

Red Lake Watershed District



2016 Annual Report

Letter from the President	2
Board of Managers – 2016	3
Staff -2016	4
2016 Overall Advisory Committee	5
2016 Subwatershed Advisory Committee Members	5
History of the Red Lake Watershed District	6
2016 District Projects	7
Four Legged Lake Watershed (RLWD Projects #102 & 102A)	7
Pine Lake Watershed (RLWD Projects #26)	8
Erosion Control (RLWD Project #164)	9
City of Erskine Veteran’s Memorial Park	9
Flood Control Impoundments	11
Euclid East Impoundment (RLWD Project #60C)	16
Brandt Impoundment (RLWD Project #60D)	17
Parnell Impoundment (RLWD Project #81)	18
Pine Lake (RLWD Project #35)	19
Elm Lake-Farmes Pool (RLWD Project #52)	21
Lost River Impoundment (RLWD Project #17)	22
Good Lake Impoundment (RLWD Project #67)	23
Moose River Impoundment (RLWD Project #13)	25
Schirrick Dam (RLWD Project #25)	27
Water Quality Program	28
Long-Term Water Quality Monitoring Program	29
Watershed Restoration and Protection (WRAP) Projects	37
Thief River Watershed Restoration and Protection Strategy (WRAPS)	39
Red Lake River Watershed Restoration and Protection Strategy (WRAPS)	43
Grand Marais Creek Watershed Restoration and Protection Strategy (WRAPS)	60
Clearwater River Watershed Restoration and Protection Strategy (WRAPS)	62
Upper/Lower Red Lakes Watershed Restoration and Protection Strategy (WRAPS)	84
Public Education	85
River Watch	86
Geographic Information Systems (GIS)	91
PTMapp (Prioritize Target and Measure Application)	93
Water Quality Partnerships	93
2017 Plans	94
Other Watershed Activities	95
Farmstead Ring Dike (RLWD Project #129AP)	95
Permits (RLWD Project #90)	96
Wild Rice Water Allocation (RLWD Project #45)	98
Stream Flow & Pool Elevation Monitoring (RLWD Project #21)	99
Snow Surveys	100
Maintenance of Drainage Systems	101
Acronyms	111
Financial Report	112

Letter from the President

Greetings to all the citizens of the Red Lake Watershed District and other interested parties.

Another year has passed and those of us who deal in water resource issues never really know what to expect from one year to the next. For those who enjoy winter activities, the winter of 2015 and 2016 is one that you would just as soon forget. January and February were unreal in that there were only five days in those two months where temperatures dipped below zero degrees. On March 6, 2016 we witnessed our first day above 60 degrees with no snow on the ground with exceptions of small amounts in wooded areas. The spring temperatures and lack of rainfall blessed us with a very early cropping season and showed us great promise leading into summer. But all things appeared to turn in June when we witnessed 11 rainfall events which dropped 3.21 inches of rain. July never fared much better as we had 14 rainfall events which dropped 5.5 inches, August had 9 rainfall events which dropped 5.67 inches, and September having 8 rainfall events which dropped 3.44 inches of rain. All said, at the RLWD office in Thief River Falls, we witnessed 23.89 inches of rain from April 1st to October 31st which lead to a very interesting fall harvest. Because of all the rain, various areas west of Thief River Falls continuing to the Red River Valley could not properly summer fallow the field which will cause some issues in spring of 2017.

Two counties re-appointed Board members in 2016 to serve another three year term on the RLWD Board. It gives me great pleasure to welcome Manager Terry Sorenson, Mentor, who was appointed to his first full three year term after Polk County appointed him to finish out the term left by the recent passing of Albert Mandt. I would also like to thank Pennington County Board for re-appointing me to another three year term. It has been my pleasure serving the folks of Pennington County the past 16 years and I hope the next three will be just as fulfilling.

I regretfully have to announce that Orville Knott, Red Lake Falls, chose to step down at the end of year 2015, as an appointed member of Red Lake County. Orville has served on the RLWD, representing Red Lake County, for 16 years and was a very strong member to this Board. On behalf of the RLWD Board of Managers, staff and citizens of the Red Lake Watershed District, we would like to thank Orville for his commitment, not only to the RLWD Board of Managers, but also for representing the RLWD on the Red River Basin Watershed Management Board. However, there is good news from Red Lake County in that they appointed another strong candidate to replace Orville and that person is Allan Page from the great community of Huot. Allan has a very diverse background and will be a great addition to the Red Lake Watershed District team.

I would like to remind the citizens that the goals of a watershed district is to manage water in the areas of flood control, drainage, and water quality. We continue to hold our meetings on the second and fourth Thursday of each month and welcome public interests and/or attendance at these meetings.

The Watershed District office is located at 1000 Pennington Avenue South, Thief River Falls, MN. Feel free to stop in and have a cup of coffee, but if you do not have time, please go to our website <http://www.redlakewatershed.org> and take a virtual tour of our facility, as well as get updates of projects throughout the year.

Our 2016 Annual Audit is included in this report in an abbreviated form. A complete copy of the Annual Audit may be obtained at the District office at 1000 Pennington Avenue South, Thief River Falls, as well as on our website www.redlakewatershed.org.

Once again, it was a pleasure to serve as President of the Board in 2016.

Sincerely,



Dale M. Nelson, President

Board of Managers – 2016



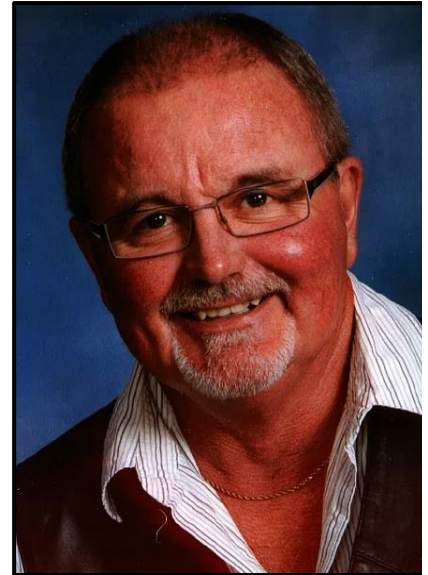
Front Row (left to right): Lee Coe, Treasurer; Dale M. Nelson, President; and Gene Tiedemann, Vice President. **Second Row** (left to right): Les Torgerson; Allan Page; Terry Sorenson; and LeRoy Ose, Secretary.



Dale M. Nelson was re-appointed to the RLWD Board of Managers to serve a 3-year term. Dale will represent Pennington County for years 2016-2018.



Allan Page was appointed to the RLWD Board of Managers to represent Red Lake County for a 3 year term. Allan will represent Red Lake County for the years 2016-2018.



Terry Sorenson was appointed to the RLWD Board of Managers to represent East Polk County for a 3 year term. Terry will represent East Polk County for the years 2016-2018.



Orville Knott

After serving on the RLWD Board representing Red Lake County for 16 years, Orville Knott did not seek re-appointment. Orville represented the District on the Red River Watershed Management Board from 2006-2015. Orville continues to serve on the Red Lake County SWCD Board. Orville and his wife, Genevieve, currently reside in Red Lake Falls.

Staff -2016



Front Row (left to right): Tammy Audette, Office Manager; Marisa Newton-Summer Intern; Ashley Hitt-Natural Resources Technician; Arlene Novak-Accounting Officer/Office & Admin. Spec. Prin.

Back Row (left to right): Corey Hanson-Water Quality Coordinator; Nick Olson-Ditch Inspector/Technician II; Loren Sanderson-Engineering Specialist; and Myron Jesme-Administrator.

Office

Red Lake Watershed District
1000 Pennington Avenue South
Thief River Falls, MN 5670
Office Hours: Mon.-Fri. 8:00 a.m.– 4:30 p.m.
Phone: 218-681-5800 Fax: 218-681-5839
Website: redlakewatershed.org
E-Mail: rlwaters@wikel.com



Meetings

The Board of Managers held twenty-four regularly scheduled board meetings in 2016. These regular meetings are normally held the 2nd and 4th Thursday of each month at the District office at 9:00 a.m. Three additional meetings were held to allow the Board to participate in the Drainage and Wetland Conference in St. Cloud; the Four Legged Lake Project/Pine Lake Area Project Landowner Informational meeting; and the Minnesota Board of Water and Soil Resources Conservation Projects Tour. Notice of these meetings are mailed or e-mailed to the Advisory Committees, county auditors, county commissioners, and SWCD/NRCS offices and by request. The agenda and minutes from board meetings are available by visiting our website at www.redlakewatershed.org/minutes. The 2016 General Fund Budget hearing was held on September 10, 2015. The General Fund budget was adopted and the levies were set for 2016 in the amount of \$155,815.00. Notice for the General Fund Budget hearing was published in at least one newspaper in each of the 10 counties within the watershed district.

2016 Overall Advisory Committee

John A. Nelson, Walker Brook Area
Lloyd Wiseth, Marshall/Beltrami SWCD
Steve Holte, Thief River Area
Emmitt Weidenborner, Upper Red Lake Area
John Ungerecht, Upper Red Lake Area

Dan Schmitz, Black River Area
John Gunvalson, Clearwater River Area
Roger Love, Grand Marais Area
Dave Rodahl, Thief River Area
Shane Bowe, Red Lake Band of Chippewa India

2016 Subwatershed Advisory Committee Members

Black River
*Dan Schmitz, RLF
Curt Beyer, RLF
Greg Dyrdal, TRF

Moose River
Wayne Larson, Middle River
Elroy Aune, Gatzke

Upper Red Lake Area
*Emmitt Weidneborner, Kelliher
*John Ungerecht, Northome

Thief River Area
Richard Engelstad, Gazke
*Dave Rodahl, TRF
Larry Hagen, Gatzke
Trent Stanley, Grygla
*Steve Holte, Grygla
Jim Sparby, Grygla

Clearwater River Area
Steve Linder, Oklee
*John Gunvalson

Lost River Area
Gary Mathis, Gonvick

Pine Lake Area
Dave Dalager, Gonvick

Red Lake River Area
Keith Driscoll, EGF

Walker Brook Area
*John A. Nelson, Clearbrook

Grand Marais/Red Area
Jeep Mattson, EGF

Hill River Area
Jake Martell, Oklee

Poplar River Area

Clearwater Lake Area

Burnham Creek Area

*Overall Advisory Committee Members

Members of the Overall Advisory and the Subwatershed Advisory Committees met on March 21, 2016. Thirteen advisory members, along with District Board members and staff were in attendance. Staff members from the District gave presentations on projects within the District and answered questions from the Advisory Committee members.

History of the Red Lake Watershed District

The Red Lake Watershed District (District) covers an area of approximately 5,990 square miles in northwestern Minnesota and includes all of Red Lake County, most of Pennington County, and parts of Mahnomon, Polk, Itasca, Marshall, Clearwater, Beltrami, Roseau, and Koochiching Counties.

A governmental unit known as the Red Lake Drainage and Conservancy District preceded the District, whose territory included approximately the same land. Under the Conservancy District, three major improvement projects were completed: dredging of the Clearwater, Red Lake, and Lost Rivers.

The Board of Directors of the Red Lake Drainage and Conservancy District felt the District could better function under the Minnesota Watershed Act. The Board petitioned the District Court for the right to operate under Chapter 112, the Minnesota Watershed Act. A hearing was held in Thief River Falls on January 25, 1969, and the Conservancy District was authorized to operate under and exercise all the rights and authorities contained in the Minnesota Watershed Act.

The Board petitioned the Minnesota Water Resources Board (now the Board of Water and Soil Resources) on July 24, 1969, amended January 20, 1970, for a change of name, review of boundary, and distribution of managers of the District. A hearing on the matter was held at Thief River Falls on March 31, 1970, and at Kelliher on April 2, 1970. In their Order, the Water Resources Board stated that the principle place of business shall be at Thief River Falls; that a description of the land within the District be written; specified that the Board of Managers be seven members, the procedure by which county boards shall appoint managers and terms of office for the Managers.

On March 25, 1975, the District adopted the Rules and Regulations pursuant to Minnesota Statutes. They were amended on May 12, 1978; December 14, 1978; August 10, 1989; and reviewed and updated on June 24, 1993, and again in 2015 to be entitled "Permit and Drainage Rules of the Red Lake Watershed District."

In 1977, the District signed a Joint Powers Agreement with other watershed districts in the Red River Basin to form the Lower Red River Watershed Management Board. In 1991, the name was changed to the Red River Watershed Management Board. This organization currently consists of eight watershed districts in the Red River Basin and provides funding to member districts, primarily for floodwater detention structures, which benefit more than one member district. The levy collected is used for funding the development, construction, and maintenance of projects of common benefit to the Red River Basin.

The District currently is governed by Minnesota Statutes 103D, which provides a broader scope for a local unit of government to manage quantity and quality of water within the hydrological boundaries.

2016 District Projects

Four Legged Lake Watershed (RLWD Projects #102 & 102A)

Four Legged Lake is located in northwestern Minnesota within Clearwater County. The chain of lakes is part of the RLWD Judicial Ditch #5 system which was established in 1921. Over the years, most recently in 1999, the downstream basin's outlet culvert had been raised without Drainage Authority permission or legal actions. The results of the raising of the culvert from its historical elevation has caused increased flooding to major county roadways and properties of upstream landowners.

On January 4, 2011 a public informational meeting was held in Leonard, Minnesota, with Clearwater County commissioners and engineer, township officials, and local landowners to get a feel of how the public wanted to proceed to remedy this flooding situation. It was determined that most landowners were not opposed to the lake being re-established but that a proper elevation should be set on the lakes to assure future flooding would not occur to the public roadways and upstream landowners in the event of large runoff events. As a result of the meeting and due to the fact the only ditch records available was an original viewers report and old blue line set of plans dating back to early 1920's, it was determined by the RLWD Board of Managers that updated information had to be developed to better identify the alternatives as we move forward.

On May 8, 2014 and again May 14, 2015 informational landowner meetings were held and it was determined that a petition for abandonment of the legal drainage system should be presented to the RLWD Board of Managers in conjunction with the Managers developing a Flood Damage Reduction Project (FDR) that would satisfy State, County, and local interests.

On July 23, 2015 a public hearing was held for the abandonment of the legal drainage system. After considerable discussion and testimony the Board of Managers elected to table the proceedings until at such time more information could be made available to the public.

On February 10, 2016 the District entered into an agreement with the Natural Resource Conservation District (NRCS) to complete a comprehensive watershed plan using the Regional Conservation Partnership Program (RCPP). This program encourages partners to join in efforts with producers to increase the restoration and sustainable use of soil, water, wildlife and related natural resources on regional or watershed scales. The District will proceed through 2017 in assuring the step process defined in the agreements are met. It is the hope of the District that upon completion of the program, we will have a more clear vision as to what can be accomplished with this project as we move forward.

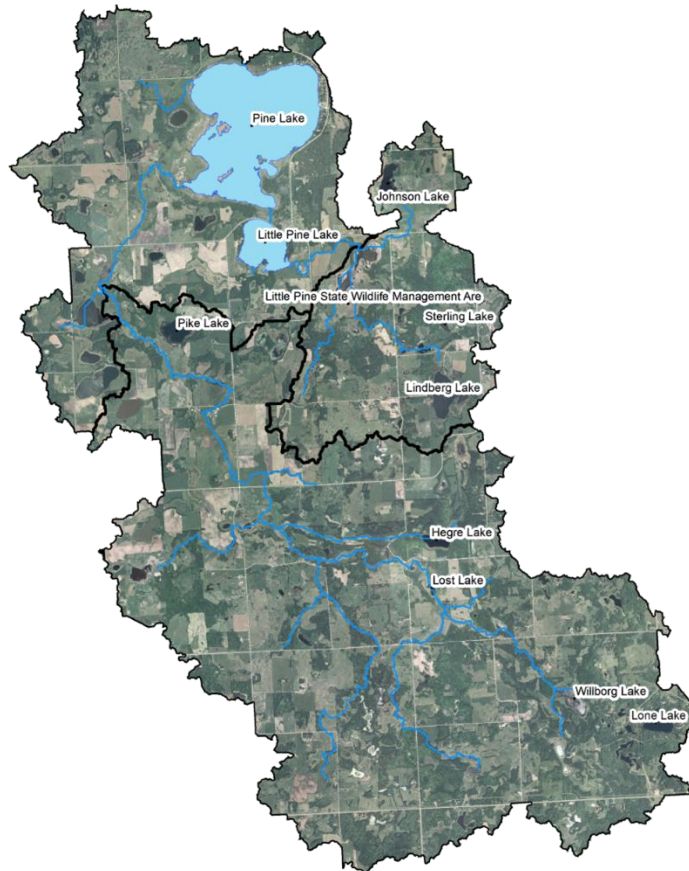


Pine Lake Watershed (RLWD Projects #26)

In 2013, at the request of the Property Owners of Pine Lake Association (POOPLA), the Board of Managers hired HDR Engineering, Inc. to investigate the Pine Lake Watershed, to not only come up with solutions and alternatives that could assist in frequent flooding on Pine Lake, but also investigate the opportunities for distributed storage sites which may assist the District in our long range plan to reduce flooding to the Red River of the North by implementing the Red Lake Watershed 20% Reduction Strategy.

After various landowner meetings held in 2014 and 2015, it was apparent that there was interest in looking at areas upstream of Pine Lake to determine if any Flood Damage Reduction (FDR) projects could be developed. This interest lead the RLWD in applying for and being approved for a Natural Resource Conservation Service PL566 grant which will assist in a study which could lead to the possibility of engineering and design of Flood Damage Reduction (FDR) projects in the Pine Lake Watershed. It is the hopes of the District that the contracts will be signed and executed in early 2016, with a comprehensive study to be completed which would lead to projects being developed to reduce flood damages in the Red Lake Watershed District.

On January 11, 2016 the District entered into an agreement with the Natural Resource Conservation District to complete a comprehensive watershed plan using the Regional Conservation Partnership Program (RCPP). This program encourages partners to join in efforts with producers to increase the restoration and sustainable use of soil, water, wildlife and related natural resources on regional or watershed scales. The District will proceed through 2017 in assuring the step process defined in the agreements are met. It is the hope of the District that upon completion of the program, we will have a more clear vision as to what can be accomplished with this project as we move forward.



Erosion Control (RLWD Project #164)

This project category was established in 2004 and is used on a yearly basis to fund various erosion control projects which are usually initiated by projects developed by local Soil and Water Conservation Districts (SWCD). In 2016, there were various projects funded from requests by SWCDs, but this year we would like to highlight a project referred to as Memorial Park Erskine.

City of Erskine Veteran's Memorial Park

The District cost shared with the East Polk SWCD, the City of Erskine, and the local American Legion Club to repair an existing levee located on the east side of Cameron Lake. The levee is approximately 500 feet in length, was constructed in 1977, and protects a public swimming area. In recent years, the levee top has been transformed into a veteran's memorial walkway which includes flag poles, along with granite stones, and benches with the names of fallen soldiers.

The 'lake side' of the levee has eroded over time and the rock rip rap had also 'slumped' from the original design. The repair mainly consisted of salvaging existing rip rap, adding clay fill to restore the eroded slope, and also placing additional quarry fractured rip rap on the slope, other items included geotextile filter fabric, turf establishment, etc. Special care had to be taken by the contractor to make sure the existing walkway area was not damaged. Davidson Construction of Middle River, MN, was the contractor for the project with an estimated total construction cost was \$78,500.00

Veteran's Memorial Park



Pre – construction Levee



City swimming area



Fall Construction



Flood Control Impoundments

The 2016 spring melt and runoff was basically a “non-event” in the basin. By mid-March the landscape was void of snow cover and the surface water was also gone. Rainfall events throughout the remainder of the year occurred at various locations in the District which generated runoff. During this time, both “gated and “non-gated’ impoundments were utilized for flood water storage.

Record Events in 2016: November was ‘warmest’ ever recorded; and the western part of the District (near East Grand Forks) was the ‘wettest’ ever recorded – 32 in. (previous record – 29 in. - 1944)

Impoundments operated by the District are quite diverse. Actual project operations are based on available flood storage, outlet structure facilities, and outlet channel capacity. Each impoundment is designed, based on upstream drainage area, topography, and runoff conditions. Some of the flood storage facilities are operated with adjustable stop-logs, adjustable flood gates, and some are non-gated fixed crest weir structures.

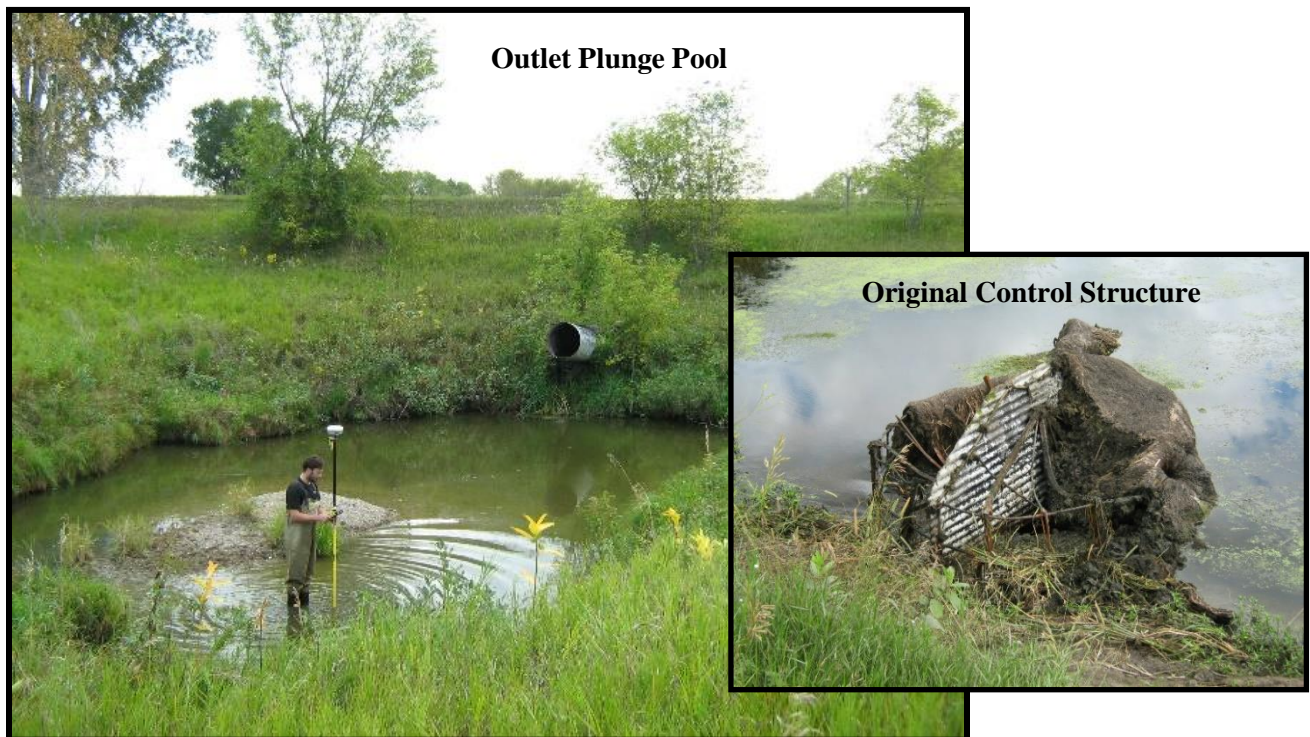
Non-gated – Fixed Crest Weir Type

“Fixed crest” structures store water to the specific elevation of a weir. When the water surface raises above the weir elevation, outflows occur automatically. Most of the non-gated projects were constructed in the 1970’s and early 1980’s by the former Soil Conservation Service (SCS), known today as the Natural Resource Conservation Service (NRCS).

