

By Corey Hanson, Red Lake Watershed District Water Quality Coordinator. 12/10/2020

**Long-Term Water Quality Monitoring Program**

Round four of 2020 sampling for the District's long-term monitoring program was completed in June.

The amount of sediment that is carried by a stream is measured by collecting and analyzing samples for **total suspended solids**. Fish and aquatic macroinvertebrates (bugs, worms, crustaceans, etc.) are harmed by high concentrations of total suspended solids. In September 2020, high total suspended solids concentrations (>65 mg/l, >30 mg/l, or >15 mg/l, depending on the site's location) were found at:

- Grand Marais Creek at 110<sup>th</sup> Street Northwest
- Murray Bridge in East Grand Forks
- Polk County Ditch 20 at CSAH 20

Water quality was exceptionally good in the Red Lake River east of Thief River Falls. Total suspended solids were so low that the laboratory couldn't report the precise value (<1 mg/L) in the headwaters of the Clearwater River at CSAH 25 and CSAH 2. The Red Lake River also notably met the total suspended solids standard at crossings along the impaired portion:

- CSAH 13 near Red Lake Falls

High concentrations of *E. coli* bacteria indicate an increased risk of gastrointestinal illness from aquatic recreation activities (swimming) that involve contact with water. High *E. coli* concentrations (>126 MPN/100ml) were found in the following waters (alphabetical order) during September 2020 sampling:

- Beau Gerlot Creek at CR 114
- Branch A of Judicial Ditch 21 at CSAH 48
- Burnham Creek at 320<sup>th</sup> Avenue SW
- Burnham Creek at CSAH 48
- Chief's Coulee at Dewey Avenue
- Clear Brook at CSAH 92
- Darrigan's Creek at CSAH 23
- Gentilly River at CSAH 11 in Gentilly
- Hill River at CSAH 35
- Kripple Creek at CSAH 53
- Lost River at CSAH 8
- Lost River at CSAH 28, north of Trail
- Lower Badger Creek at CR 114
- Mud River at CSAH 54
- Nasset Creek
- North Cormorant River at CSAH 36
- O' Briens Creek at Harvest Road NE
- Polk County Ditch 1 at County Road 61
- Polk County Ditch 14 near the Maple Lake outlet
- Silver Creek at 159<sup>th</sup> Ave

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- Terrebonne Creek at CSAH 92
- Thief River at CSAH 7
- Thief River at CSAH 6

The state's water quality standard for **total phosphorous** varies by river nutrient region. Rivers and tributaries in the western part of the District have to meet a 0.150 mg/l standard in the South River Nutrient Region. Rivers and tributaries assigned to the Central River Nutrient region have to meet a 0.100 mg/l standard. Rivers and tributaries in the eastern part of the District have to meet a more protective standard of 0.050 mg/l in the North River Nutrient Region. High total phosphorus concentrations relative to the State of Minnesota's new regionalized river eutrophication nutrient criteria were recorded in samples collected at the following sites in September 2020:

- Burnham Creek at 320<sup>th</sup> Avenue SW
- Chief's Coulee at Dewey Avenue
- Coburn Creek at CSAH 30
- Cyr Creek at 220<sup>th</sup> Street SW
- Grand Marais Creek at 130<sup>th</sup> Street Northwest
- Grand Marais Creek at 110<sup>th</sup> Street Northwest
- Heartsville Coulee at 13<sup>th</sup> Street Southeast
- Hill River at CSAH 35
- North Cormorant River at CSAH 36
- O' Briens Creek at Harvest Road NE
- Pennington County Ditch 21 at 135<sup>th</sup> Ave NE
- Polk County Ditch 1 at County Road 61
- Polk County Ditch 2 at Polk County Road 62
- Poplar River at CR 118

Low dissolved oxygen concentrations were found at:

- Clear Brook at CSAH 92
- Clearwater River at CSAH 25, near Bagley
- Grand Marais Creek at 110<sup>th</sup> Street NW
- Pennington County Ditch 21 at 135<sup>th</sup> Ave NE
- Ruffy Brook at CSAH 11
- Walker Brook at CSAH 19

### **Continuous Dissolved Oxygen Monitoring**

The HOBO DO loggers were then deployed at the following sites in September:

- Branch A of Judicial Ditch 21 at CSAH 48 (440<sup>th</sup> Street NE)
- Grand Marais Creek at 110<sup>th</sup> Street Northwest
- Lost River at 109<sup>th</sup> Ave
- Moose River at CSAH 54
- Mud River at Highway 89

- Moose River at Moose River Road NW
- Marshall County Ditch 20 at Magnum Road NW
- Ruffy Brook at CSAH 11

Discrete field measurements (dissolved oxygen, temperature, pH, specific conductivity, and stage) were recorded near the midpoint of each deployment to aid the data review and correction process. The DO loggers were retrieved, cleaned, re-calibrated, and re-deployed after two weeks of deployment.

