May 2019

By Corey Hanson, Red Lake Watershed District Water Quality Coordinator. 8/22/2019.

#### **River Watch**

The beginning of May was filled with River Watch monitoring and River of Dreams canoe launches.

- May 2, 2019 Training session and introduction to the program for the new Thief River Falls River Watch teacher
- May 7, 2019 Water quality monitoring with the Red Lake Falls River Watch group
- May 7, 2019 River of Dreams canoe launch for elementary students in Red Lake Falls
- May 8, 2019 Water quality monitoring with the Clearbrook-Gonvick River Watch group
- May 8, 2019 River of Dreams canoe launch at the Clearwater Lake Dam for Clearbrook-Gonvick elementary students
- May 10, 2019 River of Dreams canoe launch at People's Park in Plummer for Red Lake County Central elementary students



- May 10, 2019 Water quality monitoring with the Red Lake County Central River Watch group
- May 14, 2019 Water quality monitoring with the Win-E-Mac River Watch group
- May 15, 2019 River of Dreams canoe launch at the Riverside Park in Red Lake Falls for Win-E-Mac elementary students

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• May 16, 2019 – River of Dreams canoe launch at the Mud River for Grygla elementary school students



Clearwater River Watershed Restoration and Protection Strategy (WRAPS) Project

Staff from the RLWD and MPCA completed a workplan for the process of preparing these documents for the public notice period.

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#### Red Lake River Watershed One Watershed One Plan

An ArcGIS Online shapefile and map have been created for the purpose of tracking completed projects and proposed projects for the Red Lake River 1W1P by Mary Steinlicht of the Red River Valley Conservation Service Area.

MPCA staff shared a draft work plan for the Federal Clean Water Act Section 319 Small Watersheds Focus Grant workplan for the middle management area of the Red Lake River Watershed. Staff from the RLWD reviewed the document.

A Red Lake River 1W1P Planning Workgroup telephone conference on April 30th. The meeting was to review the minor changes to the existing Work Plan and submit to BWSR for approval. Items that were addressed included a bank stabilization project in the Burnham Creek Watershed that was initiated by the West Polk SWCD and clarification of funding for the stabilization of the outlet to the Thief River Falls Westside FDR Project.

#### Thief River One Watershed One Plan (1W1P)

Section 4 was revised by Houston Engineering, Inc. in May 2019. Watershed-based funding for the Thief River Watershed could be obtained in early 202 if the plan is completed in a timely manner. The Planning Work Group discussed potential projects for the first round of watershed-based funding for the Thief River Watershed:

- Stabilization of the outlet of JD 23
- Conservation tillage
- Cover crops
- Workshops (septic systems, drainage water management)
- Ditch inventory (Marshall and Beltrami Counties)
- Engineering and feasibility study for the Mud River re-meandering project within Agassiz National Wildlife Refuge
- Survey and design for the stabilization of the outlet of Judicial Ditch 30 in Pennington County
- Inventory of locations damaged by floods

One of the potential projects for the first Thief River One Watershed One Plan work plan is a stabilization project at the outlet of the Judicial Ditch 23 (Main). The Marshall County Soil and waters Conservation District has been working on finding a solution to the problem. The SWCD submitted an application for Clean Water Funds in 2018 but missed the cut for funding. When scouting locations for water level monitoring on that ditch, District staff photographed the bank failures that are threatening the road near the outlet of the ditch.

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Red Lake Watershed District Long-Term Monitoring Program

The first round of 2019 sampling for the RLWD long-term monitoring program was completed in May.

