

By Corey Hanson, Red Lake Watershed District Water Quality Coordinator, 2/4/2020. Topics include:

- Water quality sampling
- River Watch
- Clearwater River Watershed TMDL
- Thief River Intensive Monitoring
- Pine Lake and Lost Lake Area Monitoring

Red Lake Watershed District Long-Term Monitoring Program

Large rainfall and runoff events occurred on September 20th (>5 inches at the RLWD office). Several significant rain events during the first half of October further contributed to high flows and some flooding. Impoundments captured runoff to their maximum capacity to reduce the downstream impact of the runoff events.

Euclid East Impoundment – October 8, 2019



Water flowing over the Parnell Impoundment's concrete spillway



Total suspended solids concentrations met standards at most of the District's sampling sites, despite the runoff and high flows. The Red Lake River exceeded the 65 mg/L standard at the furthest downstream monitoring site at the Murray Bridge in East Grand Forks. Upstream, however, the total suspended solids concentrations in the Red Lake River met (were lower than) that standard.

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

1. Beau Gerlot Creek at CR 114
2. Burnham Creek at CSAH 48
3. Burnham Creek at 320th Ave. SW
4. Chief's Coulee at Dewey Ave in Thief River Falls
5. Coburn Creek at North Blackduck Lake Road NE
6. Cyr Creek at 220th St. SW
7. Darrigan's Creek at CSAH 23
8. Heartsville Coulee at 13th St SE
9. Judicial Ditch 30 at 140th Ave NE
10. Lower Badger Creek at 150th Ave SE
11. Lower Badger Creek at CR 114
12. Marshall County Ditch 20 at 180th Ave NE
13. Mud River at Highway 89
14. North Cormorant River at CSAH 36
15. O' Briens Creek at Harvest Road NE
16. Red Lake River at CSAH 7 (Smiley Bridge)
17. Red Lake River at the Greenwood Street Bridge in Thief River Falls
18. Red Lake River at Crookston
19. Red Lake River at Fisher
20. Red Lake River at the Murray Bridge in East Grand Forks
21. South Cormorant River at CSAH 37, Corlan Road NE

High concentrations of total phosphorus, in excess of applicable river eutrophication standards, were found in:

1. Beau Gerlot Creek at CR 114
2. Browns Creek at CR 101
3. Burnham Creek at CSAH 48
4. Burnham Creek at 320th Ave. SW
5. Chief's Coulee at Dewey Ave in Thief River Falls
6. Coburn Creek at North Blackduck Lake Road NE
7. Cyr Creek at 220th St. SW
8. Grand Marais Creek at 110th St. NW
9. Grand Marais Creek at 130th St. NW
10. Heartsville Coulee at 13th St SE
11. Hill River at CSAH 35, downstream of Hill River Lake
12. Judicial Ditch 30 at 140th Ave NE
13. Lower Badger Creek at CR 114
14. Marshall County Ditch 20 at 180th Ave NE
15. Moose River at CSAH 54

16. Mud River at Highway 89
17. Nassett Creek
18. North Cormorant River at CSAH 36
19. O' Briens Creek at Harvest Road NE
20. Pennington County Ditch 21 at 135th Ave NE
21. Pennington County Ditch 96 at Highway 32
22. Polk County Ditch 1 at CR 61
23. Polk County Ditch 2 at CSAH 20
24. Polk County Ditch2 at CR 62
25. Red Lake River at CSAH 7 (Smiley Bridge)
26. Red Lake River at the Greenwood Street Bridge in Thief River Falls
27. Red Lake River at Crookston
28. Red Lake River at Fisher
29. Red Lake River at the Murray Bridge in East Grand Forks
30. Thief River at 140th Ave NE (Hillyer Bridge)

High concentrations of biochemical oxygen demand (BOD) were found in:

1. Blackduck River at Deer Trail Road NE
2. Chief's Coulee at Dewey Ave in Thief River Falls
3. Thief River at 140th Ave NE (Hillyer Bridge)

