River Watch

District staff met with the Red Lake County Central River Watch group to plan public education projects. District staff met with the Win-E-Mac River Watch team to review data. District staff and International Water Institute staff met in Crookston to plan the 2020 River Watch Forum and discuss River of Dreams program.

Bartlett Lake Management Plan

District staff and the City Clerk for Northome worked on publicizing a December public open house meeting for the Bartlett Lake Management Plan. An open house style meeting was held on December 5, 2019 at the Northome Community Center. MPCA staff brought posters about the studies that have been completed on the lake. DNR staff brought information about the fishery and waterfowl. Red Lake DNR staff attended and provided information about the upcoming Upper/Lower Red Lakes WRAPS meeting. District staff put together a water quality summary handout for the meeting. The city of Northome and the District provided a variety of snacks and beverages for attendees.

Red Lake River Watershed Restoration and Protection Strategy (WRAPS)

The MPCA received approval documents from the EPA for the Red Lake River TMDL, notifying the MPCA that the EPA has approved the TMDLs.
Thief River One Watershed One Plan (1W1P)

District staff updated the Thief River 1W1P website, including a link to the new revised plan: http://www.redlakewatershed.org/1W1P/Thief-River-1W1P.pdf.

A public hearing for the Thief River 1W1P was held on December 2, 2019. A video of the hearing is posted online: https://youtu.be/QGqyteE4EcA

The remaining steps in the 1W1P approval process include:

1. Each LGU Board approves this document for filing to BWSR.
2. If all LGU Boards approve, send to BWSR for approval or not.
3. If approved, we are good to submit finalized workplan to Policy Committee.
4. Approved workplan will then be submitted to BWSR for approval at which time we should be able to receive 50% of the appropriated funds to start implementing the plan.

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

District staff worked on a detailed review and revision of the Clearwater River Watershed Total Maximum Daily Load document. There was a relatively small amount of information about Beau Gerlot Creek E. coli sources, so aerial photos were re-examined to find additional sources. No obvious sources of E. coli were found, but the aerial photos showed that a portion of the natural channel (public waters, not part of a ditch system) had been dredged and trees had been removed along the channel. A number of small text edits were found during the review of Sections 8 and 9 and applied to improve the document.

Multiple revisions to the BATHTUB models for impaired lakes:

- Evaporation rates were changed so that they were equal to the precipitation numbers. In the first draft, evaporation rates were based on data collected at the Minnesota State Climatology Office.
- All the BATHTUB models for the impaired lakes were re-run to verify inputs and results.
- Phosphorus sedimentation models were tested to see which predicts a total phosphorus concentration that was closest to observed concentrations. The default model had been used for the first draft’s BATHTUB models, but a different one was used for the revised draft.
- Land use areas for Cameron Lake were revised – the geometry needed to be recalculated in ArcGIS.
- Inflow rates were re-calculated using the simulated land uses that were simulated in the “restored” iterations of the BATHTUB water quality models.
- Revised models by subtracting lake area from the open water land use areas in each lake’s drainage area. The model calculates atmospheric deposition over the surface area of the lake separately, so atmospheric deposition on the lake was being double counted in previous iterations of the model.
- Methods for estimating the square kilometers of feedlots in each lake’s drainage area were reviewed.
Lake TMDLs were recalculated using the mass balance numbers (total inflow, tributary inflow, atmospheric deposition, internal loading) that were generated by the revised BATHTUB models. Some rounding errors were found (where numbers don’t appear to add-up to the total in a table due to digits that are hidden by rounding). The models were re-run using the rounded/adjusted values.

After the detailed text and table edits had been completed, the final step of the TMDL editing involved skimming through the document and making changes to the arrangement of text and figures to make sure that space was used efficiently and other issues.

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

Continuous water quality data from deployed multi-parameter sondes was compiled, drift corrections were applied to the data, and the data was sent to MDH staff. Discrete water quality measurements were also entered into a spreadsheet and sent to MDH staff.

