

Grand Marais Creek Watershed Restoration and Protection Project

Red Lake Watershed District and Emmons and Olivier Resources staff worked together to plan stage and flow monitoring within the Grand Marais Creek and Angus/Oslo (JD1 and JD75) watersheds. Grand Marais Creek flow is already being monitored by a gauging station at the County Road 64 crossing that is operated by the Minnesota Department of Natural Resources. Stage will be monitored with HOBO water level loggers at four sites in the watershed. Stage will be monitored in County Ditch 2 at CR62, Grand Marais Creek at County State Aid Highway 19, Judicial Ditch 1 at 450th Ave NW, and Judicial Ditch 75 at CSAH 22. HOBO water level loggers were deployed at the Grand Marais Creek and County Ditch 2 sites on May 9th. Water level loggers (the ones that had new batteries installed in them this spring by Onset) were deployed at the JD1 and JD75 sites on May 24th.



A geomorphic survey will be conducted during the summer of 2013. Minnesota Department of Natural Resources staff are willing to help with that effort.

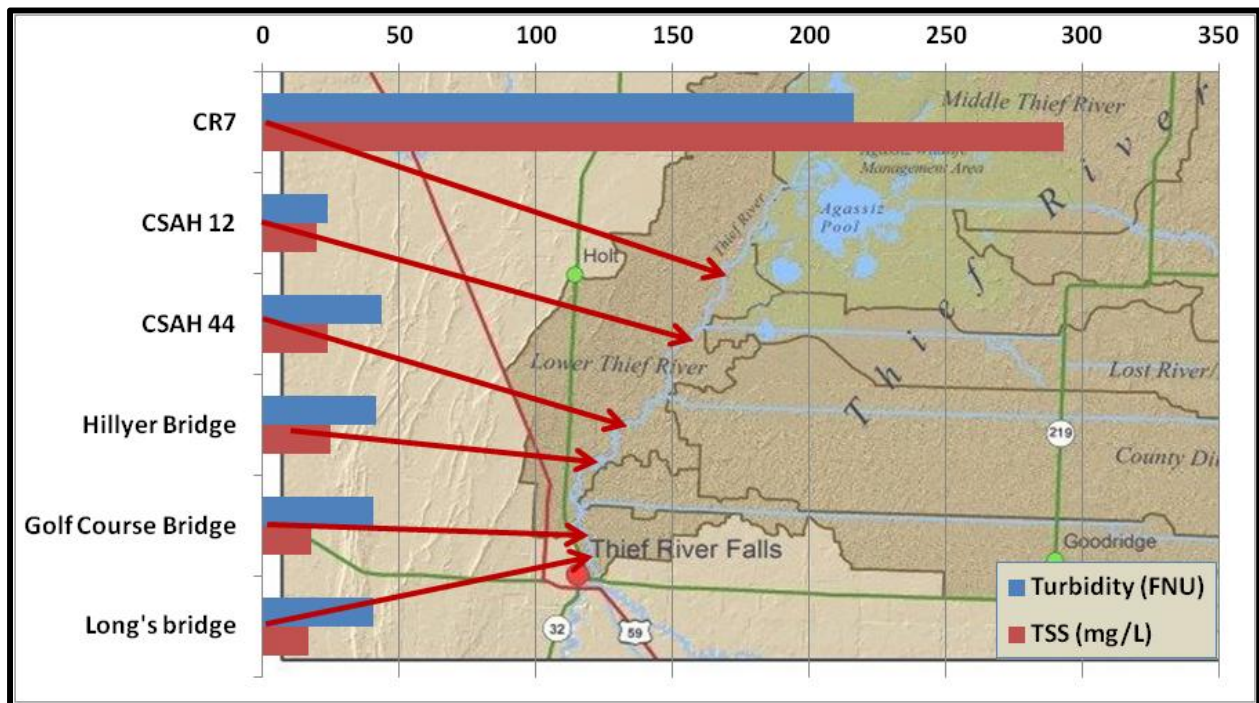
Thief River Watershed Assessment Project
(Watershed Restoration and Protection - WRAP)

- Task 3 – Continuous Water Quality Monitoring
 - Manta deployment pipes were removed from Moose River and Mud River monitoring sites.
- Task 5 – Flow Monitoring
 - A HOBO water level logger was deployed at the Branch A of JD21 monitoring site.
 - The Judicial Ditch 30 HOBO water level logger deployment pipe was lowered further into the water once water levels in the ditch receded after spring runoff.
 - HOBO water level logger deployment pipes were removed from the CR7 and CSAH 12 monitoring sites on the Thief River and the Hwy 89 site on the Mud River. The MNDNR gauges are in operation on the Mud River at Highway 89 and Thief River at CR7 monitoring sites, so the HOBOS are no longer needed at those particular sites.
 - Farmed Pool will be in draw-down this year and may be discharging more water than usual.
- Task 7 – Stressor Identification
 - The RLWD's Garmin Montana 650 GPS/Camera was used to photograph and map actively eroding spots (gully and rill erosion visible from the road) while traveling between monitoring sites.



