

By Corey Hanson, Red Lake Watershed District Water Quality Coordinator. 10/10/2019.

- Lake sampling
- Blue-green algae sampling
- River Watch
- Clearwater Lake Shoreline Restoration
- Logging Legacy: Historical dams along the trout stream reach of the Clearwater River
- Red Lake River Watershed Restoration and Protection Strategy
- Intensive monitoring in the Lost Lake and Pine Lake area
- Stream gauging
- Thief River One Watershed One Plan
- Red Lake River One Watershed One Plan

Lake Sampling

In addition to sampling Lost Lake and Pine Lake in 2019, the District is also collecting samples from Long Lake, near Pinewood, to determine whether or not the lake is still impaired. The lake met lake eutrophication water quality standards in the June 2019 samples. Reconnaissance of the lake in 2018 found very little shoreline disturbance and included a set of samples that met water quality standards. Long Lake has no public accesses, so District staff have been in contact with a primary landowner along the lake to obtain access permission, learn about the history of the lake, and share sampling results. The landowner noted some potential historical sources of nutrients like the former cattle operation, and residence on the north side of the lake that used to have a straight pipe to the lake instead of a septic system. Lost lake completely freeze-out (winterkill of fish) recently. Some fish have returned, but bullheads were eliminated by the freeze-out. The landowner suspected that the bullheads were negatively affecting water clarity because the water was never clear when the bullheads were in the lake.

Blue-Green Algae Monitoring

- District staff regularly collected samples at the Maple Lake public beach, where the District's highest measured concentration of algal toxins was discovered in 2018. All 2019 samples were negative for algal toxins (0 ppb). A temperature logger was also deployed in the lake to help us learn more about how water temperature can affect the prevalence of blue-green algae.
- The District was contacted by a landowner along the south shore of Upper Red Lake that was concerned about excess algae blooms (filamentous algae and possibly blue-green algae) and effects that drainage of wild rice paddies. He sent photos of piles of filamentous algae on his lakeshore (from 2018). He was encouraged to call if the problem recurred in 2019 so that it could be examined in person and the water could be tested for the presence of algal toxins.

River Watch

The International Water Institute's June 2019 River Rendezvous newsletter (#37, <https://us15.campaign-archive.com/?u=d4cf6826977511bce55ceeb54&id=56fb2e4a9b>) featured the River of Dreams program that teaches young students about watersheds through classroom visits and miniature canoe launches. The program has been featured in several newspapers, including the Grand Forks Herald, Valley City Times, and Wahpeton Daily News.

Clearwater Lake Shoreline Restoration

The latest edition of the Clearwater Lake Area Association (CLAA) describes the shoreline restoration projects that were completed along the lake. The CLAA worked with the Beltrami County and Clearwater County Soil and Water Conservation Districts to complete the projects. The project was funded by an Enbridge Ecofootprint Grant (\$75,000), landowners (10%) and the RLWD (\$12,500 for sites in Beltrami County and \$4,798 for sites in Clearwater County). The Projects were completed on four properties along the lake that were experiencing shoreline erosion.



Coconut fiber logs were used to stabilize the shoreline and give native plants an opportunity to take root behind the logs. Aquatic vegetation was also preserved/established along the shorelines to help protect the shoreline from wave action and to provide habitat. Jo Lynn Chadwick, CLAA Secretary, shared some photos of the completed restorations.



