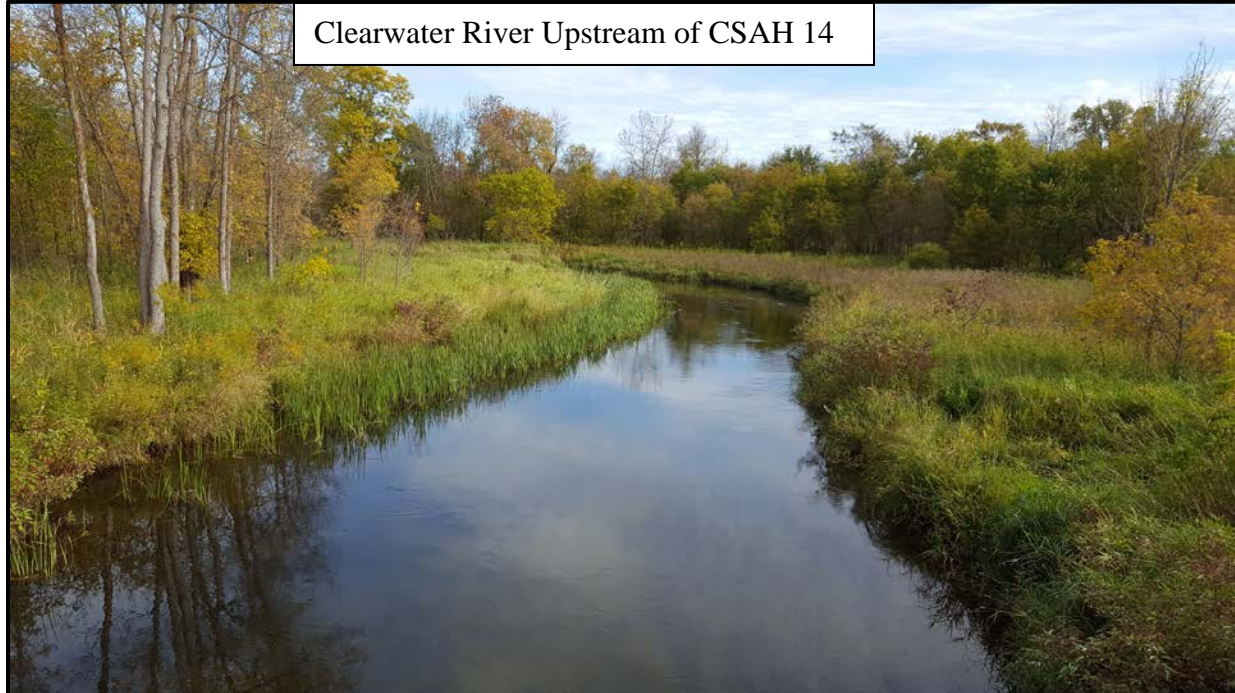


By Corey Hanson, Red Lake Watershed District Water Quality Coordinator. 3/28/2017.

- ✓ Watershed Restoration and Protection project updates
- ✓ Long-Term Monitoring
- ✓ Water Festivals

Long-Term Monitoring



A round of sampling for the RLWD long-term monitoring program was completed in September. Very muddy water (587 NTRU turbidity) was discovered in Ruffy Brook on 9/22/16. The condition was short lived (SWCD staff followed up on the discovery) and may have been caused by a beaver dam washing out.

- High concentrations of *E. coli* bacteria were found in:
 - Chief's Coulee at Dewey Ave in the City of Thief River Falls
 - Burnham Creek at 320th Ave SW
 - Polk County Ditch 1
 - Browns Creek at CR 101
 - Red Lake River at Fisher
 - Thief River at 140th Ave NE Thief River Falls
 - Judicial Ditch 30 at 140th Ave NE, north of Thief River Falls
 - North Cormorant River at CSAH 36
 - O' Briens Creek
 - Black River at CSAH 18
 - Ruffy Brook at CSAH 11
 - Moose River at CSAH 54

