RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

October 2018

By Corey Hanson, Red Lake Watershed District Water Quality Coordinator. 2/12/2019.

- ✓ Burnham Creek Bank Erosion Hazard Index assessments
- ✓ River Watch

Red Lake Watershed District Long-Term Monitoring Program

2018 water quality data was entered into the RLWD database and submitted to the MPCA for storage in the state's EQuIS database.

Water level loggers were retrieved from stage/flow monitoring stations throughout the RLWD. The water level logger and deployment pipe at the CSAH 54 Moose River monitoring station had been needlessly destroyed by Beltrami County staff that cleaned sediment out of the Moose River channel on the upstream side of the CSAH 54 crossing. The logger was not in the way of the excavation as it was not in one of the areas that was accumulating sediment and the channel had not been excavated in the location where the logger had been deployed.

Clearwater River Watershed Restoration and Protection Strategy (WRAPS) Project

- Objective 9 – Civic Engagement
  - The maps of the Clearwater River watershed that have been completed for the TMDL and WRAPS reports were compiled into a single PDF document and shared with members of the technical advisory committee/core team.
  - A meeting of the Clearwater River WRAPS core team (technical advisory committee) was scheduled for November 28, 2018.
- Objective 10 – Report Writing
  - RLWD staff began compiling restoration and protection strategies for each of the HUC10 subwatersheds in the Clearwater River watershed. The strategies were organized into tables in preparation for a technical advisory, core-team meeting (one table for each of the HUC10 subwatersheds in addition a table for watershed-wide strategies).

River Watch

District staff helped students from Red Lake Falls, Clearbrook-Gonvick, Win-E-Mac, and Red Lake County Central with River Watch monitoring in October.

Red Lake County Central River Watch Students discovered discharge into the Hill river at the CR 119 crossing near Brooks while sampling macroinvertebrates. Discharge from that location has been a problem that has been reported to Red Lake County staff as long ago as 2005. The source of the discharge (a truck washing station at a nearby business) was finally identified and addressed in 2017 when the truck washing station was upgraded. However, pollutants from the truck washing station were still entering the tile line that was discharging the sediment laden effluent (that also smelled like diesel fuel) that was flowing into the Hill River. The RLCC River Watch group will be using this situation as a project for the 2019 River Watch Forum challenge. The 2019 River Watch Forum challenge asks to examine their watersheds, find and issue or problem, and propose a solution.

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The International Water Institute released a Fall 2018 newsletter in October that includes information about the River Watch program, Paddle Excursions with Wilderness Inquiry, River Watch Kickoff events, Crookston paddling event, River of Dreams canoe launches/finds, and PTMApp hydro-conditioning.

Red Lake River Watershed Restoration and Protection Strategy (WRAPS)

Comments were received from the MPCA and EPA on the Red Lake River Total Maximum Daily Load report on 10/31/2018, so editing of that document could begin in early November.

Grand Marais Creek Watershed Restoration and Protection Strategy (WRAPS)

The Grand Marais Creek WRAPS report was edited to address comments from the MPCA and local staff to prepare the document for a public comment period. A revised version of the Grand Marais Creek WRAPS Report was completed on October 11, 2018.

Thief River One Watershed One Plan (1W1P)

RLWD staff and staff from other planning partners worked on the completion of a budget table for the 1W1P. Due to predicted bad weather, the Thief River 1W1P meeting that was to be held October 10, 2018 in Grygla, was postponed.