Chief's Coulee water quality problems and the Farmer's Co-op Elevator

- High pollutant concentrations have been found in Chief's Coulee, for several years. In 2018, complaints from neighbors led to the discovery that sump pumps from Farmers Co-op sump pumps were discharging polluted water into a ditch that flows into Chief's Coulee.
- District staff were in communication with both MPCA enforcement staff and staff from the Farmer's Co-op elevator. There seemed to be room for improvement in communication between the MPCA and elevator staff (both directions). Water quality monitoring data and reports from Chief's Coulee monitoring efforts were shared by District staff with elevator staff and MPCA staff. Sump pumps are necessary to keep the basements of co-op buildings dry. Adding tile drainage to reduce seepage of water into the basement is not feasible because it could threaten the structural integrity and stability of the tall elevator buildings. Since the problem was discovered, elevator staff have made an effort to keep the basement of the elevator cleaner and get rid of mice (keeping the building clean has helped).
- The elevator was looking at ways to collect and land apply the water that sump pumps drain from the basement of the elevator. The water has high concentrations of nutrients and biochemical oxygen demand, which are not desired in the river or drinking water supply but could help fertilize a field. District staff did some research into land application requirements and shared that information with elevator staff.

River Watch

Weather caused some scheduling changes, but October still managed to be a busy month for River Watch. District staff helped the Red Lake County Central, Thief River Falls, Win-E-Mac, Clearbrook-Gonvick, and Red Lake Falls River Watch groups with their October round of water quality measurements.

District staff spoke with Challenger 4th graders at Hartz Park in Thief River Falls. Staff spoke about watersheds and water quality. They also demonstrated collection of water samples from the Hartz Park walking bridge.

District staff helped with River Watch Kick-Off events in Thief River Falls and Grand Forks. The events included an overview of the River Watch program, team building exercises, assignments for the River Watch Forum, mini sessions with natural resources staff. The mini sessions included a presentation on aquatic macroinvertebrate (bug) sampling by Ashley Hitt. International Water Institute staff presented information about Stroud continuous water quality monitoring stations and demonstration of how to use monitoring and sampling equipment.



Clearwater River Watershed Total Maximum Daily Load and Watershed Restoration and Protection Strategy

District staff began working on a detailed review and revision of the Clearwater River Watershed Total Maximum Daily Load document.

A site-specific assessment of the pour-point monitoring sites on Clearwater River tributaries was added to the TMDL to show “boundary conditions” of unimpaired upstream reaches and tributaries and to determine whether or not the streams are contributing to Clearwater River TSS impairments. Unfortunately, the furthest downstream long-term monitoring site on the Lost River (S002-133, north of Brooks) exceeded the TSS standard. The exceedance rate in the Lost River at Oklee was 0%, but the WWTF ponds are downstream of the Oklee water quality monitoring station. A wasteload allocation for the Oklee WWTF was added to the TSS TMDLs?

Site-Specific Assessment (Years 2006-2015) of Total Suspended Solids for Pour-Point Sampling Stations on Tributaries of the Clearwater River

Clearwater River Tributary Stream:	Lower Badger Creek	Beau Gerlot Creek	Terrebonne Creek	Poplar River	Hill River	Lost River	Ruffy Brook
Furthest Downstream AUID (09020305-XXX):	502	652	574	504	539	505	513
Furthest Downstream AUID with Sufficient 2006-2015 TSS Data (09020305-XXX):	502	651	574	504	539	646	513
Furthest Downstream Station Number(s) with Sufficient TSS Data:	S004-837	S004-816	S004-819	S007-608	S002-134	S002-133	S007-848 S008-057
Number of Daily Mean TSS Values at Furthest Downstream Station	59	27	36	25	54	85	23
Percentage that Exceed 30 mg/L	6.4%	0.0%	2.8%	0.0%	3.7%	11.8%	4.3%

Portions of the Lost River were checked to see if buffers had been established to answer MPCA questions and verify information in the Clearwater River Watershed TMDL.

Sunflowers planted to the edge of the Lost River west of CSAH 2



Lack of a buffer upstream of 550th Street



Spotty buffer downstream of 550th Street



Good buffer upstream of 330th Ave SE



Intensive Monitoring in Lost Lake and Pine Lake Area

Beaver dam on the Lost River downstream of 141st Ave



Cattle crossing of a tributary of the Lost River, upstream of 410th St



Cattle in the Lost River downstream (west) of CSAH 7



Horses, overgrazing, streambank damage, and erosion along the Lost River downstream (north) of 486th Street and the Pine Lake Outlet



