 2:20 **Total time on river:** 2:40 (this total time inclusive of dragging around tree snags)

Nearest USGS Gaging Station Location: At time of paddle the Buffalo River at the USGS gaging station at Hawley was at 31 cfs and gage height of 3.44' (fairly normal for this time of year). http://waterdata.usgs.gov/mn/nwis/uv/?site_no=05061000&PARAmeter_cd=00065,00060)

Weather conditions: Sunny, with a high near 80. NE wind approx. 5 mph. No precip.

Watercraft used: Used 10 kayaks, paddles, and life jackets available through IWI/4H River Explorers Program (9-10' plastic sit-in kayaks)

Purpose of trip (check all that apply): __Scouting; _X_Recreation; _X_Watershed Science; Other:_____

Trip notes and watershed conditions (access, water level, clarity, tree snags, rocks in channel, sandbars/rest areas, plants, wildlife sightings, garbage, land use impacts, other observations, etc.)
Set up kayaks at Clay Co Hwy 31 and got everyone in to adjust foot braces and provided basic paddling and safety instructions as well as primer on this river reach conditions and what to look for and document. Some of the 4-H members had kayak experience, but none had paddled on the Buffalo River before. First reach through more of open pasture area with bank sloughs in numerous locations. Second half of reach had more trees along river corridor and this is where a couple of tree snags spanned the channel requiring getting out and dragging kayaks around to re-enter stream downstream. The river bottom and banks were fairly firm, banks were not steep, and snags not extensive, thus not a problem to get through or around them.

Stopped at one sandbar to explore for macroinvertebrates which were found under rocks and on woody debris. Students watched crayfish in shallows. Mussel shells were collected as start of reference collection for the Buffalo River. A red-tailed hawk and great blue heron were spotted along the way along with finches, cedar waxwings, and other shorebirds/songbirds.

The overall pace was leisurely—exploring and enjoying the river and a fine sunny, warm day to be out on a local river. Two students unintentionally capsized—one when trying to navigate around a tree snag and leaned over too far and the second basically "screwing around having fun" and lost balance.

International Water Institute River Explorers ~**Post-Trip Rpt: Clay County 4-H ~ Buffalo R ~ 10/22/2013**

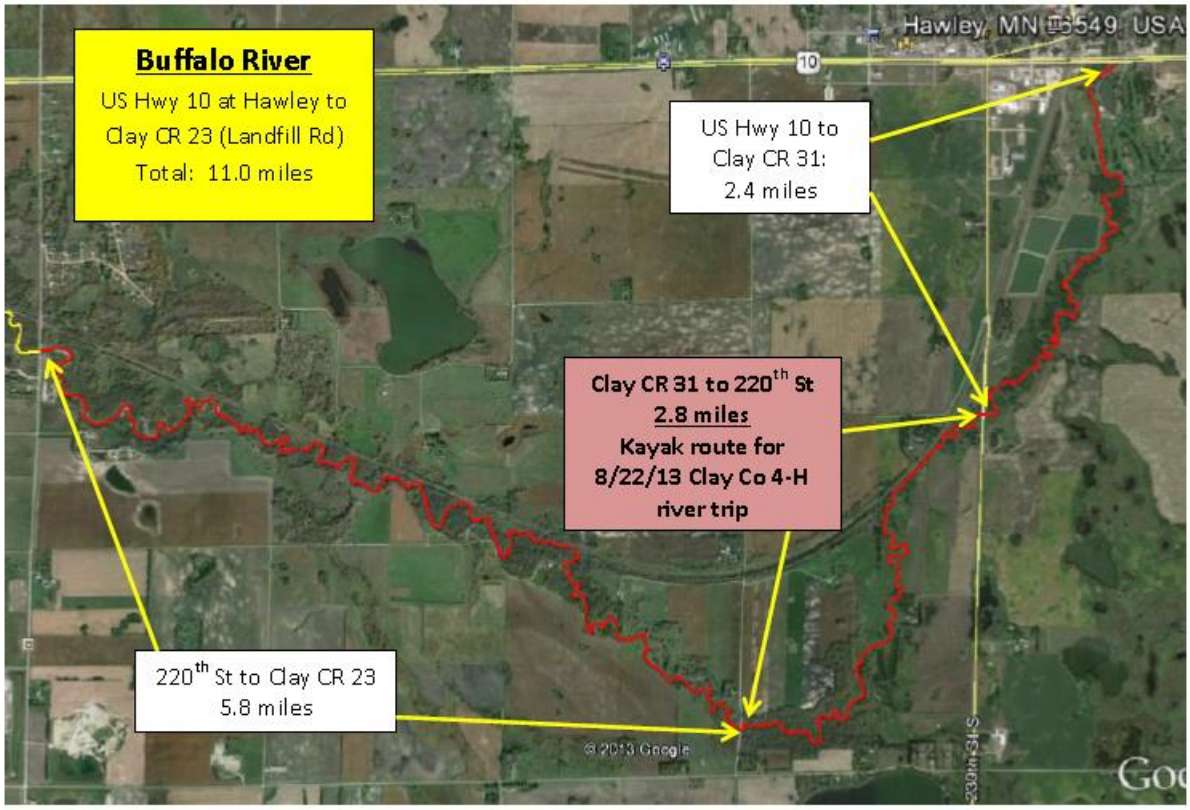
Both in safe situations and not a problem getting back in, bailed out, and on our way. Once students get wet then more horseplay ensues of getting other students wet via splashing and playing with kayaks. Water and air temps were warm so getting cold was not a problem on this day. At end of trip, wide river expanse and hole immediately downstream of culvert/road crossing where we were coming out at. One student availed himself of opportunity for swim. Somewhat challenging to get boats out without getting muddy and steep incline to get to road for loading kayaks—might try to land on rocks on upstream side of this crossing in future.

Overall, 4-H group agreed that this reach of river was very enjoyable to paddle—they didn't realize what a nice little river they have in their local area. All would readily go again and would like to explore other reaches of the Buffalo River.

Organizer's Notes: The Clay Co 4-H group is not a River Watch team so not as much of a "watershed recon" trip as it was recreational. This combined with the warm water and air temps of the day resulted in a fun day for the students "playing" in their local river. Thus, program objectives of exposing students/citizens to recreational enjoyment possibilities and value of their local watershed (sense of place) and promoting active lifestyles were fully achieved.

The small 10 ft. plastic kayaks work well for these trips as they are light for loading and dragging around snags in the river. Also these short boats are very maneuverable for getting through snags and durable for scooching over trees and scraping bottom or bouncing off rocks. Need to build in more time at end of trip for participants to do better job of helping clean up boats. Bring a couple of buckets to haul water up from river to clean boats away from muddy banks—up by trailer so they can be cleaned and loaded so trip organizers don't have such an extensive clean-up of gear when they return to home base.

International Water Institute River Explorers ~**Post-Trip Rpt: Clay County 4-H ~ Buffalo R ~ 10/22/2013**



LOGISTICS SUMMARY:

About 2.7 road miles from Clay CoRd 31 to 220th Street crossings of Buffalo R.

1:00 After shuttling vehicles and kayak trailer to downstream take-out spot, all reassembled, got fitted with life jackets, adjusted kayak footpegs, provided basic instruction on kayaks, use of CoolPix Cameras and trip comments

1:20 Disembark on trip

~Data collection, photo documentation, mussel collection, macroinvertebrates, and river exploration

4:00 Reached endpoint at 220th St. Cleaned up boats and loaded on trailer. Assembled and loaded all life jackets, paddles, and other gear. Discussed trip highlights and 4-H crew took off while IWI/Extension staff finished loading.

