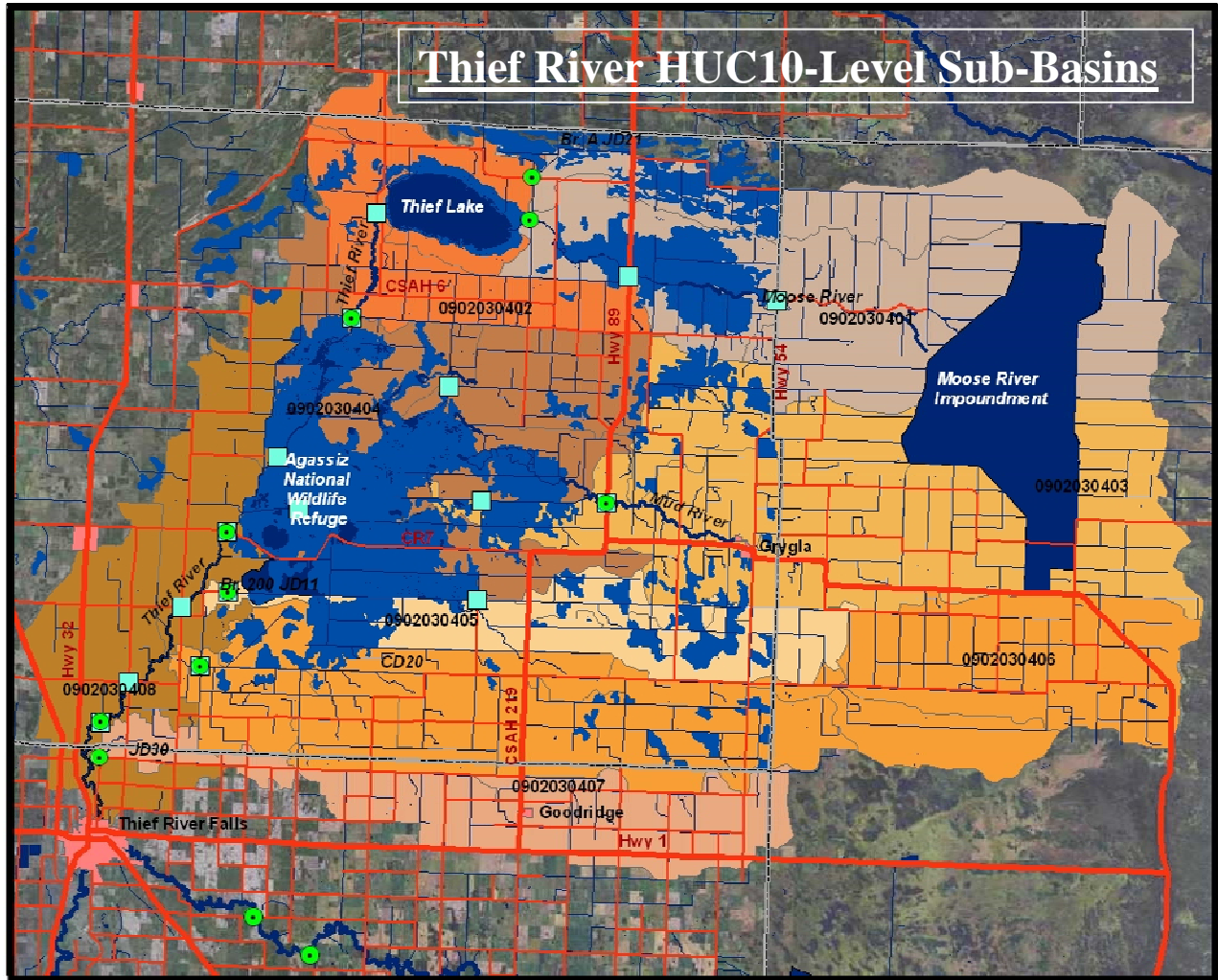


By: Corey Hanson, Water Quality Coordinator  
For: February 9, 2012  
Red Lake Watershed District Board Meeting

### Thief River Watershed Assessment Project (Watershed-Based TMDL)

- Task 1 – Evaluation of Existing Data
  - Gathered existing water quality data from all sources and compiled it into spreadsheets for each HUC10 sub-basin of the Thief River.