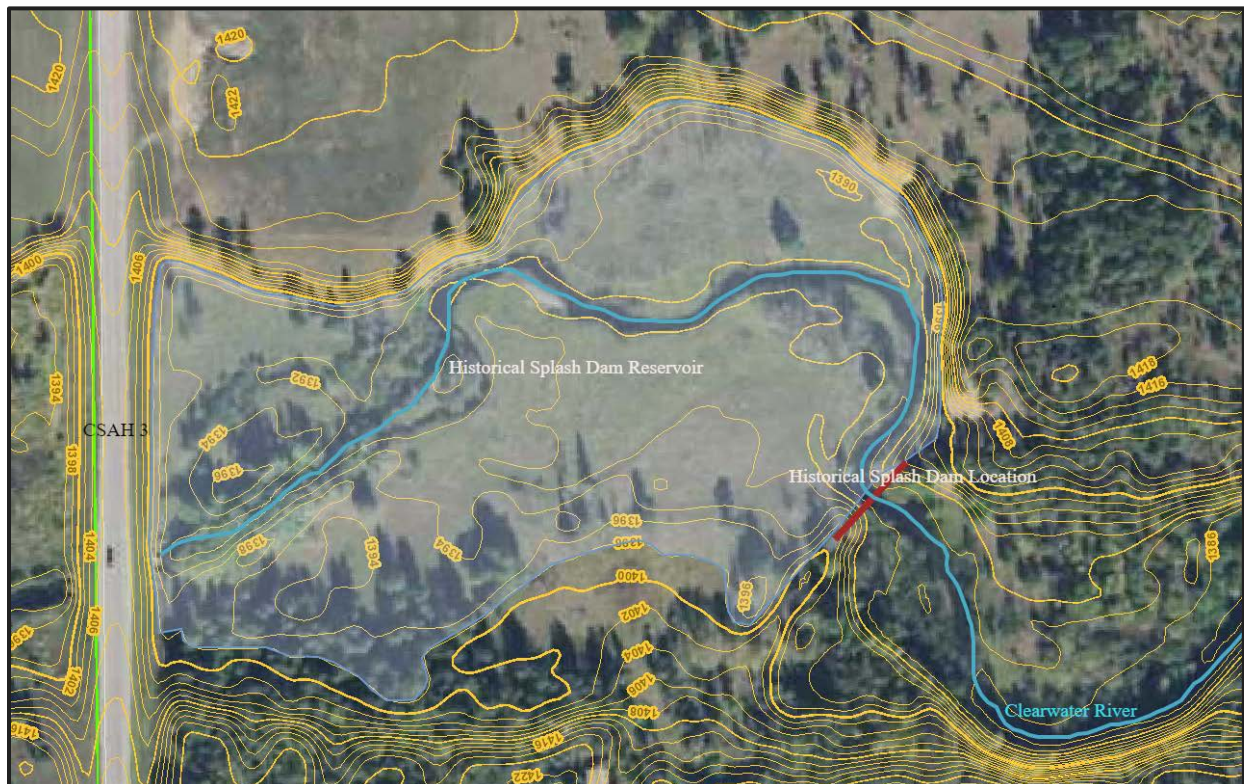
Logging Legacy: Historical Dams along the Trout Stream Reach of the Clearwater River

District staff met with landowner Charles Evenwoll to view the location of an old splash dam and reservoir pool that were used for staging and then moving logs down the river. Charles shared more of his knowledge of the history of the Clearwater River. He owns land along Long Lake, the Clearwater River, and other areas, including a portion of the trout stream reach of the Clearwater River.



Logs on the Clearwater River.

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 area had the largest white pine stand in northern Minnesota when it was first logged. The stand was also characterized by the large size of its white pine trees.