Appendix C: 2013 Fall Kick-Off

FALL TEAM KICK-OFF!

International Water Institute
Flood research and watershed education for the Red River Basin

River Watch
Citizen Monitoring Program

Dates: TRF, Nov. 19th, 2013 Best Western (Hwy 32 S.)

Rydell NWR, Nov. 21st, 2013

8:45 am	Arrival
9:00 am	Welcome
9:15 am	Team activity — Mussels and Curves?
9:45 am	River Trip Planning
	- Virtual scouting, , Google Earth, trip plans
10:45 am	Watershed Delineation
	- Project Planning Tool, Useful Watershed Applications
11:45 am	Lunch
12:30 pm	Data Analysis and Display
	-Box Plots and Designated Use Assessments
1:00 pm	RW Forum Theme Introduction and team challenge
	-Poster development
1:30 pm	Wrap-up and depart

Appendix D: River Explorers 2013 Summer Teacher Session

River Explorers 2013 Summer Session

When: Tuesday-Wednesday, July 30-31, 2013
Where: University of Minnesota, Crookston

Sponsors and collaborations: Agriculture and Natural Resources Department, U of MN, Crookston; Northwest Research and Outreach Center, U of MN; Red River Watershed Management Board; International Water Institute; Northwest Regional Sustainable Development Partnership; U of MN Extension; MN DNR Stream Habitat Program; Valley City State University STEM Education Center;

Registration Cost: $50.00 per participant. Local watershed districts have provided assistance to schools within their watershed in the past. ***18 CEU hours will be provided to participants.***

Summary: A two-day/one-night training session for River Watch teachers, educators, and natural resource managers to gain a better understanding of watershed dynamics and assessing river conditions. Activities include a kayak trip on the Red Lake River to illustrate river processes and lecture, laboratory, and field instruction by professionals representing universities, agencies, and conservation organizations to provide theoretical and practical understanding and insights which can be transferred to young learners in watershed science programs.

Outcomes:

- Understand the interactions and impacts of land uses on the natural ecology and sustainability of the region.
- Develop improved skills of field and laboratory instruction in watershed science which can be adapted to local settings.
- Acquire an expanded network of resources which support the above goals including personal contacts, instructional materials, online information and tools, and apps.
- Develop a better understanding of the array of governmental and other organizations related to watershed management which can be of assistance to watershed educational programs.

Schedule Synopsis:

Day 1 (9:00 am-9:00 pm): Kayak trip on Red Lake River with Dr. Luther Aadland, MN DNR Division of Ecological Resources Stream Habitat Program research scientist/river ecologist and expert on river restoration, dam removal and nature-like fish passage. Two reaches of Red Lake R to be explored near Crookston including a dam retrofit designed by Dr. Aadland. Participants will stop at gravel bars along the way to collect macroinvertebrates, mussel shells, and water quality measurements. Waterproof digital cameras will be used to take geo-tagged photos for displays.

Day 2 (8:00 am-3:00 pm): Illustrations and discussion of current land use changes and impacts on river systems led by Dr. Dan Svedarsky. Hands-on lab exercise on groundwater contamination led by Dr. Gary Ketterling from Great Plains STEM Education Center/VCSU. Afternoon session on measuring watershed health—how to interpret your River Watch data to assess stream health and use of new online tools for watershed assessments.

River Explorers

2013 Summer Session

River Watch
Engaging citizens and communities in local watershed stewardship

Tuesday-Wednesday, July 30-31, 2013 Crookston, MN

Schedule: (subject to change)

Tuesday, July 30

9:00 Arrival/Registration

9:30 Welcome & Introductions

9:45 River Dynamics—Geomorphology & Stream Processes ~ Dr. Luther Aadland and Amy Childers, MN DNR Stream Habitat Program. A pre-field trip primer on stream processes and what to look for before heading out on kayak reconnaissance of Red Lake River. Stream table videos to demonstrate field conditions that will be observed. (Centennial Hall Conference Room)

10:30 Depart for Red Lake River access 5.5 miles east of Crookston on Polk CR 11

11:00 Begin River Explorers kayak trip on the Red Lake River. Tips on kayak handling at start of trip. Luther and Amy will point out river features as we paddle and at stops—meanders, oxbows, thalweg, sloughs, cutbanks, soil profiles, etc. Stops at gravel bars to collect macroinvertebrates, mussel shells, and water quality measurements. Nikon Coolpix waterproof digital cameras will be used to collect geo-referenced photos of river conditions to later download and map. River Explorers program features explained while on river trip.

2:30 Off river for lunch/restroom break at UMC and move to next river trip site in Crookston

3:30 Kayak Red Lake River from retro-fitted rock dam designed by Dr. Aadland to restore river connectivity and safety. Flood control and channel stability measures featured in this river reach. Will stop at two locations to explore for macroinvertebrates and mussels.

5:30 Off river—at UMC, Amy Childers will provide overview of new MN DNR online Watershed Health Assessment Framework (WHAF) tool. (Centennial Hall Conf. Room)

6:30 Picnic dinner at UMC Nature Nook

7:30 Revisit the day's River Explorers trip—download photos/route logs, upload in Google Earth, assemble other data collected and observations made. Review River Explorers trip plans and how to make useful contributions to watershed science.
-Demonstration of preservation methods for making a macroinvertebrate reference collection.
(Centennial Hall Conf. Room)

9:00 Release time for socializing/rest

Wednesday, July 31

7:15 Breakfast – details pending (will announce on July 30th)

8:00 River Watch Partnerships ~ options and opportunities for education and research. (Agri.Res.Center Seminar Room)

8:30 Case study—Changing Conditions of watersheds/streams—slide show and discussion by Dr. Dan Svedarsky, UMC Research Biologist and Director of Center for Sustainability. Dan will illustrate land use changes in last few years as relates to high crop prices and impacts such as bulldozing of shelterbelts--farming to river's edge-- more volume of rivers--accelerating erosion. (Agri.Res.Center Seminar Room)

9:30 Groundwater Model Demonstration illustrating surface water/ground water interaction by Jan Kaspari, Marshall County Water Plan/Zoning Administrator. (Bergland Lab)

10:00 Break (hall outside Bergland Lab)

10:15 Groundwater Contamination: Trouble in Fruitvale. Dr. Gary Ketterling, Great Plains STEM Education Center-VCSU, will demonstrate a classroom/lab module exploring ground water contamination through inquiry investigations, map interpretation, and hands-on activities to test for pollutant concentrations and potential solutions. Learn about options to incorporate this module in your curriculum. (Bergland Lab)

12:15 Lunch (Brown Dining Hall)

1:00 Measuring Watershed Health—why and how. How River Watch data addresses assessments of stream health—what is it telling us? How to interpret your data and find additional pieces of the puzzle. Preview of River Watch Forum assignment. (Bergland Lab)

2:30 Open Forum~Evaluation. Discussion of further needs to better understand watersheds; resources available to help address needs, and opportunities for collaboration and training. (Bergland Lab)

3:00 Adjourn

LOGISTICS: Participants will stay in Centennial dorm on the UMC campus. Snacks and refreshments will be available throughout the day and meals provided.