- Task 4 – Biological Monitoring
  - Karsten Klimek of the MPCA sent me some photos from the biological monitoring that was completed in the Thief River watershed last summer. He mentioned that they had some good results at a couple of sites on the main stem of the Thief River. The CR7 crossing of the Thief River yielded several northern pike that weighed at least 5 pounds. They also caught 28 walleye of respectable size in that area.



- Task 5 – Stage and Flow Monitoring
  - The DNR plans to install gauges right away at the State’s event-based monitoring sites. In the Thief River watershed, this means that they will be installing gauges at the Mud River monitoring sites prior to the spring melt. They want to be able to keep track of the high flows in the spring so that they know how to time the event-based sampling runs.
- Task 6 – Stream Channel Stability Assessment
  - Exchanged Thief River geomorphology and reconnaissance photos with Dave Friedl.



- Task 8 – Watershed Modeling
  - Houston Engineering released a memorandum on the selection of flow monitoring locations for the purposes of hydrologic calibration within the Thief River watershed. Here are a couple of tables that summarize the flow data that will be used in the calibration process:

**Table 1 Available streamflow data from BASINS (USGS NWIS).**

USGS ID	USGS Station Name	Beginning Date	End Date	Data Type/Extent	Use in Model?
05076000	Thief River near Thief River Falls, MN	7/1/1909	11/14/2010	Daily Data with 2884 data points missing during 4 major periods	Yes
05075700	Mud River near Grygla, MN	7/28/1937	10/17/2011	Peak Flow and Field Measurements (32/60)	No, will use S002-078 instead
05075500	Thief River near Gatzke, MN	6/7/1954	7/5/1956	Peak Flow Measurements (3)	No, outside of modeling period

**Table 2 Available Flow Data from RLWD.**

STORET ID	Description	Beginning Date	End Date	Date Type	Used in Model?
S002-078 <sup>1</sup>	MUD R, ON MN-89 BRIDGE, 6 MI NW OF GRYGLA	7/28/1937	11/17/2011	Field Measurements (1978-2009) & Continuous Flow (open water season 2007-2009, 2011)	Y
S002-084	THIEF R ON CSAH-49 BRG, 10 MI NE OF MIDDLE RIVER	5/8/1979	11/22/2010	Field Measurements (1979-2010) & Continuous Flow (open water season 2007-2010)	Y
S002-088	THIEF R ON CSAH-7 BRG IN AGASSIZ NWR, 6 MI E OF HOLT	4/1/1978	11/16/2011	Field Measurements (1978-2007) & Continuous Flow (open water season 2007-2011)	Y
S004-047	THIEF R AT CSAH-6 CROSSING, 9.5 MI E OF MIDDLE RIVER	4/2/2007	11/17/2011	Continuous Flow (open water season 2007-2011)	Y
S004-052	THIEF R AT RANGELINE RD BRG (CSAH-12), 4.5 MI SE OF HOLT	4/14/1978	3/22/2010	Field Measurements (1978-2006) & Continuous Flow (open water season 2007-2009)	Y
S004-211	CULVERT ON MOOSE R (JD-21) ON CSAH-54, 10.5 MI NO OF GRYGLA	4/10/1978	11/17/2011	Field Measurements (1978-2009) & Continuous Flow (open water season 2007-2011)	Y
S004-493	JD#11 (BRANCH 200) AT 190TH AVE NE CULVERT XING 6 MI SE HOLT	5/9/2007	11/16/2011	Continuous Flow (open water season 2007-2011)	Y
S004-494	CD #20 AT 180TH AVE NE XING, 8 1/4 MI NE OF THIEF R FALLS	5/25/2007	11/14/2011	Continuous Flow (open water season 2007-2011)	Y
S004-495	THIEF R AT CR-44 XING, 6 1/4 MI N OF THIEF R FALLS	6/6/2007	12/1/2009	Continuous Flow (open water season 2007-2009)	Y
S004-965	JUDICIAL DITCH 30	3/31/2010	11/16/2011	Continuous Flow (open water season 2010-2011)	N, outside of modeling period
S006-540	BRANCH A OF JUDICIAL DITCH 21	3/30/2010	11/16/2011	Continuous Flow (open water season 2010-2011)	N, outside of modeling period