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High concentrations of total phosphorus were found in:

- RLWD Ditch 15 at CSAH 20
- Polk County Ditch 2 at County Road 62
- Grand Marais Creek at 110<sup>th</sup> St. NW
- Grand Marais Creek at 130<sup>th</sup> St. NW
- Heartsville Coulee at 13<sup>th</sup> Street in East Grand Forks
- Polk County Ditch 1
- Chief's Coulee at Dewey Avenue in northern Thief River Falls
- Nassett Creek

High Concentrations of *E. coli* bacteria were found in:

- Chief's Coulee at Dewey Avenue in northern Thief River Falls
- Blackduck River at Deer Trail Road
- North Cormorant River at CSAH 36
- Pennington County Ditch 96

High concentrations of biochemical oxygen demand were found in:

• Chief's Coulee at Dewey Avenue in northern Thief River Falls

Total suspended solids concentrations met standards in the lower Red Lake River. The outlet of Four-Legged Lake outlet will be monitored in 2019. The May sampling found very low concentrations of total suspended solids (<1 mg/L) and total phosphorus at the outlet of West Four-Legged Lake (233<sup>rd</sup> Ave). The *E. coli* bacteria concentration in Pennington County Ditch 21 was notably low. A bridge replacement may have fixed the *E. coli* problem in that ditch by eliminating structures (wooden beams) under the old bridge that were used as roosting platforms by pigeons. The May samples from Long Lake met water quality standards (21 ppb total phosphorus and 4.45 ppb chlorophyll-a).



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Erosion due to poor riparian vegetation upstream of the "Golf Course Bridge" over the Thief River



<image>

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Rock riffle grade stabilization structure in Marshall County Ditch 20 - still working well



A septic drain field along Silver Creek was noticeable during spring sampling due to its smell and that it wasn't hidden by vegetation at the time.



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Unpermitted ditch cleaning project near Pine Lake. The manner in which this ditch was dug has led to unstable banks a, erosion, and conveyance of sediment and nutrient pollution to Pine Lake.



Sediment moving along the bottom of an unpermitted ditch cleaning project, toward Pine Lake



District staff discussed the Clearwater River trout stream and sampling of Long Lake (near Pinewood) with a landowner, Charles Evenwoll. Long Lake was one of the few impaired lakes within the Clearwater River Watershed. A September 2018 sample easily met the water quality standards and an examination of the lake found very little evidence of ongoing pollutant sources. Evenwoll gave access permission to the RLWD for sampling in 2019. He also shared interesting information about the history of the Clearwater River River in that area.

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The Evenwoll family has owned land along the Clearwater River since 1892. When the family settled in the area, there were no roads, just trails. Historically, there were several dams along the Clearwater River. The dams were used around the turn of the century (late 1800s and early 1900s) to help with the transport of logs down the river to downstream mills. The "Bagley Dam" was constructed on the Evenwoll property. The dam created a large pool in the floodplain of the river (downstream of where CSAH 3 currently crosses the river. There was a lot of sedimentation within that pool. In fact, every dam had a pool and silt behind it. Today, that 3-4 feet of loose sediment is highly erodible and provides further explanation for the relatively unstable banks and active erosion that has been noted along that portion of the river. The embankments that were part of the old dam are still present today. The pool was deep enough that dead heads (logs that wouldn't float) would accumulate and a steam sawmill would be brought in to cut them up. There was a Headwaters Logging Camp along the Clearwater River near the railroad crossing of the river west of Pinewood. The foundations of those buildings are still there. The other dams were located upstream of CSAH 22 and near the "Tronnes Farm." There has also been a lot of erosion at the Tronnes Farm.

#### Monitoring Plan for the Lost Lake and Pine Lake Area



The RLWD Board of Managers and a Pine Lake Project Team are exploring the possibility of flood damage reduction projects within the watershed of Pine Lake. One project idea involves storing water at Lost Lake, a small lake along a headwaters portion of the Lost River. That portion of the Lost River, however, has been designated as a trout stream by the Minnesota Department of Natural Resources, which has raised issues in the permitting of an on-channel impoundment.

Despite the trout stream designation, the stream does not support trout and is not stocked for trout. The Minnesota Pollution Control Agency (MPCA) assessed the Lost River, within the designated trout stream portion, as a warm-water fishery and not a cold-water fishery. The MPCA collected biological samples and deployed temperature loggers during the Clearwater River Watershed Intensive Watershed Monitoring effort and found that the portion of the Lost River downstream of Lost Lake (Waterbody ID 09020305-530) did not meet habitat and water quality requirements of a trout stream and proposed reclassification of the channel as a warm water channel, not a cold water trout stream.