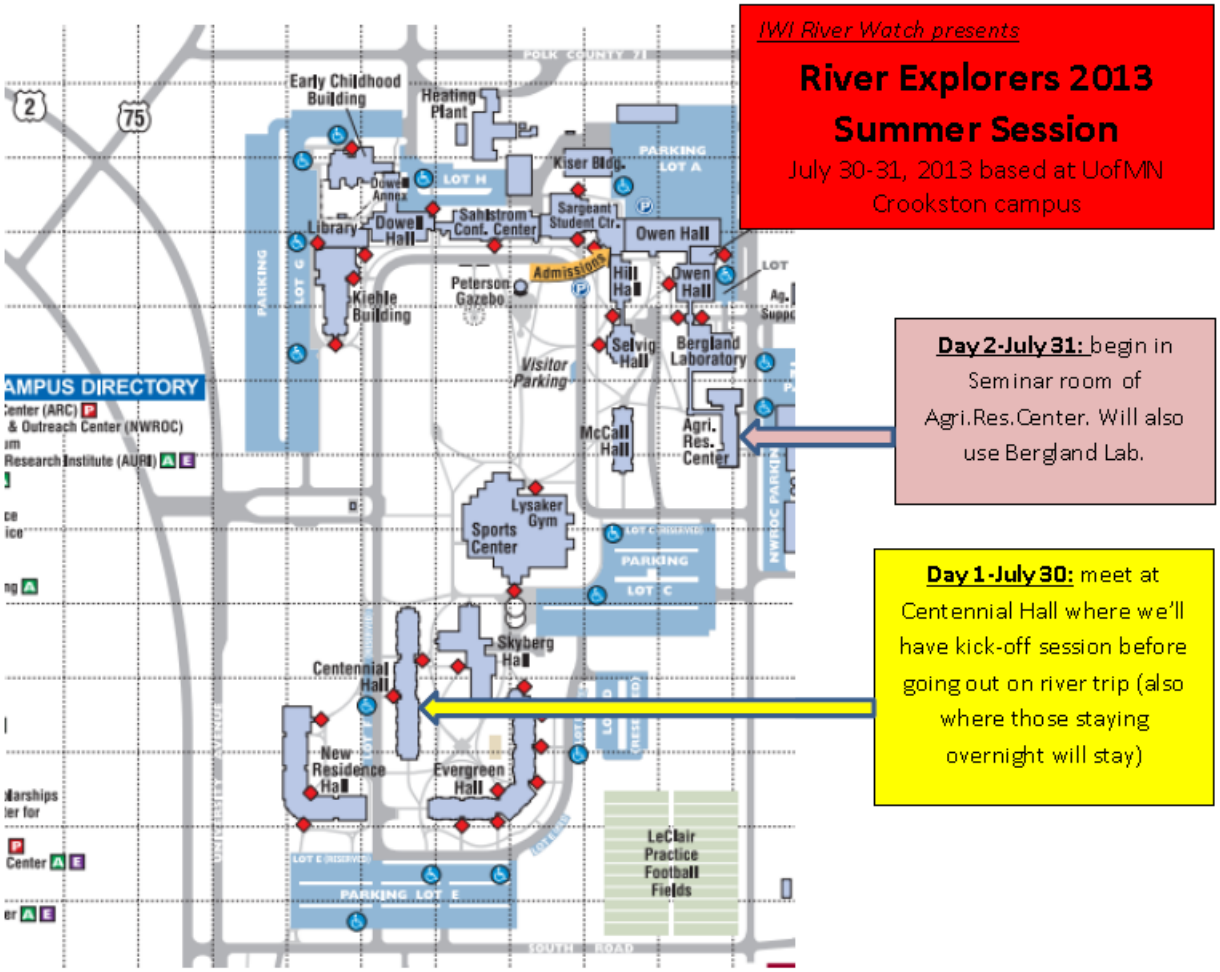
More details on recommended clothing and supplies for the field trips will follow to those registering.

Vouchers will be available for you to fill out to cover mileage. This training is being provided through a Clean Water Legacy grant which doesn't allow payment of stipends. ***A maximum of 18 hours of CEUs will be provided to participants.***

Wayne Goeken cell: 218-280-0516 Danni Halvorson cell: 218-280-0515

CLEAN WATER LAND & LEGACY AMENDMENT

Project dollars provided by the Clean Water Fund
(from the Clean Water, Land and Legacy Amendment)



River Explorers River Field Trip Tips:

- Wear clothes that may get wet and dirty—if possible wear clothes that readily dry, i.e. not cotton
- A hat is recommended
- Wear footwear that **will** get wet and likely muddy—and that will stay on your feet, i.e. not flip flop sandals. Some sort of water shoe or sandals that securely stay on your feet or old tennis shoes work well. We will be wading in quest of mussels, macroinvertebrates...and maybe seeking deeper water if you go aground.
- Sunscreen and bug repellant (though bugs are not bad down on the river)
- Sunglasses if you like. Glass guards if you wear glasses.
- Drinking water if you have a favorite re-usable container, otherwise we will have some water on hand.
- Dry bag and rain gear if you have them and think you need them-watch the weather forecast.

We will bring along some snacks and have extra sunscreen and bug repellant on hand as well as a first aid kit.

We will go over kayak basics and we will be on an easy reach of river for paddling, but if you want to learn or review some kayak skills, here is an online tutorial that has basic and advanced skills information, http://www.learntokayak.com.au/page6.htm

International Water Institute
Flood research and watershed education for the Red River Basin

River Watch Citizen Monitoring Program

River Explorers 2013 Summer Training Session

When: Tuesday-Wednesday, July 30-31, 2013
Where: University of Minnesota, Crookston

Notes from Teacher Evaluation/Discussion at end of July 30-31, 2013 Teacher Training Session:

Participants: Jill Bakken Thompson-Bagley Science Teacher/RW Advisor; Garry Kotts-Stephen-Argyle Science Teacher/RW Advisor; Nathaniel Messick-Norman County East Science Teacher/RW Advisor; Jessica Hanson-Crookston Science Teacher/RW Advisor; Amber Roloff-East Grand Forks Science Teacher/RW Advisor; Jim Blix-Red Lake Watershed District RW Coordinator; Laura Bell-University of MN-Crookston Natural Resources Lab Director/RW Coordinator; Danni Halvorson-IWI Center for Watershed Education-Director; Alisha Mosloff-IWI 2013 Summer Intern and former RW student participant; and Wayne Goeken-IWI Special Programs Coordinator

Overall: Kayak trip on Red Lake River w/ interpretation by Luther Aadland was highlight of training session. Participants would not have wanted to shorten trip as good river processes and management activities that were good for interpretation were found along entire route. Dan Svedarsky discussion of watersheds, impact of high crop prices negatively impacting land use due to more intense agricultural production, and rain garden installation as storm water management also rated highly. The combination of the groundwater model demonstration by Jan Kaspari and the "Trouble in Fruitvale" curriculum module demonstrated by Gary Ketterling of VCSU STEM Education Center was also a good hands-on activity. Danni Halvorson explanation of water quality standards and how RW data has contributed to assessment of rivers in the Red River Basin helped emphasize the importance and impact the RW program is having in the RRBasin.

Groundwater Model: There is interest in access to the groundwater model that Jan Kaspari demonstrated but would like someone (SWCD or IWI personnel) to bring the model to the school to do the demonstration and be in charge of the set-up, use of, and maintenance of the model. Would also like information before bringing in the model about the concepts that the ground water model will be used to demonstrate, ideas of how it can be worked into curriculum (where it fits), and applicability to real-world scenarios in local watersheds, i.e. are there local monitoring wells in use currently; any municipal wellhead protection plans in place, etc..

Stream Table: Yes, interest in having access to a stream table for demonstration of stream processes. Similar to groundwater model, would like someone to demonstrate its use and maintain it as well as having lesson plans that fit the school's curriculum scope and sequence and address state education standards. Noted that MnDNR already has videos of stream table use demonstrating various hydrological processes.