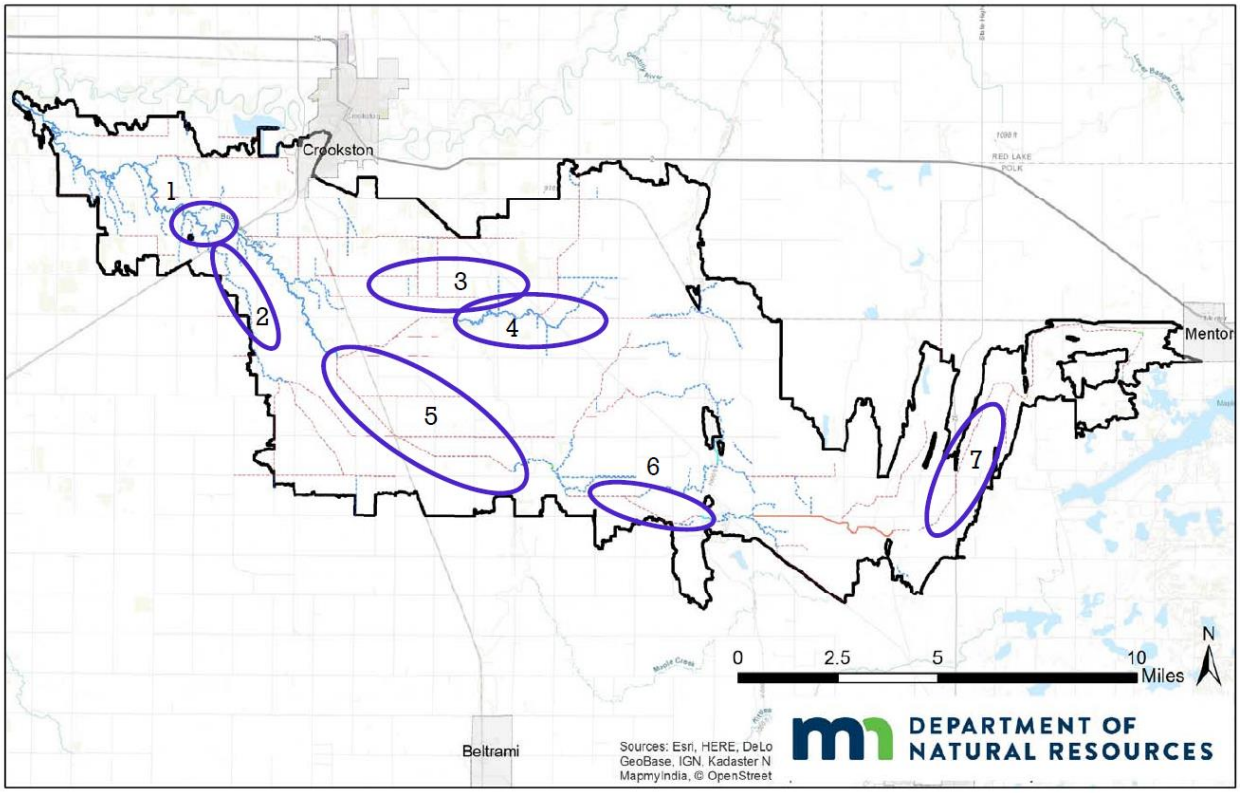
Red Lake River One Watershed One Plan

A rough draft Targeted Implementation Plan for the Red Lake River 1W1P was completed by Houston Engineering, Inc, and shared with the planning work group. The document will be an addendum to the existing Red Lake River 1W1P that summarizes the results of PTMApp analysis of the watershed. That

analysis identified the most cost-effective means of achieving sediment reduction goals in each management area.

The Red Lake River was selected by the MPCA to participate in the 319 Small-Watersheds Focus Program. The funding will be applied to a specific, nearly-restored subwatershed with the goal of significantly improving water quality so that it is no longer impaired. The planning work group has considered targeting portions of either the Black River or the Red Lake River. The portion of the Red Lake River that is impaired by excess total suspended solids between St. Hilaire and Red Lake Falls is the most likely choice for the small watershed that will be targeted.

Burnham Creek Geomorphology Assessment



DNR and RLWD staff conducted October geomorphic study of the Burnham Creek watershed. The areas in the map above were targeted for Bank Erosion Hazard Index (BEHI) ratings. Representative reaches in areas 3, 4, 5, 6, and 7 were assessed in October 2018. The further downstream areas (1 and 2) will be assessed during the summer of 2019. The goal of the work will be to find answers to some questions about the watershed:

- Where is the channel actively eroding excessive sediment into the system?
    - If eroding, where is the channel in the evolutionary process? What can be done to guide the channel into a more stable form?
    - If not eroding, what factors are critical for stability? What protection steps can be taken to maintain stability?
- Where is longitudinal connectivity creating poor connectivity conditions?

- Where is lateral connectivity in poor condition, resulting in potentially decreased habitat and increased instability?
- Where is the channel efficiently transporting sediment?
- Where is the channel unable to transport the supplied quantity of sediment?
- What channel management practices and land uses are contributing to sediment yield and river impairment?
- How are the cumulative effects of various watershed processes affecting water resources?

On October 2, 2018, DNR and RLWD staff conducted a detailed Bank Erosion Hazard Index (BEHI) assessment of the Polk County Ditch 79 portion of Burnham Creek from the Spring Gravel stream restoration project, downstream to 370th St SW (area #6 on the map). There were multiple beaver dams along the reach, including to large dams where some stream restoration work was completed. The largest dam was at the upstream end of the project area where fill from an old road/dike was not removed from the floodplain as it should have been. Another large dam was located just upstream of the location of the old Spring Gravel Dam structure that had washed-out. The beaver dams have created some potentially beneficial wetland habitat, but also are potential barriers to fish passage. A portion of the toe-wood sod mat, along the bank that bears the brunt of force of water flowing through the rock-lined channel that replaced the dam, has washed away. Downstream portions of the streambank stabilization work (after the stream turns to the north) are intact. Much of the straight portion of the channel downstream of the public land was well vegetated and relatively stable. Where field drainage entered the channel, however, washouts have been developing around the inlets and large sediment bars have been accumulating shortly downstream of the inlets. There were some eroding streambanks upstream of 180th Ave SW.

Wetland upstream of the beaver dam at the site of the Spring Gravel Dam bridge.