- Longitudinal samples were collected along the lower reach of the Thief River from CR7 to Long's Bridge during a storm event on May 20th. Turbidity gradually increased from upstream to downstream with an odd exception. The turbidity reading at the CR7 Bridge (closest crossing to the outlet of Agassiz Pool) was 216.2 FNU. The turbidity at the next crossing downstream, CSAH 12 (Rangeline Road) was 24.0. It was odd to see turbidity decrease that much from an upstream site to a downstream site. It indicates that there is a lot of sediment is being discharged from the Agassiz Pool outlet(s) and much of that sediment is being deposited along the Thief River between the two crossings. Relatively

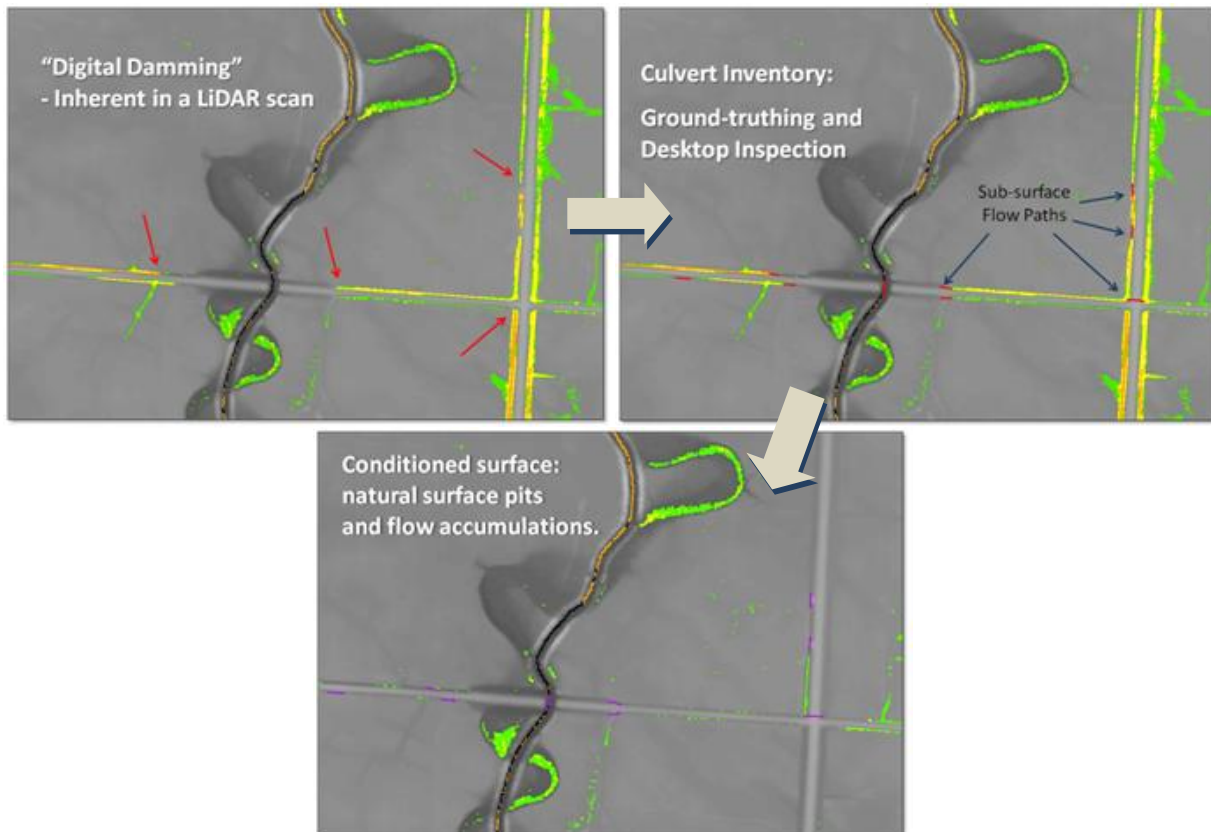
large, dark-colored particles were visible in the CR7 sample, but not in samples from other sites. These larger particles would fall out of suspension rather quickly.