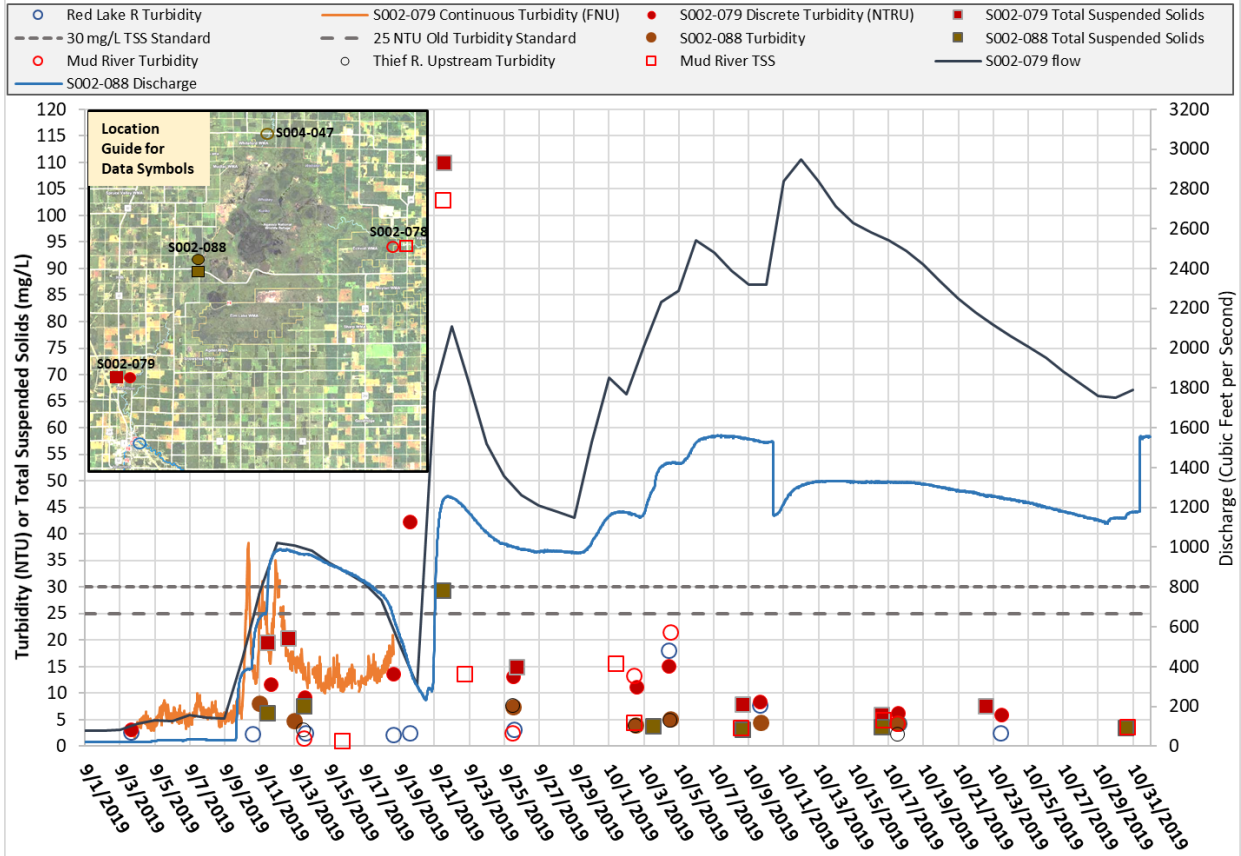
Stream Gauging

Flow measurements were recorded at the JD23 sites where flow was monitored to aid the MPCA biological assessment and stressor identification processes. Flow measurements were also recorded at Lost River monitoring sites near Lost Lake and the Hill River upstream of Hill River Lake. A rainfall event provided an opportunity to record flow measurements in early October that would be near the high end of a flow rating curve. Some valuable flow measurements were recorded during that high flow period in Lower Badger Creek, Beau Gerlot Creek, Gentilly Creek, Kripple Creek, Cyr Creek, and sites in the Thief River watershed. Some sites were too deep to wade. Water level loggers were retrieved from the sites that were being monitored in the Pine Lake and Lost Lake area. Flow rating curves were compiled for the Lost River sites that were monitored for the intensive Lost Lake and Pine Lake area monitoring effort. A Lost River tributary upstream of Lost Lake, at 410th St, didn't have much variation in the stage levels at which flow was measured. An examination of stage measurements (measure-down readings at the downstream end of the culvert) found that discrete water level measurements only varied by a total range of 0.18 feet throughout the monitoring season.