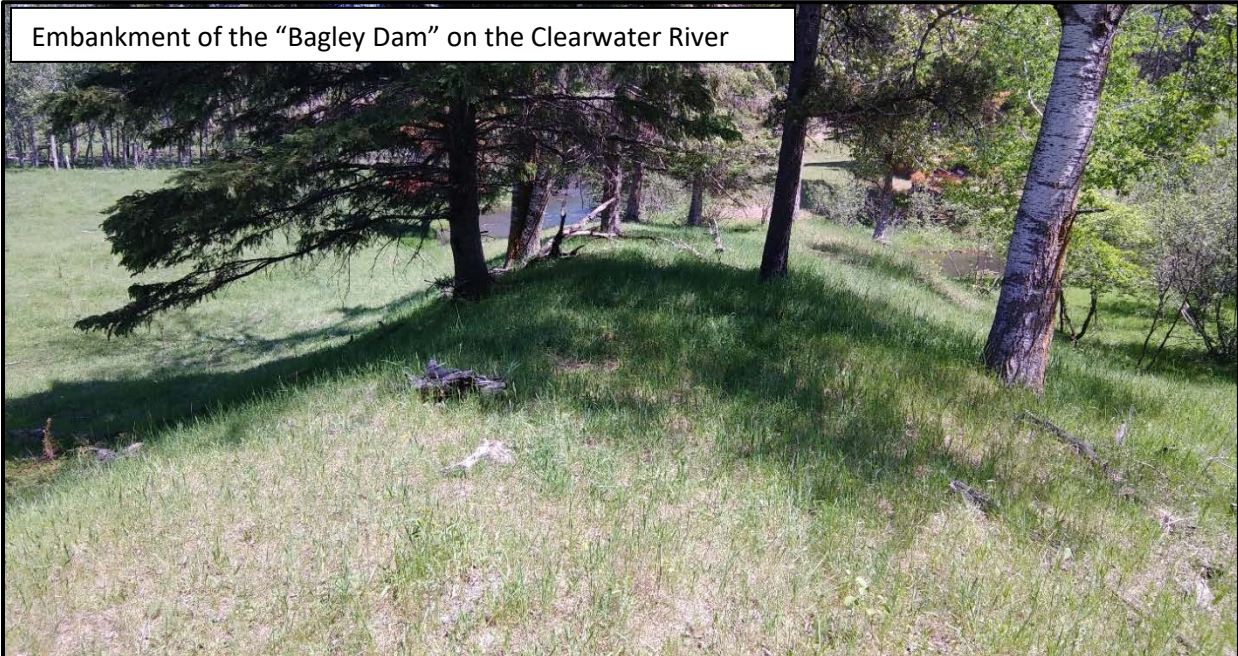


The “Bagley Dam” was constructed on the Evenwoll property. The dam created a large pool in the floodplain of the river (downstream of where CSAH 3 currently crosses the river. Logs were piled on the ice behind the dam and floated downstream in the spring by opening or removing the dam. Opening these splash dams would create a little flash flood that would flush the logs down the river. The logs would be floated down the river to Clearwater Lake and then a long log drive, complete with wanigans (a type of houseboat), would take the logs to sawmills in Red Lake Falls, Crookston, and Grand Forks.

Logs were also piled on the shore of the pool behind the dam. After the logs on the ice were floated downstream, the logs on shore would be rolled into the river. Logs could be spaced out to prevent log jams. 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 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. There also appeared to be some remnants of the dam in the river. Much of the man-made earthen dam and an outline of the pool are evident on-the-ground and in topographic maps but are much easier to envision after learning about the history of the area.

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,” west of Buzzle Lake. There has also been a lot of erosion at the Tronnes Farm.