In 2016, the District worked with the local landowners, MnDNR, and consulting firm Houston Engineering, Inc., to prepare plans and specifications to repair three small dam facilities, two in Red Lake County, and one in Polk County. These were constructed approximately 35 to 40 years ago and the control structures were deteriorating along with earthen embankment slope issues.

Miller Dam located in Gervais Township, Red Lake County

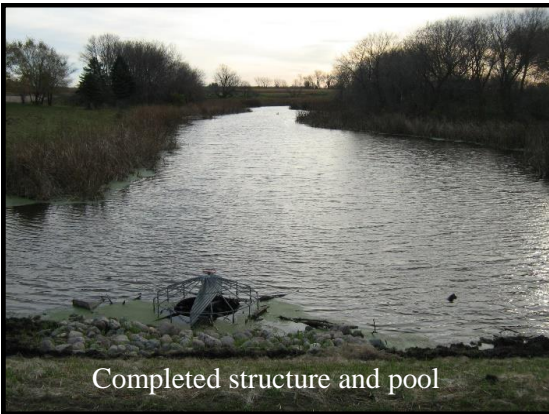
Work consisted of installation of a new control structure, embankment repair, and plunge pool modifications. Higher Ground Construction of East Grand Forks, MN completed the repairs at a cost of \$72,750.



New riser and embankment damage after storm event



New outlet structure ready to back fill



Completed structure and pool

Structure outlet and reconstructed plunge pool



Latendresse Dam located in Red Lake Falls Township, Red Lake County

Repairs to the Latendresse Dam consisted of installation of a new outlet structure, embankment and slope repair. Due to embankment sloughing the slopes were repaired to a 3:1 slope. Construction was completed by Brummund Excavating, Red Lake Falls at a cost of \$91,265.



Slope failure/deteriorated metal control structure



New control structure installation

Completed Project



Odney / Flaot Dam located in Onstad Township, Polk County

Originally constructed in 1981, a large storm event in 1983 caused dam failure. Repairs and an additional concrete structure were completed 1987. In 2016, Wright Construction of Thief River Falls removed the two control structures and replaced them with a new riser and outlet pipe at a cost of \$84,110.





Water storage is calculated in acre feet, which is a volume measurement that is one acre in area by one foot deep. Storage capacity in impoundments varies depending on acreage and depth of the storage area. One foot of water depth in an impoundment can be many thousand acre feet of storage. Some impoundments are considered “dry” which means that the pool is basically drained dry after stored flood waters are released. Other impoundments are operated with a small permanent pool throughout the year.

Operation and maintenance varies, depending on the specific project. Some are operated solely by the District, and others are operated cooperatively with the Red Lake Band of Chippewa Indians, Minnesota Department of Natural Resources, U.S. Fish and Wildlife Service, Natural Resource Conservation Service, and local Soil and Water Conservation Districts.

Routine inspections are performed and the condition of the embankment and control structures is evaluated. Typical maintenance includes flood damage repairs, debris removal, removal of beaver dams/debris, nuisance beaver, and vegetation control.

The following pages describe some of the larger impoundment facilities that have gated and/or stop-log control flexibility.

Gated / Stop-log Type

Projects with ‘adjustable flood gates and/or stop-logs’ have more flexibility for storing and also for controlling outflows from flood events. During large runoff events, flood waters are stored within the impoundments and as downstream conditions allow, the stored water is released in a controlled manner. This is done by operating flood gates or by adjusting stop-logs, depending on the respective flood storage facility. Water levels are typically lowered during the fall season. This ‘fall drawdown’ is performed to create additional flood storage for the next spring’s runoff.

Euclid East Impoundment (RLWD Project #60C)

GENERAL: Construction of the Euclid East Impoundment began on June 15, 2006. Due to excellent working conditions, it was substantially completed by the middle of November. The project became functional for operation in the spring of 2007. This project is funded jointly between the State of Minnesota, Red River Watershed Management Board and the District.

LOCATION: The project is located in Section 24, Euclid Township, and Section 19, Belgium Township, Polk County, approximately 12 miles north of Crookston.

PURPOSE: The project will store runoff and reduce flooding on downstream agricultural lands and urban areas by retaining up to approximately 2,443 acre-feet of floodwater. The storage of water in the reservoir will also reduce peak discharges on legal ditch systems, Branch C of County Ditch #66, County Ditch #66 (Main), and County Ditch #2.

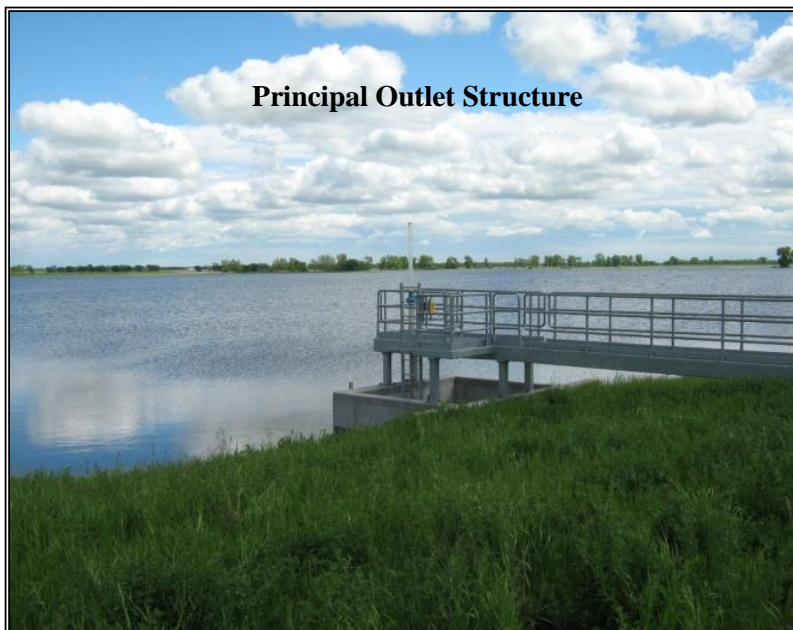
PROJECT COMPONENTS:

The project has a drainage area of 17.1 square miles. The embankment and reservoir is constructed of approximately 3.6 miles of earthen clay embankment (332,681 cubic yards & approx. 12 feet at highest point), a grass lined emergency spillway, 2.4 miles of inlet channels and culvert works, 0.8 mile of outlet channel, and a gated concrete outlet structure. The operable components are the gated structure which releases water from the impoundment into an outlet channel. This water then flows northwesterly through legal ditch systems and eventually to the Red River of the North.

FUNCTIONAL DESIGN DATA

	Elevation (ft.-msl)	Storage
Top of Dam (total Storage)	908.0	2,443 (2.68 in. runoff)
Gated Storage (Secondary Spillway)	905.0	1,878 (2.06 in. runoff)
Ungated Storage to Emergency Spillway	906.0	565 (0.62 in. runoff)
April 21, 2011 was recorded as the highest pool elevation at 903.10		

District staff completed occasional gate operation and short term storage throughout 2016.



Brandt Impoundment (RLWD Project #60D)

GENERAL: Construction of the Brandt Impoundment began on July 31, 2006, and was substantially completed by the middle of November and functional for operation in the spring of 2008. The District and HDR Engineering of Thief River Falls jointly performed construction surveying and inspection duties. The project is funded by the State of Minnesota, Red River Watershed Management Board, and the District.

LOCATION: Section 7, Belgium Township, Polk County, approximately 14 miles north of Crookston, or 1 ½ miles east and 1 mile north of Euclid.

PURPOSE: The project will store runoff and reduce flooding on downstream agricultural lands and urban areas by retaining up to approximately 3,912 acre-feet of floodwater. The storage of water in the reservoir will also reduce peak discharges on the downstream “Brandt Channel,” RLWD Ditch 15 and legal County Ditch #2 system.

PROJECT COMPONENTS:

The project has a drainage area of 23.6 square miles. The embankment and reservoir is constructed of approximately 3.5 miles of earthen clay embankment (492,579 cubic yards & approx. 19 feet at highest point), a grass lined emergency spillway, 2 – lines of 6 x 8 concrete box culverts and a gated concrete outlet structure.

Operable components are the gated structure which releases water from the impoundment into an outlet channel. This water then flows west - northwest through the “Brandt Channel” legal County Ditch #2 system and eventually to the Red River of the North.



FUNCTIONAL DESIGN DATA

	Elevation (ft.-msl)	Storage
Top of Dam (total Storage)	918.0	3,912 (3.1 in. runoff)
Gated Storage (Secondary Spillway)	914.5	3,126 (2.48 in. runoff)
Ungated Storage to Emergency Spillway	916.0	786 (0.62 in. runoff)
July 4, 2010 was recorded as the highest pool elevation at 912.5		

District staff completed occasional gate operation and short term storage throughout 2016.

Parnell Impoundment (RLWD Project #81)

GENERAL: Construction of the Parnell Impoundment began in 1997 and was completed in 1999. In 2004, modifications were made to the original design by lowering the emergency spillway 1.5 feet, expanding the inter-pool connecting channel, and installing an operable screw gate on the weir structure in the JD #60 outlet. The impoundment is now better utilized to store floodwaters by operating control gates. In 2009, excavation of an east pool interior channel, along with an inter-pool structure, consisting of 2-48” diameter culverts with operable gates was installed. The channel will enhance flow conveyance to J.D. #60 and the inter-pool structure will be beneficial in managing west pool water levels, and held reduce flooding in County Ditch #126.

LOCATION: Sections 3 and 4, Parnell Township, Polk County, approximately 12 miles northeast of Crookston.

PURPOSE: The project will reduce flooding on downstream agricultural lands and urban areas by retaining up to approximately 4,000 acre-feet of floodwater. The storage of water in the reservoir will also reduce peak discharges on four legal ditch systems, County Ditch #126, Judicial Ditch #60, County Ditch #66, and County Ditch #2.

PROJECT COMPONENTS: The project has a drainage area of 23 square miles. The impoundment incorporates a 2 – pool design (no permanent pool), with two separate outlets, and an inter-pool connecting channel. The embankment and reservoir is constructed of approximately 5 miles of earthen embankment (approx. 18 feet at highest point), a concrete emergency spillway and two gated concrete outlet structures.

Operable components are the two gated structures which release water from the impoundment into two separate outlet channels. One of these channels is JD #60, which flows south to the Red Lake River and the other is CD #126, which flows west and eventually to the Red River of the North.



FUNCTIONAL DESIGN DATA:

	Elevation (ft.-msl)	Storage
Top of Dam (total Storage)	943.0	4,000 (3.2 in. runoff)
Emergency Spillway	939.5	3,000 (2.4 in. runoff)
March 25, 2009 was recorded as the highest pool elevation at 939.75		

District staff completed occasional gate operation and short term storage throughout 2016.

Pine Lake (RLWD Project #35)

GENERAL: In 1980, the Clearwater County Board of Commissioners petitioned the District for an improvement of the Pine Lake outlet. Constructed in 1981, a sheet pile dam with two adjustable stop log bays was built about 800 feet north of the lake on the Lost River.

LOCATION: The site is near the south center of section 21, Pine Lake Township, Clearwater County.

PURPOSE: This multi-purpose project designed to provide the public with flood control and wildlife benefits. The Gonvick Lions Club has donated hundreds of man-hours and when necessary, members operate the aeration system, install and maintain signage.

FUNCTIONAL DESIGN DATA:

	Elevation (ft.-msl)
2 nd Stage-top of dam	1284.5
1 st Stage-top of dam	1284.0
Typical summer-top of stop logs	1283.5
Typical winter	1282.5
April 11, 2009 was recorded as the highest pool elevation at 1286.0	

The Pine Lake control structure is a sheet pile dam with 2 – four foot wide adjustable stop-log bays. The stop-logs can be adjusted between elevations 1281.5 to 1283.5. There is also 26 feet of fixed crest weir at elevation 1284.0, and 65 feet of fixed crest weir at elevation 1284.5. The project has a drainage area of 45 square miles. Based primarily on lake elevation, stop-logs may be removed from the dam to allow additional outflow until the lake recedes, and then they are replaced to the typical summer or winter elevation. The dam is also designed with a small fixed crest weir at elevation 1282.5, which is one foot lower than the normal summer stop-log elevation. This was an innovative design in the early 1980's, and allows for minor outflows that provides stream flow maintenance. This is very important for keeping some flow in the Lost River especially during periods of low flow. Factors to consider when adjusting the stop-logs are: monitoring "inflows" to the lake, existing lake elevation, downstream conditions and predicted runoff. Staff personnel at the Sportsman's Lodge are very helpful in reading the lake elevation gauge located inside the business and a local resident records rainfall data at the lake.



Typical fall drawdown with stop-logs removed

2016 Operation:

Pine Lake crested on August 11, 2016 at elevation 1284.52. The local Sportsman’s Club did not need to operate the aeration system during the winter season. Lake “ice out” occurred around March 28th, and on March 30th stop-logs were installed to the typical summer elevation of 1283.5. For about 3 weeks, from mid-August and into September, stop-logs had to be removed due to the rising lake level from rainfall runoff.

In early October, stop-logs were removed for the normal fall drawdown. By late October, problem beavers constructed a dam between the stop-log dam and the lake, thus, restricting outflow for the drawdown. A local trapper and contractor removed the beavers and their dam in November.



Stop-logs set for winter pool



**Typical channel of Lost River –
slightly downstream
of stop-log dam**

Elm Lake-Farmes Pool (RLWD Project #52)

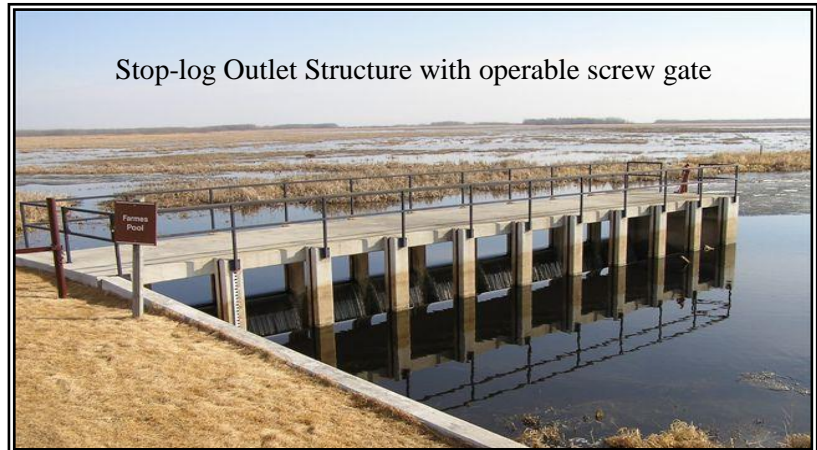
GENERAL: Elm Lake was drained in about 1920 by the construction of Branch #200 of Judicial Ditch #11. The Elm Lake project is a cooperative effort of the U.S. Fish and Wildlife Service, MN Department of Natural Resources, Red Lake Watershed District, and Ducks Unlimited. The majority of funding for the project was provided by Ducks Unlimited and at the time Elm Lake was created, it was the largest Ducks Unlimited project in the lower 48 states.

LOCATION: Marshall County, approximately 17 miles northeast of Thief River Falls. The drainage area of Ditch 200 above Elm Lake is 63 square miles.

PURPOSE: Multi-purpose – designed to meet three major objectives: Flood control, increase wildlife values, and upstream drainage improvement.

PROJECT COMPONENTS:

Approximately 9 miles of earthen embankment, an outlet control structure, rock lined emergency spillway, and an enlargement of a portion of Ditch 200.



FUNCTIONAL DESIGN DATA:

	Elevation (ft.-msl)	Storage (ac.ft.)
Top of Dam	1145.0	19,700
Emergency Spillway	1142.0	11,000 (8.9 in. runoff)
Max Summer	1141.0	7,500 (6.11 in. runoff)
Typical Summer	1140.0	5,500 (4.48 in. runoff)
Typical Winter	1139.0	3,500
Project Drainage Area 63.0 sq.mi.		
*Highest recorded pool elevation was 1143.30 on April 23, 1997		

OPERATIONAL: 1991

Agassiz National Wildlife Refuge staff performs the actual operation of the outlet structure (stop-logs and screw gate) with cooperation from the District. In 2009, repairs were made to the principal outlet structure. Work consisted of repairing stop-log bays and channels, removal of corroded stop-logs, and installation of new handrails and safety grates.

2016 Operation

Temporary pool level fluctuation for screw gate maintenance, otherwise normal operation.

Lost River Impoundment (RLWD Project #17)

GENERAL: Approximately in the mid-1970's, the project was constructed by the Minnesota Department of Natural Resources to improve waterfowl habitat. On December 14, 1978, the District entered into a formal agreement with the Minnesota Department of Natural Resources to modify the original impoundment by raising the elevation of the dike and emergency spillway. Four (4) 48 in. diameter gated pipes and a spillway from Ditch 200 of JD #11 supply water to the impoundment which is an “off channel” reservoir.

LOCATION: Marshall County, Grand Plain Township, proximately 20 miles northeast of Thief River Falls. The drainage area above the impoundment is 53 square miles.

PURPOSE: Multi-purpose – designed to increase wildlife values, and provide flood control.

PROJECT COMPONENTS:

Approximately 10 miles of earthen embankment, an outlet control structure, and an emergency spillway into Ditch 200.



FUNCTIONAL DESIGN DATA:

	Elevation (ft.msl)	Storage
Top of Dam	1150.2	14,600
Emergency Spillway	1148.2	10,000 (4.7 in.runoff)
Typical Summer	1146.2	5,500 2.6 in. runoff)
Typical Winter	1145.2	3700
Drainage Area 53.0 sq.mi.		
Highest recorded pool elevation (RLWD) was 1147.80 on April 14, 1999		

OPERATIONAL: 1978

The Minnesota Department of Natural Resources (MnDNR) staff perform the actual operation of the outlet structure with cooperation from the District. In 2014, the MnDNR obtained funding to make repairs on the outlet end of the control structure. Most of the work consisted of sediment removal, re-shaping of the plunge pool and ditch banks, plus installing rock riprap. The Watershed District helped with the design, cost estimate, and partial funding. The work was completed late in the year.



Good Lake Impoundment (RLWD Project #67)

GENERAL: The Good Lake Project is a cooperative effort between the Red Lake Band of Chippewa Indians and the District.

LOCATION: The project area lies entirely within the Red Lake Indian Reservation. The impoundment is approximately 30 miles east of Thief River Falls, in Clearwater and Beltrami Counties. The drainage area above the dam is 73 square miles.

PURPOSE: Multi-purpose project to provide wetland habitat, flood water retention, and potential irrigation water supply.

Fish and Wildlife: Enhanced wetland habitat for waterfowl, furbearers, and other wetland species. The reservoir also has the potential for seasonal rearing of northern pike.

Flood Control: The project will reduce flood peaks on both the Red Lake River and the Red River of the North. The dam will store runoff from the 73 square mile drainage area. Spring storage capacity is 11,300 acre-feet and is equal to 2.6 inches of runoff from the drainage area. The project will also reduce flooding on approximately 4,000 acres of private land immediately west of the project, by intercepting overland flows.



Water Supply: The reservoir may be used as a water source for irrigation of wild rice paddies. Paddies have not been built, but there is potential for paddy development in adjacent areas.

PROJECT COMPONENTS: Approximately 9 miles of earthen embankment, 7.5 miles of inlet channels, a reinforced concrete outlet structure, and 2 miles of outlet channel. Water released from the impoundment, enters the Red Lake River approximately 2.5 miles downstream (south easterly) from the outlet control structure.

FUNCTIONAL DESIGN DATA:

	Elevation (ft.-msl)	Storage (ac.ft.)
Top of Dam	1178.5	27,500
Flood Pool (Emergency Spillway)	1176.1	13,100 (4.8 in. runoff)
Normal Summer Pool	1173.0	3,250 (1.2 in. runoff)
Normal Winter Pool	1172.0	1,800
Drainage Area – 73 sq.mi.		
Highest recorded pool elevation was 1176380 on May 25, 1999		

OPERATIONAL: 1996

On April 12, 2011, the Red Lake Tribal Council approved a new 5 year Special Land Permit (Resolution No. 61-11) granted to the District. The original permit had expired on January 12, 2010. In part, the permit states “The purpose of this permit is to facilitate cooperative management of the Good Lake Impoundment, where the District and the Red Lake Band will cooperatively inspect, supervise and conduct necessary maintenance at the Good Lake Flood Control project site. Activities will be coordinated with the Red Lake Department of Natural Resources.” Also, as part of the land use permit, the District is granted a right of access to the land described for a period of five years, starting on the date the permit commenced. It was signed by the Tribal Chairman and Secretary on April 13, 2011 and expired on April 13, 2016.

On July 12, 2016, two District Board Managers and two Staff members met before the Red Lake Tribal Council to discuss and ask for a renewal of the Special Land Permit. On August 24, 2016, the office received a new 2 year Special Land Permit (Resolution No. 138-16) signed by the Tribal Chairman and Secretary and dated July 12, 2016. (expires on July 12, 2018)

2016 Operation:

No gate operation was necessary during in 2016. Pool elevations above the typical summer level were temporarily stored, and outflows were released automatically through the stop-log bays and the overflow weir. In mid-November, stop-logs were removed for the normal fall drawdown.



Moose River Impoundment (RLWD Project #13)

GENERAL: The project, which is a two pool design, is the largest impoundment operated by the District. It was a cooperative effort of the District, Red River Watershed Management Board, and the Minnesota Department of Natural Resources for flood control and wildlife management. Flood damages will be reduced by impounding floodwaters in the upper reaches of the watershed. Wildlife and associated recreational benefits will be enhanced by water retained in the two pools. The project is constructed on lands managed by the Minnesota Department of Natural Resources.

LOCATION: The project is located at the headwaters of the Moose and Mud Rivers in northwestern Beltrami County, approximately 15 miles northeast of Grygla, MN.