Intensive monitoring of the Thief River and Red Lake River Upstream of Thief River Falls

After an intense rainfall event, flows in the Thief River greatly increased. The rise in water levels and flows prevented the retrieval of the Minnesota Department of Health's Hydrolab HS4 sonde. The water coming from Agassiz Pool while it was full and ponded after a large rainfall event, had relatively low turbidity levels throughout October. There was some erosion occurring along the Thief River and its tributaries during the high flows, but turbidity and total suspended solids levels were okay (well below the impairment threshold) throughout the month. There typically was at least a small increase in turbidity between the CSAH 7 (near Agassiz Pool) and 140th Ave NE (near Thief River Falls) crossings of the Thief River due to erosion along the channel.

Fall 2019 Turbidity and Total Suspended Solids Monitoring in the Thief River



Thief River at 140th Ave on October 4, 2019



Thief River at CSAH 6 on October 4, 2019



Mud River at Highway 89 on October 4, 2019



Thief River at CSAH 6 on October 17, 2019



Red Lake River Watershed One Watershed One Plan

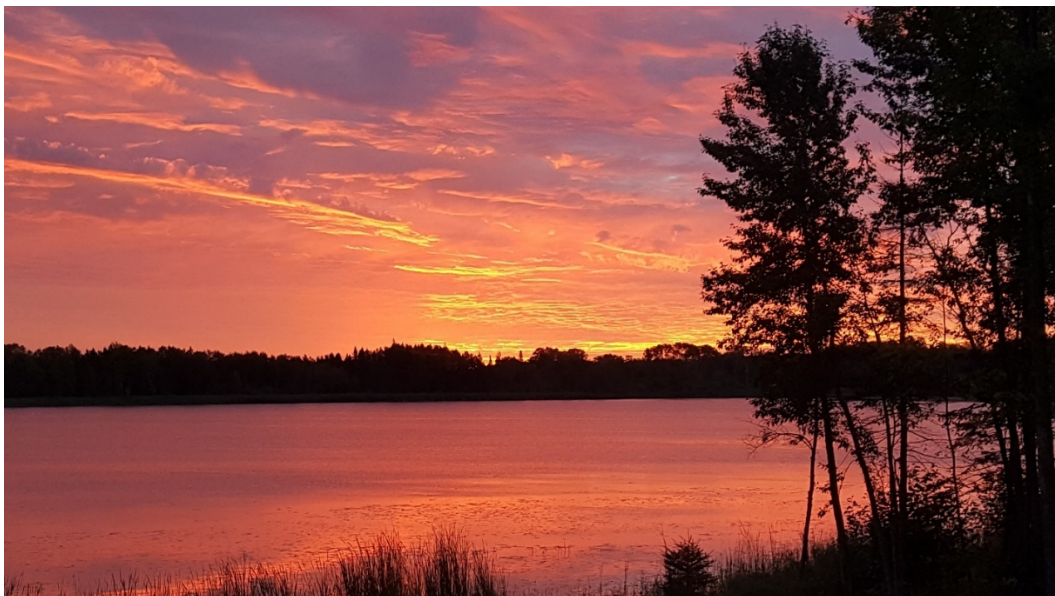
The runoff events and high flows during the fall of 2019 delayed construction work on a project in the Burnham Creek subwatershed in Section 13 of Russia Township. Photos of erosion that occurred along the construction project are shown below.





Bartlett Lake Management Plan

District staff typed notes from the September Bartlett Lake Management Plan meeting and shared them with the rest of the attendees. Koochiching SWCD staff worked on a flyer to advertise the December public meeting. City of Northome staff shared photos of Bartlett Lake.



Other Notes

- Zebra Mussels were found in Lake Lomond in Bagley. That lake drains to the Clearwater River. Water flows from the lake outlet, into one of the city's stormwater retention ponds, then into the Clearwater River. This is a concern for the Clearwater River and Clearwater Lake. <https://www.bemidjipioneer.com/sports/outdoors/4742803-Zebra-mussel-larvae-found-in-Lomond-Lake-in-Clearwater-County>
- New pipes were installed along Chief's Coulee where water has been routed under the Farmers Co-op property. The old pipes were corroding and collapsing.