Embankment of the "Bagley Dam" on the Clearwater River



Embankment of the "Bagley Dam" next to the Clearwater River



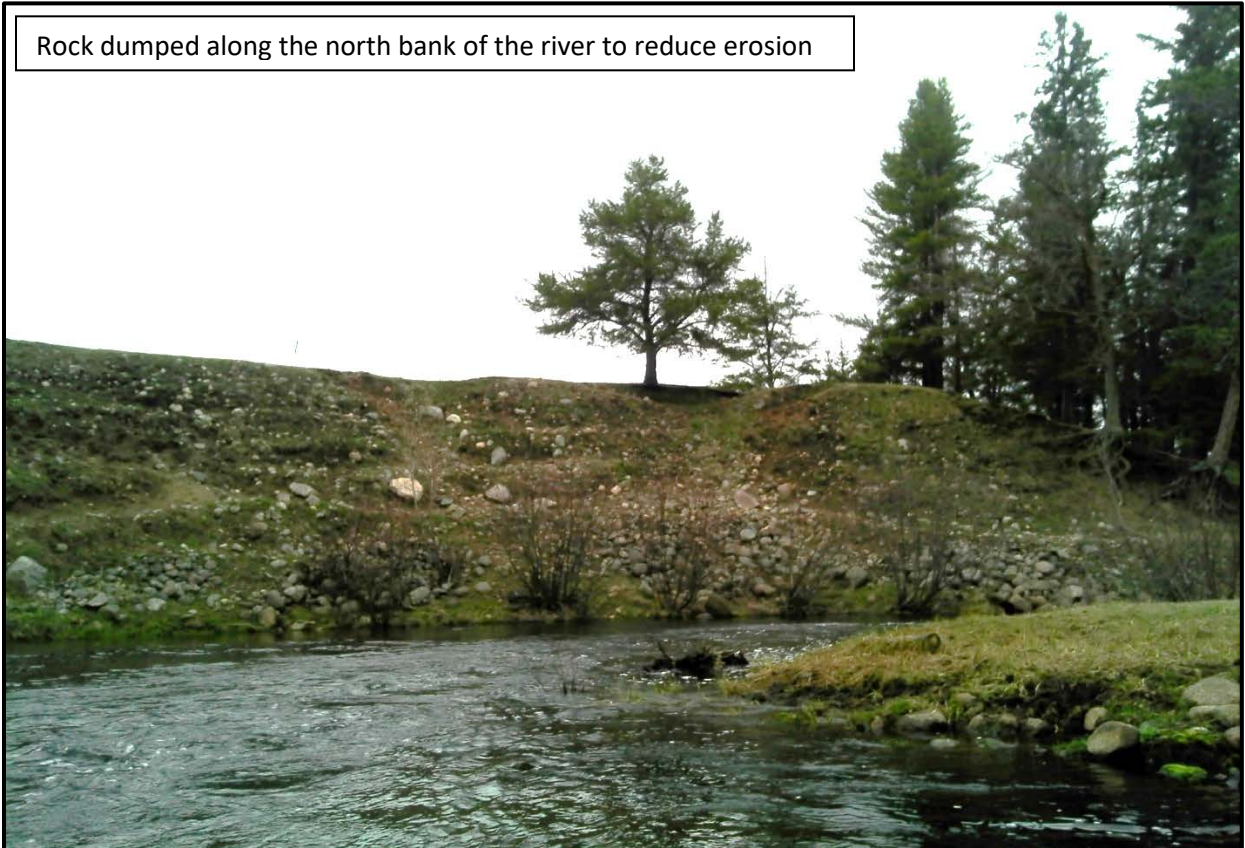
Remnants of the "Bagley Dam" in the Clearwater River



This portion of the river was assessed during the fluvial geomorphology study. The pool area, which was being grazed, had more active erosion than other areas along the river. It was assumed that the removal of vegetation by grazing was the cause of the eroding banks. There was a significant difference between the banks within the pool area and the well-vegetated (more shrubs and trees) banks downstream. The splash dam reservoir was likely cleared of trees when it was in use and, according to the landowner, approximately four feet of sediment accumulated in the valley behind the dam. That loose, silty sediment would be more easily eroded, relative to the rest of the river. The sediment is very rich, garden-quality soil. Sediment was likely deposited at a level that is greater than the current bankfull height, so that would make it even more vulnerable to erosion. The river is also pastured downstream of the former dam but has relatively stable banks that are better vegetated with shrubs and small trees. Charles noted that shrubs have had a hard time growing within the old pool area. A portion of the river within the pool, downstream of CSAH 3, has been dredged and straightened. It historically meandered to the north, downstream of the road and there were some erosion problems on the north side of the river. Downstream of the straightened portion of the river, there is still a tall bank that has had erosion problems in the past. The DNR dumped rock down that large, steep slope in an attempt to slow the erosion.