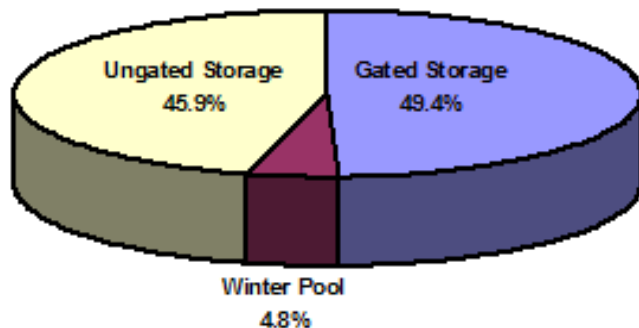
PURPOSE: Multi-purpose – designed to provide flood control, streamflow maintenance, increase wildlife values, and benefit fire control.

OPERATIONAL: 1988

FUNCTIONAL DESIGN DATA:

	North Pool	South Pool	Total
Top of Dam Elevation (ft.msl.)	1218.0	1220.0	
Freeboard Flood Elevation (ft.-msl)	1217.2	1219.3	
Freeboard Flood Storage (ac.ft.)	16,250	38,250	54,500
Emergency Spillway Elevation (ft.-msl)	1216.0	1218.0	
Emergency Spillway Storage (ac.ft.)	12,000	24,250	36,250 (5.4 in. runoff)
Gated Pool Elevation (ft.-msl)	1215.3	1217.4	
Gated Pool Storage (ac.ft.)	9,750	19,750	29,500 (4.4 in. runoff)
Typical Summer Elevation (ft.-msl)	1211.7	1213.6	
Typical Summer Storage (ac.ft.)	2,000	4,000	6,000 (2.1 in. runoff)
Typical Winter Elevation (ft.-msl)	1210.5	1212.4	
Typical Winter Storage (ac.ft.)	800	1,800	2,600
Max No-Flood Elevation (ft.-msl)	1212.5	1214.5	
Max No-Flood Storage (ac.ft.)	3,000	6,000	9,000
Project Drainage Area (sq.mi.)	41.7	83.3	125.0
*Highest Recorded Pool Elevation May 16, 1999	*1215.90	*1218.05	

This impoundment has a small permanent winter pool to allow for maximum storage capacity as indicated on the graph shown to the right.



Moose River Impoundment – North Pool

The North Pool outlets into the Moose River (JD #21). The major components of the north pool are: 5 miles of diversion ditch, 4 miles of earthen dike with a top elevation of 1218.0, one gated outlet structure, one rock lined emergency spillway at an elevation of 1216.0. Approximately 1/3 (41.7 sq. mi.) of the total project drainage area (125.0 sq. mi.) drains to the Moose River.

2016 Operation: Flood water storage and gate operations occurred during the spring melt and during large rainfall events. The maximum North Pool elevation for 2016 was 1213.95 (6104 ac/ft) which occurred on May 15th.

The Minnesota Department of Natural Resources (MnDNR) performed spotted knapweed control at various locations of the project. The watershed performed other routine maintenance (dike mowing, stream gage repair, and debris removal). At the request of the MnDNR, an early ‘fall drawdown’ was performed from late July to early September. Minor final outflows were completed in late October.



Moose River Impoundment – South Pool

The South Pool outlets into the Mud River (JD #11). The major components of the south pool are: 3 miles of diversion ditch, 9 miles of earthen dike with a top elevation of 1220.0, 4 miles of earthen dike between the north and south pools, one gated outlet structure, two rock lined emergency spillways at an elevation of 1218.0. Between the North and South pools is an inter-pool structure which may be used to pass water between the pools. Approximately 2/3 (83.3 sq. mi.) of the total project drainage area (125.0 sq. mi.) drains to the Mud River.

2016 Operation: Flood water storage and gate operations occurred during the spring melt and large rainfall events. The maximum South Pool elevation for 2016 was 1215.4 (9,307 ac/ft) which occurred on May 17th.

The Minnesota Department of Natural Resources performed spotted knapweed control at various locations of the project. The watershed performed other routine maintenance (dike mowing, stream gage repair, and debris removal).

At the request of Agassiz National Wildlife Refuge and MnDNR, an early ‘fall drawdown’ was performed from mid-September to early October. Minor final outflows were completed in late October.



Schirrick Dam (RLWD Project #25)

GENERAL: The Schirrick Dam was constructed on the Black River in 1984, and operational in 1985. The project was constructed on property owned by Don Schirrick.

LOCATION: Section 35, Wylie Township, Red Lake County, approximately 20 miles northeast of Crookston. The drainage area above the dam is 107.7 square miles.

PURPOSE: The primary purpose is to provide flood relief on the Red Lake River and the Red River of the North by controlling the flow contribution from the Black River. A small permanent pool is also provided.

PROJECT COMPONENTS: An earthen embankment (38 feet at highest point) and a gated concrete outlet structure. The reservoir has the capacity to detain up to 4,800 acre-feet of water. Operable components are stop-log bays to control the elevation of the permanent pool and hydraulic flood gates to control the flow contribution of the Black River during floods. The gates will normally be open and will only close in the event of severe mainstem flooding.



Principal outlet structure hydraulic gate operation



Looking downstream from outlet structure

FUNCTIONAL DESIGN DATA:

	Elevation (ft.-msl)	Storage (ac.ft.)
Top of Dam	992.5	6,000
Gated Storage	987.0	4,000
Emergency Spillway	989.3	4,800
Permanent Pool	962.0	70
Drainage Area 107.7 sq.mi.		
Highest recorded pool elevation was 988.75 on April 17, 1997		

2016 Operation: Again this year, the spring and summer runoff events, were not large enough to raise downstream river levels to the plan “trigger point” elevations, therefore no gate operation was required. In October, yearly routine maintenance was performed on the two hydraulic gates and lifting mechanism. The gates were also test operated (closed and opened) to make sure that they function properly. This is done to be prepared in the event of a severe 2017 spring flood which would require closure.



Aerial view of Schirrick Dam looking south

This dam and the timing of closure are vitally important for the flood protection for city of Crookston.

Water Quality Program

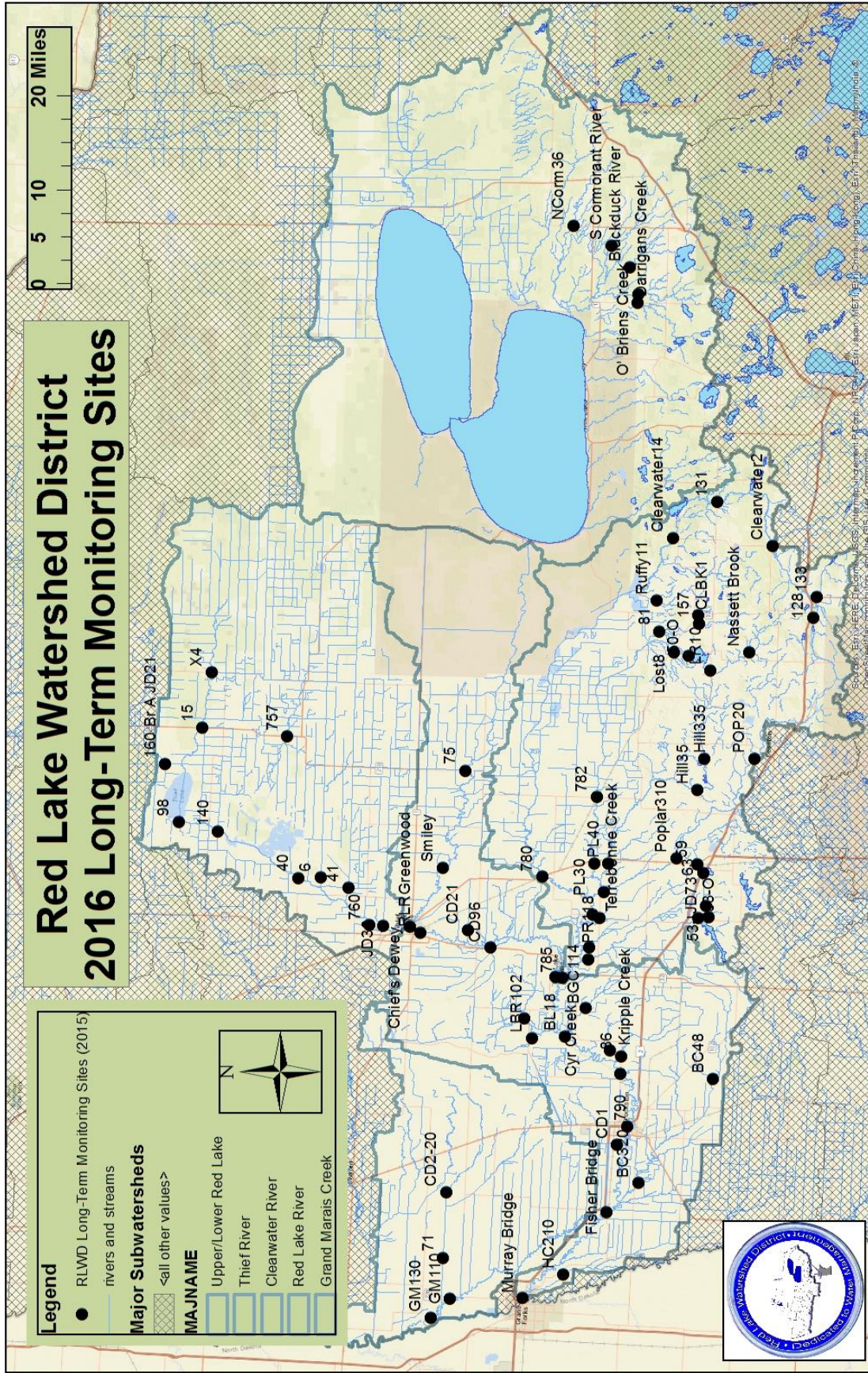
The District and other organizations are working to protect and restore water quality in rivers, streams and lakes in the five major watersheds within the District's boundary. To protect water quality, it is important to have a confident understanding of current water quality conditions. District staff work hard to monitor water quality and flow conditions. Monitoring involves regular sample collection, investigative sampling, and event monitoring with autonomous sensors. The data is used to assess water quality conditions by comparing statistics to water quality standards that are established by the State of Minnesota. The results of data assessment and analysis are used to identify problem areas and trends. Sampling activities can also be conducted to narrow-down the locations of sources of excess pollutants.

Thanks to the Clean Water Land and Legacy Act, the MPCA has been able to provide the District with funding for four watershed restoration and protection strategy (WRAPS) projects (Thief River, Red Lake River, Grand Marais Creek, and Clearwater River watersheds). In 2016, much time was spent by District staff on the completion of two of those WRAPS projects. The Thief River WRAPS was completed in the first half of the year and the Red Lake River WRAPS was completed in the second half of the year. The Grand Marais Creek Watershed TMDL was also completed, by a subcontractor, and the the draft Grand Marais Creek WRAPS is in the process of late-stage reviews and editing. The completion of all of those reports required a great deal of data analysis and technical writing. The time spent writing those reports did not greatly subtract from the District's data collection efforts, though. The District hired a summer Water Quality Assistant, Marisa Newton, who greatly helped with water quality monitoring in 2016. In addition to the District's long-term monitoring program, a large amount of data was collected for stressor and pollutant source investigation for the Clearwater River, longitudinal sampling during runoff events, and monitoring the Mud River in Grygla for potential blue-green algae problems.

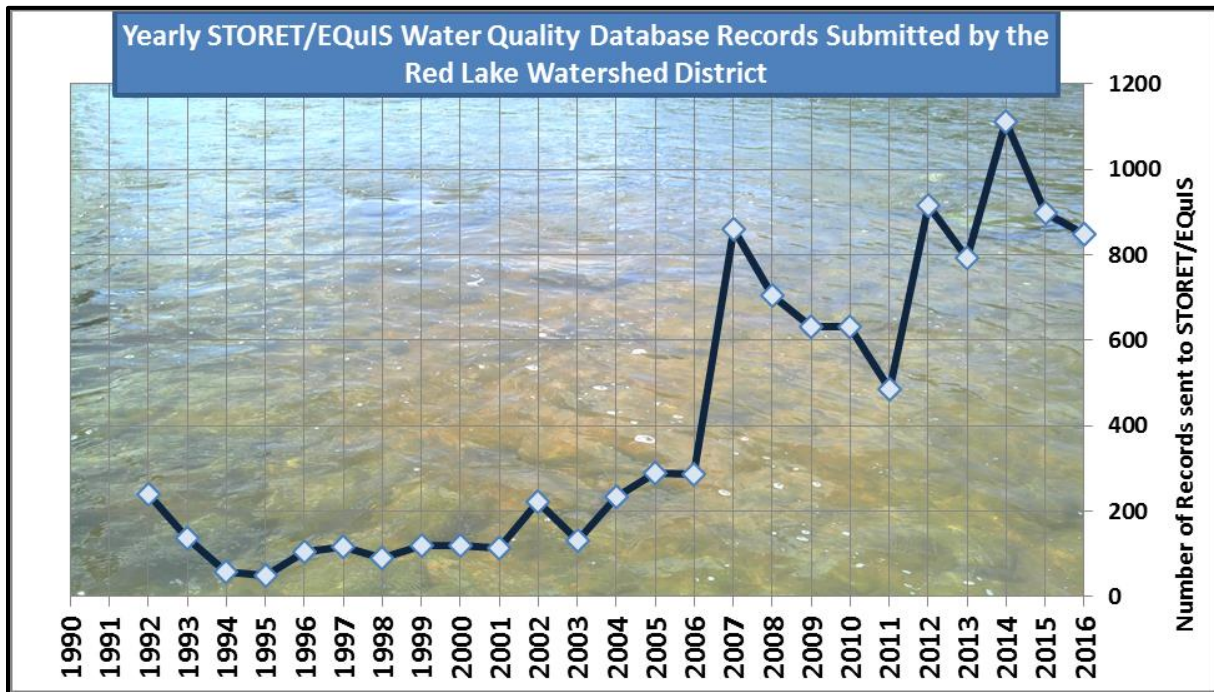
An important part of the District's water quality program is public education. The District supports River Watch programs at schools that monitor water quality in streams within its boundaries. The information that the District collects needs to be interpreted and shared in order for it to be most beneficial. Therefore, the District generates regular (monthly and annual) water quality reports, hosts open house events, and participates in other educational events like water festivals and community events. Information is shared online. The creation of informative maps using GIS software is also used to attain a better understanding of water resources and watersheds.

The knowledge that is gained through the District's water quality program is also used for the planning of projects that will improve water quality conditions and overall watershed planning efforts (1W1P). The District has identified sources of pollutants that can be addressed through large and small projects. The Board of Managers provides financial support to projects and programs that will improve water quality. Monitor the success of those projects can also be accomplished through the District's water quality program.

Long-Term Water Quality Monitoring Program



The District's long-term district monitoring program has collected water quality data throughout the district since 1980. Water quality monitoring was conducted at 73 sites as part of the District's regular monitoring program in 2016.



Field measurements of dissolved oxygen, temperature, turbidity, specific conductivity, pH, and stage are collected during each site visit (if there is water/flow). Four rounds of samples are also collected and analyzed for total phosphorus, orthophosphorus, total suspended solids, total dissolved solids, total Kjeldahl nitrogen, ammonia nitrogen, nitrates + nitrites, and *E. coli* at sixty-nine of the sites. Chemical/biochemical oxygen demand analysis is performed on samples from rivers and streams that are impaired by low dissolved oxygen levels. The four 2016 rounds of sampling began in May, June, July, and September.

Monitoring site selection is strategically collected from as many assessment units (reaches of rivers, streams, and ditches – delineated by the MPCA for assessment purposes) as possible. The Minnesota Pollution Control Agency has split reaches so that channelized reaches can be assessed separately from natural reaches (particularly for the assessments of aquatic biology). Generally, monitoring sites are located near the pour points (downstream ends) of rivers, streams, and ditches. There are examples (Clearwater River) in which a reach was well represented by a monitoring site near the downstream end (Clearwater River in Red Lake Falls and Plummer) prior to a split, but an additional site (CSAH 10 within the channelized portion of the Clearwater River) may be needed after the split. The upstream reach may not have been as intensively monitored and may have insufficient data.

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) occurred in 2015 in the following waters (alphabetical order).

1. Beau Gerlot Creek at CR 114

2. Black River at CSAH 18
3. Brandt Impoundment outlet
4. Browns Creek at County Road 101
5. Burnham Creek at 320th Ave
6. Burnham Creek at CR 48
7. Chief's Coulee at Dewey Avenue in Thief River Falls
8. Clear Brook at Hwy 92 in Clearbrook
9. Clearwater River in Red Lake Falls (runoff event)
10. Clearwater River at the CSAH 12 crossing near Terrebonne
11. Clearwater River at CR 126, north of Plummer
12. Clearwater River at CR 127
13. Clearwater River at CSAH 5
14. Clearwater River at CSAH 14
15. Clearwater River at CSAH 24, upstream of Clearwater Lake
16. Clearwater River at CSAH 2
17. Cyr Creek at CR 110
18. Darrigan's Creek
19. Euclid East Impoundment outlet
20. Gentilly River at CSAH 11
21. Grand Marais Creek at 130th St. NW
22. Grand Marais Creek at 110th St. NW
23. Heartsville Coulee at 210th St. SW
24. Hill River at CR 119, north of Brooks
25. Judicial Ditch 30 at 140th Ave NE, north of Thief River Falls
26. Judicial Ditch 73 near Rydell National Wildlife Refuge
27. Kripple Creek at 180th Ave
28. Little Black River at CR 102
29. Lost River at CR 119, north of Brooks
30. Lost River at 109th Ave, upstream of Pine Lake
31. Lower Badger Creek at CR 114
32. Marshall County Ditch 20
33. Moose River at CSAH 54
34. Mud River at the Grygla City Park
35. North Cormorant River at CSAH 36
36. O' Briens Creek at Harvest Rd. NE
37. Pennington County Ditch 21 at 135th Ave NE
38. Polk County Ditch 1
39. Polk County Ditch 2 at County Road 62
40. Polk County Ditch 2 at CSAH 20
41. Polk County Ditch 2 at 360th Ave NW
42. Poplar River at CR 118, near the Lost River confluence northwest of Brooks
43. Poplar River at 310th St. SE
44. Poplar River at CSAH 30 near Fosston
45. Red Lake River at Fisher
46. Red Lake River at the Louis Murray Bridge in East Grand Forks
47. RLWD Ditch 15 at Hwy 75
48. Ruffy Brook at CSAH 11
49. Silver Creek at 159th Ave, west of Clearbrook
50. South Cormorant River at CSAH 37
51. Terrebonne Creek at Hwy 92



52. Thief River at 140th Ave NE, north of Thief River Falls

53. Maple Lake Outlet

- The highest 2016 E. coli concentration for the District's long-term monitoring effort was 19,863 MPN/100ml (extremely high). It was discovered in Ruffy Brook at CSAH 11.
- The lowest 2016 E. coli concentration was 1 MPN/100ml (equal to the laboratory's minimum reporting limit) was found in the Black River at CSAH 18 on May 19, 2016.

The amount of sediment that is carried by a stream is measured through the collection of samples that are analyzed for total suspended solids. Fish and aquatic macroinvertebrates (bugs, worms, crustaceans, etc.) are harmed by high concentrations of total suspended solids. High total suspended solids concentrations (>65 mg/l, >30 mg/l, or >15 mg/l, depending on the site's location) were found in the following rivers and streams in 2016 during sampling efforts for the District's long-term monitoring program:

- >65 mg/L – Violates all River Nutrient Region standards
 - Grand Marais Creek at 130th St. NW (239 mg/L)
 - Polk County Ditch 2 at CR 62 (158 mg/L)
 - Poplar River at CR 118
 - Poplar River at CSAH 30, north of Fosston (98 mg/L)
 - Discharge from Fosston lagoons
 - Red Lake River at Fisher (102 mg/L)
 - Red Lake River at the Murray Bridge in East Grand Forks
 - Ruffy Brook at CSAH 11 (397 mg/L, 282 mg/L, 258 mg/L)
 - Suspected beaver dam breach/removal
 - Thief River at CSAH 7
- >30 mg/L – Violates Central and North River Nutrient Region standards
 - Branch A of Judicial Ditch 21
 - Clearwater River at CR 127
 - Poplar River at CR 118
 - Poplar River at CSAH 30, north of Fosston (98 mg/L)
 - Ruffy Brook at CSAH 11 (397 mg/L, 282 mg/L, 258 mg/L)
 - Thief River at CSAH 7
 - Thief River at 140th Ave NE Thief River Falls
- >15 mg/L – Violates the North River Nutrient Region standard
 - Ruffy Brook at CSAH 11 (397 mg/L, 282 mg/L, 258 mg/L)
- The highest total suspended solids concentration that was found during 2016 District long-term monitoring was 397 mg/L. It was surprisingly found in Ruffy Brook (a former trout stream) at CSAH 11. High total suspended solids concentrations in Ruffy Brook were attributed to beaver dam removal. Because they were recurring, however, more investigation is needed. Total suspended solids concentrations in excess of the 15 mg/L North River Nutrient Region standard were found on 3 of the 6 days in which the river was sampled.

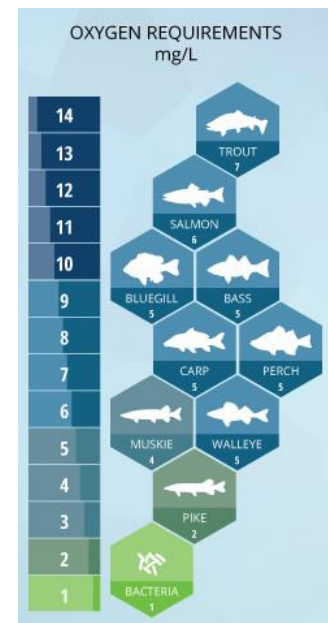


That brings the violation rate over the 10% impairment threshold for the most recent 10 years of monitoring (14% of samples in 2007-2016).

- The lowest possible total suspended solids (cleanest water) is a censored value of <1 mg/l (less than the laboratory's minimum reporting limit). It was recorded at a number of sites in 2016 for the District's long-term monitoring program:
 - Beau Gerlot Creek at CR 114
 - Branch A of Judicial Ditch 21
 - Clear Brook at Hwy 92 in Clearbrook
 - Clearwater River at CSAH 25, upstream of Bagley
 - Clearwater River at CSAH 24, upstream of Clearwater Lake
 - Clearwater River at CR 126, north of Plummer
 - Clearwater River in Red Lake Falls
 - Gently River at CSAH 11
 - Grand Marais Creek at 110th St. NW
 - Judicial Ditch 30 at 140th Ave NE, north of Thief River Falls
 - Little Black River at CR 102
 - Lost River in Oklee
 - Lost River at 109th Ave, upstream of Pine Lake
 - Lower Badger Creek at CR 114
 - Judicial Ditch 73 at the Maple Lake Inlet
 - Mud River at the city park in Grygla
 - Pennington County Ditch 21 at 135th Ave NE
 - Poplar River at CR 118, near the Lost River confluence northwest of Brooks
 - Poplar River at CSAH 30 near Fosston
 - Silver Creek at CR 111
- A notably low total suspended solids (TSS) concentration (6 mg/L) was found at the CSAH 11 Bridge over the Red Lake River (on a reach that is impaired by high turbidity). All four samples collected at that location were 30 mg/L or less.