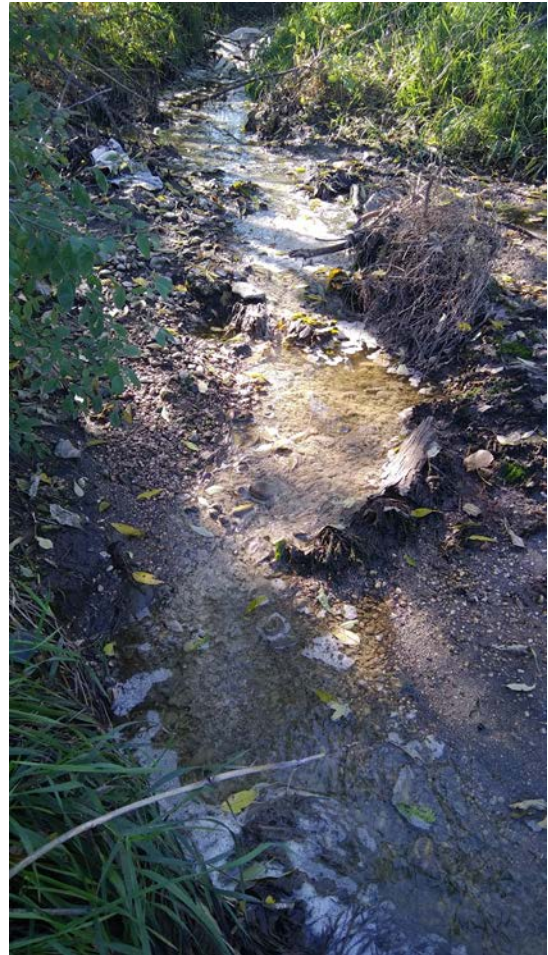


- The rain gauge at the Red Lake Watershed District office recorded 21.39 inches of rain in April through September 2019. It recorded 10.32 inches of rain in September.
- The high flow rates in ditches and streams in early October caused some fresh bank failures and other erosion problems. Fresh bank failures were noted along Judicial Ditch 30 and Judicial Ditch 23 in the Thief River watershed.
- A retirement party was held on October 10 for Loren Sanderson to celebrate his accomplishments and career with the Red Lake Watershed District.
- The area experienced a winter storm on October 11, 2019.
- District staff provided Chief's Coulee sampling data to staff at the Farmers Co-op Elevator in Thief River Falls.
- A June Water Quality Report was completed and is available online: <http://redlakewatershed.org/waterquality/MonthlyWQReport/2019%2006%20June%20Water%20Quality%20Report.pdf>
- No zebra mussels were found on the zebra mussel samplers that were deployed in the Red Lake river east of Thief River Falls.

- Another small stream draining railroad property had the same gray, slimy channel bottom as Chief's Coulee has had and it also had a similarly septic smell.

Water quality related notes and minutes from the October 10, 2019 Red Lake Watershed District Board of Managers meeting.

- Matt Fischer, BWSR appeared before the Board to present the District with a plaque recognizing the Red Lake Watershed District's 50th Anniversary.
- Administrator Jesme stated that the Red Lake River 1W1P, RLWD Project No. 149, Advisory Committee and Planning Work Group met to review and make recommendations to the Workplan to be submitted to the Policy Committee for review and approval. Included in the Workplan, was \$185,000 to assist with repairs to the outlet of Ditch 10, RLWD Project No. 161
- Staff members Loren Sanderson and Nick Olson updated the Board on recent District Impoundment activity. Administrator Jesme discussed the importance of draining down the impoundments prior to freeze-up and the assumed timeline it would take. Dalager noted that the current operation of the impoundments is about as good as it can be. Discussion was held on obtaining additional easements downstream of the Brandt Impoundment where there presently was not a channel restoration project completed. Matt Fischer stated that a Watershed Based Implementation Program funds can be used for easements for multipurpose projects.
- Due to weather issues, the project that the District cost shared with funds from the 2019 Erosion Control Funds with the Clearwater SWCD will not be completed until next year.
- Manager Dwight asked if any public comment had been received on the draft Thief River 1W1P. Matt Fischer stated that BWSR had received comments from landowner, Darrold Rodahl, and the U.S. Fish and Wildlife Service.
- The Board recessed for lunch at the District office for a retirement party for Staff member Loren Sanderson.