Samples were collected from Long Lake, near Pinewood. The water quality in Long Lake met water quality standards again. Though there have been a few high concentrations of chlorophyll-a (>9 µg/L) and total phosphorus (>0.030 mg/L), the average sampling results for total phosphorus (nutrients), chlorophyll-a (algae), and Secchi disk (clarity) met the stringent water quality standards for lakes in the Northern Lakes and Forest ecoregion. The lake has met the state's water quality standards during the District's sampling effort that began in September 2018. Though water quality statistics have improved with the addition of 2018-20 data, the 10-year summer averages (basis for the state's water quality standards) for chlorophyll-a and total phosphorus still exceed the standards due to high concentrations that were recorded in 2011 and 2012. If the District could sample through another summer, water quality conditions remain similar to 2018-2020 conditions, and the 2011 data is cycled out of the assessment period, the lake could officially, without-a doubt be recommended for delisting from the 303(D) List of Impaired Waters.

After a belated delivery of a backordered plankton sampling net, District staff collected a sample from the Red Lake River to be tested by RMB Environmental Laboratories, Inc. for the presence of zebra mussel veligers. No veligers were present in the sample. Stationary zebra mussel samplers were retrieved from the Red Lake River, as well. The samples showed no evidence of zebra mussels. The samplers were cleaned thoroughly prior to over-winter storage.

### **Blue-Green Algae**

District staff answered questions from Maple Lake residents about the blue-green algae blooms in the lake. A sample was collected from the Polk County Park beach and tested for algal toxins. No toxins were detected in the sample. The blue-green algae bloom in the marina had disappeared. District staff were interviewed by the KROX radio station about the summer's blue-green algae problems in Polk County lakes.

<https://www.kroxam.com/2020/09/02/no-measurable-blue-green-algae-found-on-open-water-on-maple-lake-blooms-along-shore-shrinking/>

September 3, 2020 update: With the arrival of cooler temperatures, the blue-green algae bloom at the Polk County Park boat launch has disappeared. No (0 parts per billion) algal toxins were detectable in water sampled from the beach at the Polk County Park.



Polk County Park marina on Maple Lake: the blue-green algae had disappeared by September 3, 2020.

### **River Watch and Public Education**

District staff created a worksheet and a video for the water quality station portion of the 2020 Northwest Minnesota Virtual Water Festival. This year's festival will include a lesson packet for teachers and students (activities, etc.) along with educational videos for each station's topic. District staff developed an activity that students can do at home or in their classroom. The worksheet includes instructions for an activity that the kids can do in their classroom or at home. Video clips were recorded at Hartz Park and at the District office. The video was pieced together and edited by District staff and uploaded to YouTube: <https://youtu.be/RzQRPhBCXHE>