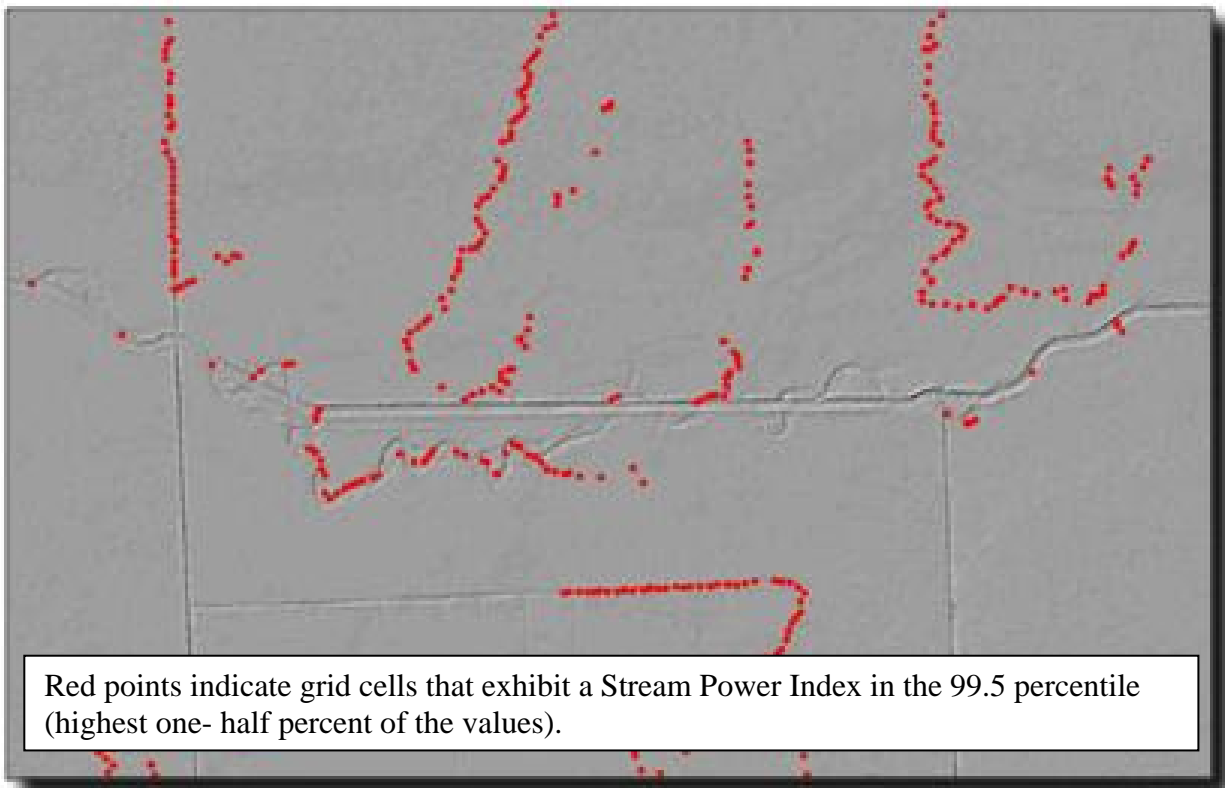
- Task 10 – Data Analysis
 - Continuous dissolved oxygen data from the Lower Thief River at CR77 and CR77 was compiled, summarized (daily minimums, averages, and maximums), and submitted to the MPCA. These data sets included monitoring results from the 2007-2009 Thief River Watershed Sediment Investigation study and the data collected in 2011 and 2012 for the Thief River WRAP project. QA/QC and calibration records were gathered, scanned, and submitted along with the data.
- Task 11 – Civic Engagement
 - A Technical Advisory Group meeting is being planned for June 12th at the Detroit Lakes MPCA office.
 - Lori Clark, the RMB Laboratories Employee that has been helping us with the WRAP projects' civic engagement work, has taken a new position with the MNDNR where she will be helping with the geomorphology work that is being conducted in coordination with the WRAP projects. After she leaves RMB, her job will initially be covered by multiple RMB staff members, including Andy Mohn and Moriya Rufer.
 - An Open House Event at the Grygla Community Center is being planned for June 17th.
 - Informative You Tube videos are being planned as part of this civic engagement effort. Draft scripts have been put together by RMB Environmental Laboratories staff. The scripts are being reviewed by MPCA, RMB, and RLWD staff. Once we