Water quality related notes and minutes from the October 24, 2019 Red Lake Watershed District Board of Managers meeting.

- Administrator Jesme stated that the District received the students' River Watch jackets, that the Board had approved purchasing at the September 6, 2019 Board meeting. Jesme requested approval to pay the invoice in the amount of \$1,972 to Page's Country Creations. Motion by Tiedemann, seconded by Sorenson, to approve payment in the amount of \$1,972 to Page's Country Creations for the River Watch jackets. Motion carried.

- The Red Lake River Planning Work Group met with staff from the MPCA on October 21st at the District office to develop a draft work plan for the upcoming MPCA 319 grant that was approved for the middle Red Lake River 1W1P.
- Manager Torgerson discussed a recent meeting with staff from the Minnesota Department of Natural Resources, regarding the Pine Lake Project, RLWD Project No. 26. Torgerson stated that he would like to update the Clearwater County Commissioners on the status of the project.

Meetings and Events from October 2019

- **October 1, 2019** – Red Lake River One Watershed One Plan Planning Work Group conference call
- **October 2, 2019** – Red Lake River One Watershed One Plan Advisory Committee and Planning Work Group meeting
- **October 8, 2019** – Polk County Water Resources Advisory Committee meeting
 - The access at the Gentilly Bridge will be improved by the Red Lake River Corridor Enhancement Project.
 - Commissioner Joan Lee shared that a landowner had called her to tell her how well impoundments have worked to reduce flooding.
 - The first wave of Buffer Law corrective notices went out in January 2018 for public waters. Some may get fines if they aren't in compliance. Some of the sites have not been checked yet because they are difficult to access. The county is thinking about getting a drone.
 - The county is trying to find well records to aid the development of a Polk County Geological Atlas.
 - The recent Polk County Aquatic Invasive Species meeting was just a year-end recap.
 - SWCD staff helped during education days for elementary students, had lots of Wetland Conservation Act work, had to complete a time-consuming audit, conducted feedlot inspections (which have gone well), sampled lakes, monitored water quality in streams, and working with the Minnesota Geological Survey.
 - The SWCD will be promoting raingardens and shoreline restore at Sarah Lake and Union Lake. One of the Maple Lake Improvement District board members is doing a project on their property.
 - The Sand Hill Watershed District is adding onto their building. A culvert will be replaced in Kittleson Creek to improve fish passage. Phase II of the Sand Hill River rock riffle project will be starting. Rock riffles are being installed along Carlson Coulee.
 - There have been fewer well interference complaints this year, maybe due to the wet weather.
 - Demand for wetland bank credits in this area has exceeded supply.
 - The next Polk County WRAC meeting was scheduled for February 11, 2020. The AIS meeting will be held at 10 am on that same day.
- **October 14, 2019** – Pennington County Water Resources Advisory Committee
 - CD96, 21, 16 Gully Control and Buffer Implementation project update
 - LiDAR Ditch Outlet Analysis project update
 - There have only been a limited number of days with decent weather – Only 10 of 53 ditch outlets have been flown since Labor Day.
 - High water levels have been preventing a full view of the ditch bottom.