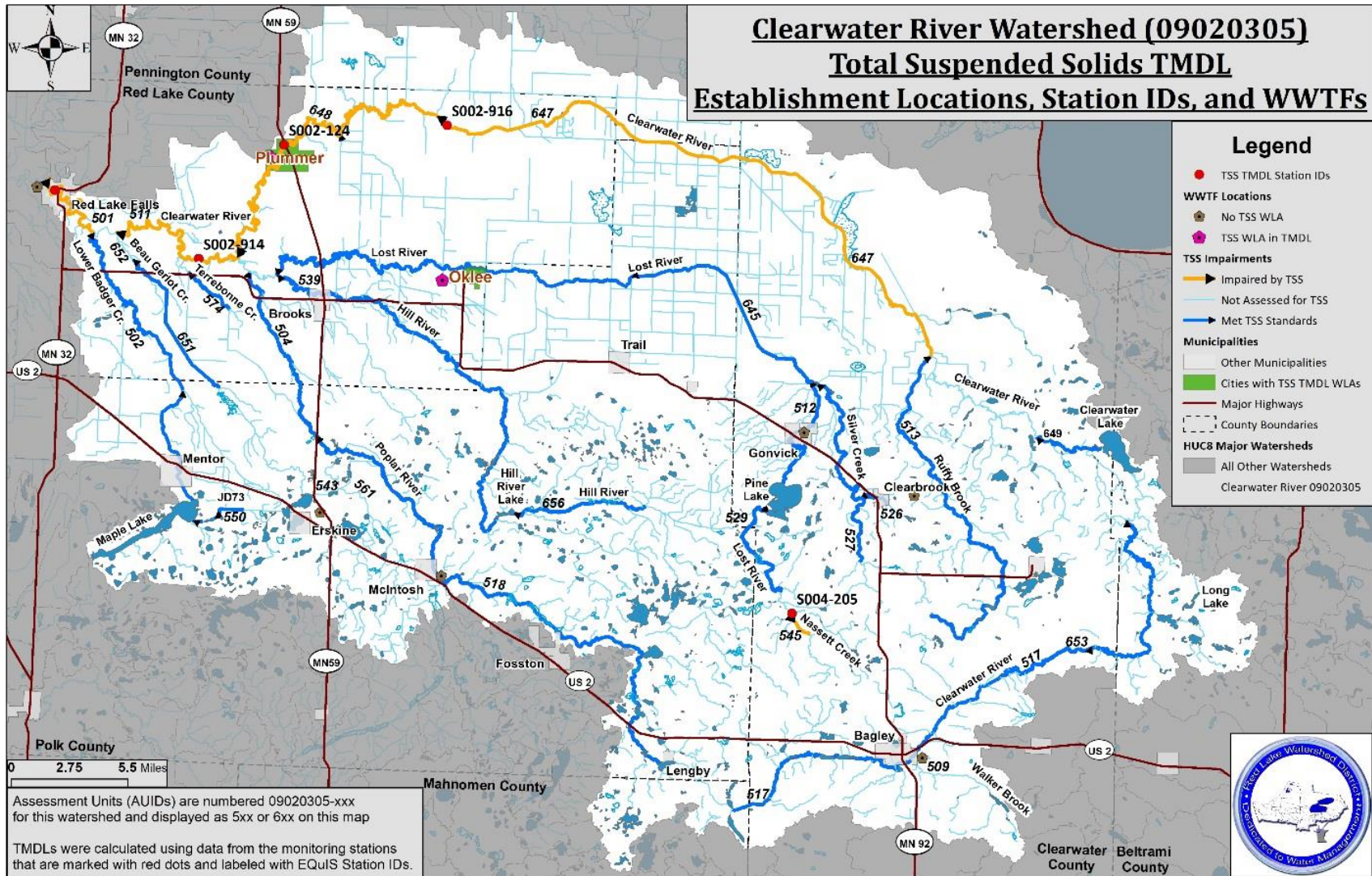
Ashley Hitt helped the Red Lake Falls River Watch team complete a round of water quality monitoring in September.

### **Clearwater River Watershed Restoration and Protection Strategy (WRAPS)**

District staff helped MPCA staff with responses to EPA comments on the Clearwater River Watershed Total Maximum Daily Load as well as some edits to maps and figures to add details that were suggested by the EPA. District staff helped MPCA staff with editing and providing information for a WRAPS summary document. The MPCA completed another internal review of the WRAPS document to get it ready for the public notice process. District staff also answered some additional questions from the MPCA review.