The landowner has been asked, by state agencies, to fence his cattle away from the river. He feels that he would rather remove the cattle from the area than clutter the scenic river valley with fencing and has plans to do so. Removing the cattle would also reduce physical disturbance of the banks and reduce *E. coli* concentrations in the river. The establishment of native plants was discussed as a way to add deep-rooted protection for the streambanks while complementing the aesthetics of the valley.

Rock dumped along the north bank of the river to reduce erosion



Erosion of the sediment that was deposited within the historical reservoir



Red Lake River Watershed Restoration and Protection Strategy (WRAPS)

MPCA staff, when reviewing the draft WRAPS and TMDL documents, asked about the current status of streams/ditches that the WRAPS process had identified as needing a better buffer. Some of those locations have been planted to comply with the Buffer Law, but some streambanks and ditch banks were still lacking a buffer.

Burnham Creek (Waterbody ID 09020303-551, upstream of CSAH 45): Right of way markers have been placed along AUID 551 and farmers are abiding by those stakes. The right of way markers upstream of CSAH 45, however, were placed at the crown of the ditch channel. That may have something to do with the long ditch slope or the amount of right of way that was purchased. At the other crossings, the channel was buffered beyond the spoil bank. Some tributary ditches in the Burnham Creek subwatershed have inadequate buffers and fields that are plowed to the crown of the ditch bank. County Ditch 130 had severe erosion problems.

Good buffer, with RLWD markers, along Burnham Creek



Erosion along CD 130, near Burnham Creek



Gentilly River: There were some fields with recently planted (spotty, not well-established) buffers near some crossings along the channelized portion south of Highway 2. However, there were still multiple cultivated fields that had no buffer along the channel.

Cyr Creek: Some progress has been made with buffer installation along Cyr Creek, with some recently planted (sometimes spotty) buffers. However, there were still portions of the channel and tributary ditches with no buffer.

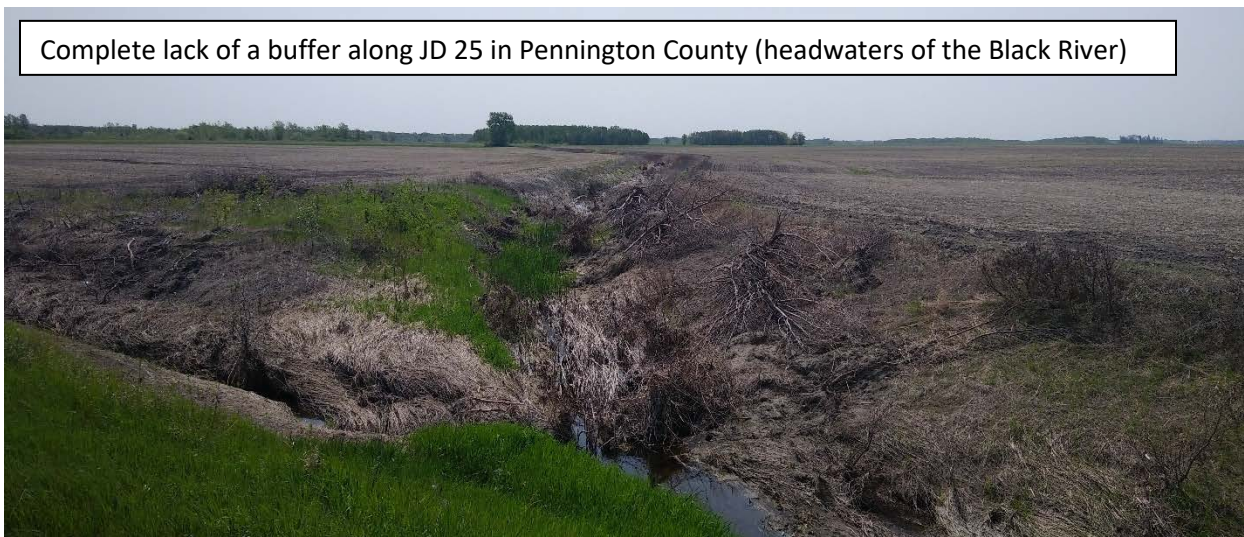
Poor buffer and erosion along Cyr Creek in Red Lake County



Black River (Waterbody ID 09020303-558, channelized portion): New buffer has been planted along much of the JD 25 portion of Burnham Creek upstream of 110th avenue, but the buffers near 120th Ave haven't been improved. Much of the channelized portion (Waterbody ID 09020303-557) also lacks trees and shading of the channel. The east-west-flowing portion of JD 25 is still farmed to the edge of the ditch bank.