- Thief River PTMApp project update
- Streambank Stabilization project updates: Three projects will be completed within Thief River Falls, near Hartz Park, the Greenwood Street Bridge, and Oakland Park.
- A new Clean Water Fund application has been submitted to target the Lower Thief River for side water inlet installation and cover crops. The Judicial Ditch 30 subwatershed will also be included in the proposed project.
- Red Lake River One Watershed One Plan update
 - More than \$1 million has been allocated to this watershed for the 2020-2021 fiscal years and the Planning Work Group is drafting a work plan. A Policy Committee meeting is planned for December to, hopefully, approve the workplan.
- Thief River One Watershed One Plan update
 - Comments on the draft plan are due soon.
 - Discuss Red Lake River projects and funding (as examples) at the next Thief River 1W1P meeting.
 - Public hearing in December.
- Buffer Law Implementation update
 - Letters are being sent to a list of non-compliant landowners. The SWCD has been getting responses from people who received letters. The wet weather has made planting this fall unlikely. Public waters compliance is estimated at 98-99% within the county. Ditch compliance, however, is more like 60-70%. In some cases, landowners had hired contractors to plant the buffer strips, but weather has prevented planting. One corrective action notice has been sent.
 - Roundup overspray is an issue.
 - Some landowners have been leaving the buffer area unplanted, which is worse than farming it.
 - One of the committee members discussed her experience on her own land. She said that snow seeding with wildflower seed from the USFWS has worked well. Snow-seeding can be done after the first snow that stays (doesn't melt).
- Geologic Atlas development has involved compilation of well data, locating wells, and verifying wells.
- Cooperative Weed Management Area
 - Focus on gravel pits.
 - Cost share is available from BWSR and the Minnesota Department of Ag.
 - Priority areas are being mapped with GIS.
- Culvert Inventory
 - Dave Bennett worked as a seasonal technician to develop a database and collect data.
 - Culvert ownership
 - The inventory will be used to hydrologically correct LiDAR DEMs.
 - Photos are taken of culvert inlets and outlets. The database can be updated whenever a culvert is replaced.
 - Other agencies (like the RLWD) should be able to enter/provide data, as well.
 - Are there any other categories of information that the county should be collecting?

o Activity reports

- The city of Thief River Falls is planning a project for a wetland downstream and west of Pennington Ave (pictured below, between Parkview St. E and Greenwood St. E). Stormwater runoff flows into the wetland and it has accumulated 17,000 cubic yards of sediment. The city is working on getting approval from the DNR. They would like to treat the runoff before it enters the wetland, remove the sediment, and restore the wetland. When the District sampled at the Pennington Ave stormwater outlet during two June 2017 rainfall events, total suspended solids concentrations were greater than 40 mg/L in both and *E. coli* concentrations were extremely high in both (>2,419.6, and 24,196 MPN/100mL).



- Wetlands have been delineated within the Black River Impoundment project area by the SWCD, including acres that are impacted by diversion ditches (water diverted from the contributing watershed of some wetlands).
- The SWCD has financial assistance available for buffer law compliance (\$200-\$300 per acre).
- SWCD staff meet with landowners to see if alternative practices would work.
- SWCD staff have also been working with feedlots and surveying for side water inlet installations.
- SWCD staff have been working on the Thief River and Red Lake River 1W1Ps, floodplain and shoreland permitting, well monitoring, monthly surface water monitoring, SSTS upgrades, side water inlet installations along CD 96, 21, and 16, well testing clinic, Clean Water Fund grant applications, and education events for grade school kids.

- MPCA staff are reviewing the Thief River 1W1P and will submit comments regarding the topics of drinking water, Agassiz Pool. Staff from the Minnesota Department of Health and the MPCA Divisional Director are reviewing Denise Oakes' comments on the 1W1P.
- The Pennington County Highway Department will be starting to work on the Challenger Bridge. There will be an unpaved bypass for highway construction work, initially, but the bypass will be paved in the summer.
- A new assistant county engineer, Alex Bladow, has been working with the SWCD on side water inlet projects.
- The Thief River Falls dam is filled with logs right now and is "wide open."
- The city's forced main wastewater project has been delayed due to the weather.
- The Thief River Westside Flood Damage Reduction project has also been delayed due to permitted issues (FAA, USACOE).
- New pipes for the underground portion of the Chief's Coulee pipe has been laid-out and ready to install.
- 60 CRP contracts (3,600 acres) are expiring. 31 of those have been extended. 3 have been renewed.
 - The next Pennington County WRAC meeting will be January 13, 2020.
- **October 21, 2019** – Red Lake River 319 Small Watersheds Focus Grant meeting (MPCA staff and the Red Lake River 1W1P Planning Work Group) to work on the work plan
- **October 28, 2019** – Thief River one Watershed One Plan, Planning Work Group phone conference
- **October 29, 2019** – Red River Watershed Management Board Water Quality Monitoring Advisory Committee meeting in Ada
 - Rely upon the prioritization that has already occurred in local plans
 - RRWMB water quality goals?
 - Higher value or likelihood of funding for higher mainstem benefits
 - Decrease total suspended solids and total phosphorus loads, in general
 - Reduce the number of impairments of aquatic life and recreation
 - Focus on surface water or include projects that address groundwater issues? Focus on surface water.
 - Carryover of funds from year to year? Hopefully

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](#) to stay up-to-date on RLWD reports and activities.