

### **Grand Marais Creek Watershed Restoration and Protection Project**

The Grand Marais Creek Watershed Restoration and Protection project began in February of 2013. \$123,400 in Clean Water, Land, and Legacy funds will be used by the Red Lake Watershed District and Emmons and Oliver Resources, Inc. (EOR) to complete the first phase of the project.

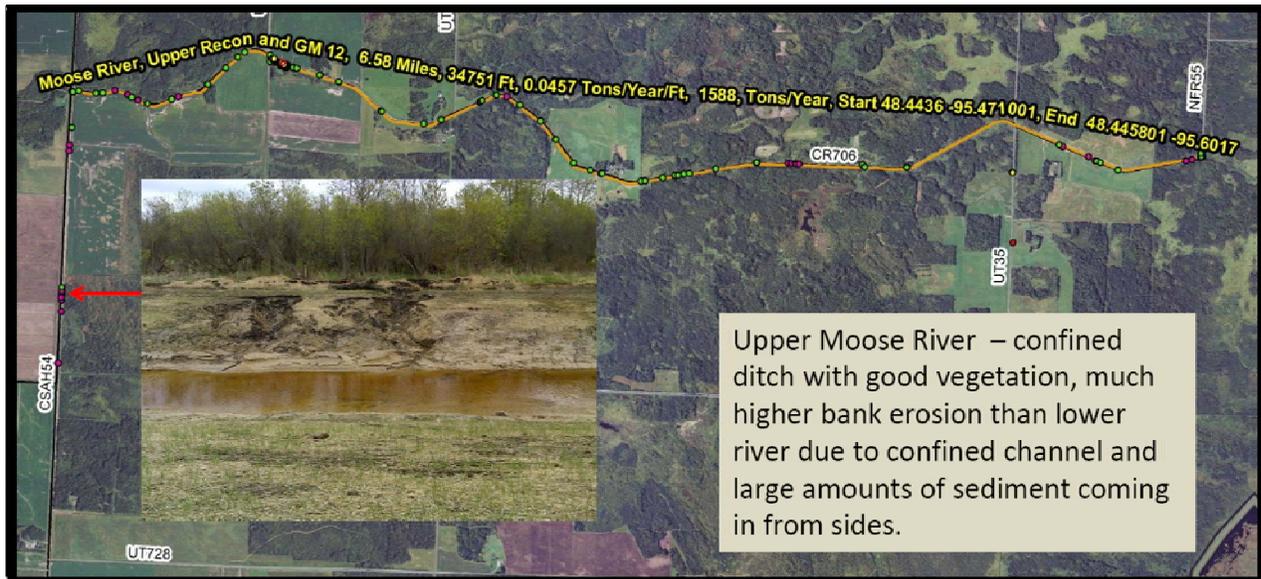
Some progress has been made toward gathering existing flow, water quality, and biological data and planning a public meeting for the project. A list of stakeholders was compiled and a public meeting has been scheduled for **April 18<sup>th</sup>, 2013 at 1:00 p.m.** at the conference room in the **East Grand Forks Cabela's store.**

The Grand Marais Creek SWAT modeling report produced by the Energy and Environmental Research Center has been reviewed by both the RLWD and Emmons & Oliver Resources.