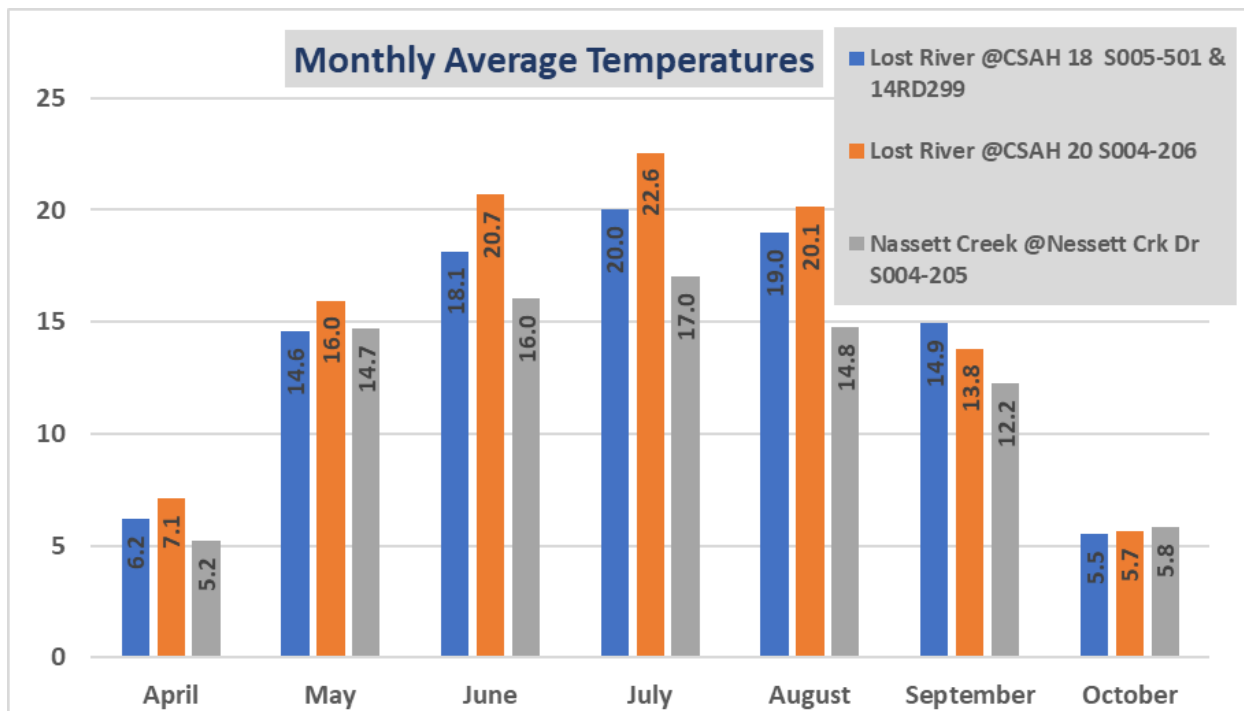
Pennington County Ditch 43: The portion of Pennington County Ditch 43 downstream of CSAH 27 still has no buffer. The channel upstream of CSAH 27 has a recently established buffer.

Complete lack of a buffer along JD 25 in Pennington County (headwaters of the Black River)



Intensive Monitoring in Lost Lake and Pine Lake Area

Temperature data from the designated trout stream portion of the Lost River was summarized and compared to data from Nasset Creek. Nasset Creek’s temperature and dissolved oxygen levels are closer to levels that would support trout than the Lost River, which has significantly warmer temperatures and has had low dissolved oxygen levels.