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Beaver dam at the former location of the Spring Gravel Dam bridge

Beaver dam near the former location of the Spring Gravel Dam

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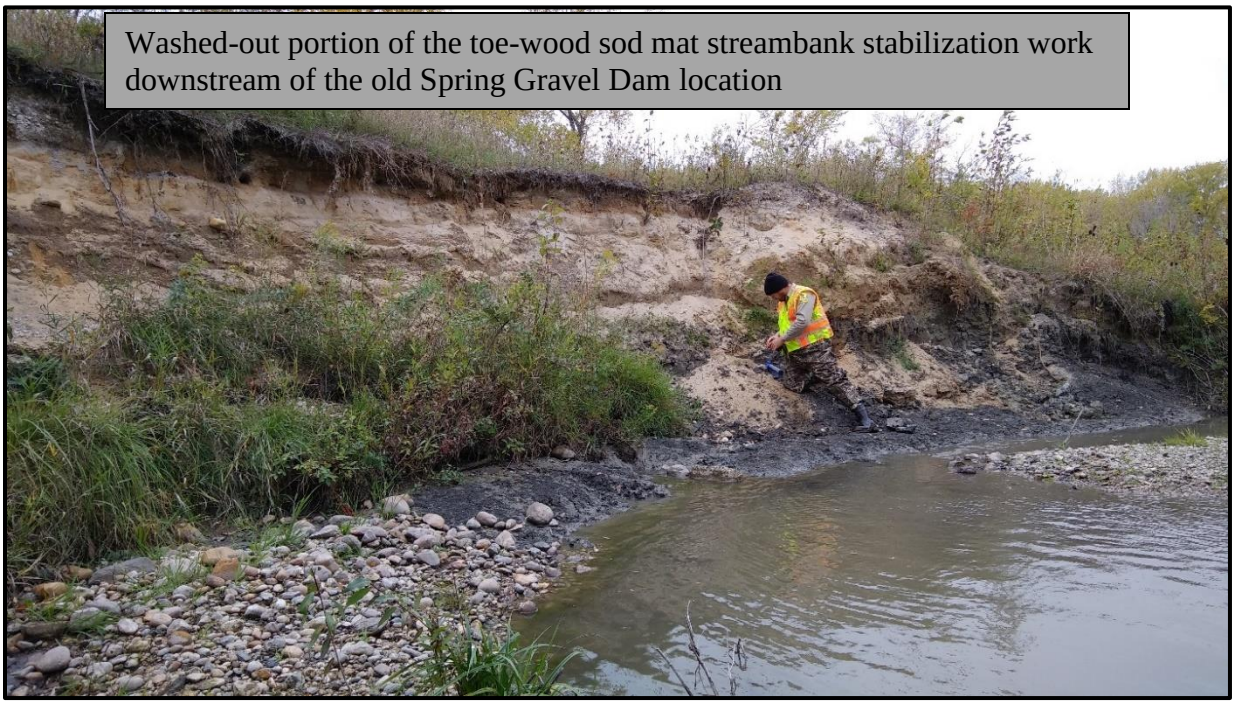

Washed-out portion of the toe-wood sod mat streambank stabilization work downstream of the old Spring Gravel Dam location

Intact, successful portion of the toe-wood sod mat streambank stabilization

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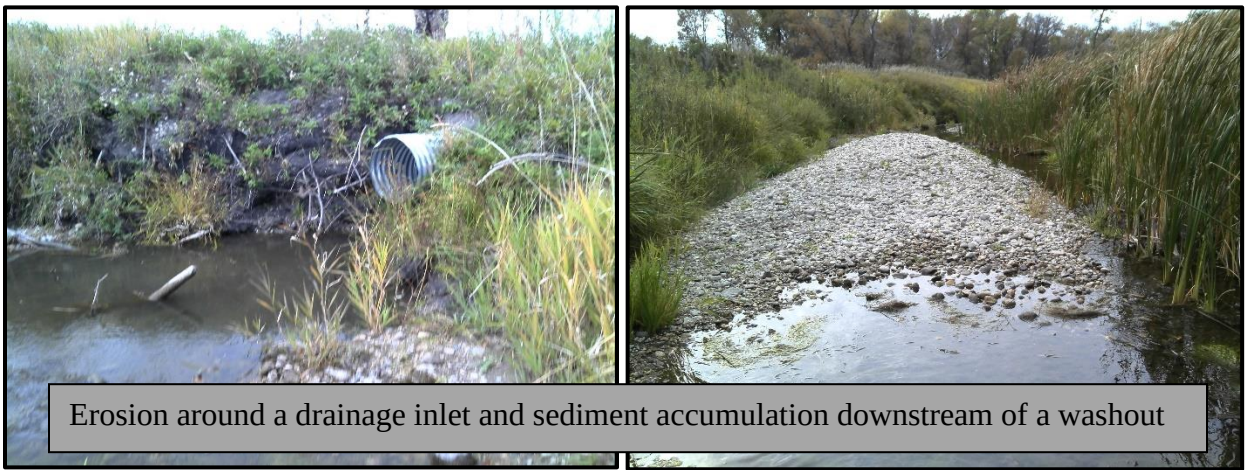