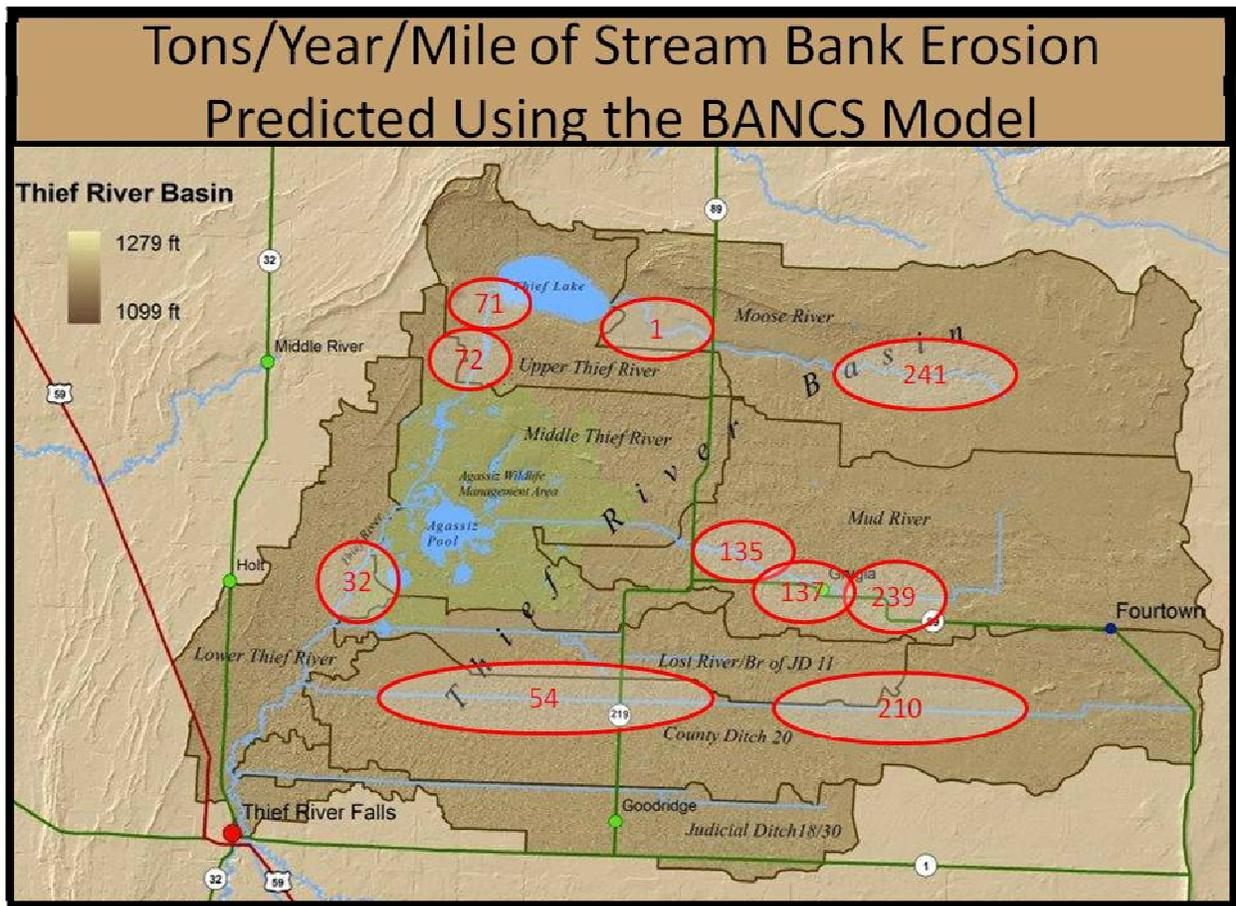
The RLWD provided EOR with 2006-07 flow and turbidity data that was collected in the Polk County Ditch 2 watershed as part of some pre/post project monitoring conducted for the Brandt and Euclid Impoundment construction and Brandt Channel Restoration projects.

### **Thief River Watershed Assessment Project** **(Watershed Restoration and Protection - WRAP)**

- Task 5 – Flow Monitoring
  - The Minnesota Pollution Control Agency and The Minnesota Department of Natural Resources will be installing a gauge and measuring flow in Marshall County Ditch 20 at site #41 (180<sup>th</sup> Ave NE).
  - A 2013 flow monitoring plan, with HOBO deployment and stage measurement instructions, was created for the Thief River watershed.
- Task 6 – Stream Channel Stability Assessment
  - DNR staff have completed some preliminary BANCs modeling results using the geomorphology data that was collected during the past two years.
    - The Upper Moose River (upstream of CSAH 54) is a confined ditch with good vegetation. It has much higher bank erosion than the lower reach of the river due to the confined channel and large amounts of sediment coming in from the land alongside the river. This reach has a stream bank erosion rate of 241 tons/year/mile.
    - The Lower Moose River (downstream of Hwy 89) is stable due to vegetation. It could be improved by opening up spoil piles to improve access to the floodplain.
    - The Thief River from Marshall County Road 7 to Marshall County Road 12 had an erosion rate of 32 tons/year/mile.