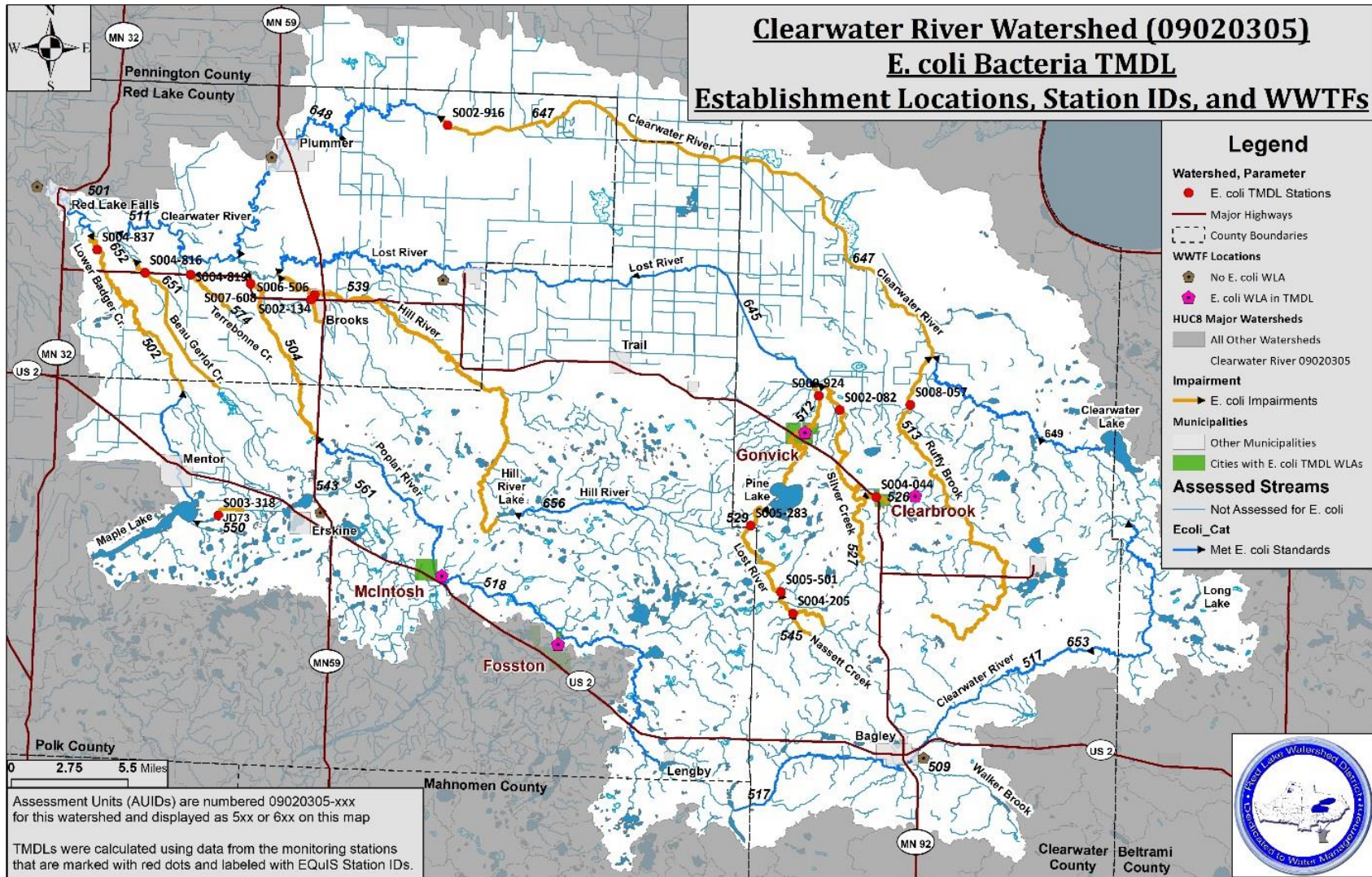
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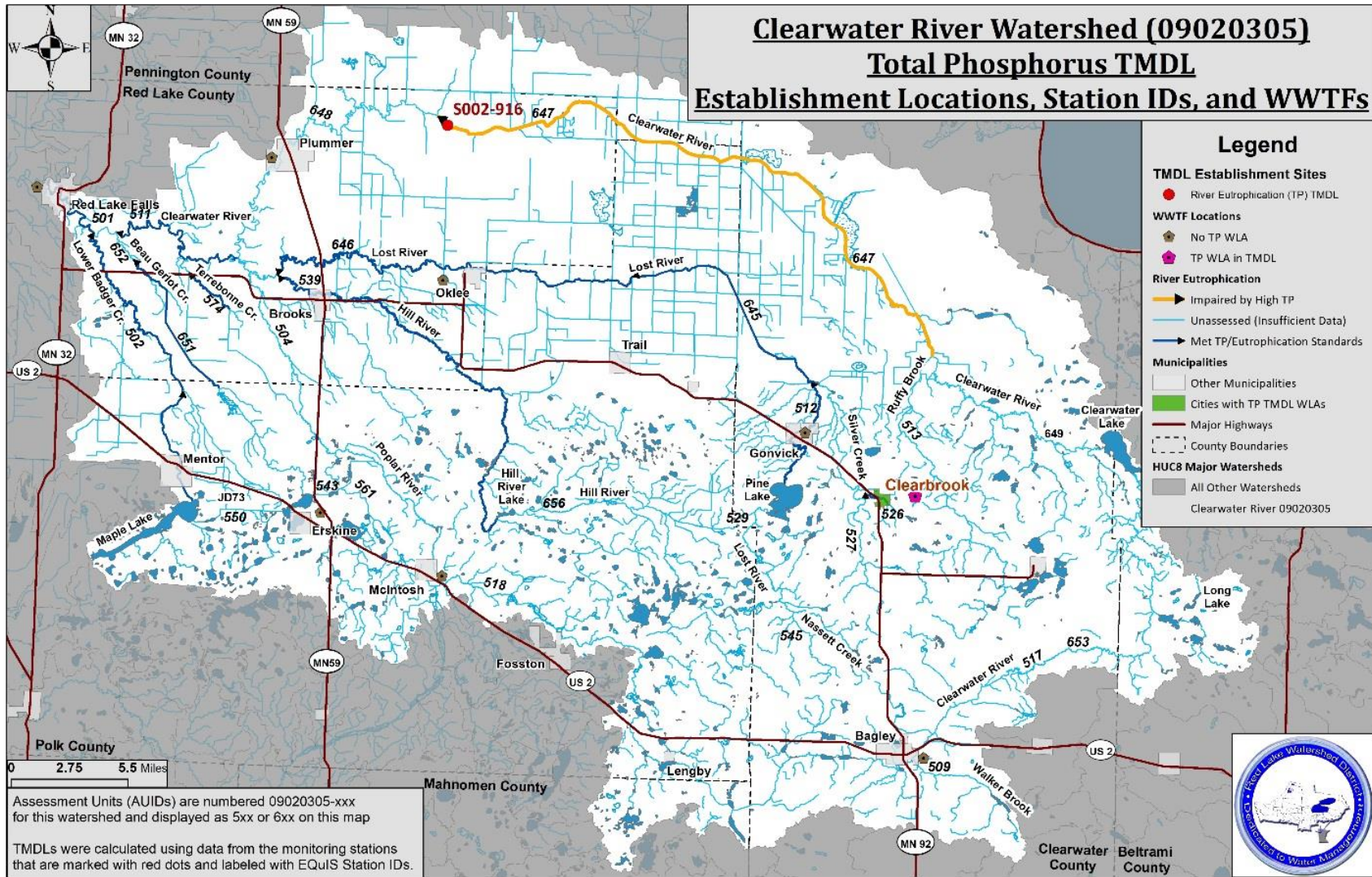
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**Red Lake River Watershed One Watershed One Plan**