Aquatic fish and macroinvertebrates rely on dissolved oxygen in water for survival. Dissolved oxygen can enter the water through mechanical means (splashing over rocks, wave action) or through the photosynthesis process of aquatic vegetation. Low dissolved oxygen levels (<5 mg/l) were found in the following rivers and streams during 2016 monitoring for the District's long-term monitoring program (alphabetical order).

1. Black River at CR 63 (180th St. NW)
2. Black River at 140th Ave
3. Black River at 140th St. SW
4. Branch 200 of Judicial Ditch 11
5. Burnham Creek at CSAH 48
6. Chiefs Coulee at Dewey Ave in Thief River Falls
7. Clearwater River at CSAH 25, upstream of Bagley
8. Clearwater River at CSAH 2
9. Grand Marais Creek at 110th St. NW
10. Grand Marais Creek at 130th St. NW
11. Heartsville Coulee at 210th Street, south of East Grand Forks
12. Judicial Ditch 73 (Poplar River Diversion ditch) at the Badger Lake Inlet



13. Judicial Ditch 73 at the Badger-Mitchell Lake channel
 14. Judicial Ditch 73 near Rydell National Wildlife Refuge
 15. Little Black River at CR 3
 16. Little Black River at CR 102
 17. Lost River at 109th Ave, upstream of Pine Lake
 18. Polk County Ditch 2 at CSAH 20
 19. Polk County Ditch 2 at CR 62
 20. Poplar River at CSAH 30 near Fosston
 21. Ruffy Brook at CSAH 11
 22. Terrebonne Creek at Hwy 92
 23. Walker Brook at CSAH 19
- The highest (best) dissolved oxygen concentration recorded for the District's long-term monitoring program in 2016 was 15.75 mg/L in Pennington County Ditch 21. That may have been a case of supersaturation in stagnant water. The Clearwater River in Red Lake Falls had the second highest 2016 dissolved oxygen concentration at 15.22 mg/L.
 - The lowest (worst) dissolved oxygen concentration found at a District long-term monitoring site was 0.25 mg/L in the Lost River at 109th Ave, upstream of Pine Lake.

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.

1. North River Nutrient Region (>0.05 mg/L):
 - Blackduck River at Deer Trail Rd.
 - Clear Brook at Hwy 92 in Clearbrook
 - Clearwater River at CSAH 24, upstream of Clearwater Lake
 - Clearwater River at CSAH 2
 - Darrigan's Creek at CSAH 23
 - North Cormorant River at CSAH 36
 - O' Briens Creek at Harvest Rd.
 - Ruffy Brook at CSAH 11
 - Silver Creek at CR 111
 - South Cormorant River at CSAH 37
2. Central River Nutrient Region (>0.1 mg/L):
 - Chiefs Coulee at Dewey Ave in Thief River Falls
 - Clearwater River at CSAH 10
 - Clearwater River, north of Plummer
 - Clearwater River at the CSAH 12 crossing near Terrebonne
 - Hill River at CR 119, north of Brooks
 - Judicial Ditch 30, north of Thief River Falls
 - Judicial Ditch 73 near Rydell National Wildlife Refuge
 - Lost River at 109th Ave, upstream of Pine Lake
 - Mud River at the city park in Grygla
 - Pennington County Ditch 21 at 135th Ave NE

- Pennington County Ditch 70 outlet (1.9 mg/L)
 - Poplar River at CSAH 30 near Fosston
 - Poplar River at CR 118
3. South River Nutrient Region (>0.15 mg/L):
- Black River at CSAH 18
 - Brown's Creek at County Road 101
 - Burnham Creek at 320th Ave SW
 - Grand Marais Creek at 130th St. NW
 - Grand Marais Creek at 110th St. NW
 - Heartsville Coulee at 210th Street, south of East Grand Forks
 - Polk County Ditch 2 at CSAH 20
 - Polk County Ditch 2 at CR 62
 - Polk County Ditch 1
 - Red Lake River in Crookston
 - Red Lake River at Fisher
 - Red Lake River at the Louis Murray Bridge in East Grand Forks
- The highest 2016 concentration of total phosphorus, 6.74 mg/L, was found in the Poplar River at CSAH 30 near Fosston while Fosston lagoons were (unlawfully) discharging into the river.
 - The lowest 2016 concentration of total phosphorus, 0.012 mg/L, was found in the Clearwater River at CSAH 2.

High biochemical oxygen demand concentrations were found in:

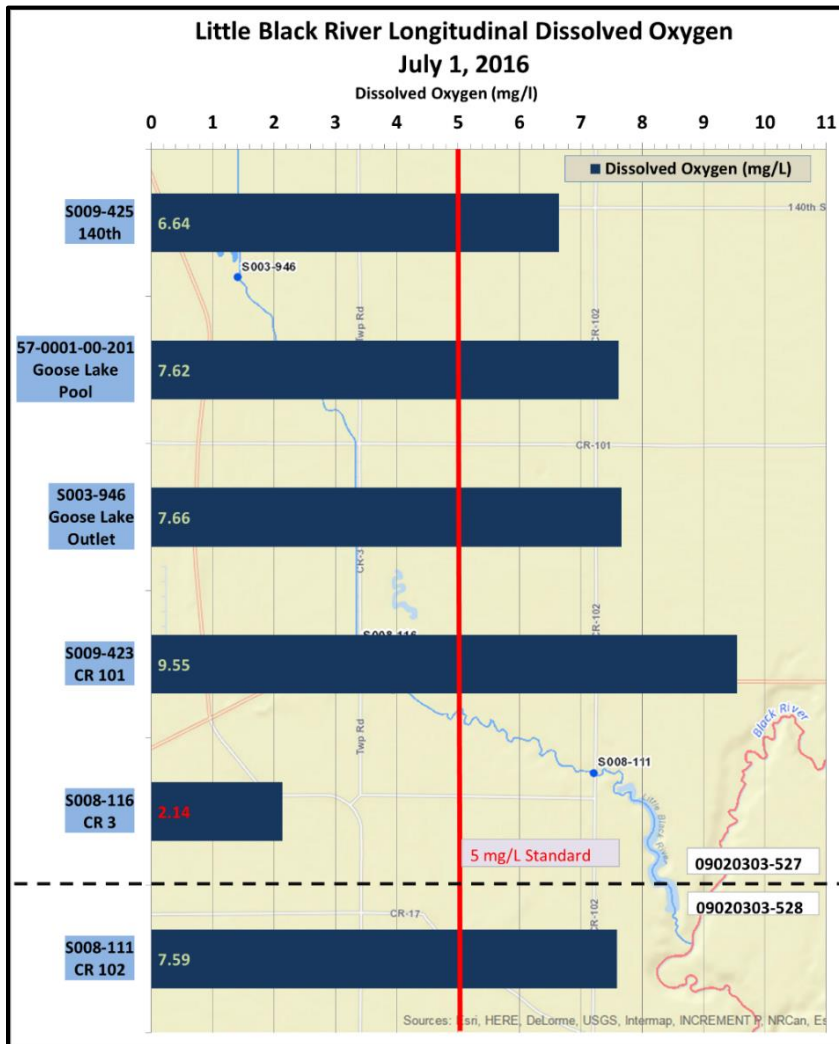
- Poplar River at CSAH 30, north of Fosston (143 mg/L, 12.3 mg/L)
- Poplar River at CR 118
- Mud River at Hwy 89
- Red Lake River at CSAH 219 (Highlanding)
- Clearwater River at CSAH 10

The District's monitoring data from 2016 was entered and submitted to the MPCA for storage in the State's EQUIS database. The records were reviewed by comparing data stored in spreadsheets to field data sheets and lab reports to make sure they are accurate.

Localized "dust storms" have been encountered annually in recent years in the early summer while fields are mostly bare. Rolling of fields makes the wind erosion problem worse.



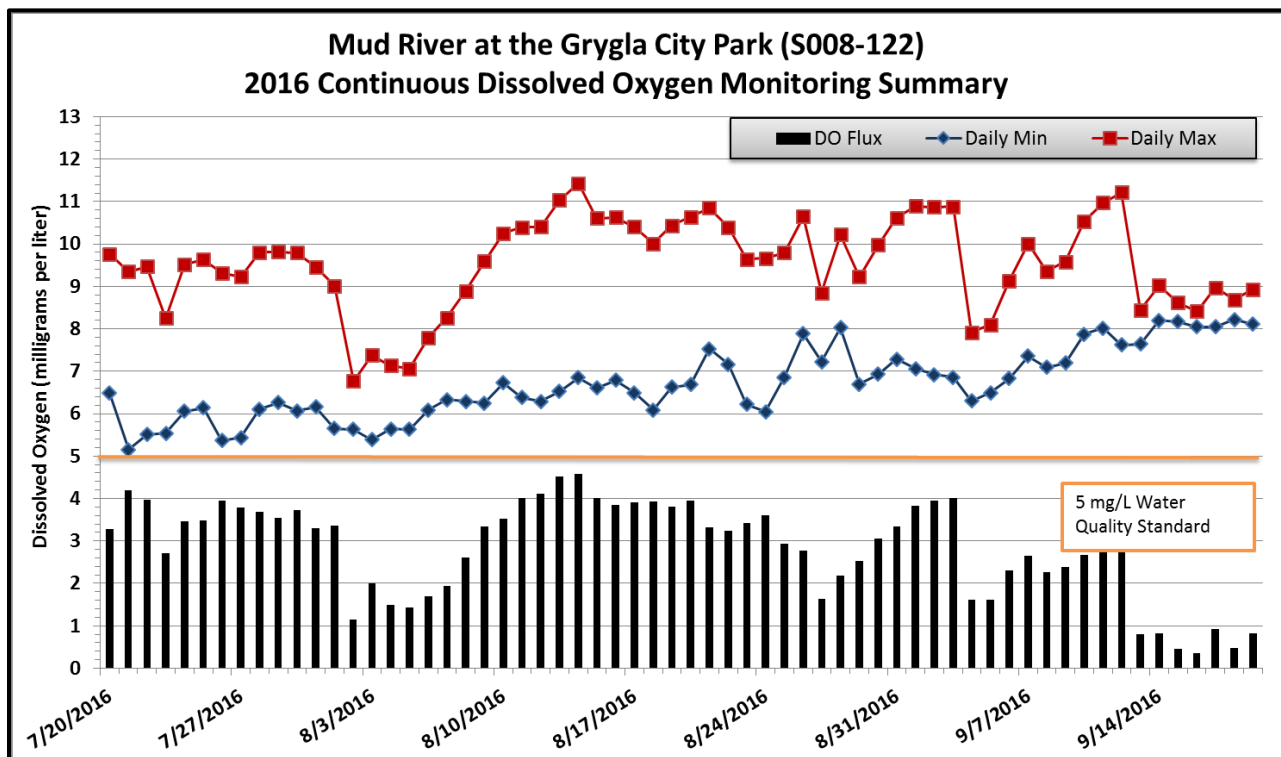
Longitudinal dissolved oxygen measurements were recorded along the Little Black River on July 1, 2016. DO was very low at the CR 3 crossing (S008-116), but okay at all other sites, even within the Goose Lake pond.



Longitudinal dissolved oxygen measurements were made along Cyr Creek on July 1, 2016. Dissolved oxygen concentrations were good at all of the sites, despite low flow and stagnant conditions.

Longitudinal dissolved oxygen measurements were made along Pennington County Ditch 96 on July 1, 2016. Dissolved oxygen levels were okay at all sites that had water, despite low flow conditions. One crossing, 120th St. NW, was dry.

A dissolved oxygen logger was deployed in the Mud River near Grygla throughout the months of August and September 2016. The summer average of daily dissolved oxygen fluctuation was low enough in 2016 (2.85 mg/L) to fall below the 3 mg/L impairment threshold for the Northern River Nutrient Region. All of the daily minimum dissolved oxygen concentrations were greater than the 5 mg/L water quality standard. Regular samples were collected from the CSAH 54 crossing of the Mud River and from the city park. Water was also tested for blue-green algae. No positive test results for blue-green algae were discovered. Blue-green algae blooms are more likely in stagnant water. There was little chance for that to occur in 2016, as flows were relatively high in the late summer and fall.



Data from the Red Lake Watershed District’s long-term monitoring program was entered, reviewed, and submitted to the MPCA for storage in the state’s EQuIS database. Data collected by the East Polk SWCD staff on the Mud River in Grygla and sites within East Polk County were entered into the MPCA data submittal template, reviewed and submitted to the MPCA.

Watershed Restoration and Protection (WRAP) Projects

The Federal Clean Water Act (1972) requires each State to develop plans for the identification and restoration of waterbodies that are deemed impaired by state regulations. A Total Maximum Daily Load (TMDL) is required by the U.S. Environmental Protection Agency (USEPA) as a stipulation of the Clean Water Act. In Minnesota, the Minnesota Pollution Control Agency (MPCA) is tasked with assessing and listing waterbodies that do not meet water quality standards (MN Rule 7050.022). A TMDL identifies the pollutant sources causing the impairment. It is a calculation of the maximum amount of pollutant that can enter a waterbody without causing the concentration of the pollutant within the waterbody to exceed water quality standards.

The State of Minnesota has adopted a “watershed approach” to address the state’s 80 major watersheds (denoted by 8-digit hydrologic unit code or HUC). This watershed approach incorporates water quality assessment, watershed analysis, civic engagement, planning, implementation, and measurement of results into a 10-year cycle that addresses both restoration and protection.

As part of the watershed approach, waters not meeting state standards are still listed as impaired and Total Maximum Daily Load (TMDL) studies are performed, as they have been in the past, but in addition the watershed approach process facilitates a more cost-effective and comprehensive characterization of multiple water bodies and overall watershed health. A key aspect of this effort is to develop and utilize watershed-scale models and other tools to identify strategies and actions for point and nonpoint source pollution that will cumulatively achieve water quality targets. This report informs local planning efforts for nonpoint source pollution, but ultimately the local partners decide

what work will be included in their local plans. This report also serves as a watershed plan addressing EPA's Nine Minimum Elements to qualify applicants for eligibility for section 319 implementation funds.

The watershed-based strategy recognizes the connectivity of the watershed better than the reach-by-reach system. An impairment may extend over multiple assessment units. Impairments for different parameters may be linked by common stressors and/or pollutants. The stakeholder process will also be helped through this strategy. Not only is there an increased emphasis on civic engagement, but the process also avoids the redundancy that could occur when addressing TMDLs with a reach-by-reach strategy. The watershed-based, comprehensive implementation plan will be more useful and effective because it will address pollutant sources and stressors throughout the watershed. It will also reduce the complexity of incorporating TMDL implementation plans into watershed management plans.

A significant amount of information and goals are shared among IWIP, TMDL, and WRAPS documents. The majority of the content of the WRAPS reports is organized within four sections.

1. Watershed Background and Description

As the title implies, this section provides a description of the watershed to familiarize the reader with watershed features and issues. It also contains some information about the history of the watershed and findings of previous water quality studies.

2. Watershed Conditions

This section includes detailed water quality assessment results from the 2014 assessment (2004-2014 data). Water quality trends were also calculated and some strong trends were revealed. The current impaired waters are identified and TMDL summaries are included in this section. This section provides guidance for addressing stressors and sources of pollutant sources for all subwatersheds, regardless of impairment status. The results of investigative monitoring efforts are also described.

3. Prioritizing and Implementing Restoration and Protection

This is, arguably, the most important section of the report. In recent years, multiple water quality models have been used to identify the areas of the watershed that are contributing the most significant quantities of pollutants. Stream Power Index (SPI) and DNR Stressor Identification analysis pinpointed locations that are in need of repair or protection. A geomorphological assessment of the watershed made recommendations for implementation efforts throughout much of the watershed. State and local staff collaborated to compile lists of potential projects that could be completed to address water quality restoration and protection needs. The lists of projects are organized into tables for the entire watershed and for each HUC10 subwatershed.

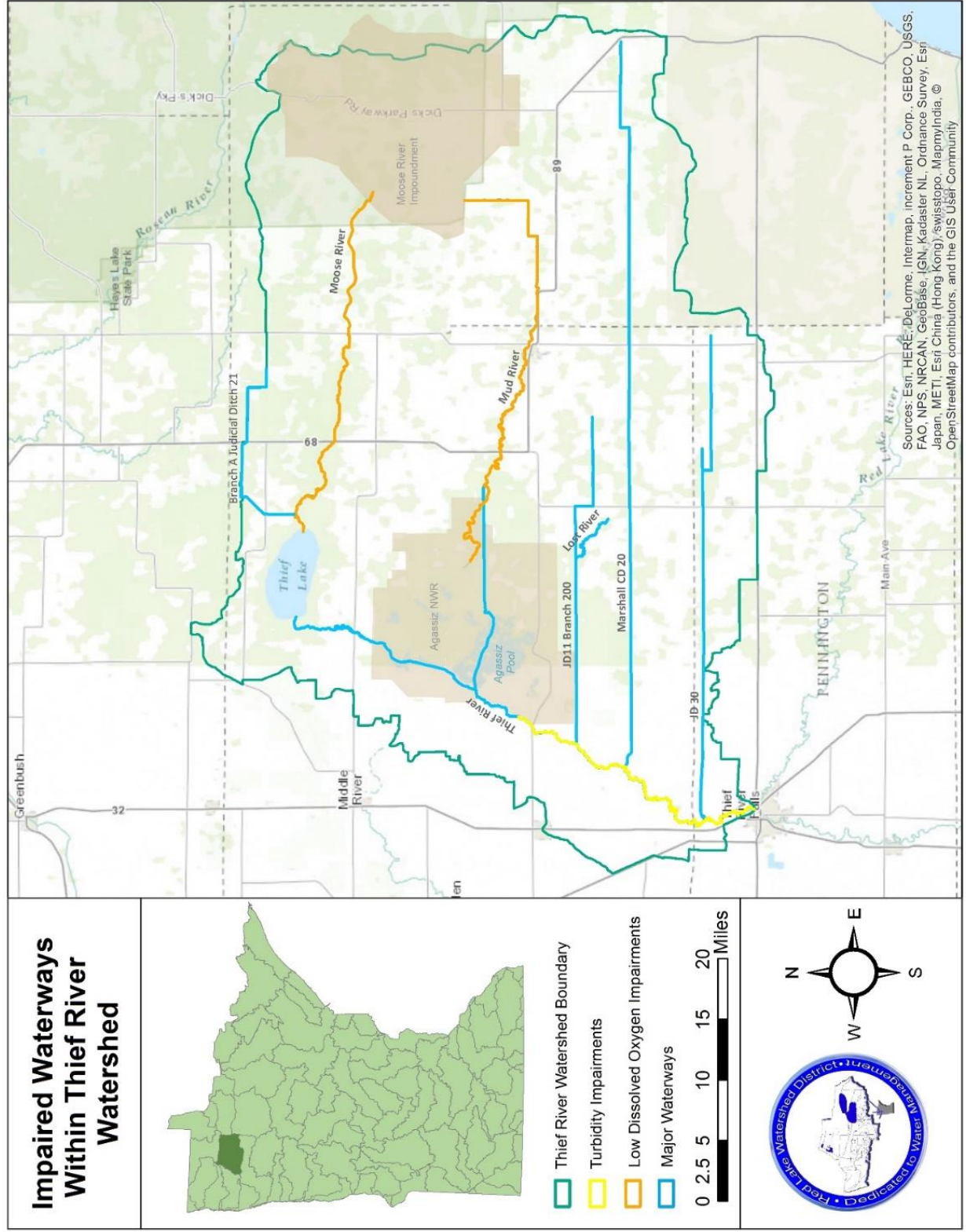
4. Monitoring Plan

This section provides a detailed summary of monitoring site locations (flow, water quality, etc.). It also provides a description of data collection goals.

The MPCA has released some informational videos about the watershed approach to monitoring, assessment, restoration, and protection.

- Part 1: What is a Watershed? <http://youtu.be/ACim1rj-RZw>
- Part 2: How we got to where we are. <http://youtu.be/zG0so5AZANs>
- Part 3: Watershed Approach and the 10-Year Cycle. <http://youtu.be/cGqFO9G6UnA>
- Part 4: Getting involved in the process. <http://youtu.be/B15EKurqFAA>

Thief River Watershed Restoration and Protection Strategy (WRAPS)



Thief River Watershed HSPF Modeled Sediment Yields (Tons/Acre/Year) - 1996-2009

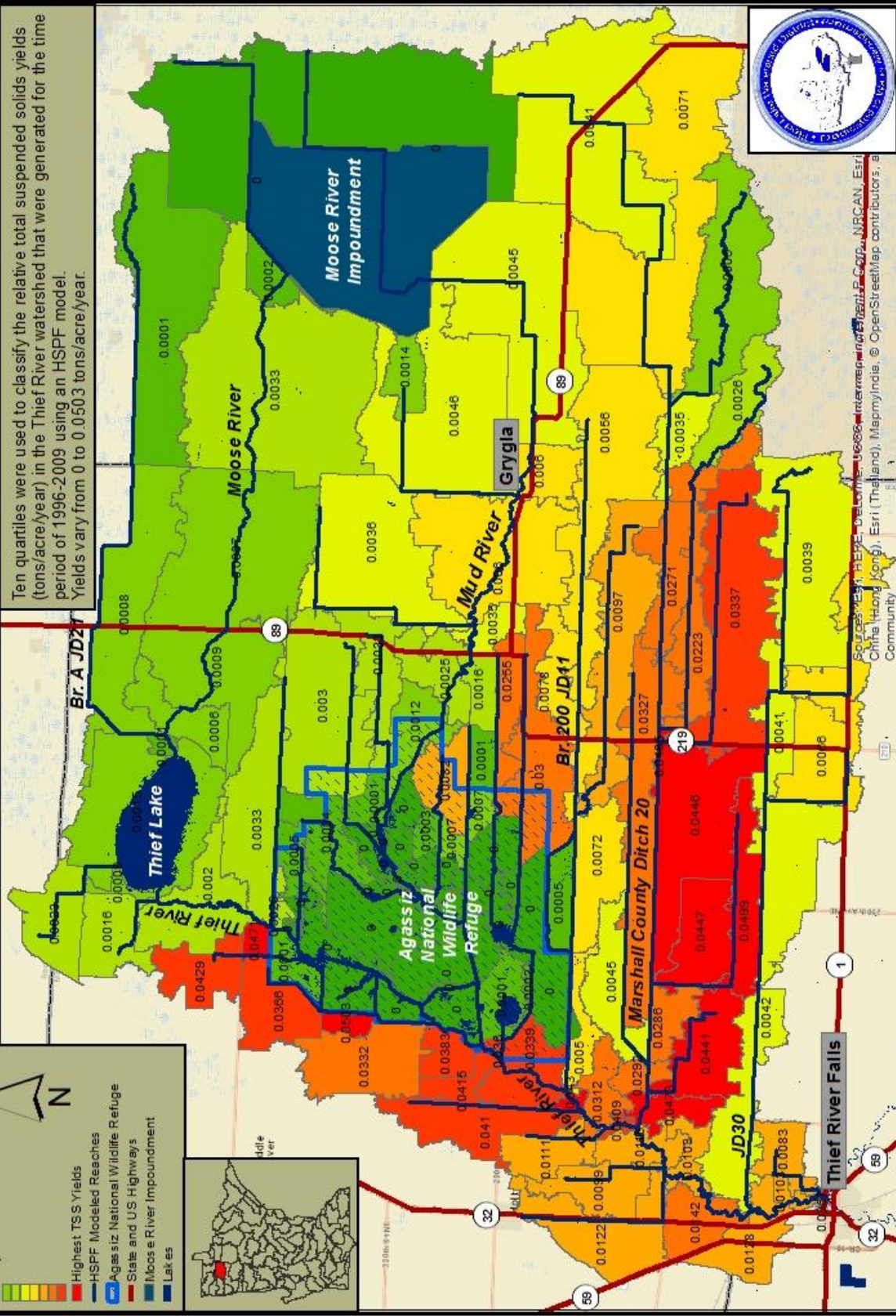
Ten quartiles were used to classify the relative total suspended solids yields (tons/acre/year) in the Thief River watershed that were generated for the time period of 1996-2009 using an HSPF model. Yields vary from 0 to 0.503 tons/acre/year.