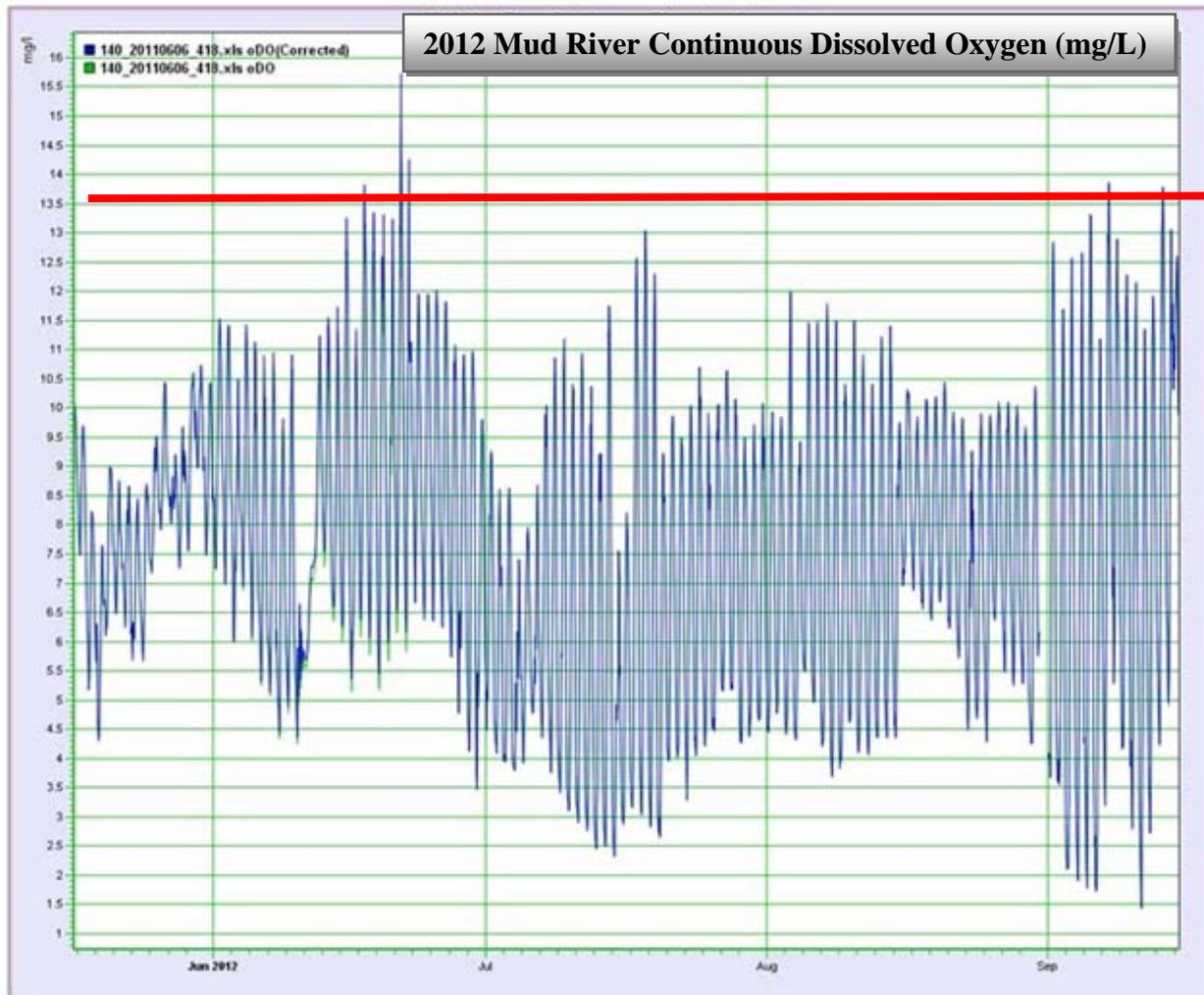
- The Main JD21 portion of the Upper Thief River, downstream of Thief Lake, has an erosion rate of 71 tons/year/mile.
- The lower portion of the Upper Thief River, upstream of Thief Lake, has an erosion rate of 72 tons/year/mile.
- The lower Mud River (downstream of Grygla) is fairly stable due to vegetation, but it is carrying a high, sandy bedload from the upper watershed. Bedload consists of sediment particles that, although not suspended, are transported along bed of the river.
- The Mud River upstream of Grygla is channelized (Main JD 11). There is a lack of buffers and higher erosion rates (239 tons/year/mile).
- An upper reach of Marshall County Ditch 20 (Beltrami CR 707 to Marshall CSAH 53) is fairly stable due to vegetation, but is nonetheless contributing higher amounts of sediment from its banks. The majority of sediment is coming from fields and ditches along CD20.
- Lower CD20 (downstream of CSAH 53) is fairly stable due to vegetation, but is carrying a high, sandy Bedload from the upper part of the drainage area.