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To help answer questions about the current conditions in the lakes and streams, the Ditrict will conduct intensive water quality monitoring in the Pine Lake and Lost Lake area to characterize the current conditions of Lost Lake, Pine Lake, and the Lost River. District staff created a 2019 monitoring plan for the Lost lake and Pine Lake area and presented the plan at the May 17, 2019 Project Team meeting. The presentation included information on current monitoring efforts, water quality standards, current water quality conditions, and a proposed monitoring plan. The presentation was shared on the District's Clearwater River Watershed website:

http://www.redlakewatershed.org/Presentations/Pine%20Lake%20Area%20Water%20Quality%20Monitoring.pdf.

District staff also provided information and analysis to MNDNR staff after the Project Team meeting, including:

- Frequency of temperatures above 25° C.
- Presentations were shared with DNR staff
- Month-by-month analysis/summarization of temperature data
- Improved maps that include the footprints of the trout stream designations

The temperature threshold that is used to separate cold waters from warm waters is 20° C. As shown in the following chart, temperatures are typically lower than 20° C in Nassett Creek, but higher than 20° C in the Lost River.



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MPCA staff shared temperature data that they recorded with temperature loggers in the Lost River. MPCA staff also provided notes on this portion of the Lost River:

- The MPCA had collected two years of temperature data at the 14RD299 monitoring site (upstream of CSAH 18) and sampled the reach for fish twice (2014 and 2015). The reach had become stagnant and lacked sufficient habitat to collect a macroinvertebrate sample during either the 2014 or 2015 sample year. The average July and August water temperatures from the 14RD299 temp logger deployment were marginal for a coldwater use designation.
- In 2005, the MPCA collected a fish sample and temperature data just downstream from the CSAH 20 crossing. The 2005 logger deployment data included warmer water temperatures (often warm enough to be lethal to trout) than the downstream station deployment data.
- The DNR had indicated that this reach became designated as 2a water after trout were introduced in the late 1940's. However, the reach lacks suitable habitat and water quality for reproduction and survival of trout. The DNR also indicated that the change from a cold water to warm water use designation is not the result of degradation and instead is a correction to an incorrectly classified AUID.
- Based on the data the MPCA had collected, and conversations between MPCA and MNDNR staff, MPCA staff wrote the following summary as a proposal for changing the use class on the Lost River (09020305-530) from 2a to 2b: "The Lost River, from Unnamed Creek to the north line

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of T148 R38W S20, as well as its tributaries designated as Class 2A, is proposed to be reclassified as Class 2B waters. The MDNR currently classifies the Lost River (from Unnamed Creek to the north line of T148 R38W S20 and all of its tributaries) as marginal trout (Class 1D) water. Stocking reports indicated that the reach was stocked with brook trout from 1947 to 1975. No documented evidence of natural reproduction could be found. No additional reports or information regarding the cessation of stocking could be located. The MNDNR no longer manages the Lost River for trout. The MPCA collected fish community data at two stations on the Lost River. The furthest upstream station, located just downstream of CSAH 20, was sampled in 2005. No coldwater fish species were collected. Temperature data collected at this location indicate thermal stress was recorded 40% of the time and the lethal threshold was exceeded 18% of the recorded time. The summer average temperature was 21.4 degrees. The downstream station, located just upstream of CSAH 18, was sampled in 2014 and 2015. No coldwater fish species were collected. Temperature data was collected from 2014 -2015. Thermal stress ranged from 33 - 37% of the recorded time and the lethal threshold was reached 0 - 1% of the recorded time. The summer average temperature was 19.30 C in 2014 and 18.60 C in 2015. Considering this information, it is reasonable to remove the Class 1B, 2A, 3B classifications assigned to cold waters and replace them with uses assigned to cool/warm waters, Class 2B and 3C. The MPCA proposes to make this change in Minn. R. 7050.0470, subp. 4, item A, subitem 28 to acknowledge the cool/warm water characteristics of this stream."