<sup>1</sup>Same as USGS Site 05075700



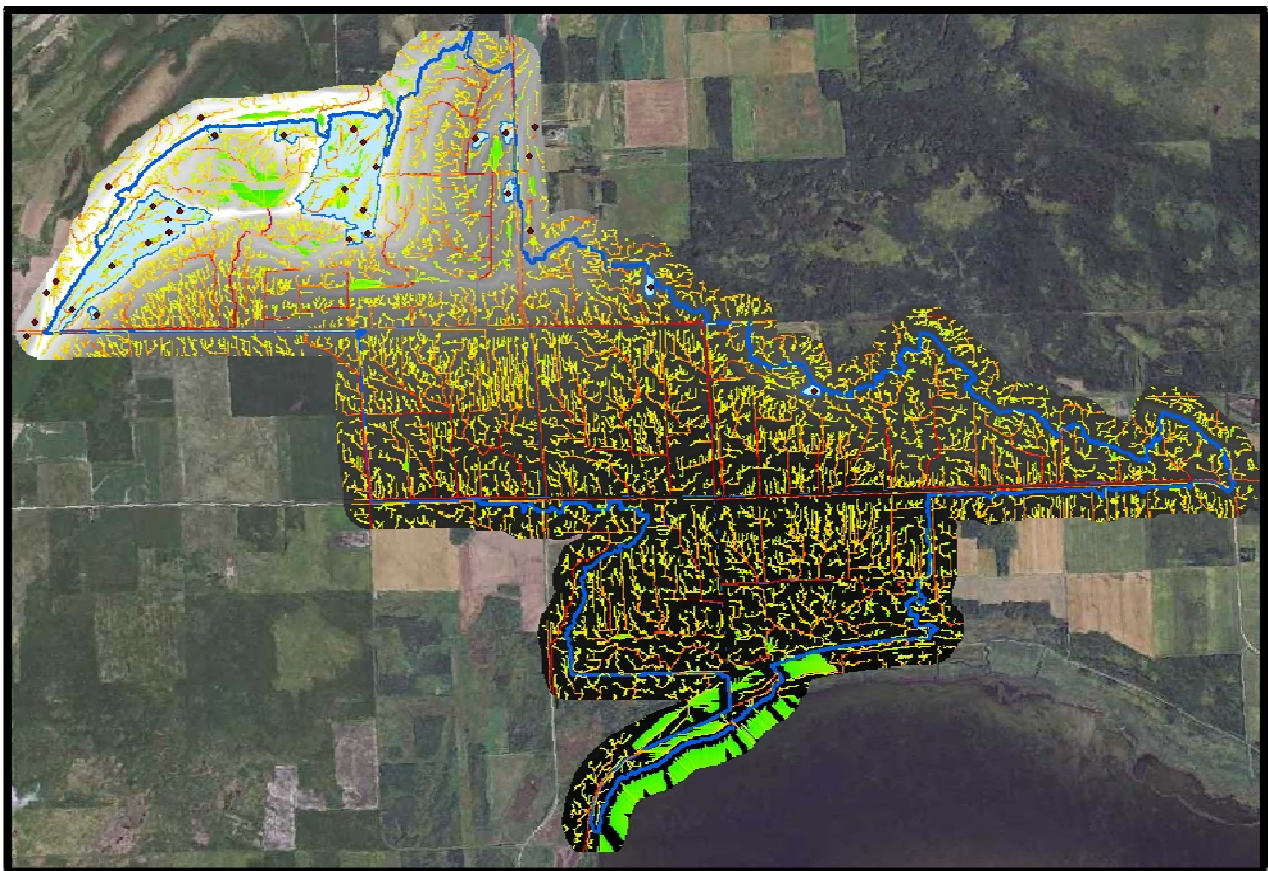
- Task 10 – Data Analysis
  - Graphs of 2011 continuous water quality data.
  - Began looking for a correlation between daily minimum dissolved oxygen concentrations and a pollutant. The best correlation so far was found between total phosphorus and dissolved oxygen.
- Task 11 – Civic Engagement
  - Created a Facebook fan page for the Red Lake Watershed District. People can click the “like” button for the RLWD page to keep up-to-date with the latest news from the watershed district.
  - Invoices from RMB Environmental Labs were paid
  - Preparation for the January 13<sup>th</sup> Stakeholders’ Project Kick-Off meeting
    - A newspaper article about the meeting was on the front page of the Thief River Falls Times. An advertisement was also placed in the paper.
    - I was interviewed by Key Teeters for KTRF radio about the RLWD water quality program, water quality in the Thief River, and the upcoming meeting.
    - I put together a Thief River fact sheet handout for the meeting.
    - Uploaded the meeting’s presentations to the RLWD FTP site so that they can be downloaded through a direct link. Links to these presentations will be featured on a future web page that is dedicated to the Thief River.
  - Lori Clark of RMB Environmental Laboratories worked on:
    - Planning the public meeting
    - Presented at the January 10<sup>th</sup> Pennington County WRAC meeting
      - Demographic study by Molly Macgregor
        - Compared to other area watersheds, the Thief River has a significantly lower high school graduation rate, but still has a higher median income.
        - More of the Thief River’s population lives in rural areas than in urban areas. It’s the other way around in other area watersheds.
        - The Thief River watershed has the lowest total population among the area watersheds that have been analyzed so far (Buffalo, Mustinka, and Sand Hill). It also has the lowest population density so far.
        - Someone mentioned that we should look at cattle operations in Benville and Spruce Grove Townships this year as part of the stressor identification process.
        - Connect with Wheat Growers Organizations, sportsman’s clubs, 4-H, Rocky Mountain Elk Association, Lanowners’ Rights Groups, and the Deer Hunter’s Association.
        - How do we reach the “weekend residents” that own land in the watersheds, but don’t live there.
      - Presenting at the January 13<sup>th</sup> public meeting
  - The Thief River Watershed Assessment Project Kick-Off Meeting was held on January 13<sup>th</sup>, 2012.