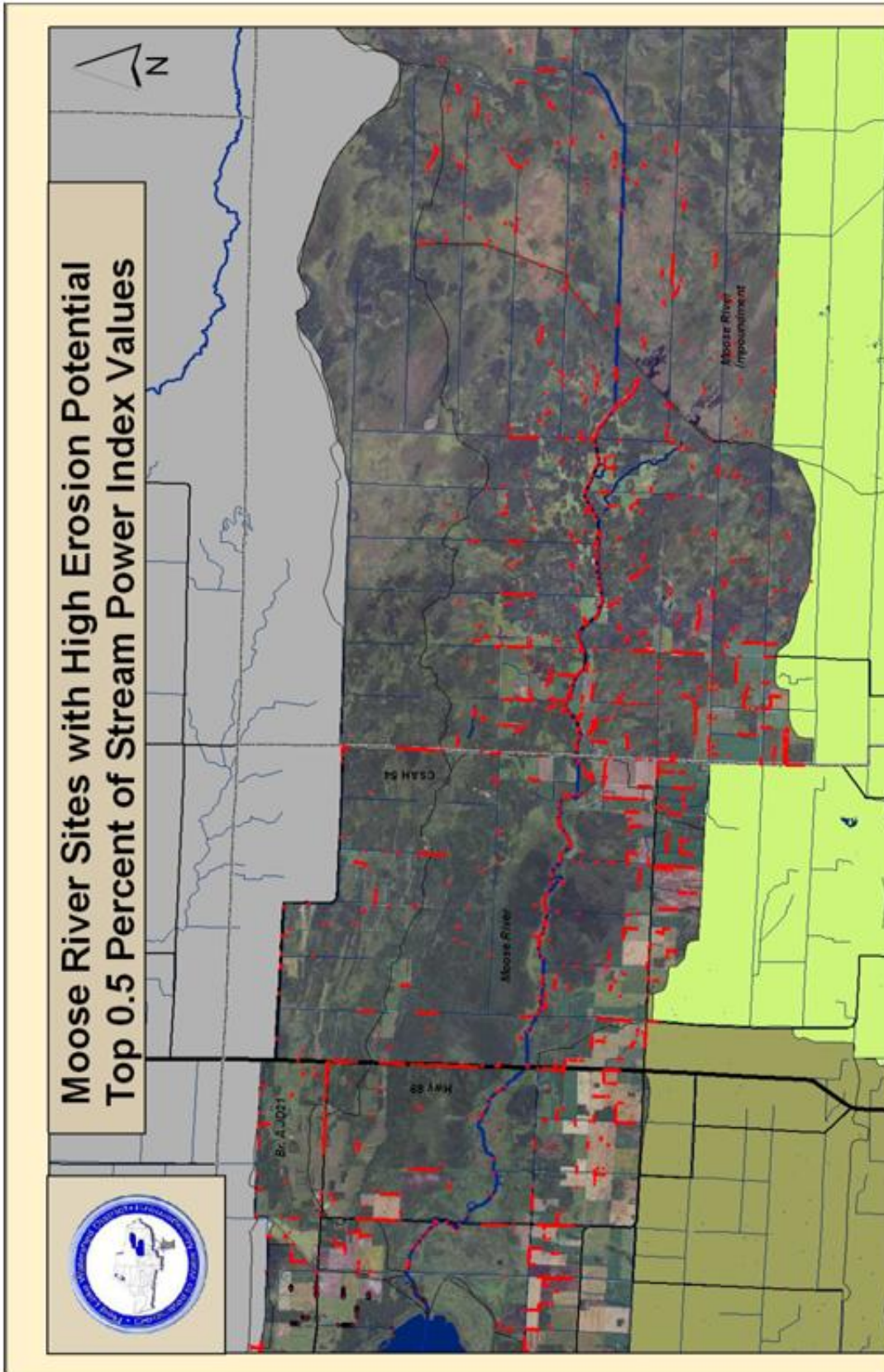
have some good “scripts,” we can collect and compile footage for the videos. Some ideas for videos include explanations of turbidity, dissolved oxygen, E. coli, the watersheds, and the Watershed Restoration and Protection projects.

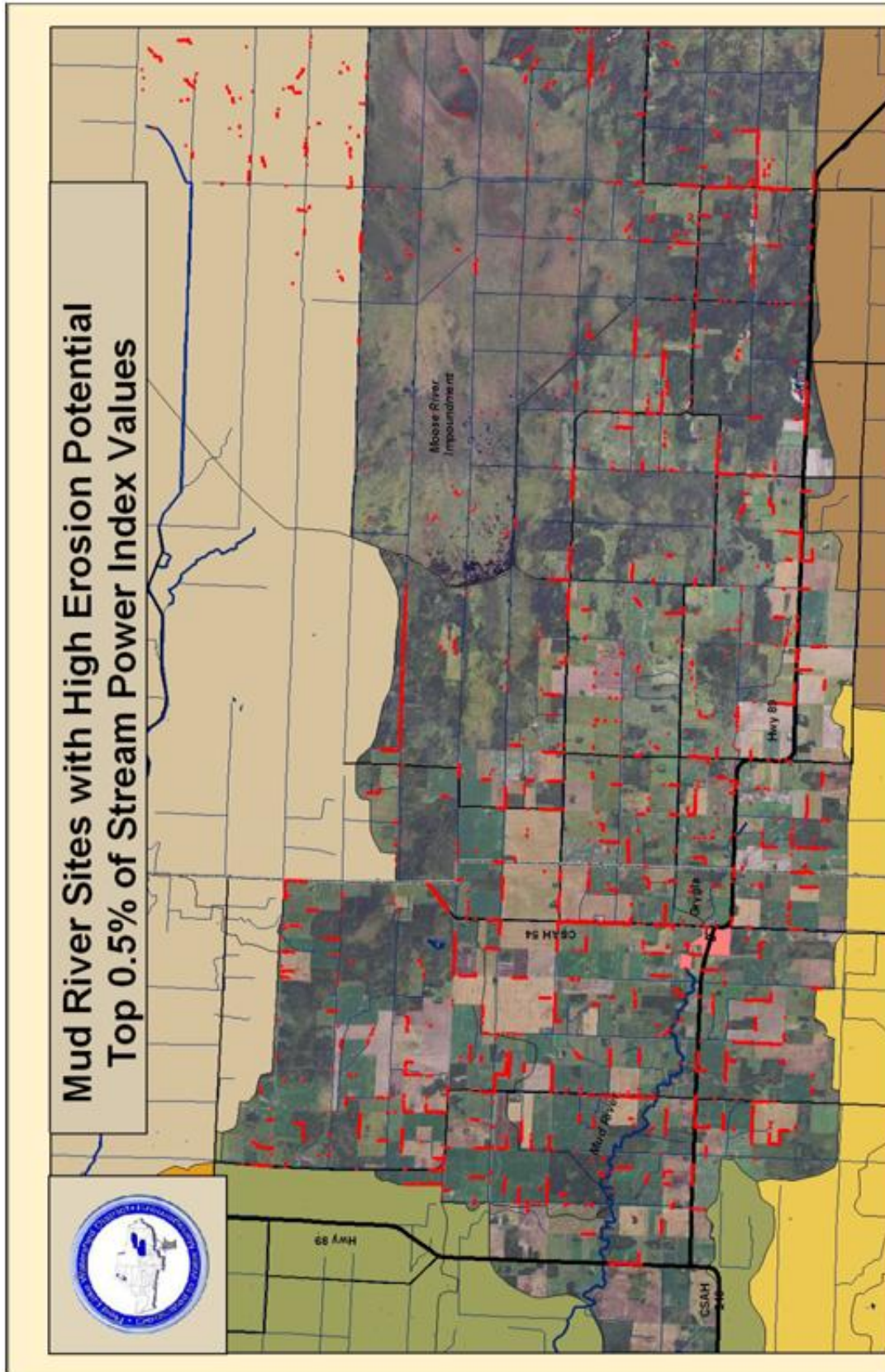
- Radio spots will be purchased to broadcast messages on local radio stations that are similar to (or exactly the same as) the “Water Minutes” that are developed by the Red River Basin Commission and broadcast on Fargo radio stations.
- Task 12 – Identification of Sources and Solutions
 - The Stream Power Index component of Project 157B, the TMDL study for the Thief River basin, was completed in April of 2013. The next steps involve filtering, mapping, and ground-truthing the highest SPI values. This project component included these steps, in order of occurrence:
 1. Assembling the digital elevation model for the basin area from 2-kilometer distribution tiles.
 2. Creating flow paths for subsurface drainage structures, primarily culverts, which are superimposed on the original elevation grid. These subsurface flow paths are established by creating a linear feature coincident with each structure and used by Arc Hydro tools to create a secondary elevation grid that exhibits a ground-true runoff pattern. This process is referred to as hydrological conditioning. This process required a combination of ground inspection at section road crossings and a careful examination of the digital elevation grid from the desktop.