- (High concentrations of E. coli, continued)*
- South Cormorant River
 - Darrigan's Creek
 - Red Lake River at the Murray Bridge in East Grand Forks
 - Silver Creek at 159th Ave, west of Clearbrook
 - High concentrations of total phosphorus were found in:
 - North River Nutrient Region (>0.05 mg/L):
 - Ruffy Brook at CSAH 11
 - Silver Creek at CR 111
 - O' Briens Creek
 - North Cormorant River at CSAH 36
 - Darrigan's Creek
 - Blackduck River
 - South Cormorant River
 - Central River Nutrient Region (>0.1 mg/L):
 - Poplar River at CR 118
 - Pennington County Ditch 21 at 135th Ave NE
 - Clearwater River, north of Plummer
 - Chief's Coulee at Dewey Ave in the City of Thief River Falls
 - South River Nutrient Region (>0.15 mg/L):
 - Browns Creek at CR 101
 - Grand Marais Creek at 130th St. NW
 - Grand Marais Creek at 110th St. NW
 - Heartsville Coulee at 210th St. SW
 - Polk County Ditch 2 at CR 62
 - Polk County Ditch 2 at CSAH 20
 - Polk County Ditch 1
 - Burnham Creek at 320th Ave SW
 - Black River at CSAH 18
 - Red Lake River at Fisher
 - Red Lake River in Crookston
 - High total suspended solids (TSS) concentrations were found in:
 - >65 mg/L TSS – All River Nutrient Regions
 - Red Lake River at Fisher (102 mg/L)
 - Red Lake River at the Murray Bridge in East Grand Forks
 - Ruffy Brook at CSAH 11 (397 mg/L, 282 mg/L)
 - The >100 mg/l difference between duplicate samples suggests that the sediment in the stream was not well mixed and the source may have been located a relatively short distance upstream of the CSAH 11 crossing. There were large, floating chunks of sediment in the samples that rapidly settled. The removal/washing-out of a beaver dam or a private stream crossing is the primary suspected cause. Beaver dams and a crude private stream crossing are visible in aerial photos of the area upstream of CSAH 11.



- >30 mg/L Total Suspended Solids – Central and North River Nutrient Regions
 - Thief River at CSAH 7
 - Thief River at 140th Ave NE Thief River Falls
- Low dissolved oxygen concentrations (<5 mg/L) were found in:
 - Heartsville Coulee at 210th St. SW
 - Grand Marais Creek at 110th St. NW
 - Poplar River Diversion channel at the Badger Lake inlet
 - Grand Marais Creek at 130th St. NW
 - Lost River at 109th Ave, upstream of Pine Lake
 - Chief's Coulee at Dewey Ave in the City of Thief River Falls
 - Little Black River at CR 102
 - Clearwater River at CSAH 25 near Bagley
 - Polk County Ditch 2 at CR 62
- High biochemical oxygen demand concentrations were found in:
 - Poplar River at CR 118
 - Silver Creek at CR 111
 - Mud River at Hwy 89
 - Thief River at CSAH 7
 - Thief River at CSAH 6