- The presentations from the January 13th, 2012 Thief River Watershed Assessment Project Stakeholders' Project Kickoff Meeting are available online. You can download the presentations from the direct links in this email. There should be some links posted on the RLWD home page sometime next week. Eventually, we plan to have a web page dedicated to the Thief River watershed Assessment Project that will chronicle the progress of the project and include links to all Thief River related material (reports, presentations, work plans, maps, etc.) A couple of these presentations are fairly large, so it may take some time for them to load.
  - Presentation by Corey Hanson, Red Lake Watershed District - History of Water Quality Monitoring in the Thief River and an Introduction to the Thief River Watershed Assessment Project:
    - [http://www.redlakewatershed.org/presentations/20120113\\_ThiefR\\_Water\\_Quality\\_CoreyH.pdf](http://www.redlakewatershed.org/presentations/20120113_ThiefR_Water_Quality_CoreyH.pdf)
  - Presentation by Dave Friedl, Minnesota Department of Natural Resources - Thief River Watershed Geomorphic Assessment
    - [http://www.redlakewatershed.org/presentations/20120113\\_Thief\\_Geomorph\\_DaveFriedl.pdf](http://www.redlakewatershed.org/presentations/20120113_Thief_Geomorph_DaveFriedl.pdf)
  - Presentation by Lori Clark, RMB Environmental Laboratories:
    - [http://www.redlakewatershed.org/presentations/20120113\\_Thief\\_Public\\_kickoff\\_Lori\\_RMB.pdf](http://www.redlakewatershed.org/presentations/20120113_Thief_Public_kickoff_Lori_RMB.pdf)
  - Fact sheet that was handed out at the meeting:
    - [http://www.redlakewatershed.org/presentations/ThiefR\\_MWRPP\\_Fact\\_Sheet.pdf](http://www.redlakewatershed.org/presentations/ThiefR_MWRPP_Fact_Sheet.pdf)
  - There also was a great article about the meeting in the Thief River Falls Times by David Hill in the following edition of the paper. Hopefully, the Times subscribers among you got a chance to read that. It was pretty well-written.
- If you didn't get a chance to do so at the meeting, you can still fill out an "I want to get involved in my watershed" sheet and mail it to the RLWD (see the end of the email for my contact information and address) if you would like to. You could also just send me an email with your contact information that lets me know what you're interested in. Here's the direct link to the "get involved" sign up sheet:
  - <http://www.redlakewatershed.org/presentations/Get%20involved%20sheets%20Thief%20R.pdf>
- Comments and questions brought up during the meeting:
  - The RLWD should investigate the source of high E. Coli readings in Branch A of JD21.
  - CD20 is passing a high bed load of sand, but there isn't much bank erosion.
  - What is the optimal rate of flow in the Moose River? At what level of flow do we get lots of erosion? Can this be factored into impoundment management? The results of the geomorphic

assessment should provide some insight into what constitutes a channel forming level of flow in the Moose River. A draft report of the results is anticipated in April 2012.