Legend

HSPF TSS Yield (Tons/Acre/Year)

- Zero TSS Yield
- Very Low TSS Yields
- Low TSS Yields
- Medium TSS Yields
- High TSS Yields

- Highest TSS Yields
- HSPF Modeled Reaches
- Agassiz National Wildlife Refuge
- State and US Highways
- Moose River Impoundment
- Lakes



Sources: HSPF, HSPF, DNR, Minnesota Department of Natural Resources, NRCAN, Esri, China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, ©

The District completed the Thief River WRAPS project in 2016. Draft Thief River Watershed TMDL and WRAPS Documents were completed in March and April of 2016. Those draft documents underwent multiple rounds of reviews and edits prior to the June 30, 2016 end date of the District's contract with the MPCA.

The Thief River Watershed (USGS Hydrologic Unit Code 09020304) is located in northwest Minnesota and is a tributary of the Red Lake River (USGS HUC 09020303) in the Red River of the North Basin (USGS HUC 090203). Most of the watershed area lies within Marshall, Pennington, and Beltrami Counties. The Thief River flows along the western side of the watershed and is joined along the way by a number of tributaries including the Moose River (Judicial Ditch 21), Mud River (Judicial Ditch 11), Branch 200 of Judicial Ditch 11, Marshall County Ditch 20, and Judicial Ditch 30. There are more than 30 impoundments and reservoirs in the watershed, including the Moose River Impoundment, Lost River Pool, Farmes Pool, the pools of Agassiz National Wildlife Refuge, and the Thief River Falls Reservoir. Agassiz NWR lies in the center of the watershed. Agassiz Pool, the main pool of the refuge, receives water from the Mud River, Thief River, and some smaller ditches. It discharges to the Thief River.

The number of impairments on the 2014 USEPA's 303(d) list of impaired waters has been reduced to four after multiple reaches were recommended for delisting during the 2013 assessment. The Moose River and the Mud River remain impaired by low dissolved oxygen (DO). The Thief River downstream of Agassiz Pool is listed as impaired by high turbidity. The state's new 30 mg/l Central Nutrient Region total suspended solids (TSS) standard will be used to develop a TMDL to address the turbidity impairment. The Mud River is impaired by high E. coli. E. coli levels have improved at the downstream end of the Mud River and that portion is no longer impaired. Because of that improvement, a delisting was anticipated. However, recent data collected from the Mud River in Grygla showed that an upstream portion of the river is still exceeding standards and a TMDL will be established for that impairment.

Stream (AUID)	Pollutant	Units	Season or Flow Conditions	Current Load	Allocations				Percent Reduction
					Wasteload Allocation	Load Allocation	Margin of Safety	Reserve Capacity	
Thief River Watershed Total Maximum Daily Load									
Thief River	Total Suspended Solids (30 mg/l)	Tons/Day	Very High Flows	142.39	0	83.74	9.3	0	41%
Thief River	Total Suspended Solids (30 mg/l)	Tons/Day	High Flows	14.33	0	11	1.22	0	23%
Thief River	Total Suspended Solids (30 mg/l)	Tons/Day	Mid-Range Flows	0.21	0	0.95	0.11	0	0%
Thief River	Total Suspended Solids (30 mg/l)	Tons/Day	Low Flows	0.01	0	0.04	0	0	0%
Mud River	Flow	Cubic feet per second	All	Maintain a rate of flow greater than 5 CFS at the Highway 89 crossing using water stored within the Moose River Impoundment.					
Moose River	Flow	Cubic feet per second	All	Maintain a rate of flow greater than 0 CFS at the CSAH 54 crossing using water stored within the Moose River Impoundment.					

The analysis of data revealed that the absence of sufficient flow in the Moose River and Mud River had a greater influence upon the ability of the streams to meet the 5 mg/l DO standard than pollutants. Dissolved oxygen concentrations in the Moose and Mud Rivers were compared to impoundment discharge records. Most of the low dissolved oxygen readings have occurred while the Moose River Impoundment outlet gates have been closed or allowing only a minimal amount of discharge. The flowing portions of the Moose River meet the dissolved oxygen water quality standard when the rate of flow at CSAH 54 is greater than 0 cubic feet per second (CFS). The Mud River meets the dissolved oxygen standard when flow at Highway 89 is greater than 5 CFS.

The findings of the Thief River WRAPS and other studies that have been completed in the watershed will be used to guide the development of implementation strategies. A full list of these strategies is a significant part of the Thief River Watershed Restoration and Protection Strategies report. Restoration and protection strategies were compiled for application to the watershed as a whole and for each HUC 10 subwatershed.

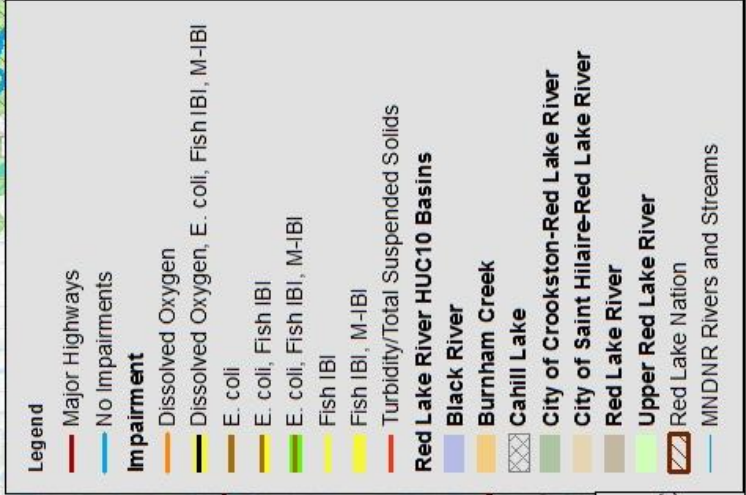
Trend Analysis of April - September Annual Average Total Suspended Solids Data						
River	Site #	Road Crossing	Period	Mann-Kendall Statistic	Confidence Factor	Trend Description
Thief River	S002-079	140th Ave NE	1994-2014	7	57.2%	No Trend
Thief River	S002-088	CSAH 7	1994-2014	88	99.6%	Increasing
Thief River	S002-084	CSAH 49	1994-2014	-57	95.6%	Decreasing
Mud River	S002-078	Hwy 89	1994-2014	-16	67.5%	Stable
Moose River	S002-089	Hwy 89	1998-2014	-56	99.0%	Decreasing

A Thief River Watershed Restoration and Protection Strategy Open House event was planned and publicized. RLWD staff created maps and a presentation for the project. Restoration and Protection Strategies were printed so that they could be displayed at the event. A press release was drafted and sent to local newspapers. Large maps of each HUC10 subwatershed and lists of restoration and protection strategies for those areas were displayed on large sheets of poster board. A newspaper article was written about the event. RMB staff drafted surveys for attendees of the event. The article was scanned and saved.

Following completion, this TMDL Report, the WRAPS report, and other technical reports referenced in this document will be publically available on the MPCA website for the Thief River watershed: <https://www.pca.state.mn.us/water/watersheds/thief-river>. These and other documents can also be found on watershed-based web pages created for the Thief River: <http://www.rlwdwatersheds.org/wraps-info>.

Red Lake River Watershed Restoration and Protection Strategy (WRAPS)

Red Lake River Watershed (09020303) Draft 2016 Aquatic Life and Recreation Impairments



Draft List of Impaired Waters released on 7/13/2016
 Fish IBI = Fish Index of Biotic Integrity
 M-IBI = Macroinvertebrate Index of Biotic Integrity
 Assessment Units (AUIDs) are numbered 09020303-5XX for this watershed and displayed as 5XX on this map

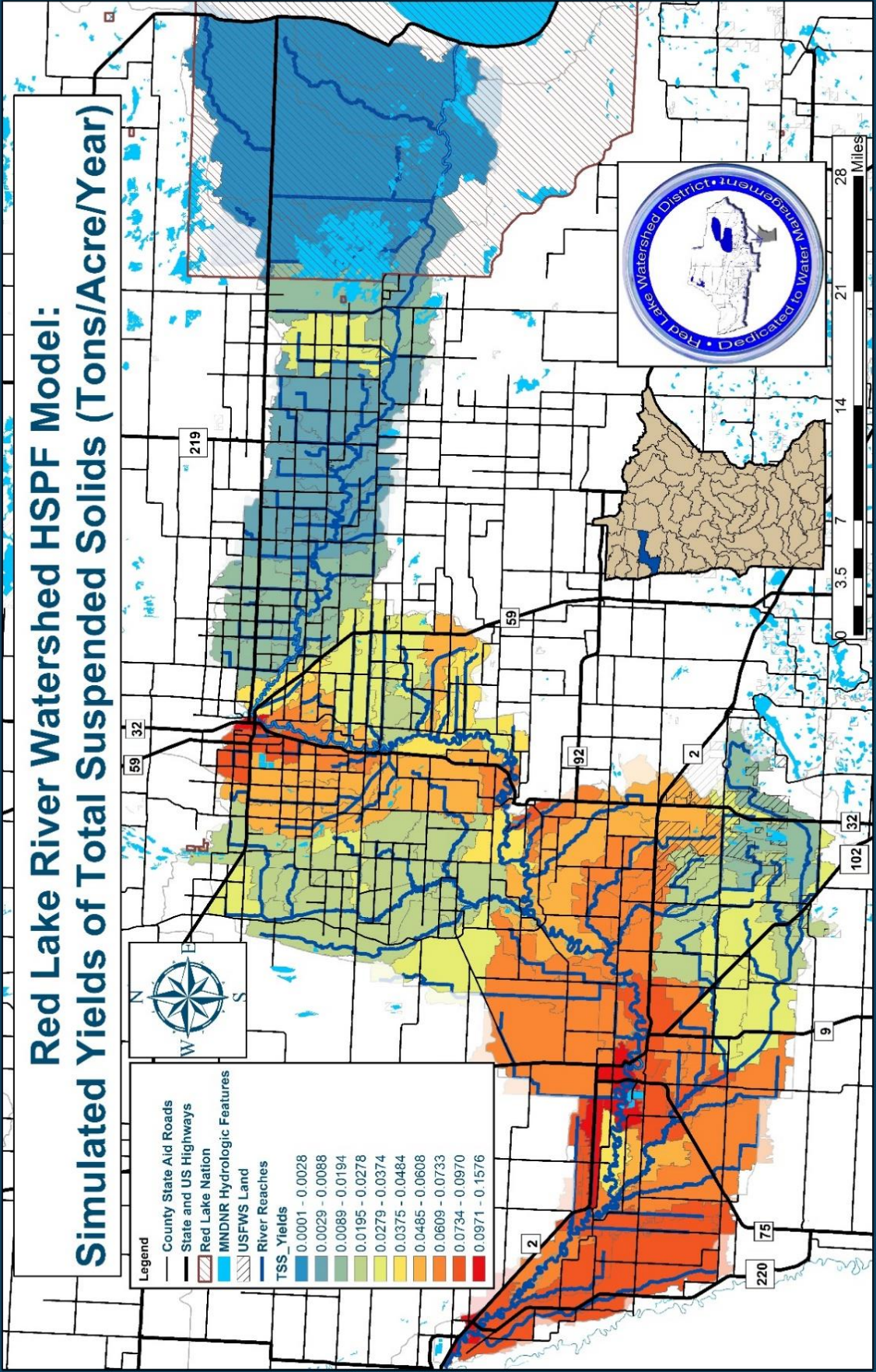
Red Lake River Watershed HSPF Model: Simulated Yields of Total Suspended Solids (Tons/Acre/Year)

Legend

- County State Aid Roads
- State and US Highways
- Red Lake Nation
- MNDNR Hydrologic Features
- USFWS Land
- River Reaches

TSS_Yields

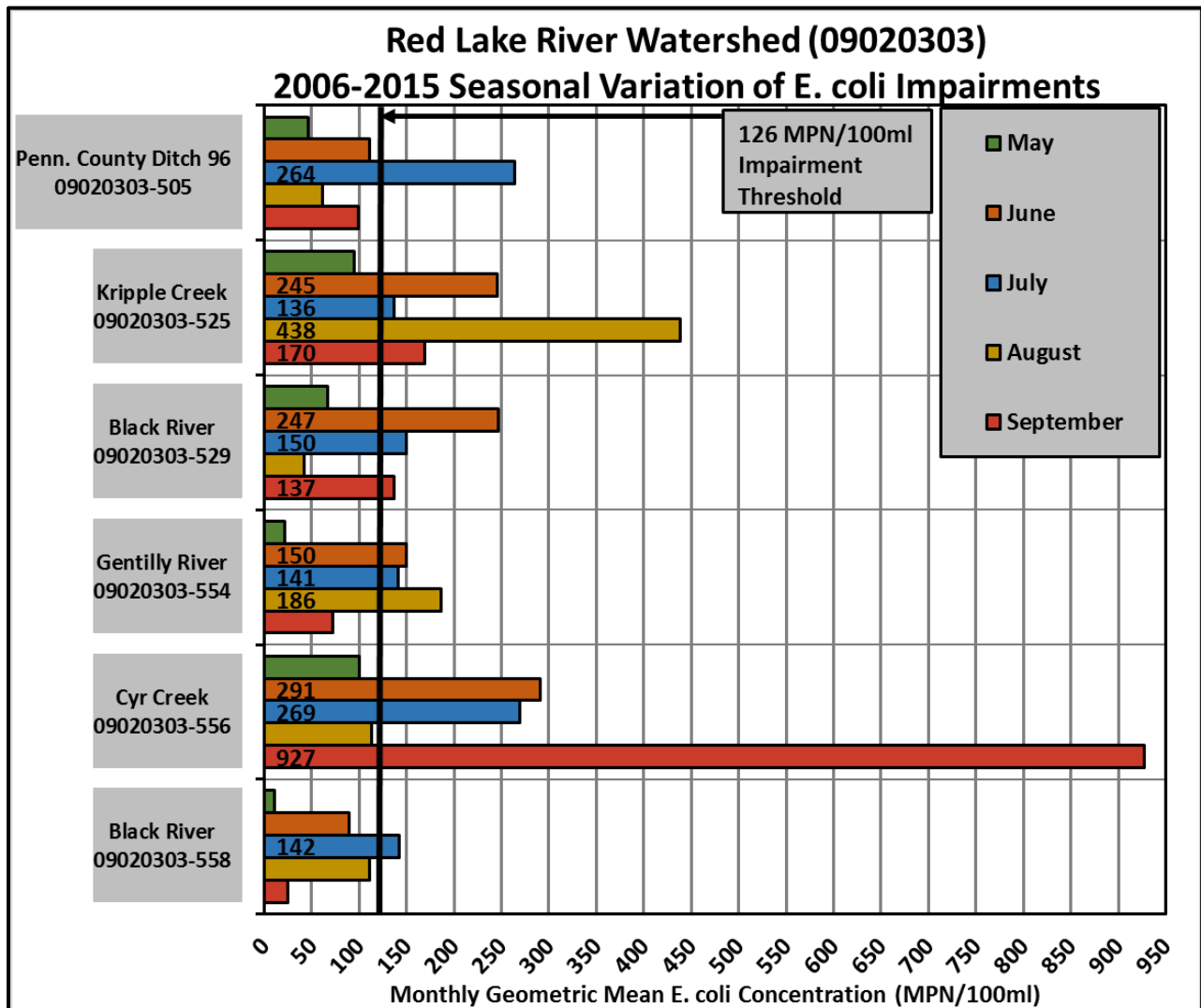
0.0001 - 0.0028
0.0029 - 0.0088
0.0089 - 0.0194
0.0195 - 0.0278
0.0279 - 0.0374
0.0375 - 0.0484
0.0485 - 0.0608
0.0609 - 0.0733
0.0734 - 0.0970
0.0971 - 0.1576

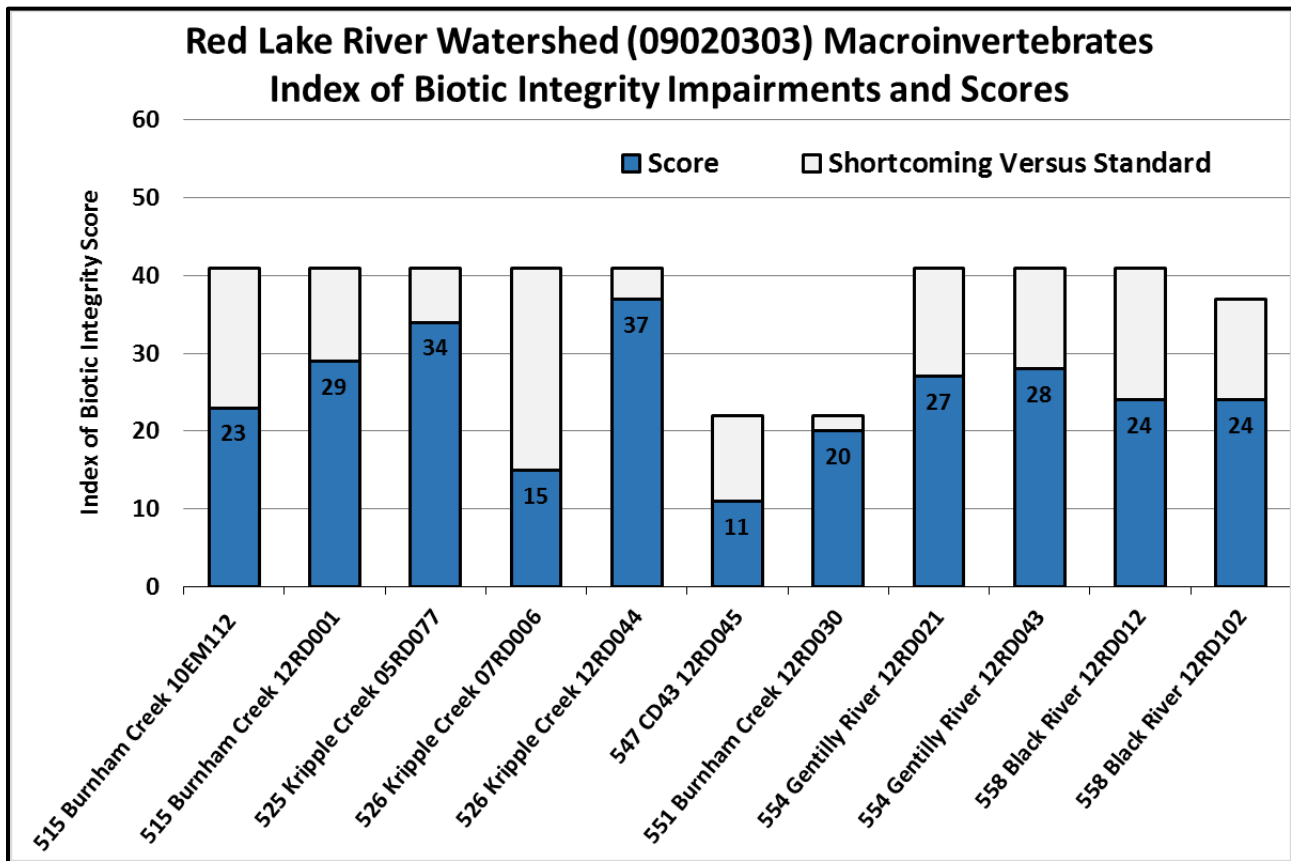
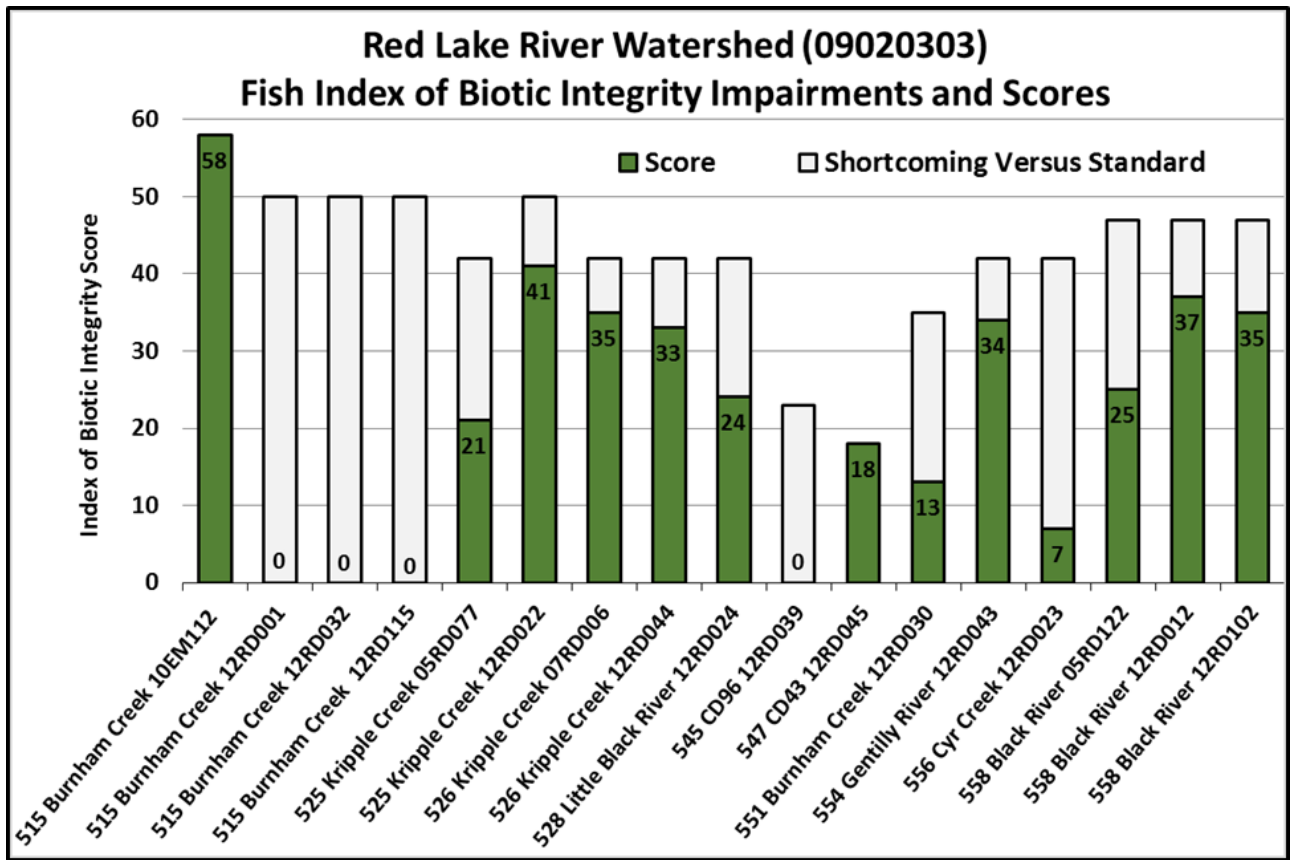