3. Delineation of subwatershed catchments and areas that do not contribute to basin-wide runoff (e.g., gravel pits, pothole lakes, etc.).
 4. Surface analysis of each sub-watershed catchment to determine flow accumulation patterns, flow length, slope, and stream power index.
- SPI results were filtered to isolate the 98th and 99 ½ percentiles, respectively. This was done to reduce the data set to a manageable size and remove extraneous values. The SPI raster grid was then transformed to a vector point set so that end users can more easily download and deploy it on a variety of GIS platforms. To date, the Thief River Basin SPI data has been requested by the DNR, the MPCA, and the NRCS. It is currently available online.
 - The same processes are currently being applied to Project 157C, the TMDL study for the Red Lake River basin. The basin surface has been assembled and the drainage structure inventory is about 50 percent complete.







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

- Task 3 – Continuous Water Quality Monitoring
 - The new HOB0 optical dissolved oxygen logger was deployed in Kripple Creek.
 - Replacement RDO dissolved oxygen sensor caps were ordered for the two TROLL 9500 sondes with optical dissolved oxygen probes.
 - Last year's deployment pipes were removed from the 180th Ave Gentilly Creek monitoring site.
 - A dissolved oxygen logger deployment pipe was installed at the CSAH 27 crossing of the Red Lake River.
 - Eureka Midge and In-Situ TROLL 9500 dissolved oxygen loggers were deployed at 5 monitoring sites
 1. Red Lake river at CSAH 27
 2. Red lake River at the Highlanding Bridge
 3. Pennington County Ditch 96
 4. Cyr Creek
 5. Judicial Ditch 60



- Task 5 – Flow Monitoring
 - The Heartsville Creek HOBO water level logger was deployed.
 - The Burnham Creek HOBO water level logger was moved from the high-water pipe to the low-water pipe. Utilities have been marked at the site, perhaps in preparation for the installation of a DNR gauging station.
 - The CD1 HOBO pipe was knocked over by spring runoff, so it was fixed and the HOBO was re-deployed.
 - The CD96 HOBO water level logger's deployment pipe was lowered further into the ditch once runoff slowed down and the water in the ditch became shallow enough to wade safely.
 - The HOBO water level logger pipe near the CSAH 27 crossing was lowered further into the water.
 - A HOBO water level logger was deployed at the Smiley Bridge (CSAH 7) crossing of the Red Lake River.



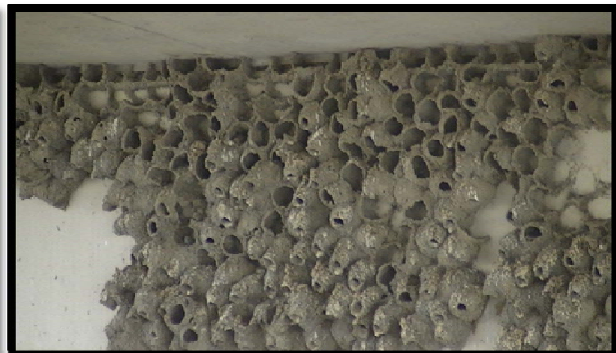
- Task 7 – Stressor Identification
 - The RLWD’s Garmin Montana 650 GPS/Camera was used to photograph and map actively eroding spots (gully and rill erosion visible from the road) while traveling between sites.