Erosion around a drainage inlet and sediment accumulation downstream of a washout

Well-vegetated, cobble-bottom, relatively stable ditch channel

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The way that the bark has been stripped, as if sandblasted, from the trunk of this tree is a evidence of the power and sediment content of the water flowing through CD 79 upstream of 180th Ave SW

The culvert at [180th Ave SW was still somewhat perched, despite the rock that was placed downstream to improve fish passage. The portion of CD 79 between 180th Ave SW and 370th St. SW was relatively stable, well vegetated, and exhibited an alternating riffle-pool pattern despite the channelization. Meanwhile, on the same day, another group of DNR staff conducted BEHI assessments downstream of 370th St. SW. The culvert at 370th St. SW appeared to still be somewhat perched but may allow some fish passage during higher flows. The DNR staff noted that there was a lot of sedimentation between a confluence of 2 ditches and the large weir downstream of 190th Ave SW. They reported that it was difficult to maintain their footing in the slippery muck. There were some small beaver dams along this portion of the ditch. Rock riffle structures had been constructed downstream of a large weir on the CD 11 portion of Burnham Creek. The channel between rock riffle structures was a bit mucky due to sedimentation, but a limited amount of sedimentation upstream of a new rock structure is expected. It was sediment that had been deposited behind a riffle structure rather than being carried further downstream.

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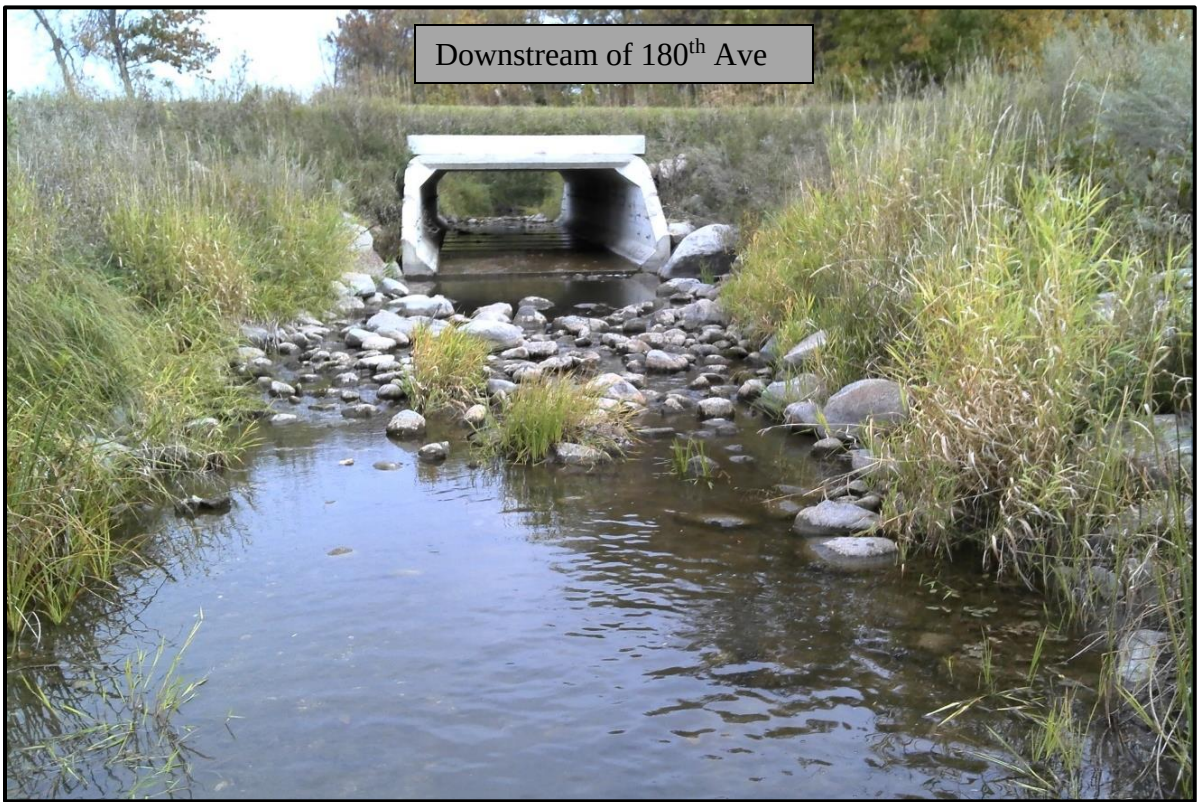