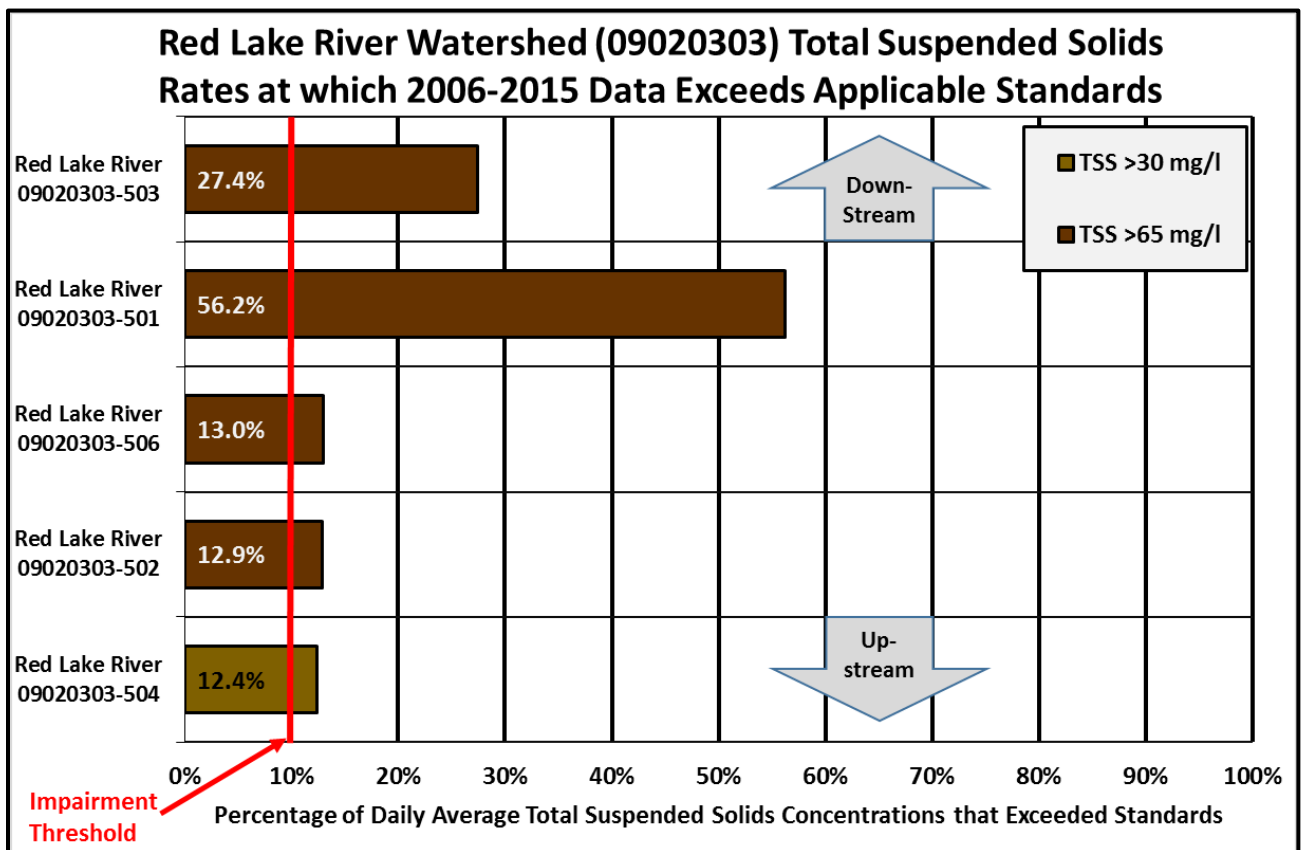
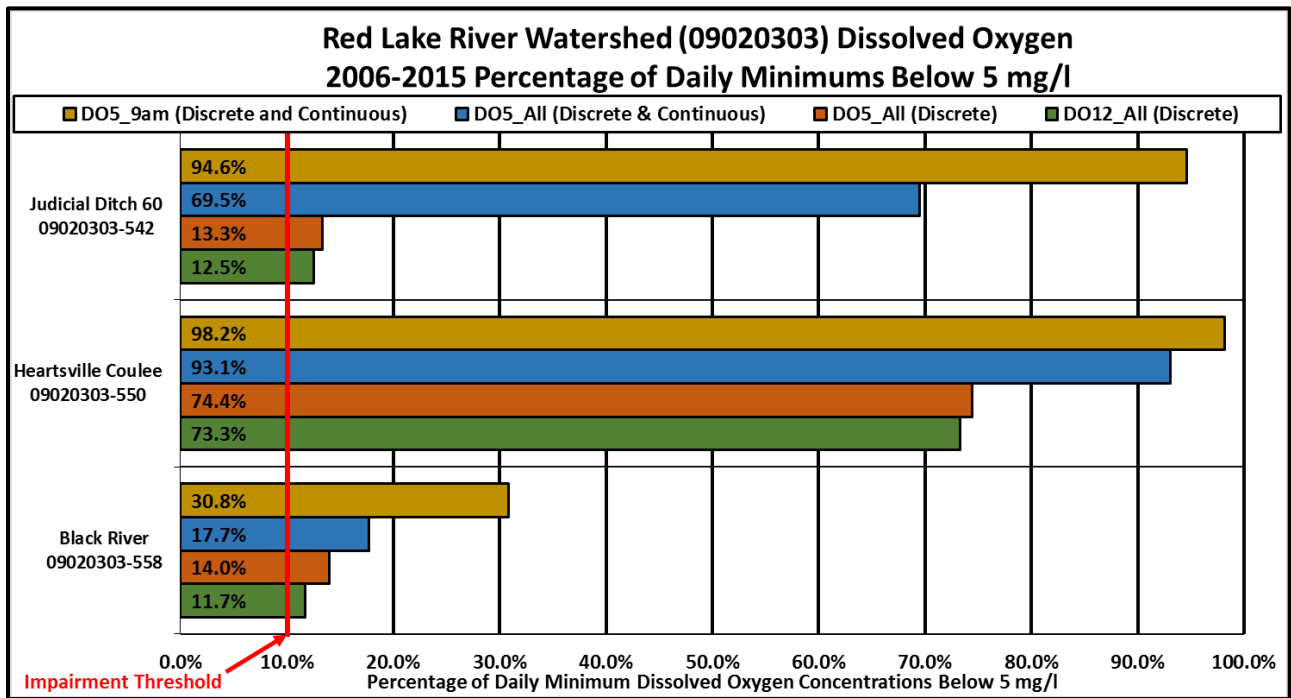
The District completed the Red Lake River WRAPS project in 2016.

The Red Lake River (USGS Hydrologic Unit Code 09020303), in northwest Minnesota, begins at the outlet of lower Red Lake and flows west to the Red River of the North. The Red Lake River watershed receives drainage from three other major subwatersheds: Upper and Lower Red Lakes, Thief River, and Clearwater River. It flows through the cities of Thief River Falls, St. Hilaire, Red Lake Falls, Crookston, Fisher, and East Grand Forks. It is the source of drinking water for the cities of Thief River Falls and East Grand Forks.

The Red Lake River Watershed TMDL addresses 31 impairments of aquatic life and/or recreation that have been found within 19 reaches of the Red Lake River and its tributaries. Turbidity and/or total suspended solids (TSS) impairments were found in five reaches of the Red Lake River between the Pennington County Ditch 96 confluence and the Red River of the North. Impairments due to chronically high concentrations of E. coli bacteria have been found along six reaches of Red Lake River tributaries. Impairments due to low dissolved oxygen (DO) levels have been identified in three reaches along tributaries of the Red Lake River. Low index of biotic integrity (IBI) scores have resulted in macroinvertebrate IBI (M-IBI) impairments for seven reaches and fish IBI (F-IBI) impairments for ten reaches along tributaries of the Red Lake River.



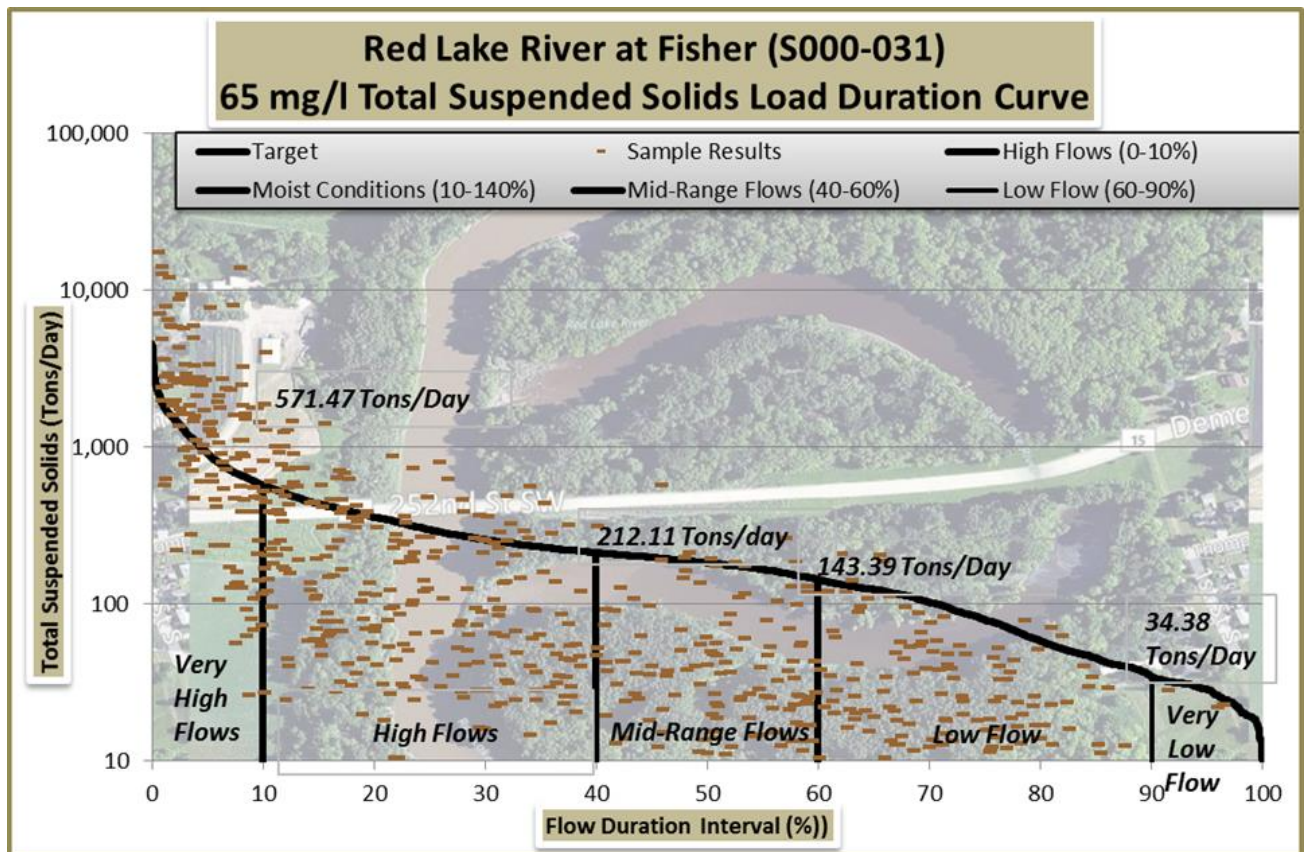




The TMDL and WRAPS reports recommend strategies for reducing nonpoint contributions of TSS using various erosion control strategies. Sources of E. coli pollution have been identified and described along with strategies for addressing those sources. Recommendations are also given for the improvement of DO levels and the quality of aquatic life. Insufficient base flow is the most common and impactful stressor for aquatic biology and DO within impaired Red Lake River tributaries. F-IBI scores are also limited by fish passage barriers in some reaches. No pollutant-based causes of DO or

biological impairments are needed. The reports also include information about future monitoring plans, cost estimation, and civic engagement strategies. Restoration and protection strategies were compiled for application to the watershed as a whole and for each HUC 10 subwatershed. Sources of pollutants were identified on a broad scale through water quality modeling (like the HSPF sediment yield map at the beginning of this section). District staff also documented specific erosion problems like eroding stream banks and gully erosion from fields during geomorphology reconnaissance and windshield surveys.

Total maximum daily loads were calculated for reaches that were impaired by quantifiable pollutants. TMDLs are a calculation of the maximum amount of pollutants that can be conveyed by a stream without exceeding water quality standards. TMDLs were calculated to address total suspended solids and *E. coli* impairments using the load duration curve method. To calculate TMDLs, flow and load duration curves were created for representative sampling stations on each impaired reach (like the Red Lake River crossing in Fisher). The allowable pollutant load (loading capacity) was calculated for each flow regime (very high, high, mid-range, low, and very low). Wastewater loads were calculated using permitting information for each wastewater treatment facility that discharges to the Red Lake River (Thief River Falls, St. Hilaire, Red Lake Falls, Crookston, American Crystal Sugar, and Fisher). Load allocations were also set aside for future growth (reserve capacity) and a margin of safety. The wastewater, reserve capacity, and margin of safety load allocations were subtracted from the loading capacity to calculate the load allocation for nonpoint sources of pollution. If possible, current loads were calculated in order to estimate the amount of pollutant reductions that are needed to restore the river/stream.



Red Lake River Watershed • Total Suspended Solids • Total Maximum Daily Loads										
Stream (AUID)	Pollutant (Standard)	Units	Season or Flow Conditions	Loading Capacity	Allocations				Current Load	Percent Reduction Needed
					Wasteload Allocation	Margin of Safety	Reserve Capacity	Load Allocation		
Red Lake River (09020303-506)	Total Suspended Solids (65 mg/l)	Tons/Day	Very High	722.23	3.17	72.22	36.11	610.72	1453.9	58.0%
Red Lake River (09020303-506)	Total Suspended Solids (65 mg/l)	Tons/Day	High	241.91	3.17	24.19	12.1	202.45	170.55	0.0%
Red Lake River (09020303-506)	Total Suspended Solids (65 mg/l)	Tons/Day	Mid	132.35	3.17	13.23	6.62	109.33	53.45	0.0%
Red Lake River (09020303-506)	Total Suspended Solids (65 mg/l)	Tons/Day	Low	52.59	3.17	5.26	2.63	41.53	24.05	0.0%
Red Lake River (09020303-506)	Total Suspended Solids (65 mg/l)	Tons/Day	Very Low	11.04	3.17	1.1	0.55	6.22	4.4	0.0%
Red Lake River (09020303-512)	Total Suspended Solids (65 mg/l)	Tons/Day	Very High	843.51	3.17	84.35	42.18	713.81	Not Known	Not Known
Red Lake River (09020303-512)	Total Suspended Solids (65 mg/l)	Tons/Day	High	319.49	3.17	31.95	15.97	268.4	Not Known	Not Known
Red Lake River (09020303-512)	Total Suspended Solids (65 mg/l)	Tons/Day	Mid	189.04	3.17	18.9	9.45	157.52	Not Known	Not Known
Red Lake River (09020303-512)	Total Suspended Solids (65 mg/l)	Tons/Day	Low	116.06	3.17	11.61	5.8	95.48	Not Known	Not Known
Red Lake River (09020303-512)	Total Suspended Solids (65 mg/l)	Tons/Day	Very Low	37.03	3.17	3.7	1.85	28.31	Not Known	Not Known
Red Lake River (09020303-502)	Total Suspended Solids (30 mg/l)	Tons/Day	Very High	376.95	3.17	37.69	18.85	317.23	1395.9	77.3%
Red Lake River (09020303-502)	Total Suspended Solids (30 mg/l)	Tons/Day	High	145.14	3.17	14.51	7.26	120.2	137.42	12.5%
Red Lake River (09020303-502)	Total Suspended Solids (30 mg/l)	Tons/Day	Mid	86.05	3.17	8.6	4.3	69.97	36.31	0.0%
Red Lake River (09020303-502)	Total Suspended Solids (30 mg/l)	Tons/Day	Low	52.93	3.17	5.29	2.65	41.82	23.21	0.0%
Red Lake River (09020303-502)	Total Suspended Solids (30 mg/l)	Tons/Day	Very Low	16.87	3.17	1.69	0.84	11.17	3.88	0.0%
Red Lake River (09020303-504)	Total Suspended Solids (30 mg/l)	Tons/Day	Very High	225	2.7	22.5	11.25	191.25	714.94	73.2%
Red Lake River (09020303-504)	Total Suspended Solids (30 mg/l)	Tons/Day	High	93.85	2.7	9.39	4.69	79.77	105.6	24.5%
Red Lake River (09020303-504)	Total Suspended Solids (30 mg/l)	Tons/Day	Mid	35.49	2.7	3.55	1.77	30.17	21.19	0.0%
Red Lake River (09020303-504)	Total Suspended Solids (30 mg/l)	Tons/Day	Low	0	0	0	0	0	2.35	100.0%
Red Lake River (09020303-504)	Total Suspended Solids (30 mg/l)	Tons/Day	Very Low	0	0	0	0	0	0	0.0%

Red Lake River Watershed • Escherichia Coli Bacteria • Total Maximum Daily Loads										
Stream (AUID)	Pollutant (Standard)	Units	Season or Flow Conditions	Loading Capacity	Allocations				Current Load	Percent Reduction Needed
					Wasteload Allocation	Margin of Safety	Reserve Capacity	Load Allocation		
Penn. CD96 (09020303-505)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Very High	225.12	0	22.51	0	202.61	288.86	29.9%
Penn. CD96 (09020303-505)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	High	19.99	0	2	0	17.99	130.9	86.3%
Penn. CD96 (09020303-505)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Mid	0	0	0	0	0	0	0.0%
Penn. CD96 (09020303-505)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	No Flow (Low and Very Low)	0	0	0	0	0	0	0.0%
Kripple Creek (09020303-525)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Very High	93.54	0	9.35	0	84.18	626.59	86.6%
Kripple Creek (09020303-525)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	High	23.59	0	2.36	0	21.23	74.22	71.4%
Kripple Creek (09020303-525)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Mid	11.47	0	1.15	0	10.32	28.57	63.9%
Kripple Creek (09020303-525)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Low	3.4	0	0.34	0	3.06	22.66	86.5%
Kripple Creek (09020303-525)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Very Low	0	0	0	0	0	0	0.0%
Black River (09020303-529)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Very High	502.7	0	50.27	0	452.43	19687	97.7%
Black River (09020303-529)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	High	14.24	0	1.42	0	12.82	38	66.3%
Black River (09020303-529)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	No Flow (Mid-Range, Low, and Very Low)	0	0	0	0	0	0	0.0%
Gentilly River (09020303-554)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Very High	222.05	0	22.2	0	199.84	144.7	0.0%
Gentilly River (09020303-554)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	High	53.33	0	5.33	0	48	225.81	78.7%
Gentilly River (09020303-554)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Mid	31.17	0	3.12	0	28.05	46.07	39.1%
Gentilly River (09020303-554)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Low	5.78	0	0.58	0	5.2	22.63	77.0%
Gentilly River (09020303-554)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Very Low	0	0	0	0	0	0	0.0%
Cyr Creek (09020303-556)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Very High	239.57	0	23.96	0	215.61	283.2	23.9%
Cyr Creek (09020303-556)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	High	48.01	0	4.8	0	43.21	43.79	1.3%
Cyr Creek (09020303-556)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Mid	1.56	0	0.16	0	1.4	0	0.0%
Cyr Creek (09020303-556)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	No Flow (Low and Very Low)	0	0	0	0	0	0	0.0%
Black River (09020303-558)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Very High	703.31	0	70.33	0	632.98	Not Known	Not Known
Black River (09020303-558)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	High	182.01	0	18.2	0	163.81	Not Known	Not Known
Black River (09020303-558)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Mid	103.11	0	10.31	0	92.8	Not Known	Not Known
Black River (09020303-558)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Low	74.35	0	7.43	0	66.91	Not Known	Not Known
Black River (09020303-558)	E. coli, 126 MPN/100ml	Billions of Orgs/Day	Very Low	60.56	0	6.06	0	54.5	Not Known	Not Known

Red Lake River Watershed • Total Suspended Solids • Total Maximum Daily Loads										
Stream (AUID)	Pollutant (Standard)	Units	Season or Flow Conditions	Loading Capacity	Allocations				Current Load	Percent Reduction Needed
					Wasteload Allocation	Margin of Safety	Reserve Capacity	Load Allocation		
Red Lake River (09020303-503)	Total Suspended Solids (65 mg/l)	Tons/Day	Very High	946.62	6.87	94.66	47.33	797.76	1020.8	21.9%
Red Lake River (09020303-503)	Total Suspended Solids (65 mg/l)	Tons/Day	High	346.01	6.87	34.6	17.3	287.24	726.02	60.4%
Red Lake River (09020303-503)	Total Suspended Solids (65 mg/l)	Tons/Day	Mid	200.9	6.87	20.09	10.05	163.9	161.26	0.0%
Red Lake River (09020303-503)	Total Suspended Solids (65 mg/l)	Tons/Day	Low	125.39	6.87	12.54	6.27	99.71	91.34	0.0%
Red Lake River (09020303-503)	Total Suspended Solids (65 mg/l)	Tons/Day	Very Low	40.97	6.87	4.1	2.05	27.95	27.74	0.0%
Red Lake River (09020303-501)	Total Suspended Solids (65 mg/l)	Tons/Day	Very High	916.63	6.87	91.66	45.83	772.27	3340.1	76.9%
Red Lake River (09020303-501)	Total Suspended Solids (65 mg/l)	Tons/Day	High	298.01	6.87	29.8	14.9	246.44	544.68	54.8%
Red Lake River (09020303-501)	Total Suspended Solids (65 mg/l)	Tons/Day	Mid	182.31	6.87	18.23	9.12	148.09	168.29	12.0%
Red Lake River (09020303-501)	Total Suspended Solids (65 mg/l)	Tons/Day	Low	79.23	6.87	7.92	3.96	60.48	82.23	26.5%
Red Lake River (09020303-501)	Total Suspended Solids (65 mg/l)	Tons/Day	Very Low	28.57	6.87	2.86	1.43	17.42	15.02	0.0%

The WRAPS and 1WIP processes identified the reaches in the Red Lake River watershed that are most in need of protection efforts to avoid future impairments. The following table lists the reaches that came the closest to exceeding water quality standards during the 2004-2014 assessment period.