- A significant gully was found along a field was found along CSAH 9 (north of the CSAH13/CSAH9 intersection) near a ditch that flows into Browns Creek.



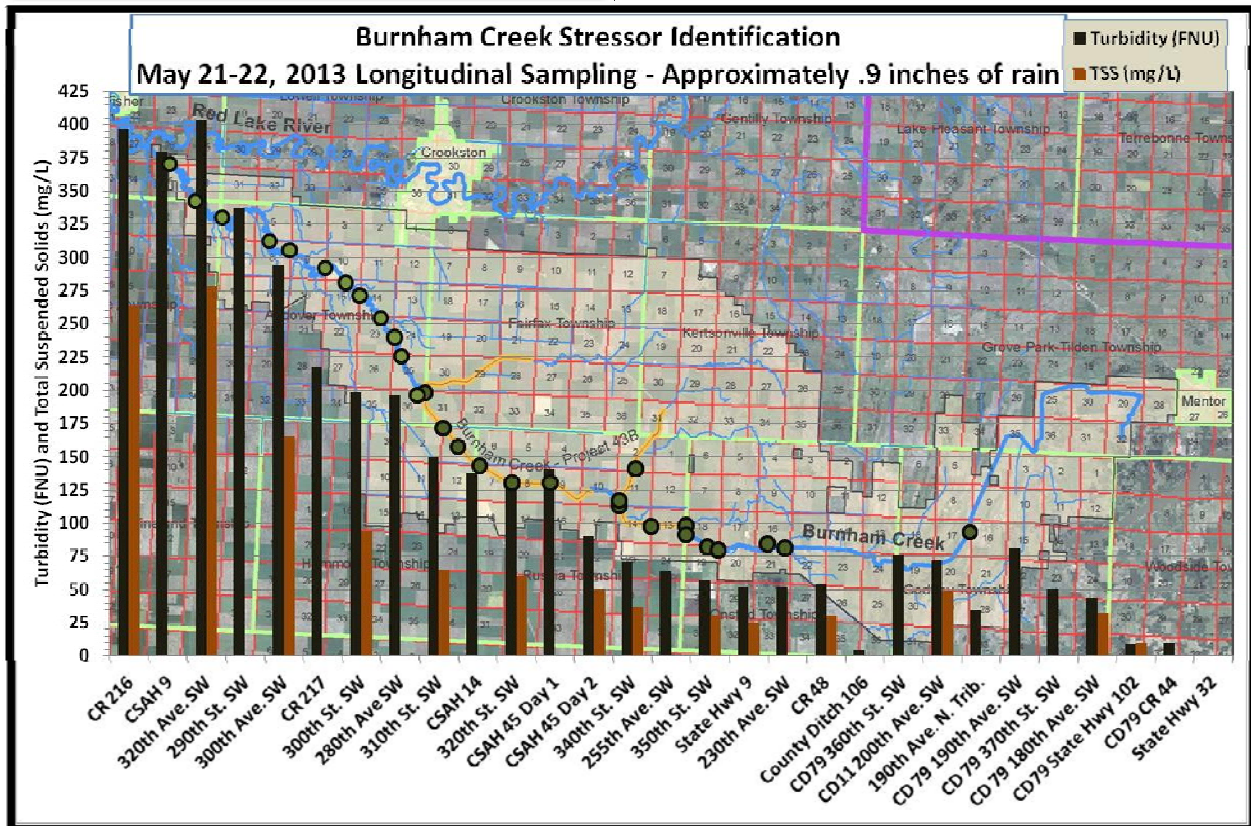
- There is a lot of sloughing, erosion, and sedimentation occurring along Polk County Ditch 1. Much of which is visible from the CR64 crossing.
- Not only is there a herd of cattle with direct access to the Red Lake River upstream of the CSAH 27 Bridge, but there also are countless cliff swallows that “swarm” around the bridge.



RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT

May 2013

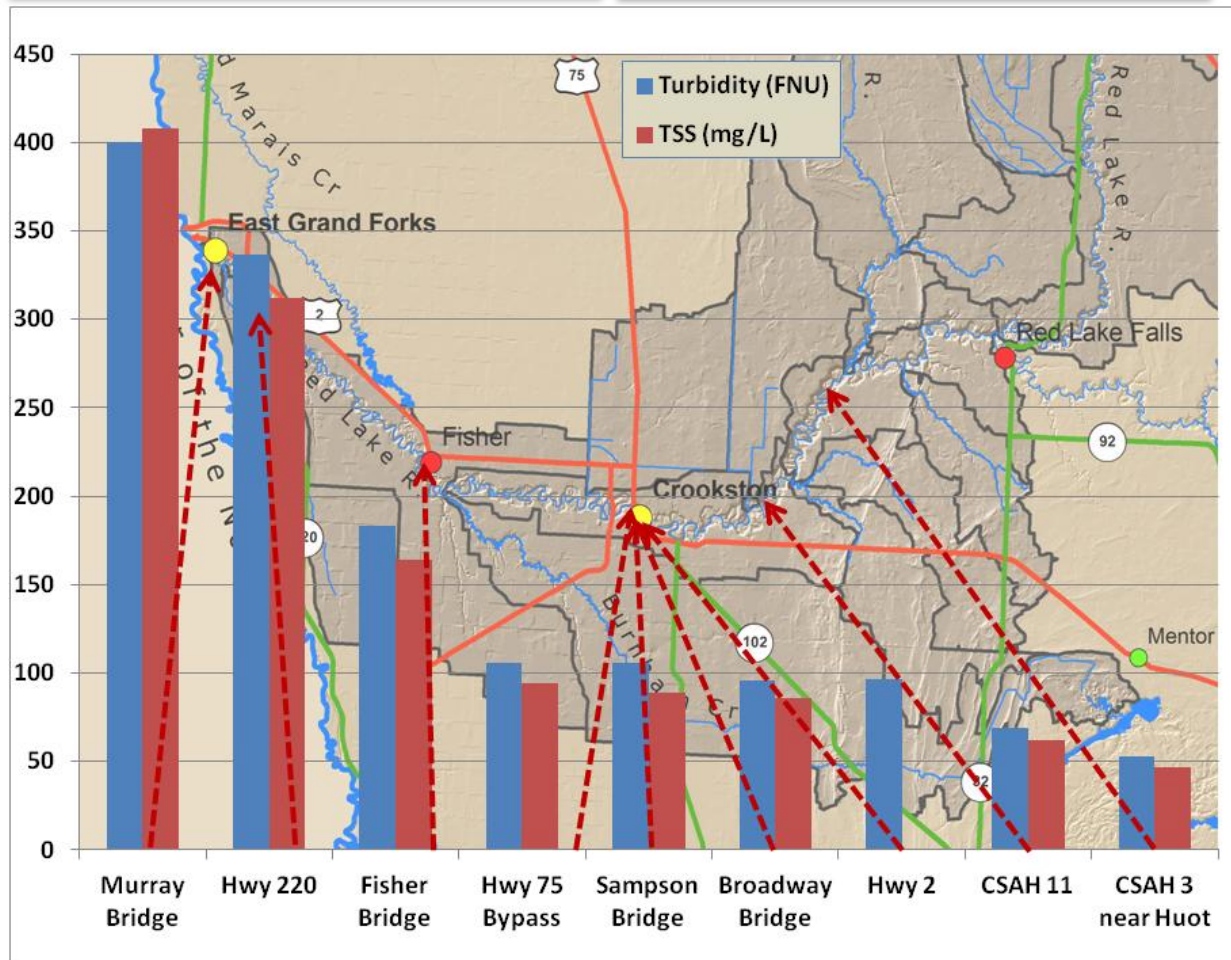
Longitudinal sampling was conducted along Burnham Creek. The lower half of Burnham Creek was sampled during a rain event on May 21st and sampling continued upstream the next day. Turbidity (397.1 FNU) and total suspended solids (264 mg/L) levels were very high on the lower end of the watershed, but gradually got better upstream and were very low (0.4 FNU,) at Highway 32. Turbidity increased from 9.1 FNU to 44.2 through the Spring Gravel Dam washout area downstream of Highway 102 (to 180th Ave). Turbidity then increased significantly to 81.9 at the next crossing (190th Ave). So, the planned Burnham Creek grade stabilization and restoration projects are well needed in order to address some sources of sediment and turbidity. Turbidity was very low (4.4 FNU) in CD106 where it flows into Burnham Creek (see right photo below).



RED LAKE WATERSHED DISTRICT MONTHLY WATER QUALITY REPORT

May 2013

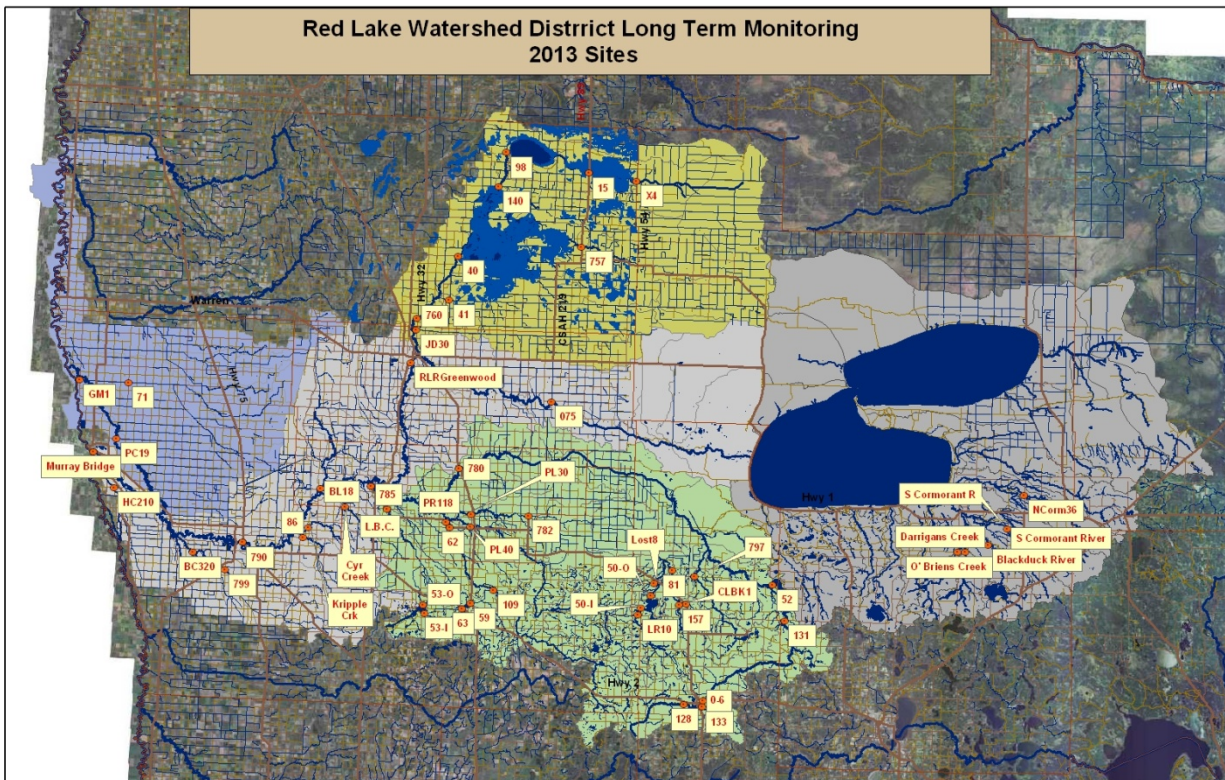
Longitudinal samples were collected along the main channel of the Red Lake River from Murray Bridge in East Grand Forks upstream to the CSAH 3 crossing near Huot.