- Task 10 – Data Analysis
  - The Minnesota pollution Control Agency completed its initial assessment of water quality data from the Thief River watershed.
    - The E. coli and ammonia impairments along the upper reach of the Thief River (Thief Lake to Agassiz Pool) will be taken off of the 303(d) List of Impaired Waters.
    - A possible delisting of the Mud River’s low dissolved oxygen impairment was examined. Data collected through 2011 indicate d that the river is meeting the dissolved oxygen standard. 2012 continuous monitoring data had many instances of dissolved oxygen below the 5 mg/L standard. This was likely due to the low flow and no-flow conditions, but it is hard to justify a delisting immediate after such a year.
    - A meeting will be held in early April 2013 in the Detroit Lakes MPCA office at which the MPCA will review their assessment results with local agencies.
    - The 2013 Thief River Transparency Data document was reviewed by the RLWD Water Quality Coordinator. Many reaches are described by the term “unnamed ditch.” Some time was spent on looking up the ditch names that should be associated with the MPCA’s assessment units so the

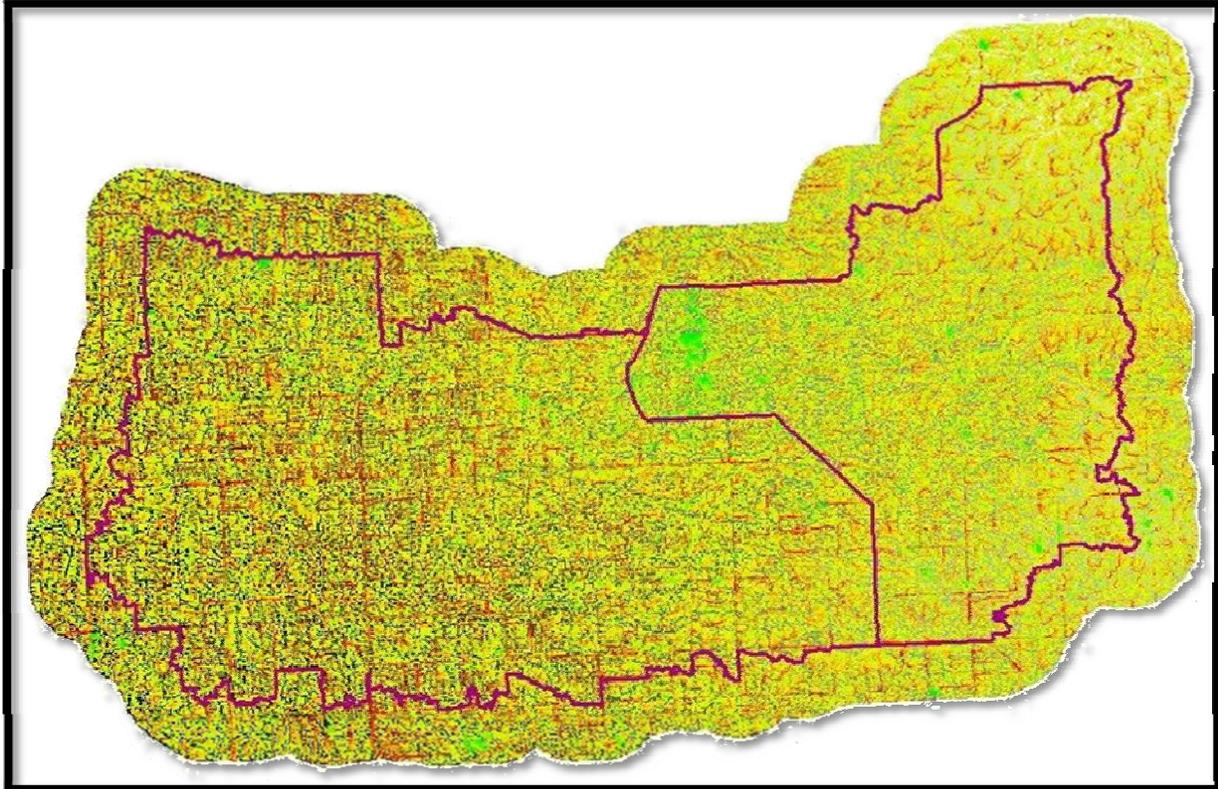
reach descriptions can be more useful than “unnamed ditch, from unnamed ditch to unnamed ditch” in the future.