- Would more tile drainage help reduce bank erosion and sedimentation, or would it increase the duration of channel-forming flows?
  - Compared to other rivers, such as the Buffalo River and Pomme de Terre, the channels in the Thief River watershed haven't moved much over the years. So, that shows that stream channels in the Thief River watershed are fairly stable and stream bank erosion is relatively limited when compared to other rivers in the Red River Basin.
  - There are, of course, still some areas of instability and bank erosion in the Thief River watershed. In some places, spoil banks are currently adding weight and height to the streambanks, which reduces the stability of those banks.
  - Trees have a significant benefit upon streambank stability. While there can be some very small eddies washing around some larger roots, the root mass as a whole does a tremendous job of protecting the stream banks. They add roughness and slow the velocity of water next to the bank. The smaller roots literally hold onto the soil. The 11th slide in Dave's presentation shows the sharp contrast between areas that have a good wooded riparian buffer and areas that don't. The roots take a beating from high flows, but erosion is limited. Where trees have been removed, however, we see major bank failures and large rates of erosion.
  - There was some positive interest in the use of setback levees for ditches. There was some discussion about how they've been successful in other areas, such as the outlet channel of the Brandt Impoundment near Euclid, MN.
  - We should present to civic groups.
  - There was also some interest in the town hall meetings that are planned for the Mud River and Lower Thief River watersheds. We received recommendations to have the meetings in Grygla and in either the Excel or the Agder Town Hall.
  - We will also be having additional large group meetings like this one when we reach milestones in this project. We will, at the least, have another one next year at this time. In addition to the large group meeting, we may also have smaller focus group meetings in the meantime. A decent number of people have already signed up to be part of the focus group meetings.
  - In addition to donuts, cookies, and coffee, attendees were given RLWD travel mugs and pens.
- Task 12 – Identification of Sources and Solutions

- Jim Blix has been working on the terrain analysis for portions of the Upper Thief River watershed. A draft Stream Power Index analysis of an Upper Thief River sub-basin has been completed. Much of Jim's time this month has been spent on hydro-correcting the LIDAR "surface layer" of the Thief River watershed. When that is completed, it can be used for other purposes (e.g. modeling and project planning) in addition to the stream power index terrain analysis. Stream power index analysis will be completed for the sub-basins in the Thief-Lake-to-Agassiz-NWR part of the Thief River watershed. This area is being targeted by a buffer initiative that is being led by the Marshall County SWCD and funded by the Clean Water Fund. The terrain analysis results will assist the local SWCD and NRCS staff in finding specific points and flow paths on the landscape that in need of side water inlets and buffer strips. In the map below, the red lines represent the reaches with the highest stream power and potential for erosion. This is a sub-basin that drains into the northwestern side of Thief Lake. Many of the red reaches are located within the interior of a section and would not be spotted during a windshield survey of the watershed.



- Task 13 – Final Reports, Semi-Annual Reporting, and the TMDL Process
  - Submitted and invoice for December 2011 to the MPCA project manager.
  - Wrote and submitted a semi-annual report to the MPCA project manager.