Downstream of 180th Ave

CD 79 portion of Burnham Creek, between 180th Ave SW and 370th St. SW

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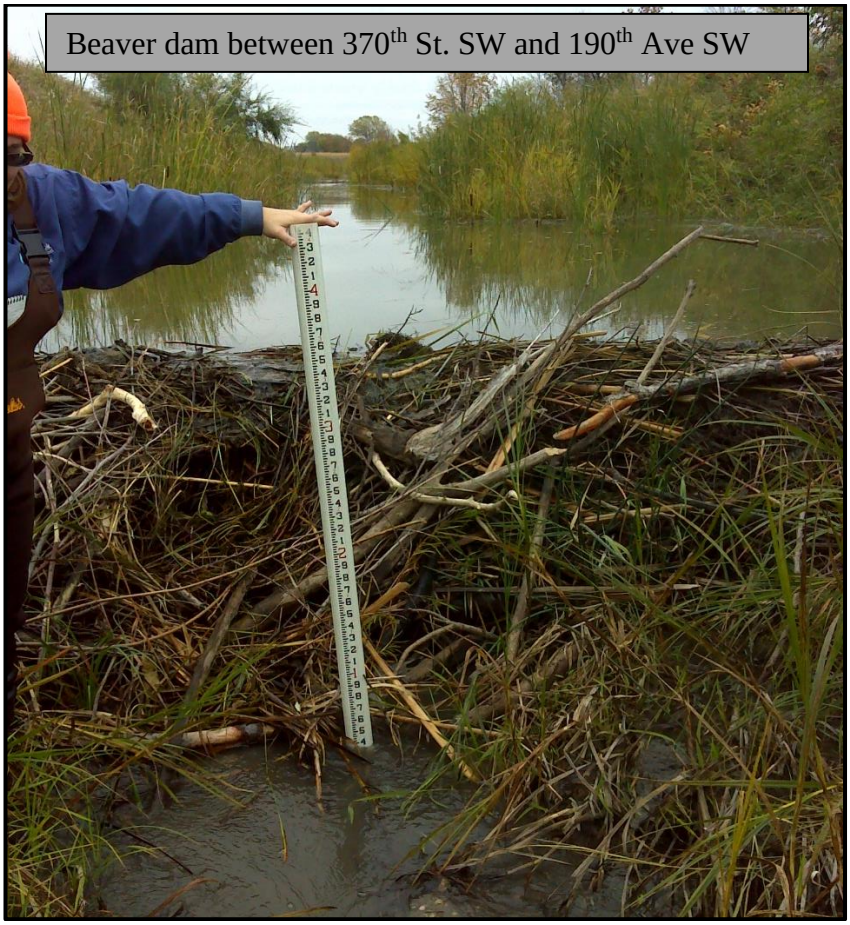
Upstream of 370th St SW