- Data from the Mud River at Highway 89 (site #757) was compiled and corrected using Aquarius software. Not counting the days in which the channel was dry, the dissolved oxygen levels recorded in the Mud River dropped below the 5 mg/L standard during 54% of the days in the summer of 2012. The 2007-2009 monitoring data (combined with pre-9am manual measurements) indicated that the river met the dissolved oxygen standard in 98.6% of the days in which it was monitored. The 2012 conditions were poor enough to bring the overall percentage of sub-5 mg/L daily minimums to more than 15%. Since there wasn't much runoff, turbidity levels were quite low. Because the turbidimeter on one of the sondes was malfunctioning, we only have a turbidity record from about half of the deployments (four two-week periods). The Eureka Manta didn't record a turbidity level higher than 1.37 FNU (the water quality standard is 25).



- Task 11 – Civic Engagement
  - Civic group presentations, public library presentations, an open house event at the RLWD, coordination with school field trips (if possible), coordination with Chamber of Commerce events, and website development are also in the plans for the first six months of 2013.
  - A summary of survey responses from the February Stakeholders' Update meeting was posted on the Thief River blog at <http://thiefriver.wordpress.com/>.
  - A draft Thief River Watershed Public Participation Strategy document was completed. By RMB Environmental Laboratories for the Red Lake Watershed District.
  - A report was completed to the InCommons and MedowlarkInstitute for the grant money that they provided for the Thief River World Café event.
  - A former member of the Marshall-Beltrami SWCD board brought in some data that was collected in 1996 by the Marshall-Beltrami SWCD. Some of the sites bracketed suspected fecal coliform sources such as cliff swallows within a box culvert and a livestock operation. Fecal coliform concentrations didn't change much from upstream to downstream of the feedlot unless there was a runoff event. During the runoff event, fecal coliform increased greatly from 329 col/100ml above the feedlot to "too numerous to count" below the feedlot on May 29, 1996.
- Task 12 – Identification of Sources and Solutions
  - Jim Blix has been working on a Stream Power Index for parts of the Thief River watershed. Stream Power Index layers have been generated for some of the subwatersheds of the Thief River. The layers can be "filtered" so that they only display the highest values with the highest risk of erosion problems. More work needs to be done on the task of determining the threshold at which SPI values begin to predict erosion problems. The pixilated SPI layers don't show up well on maps, though. So, shapefiles based on the SPI results will need to be generated so that the features can be made larger and more visible on a map.

- A Stream Power Index has been created for several subwatersheds within the Thief River watershed. The next steps involve completion of the SPI for the remaining sub-basins of the Thief River watershed and then deciding on the best way to filter results so they look less like this...



...and more like this:



**Red Lake River Watershed Assessment Project**  
**(Watershed Restoration and Protection - WRAP)**

A work plan for Phase II of this project was developed in February 2013. Phase II is planned to begin on July 1, 2013. The revision to the Phase I budget that added \$9,900 to the \$150,000 budget was completed in February, but hasn't become official yet.

- Task 5 – Flow Monitoring
  - The Minnesota Pollution Control Agency and The Minnesota Department of Natural Resources will be installing a gauge and measuring flow in Burnham Creek at 320<sup>th</sup> Ave. This site will replace the site on the Black River that was monitored in 2012. Monitoring at the Black River site is being abandoned by State agencies due to safety concerns created when MPCA staff reported that they were threatened by a landowner along the Black River.
  - A 2013 flow monitoring plan, with HOBO deployment and stage measurement instructions, was created for the Red Lake River watershed.
- Task 10 – Civic Engagement
  - Two public stakeholders' update meetings will be held in April. We will be having two public information meetings for this project because of the length of this watershed. A meeting will be held in Grand Forks for people that live and/or work in the lower part of the Red Lake River watershed. People who live and/or work in the upper part of the watershed can go to a meeting in Thief River Falls.
    - On **April 9<sup>th</sup>** a Red Lake River Watershed Restoration and Protection Project Stakeholders' Update Meeting will be held at the **Guesthouse Inn in Grand Forks** from **10 am until noon**.
    - On **April 10<sup>th</sup>**, a Red Lake River Watershed Restoration and Protection Project Stakeholders' Meeting will be held at the **Red Lake Watershed District Office** (1000 Pennington Ave S) in Thief River Falls from **10 am until noon**.
    - Brochures were printed and mailed to (approximately 10,000) residents of townships along the Red Lake River to provide information about the study and promote the public meetings. Brochures began arriving at people's homes in late March.
  - Civic group presentations, public library presentations, an open house event at the RLWD, coordination with school field trips, coordination with Chamber of Commerce events, and website development are also in the plans for Phase II of the project, in the latter half of 2013.
  - A draft Red Lake River Watershed Public Participation Strategy document was completed. By RMB Environmental Laboratories for the Red Lake Watershed District.