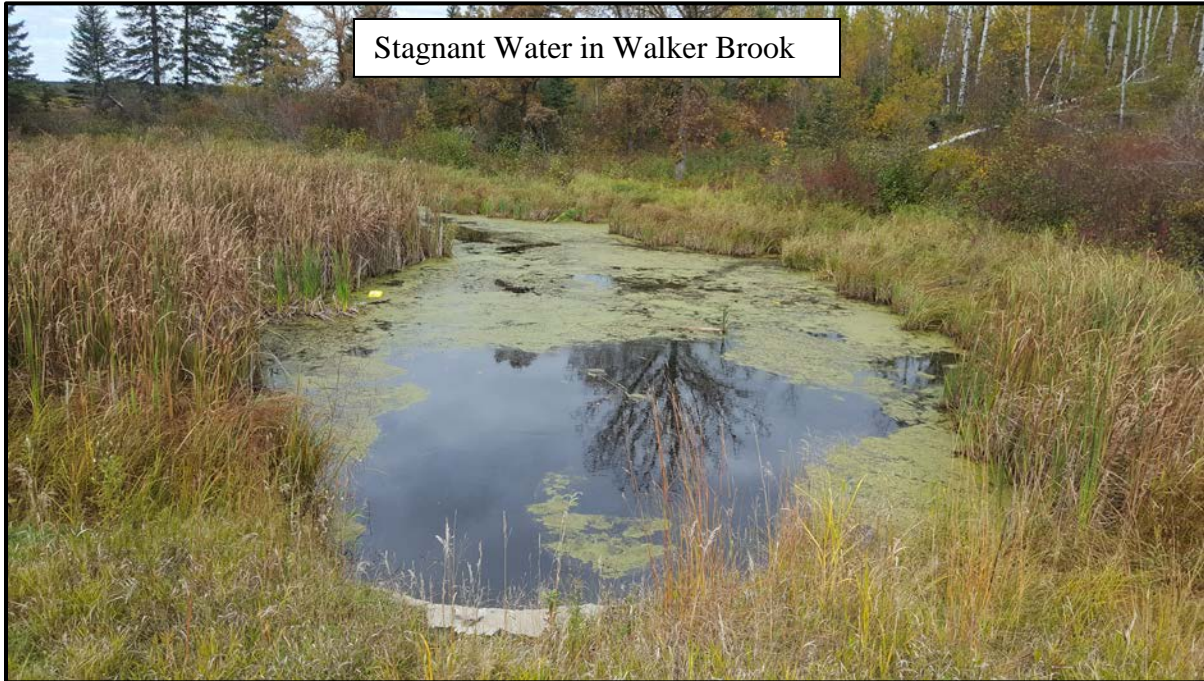


- A dissolved oxygen logger was deployed in the Mud River at the City Park in Grygla until the logger and deployment pipe were removed on September 21, 2016. Blue-green algae blooms are more likely in stagnant water. There was little chance for that to occur in 2016 because flows were relatively high in the late summer and fall.



Clearwater River Watershed Restoration and Protection (WRAP) Project

- Objective 2 – Water Quality Sampling
 - High concentrations of *E. coli* bacteria were found in:
 - Hill River at CSAH 35
 - Walker Brook
 - High concentrations of total phosphorus were found in:
 - North River Nutrient Region (>0.05 mg/L):
 - Ruffy Brook at CSAH 11
 - Central River Nutrient Region (>0.1 mg/L):
 - Low dissolved oxygen concentrations were found in:
 - Walker Brook



Stagnant Water in Walker Brook

- High concentrations of biochemical oxygen demand (>2.0 mg/L Central River Nutrient Region standard) were found in:
 - Hill River at CSAH 35
 - Tributary of the Poplar River Diversion (Gerdin Lake Outlet) at 240th Ave SE, north of Erskine
 - Poplar River at CSAH 27
 - Lower Badger Creek at 150th Ave SE

Stagnant Water in the channel that flows from Gerdin Lake to the Poplar River Diversion



- Objective 3 – Flow Monitoring
 - 6.67 cfs of flow was measured in the Poplar River at CSAH 30 on 9/15/16.
 - 1.85 cfs of flow was measured in the Hill River at 335th Ave on 9/22/16.
- Objective 5 – Stream Channel Stability Assessment
 - RLWD staff assisted MN DNR staff with geomorphology assessments along reaches that did not meet the requirements of biological standards (fish and macroinvertebrate indices of biological integrity) and were not visited during previous geomorphological work completed in the watershed.
 - Poplar River upstream of CSAH 27, east of Fosston