Protect High-Quality Unimpaired Waters at Greatest Risk of Becoming Impaired (Ranking based proximities to impairment thresholds in 2004-2014 assessment statistics)									
Stream	AUID	HUC10	TSS	<i>E. coli</i>	DO	F-IBI	M-IBI	Count	Count/Avg
Red Lake R.	3-561	902030302	1		1			2	2.000
Black River	3-557	902030304	4	2		3	2	4	1.455
Red Lake R.	3-562	902030302	2			4	3	3	1.000
Red Lake R.	3-504	902030303		1				1	1.000
CD 53 (RLWD Ditch 12)	3-549	902030307					1	1	1.000
Black River	3-529	902030304	3			2	5	3	0.900
Red Lake R.	3-506	902030305				1	4	2	0.800
Gentilly R.	3-554	902030305			2			1	0.500
Burnham Crk.	3-515	902030306	6	4				2	0.400
Red Lake R.	3-502	902030305		3				1	0.333
Cyr Creek	3-556	902030305			3			1	0.333
Polk CD 1	3-536	902030305			4			1	0.250
Red Lake R.	3-560	902030302	5					1	0.200
Red Lake R.	3-501	902030307				5		1	0.200

RLWD staff reviewed a draft version of the MPCA's Red Lake River Watershed Monitoring and Assessment Report and submitted comments to MPCA staff. Links to the monitoring and assessment report and other Red Lake River documents were added to the www.rlwdwatersheds.org website. The following tables list the current conditions within Red Lake River watershed streams, ditches, and rivers.

Current Water Quality Conditions in the Red Lake River Watershed (2004-2014 Data)																	
HUC-10 Subwatershed	AUID (Last 3 digits)	Stream	Reach Description	Segment Length (Miles)	# of Days with Water Chemistry Data*	Aquatic Life						River Eutrophication				Aq Rec	
						Fish IBI	Macroinvertebrate IBI	pH	Un-ionized Ammonia	Dissolved Oxygen	Turbidity/TSS	Total Phosphorus	Biochemical Oxygen Demand	Chlorophyll-a	DO Fluctuation		River Eutrophication
Red Lake River 0902030307	501	Red Lake River	Burnham Cr to Unnamed cr	30.83	341	Sup	Sup	Sup	Imp	PI	IF	IF	Sup	IF	IF	Sup	IF
	503	Red Lake River	Unnamed cr to Red River	1.87	130	Sup	Sup	Sup	Imp	Sup	IF	IF	Sup	Sup	Sup	Sup	Sup
	549	RLWD Ditch 12	Headwaters to CD 115	7.27	2	PI	PI	IF	IF	IF	IF	IF	IF	IF	IF	IF	IF
	550	Heartsville Coulee	CD115 to Red Lake River	11.39	186*	IF	Sup	Imp	Sup	PI	IF	IF	IF	IF	IF	Sup	IF
Burnham Creek 0902030306	515	Burnham Creek	Polk CD 15 to Red Lake R	20.35	239*	Imp	Sup	Sup	Sup	PI	IF	IF	IF	IF	IF	Sup	IF
	551	Burnham Creek	CD 106 to Polk CD 15	7.53	21*	Imp	IF	IF	IF	IF	IF	IF	IF	IF	Sup	IF	IF
	552	Burnham Creek	Br 1 CD 72 to CD 106	15.88	2	IF	IF	IF	IF	IF	IF	IF	IF	IF	IF	IF	IF
	559	CD 106	Headwaters to Burnham Creek	5.79	1	IF	IF	IF	IF	IF	IF	IF	IF	IF	IF	IF	IF

Imp = Impaired. The reach is officially listed as impaired for this parameter and 2004-2014 data supports that listing.

PI = Potentially Impaired reach in need of protection efforts.

Sup = Supporting. Current data indicates that the reach is meeting the standard for this parameter and supports the respective designated use.

IF = Insufficient data. Either there is no data, or the data doesn't meet minimum requirements for an assessment.

Current Water Quality Conditions in the Red Lake River Watershed (2004-2014 Data)																		
HUC-10 Subwatershed	AUID (Last 3 digits)	Stream	Reach Description	Segment Length (Miles)	# of Days with Water Chemistry Data*	Aquatic Life					River Eutrophication					Aq Rec		
						Fish IBI	Macroinvertebrate IBI	pH	Un-ionized Ammonia	Dissolved Oxygen	Turbidity/TSS	Total Phosphorus	Biochemical Oxygen Demand	Chlorophyll-a	DO Fluctuation		River Eutrophication	
Red Lake River 0902030303	504	Red Lake River	CD 96 to Clearwater R	20.88	165	Sup	Sup	Sup	Sup	Imp	Sup	IF	IF	IF	IF	Sup	Sup	
	505	Pennington CD 96	Headwaters to Red Lake R	10.72	172*	Sup	Sup	Sup	PI	Sup	Sup	Sup	IF	IF	Sup	Sup	Imp	
	509	Red Lake River	Thief River to Thief River Falls Dam	0.86	105	IF	IF	Sup	Sup	IF	Sup	Sup	IF	IF	Sup	Sup	Sup	
	513	Red Lake River	Thief River Falls Dam to CD 96	13.66	125	Sup	Sup	Sup	Sup	Sup	Sup	Sup	IF	IF	Sup	Sup	Sup	
	541	Pennington CD 21	Unnamed cr to Red Lake River	1.52	29	IF	IF	Sup	PI	PI	Sup	Sup	IF	IF	IF	PI	PI	
	545	Pennington CD 96	BR 2 CD 96 to CD96 main stem	1.32	18*	Imp	Sup	IF	IF	PI	IF	IF	IF	IF	IF	IF	IF	IF
	902	Pennington CD 70	T154 R43W S31 to Red Lake R	2.03	61	IF	IF	Sup	Sup	PI	Sup	IF	IF	IF	IF	PI	IF	Sup

Current Water Quality Conditions in the Red Lake River Watershed (2004-2014 Data)																		
HUC-10 Subwatershed	AUID (Last 3 digits)	Stream	Reach Description	Segment Length (Miles)	# of Days with Water Chemistry Data*	Aquatic Life						River Eutrophication				Aq Rec		
						Fish IBI	Macroinvertebrate IBI	pH	Un-ionized Ammonia	Dissolved Oxygen	Turbidity/TSS	Total Phosphorus	Biochemical Oxygen Demand	Chlorophyll-a	DO Fluctuation		River Eutrophication	
Red Lake River 0902030302	547	Pennington CD 43	Unnamed ditch to Red Lake River	7.3	14*	Imp	IF	IF	PI	IF	IF	IF	IF	IF	IF	IF	IF	E. coli Bacteria
	560	Red Lake River	Headwaters to Clearwater/Pennin gton Co line	17.93	77	Sup	Sup	Sup	Sup	Sup	Sup	Sup	IF	IF	IF	IF	IF	Sup
	561	Red Lake River	Clearwater/Penn. Co line to CD39	22.23	237*	Sup	Sup	Sup	PI	Sup	Sup (30)	Sup	IF	IF	IF	IF	IF	Sup
	562	Red Lake River	Thief R to Thief River Falls Dam	26.36	235*	Sup	PI	Sup	Sup	Sup (30)	Sup	Sup	IF	IF	IF	IF	IF	Sup
Cahill Lake (Unnamed Ditch) 0902030301	543	Unnamed Ditch	Unnamed ditch to Red Lake River	9.96	0	Sup	IF	IF	IF	IF	IF	IF	IF	IF	IF	IF	IF	IF
IF	Insufficient data. Either there is no data, or the data doesn't meet minimum requirements for an assessment.																	
Imp	Impaired. The reach is officially listed as impaired for this parameter and 2004-2014 data supports that listing.																	
PI	Potentially Impaired reach in need of protection efforts. 2004-2014 data provides evidence that the reach is too frequently violating the standard for this specific parameter, but the reach has not been listed as impaired. Decisions to list, or not to list, are based upon professional judgement in addition to statistics. The poor results may have been connected with low flows; water quality conditions may have changed; the reach may be of limited resource value; or good IBI scores may indicate that water chemistry deficiencies are not harming aquatic life. There also may be insufficient data on a reach, but interpolation of upstream and downstream impairments suggests that in-between waters would also be impaired or the reach is trending toward impairment.																	
Sup	Supporting. Current data indicates that the reach is meeting the standard for this parameter and supports the respective designated use.																	
*Includes both discrete and continuous data																		
**Poor water quality has been discovered in more recently collected data																		

Trends were calculated for sites with a long (>10 years) history of water quality monitoring.

Recent Trends of Seasonal Averages Using Seasonal Mann-Kendall Analysis				
Red Lake River Watershed - All Sites	Total Suspended Solids	Dissolved Oxygen	Total Phosphorus	E. coli
Years	1992-2014	1992-2014	1992-2014	2000-2014
Annual Average	X			
Summer (May - Sept.)	X			
April	X	X		
May	X			X
June	X	X		
July			X	
August	X	X	X	
September			X	X
October		X	X	
X = No Trend				
= Upward Trend (Getting Better)				
= Downward Trend (Improvement)				
= Strong Upward Trend (Getting Significantly Better)				
= Strong Downward Trend (Getting Significantly Better)				
= Strong Upward Trend (Getting Significantly Worse)				
= Upward Trend (Getting Worse)				

Efforts were made to inform and involve the public throughout the Red Lake River WRAPS project. Past civic engagement efforts and future plans are described in this document. There is great cooperation among agencies for project implementation and monitoring. RMB Environmental Laboratories, Inc. staff created a draft version of an informational brochure that was mailed to landowners and stakeholders. The RLWD Water Quality Coordinator created a one-page (two-sided) insert for the brochure. Stressors and pollutant sources were summarized into a table/matrix on one side of that insert. For the opposite side of that page, brief descriptions of stressors and pollutant sources were organized into a one-page document. Dan Olson, MPCA Public Information, provided some good ideas for improving the formatting/appearance of the brochure insert. A final review of the entire brochure was completed. The brochure was printed and mailed in December 2016.

Red Lake River Watershed water quality/biological issues at a glance

Aquatic life impairments, stressors

Dry Channels and Stagnant Water

A lack of base, or late-summer, flow was the main cause of poor biological integrity scores in this watershed. This stressor leads to dry channels, stagnant water, and low dissolved oxygen levels.



Low Dissolved Oxygen

Monitoring data indicates that low dissolved oxygen concentrations in Red Lake River tributaries are most often a result of stagnant water.

Fish Passage Barriers

Barriers such as dams, beaver activity, stream crossings, and other structures, can block fish passage and limit the quality of fish populations in upstream reaches.



Sources of sediment in impaired waters

Insufficient In-Stream Habitat

The quality of habitat along the Red Lake River and its tributaries has been assessed using the MPCA Stream Habitat Assessment protocol.

Excess Sedimentation

Sediment deposition within streams covers habitat of aquatic insects and fish and negatively affects egg development.

Inadequate Riparian Buffers

Riparian buffers are important for protecting streams from pollutant runoff, stabilizing stream banks, habitat, and providing shade.

Stormwater

The Red Lake River flows through (or near) the cities of Thief River Falls, St. Hilaire, Red Lake Falls, Crookston, Fisher, and East Grand Forks.

Upland and Streambank Erosion

Erosion of sediment from land, usually during snowmelt and large rainfall events (gully, sheet, rill erosion) can result in high sediment concentrations in waterways. Moving water has tremendous power for moving sediment. Without vegetative cover and thick, deep root systems, banks are susceptible to erosion.



E. coli impairments and sources

Wastewater Treatment Facilities

Facilities in Thief River Falls, St. Hilaire, Red Lake Falls, Crookston, and Fisher contribute to sediment loads in the Red Lake River, but are required to discharge water at sediment levels that meet water quality standards

Wind Erosion

Bare soil is eroded and transported to ditches and streams by wind. Wind erosion is made worse when windbreaks are removed.

Livestock along Streams

E. coli concentrations are typically high downstream of areas in which livestock have access to a river, stream, or ditch.

Waterfowl

A stream reach may be located downstream of an impoundment that attract large numbers of waterfowl. Waterfowl are sometimes noted upstream of the sampling site.

Failing Septic Systems

MST analysis has found DNA markers from human waste in water samples collected in some Red Lake River tributaries.

Birds (Cliff Swallows)

Cliff swallows or pigeons can live under a bridge and contribute to elevated E. coli concentrations. Microbial source tracking (MST) analysis has returned positive results for bird fecal DNA at sites within this watershed.



Grand Marais Creek Watershed Restoration and Protection Strategy (WRAPS)



Emmons and Olivier Resources, Inc. (EOR) staff and District staff worked to create a draft Grand Marais Creek Watershed TMDL report and a draft Grand Marais Creek WRAPS report in 2016.

The TMDL study addresses bacteria in the form of *Escherichia coli* (*E. coli*) impairments in three streams located in the Grand Marais Creek Watershed, Hydrologic Unit Code (HUC) 09020306 that are on Minnesota's Draft 2016 303(d) list of impaired waters. The waterways of the Grand Marais Creek Watershed are tributaries to the Red River of the North, in northwestern Minnesota.

Information from multiple sources was used to evaluate the ecological health of each waterbody:

1. All available water quality data from the TMDL ten-year time period (2005-2014)
2. Grand Marais Creek Watershed Hydrologic Simulation Program – FORTRAN (HSPF) model
3. Stream geomorphic and field surveys
4. Stressor identification investigations
5. Stakeholder input

The following pollutant sources were evaluated for each stream: loading from upstream waterbodies, point sources, feedlots, septic systems, and wildlife. The TMDL study used an inventory of pollutant sources to develop a load duration curve model for each impaired stream. These models were then used to determine the pollutant reductions needed for the impaired waterbodies to meet water quality standards.

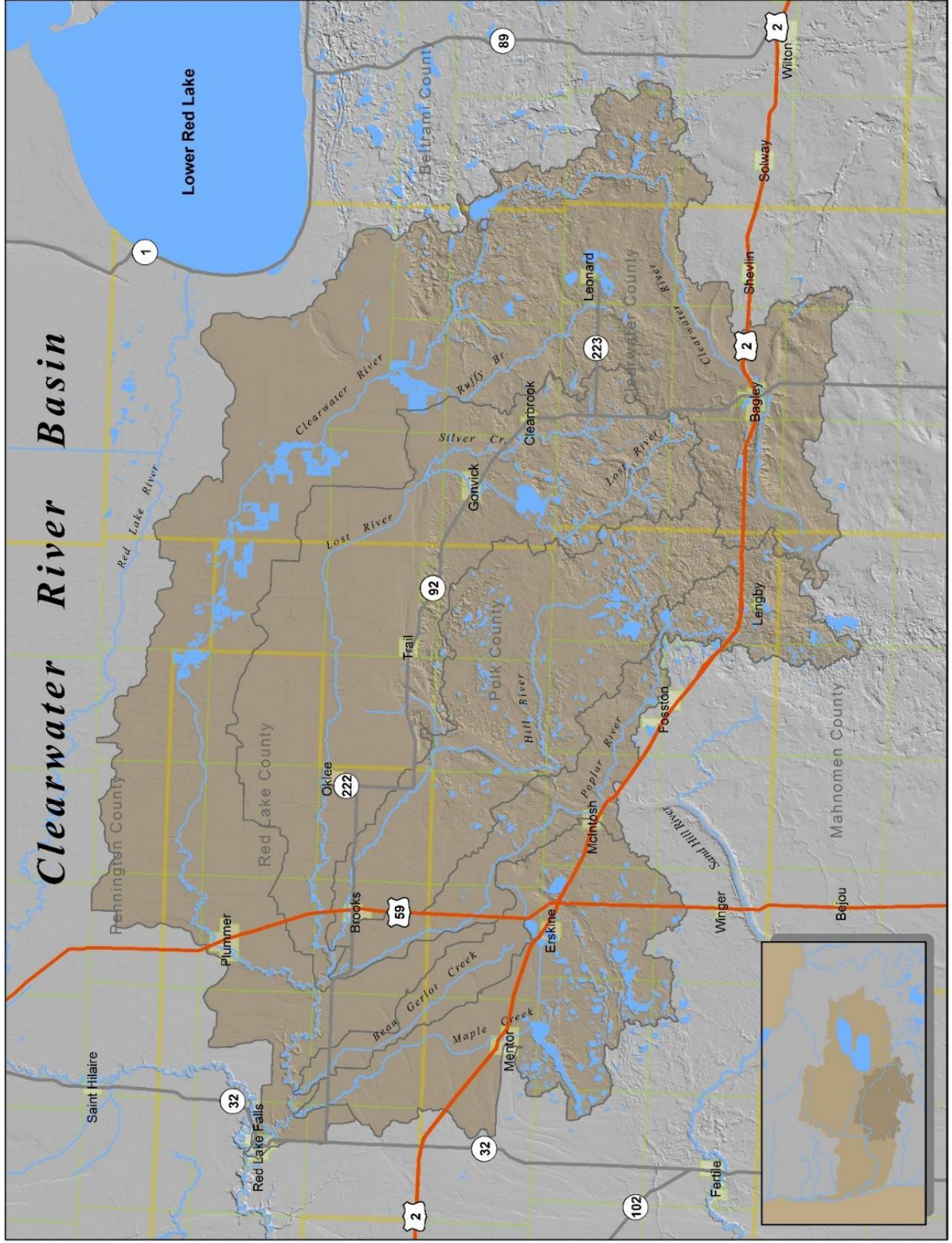
A Core Team meeting was held on April 13, 2016. Emmons and Olivier Resources, Inc. (EOR) staff made plans to distribute a table in which stakeholders could contribute ideas for restoration and protection projects that should be implemented to restore and protect water quality and aquatic habitat in the Grand Marais Creek watershed. BMP targeting tools (PTMApp, HSPF model) were discussed.

The TMDL study's results aided the selection of implementation activities during the Grand Marais Creek WRAPS process. The purpose of the WRAPS process is to support local working groups in developing ecologically sound restoration and protection strategies for subsequent implementation planning. Following completion of the WRAPS process, the Grand Marais Creek WRAPS Report will be publically available on the MPCA Grand Marais Creek Watershed website:

<https://www.pca.state.mn.us/water/watersheds/red-river-north-grand-marais-creek>

Additional supporting information and reports can be found on the Red Lake Watershed District's Prairie Basin website: <http://www.prairiebasin.com/>

Clearwater River Watershed Restoration and Protection Strategy (WRAPS)



Phase II of the Clearwater River WRAPS project began in the spring of 2016. Data collected through 2015 was used to assess water quality conditions. Water quality monitoring and sampling in 2016 was conducted to investigate water quality problems and data deficiencies that were identified during the assessment process. Stage and flow measurements in Clearwater River tributaries continued in 2016. The year 2016 included a relatively wet summer that provided many opportunities for flow measurements that improved flow rating curves.

The MPCA assessed water quality in the Clearwater River watershed in 2016. District staff provided MPCA assessment staff with all available continuous dissolved oxygen data that was collected within the 2006-2015 assessment period, draft TMDL reports from previous TMDL studies conducted within the Clearwater River watershed, assessment statistics from continuous dissolved oxygen data, and the draft Clearwater River Bioassessment report. District staff prepared for the assessment process by calculating assessment statistics (exceedance rates, summer averages) for all of the Clearwater River assessment units (reaches) with sufficient data. District staff also participated in Watershed Assessment Team and Professional Judgement Group meetings. A spreadsheet with all of the water chemistry data collected within the Clearwater River watershed through 2015 was obtained. Continuous dissolved oxygen data was also used in the District's assessment of Clearwater River watershed conditions. To facilitate proper application of tiered aquatic life use (TALU) standards, the MPCA split multiple existing reaches into new, separate assessment units. This was mostly done to separate channelized reaches from natural portions of streams. Cold-water taxa were found in Ruffy Brook! Ruffy Brook is a former trout stream that lost its ability to support trout due to land use changes. Fish and macroinvertebrate IBI scores were good in Ruffy Brook. The presence of cold-water taxa is a sign that the restoration of the Ruffy Brook trout stream is still a possibility.

Silver Creek dissolved oxygen data was cross-referenced with flow data. The stream meets the 5 mg/l dissolved oxygen standard as long as there is measurable flow in the stream. Flow data and results of the analysis were sent to MPCA assessment staff.

Red Lake County Ditch 57 dissolved oxygen data was cross-referenced with flow data. The ditch meets the 5 mg/l dissolved oxygen standard while flows are greater than 5 cubic feet per second (cfs).

Terrebonne Creek dissolved oxygen and flow data were cross-referenced. The rate at which dissolved oxygen levels failed to meet the 5 mg/l standard decreased when days with 0 cfs of flow and days with <1 cfs of flow were removed from the record.

The following tables summarize the existing impairments in the Clearwater River watershed and potential new impairments that have been identified during the assessment process. The list of new impairments is not an official draft list, but it is a summary of what the data is currently showing. A formal draft list of impaired waters will not be released by the MPCA for the results of this assessment until 2018.