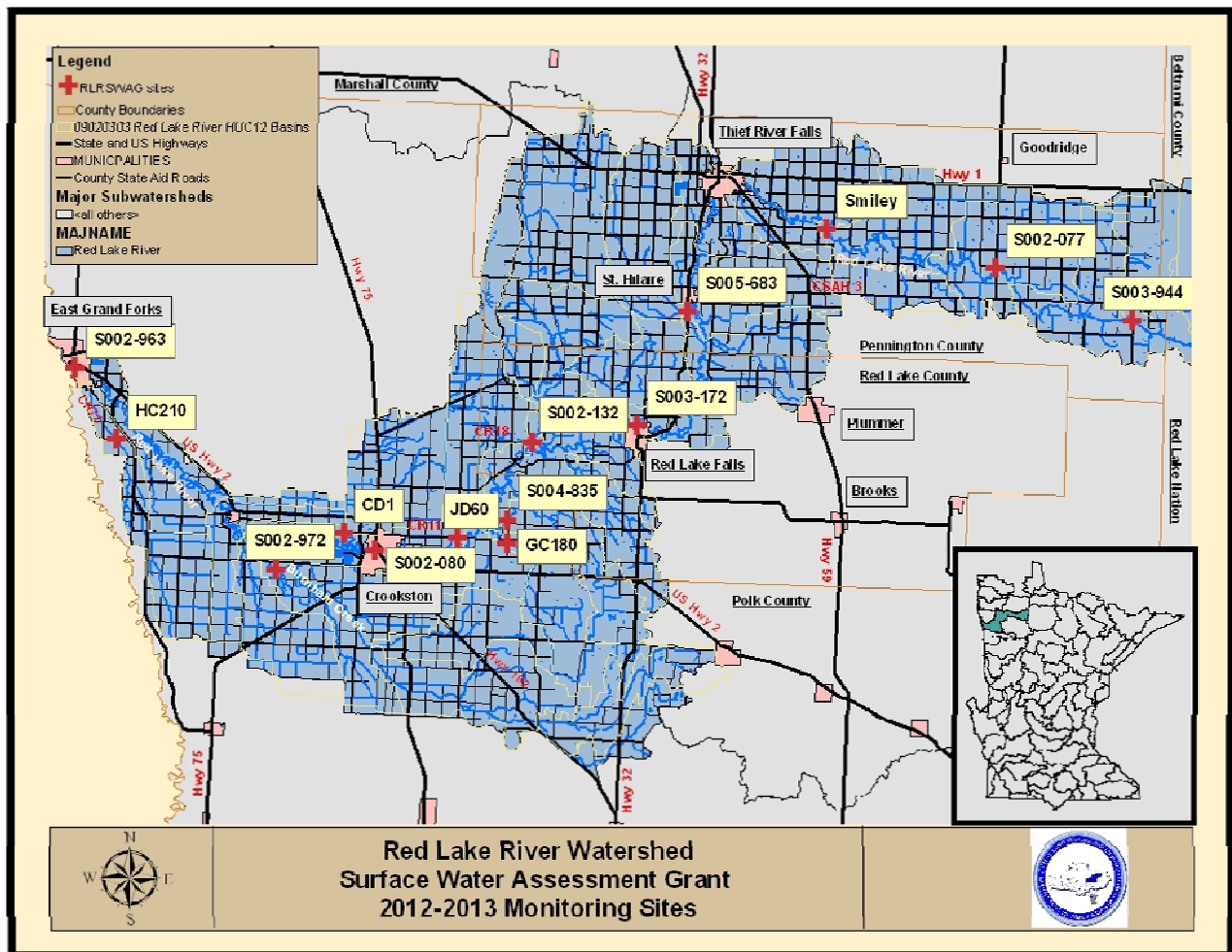


**Thief River Watershed Assessment Monitoring**

- Calibration records were entered into the MPCA's calibration reporting forms.
- An interim progress report was completed and sent to the MPCA project manager.

**Red Lake River Watershed Assessment Project (Watershed-Based TMDL)**

- Task 2 – Water Quality Sampling
  - Worked on final adjustments to the list of Red Lake River Surface Water Assessment Grant sampling sites with Scott Niemala of the MPCA.
  - Discussed the SWAG work plan with Ron Schwartz and Dana Vanderbosch of the MPCA.
  - Completed a work plan for the Surface Water Assessment Grant project and submitted it to the MPCA.





- Task 5 – Flow Monitoring
  - The DNR plans to install gauges right away at the State’s event-based monitoring sites. In the Red Lake River watershed, this means that they will be installing gauges at the Kripple Creek and Black River monitoring sites prior to the spring melt. They want to be able to keep track of the high flows in the spring so that they know how to time the event-based sampling runs.
  - Conducted an inventory of RLWD HOBO water Level Loggers. We had 30 of them and I needed to order nine more in order to collect water level data at the new Red Lake River TMDL monitoring sites. I had budgeted for ten and received a significant discount when I made the order. So, there is still more than \$1,000 left in the equipment budget for this task.
- Task 12 – Final Reports, Semi-Annual Reporting, and the TMDL Process
  - A December invoice was submitted to the MPCA Project Manager.
  - Wrote and submitted a semi-annual report to the MPCA project manager.