Beaver dam between 370th St. SW and 190th Ave SW

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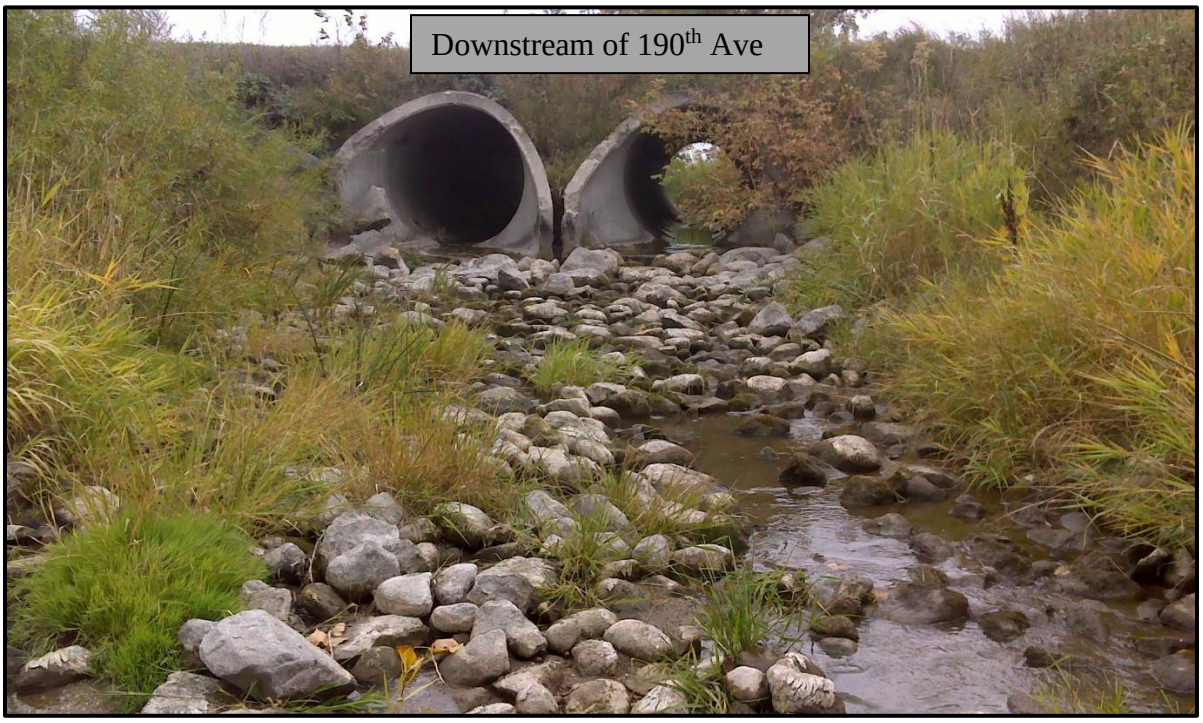
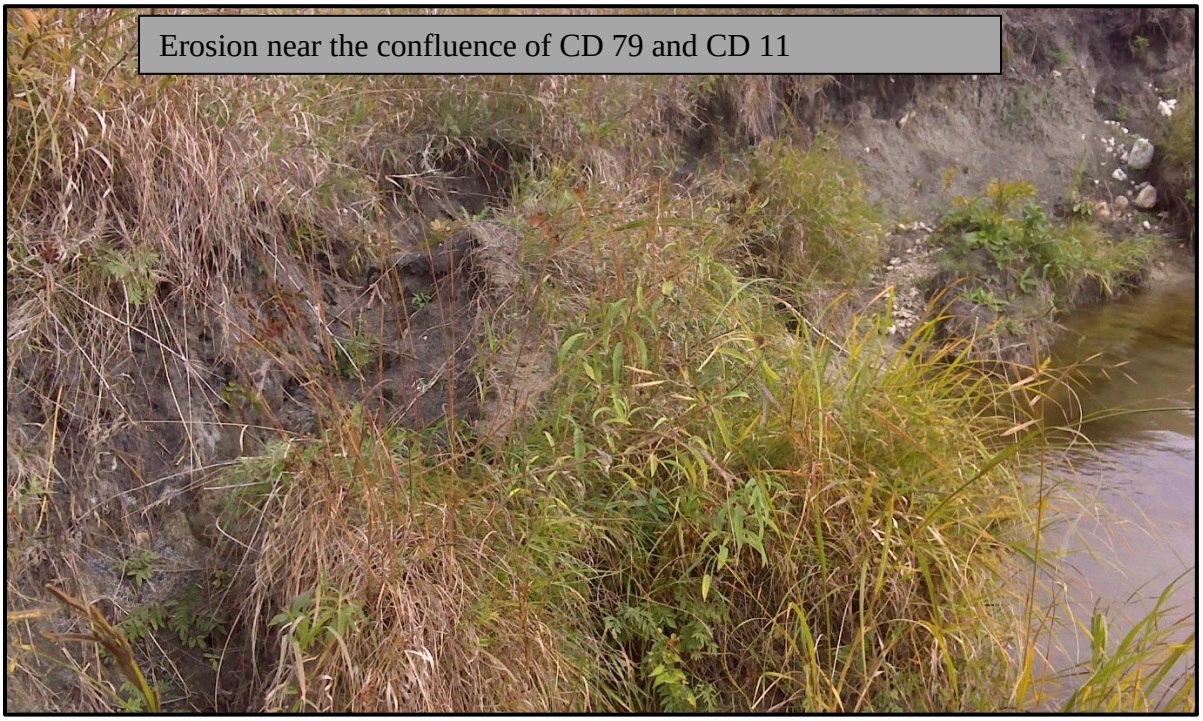