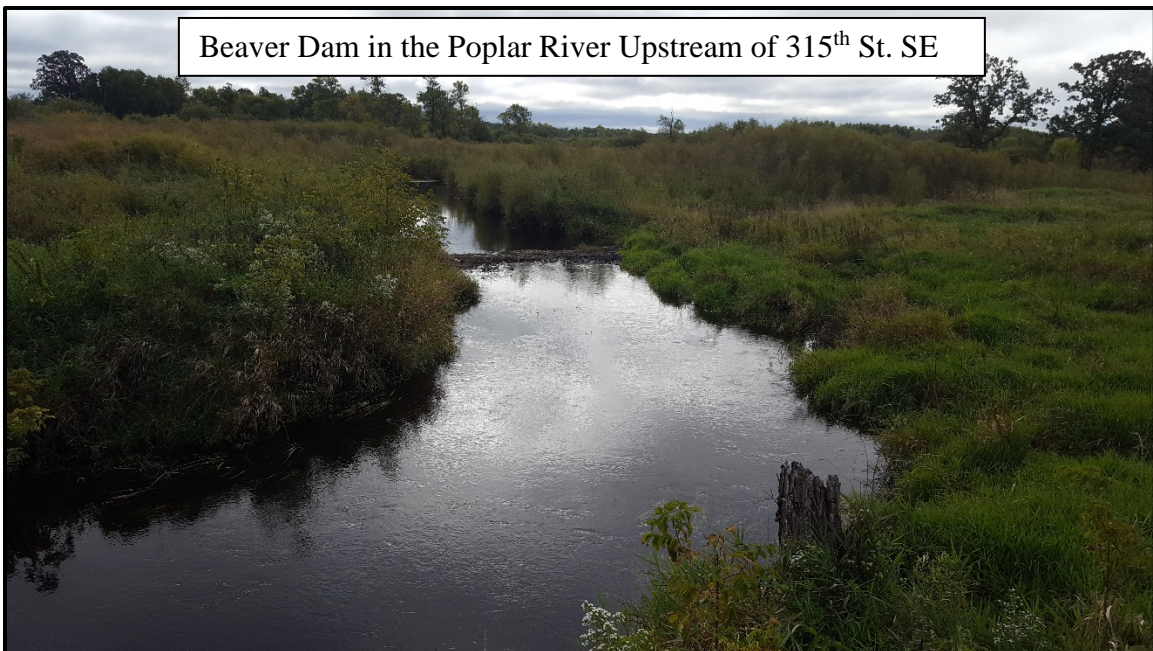
- Poplar River downstream of 315th St. SE, north of Erskine



- Poplar River upstream of CSAH 30, near Fosston



- Objective 6 – Stressor and Pollutant Identification
 - A flow rating curve was created for the Hill River at the 335th Ave crossing. The rating curve was used to calculate a flow record from manual stage measurements and measurements recorded with a water level logger. The dissolved oxygen record was then filtered to remove days in which there was zero or low flow. Removing those data points did not meaningfully decrease the rate at which dissolved oxygen levels fail to meet the 5 mg/l standard. Therefore, something other than flow may be limiting dissolved oxygen concentrations in the Hill River.



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

The end date of the Red Lake River WRAP contract was extended to December 31, 2016.

- Task 12 – Reports
 - RLWD staff spent time writing the Red Lake River Total Maximum Daily Load (TMDL) report.
 - Finished the “Applicable Standards” section of the TMDL report.
 - Stressor Section
 - AUID 09020303-515 of Burnham Creek fish and macroinvertebrate impairments
 - Identified the stage at which no flow occurs. Dissolved oxygen levels meet the standard when days with zero flow are filtered from the record.
 - Kripple Creek (09020303-525 and 09020303-526) fish and macroinvertebrate index of biological integrity impairments
 - Base flows and in-stream habitat need to be improved.
 - Little Black River fish index of biotic integrity (09020303-528)
 - Judicial Ditch 60 dissolved oxygen impairment (09020303-542)
 - Pennington County Ditch 96 fish index of biological integrity impairment
 - The dissolved oxygen record from CD 96 was examined.
 - Implementation Programs
 - East Grand Forks Stormwater Pollution Prevention Plan
 - TSS/turbidity concentrations and sources in Burnham Creek were examined for the WRAPS report. The stressor identification report identified excess sediment as a stressor. The TSS standard for this reach should have been set at 30 mg/l instead of 65 mg/l.
 - Kripple Creek *E. coli* TMDL calculations
 - Map of (draft) impaired waters in the Red Lake River watershed
 - Impoundment and SCS dam information

Grand Marais Creek Watershed Restoration and Protection Project

The RLWD and other project partners provided Emmons and Olivier Resources, Inc. (EOR) staff with a list of project ideas for the Restoration and Protection Strategies section of the Grand Marais Creek Watershed Restoration and Protection Strategy document. EOR staff worked on revision of pollutant source figures, TMDL report revisions based on RLWD and MPCA comments, WRAPS report development, and gathering restoration and protection strategies from technical advisory committee members.