Comments regarding the assessment of aquatic life based on the biological data: "One biological monitoring station was located on this 4.4-mile general use AUID of the Lost River. Two visits were made to station 14RD299 - one visit in 2014 and on in 2015. This AUID was previously designated as cold water but was changed to warm water based on biology, temperature data, and conversations about historical management practices with MNDNR. The 2014 visit northern headwaters FIBI score was well below the threshold (sample was collected early and late spring occurred that year). The 2015 visit FIBI score was 3 points above the threshold. Similar numbers of species were collected in both samples. Much higher numbers of lithophilic spawners were present in 2015 (along with northern redbelly dace a sensitive headwaters species). Recommend full support for aquatic life based on the fish community."

Landowners were contacted to get access permission for monitoring of Lost lake. District staff scouted monitoring locations and began monitoring water levels, measuring flow, and sampling water quality in the Lost River, Lost Lake, and Pine Lake. District staff explored the area where branches of the Lost River flow into Lost Lake in order to create a monitoring strategy for the streams and the lake. Water quality conditions at the sampling sites in the Lost River and Lost Lake met water quality standards in May 2019. The total suspended solids concentration in the Lost River downstream of Lost Lake (141<sup>st</sup> Ave) was less than the lab's minimum reporting limit (<1 mg/L).

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Several small stream channels converge in Lost Lake. The larger two of those streams will be sampled (Lost River at 141<sup>st</sup> Ave and a tributary of the Lost River at 410<sup>th</sup> St).





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Water cascades over and around a series of beaver dams and remnants of dams as it flows toward Lost Lake from the southeast.



A small, clear stream flows between a wetland and Lost Lake.



Beaver activity at the confluence of streams near the inlet to Lost Lake



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Lost River tributary at  $410^{\text{th}}$  St – perched culvert





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View from the west side of Lost Lake, May 7, 2019.



View from the east side of Lost Lake on May 23, 2019 - water levels had dropped significantly



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Lost River downstream of Lost Lake, at 141<sup>st</sup> Ave





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Water flowing around a beaver dam and causing erosion, upstream of Lost Lake, near the inlet.



#### **Stream Gauging**

A plan for 2019 deployments of water level loggers and dissolved oxygen loggers was prepared. Water level loggers were deployed at stage/flow monitoring sites throughout the District.

Discussions between the District and the MPCA identified a need for temporary flow measurement stations on ditches in the Thief River Watershed (Judicial Ditch 23 and the upper reaches of Marshall County Ditch 20 that had been sampled by the MPCA for aquatic biology (fish and macroinvertebrates). The flow monitoring will provide evidence of whether the channels have intermittent flow or if they flow throughout the year. If they are intermittent, the MPCA will be less likely to assess the ditches. It will back up the view of District staff that sampling of intermittent ditch systems for biology should not be a priority. Concerns have been raised by watershed district staff throughout the Red River Basin about whether biological impairments on artificial watercourses could affect the ability to perform ditch maintenance work.

District staff began conducting flow measurements at the District's stage/flow monitoring sites with the goal of getting at least one measurement at each site in 2019.

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Upper reach of the CD 20 drainage system where the MPCA collected biological samples