Progress had been made on the stabilization of the Thief River Falls Westside Flood Damage Reduction Project outlet. The following photo shows a rock structure and turf establishment near the Highway 32 crossing.



**Clearwater River One Watershed One Plan (1W1P)**

Clearwater SWCD staff have been working on a workplan and a budget for the Clearwater River 1W1P process. District staff reviewed the budget line item tasks and projected plan sections and provided thoughts on what parts of the plan writing process could be completed by local staff and what parts would benefit from the assistance of a consultant.

**Other**

Water quality related notes and minutes from the September 10, 2020 Red Lake Watershed District Board of Managers meeting.

- Manager Sorenson discussed the beaver dams upstream of Pine Lake. Administrator Jesme stated that the Project Work Team will look at existing streams going into the lake and what is the present inflows.

Water quality related notes and minutes from the September 24, 2020 Red Lake Watershed District Board of Managers meeting.

- Discussion was held of the Pine Lake Project Work Team (PWT) meeting held on Friday, September 18, 2020, at the Red Lake Watershed District office. The consensus of the PWT was to move forward with the concept presented and present their recommendations to the RLWD Board. Following discussion of the concept from the Pine Lake PWT, Torgerson moved to



establish Pine Lake as a project and move forward with the design. Motion was seconded by Sorenson and unanimously passed. Watershed district should continue to monitor the Lost River, as well as the water quality and water temperature.