Snow Study: Some indicated that location of sampling sites just didn't work out for easy access and program didn't fit with student or school schedules. One teacher used waders for tromping through snow to get out to sites. Also "best" site locations often change from year to year as snow accumulation patterns shift due to variable winds in RRBasin. IWI staff noted that a new frost tube design might be used but also need to have some sort of commitment from schools re: participation otherwise IWI will not install equipment due to cost of time, travel, and equipment. Others indicated they did collect data but found the CoCoRaHS website data entry page too cumbersome. The new RW snowstudy data page was shown and teachers seemed to think this would be easier and would work. Pop-up "*i*" information bubbles should be incorporated to guide data entry queries as to what is supposed to be entered in each space. Also noted that more training is needed for procedures on taking measurements and for data entry. Also keep in mind that measurements and reporting is most important towards the end of winter as spring melt and flood forecasting needs of the NWS become more critical. It was

noted that one option for schools might be to drive around to their sites during this critical spring melt period and take snow depth and snow water equivalency measurements (suggest doing by weight vs melting for ease and speed as results are very comparable). Field observations could also be shared via the CRED app which was discussed and demonstrated.

Macroinvertebrates: Would like simple laminated dichotomous key similar to what Laura Bell demonstrated during the training session. Preserving specimens in the hand sanitizer solution also seemed to be a safer, easier, and more cost-effective method than using ethanol with bugs maintaining color longer. It was noted that six macroinvertebrate trunks are available from IWI staff and partners. Evelyn has worked with Norman Co. East in doing macro study where they collect bugs one day, preserve in refrigerator and come back and pick/ID within a week before making reference collection. Laura Bell noted that they have done macroinverts on same day as monitoring with students understanding that they need to get regular sampling done first and if time allows they can do the macroinvert activity.

Mussel collection: Goeken noted that permits have been obtained from MnDNR to allow for mussel shell collection. Will be working on establishing partners with MnDNR, post-secondary schools, and Andre DeLorme to assist with identification of the shells. Shells can be collected as part of River Explorer trips and/or can be collected by schools at their sample sites either at same time or independently of when doing macroinvertebrate sampling. Will be working up SOPs for mussel collection as relates to clearly labeling where shells are collected, handling, and identification. Need to have personnel listed on permit present to do collection (W.Goeken, E.Ashiamah, A.Kingery, and L.Bell). Laura Bell also has obtained a fisheries permit that allows groups with her to do fish collections via net, angling, or shocking. She explained methods for euthanizing fish in prep for making study collections for schools.

Fall kick-offs and River Watch Forum assignment: The fall kick-off training/review sessions are viewed as good opportunities to learn new concepts and good to get preview of RW Forum assignment. Include hands-on activities as much as possible. The poster format of the RW Forum is viewed as positive direction. For upcoming year the focus on interpretation of the data seems to be an agreeable topic. One idea was to "swap" data, i.e. give RW teams data sets from other RW teams and have them analyze and interpret. Another idea was to have assignments specific to each school—drill down on unique features or conditions that data might reveal. Statistical analysis tools were noted such as the box and whisker plot utility that is a free Excel add-on.

Teacher Training: Doing training during school year not viewed favorably as teachers generally don't like to be gone as it is more work to line up lessons for sub teachers to implement. The summer training is good, but would like to see more teachers attend—seems to be the same teachers attending from year to year. Need to get notice of training dates and topics out earlier. Consider driving tours to see different parts of watersheds—get upstream/downstream perspectives. It was noted as example that paddle trip on Red Lake River this year with 15 kayaks would start getting unwieldy if more participants involved. It was suggested that perhaps do rotations to keep group sizes manageable for various activities—and strong preference for hands-on activities. Consideration of all RW teams participating in a monitoring event on the same day/week—"Danni's Dip-in Day."

Appendix E: 2013 River Watch Forum

2013 River Watch Forum Team Challenge

♦Natural Resource Project Profile
♦Drought Planning Tool
♦Designated Use Support Assessment

Assignment Summary

- Natural Resource Project Profile – Project description and Map of affected area. Short summary listing the need for the project, project goals, effectiveness, and implementation steps.
- Drought Planning – Identify your drought planning station(s) and plot 2012 flows verses 1988 flows; create a monthly sub-basin forecast conditions water report. Short summary of comparison between 1988 and 2012 flows along with discussion of sub-basin report findings.
- Designated Use Assessment. Table or graph of results with short written summary. Create a map illustrating use assessment rankings for your sites based on transparency readings.

*Optional: Other water quality research or watershed awareness activities you are involved with

*All components part of 3'x 4' poster to be printed for your RW team.

Natural Resource Project Profile

- Identify a project that has been, or is being, implemented and research why it is taking place and what was/is involved in regards to constructing it. Website help:
- SWCD projects http://www.bwsr.state.mn.us/SWCD/Guidebook/index.html
- Watershed district projects http://www.bwsr.state.mn.us/publications/WD_Guidebook/index.html
- Questions to answer:
  1. The need for the project and where it is located.
  2. Affected area above and below the project (MAP of Area!).
  3. Project goals, effectiveness, and impacts.
  4. Steps for Implementation; Funding (costs), Permits, Planning, and Land Acquisition.
  5. Project road blocks or hurdles.

Red River Basin Drought Planning Tool

The Regional Drought Decision Support System (RDDSS) for the Red River Basin http://www.rrbdin.org/hydrologic-data provides access to a common base of drought related information for the Red River Basin of the North.

- Plot the stream flow values for the drought planning station nearest your sample area for March thru August 2012. Be sure to include the comparison to the 1988 drought flows on your graph.
- Based on your plot explain how 2012 stream flows compare to the 1988 flows for your station.
- State how the drought indices might compare between 1988 and 2012.
- Create a monthly sub-basin forecast conditions water report for the modeled sub-basin closest to your locale.
- Explain what a Decile rating is. Hint: See http://www.rrbdin.org/subbasin-reports (RDDSSTechnicalHelp)

- What is the stream flow Decile rating for your sub-basin and what does it mean in regards to precipitation expected?
- What does UZTWC stand for and what is the UZTWC Decile rating for your sub-basin?
- How would you use this forecast report if you were a drought planner?

Designated Use Support Assessment

Compare data from all your monitoring sites to following MN State Standards criteria (Class 2B waters):

- Dissolved Oxygen: not less than 5mg/l
- Turbidity: not more than 25 NTUs
- Transparency tube not less than 20 centimeters
- pH: between 6.5-8.5

Determine Use Support - Compare your data to the state standards

- < 10% of values exceed criteria = Fully Supporting
- 10-25% of values exceed criteria = Partial Support
- >25% of values exceed criteria = Non-Support

Display Results graphically and Geospatially

- Create a table or graph with your use assessment results
- Table should include; Site Name, number of samples, and assessment percentage.
- Create a map of your assessment sites which illustrates Use Assessment rankings for each site based on Transparency readings. http://riverwatch.wq.io/

****

References

- Natural Resource Projects
  www.bwsr.state.mn.us/SWCD/Guidebook/index.html
  www.bwsr.state.mn.us/publications/WD_Guidebook/index.html
- River Watch Database: riverwatch.umn.edu
- Drought Tool www.rrbdin.org/rddss
- RDDSSTechnicalHelp www.rrbdin.org/subbasin-reports
- Designated Use Information: www.pca.state.mn.us/water/tmdl/tmdl-publications.html
- KML (Google Earth) file generation http://riverwatch.wq.io/

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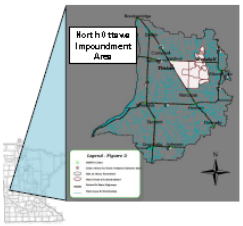
Poster Development Timeline:

February 25th --1st draft due to danni@iwinst.org
February 26th – 27th IWI staff review of posters.
March 1st – Comments sent back to schools.
March 11th -- final draft due to danni@iwinst.org for printing.