Red Lake River Watershed One Watershed One Plan

The Planning Work Group and MPCA staff reviewed comments from the EPA on the Red Lake River 319 Small Watersheds Focus grant work plan.

Other Notes

- District staff discussed possible projects for a No Child Left Inside grant application
  - Pollinators with scouts? Nature play area in Thief River Falls?
- District staff started working on the entry of 2019 water quality monitoring data.
- Thief River turbidity measurements on December 9, 2019 due to reports of high turbidity on December 5, 2019.
- District staff provided some instruction to Pelican River Watershed District staff on how to use HOBO water level loggers and how to process the data.
- Data from the Hydrolab HL4 multiparameter sonde that was deployed in the Thief River near Thief River Falls and Eureka Manta sondes that were deployed in the Red Lake River near LaFave Park during the fall of 2019 was compiled, corrected, and analyzed. Discrete monitoring data from 2019 monitoring of the Thief River, Mud River, and Red Lake River was compiled and sent to MDH staff along with the data that was collected with deployed water quality loggers.

Water quality related notes and minutes from the December 12, 2019 Red Lake Watershed District Board of Managers meeting.
- Darren Carlson, Marshall County SWCD, stated that in 2018 the SWCD installed side water inlet (SWI) culverts within the District’s boundary which were in part, funded with the assistance from the District’s Erosion Control Funds, RLWD Project No. 164. Carlson requested additional funding from the 2019 Erosion Control Funds, RLWD Project No. 164, in the amount of $12,500 to assist in the design of the structures and installation of SWI culverts located within the District’s boundary. Motion by Ose, seconded by Tiedemann, to approve cost share in the amount of $12,500 to assist in the design and installation of side water inlet culverts for the Marshall County SWCD from the 2019 Erosion Control Funds, RLWD 164. Motion carried.
Engineer Nate Dalager, HDR Engineering, Inc., discussed the U.S. Army Corps of Engineers (Corps) permit for the Thief River Falls Westside FDR Project, RLWD Project No. 178. Dalager noted that the Corps is not regulating the outlet as a wetland, rather they are regulating it as a stream since they state it is a tributary to the Red Lake River. There was discussion concerning the channel in reference as an outlet to Pennington County Ditch #1 and would it have other regulatory rules if the Corps recognized the channel as a legal drainage system? Dalager indicated that the Corp is also regulating the portion of Pennington County Ditch #1 west of TH #32 as a stream so he doubted that would matter. Dalager discussed the Corps’ concern with stabilization of the bank of the outlet. Dalager and Administrator Jesme will work with staff from the Corps to ensure that all information is provided in hopes of a timely and positive determination for receipt of the permit.

The Upper/Lower Red Lake WRAPS public meeting will be held on December 12th, from 4:00-6:00 p.m. at the North Beltrami County Community Center in Kelliher, MN.

Staff member Hanson participated in a Public Open House for Bartlett Lake on December 5th in the Northome City Hall. The next meeting will be held on January 22, 2020 at 10:00 a.m. at the Northome City Hall. Notes from the meeting were included in the packet.

Manager Dwight commented on a discussion he had with MnDNR Staff regarding alternatives for the Pine Lake Project, RLWD Project No. 26.

The District received word of the passing of former Board Member, Vernon Johnson. Mr. Johnson served on the District Board for 21 years. He also served on the RRWMB Board.

https://www.ceasefuneralhome.com/obituaries/Vernon-E-Johnson?obId=9474009#/celebrationWall

Water quality related notes and minutes from the December 30, 2019 Red Lake Watershed District Board of Managers meeting.

The District was informed that a Conservation Partners Legacy (CPL) Grant in the amount of $168,420 was received for the Burnham Creek Wildlife Habitat Structure Repair, RWLD Project No. 43A, which is adjacent to the BR 6 structure. Administrator Jesme stated that a requirement of the grant is to give an opportunity to the Conservation Corps to see if there is any work, they may be able to complete. Jesme will work with staff from the MnDNR and HDR Engineering, Inc., to review the Work Plan for submittal to CPL.