- Task 8 – Data Entry
 - A data review was completed for data submitted to EQuIS for the Red Lake River WRAP project.
- Task 10 – Civic Engagement
 - A Technical Advisory Group meeting is being planned for June 12th at the Detroit Lakes MPCA office.
- Task 11 – Identify Sources and Solutions
 - Michael Knudson will be using a RLWD sampler and turbidimeter to sample and analyze stormwater runoff in Crookston again in 2013.

District Monitoring

- The RLWD purchased a new Wildco Beta Plus Van-Dorn-style water sampling bottle.
- The map of RLWD long-term monitoring sites was updated.
- High E. coli concentrations were found in Browns Creek, Kripple Creek, Black River, Cyr Creek, and the Red Lake River at Highlanding.



- The first round of 2013 sampling at RLWD long-term monitoring sites (a.k.a. district monitoring) was completed in May. The RLWD Water Quality Assistant, Alisha Mosloff returned to work on May 13th and was able to complete the first round of district monitoring before she left the RLWD to begin a new water quality monitoring job with the International Water Institute.



Other Notes

- A revised list of potential Clearwater River SWAG sites was reviewed. The list had been significantly reduced and excludes many significant reaches within the watershed.
- RLWD staff began the search for a new Water Quality Assistant to hire for the summer.
- A HOBO water level logger was deployed in the Poplar River at CR118, west of Brooks. This will be a new monitoring site, and is the closest monitoring site to the “pour point” of the watershed.



- The HOBO water level logger deployment (used in 2012) was removed from CD79 near the Spring Gravel Dam wash-out area. More of the road bed has washed away from around the old bridge at the site. There was some fresh erosion along the streambank downstream of the old dam, too.



Plans for June and July 2013

- Thief River Watershed Restoration and Protection Project.
 - Creating Stream Power Index maps and figuring out ways to distribute and use the information.
 - Create a web page dedicated to the Thief River Watershed
 - Compile and apply corrections to continuous water quality data.
 - Technical Advisory Committee meeting.
 - Grygla Open House.
 - Stressor identification sampling and windshield surveys.
- 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.
 - Deploy dissolved oxygen loggers.
 - Stressor identification sampling and windshield surveys.
 - Technical Advisory Committee meeting.
 - Follow-up geomorphology work on July 22-25th.
- District monitoring in June.
- Flow measurements at stage monitoring sites in the Clearwater River watershed.
- Stressor ID sampling for WRAP projects during runoff events.

Future Meetings/Events

- **June 10, 2013** – Pennington County Water Resources Advisory Committee – 9 am
- **June 10, 2013** - E-Link Training Session – 12:30 – 3:30 PM
- **June 12, 2013** – Technical Advisory Committee meeting for the red Lake River and Thief River Watershed Restoration and Protection Projects
- **June 17, 2013** – Grygla Open House Event at the Grygla Community Center, 3-6 PM
- **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 17, 2013** – Marshall County Water Resources Advisory Committee at the Marshall County Park at the Florian Reservoir.
- **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 15-16, 2013** - Follow-up geomorphology work at Red Lake River stations
- **July 17, 2013** – Marshall County Water Resources Advisory Committee
- **July 22-25th** – Follow-up geomorphology work at Red Lake River stations
- **July 31, 2013** – Final payment request for the Thief River SWAG is due.
- **August 26-29, 2013** – Grand Marais Creek Geomorphology work
- **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>.

“Like” the Red Lake Watershed District on [Facebook](#) to stay up-to-date on RLWD reports and activities.

Quote of the Month:

“Don’t ask for a light load, but rather ask for a strong back.”
– Anonymous