North Ottawa Impoundment

Introduction:

The North Ottawa Impoundment is a project in Grant and Otter Tail counties. It is a series of ditches, dikes and water holding areas designed to store runoff water. The stored water is released through controlled outlets into Judicial Ditch (JD) #2 and JD12 where it eventually drains into the Rabbit River. Construction of the project began in 2004 and was first put into use in 2010.



Affected Area

The Impoundment affects up to 75 square miles of the Rabbit River Watershed.

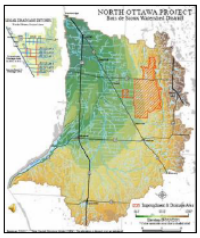


Photo by Janssen Photography

Campbell-Tintah School

430 Connecticut Ave.
P.O. Box 8
Campbell, MN 56522
(218) 630-5311
www.campbell.k12.mn.us

Project Need

Flooding is a big problem in the area around the North Ottawa Impoundment. 10 to 15 square miles of farmland, the Wahpeton/Breckenridge urban area, and several farmsteads flooded frequently. There was also a loss of wildlife habitat due to intense agricultural activities.

Implementation Steps and Challenges

Construction on the project began in 2004. The biggest hurdle was funding. The total cost for the project was between 19 and 20 million dollars. 75% of the money needed came from state funds; the remaining 25% was funded by the Bois de Sioux and the Red River Watershed Districts. Permits were obtained from the DNR, the WCA, and the Army Corps of Engineers. Several meetings were held to get local farmers, land owners, and townships to agree and support these plans. Since the new impoundment would go over existing roads, new roads needed to be made to replace the existing ones. The impoundment was first put into use in 2010.

Project Goals

- Decrease Downstream Flooding
- Water Quality Improvement
- Increase Agricultural Production
- Decrease in Drought Damage
- Habitat Enhancement

Conclusion:

The impoundment is very beneficial to our area by helping to reduce flooding, maintaining downstream flow, improving the water quality, and providing a habitat for wildlife. It was made possible through efforts of the Red River Watershed Management Board, the State of Minnesota, the Bois de Sioux Watershed District, the U.S. Fish and Wildlife Service, and the Minnesota Department of Natural Resource. Impoundments such as these could be very beneficial to many other areas of our state and country as well.

Members

Dylan Hensch 11th
Brandon Meyer 10th
Alex Viger 11th
Skylar Niesche 10th
Taylor Wiertzema 10th
Faith Goettle 9th
Eli Christensen 9th
Advisor: Mr. Mayeda

"Support for the River Watch Program is provided by the State of Minnesota, Minnesota Clean Water Fund, Minnesota Pollution Control Agency and the Red River Watershed Management Board."

Drought Planning and Water Management in the Rabbit River Sub-Watershed

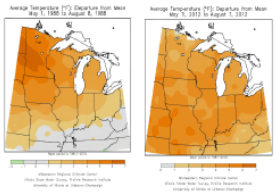
Campbell-Tintah River Watch
Bois de Sioux Watershed
March 20, 2013

Drought Planning Tool

A drought is a prolonged period of abnormally low precipitation. Our drought planning area was at a station on the Red River by Wahpeton, ND. The hydrograph below shows a comparison of the droughts of 2012 and 1988. Stream flows in 2012 were at most times significantly higher than those of 1988. Only once, in the month of March, did the flows for this site in 1988 read higher than the 2012 flows. Our readings for 2012 peaked at 2,670 cfs in the month of April. The forecasted monthly stream flow has a decile rating of 10, meaning really high above of a drought: 217% departure from normal.

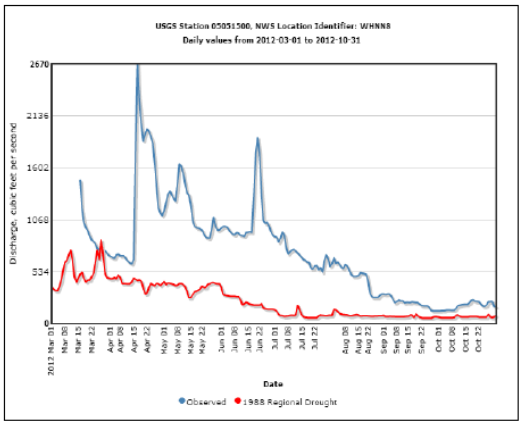
Indices are ratings based on drought likelihood. They are measured in 10% brackets (deciles 1, 2, 3 Etc.) 100% being the highest above of a drought. With this information we make the conclusion that the drought index of 1988 is higher rated than the drought index of 2012. Shown below, the recorded flows of 1988 are significantly lower than the readings of 2012.

This information can be useful to a drought planner in many ways. Drought planners can use this information to forecast drought patterns for future years. This information can be used by farmers and other people in the community.



UTZWC means Upper Tension Zone Water Content. It is the amount of water available for plant uptake.

Drought planners can use this information to forecast drought patterns, e.g. to advise farmers on the choice of crops to plant the coming season.



Designated Use Support

The Campbell-Tintah River Watch Team monitors 11 sites on the Rabbit River and ditches that drain into it. Some of the parameters we measure are dissolved oxygen, water clarity, and pH.

AM State Standards

Dissolved Oxygen (DO)
- at least 5 mg/L
- 5 sites met state standard

Turbidity
- less than 25 NTRUs
- 0 sites met state standard

Secchi tube
- greater than 20 cm
- 1 site met state standard

pH
- between 6.5 and 8.5
- all sites met state standard

Site ID	No. of DO Samples	% of DO samples <5 mg/L	No. of Turbidity samples	% of Turbidity samples >25 NTRUs	No. of Secchi Tube samples	% of Secchi Tube samples <20 cm	No. of pH samples	% of pH samples 6.5-8.5
BHS27	59	12%	58	53%	44	43%	60	2%
RAB5F	40	28%	40	63%	39	28%	40	5%
BHS31	15	33%	15	67%	15	87%	15	0%
BHS30	68	11%	45	33%	61	34%	61	7%
BHS29	51	6%	33	12%	49	12%	51	0%
BHS44	57	19%	37	11%	57	7%	57	0%
BHS51	69	1%	49	59%	69	59%	69	3%
BHS37	90	2%	48	50%	38	47%	48	0%
WHKD9	41	5%	39	18%	37	16%	37	3%
BHS28	35	5%	35	29%	34	29%	35	6%
RAB1A	29	14%	30	70%	28	79%	29	0%

Other Activities

2013 River Watch Forum Planner

*****Thursday, March 14th – Online Registration Deadline*****

Wednesday, March 20th RW Forum at UofMN-Crookston

8:30 Registration & Display Viewing
9:30 Opening Assembly~Welcome
2:30 Adjournment

Parking: It will be spring break on the UMC campus thus all parking lots are available to use. Parking Lot A is recommended for convenient access to Forum activities. Campus map at http://www1.crk.umn.edu/prod/groups/crk/@pub/@crk/documents/content/crk_content_369822.pdf

Refreshments: A continental breakfast during registration/setup and noon meal will be provided.

On-site Registration will begin at 8:30 a.m. with opening ceremonies beginning promptly at 9:30.