### Other Notes

- RLWD staff attended the 10<sup>th</sup> Annual Red River Basin Water Quality Monitoring Training Session at the University of Minnesota, Crookston on March 14<sup>th</sup>. Corey Hanson gave a presentation on the use of standard operating procedures for water quality monitoring.
- Final Clean Water Fund project reports to the Minnesota Board of Water and Soil Resources were completed in ELink for the Grand Marais Creek Cut Channel Stabilization Project and the Grade Stabilization for Reduction of Sedimentation in the Thief River Project.
- Provided HOBO Water Level Logger advice and methods information to the Lake of the Woods SWCD, Two Rivers Watershed District, and the NRCS.
- Several HOBO Water Level Loggers were shipped to Onset to have new batteries installed.
- A blizzard kept some staff at home on March 18<sup>th</sup> and spring never quite arrived in March of 2013. In mid-march of 2012, most of the snow was gone, water was flowing over the ice in are rivers and ditches, and we had already deployed some water monitoring equipment.
- MPCA staff began work on identification of 2014 Clearwater River Surface Water Assessment Grant monitoring sites. The RLWD Water Quality Coordinator commented on the initial list of sites. After the MPCA staff made some changes, the list is now up to a total of 25 sites along the Clearwater River and its tributaries.
- A 2013 flow monitoring plan, with HOBO deployment and stage measurement instructions, was created for the Clearwater River watershed.

### March Meetings and Events

- **March 4, 2013** – GIS Terrain Analysis Workshop at Rydell National Wildlife Refuge.
  - Jim Blix, RLWD GIS Technician, presented on the LIDAR terrain analysis work that is being done at the local level at the RLWD.
  - LIDAR-based terrain analysis and the creation of a stream power index (SPI) essentially answers the question “where, in my study area, is the highest potential for gully erosion?”
  - When this analysis was used in the Sand Hill River watershed, the highest 1% of SPI values were used to map spots with a high probability of gully erosion.
  - Also in the Sand Hill watershed, Houston Engineering, Inc modeling work showed that CRP coming out of the program and into cultivation will increase sediment loading from the watershed by 10%.
  - While ground-truthing stream power index results, an inventory of suggested best management practices can be compiled.
  - Not every spot with a high SPI value will have gully erosion. Often, good vegetative cover can keep these areas from eroding. However, these areas

could still be highly susceptible to gully erosion if changes occur in hydrology or land use.

- **March 11, 2013** - Pennington County Water Resources Advisory Committee meeting, 9 am
  - The Thief River Reservoir Association no longer exists, but there may be people that would be interested in participating in the Red lake River WRAP civic engagement process. The group was organized prior to the dredging of the reservoir and get together to clean up the river. In particular, they want to clean out logs that have floated into town because they can become a hazard.
  - Unused gravel pits could be used to create/restore wetlands in the county.
  - The permitting process for gravel mining could be changed to require some extent of restoration (save the top soil, re-grade).
  - The Lloyd Halvorson bank stabilization project has been completed.
  - Judicial Ditch 30 is sloughing by the Rangeline Road (CSAH 20).
  - The Pennington County SWCD is using Clean Water Fund money to update two septic systems.
  - Pennington County SWCD newsletters can be found on their website: <http://www.nwmnswcd.org/index.pl?id=2172;isa=Category;op=show>
  - The NRCS is hoping to promote no till and soil health programs in the county. These programs can increase yields – the soil is still “alive” if a cover crop is left on the field.
  - The city would like to see the Greenwood Street erosion control project get done. A lift station and a wastewater main would be impacted if the site keeps eroding.
  - The timing of side water inlet installation doesn’t match well with the annual county inventory of culverts. Designs for side water inlets should get done over the winter so that pipe can be ordered in the spring along with all of the other culverts that the county highway department needs to order. It would be cheaper to order through the county than to order the pipes directly from the supplier in Fargo. Target landowners along planned county ditch projects.
  - The County Ditch 1 project was a success story for cooperation and partnerships among agencies.
  - DNR Hydrologist Stephanie Klamm is conducting an aerial photo-based exploration for erosion problems.
- **March 14, 2013** – 10<sup>th</sup> Annual Red River Basin Water Quality Monitoring Training Session; 8:30 am to 4:00 pm; Younquist Auditorium, University of Minnesota, Crookston
  - Presentations can be found on the International water Institute’s website at: <http://www.iwinst.org/monitoring-network/sops>
- **March 21, 2013** – RLWD Overall Advisory Committee meeting
  - RLWD staff gave presentations that summarized 2012 projects.