Other Notes

- A water quality report for the month of March was completed.

- Improvements were made to Upper/Lower Red lakes web pages on the www.rlwdwatersheds.org website.
 - <http://www.rlwdwatersheds.org/2297560-general-info>
 - <http://www.rlwdwatersheds.org/2297608-wrap-info>
- The RLWD received a call about construction debris (Styrofoam insulation from construction at a school building) in the Red Lake River near the Thief River Falls Dam on 9/19/2016. Bits of white Styrofoam can be seen in the photo below. Workers had just finished cleaning up trash along the west bank of the river when RLWD staff arrived at the dam. Photos were taken. It was a windy day, so loose scraps of insulation could have easily blown into the river. The amount of Styrofoam pellets in the water was similar to the amount of other garbage that has floated down the river and accumulated near the dam. Information was relayed to the City Administrator.



- People have been catching catfish in Grand Marais Creek.
- The Red Lake DNR is planning an open house event for the Upper and Lower Red Lakes Watershed Restoration and Protection Project.
- Thief River WRAPS update
 - The United State Fish and Wildlife Service (Agassiz National Wildlife Refuge) submitted comments on the Thief River Watershed Restoration and Protection Strategy. The comments were submitted on September 2, 2016, several months later than other members of the technical advisory committee had submitted comments and more than a month after the end date of the project. Therefore, they were too late to be incorporated into the June draft WRAPS and TMDL documents. They will be considered and incorporated, where appropriate, when editing of the documents resumes under a new contract with the MPCA in 2017.

- Comments will be on hand from a preliminary EPA review of the TMDL and from the United States Fish and Wildlife Service (USFWS) to guide editing of the Thief River TMDL and WRAPS documents once the public review period and contract commence. The USFWS concern about the impacts of upstream land use upon Agassiz National Wildlife Refuge's pools is acknowledged. Any actions to improve upstream water quality conditions in the Mud River and Thief River will slow the rate of deposition in Agassiz Pool. USFWS staff have expressed an opinion that undue attention is paid to management of water and sediment in Agassiz Pool. The current reality of the situation, however, is that rivers meet the total suspended solids standard upstream of Agassiz Pool and the Thief River exceeds the standard downstream of Agassiz Pool. The Thief River and Mud River meet the 30 mg/L and 15 mg/L water quality standards (respectively) for total suspended solids where they enter the refuge and that the Thief River exceeds the 30 mg/L total suspended solids standard immediately downstream of the refuge. An essential goal of a water quality investigation is the identification of pollutant sources within the area in which the water quality of a river changes for the worse and becomes impaired. For that reason, application of due diligence required an examination what is going on within Agassiz Pool. Extensive data collection has documented the fact that discharge from Agassiz Pool has caused extreme water quality problems downstream, has caused problems with water treatment in the City of Thief River Falls, and has resulted in extensive sedimentation within State Ditch 83. Recent excavation and flushing of sediment from Agassiz Pool has made things worse. All of these things are documented by data and in-stream reconnaissance. USFWS actions and plans are documented in their own reports. Agassiz Pool is a very complicated issue that requires a great deal of explanation. It is also important to acknowledge that, although it is point at which the Thief River becomes impaired, Agassiz Pool is not the only characteristic of the watershed that is contributing to sediment loads. The WRAPS and TMDL documents also address pollutant sources like stream bank erosion and overland erosion from agricultural land. The excess sediment that is filling Agassiz Pool and being flushed downstream has come from sources upstream of the refuge. One study identified upland erosion as the primary source of that sediment. The WRAPS and TMDL documents will be reviewed to make sure that the discussion of all sediment sources is sufficient and comprehensive. Local agencies will work to improve buffers, stabilize streambanks, restore portions of channelized rivers, and install side water inlets to reduce the amount of sediment that is being carried into Agassiz Pool by the Thief River and Mud River.