PRE-REGISTRATION and Concurrent Sessions:
Concurrent sessions will **REQUIRE EVERYONE TO PRE-REGISTER YOUR SESSION CHOICES ONLINE**. Teachers, please distribute the online registration link, http://riverwatch2013.eventbrite.com to everyone from your team who will be coming to the Forum. Review the description of concurrent sessions and grid showing the schedule in this planner. Your RW team can split up and choose which sessions are of interest to individual members. Select just ONE entry from within each of the four session groups by clicking on "1" in the "quantity" box of the entry you wish to attend. The sessions will be filled on a "first come-first served" basis and will not let you register once it is filled, so please register as soon as possible to better ensure you get into the sessions you most desire. When you arrive your name tag will include the schedule of concurrent sessions for you to attend for the day.

Posters: Posters will be judged for both **People's Choice** and **Judges Choice**—with three prizes given for each method. For "People's Choice"—each RW team will be given two ballots to use for selecting their choices for best posters which will be tallied with ballots by the public at large. For Judges Choice—teams of judges will review each poster and visit with RW team representatives. RW teams are asked to have 2 students at your poster to provide a brief (1-2 minutes) oral introduction and highlights of your team's activities. A schedule will be provided of time slots when you can expect your poster to be judged and thus when the two students should be available at your poster. A 1-2 page handout or brochure that summarizes your monitoring program and results should be available at your poster (minimum of 30 copies recommended—these are good to use for general public marketing as well).

Watershed Awareness (Communications) Award: The Red River Basin Commission will present award(s) to schools that have shown leadership in raising watershed awareness through communications and public engagement. Details and entry instructions were emailed to schools on 3/6/13. Send entries and any questions to Joe Courneya at joe@redriverbasincommission.org. **Entries due by 4:00 p.m., Thursday, March 14, 2013**.

All for now. Looking forward to an exciting Forum! If you have any questions, contact Wayne Goeken at wrg@gvtel.com / 218-574-2622 or Danni Halvorson at danni@iwinst.org / 218-280-0515.

See you at the Forum!

International Water Institute presents 18th Annual

River Watch Citizen Monitoring Program

Red River Basin River Watch Forum ~ 2013

Wednesday, March 20, 2013
University of Minnesota-Crookston Campus

8:30 Registration. Set-up Displays. Continental Breakfast. (Bede Conference Center)

Posters from each River Watch team in Bede Conference Center for viewing throughout the day

9:30 Welcome-Bede Conference Center: Charles Fritz, Executive Director-International Water Institute

9:40 Red River CSI ~ Field Data Sheet Challenge: Danni Halvorson, IWI

10:00 River Watch in the Red River Basin:
North Dakota ~ Prairie Waters Education and Research Center
Manitoba ~ South Central Eco Institute

10:15 Lake Winnipeg Challenges and Opportunities ~Karla Zubrycki, Project Officer-International Institute for Sustainable Development

10:45 Announcements and First Door Prize Drawings

11:00 First Concurrent Session

11:30 Second Concurrent Session

12:00 Lunch (Brown Dining Hall) and Display Viewing and Voting

1:00 Third Concurrent Session

1:30 Fourth Concurrent Session

2:00 Awards ~ Recognition of Excellence for Schools and Partners
Final Door Prize Drawings ~ Parting Thoughts

2:30 Adjournment

~Public Welcome ~

InternationalWaterInstitute
Flood research and watershed education for the Red River Basin

CLEAN WATER LAND & LEGACY AMENDMENT

2013 River Watch Forum Concurrent Session Descriptions:

River Watch Posters: View and Vote~ Learn about the health of other rivers in the Red River Basin. River Watch team posters feature their latest monitoring results and research related to the Red River Basin. Vote on best displays. **Evelyn Ashiamah**-International Water Institute (Bede Ballroom, limit 50/session)

River Explorers~ Get ready to explore your local rivers by kayak. Document your trip with waterproof geotag cameras, trip logs, and new river apps. Trip options and planning needs will be covered. Share your paddling experiences and ideas. **Asher Kingery**-International Water Institute (Student Center, limit 25/session)

Stream Table~Build a river and see first-hand "how rivers work." Explore impacts of stream flow, erosion, sediment deposition and land use. Figure out where the fast and deep waters run. **Karen Terry**-Univ. of MN Extension Water Educator (Northern Lights Lounge, limit 20/session)

Teachers Talk: River Watch 2013~Overview of options and involvement opportunities for RW schools including challenges and barriers to program implementation. Educator input on 2013 Summer Teacher Training sessions and more. **Danni Halvorson**- IWI/ (Dowell H 200, limit 20/session)

Minnesota Conservation Corp of Minnesota and Iowa~Learn about youth involvement opportunities in outdoor conservation and environmental education. Opportunities for volunteers, internships, and jobs in the natural resource field. **Andrew Ulven,** Minnesota Cons. Corp of MN/Iowa (Dowell H 200, limit 25/session)

Stressor ID: Reading the River~Every river system has unique factors that affect water quality. Learn what to look for, how these factors affect water quality, and how to document field conditions. **Bruce Paakh**- MN Pollution Control Agency and **Dave Friedel**- MN Dept. of Natural Resources (Dowell H 206, limit 25/session)

Red River Fisheries~The Red River and its tributaries provide trophy catfish and a variety of other excellent fishing opportunities. Pick up some fishing tips and river stories from Red River fishing guide and retired NDSU Natural Resource Economics professor **Jay Leitch**. (Dowell H 206, limit 25/session)

Watershed Science goes MOBILE~ Smartphones, mobile tablets and mobile laptops are increasingly being used in the field to collect and share experiences. Learn about current applications of the mobile environment, explore several apps. that are fun and functional. **Joe Courneya**- Red River Basin Commission; **Jacob Fatz** and **Kristopher Donner**-4-H GIS/ Mobile learning specialists. (Dowell H 220, limit 20/session

Geo-Spatial Collaborative Lab~See how multi-touch large format displays are used to manage and investigate geographic data. Experience the latest technology in interactive geo-spatial information systems and the future of collaboration and decision support. **Mark Gill**-UofMN-Crookston Math, Science, and Technology Dept. (Dowell 212A, limit 20/session)

River Watch Jeopardy~It's BACK by popular demand. Come and match your watershed knowledge with fellow students. We'll give you the answer—you tell us the question! **Dan Olson**-Minnesota Pollution Control Agency (Dowell H 225)

Show us Your Mussels~Clams, mussels…whatever you call them, offer another biological perspective on the health of our rivers. Learn about their life cycle and what species you might find in your local waters. **Brett Jasperse**-Bemidji State University Aquatic Biology Program (Dowell 308, limit 20/session)

Healthy Watersheds-Making Connections~How is personal health and well-being connected to watershed health? Help tell the story of your watershed's health. Explore video production and social media sharing options. **Karla Zubrycki**-International Institute for Sustainable Development (Dowell 207, limit 25/session)

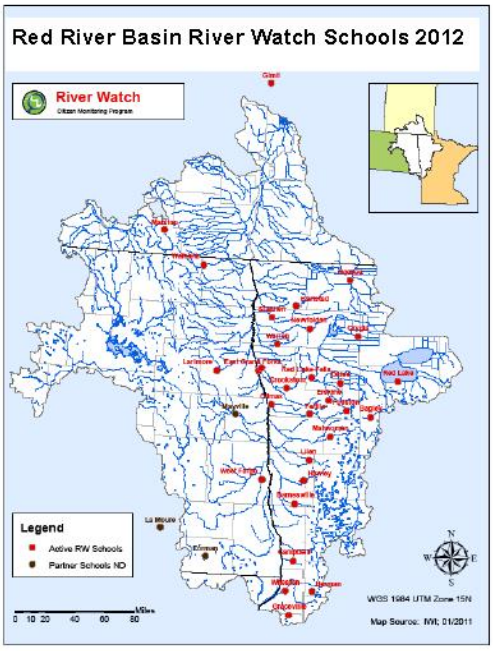
River Watch Forum ~ March 20, 2013 Univ.of MN Crookston