Twice each month, samples were collected from Lost Lake, the Lost River and a tributary upstream and downstream of Lost Lake, and the Lost River upstream and downstream of Pine Lake. Pine Lake was sampled once each month during the summer of 2019. Lost Lake met water quality standards for lake eutrophication and also had low *E. coli* concentrations in June 2019. HOBO water level loggers were installed in the streams near the inlets and outlets to Lost Lake and Pine Lake. HOBO dissolved oxygen loggers will be deployed at those sites when they are shipped back from the company with new batteries. Water levels in Lost Lake had dropped after the initial reconnaissance of the lake. A hole had developed in a beaver dam at the outlet of the lake. The decrease in water level appeared to be causing some erosion upstream as well. Water flowing around a beaver dam near the inlet of the lake was cutting down and eroding due to the increased head differential. Pine Lake had very clean water and met water quality standards this month. The Secchi disk reading in Pine Lake (June 12, 2019) went all the way to the bottom of the lake.

Hole in the beaver dam at the outlet of Lost Lake



Water flowing around a beaver dam near the inlet to Lost Lake



Stream Gauging

New HOBO water level loggers were purchased and deployed at Lost River monitoring sites near Pine Lake and Lost Lake. Water level loggers were deployed in Pennington County Ditch 96, Judicial Ditch 73 near Rydell National Wildlife Refuge, the Hill River upstream of Hill River Lake, Clearwater River at CSAH 2, Moose River at CSAH 54, and Branch A of Judicial Ditch 21. Flow was measured in Marshall County Ditch 20 at Sharon Road, Hill River at CSAH 19 near Brooks, Poplar River at CSAH 118.

Thief River One Watershed One Plan (1W1P)

District staff reviewed a full draft Thief River One Watershed One Plan document. A Planning Work Group phone conference was held to discuss comments on the full draft of the plan.

Red Lake River Watershed One Watershed One Plan

- District staff reviewed a draft Section 319 Small Watersheds Focus work plan for the Red Lake River that was drafted by MPCA staff.
- A Red Lake River 1W1P Planning Work Group conference call was held on June 10, 2019.
 - Assembled an agenda for an upcoming Policy Committee meeting
 - Discussed a cost share policy
 - Reviewed the wording of an amendment
 - A contract template and checklist will be posted on the 1W1P website
 - The word “practices” will replace “SWIs” throughout the cost share policy to make it less specific.
 - The Policy Committee has no authority to enter into contracts because a Joint Powers Authority was not formed.

Other Notes

- The District’s Onset HOB0 dissolved oxygen loggers were all shipped to Onset for battery replacements in the early summer, 2019. When they arrived back at the RLWD office, staff began deploying them at Pine/Lost Lake monitoring sites and at other strategic locations. In addition to intensive studies like the 2019 Pine/Lost Lake area monitoring, District staff have a 10-year plan for collecting continuous dissolved oxygen records at sites along significant reaches of streams and ditches prior to the next round of formal MPCA water quality assessment. In June 2019, a dissolved oxygen logger was deployed in Pennington County Ditch 21 until flow ceased.
- Water quality related notes from the June 24, 2019 Red Lake Watershed District Board of Managers meeting:
 - District Manager, Rachel Klein, East Polk Soil and Water Conservation District, presented a proposal for cost share for five water and sediment basins sites in Brandvold Township. Klein stated that this area tends to wash out a road. Estimate project cost is \$73,176.00 with a request for 25% cost share funding from the RLWD’s Erosion Control Funds. Klein stated that the SWCD will contribute 50% with the landowner paying 25% of the project costs. Following discussion, a motion was made by Sorenson, seconded by Tiedemann, and passed unanimously, to approve a cost share of 25% from the RLWD Erosion Control Funds for the installation of five water and sediment basins for the East Polk SWCD.
- District staff participated in Legacy Fund Restoration Evaluation site visits to Halvorson and Erickson projects along with staff from the Pennington SWCD, MN DNR, and BWSR. The Legacy Fund Restoration Evaluation site visits also included the rock riffles that were installed in Burnham Creek by the West Polk SWCD.