#### Other Notes

- Water quality related notes from the May 9, 2019 Red Lake Watershed District Board of Managers meeting:
  - The Board viewed a drone video of flooded cabins along the shore of Pine Lake.
  - The Red Lake County River Watch students presented their project that they completed for the River Watch Forum, where they were awarded first place.
  - o Staff member Corey Hanson updated the Board on the Water Restoration and Protection Strategy (WRAPS) Reports for the Thief River Watershed, Grand Marais Creek Watershed, Red Lake River Watershed, and Clearwater River Watershed, that are wrapping up this year. Hanson stated that WRAPS is a MPCA system for assessing water quality and creating restoration and plans. Hanson discussed the Total Maximum Daily Load (TMDL) Reports he wrote that address impairments and how to restore them. Discussion was held on the tasks that were completed for each WRAPS project, including Civic Engagement processes that were efforts to keep the public informed. Discussion was held on the water quality results found on the Lost River upstream of Pine Lake. Hanson will be collecting extra water quality data on the Lost Lake upstream of Pine Lake in 2019 to characterize pre-project water quality conditions in preparation for a potential FDR project in that area. Hanson noted that the Red Lake DNR took the lead role on the Upper and Lower Red Lake TMDL's; the MPCA is currently reviewing their draft TMDL report. Hanson discussed the public notice contract in the amount of \$7,500 with the MPCA for the Clearwater River Watershed Restoration and Protection Strategy Public Notice, RLWD Project No. 157E. Motion by Tiedemann, seconded by Ose, to approve the public notice contract with the MPCA for the Clearwater River Watershed Restoration and Protection Strategy Public Notice, RLWD Project No. 157E. Motion carried.
- Water quality related notes from the May 23, 2019 Red Lake Watershed District Board of Managers meeting:
  - District Manager, Nicole Berndt, and District Technician, Duane Steinbrink, West Polk Soil and Water Conservation District, presented a proposal for a cost share of a grade stabilization project in the Burnham Creek area. This is one of the first projects to be funded in part with the One Watershed One Plan monies. The cost estimate is \$77,364.00 with a request for cost share funding from the RLWD's Erosion Control Funds. Following discussion, a motion was made by Tiedemann, seconded by Dwight, and passed unanimously, to approve a cost share of \$15,000 from the RLWD Erosion Control Funds for the Burnham Creek grade stabilization project.
  - Due to the loss of a water level logger in a stream and the addition of 6 additional water testing sites in 2019, staff member Corey Hanson presented a proposal to purchase 5 -7 Water Level loggers. Following discussion on the equipment, motion by Ose, seconded by Dwight, to purchase 7 Onset HOBO water level loggers at a quoted price of \$3,164. Motion carried.
- The Red Lake Department of Natural Resources has completed a draft version of the Upper/Lower Red Lakes Watershed Restoration and Protection Strategy.
- District staff helped new East Polk SWCD staff with their first round of stream monitoring.
- A water quality report for November-December 2018 was completed.

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• District staff identified erosion problems within the immediate drainage area of Maple Lake in preparation for a Maple Lake Improvement District meeting.

Cultivated field near the edge of water along Maple Lake



• There are some significant, active erosion problems along the Black River, upstream of CSAH 18. One of the erosion problems may be a meander cut-off that could make upstream erosion problems worse if it is not addressed.



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- Some of the District's Onset HOBO water level loggers were shipped for battery replacements.
- The Clearwater Lake Area Association published a May 2019 Dockside newsletter. The newsletter featured summaries of the shoreline restoration projects that were funded by an Ecofootprint Grant. <u>https://minnesotawaters.org/clearwaterlakearea/wp-content/uploads/sites/25/2019/05/Dockside\_May2019\_for-Posting.pdf</u>

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 A homeowner in northern Thief River Falls (near Dewey Avenue and the Farmers Co-Op Elevator) complained of foul-smelling discharge from the northern buildings of the co-op into a ditch in his backyard. District staff investigated the problem and contacted the MPCA. The city of Thief River Falls had also been contacted by the homeowner and had also contacted the MPCA about the issue.

![](_page_23_Picture_3.jpeg)

![](_page_23_Picture_4.jpeg)

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- District staff worked with MPCA staff to schedule a July 10, 2019 Professional Judgement Group meeting to the water quality and biological assessment results for deferred streams (ditches that weren't assessed in 2013) in the Thief River Watershed. The MPCA has completed a preliminary assessment of 22 channelized streams and ditches. Seven of those reaches were not meeting biological standards and may be impaired by poor biological scores. A draft list of impaired waters needs to be completed by September.
- New Onset HOBO water level loggers were also ordered.
- A landowner along the south shore of Upper Red Lake contacted the District to complain about excess filamentous algae, potential blue-green algae, and a foul rotten-egg smell along his lakeshore that may have been exacerbated by discharge from nearby wild rice paddies. The information from the landowner was passed along to Red Lake DNR staff. The landowner will contact the RLWD this summer if the problem occurs again.
- The Clearwater River documents and resources website was updated: <u>https://www.rlwdwatersheds.org/plan-documents</u>
- The MN DNR sampled fish in Grand Marais Creek on May 22, 2019. They captured Channel Catfish in all five locations where trap nets were set. In addition, 13 fish species (Northern Pike, Sauger, Walleye, Black Crappie, Freshwater Drum, Common Carp, Quillback...) were captured throughout the Restoration Project. It appears fish are utilizing the restoration project during spring flows.