### **January 2012 Meetings and Events**

- **January 10, 2012** - Pennington County Water Resources Advisory Committee, 9 AM
  - TMDL Civic Engagement Presentation by Lori Clark and Molly MacGregor
  - Howard Person’s Extension report
    - Seeing more liver flukes in cattle. It comes from snails in stock ponds and other wet areas. The problem may be exacerbated by plowing up more of the well drained land and using swampier land for pasture.
    - Excel Dairy won’t be used for cows any more. It has been purchased by a construction company that will use the buildings for storage.
  - Burr Oak blight is in Pennington and Marshall Counties. It will kill trees if they are weakened by stress.
  - The Pennington County SWCD will be working on a lot of erosion control projects this year.
    - The Erickson Group erosion control project (\$77,000) is currently being planned.
    - The Lloyd Halvorson 200 foot bank protection project will be constructed this summer.
    - 10 side water inlets and a filter strip will be installed along a 4-mile stretch of CD38.
  - The Pennington County SWCD recently received a Clean Water Fund grant to address two imminent-health-threat septic systems.
  - The Pennington SWCD is in the process of hiring an engineer for the Engelstad Arena rain garden project.
  - The Pennington County Outstanding Conservationist award recipients (Dean and Naomi Hanson) also won the State award.
- **January 11, 2012** – Marshall County Water Resources Advisory Committee, 9 AM
  - The Middle-Snake-Tamarac River Watershed District’s new interactive mapping tool was demonstrated. A useful feature that could be added to our website is a way that people can click on a label (project or waterway) on the map and open a

list of links to all the documents related to that project or waterway. They also had online permit application forms that people can complete and email to the watershed district.

- The MSTRWD allows public hunting and fishing within its impoundments.
- **January 12, 2012** – Franklin Middle School Science Fair judging
- **January 13, 2012** – 10 AM until Noon – Thief River Watershed Assessment Project Kick-Off meeting at the RLWD office.
- January 23, 2012 – Red River Basin water Quality Team meeting – via Webex.
- **January 31, 2012** – First progress report for the Thief River SWAG monitoring is due.

### **Other Notes from January**

- 2012 Budgeting and planning
  - With all the projects going on, my 2012 “time budget” is overfull and there’s no room for additional projects for me this year.
- Submitted Progress reports for the Grand Marais Creek Cut Channel Stabilization project (60FF) and the CD20 Grade Stabilization project (14D).
- HOBO water level loggers will be installed at four water quality monitoring sites in the Clearwater River watershed in anticipation of the major watershed restoration and protection project that should start in 2014. Lower Badger Creek, Hill River, Ruffy Brook, and the Lost River near Gonvick are four strategic locations for TMDL-based monitoring that are in need of continuous flow records. Flow monitoring will continue at Silver Creek, another important stream in the Clearwater River watershed.

### **Plans for February 2012**

- 2011 Annual Report
- Red Lake River and Grand Marais Creek Surface Water Assessment Grant (SWAG) contract approval and Quality Assurance Project Plan (QAPP)
- Sonde maintenance
- Thief River Watershed Assessment Project.
  - Complete a report on the existing data that is available for the watershed.
  - Jim Blix will continue working on terrain analysis to identify potential erosion areas throughout the watershed.
  - Create a webpage dedicated to the Thief River
  - TMDL report and protection plan outlines
- Red Lake River Watershed Assessment Project
  - Complete a report on the existing data that is available for the watershed.
  - Work with Lori Clark to plan a project kickoff meeting.
  - Create a webpage dedicated to the Red Lake River

**Future Meetings/Events**

- **February 1, 2012** - BWSR CWF Grant semi-annual progress reports are due.
- **February 1, 2012** - MPCA Thief River Watershed Assessment Project semi-annual progress report is due.
- **February 1, 2012** – Thief River Watershed Buffer Initiative meeting, 10:00 AM, RLWD
- **April 3, 2012**, - Pennington County Water Resources Advisory Committee, 9 AM
- **August 1, 2012** – BWSR CWF Grant semi-annual progress reports are due.
- **August 1, 2012** – MPCA Thief River Watershed Assessment Project semi-annual progress report is due.
- **January 31, 2013** – The second progress report or final report for the Thief River SWAG monitoring is due.
- **February 1, 2013** - BWSR CWF Grant semi-annual progress reports are due.
- **February 1, 2013** - MPCA Thief River Watershed Assessment Project semi-annual progress report is due.
- **June 30, 2013** – Expiration of the Thief River Watershed Assessment Project Contract.
- **June 30, 2013** – Expiration of the Red Lake River Watershed Assessment Project – Phase I Contract.
- **June 30, 2013** – Final report for the Thief River SWAG grant is due
- **July 30, 2013** – Due date for the final progress report and final invoice for the Thief River Watershed Assessment Project
- **July 31, 2013** – Final payment request for the Thief River SWAG is due.