	Bede Ballroom	Student Center	Northern Lights Lounge	Dowell 200	Dowell 206	Dowell 220	Dowell 212A	Dowell 225	Dowell 207	Dowell 308
Sesn 1 11:00	RW Posters View & Vote Evelyn Ashiamah 30	Red River Explorers Paddling Program Asher Kingery 25	Stream Table Karen Terry 20	Teachers Talk Danni Halvorson 25	River Stressor ID B.Paakh & D.Friedel 25	Mobile Science~ Apps + Joe, Jacob, and Kris 20	Geo-spatial Collaborative Lab Mark Gills 20	RW Jeopardy Dan Olson 25		Show us Your Mussels Brett Jasperse 20
Sesn 2 11:30	RW Posters View & Vote Evelyn Ashiamah 30	Red River Explorers Paddling Program Asher Kingery 25	Stream Table Karen Terry 20	MN Cons Corp of MN & IA Andy Ulven 25	Red River Fisheries Jay Leitch 25	Mobile Science~ Apps + Joe, Jacob, and Kris 20	Geo-spatial Collaborative Lab Mark Gills 20	RW Jeopardy Dan Olson 25	Healthy Watersheds ~Making Connections Karla Zubrycki 25	Show us Your Mussels Brett Jasperse 20
12:00 Noon	Lunch-Brown Dining Hall Posters—View and Vote, Bede Ballroom									
Sesn 3 1:00	RW Posters View & Vote Evelyn Ashiamah 30	Red River Explorers Paddling Program Asher Kingery 25	Stream Table Karen Terry 20	Teachers Talk Danni Halvorson 25	River Stressor ID B.Paakh & D.Friedel 25	Mobile Science~ Apps + Joe, Jacob, and Kris 20	Geo-spatial Collaborative Lab Mark Gills 20	RW Jeopardy Dan Olson 25		Show us Your Mussels Brett Jasperse 20
Sesn 4 1:30	RW Posters View & Vote Evelyn Ashiamah 30	Red River Explorers Paddling Program Asher Kingery 25	Stream Table Karen Terry 20	MN Cons Corp of MN & IA Andy Ulven 25	Red River Fisheries Jay Leitch 25	Mobile Science~ Apps + Joe, Jacob, and Kris 20	Geo-spatial Collaborative Lab Mark Gills 20	RW Jeopardy Dan Olson 25	Healthy Watersheds ~Making Connections Karla Zubrycki 25	Show us Your Mussels Brett Jasperse 20

RIVER WATCH

Rigor ~ Relevance ~ Relationships

Red River Basin River Watch engages youth in scientific monitoring of local rivers and streams; analysis and reporting of conditions; and development of critical thinking skills and working partnerships to identify actions needed for sustainable watersheds and communities.



Red River Basin Monitoring Network

Data ~ Information ~ Action

A local, tribal, regional, state and federal water quality partnership

2013 Red River Basin River Watch Forum

Wednesday, March 20th, 2013

University of Minnesota—Crookston

Sponsored by:

Red River Watershed Management Board

CLEAN WATER LAND & LEGACY AMENDMENT

International Water Institute

Flood research and watershed education for the Red River Basin

2013 Red River Basin River Watch Forum Agenda

8:30 Registration/Display Viewing ~ Bede Ballroom-2nd floor Student Ctr
9:30 Welcome & Opening Remarks
9:40 Red River CSI ~ Bede Ballroom
10:00 River Watch in the Red River Basin
North Dakota—Prairie Waters Education & Research Center
Manitoba—South Central Eco Institute
10:15 Lake Winnipeg Challenges and Opportunities ~ Karla Zubrycki, International Institute for Sustainable Development
10:45 Announcements and Door Prizes

11:00 Track 1 Concurrent Sessions (listed below)
11:30 Track 2 Concurrent Sessions (listed below)

12:00 Lunch-Brown Dining Hall **River Watch Displays**-Bede Ballroom

1:00 Track 3 Concurrent Sessions (listed below)
1:30 Track 4 Concurrent Sessions (listed below)

2:00 Awards ~ Recognition of Excellence for Schools and Partners

2:30 Adjournment

~ ~

Concurrent sessions

Poster Display View and Vote ~ E.Ashiamah ~ Bede Ballroom
Red River Explorers Paddling ~ A.Kingery ~ UMC Student Center
Teachers Talk ~ D.Halvorson ~Dowell 200
Conservation Corp of MN & IA ~ A.Ulven ~ Dowell 200
River Stressor ID ~ B.Paakh & D.Friedel ~ Dowell 206
Red River Fisheries ~ J.Leitch ~ Dowell 206
Mobile Science Apps ~ J.Courneya, J.Fatz & Kris Donner ~ Dowell 220
Geo-Spatial Collaborative Lab ~ M.Gills ~ Dowell 212A
River Watch Jeopardy ~ D.Olson ~Dowell 225
Healthy Watersheds ~ K.Zubrycki ~ Dowell 207
Show us your Mussels ~ B.Jasperse ~ Dowell 308

"A river is the report card for its watershed."
(Alan Levere, Connecticut Department of Environmental Protection)

THANK YOU
River Watch Forum Sponsors!

NW MN Regional Sustainable Development Partnership
University of Minnesota Crookston Natural Resources Dept.
Red River Basin Commission
Houston Engineering, Inc.
Moore Engineering
HDR Engineering
North Dakota Department of Health
Minnesota Pollution Control Agency ~ Detroit Lakes
Red River Watershed Management Board
RMB Environmental Lab, Inc.

2013 Forum Presenters and Volunteers-THANKS!

Karla Zubrycki, International Institute for Sustainable Development
Bruce Paakh, Minnesota Pollution Control Agency
Dave Friedl, Minnesota Department of Natural Resources
Jay Leitch, Red River Fishing Guide/NDSU Resource Economist
Mark Gills, UofMN-Crookston Math, Science & Technology
Brett Jasperse, Bemidji State University Aquatic Biology
Andrew Ulven, MN Conservation Corp of Minnesota & Iowa
Joe Courneya, Red River Basin Commission
Jacob Fatz, 4-H GIS/Mobile Learning Specialist
Kristopher Donner, 4-H GIS/Mobile Learning Specialist
Dan Olson, Minnesota Pollution Control Agency
Asher Kingery, International Water Institute
Katy Smith, UofMN-Crookston Math, Science & Technology
Roxanne Johnson, North Dakota State University Extension Service
Tanya Billberg, Red Lake Soil & Water Conservation District
Grit May, International Water Institute
Jan Kaspari, Marshall County Water and Land Office
Derek Crompton, Pioneer Hi-Bred International Inc.
Lisa Newton, Marshall-Beltrami Soil & Water Conservation District
Heidi Hughes, Agassiz Audubon of the Northwoods
Danni Halvorson, International Water Institute
Evelyn Ashiamah, International Water Institute
Laura Bell, UofM-Crookston Natural Resources Department
Wayne Goeken, International Water Institute

2013 Red River Basin River Watch Forum Evaluation

Based on Survey Monkey survey sent to all participants who registered on-line.

Sessions:

1. How would you rate this year's range of session topics?
   - Disappointed the stream table wasn't available
   - Excellent presentations!
   - 1. Luther Aadland on rip-rapping dams, effects, etc (perhaps he has already spoken at River Watch. 2. The mussel session was excellent; something along those lines (e.g. biology/id of lesser known fishes in the Red River drainage (e.g madtoms, goldeyes, etc) 3. I heard several speakers say the Red River is very clean, just silty as it always has been. IF that is the case, why is there a growing"dead zone" in Lake Winnipeg? There must be other inputs into the river besides silt.