September 2016 Meetings and Events

- **September 8, 2016** – RLWD Board of Managers Meeting. Water quality related items in the agenda and minutes included:
 - Cheryl Hornbuckle appeared before the Board to discuss erosion on the bank of Lake Cameron that is endangering her son, Scott Hornbuckle's, home. Mrs. Hornbuckle stated that on August 4, 2016, the Erskine area received a 4" rain event that severely eroded the bank behind Scott's home, with the bank slumping

and eroding, exposing part of the deck and foundation of the home. Staff member Loren Sanderson, Lisa Newton, East Polk SWCD and Stephani Klamm, MNDNR, have inspected the site. The landowners have been in contact with officials from Polk County and will be attending the City of Erskine Council Meeting to seek assistance. Mrs. Hornbuckle stated that they are looking for recommendations and assistance on how to handle the matter. The property in question is within the city limits of Erskine, therefore the county would have no jurisdiction. The Board expressed their concern for the Hornbuckle's situation, recommending that they would work with the City of Erskine for assistance. Discussion was had that the slumping had not entered the lake and therefore it did not appear the District would have jurisdiction or statutory authority to address the issue.

- Jake Huwe, HDR Engineering, Inc., presented plans for the City of Erskine Memorial Park stabilization project located on Cameron Lake. Huwe stated that they designed the repair with a 3:1 slope, with a key trench that will act as a barrier to hold the shoreline in place, along with the installation of fractured granite rock. The estimated construction cost is \$85,370. Huwe stated MNDNR and U.S. Army Corps of Engineers permits would be required. The Board voted to authorize HDR Engineering, Inc. to proceed with completion of the Plans and Specifications and submittal of the appropriate permits applications for the City of Erskine Memorial Park.
- Lisa Newton, East Polk SWCD, appeared before the Board to request \$7,500 from the East Polk SWCD allotted funds from the District's Erosion Control Project, RLWD Project No. 164 to be put towards the City of Erskine Memorial Park Stabilization Project, RLWD Project No. 164. The City of Erskine has committed \$25,000 for the project and the Erskine American Legion Club will donate \$5,000. The Board voted to approve the request of the East Polk SWCD for \$7,500 from the District's Erosion Control Fund for construction of the City of Erskine Memorial Park Stabilization Project.
- Administrator Jesme stated that Marshall County had initiated the submittal of a 1W1P grant application for the Thief River watershed. Jesme indicated that he worked with other potential partners to develop a grant application to BWSR and that he was recently notified that the proposal was selected.
- The Board reviewed correspondence from the Agassiz National Wildlife Refuge providing feedback on the Thief River Watershed Restoration and Protection Strategy (WRAPS) draft report. Administrator Jesme stated that staff member Corey Hanson and staff from the MPCA will follow-up with this correspondence.
- Administrator Jesme discussed a meeting he attended with the MNDNR regarding the existence of Starry Stonewort, an invasive species found in harbors located on Upper Red Lake as well as Turtle Lake near Bemidji. Starry Stonewort is grass-like algae that are not native to North America and looks similar to native grass-like algae such as other stonewort's and musk-grass. This particular plant does not like wave action but will thrive in marinas/harbors thus choking out native vegetation. MNDNR staff treated the invasive species with copper sulfate. Manager Coe stated that he attended a recent AIS meeting in Beltrami County and

that the MNDNR stated that they cannot afford to treat all the sites infested with starry stonewort.

- Administrator Jesme discussed recent phone calls he received about a landowner running a tile pump on a stubble field when the legal ditch system is full to capacity. Staff member Loren Sanderson will meet with landowner to try to rectify the situation.
- Staff member Loren Sanderson stated that due to the recent rain events, the gates on the Brandt Impoundment and Moose River Impoundment were closed until downstream conditions allow.
- **September 14, 2016** – Pennington County outdoor Education Day
 - RLWD staff helped with the “Incredible Journey” water cycle station and the casting station.