- Staff member Nick Olson gave an update on the Moose River pool. There is a Minnesota Department of Natural Resources Conservation Partners Legacy Grant which was awarded in partnership with the RLWD and Agassiz National Wildlife Refuge to complete the work within the Agassiz NWR. Construction was to be completed last Fall but due to large rainfall events, construction was delayed until this Fall. The project is scheduled to begin the first part of October. The gates at Moose River have been closed and water has moved from the North Pool to the South Pool, which will allow better working conditions for the contractor.
- Red Lake SWCD has requested 2020 Project 164, Erosion Control Funds, for the following individual projects:
  - The total cost for the Ray Delorme Grade Stabilization Project is \$7,335.59 with a request from RLWD for \$1,000 cost share for the Project. Motion by Page, seconded by Ose, and passed unanimously to approve the cost share of \$1,000 to Red Lake SWCD for the Ray Delorme project.
  - The total cost for the Dave Ste Marie Grade Stabilization Project is \$10,921.43 with a request from RLWD for \$1,630.00 cost share for the Project. Motion by Page, seconded by Dwight, and passed unanimously to approve the cost share of \$1,630.00 to Red Lake SWCD for the Dave Ste Marie project.
  - The total cost for the Ralph Perreault, Gervais Township, Grade Stabilization Project is \$12,621.12 with a request from RLWD for \$7,521.00 cost share for the Project. Motion by Page, seconded by Tiedemann, and passed unanimously to approve the cost share of \$7,521.00 to Red Lake SWCD for the Ralph Perrault project.
- District staff reviewed and commented on the District's COVID-19 Preparedness Plan
- District staff completed a water quality report for the month of [March 2020](#).
- District staff were contacted by MPCA public information staff to talk about examples of projects that were accomplished through the cooperation among agencies (gave examples of projects completed through cooperation among Red Lake River 1W1P project partners). District staff also reviewed a draft of the [article](#).
- The Clearwater Lake Area Association shared their [Fall 2020 Newsletter](#)
- Excavation within Agassiz Pool was planned for October 1-20. District staff collected a pre-project sample at the end of September and made plans to collect weekly samples during the excavation project.

### **September 2020 Meetings and Events**

- **September 17, 2020** – Red Lake River 1W1P Planning Work Group Zoom conference
  - Financial updates
  - Project updates
    - The Russia 13 Project has been completed.
    - Construction work for the Pennington County Ditch 96 stabilization project is planned for October 2020.
    - The first 1.3 miles of RLWD Ditch 16 has been constructed and seeded. The outlet look really nice.

- The construction of the stabilization structures at the outlet of the Thief River Falls Westside Flood Damage Reduction Project is nearing completion.
- The Red Lake County SWCD was likely able to free-up funding for additional side water inlets in the Black River subwatershed by finding funding from other sources to install grade stabilization structures in that management area.
- Install additional Black River subwatershed side water inlets with remaining funding that was designated for that subwatershed. There was also some discussion about stabilization projects that are needed downstream of the Shirrick Dam outlet.
- Two Black River grade stabilization structures from the 2020-21 work plan are ready to construct. Construction will likely be completed in the spring of 2021.
- Show progress on completed projects during the October 21, 2020 Policy Committee meeting.
- Cover crop policy discussion
- Look for georeferenced photos of gully erosion problems from Red Lake River WRAPs windshield surveys that could be fixed with side water inlets.
- Discussion of ArcOnline project tracking
- **September 17, 2020** – BWSR Input Sessions for Evaluating Implementation of Comprehensive Watershed Management Plans, Zoom conference
  - Reasons for evaluation:
    - Clearing away the dust, evaluating changes in conditions
    - Coordination – which things have been done and what is left to do
    - Are we on track? Have we focused on the right areas?
  - Telling good stories about the work that is being done
    - One reason for hesitation may be that some are worried about backlash for “tooting our own horn” about a project.
    - “Status of the Watershed” Report – North Fork is trying this approach and can share a template with other watersheds once it has been completed. The summary document will be geared toward an audience of county boards and the general public.
    - Bring in a consultant to develop a format for newsletters that report progress on the comprehensive watershed management plan actions.
    - Use ArcGIS StoryMaps
  - Evaluation and Reporting – LGUs provided some feedback to BWSR about reporting requirements
    - Make sure reporting requirements are consistent and clearly stated
    - Don’t move goal posts
    - How do we properly use PTMApp for tracking purposes? PTMApp and the pollutant reduction estimator spreadsheets likely return different results.
    - It works best for us to use winter months for most of the evaluation and reporting work but tracking things as we go would also have benefits (spread out the effort).

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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](http://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](http://www.rlwdwatersheds.org).

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