Downstream of 190th Ave



Erosion near the confluence of CD 79 and CD 11

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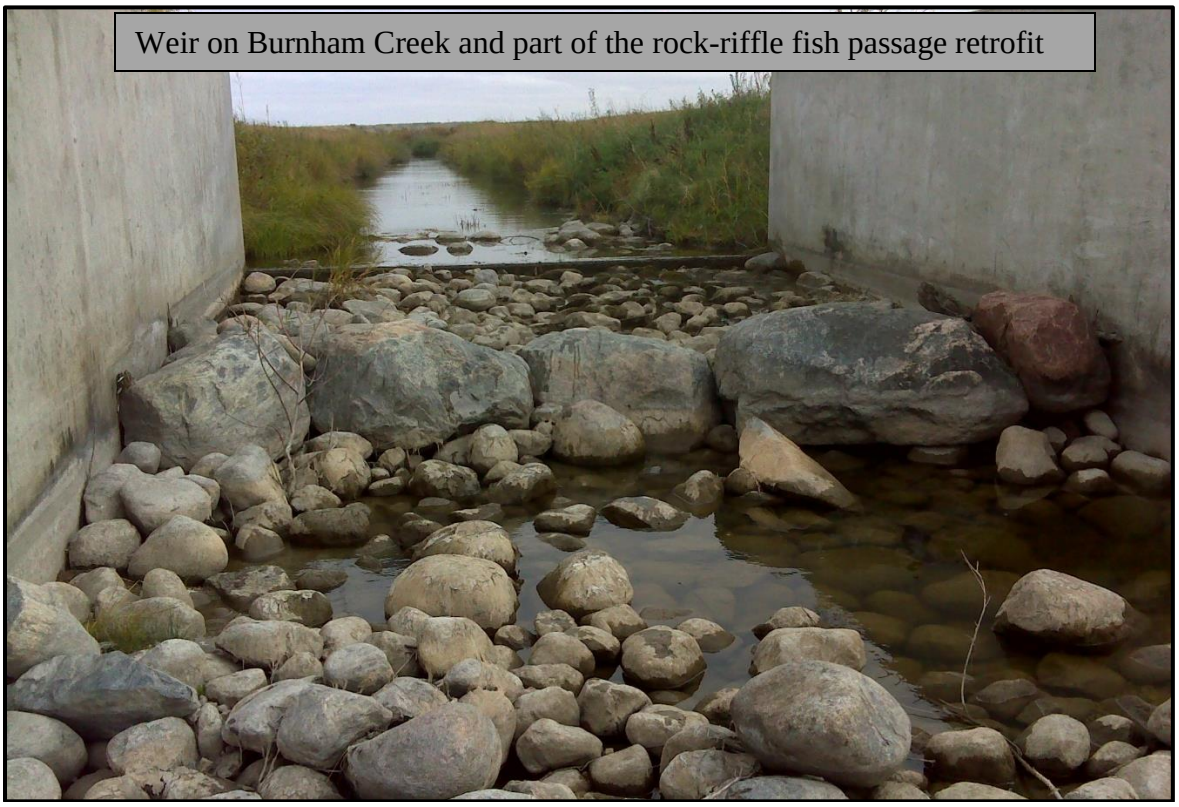
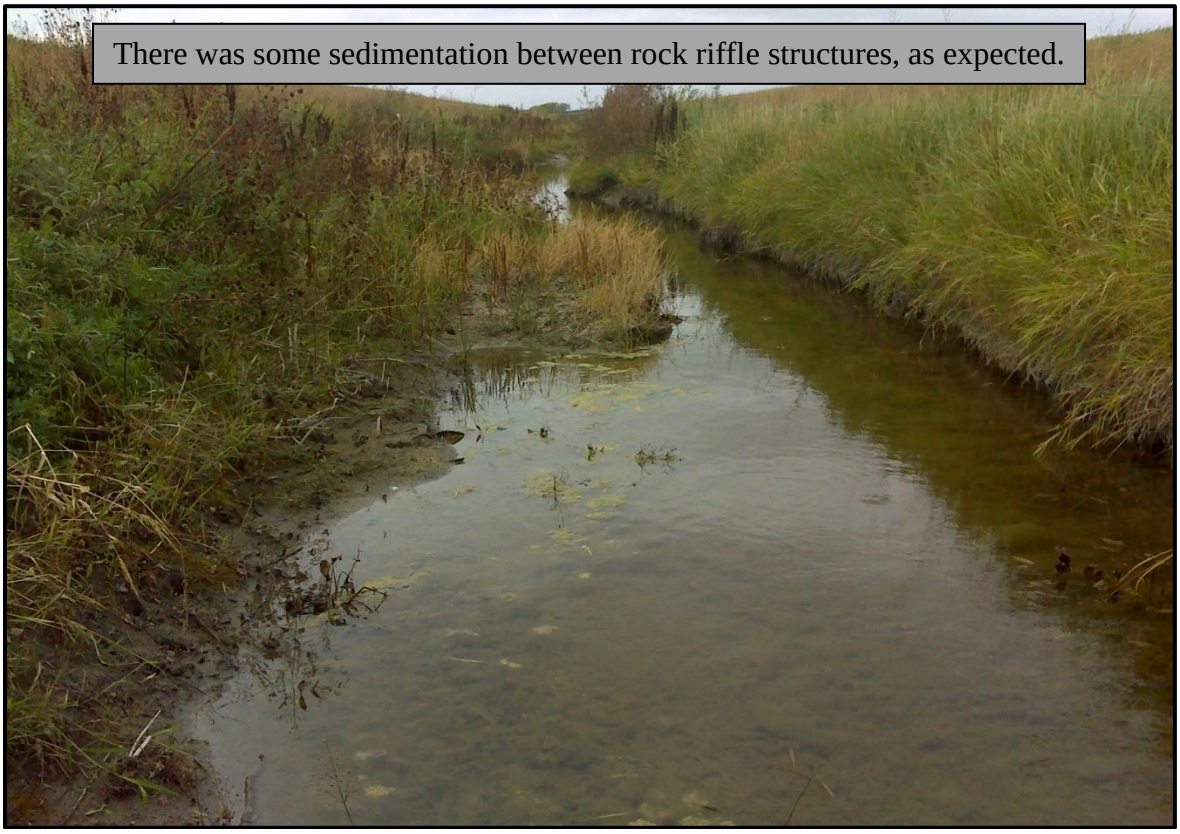


Weir on Burnham Creek and part of the rock-riffle fish passage retrofit



There was some sedimentation between rock riffle structures, as expected.