Manager Dwight discussed the Pine Lake Project, RLWD Project No. 26 and conversations he has had with several agency personnel. Discussion was held on the replacement of the outlet structure which would allow for better winter drawdown to hold additional spring floodwaters, as well as incorporating fish passage, and would also help with less ice damage to the shore bank due to a lower water level. MnDNR Fisheries has indicated that by lowering the water in the fall thus minimizing the area to aerate is better for fisheries as it takes the water out of the vegetated areas. Administrator Jesme stated that CPL grants could be applied for as there would be Natural
Resource Enhancement (NRE) benefits on the project, plus Flood Damage Reduction funding. Manager Torgerson inquired on the possibility of diverting water around the lake in an emergency. Engineer Nate Dalager stated that they have not looked at that possibility.

Meetings and Events from December 2019

- **December 2, 2019** – Thief River One Watershed One Plan Public Hearing
- **December 2, 2019** – Thief River 1W1P Planning Work Group Meeting to discuss a work plan for the first round of funding
- **December 5, 2019** – Bartlett Lake Management Planning Kick-Off Open House
- **December 5-7, 2019** - Minnesota Association of Watershed Districts 2019 Annual Meeting and Trade Show
- **December 11, 2019** – Red Lake River One Watershed One Plan Planning Work Group conference call
- **December 12, 2019** – Upper/Lower Red Lakes Public Open House event at Kelliher
  - District staff put together a display with information about projects and monitoring in the Upper/Lower Red Lakes watershed. The following photos include some of the other informational displays that were at the event.
Table 1. Summary of Land Use in the Upper Red Lake Watershed

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Upper Red Lake</th>
<th>Lower Red Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest</td>
<td>120</td>
<td>90</td>
</tr>
<tr>
<td>Agriculture</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Grassland</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>Wetlands</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Open Water</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>200</td>
</tr>
</tbody>
</table>

Table 2. Summary of RLCR Land Use in the Upper and Lower Red Lake Watersheds

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Upper Red Lake</th>
<th>Lower Red Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetlands</td>
<td>1,656</td>
<td>2,883</td>
</tr>
<tr>
<td>Open Water</td>
<td>491</td>
<td>1,317</td>
</tr>
<tr>
<td>Forest</td>
<td>121</td>
<td>907</td>
</tr>
<tr>
<td>Developed</td>
<td>14</td>
<td>77</td>
</tr>
<tr>
<td>Agriculture</td>
<td>49</td>
<td>102</td>
</tr>
<tr>
<td>Grassland</td>
<td>2</td>
<td>67</td>
</tr>
</tbody>
</table>

Filling “BATHTUB” model with good data helps planners keep lake water quality from going down the drain

Questions that arise when making plans to improve water quality in a specific lake or lakes include:

- What are the various sources of pollution that are causing problems, and how would water quality change in these lakes if we increase or decrease the pollutant loads coming from the various sources we have identified?

Computer models or simulation programs like the BATHTUB model help us answer these questions. BATHTUB takes data collected through monitoring efforts and other watershed information such as land use and uses that information to show what the effect will be in lakes if we make changes, such as to the amount of pollutant loads coming from various sources.

Facts about the BATHTUB model:
- Developed by William Walker, Jr., PhD, for the US Army Corps of Engineers in the 1980s.
- It is a steady-state model that has been used by the MPCA since the 1980s.
- Model inputs include lake morphometry, water budget data, and phosphorus budget data.
- It can assess the impacts of changes in water or nutrient loading to lakes/reservoirs.
- It has been used for a number of lake TMDLs in Minnesota.
- The Red Lakes watershed BATHTUB model uses output from the watershed HSPF model.
- **December 16, 2019** - Red Lake River 319 Small Watersheds Focus Grant conference call (MPCA staff and the Red Lake River 1W1P Planning Work Group) to discuss estimates of pollutant reductions.
- **December 23, 2019** – BWSR Grant Reporting Training/Refresher at the RLWD office

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