#### Meetings and Events from May 2019

- May 1, 2019 Thief River One Watershed One Plan Planning Work Group conference call
- May 2, 2019 Marshall County Water Resources Advisory Committee
  - There was a lot of discussion about the Thief River 1W1P.
    - Some of the resistance to additional water storage for flood damage reduction comes from the view that there has been a lack of credit given to existing storage in the county.
    - The Marshall County SWCD has been busy with septic system replacements and new installations. Some of the septic system projects were funded by a \$23,476 grant.
    - o The Marshall County SWCD sealed 27 wells last year.
    - o SWCD staff helped with the area Envirothon contest that was held in late April.
    - Marshall County will likely receive Federal disaster funding for debris removal, culvert washouts, and other damage that occurred near the Red River of the North, especially near Oslo.
    - Kyle Arola is the new manager at the Thief Lake Wildlife Management Area, replacing Joel Huener.
    - The Lower Red River Watershed TMDL and WRAPS reports have been approved.
    - o The Minnesota Board of Water and Soil Resources (BWSR) has overhauled its website.
    - Because impoundments in Agassiz NWR had been drawn down, there was more room for storage during spring runoff (35,000 acre-feet of total storage).
    - Agassiz National Wildlife Refuge Manager Craig Mowry will be leaving for a new job in Kansas in mid-July.
- May 9, 2019 Maple Lake Improvement District Meeting
  - District staff met with East Polk SWCD staff prior to the meeting to discuss potential projects

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- Prairie Restorations has helped with shoreline restoration workshops.
- A map of erosion problems and locations where runoff could be treated with best management practices (BMPs) was discussed.
- Ways to publicize shoreline restorations, rain gardens, and other BMPs should be explored. The SWCD will produce a Lake Leader newsletter that is specifically targeted for Maple Lake residents.
- Example projects, especially in public areas, could increase interest in shoreline restoration and rain garden projects.
- The Maple Lake Improvement District's large annual meeting was scheduled for July 13, 2019 at the Mentor Community Center.
- The MLID members asked the SWCD staff if they could contact landowners where BMPs are needed to gauge interested in installing grade stabilization structures or other BMPs.
- May 17, 2019 Pine Lake Project Team Meeting
  - District staff presented on current water quality conditions in the Pine Lake and Lost Lake area and proposed a 2019 monitoring plan to characterize water quality in the lakes and streams in that drainage area.
  - The trout stream designation was one barrier to moving forward with a project on Lost Lake. There was discussion about how the designation could be removed. There appeared to be an impasse between the local project team and the DNR and both sides were concerned about sunk costs. The project team and the RLWD have spent a lot of time and money trying to plan projects to address flooding. The DNR has sunk costs in the form of easements along the designated trout stream. There was also an issue with DNR staff choosing not to act on the reclassification of the stream due to personnel issues (impending retirement) rather than factual reasons.
  - Data shows that the Lost River is not close to supporting trout downstream of Lost Lake, however. The 2019 monitoring will evaluate the current conditions in the Lost River and its tributaries upstream of Lost Lake to see if there is a possibility of those streams supporting trout.
  - Other questions or points of debate posed during the meeting that may require additional research or study included:
    - How would the impoundment of water at Lost Lake affect water temperatures and dissolved oxygen levels?
    - Additional (raw) temperature data from the MPCA
    - What were the MN DNR fish sampling results for Pine Lake?

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

Learn more about the Red Lake Watershed District at <u>www.redlakewatershed.org</u>.

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 <u>www.rlwdwatersheds.org</u>.

"Like" the Red Lake Watershed District on Facebook to stay up-to-date on RLWD reports and activities.