### Plans for April and May 2013

- Thief River Watershed Restoration and Protection Project.
  - Work with the MPCA to complete an official assessment of the Thief River watershed.
  - Stream power index analysis of sub-basins in the Thief River watershed.
  - Create a web page dedicated to the Thief River Watershed
  - Compile and apply corrections to continuous water quality data.
  - Plan the next civic engagement event for the Thief River watershed.
- Red Lake River Watershed Assessment Project
  - Produce an updated assessment of water quality conditions in the watershed.
  - Create a webpage dedicated to the Red Lake River
  - Compile and apply corrections to continuous dissolved oxygen data.
  - Plan and conduct stakeholders' update meetings
  - Deploy dissolved oxygen loggers.
- Begin stage and flow monitoring
- District Monitoring in May (Originally planned for April, but the melt didn't start soon enough).
- Flow measurements during spring runoff (contract with Red Lake Department of Natural Resources)
- HOBO Water Level Logger deployment
- Stressor ID sampling for WRAP projects during spring runoff.
- Work with the MPCA to develop a method for the submission of continuous dissolved oxygen data.

### Future Meetings/Events

- **April 2, 2013** – Thief River Best Professional Judgment Group (official State water quality assessment) meeting at the Detroit Lake MPCA Office.
- **April 9, 2013** – Red Lake River Watershed Restoration and Protection Project Stakeholders' Update Meeting.
  - 10:00 am to 12:00 pm
  - Guesthouse Inn, Grand Forks, ND
  - Watershed overview
  - Description of the project.
  - Water quality conditions
  - Civic Engagement
  - Red Lake County SWCD projects
  - Biological monitoring in the Red Lake River watershed.
- **April 10, 2013** – Red Lake River Watershed Restoration and Protection Project Stakeholders' Update Meeting.
  - 10:00 am to 12:00 pm

- Red Lake Watershed District Office meeting room, Thief River Falls
- Watershed overview
- Description of the project.
- Water quality conditions
- Civic Engagement
- Pennington County SWCD projects
- Stream channel stability assessment within the Red Lake River watershed.
- **April 17, 2013** - Marshall County Water Resources Advisory Committee
- **April 18, 2013** – Grand Marais Watershed Restoration and Protection Project Kick-Off Meeting at Cabela’s in East Grand Forks at 1:00 pm
- **April 22, 2013** – Houston Engineering will be presenting a webinar about “Using LIDAR-based Terrain Analysis Products.”
- **April 25, 2013** – The Red lake Watershed District will set up a booth at the Thief River Falls Community Expo Booth at the Ralph Engelstad Arena in Thief River Falls (4:00 pm to 7:00 pm).
- Early June – Technical Advisory Committee meeting for the red Lake River and Thief River Watershed Restoration and Protection Projects
- **June 10, 2013** – Pennington County Water Resources Advisory Committee – 9 am
- **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 1, 2013** – Beginning of Phase II of the Thief River and Red Lake River Watershed Restoration and Protection Projects.
- **July 17, 2013** – Marshall County Water Resources Advisory Committee
- **July 31, 2013** – Final payment request for the Thief River SWAG is due.
- **October 16, 2013** - Marshall County Water Resources Advisory Committee

Red Lake Watershed District Monthly Water Quality Reports are available online at:  
<http://www.redlakewatershed.org/monthwq.html>.

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**Quote of the Month:**

“Challenges make you discover things about yourself that you never really knew. They’re what make the instrument stretch – what make you go beyond the norm.”  
– Anonymous