Halvorson bank stabilization project along the Thief River



Part of the Halvorson stream bank stabilization project recently collapsed during high flows



Erickson Group streambank stabilization project



Rock riffle structure on Burnham Creek



- A water quality report for the month of February 2019 was completed, posted online, and shared.
- District staff began gathering information and making contacts to facilitate the creation of a lake management plan for Bartlett Lake (at Northome, MN).
- DNR staff sampled fish in Burnham Creek in June to gather baseline fish community data for the recent restoration project.

- A sample was collected from a small ditch that was filled with discharge from the Farmer's Co-op Elevator in northern Thief River Falls in response to a complaint from a landowner. The discharge was being routed from the elevator building(s) to the ditch, which then flowed into Chief's Coulee. The smell (septic rotten grain) was very bad and it was understandable that the homeowner would be upset about having foul smelling water in his backyard. An update on the sample collection and photos of the sampling location were sent to city and MPCA staff. City staff and the mayor had also already contacted MPCA staff about the problem. Extreme concentrations of ammonia nitrogen (424 mg/L), total Kjeldahl nitrogen (194 mg/L), total phosphorus (211 mg/L), orthophosphorus (199 mg/L), and total suspended solids (340 mg/L) were found in the sample that was collected from the water in the ditch. *E. coli* bacteria was the only pollutant that was not found. A high concentration of *E. coli* had been found in the May sample, however.



Polluted, foul-smelling water draining to Chief's Coulee in northern Thief River Falls

Meetings and Events from June 2019

- **June 19, 2019** – Polk County Water Resources Advisory Committee
 - The SWCD dealt with a Cable Lake shoreland violation where a landowner had created his own access.
 - The Sand Hill Watershed District is adding an online permit submittal method and is weighing options for expanding their office.
 - Polk County is starting to work on a geologic atlas for the county.
 - The Wild Rice River One Watershed One Plan process has started.
 - There has been a changeover in staff at the Environmental Service office, so they have been trying to keep up with planning and zoning while short-handed.

- The East Polk SWCD has been busy with enforcement of Wetland Conservation Act regulations.
- The Polk County SWCD is still sampling 11 lakes in the county.
- The East Polk SWCD conducts well monitoring.
- The erosion on the south side of Cameron Lake was discussed as a future project that could be a collaboration with the East Polk SWCD, city of Erskine, MNDOT/Highway Department, and the RLWD.
- Polk County has invested in pictometry aerial photography of the county. The county was flown in May. This high-resolution, current imagery allows for 360° views of properties. It has been helpful for planning/zoning and appraisals. It is also being used to help assess buffer compliance. Other agencies and organizations, like the RLWD, will have an opportunity to “buy-in” and use the imagery.
- There was a discussion about coordinating and sharing permitting information. There should be a way to make sure that all pertinent entities are contacted for each permit.
- Maple Lake discussion
 - There is a washout along 140th Ave at Salem Shores
 - The SWCD put together a Lake Leader newsletter that was specific to Maple Lake.
 - A rain collection project may be completed by the southwest access.
 - The SWCD has been getting a lot of calls from landowners that are interested in doing rain garden or shoreline restoration projects.
- **June 19, 2019** – Polk County Aquatic Invasive Species
 - Cleaning tools and signage have been installed at the Maple Lake public access
 - There was discussion about the acquisition of CD³ (Clean Drain Dry Dispose) waterless decontamination systems
 - Disposal of water, post-cleaning, is an issue that is being discussion.



RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

June 2019

Red Lake Watershed District Monthly Water Quality Reports are available online:
<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](https://www.facebook.com/redlakewatershed) to stay up-to-date on RLWD reports and activities.