2. How would you rate the sessions that you attended?
   - Jay Leitch was the highlight of the whole event. He was so up beat and funny i wanted to find out more and more. What a great speaker!
   - All breakout sessions and group session: 1. Please dim lights when using power points, at least over the projection screens. It is so difficult to see detail in images when there is competition from overhead lighting and filtered light from windows. 2. My personal pet peeve: "You guys". At least one half of the audience members are of the female persuasion. Presenters should either use gender-neutral terms (young scientists, you folks, students, etc.) OR try acknowledging both genders instead of a generic "you guys". 3. No Styrofoam!
   - Yesterday's River Watch Forum was one of the best ones I have been to so far! The sessions were a lot more interesting and more interactive than last year. I really liked the Geo-Spatial Collaborative Lab by Mark Gill and I thoroughly enjoyed Red River Fisheries by Jay Leitch. Red River Fisheries was my favorite because he was funny and had very interesting stories! I know a lot of my other classmates and even my River Watch adviser, Karen Thoreson enjoyed his session. This being my senior year, I hope that he will speak at future River Watch Forums for students that are interested.
   - Fascinating computer stuff in the geo-spatial lab
   - I would have liked to take in more.
   - With the mussel ID you hit a daily double; you gave a young person with interest and passion in this subject a chance to speak and teach in front of numerous groups.
   - I had excellent experiences at the ones I went to. I thought they were appropriate and well done.

3. Was the amount of time at a session appropriate? 93% indicated it was about the right amount of time.
   - Stressor ID needed more time
   - The teacher session could have been longer. It was a great time to share. We still got some excellent things done however.
   - Fisheries

4. Please provide feedback on the large group sessions:
   - See above comments about lighting. Otherwise, great keynote address!
   - Perhaps a short Power Pt on other parts of the world aand what so many humans go through each day to get water for drinking, cooking, bathing, etc. We are in such a "water rich" part of the world I fear we do not understand how important water is to the planet.

5. Poster Presentation and Judging: Please provide feedback on the following:
    - Overall a very good experience.
    - The poster requirements were well mapped out. The students should have a better idea of the information they should present. Kids don't get it when you say "present your information". This is a way for them to learn what that means and what is expected in these types of presentations since they aren't done that often in the classroom. I noticed the judges looked like they have a sheet they were using to grade them.... the students should see those prior to the forum. It is like taking a test that you don't have a clue what to study, or what the teacher finds most important. Maybe try giving a grade instead of awards for the "best". If they don't win, the kids just know that they lost and not exactly how to improve for next year since each year's poster assignment is different.
    - It's a challenge every year to do the poster but I sure like how uniform they are and I also like the fact that on Forum day we don't really have anything to do...it's all done by that time. We had questions on doing the poster but they were answered in a very timely manner.
    - Judge was cranky.

Facilities:

1. How would you rate the facilities and food at UMC?
    - Eliminate as much disposable utensils and "dishes" as possible. Seemed to be too much trash created for an environmental event.
    - This has really improved over the years. UMC/IWI does a good job with this.
    - Very well done.

2. How would you rate the pre-Forum planning and online registration process?
    - Excellent!
    - I thought it was okay. It is good to have kids register ahead of time.
    - More lead time for registration would be good. Be sure that presenters get registered so they have name tags
    - I liked the online registration.

6. Please share any other comments you have about the River Watch Forum or the Red River Basin River Watch program in general:
    - Great effort, great talks, keep it up!
    - Had a lot of fun this year!
    - Danni asked for teacher input during our teacher's session. Will send examples of what I mean about grading presentation/posters.
    - The support from many agencies is great to see.
    - I think the Forum is a good idea and I like the present format. River Watch is an important part of our school and we will always do it. We need to get better at some of the other aspects like snow studies but we will.

1. How many years have you personally been involved in River Watch? Create Chart Download

	Response Percent	Response Count
First Year	23.1%	6
2-4	57.7%	15
5-9	7.7%	2
10+	7.7%	2
NA	3.8%	1

2. How many Red River Basin River Watch Forums have you attended? Create Chart Download

	Response Percent	Response Count
1	26.9%	7
2-4	61.5%	16
5+	11.5%	3

3. If you are a teacher or administrator, did the date of the Forum conflict with other activities at your school that precluded some students from attending? Create Chart Download

	Response Percent	Response Count
Yes	15.0%	3
No	40.0%	8
NA	45.0%	9

- Our Sacred Sounds Concert was that night.
- Not this year. Each year is different.

4. How important is the River Watch Forum to you and your school as part of your participation in the River Watch program? Create Chart Download

	Response Percent	Response Count
Not important	0.0%	0
Important	46.2%	12
Very important	38.5%	10
NA	15.4%	4

1. I am a:		Response Percent	Response Count
Student		65.4%	17
Teacher		23.1%	6
Administrator		0.0%	0
Resource Manager		7.7%	2
Other		3.8%	1

2. I am:		Response Percent	Response Count
female		53.8%	14
male		46.2%	12

4. I am		Response Percent	Response Count
8th grader		0.0%	0
9th grader		23.1%	6
10th grader		7.7%	2
11th grader		0.0%	0
12th grader		34.6%	9
20-35 yrs		11.5%	3
36-50 yrs		11.5%	3
>50 years		11.5%	3

2013 River Watch Forum Teacher Session Summary – Danni Halvorson, IWI

As part of the annual River Watch Forum held on March 20, 2013 a working session was held to get input from River Watch Educators. This session was voluntary and educators chose to attend by their own accord. The International Water Institute (IWI) currently has 30 Minnesota schools involved with educational programs and of these 30 schools, 12 educators chose to be involved with this session.

The session was led by IWI Director of Education, Danni Halvorson. He reviewed with participants IWI's Watershed Education goals, learning program opportunities, and led a group activity designed to get educator feedback on IWI's educational programming.

Educators were divided into two groups and were posed questions relating to challenges and barriers to implementing the activities associated with River Watch and what they like (What works?) and what they dislike (What can IWI do better?). Challenges were defined as things that are difficult but can be overcome and barriers as things that may potentially become program show stoppers. The educators worked for twenty minutes total. Ten minutes each on the challenges and barriers, and program likes and dislikes. All of the written feedback provided by the educators is listed below.

River Watch Program Challenges:

- Student motivation – Group 1
- Website/data entry – Group 1
- Student/teacher time – Group 1
- Students are pulled in many directions – Group 2
- Student retention of material from year to year – Group 1
- Teachers are doing this (almost unanimously) on a volunteer basis – Group 2

River Watch Program Barriers:

- Kids' time and educational background – Group 2
- Doing everything River Watch has to offer – Group 1
- Expectations are technically too high for Posters – Group 2

Likes – What Works?

- Support from Watershed Districts, SWCDs, and UMC – Group 1
- Poster – nice to have it all ready to go at the Forum – Group 1
- Designated Use Assessments for Poster – Group 1
- Project highlight section of Poster – Group 1
- Kayak/canoe trips to all sites – Group 2
- IWI, SWCD, and Watershed staff really great with students – Group 2

Dislikes – What can IWI do better?

- Snow study – need more training by IWI staff – Group 2
- Snow Study - probes and equipment need to be improved. – Group 2
- Fall Kick-Offs – provide training for students – Group 1
- Fall Kick-Offs - Do hands on training (e.g. Sondes) and less power points – Group 1