- **September 19, 2016** – Pennington County Water Resources Advisory Committee
 - The Pennington SWCD is working on a City of Thief River Falls Stormwater Assessment. Houston Engineering has been hired as a consultant and will recommend structures and BMPs for treating stormwater throughout the city.
 - The Pennington SWCD submitted a Clean Water Fund grant application for a project that will use drones to identify erosion problems, especially at the outlets of ditch systems. A Clean Water Fund grant application was also submitted for a drone project that would assess soil health in the Pennington County Ditch 21 drainage area.
 - Shoreland ordinance
 - “Urban segments” of the Red Lake River are regulated by city guidelines. Some homes are located outside of the city’s limits, but are in a location that is still under the city’s jurisdiction. There is overlapping authority between the county and the city.

- Speedee delivery service lost a cooler full of well testing samples that was being shipped from the SWCD to a lab for testing.
- Buffer Update – “Other Waters”
 - Look areas that have high stream power index values (high susceptibility to erosion).
- Inspection of septic systems in the Chief’s Coulee drainage area is about ½ done. A couple of problems have been found.
- The SWCD distributed Aquatic Invasive Species information at the Pennington County Fair.
- Starry Stonewort has been found in a private harbor on the eastern edge of Upper Red Lake, but it shouldn’t fair well in the lake. The invasive form of algae reportedly does not like wave action. Hopes are that it can be contained to a bay and eradicated.
- The RLWD Water Quality Coordinator discussed Red Lake River watershed impairments and sources, revival of the Red Lake River Corridor Enhancement project, and the status of the Thief River WRAPS project during the “activity reports” portion of the meeting.
- The City of Thief River Falls has purchased land to construct a new rock-lined sludge pond.
- There was discussion about the interrelationship of management of Agassiz Pool, water quality in the Thief River, and water quality in the rivers that flow into Agassiz Pool during the activity reports from the RLWD and Agassiz National Wildlife Refuge staff.
- MPCA, RLWD, and County representatives reiterated that the USFWS concerns will be addressed in future meetings and revisions to the WRAPS and TMDL reports.
- **September 8, 2016** – RLWD Board of Managers Meeting. Water quality related items in the agenda and minutes included:
 - The Board reviewed correspondence to the City of Erskine regarding erosion on the Hornbuckle property along Lake Cameron within the City of Erskine. Legal Counsel Sparby stated that the District would need to have a statutory basis for assisting in erosion on private property, or would have to show that the erosion affects water quality. It was the consensus of the Board, that the landowner and City of Erskine should work with the East Polk SWCD for potential funding sources to help repair the bank erosion.
 - Staff member Corey Hanson appeared before the Board to discuss the Thief River TMDL/WRAP Draft Report, RLWD Project No. 157B. Discussion was held on the results of various parameters throughout the Thief River watershed.
 - Manager Nelson discussed the spraying of cattails, vegetation and if there was any water quality monitoring near Goose Lake. Staff member Corey Hanson stated that he has completed some baseline monitoring on Little Black River but not on Goose Lake (*discovered later that the Pennington SWCD had indeed collected samples from within Goose Lake*). Corey mentioned that a lack of base flow is a problem for aquatic life in the river and indicated that strategically placed retention may help.

- **September 27, 2016** –Northwest Minnesota Water Festival in Warren
 - RLWD staff taught fourth graders about water quality, sediment, and turbidity.



- **September 28, 2016** – Northwest Minnesota Water Festival at Rydell National Wildlife Refuge.
 - RLWD staff taught fourth graders about water quality, sediment, and turbidity.



Quotes of the Month:

“Most things in life require effort even if, years later, they seem easy.”

- Anonymous

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

Learn more about the Red Lake Watershed District at www.redlakewatershed.org.

Learn more about the watershed in which you live (Red Lake River, Thief River, Clearwater River, Grand Marais Creek, or Upper/Lower Red Lakes) at www.rlwdwatersheds.org.

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