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On October 4, 2018, RLWD and DNR staff completed BEHI assessments of streambank stability along two reaches within the Burnham Creek drainage area. One group completed an assessment of Polk County Ditch 144 between 310th St. SW and State Highway 9 (area #3 on the map). Another group completed an assessment of Burnham Creek from 340th St. SW to CSAH 45 (area #5 on the map). All staff worked together to finish the days work along a portion of the channel between CSAH 45 and the confluence with Polk County Ditch 15. The north-south portion of CD 144 had a large amount of sedimentation, particularly at points where field drainage entered the ditch. The sediment bars that have accumulated near the field drainage inlets may have been exacerbating sedimentation in the channel upstream. Edge-of-field best management practices are needed along this ditch. Improved buffers or alternative practices are also needed along this ditch as portions of the ditch currently being farmed up to the edge of the ditch slope and there is erosion at field drainage inlets.

North-South portion of CD 144, downstream of 310th St

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East-West portion of CD 144, upstream of Hwy 9

Burnham Creek between and 340th St. SW CSAH 45

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Burnham Creek downstream of CSAH 45

Polk County Ditch 15 confluence with Burnham Creek

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On October 5, 2018, RLWD staff completed BEHI assessments along portions of Polk County Ditch 72 near Rydell National Wildlife Refuge (area #7 on the map) and a meandering portion of Polk County Ditch 15 near Harold (area #4 on the map). A 0.3-mile section of CD 72 upstream of 360th St. SW and a half-mile section of CD 72 between 360th St. SW and State Highway 32 were assessed. CD 72 had good vegetative cover except for a location that was a heavily-used wildlife crossing and low areas where the upper banks were sparsely vegetated due to disturbance or standing water. There were survey stakes along the sparsely vegetated areas that are evidence that some type of excavation may have occurred there. Aerial photos show that wetlands were once drained through those areas. One of the wetlands has been "restored" with a ditch plug. Another low, wet area is located along the east bank of the CD 72 channel. The area should be examined for a small project that may involve a true wetland restoration (excavation of sediment to form a basin) or establishment of additional native vegetation that favors wet conditions. Much of the CD 72 channel was filled with cattails and other vegetation. The upper banks of CD 72 were lined with native vegetation. Two dead bald eagles were lying in the ditch near the carcass of a road-killed deer near the Hwy 32 crossing of CD 72 (reported to the MN DNR).

Polk County Ditch 15 was assessed with BEHI ratings between the CSAH 48 crossing and where the ditch nears CSAH 45 (nearly half way between CSAH 48 and 220th Ave SW). A potential fish passage barrier (an old concrete private crossing) was found near the downstream end of the assessed portion of the ditch. Conditions varied throughout the assessed reach. Sedimentation was occurring along much of this reach. The banks near CSAH 45 were less stable than the banks along the rest of the channel.

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Collapsed, old concrete crossing in Polk County Ditch 15

Polk County Ditch 15 near Harold

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Unstable banks along part of Polk County Ditch 15

Other Notes

- Water quality related notes from the October 11, 2018 Red Lake Watershed District Board of Managers meeting:
  - The Board reviewed the Clearwater SWCD Local Water Resources Riparian Protection ("Other Watercourses") for inclusion into their local water management plan.
  - The Board reviewed the draft Buffer Law Implementation for Watersheds under Minnesota State Statutes 103E. Administrator Jesme stated that Houston Engineering, Inc., developed the document for the Buffalo Red River Watershed District. Discussion was held on penalty amounts for non-compliance for the installation of a buffer strip. Legal Counsel Sparby referred to section 6.1 where the District may seek remedies for non-compliance from any responsible party. Discussion was held on who is the responsible party, whether it be the agent, operator, or renter. It was the consensus of the Board, that the Owner of the property would be the responsible party, with recommendation that the Owner notify their renters to respect the Buffer Law. Motion by Page, seconded by Torgerson, to approve the Buffer Law Implementation for Watersheds, subject to Legal Counsel Sparby's review. Motion carried.
  - The Board reviewed correspondence from the City of Crookston, Part II Wellhead Protection Plan.
- A final report was completed and submitted to the MPCA for the completed Thief River Watershed Restoration and Protection Strategy Public Notice contract.

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- RLWD staff were interviewed, via Skype, by high school students from the School of Environmental Studies at the Minnesota Zoo in Apple Valley, Minnesota that were working on a school project about the Red Lake River. The students used information from their research and information from our conversation to create an "Environmental News Show" YouTube video about the Red Lake River for their class project: https://youtu.be/cWuaC8a4Cn0
- RLWD staff prepared a presentation to describe the District's water quality program for an upcoming Red River Monitoring Advisory Committee meeting.
- New maps have been added to the RLWD website that show the names and locations of RLWD drainage ditches within each county: http://redlakewatershed.org/engineering.html.

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.