Anticipated New Impairments from the 2016 Assessment of the Clearwater River Watershed						
AUID	Reach Name	Reach Description	Miles	Aquatic Life	Aquatic Recreation	New Impairments
09020305-502	Lower Badger Creek	CD 14 to Clearwater R	12.66	FS	NS	E. coli
09020305-504	Poplar River	Highway 59 to Lost R	14.25	FS	NS	E. coli, DO?
09020305-512	Lost River	Pine Lk to Anderson Lk	10.23	FS	NS	E. coli
09020305-517	Clearwater River	Headwaters to T148 R36W S36, east line	30.32	NS	FS	Eutrophication?
09020305-518	Poplar River	Spring Lk to Highway 59	39.28	NS	FS	Fish, Invertebrates, Eutrophication?
09020305-526	Unnamed creek	Headwaters to Silver Cr	1.68	NS	NS	DO, E. coli
09020305-527	Silver Creek	Headwaters to Anderson Lk	15.65	NS	NS	Invertebrates
09020305-529	Lost River	T148 R38W S17, south line to Pine Lk	9.87	NS	NS	E. coli
09020305-530	Lost River	Unnamed cr to T148 R38W S20, north line	4.46	NS	NS	DO, E. coli
09020305-539	Hill River	Hill River Lk to Lost R	34.06	NS	NS	Fish, E. coli
09020305-545	Unnamed creek (Nassett Creek)	T148 R38W S28, south line to Lost R	1.65	NS	NS	DO, TSS, E. coli
09020305-549	Unnamed creek	Tamarack Lk to Maple Lk	0.52	NA	FS	DO?
09020305-550	Judicial Ditch 73	Unnamed ditch to Tamarack Lk	1.7	NS	NS	E. coli, DO
09020305-561	Unnamed creek	Gerdin Lk to Poplar R Diversion	2.35	NS	No Data	fish
09020305-574	Terrebonne Creek	CD 4 to CD 58	3.23	IF	NS	DO?
09020305-578	Brooks Creek	Unnamed cr to Hill R	1.95	IF	NS	E. coli
09020305-645	Lost River	Anderson Lk to Unnamed cr	12.27	NS	FS	Fish
09020305-647	Clearwater River	Ruffy Bk to JD 1	34.62	NS	NS	TSS, E. coli, Eutrophication?
09020305-648	Clearwater River	JD 1 to Lost R	25.1	NS	FS	TSS
09020305-651	Beau Gerlot Creek	Upper Badger Cr to -96.1947 47.8413	8.26	IF	NS	E. coli
09020305-652	Beau Gerlot Creek	-96.1947 47.8413 to Clearwater R	2.02	NS	IF	Fish, Invertebrates
09020305-653	Clearwater River	T148 R35W S31, west line to Unnamed cr	11.84	FS	FS	DO?
09020305-655	Hill River	Cross Lk to Unnamed cr	4.91	NA	No Data	DO?
09020305-656	Hill River	Unnamed cr to Hill River Lk	8.18	NS	FS	Fish, DO?
09020305-658	County Ditch 23	-96.1479 47.8855 to Clearwater R	1.98	NS	No Data	Fish

? = Monitoring data indicates and impairment, but the impairment was not identified in the MPCA's initial assessment. This could be a violation of the standard that was discovered through the deployment of dissolved oxygen (DO) monitoring equipment. The MPCA may not have listed the water chemistry impairment because aquatic life samples met expectations.

Hg = Mercury | DO = Dissolved Oxygen | FS = Full Support | NS = Not Supporting | IF Insufficient Data

Current Impairments in the Clearwater River Watershed						
AUID	Reach Name	Reach Description	Miles	Aquatic Life	Aquatic Recreation	Current Impairments
09020305-649	Clearwater River	Clearwater Lk to Unnamed cr	4.9	FS	FS	Hg in fish tissue
09020305-650	Clearwater River	Unnamed cr to Ruffy Bk	13.17	FS	FS	Hg in fish tissue
09020305-654	Clearwater River	Unnamed cr to Clearwater Lk	5.82	FS	No Data	Hg in fish tissue, ammonia - will not CF
09020305-529	Lost River	T148 R38W S17, south line to Pine Lk	9.87	NS	NS	DO
09020305-518	Poplar River	Spring Lk to Highway 59	39.28	NS	FS	DO
09020305-508	County Ditch 57	Unnamed ditch to Clearwater R	0.36	NS	FS	DO
09020305-509	Walker Brook	Walker Brook Lk to Clearwater R	5.23	NS	No Data	DO
09020305-541	Unnamed creek	Eighteen Lk to Bee Lk	1.31	NA	No Data	DO
09020305-542	Unnamed creek	Mitchell Lk to Badger Lk	0.36	NA	IF	DO
09020305-543	Poplar River Diversion	Unnamed ditch to Badger Lk	1.48	NS	IF	DO
09020305-574	Terrebonne Creek	CD 4 to CD 58	3.23	IF	NS	E. coli
09020305-527	Silver Creek	Headwaters to Anderson Lk	15.65	NS	NS	Fecal coliform
09020305-513	Ruffy Brook	Headwaters to Clearwater R	26.41	FS	NS	Fecal coliform
09020305-653	Clearwater River	T148 R35W S31, west line to Unnamed cr	11.84	FS	FS	Hg in fish tissue
09020305-517	Clearwater River	Headwaters to T148 R36W S36, east line	30.32	NS	FS	Hg in fish tissue, DO
09020305-501	Clearwater River	Lower Badger Cr to Red Lake R	7.17	NS	FS	Hg in fish tissue, Turbidity
09020305-511	Clearwater River	Lost R to Beau Gerlot Cr	11.76	NS	FS	Hg in fish tissue, Turbidity
09020305-648	Clearwater River	JD 1 to Lost R	25.1	NS	FS	DO - will not CF
09020305-647	Clearwater River	Ruffy Bk to JD 1	34.62	NS	NS	DO - will not CF

Hg = Mercury | DO = Dissolved Oxygen | FS = Full Support | NS = Not Supporting | IF = Insufficient Data | CF = Carried Forward

Cameron Lake is still listed as impaired by eutrophication. Two new eutrophication impairments have been identified on Long Lake (04-0295-00) and Stony Lake (15-0156-00). Cross and Hill River Lakes are considered “vulnerable” and should receive a high priority for protection efforts due to fish index of biological integrity scores that were within the “confidence interval” (unclear whether they were impaired or unimpaired - borderline).

Stressor identification fieldwork was conducted along stream/ditch reaches that failed to meet biological (index of biological integrity) standards. Frequent water quality samples were also collected at the sites where continuous dissolved oxygen loggers were deployed for the stressor identification process. Supplemental water quality samples and flow measurements were collected at other strategic monitoring sites to provide additional data to confirm impairments and provide information for the calculation of TMDLs for impaired waterways.

The 2016 water quality monitoring effort for the Clearwater River WRAPS project discovered a number of instances in which rivers, streams, and ditches violated the state’s water quality standards.

High concentrations of E. coli bacteria were found in:

- Beau Gerlot Creek at CR 114
- Beau Gerlot Creek at CSAH 92

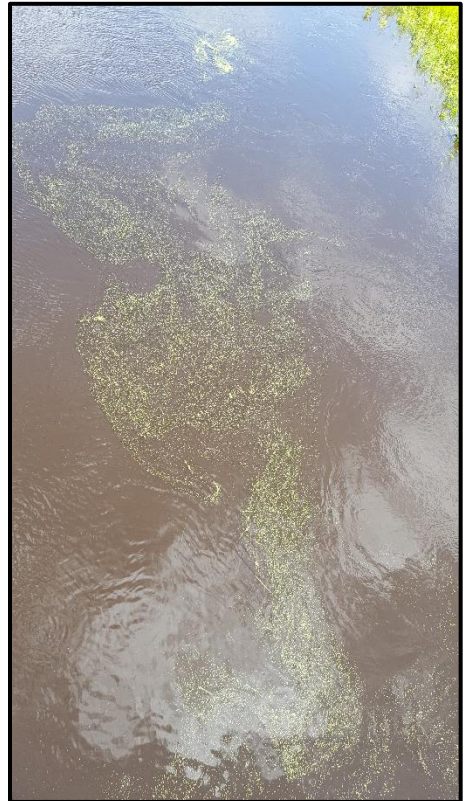
- Brooks Creek at CSAH 92
- Clear Brook at CSAH 92
- Clearwater River in Red Lake Falls
- Clearwater River at CSAH 12, near Terrebonne
- Clearwater River, north of Plummer
- Clearwater River at CR 127
- Clearwater River at CSAH 10
- Clearwater River at CSAH 5
- Hill River at 335th Ave SE
- Hill River at CSAH 35
- Hill River at CR 119
- Judicial Ditch 73 upstream of Rydell NWR
- Lost River at the Lindberg Lake Road
- Lower Badger Creek at 150th Ave SE
- Lower Badger Creek at CR 117
- Nassett Brook
- Poplar River at CSAH 92
- Poplar River at 250th St. SE
- Poplar River at CSAH 49
- Poplar River at 270th St. SE
- Poplar River at 310th St. SE
- Poplar River at CSAH 6
- Poplar River at CSAH 27
- Poplar River at CSAH 1
- Red Lake County Ditch 23
- Ruffy Brook at Township Road 5
- Ruffy Brook at CSAH 11
- Ruffy Brook at 510th St.
- Ruffy Brook at 189th Ave
- Ruffy Brook at 179th Ave
- Ruffy Brook at 490th St
- Ruffy Brook at CSAH 4
- Ruffy Brook at 209th Ave
- Ruffy Brook at CSAH 3
- Ruffy Brook at State Highway 223
- Silver Creek at 159th Ave (west of Clearbrook)
- Silver Creek at 159th Ave (southwest of Clearbrook)
- Silver Creek at 161st Ave
- Terrebonne Creek at CSAH 92
- Tributary of the Poplar River Diversion (Gerdin Lake Outlet) at 240th Ave SE, north of Erskine
- Walker Brook



High concentrations of total phosphorus were found in:

- North River Nutrient Region (>0.05 mg/L):
 - Ruffy Brook at Township Road 5
 - Ruffy Brook at CSAH 11

- Ruffy Brook at 510th St.
- Ruffy Brook at 179th Ave
- Ruffy Brook at 189th Ave
- Ruffy Brook at 490th St
- Ruffy Brook at CSAH 4
- Ruffy Brook at 209th Ave
- Ruffy Brook at CSAH 3
- Ruffy Brook at State Highway 223
- Central River Nutrient Region (>0.1 mg/L):
 - Clearwater River at CSAH 10
 - Clearwater River, north of Plummer
 - Clearwater River at CSAH 20, south of Plummer
 - Clearwater River at CSAH 12, near Terrebonne
 - Clearwater River at 310th Ave SE, NE of Oklee
 - Clearwater River at 370th Ave SE, N of Gully
 - Clearwater River at 400th Ave SE
 - Hill River at CSAH 35
 - Hill River at 335th Ave SE
 - Judicial Ditch 3, NE of Oklee
 - Nassett Brook
 - Poplar River at CR 118
 - Poplar River at CSAH 92
 - Poplar River at 250th St. SE
 - Poplar River at 260th St. SE
 - Poplar River at 270th St. SE
 - Poplar River at CSAH 49
 - Poplar River at 290th St. SE
 - Poplar River at 220th Ave SE
 - Poplar River at 310th St SE
 - Poplar River at 315th St. SE
 - Poplar River at 255th Ave SE
 - Poplar River at CSAH 35
 - Poplar River at 267th Ave SE
 - Poplar River at 340th St. SE
 - Poplar River at CSAH 8, north of McIntosh
 - Poplar River at 350th St. SE
 - Poplar River at 360th St. SE, east of McIntosh
 - Poplar River at the west crossing of 370th St. SE
 - Poplar River at the east crossing of 370th St. SE
 - Poplar River at 310th Ave SE
 - Poplar River at 320th Ave SE
 - Poplar River at 380th St. SE, northwest of Fosston
 - Poplar River at CSAH 30
 - Poplar River at CSAH 6
 - Poplar River at 360th Ave SE
 - Poplar River at CSAH 27
 - Red Lake County Ditch 17
 - Red Lake County Ditch 23
 - Tributary of the Poplar River Diversion (Gerdin Lake Outlet) at 240th Ave SE, north of Erskine



High total suspended solids (TSS) concentrations were found in:

- Ruffy Brook at Township Road 5
- Ruffy Brook at CSAH 11
- Ruffy Brook at 510th St.
- Ruffy Brook at 179th Ave
- Clearwater River at CSAH 5
- Clearwater River at CR 127

Low dissolved oxygen concentrations were found in:

- Bee Lake Outlet
- Clearwater River at CSAH 10
- Hill River at 335th Ave SE
- Hill River at CSAH 35
- Lost River at the Lindberg Lake Road
- Poplar River at CSAH 92
- Poplar River at 350th Ave SE
- Poplar River at CSAH 8, north of McIntosh
- Poplar River at 360th St. SE
- Poplar River at 310th Ave SE
- Poplar River at 320th Ave SE
- Poplar River at the east crossing of 370th St. SE
- Poplar River at 380th St. SE
- Poplar River at CSAH 30
- Poplar River at CSAH 6, northeast of Fosston
- Poplar River at 360th Ave SE
- Poplar River at CSAH 27
- Poplar River at CSAH 1
- Poplar River at 450th St. SE
- Poplar River Diversion at the Badger Lake inlet
- Silver Creek at CSAH 18
- Terrebonne Creek
- Tributary of the Poplar River Diversion (Gerdin Lake Outlet) at 240th Ave SE, north of Erskine
- Walker Brook

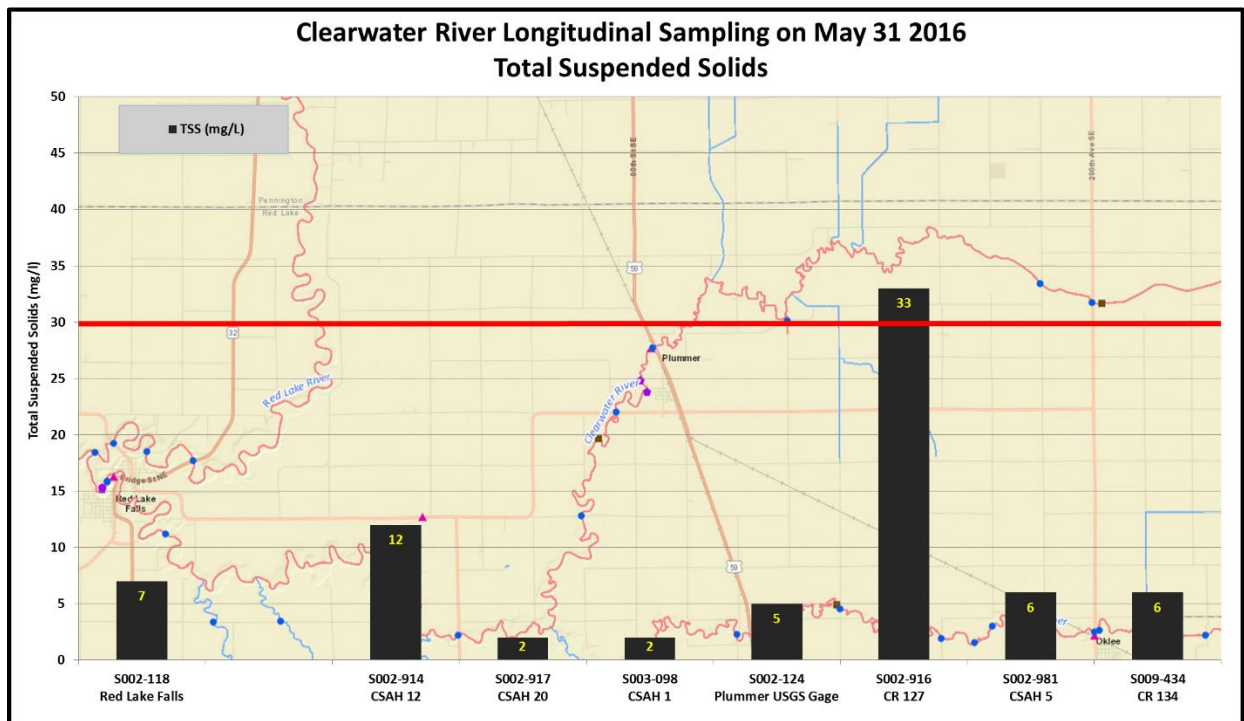


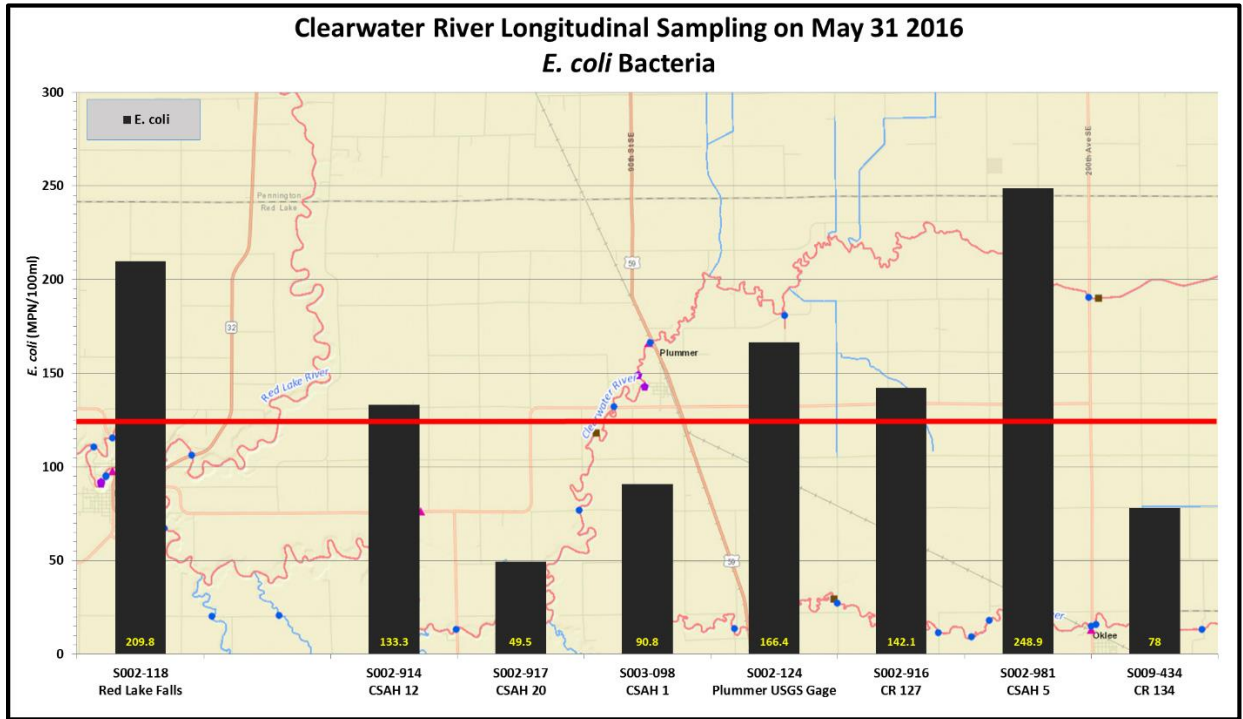
High concentrations of biochemical oxygen demand (>2.0 mg/L Central River Nutrient Region standard) were found in:

- Clearwater River at CSAH 10
- Hill River at CSAH 35
- Lower Badger Creek at 150th Ave SE
- Poplar River at 250th St. SE
- Poplar River at CSAH 49
- Poplar River at 310th St SE
- Poplar River at 315th St. SE
- Poplar River at 267th Ave SE
- Poplar River at CSAH 8, north of McIntosh
- Poplar River at 340th St. SE

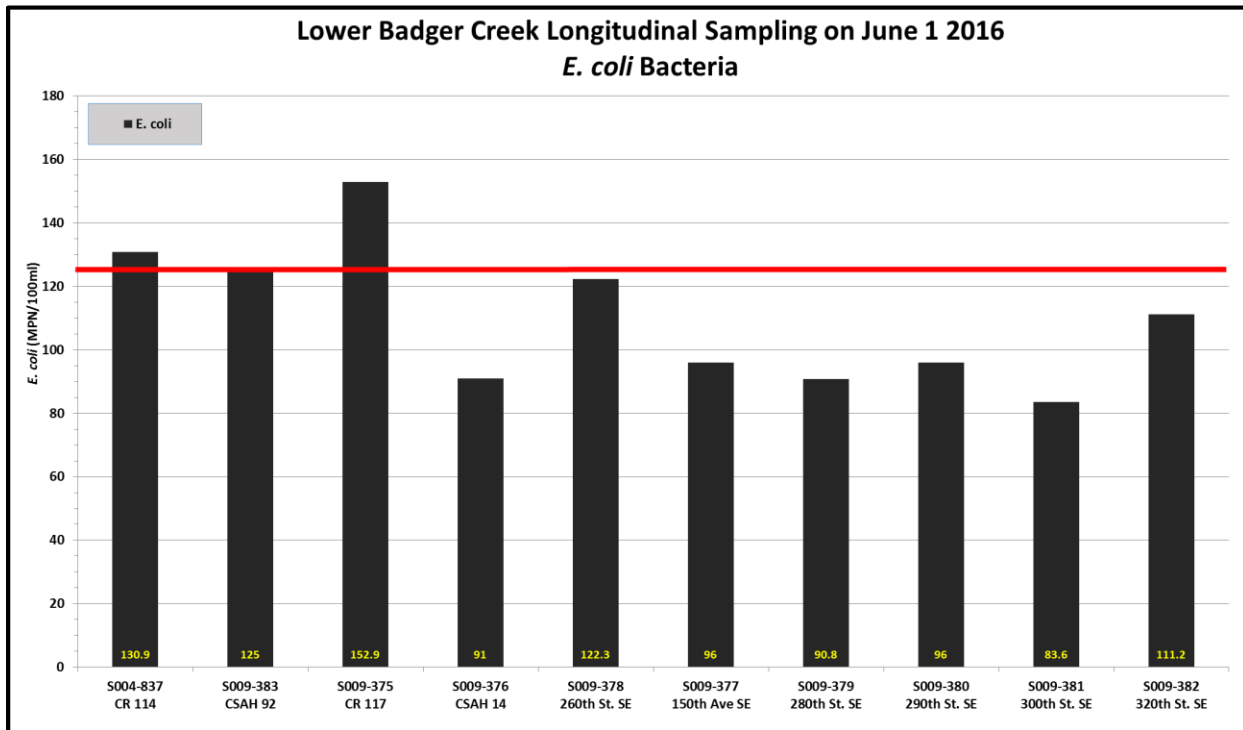
- Poplar River at 350th St. SE
- Poplar River at 360th St. SE, east of McIntosh
- Poplar River at the west crossing of 370th St. SE
- Poplar River at the east crossing of 370th St. SE
- Poplar River at 310th Ave SE
- Poplar River at 380th St. SE, northwest of Fosston
- Poplar River at CSAH 6
- Poplar River at 360th Ave SE
- Poplar River at CSAH 27
- Poplar River at CSAH 1
- Within Whitefish Lake
- Poplar River at 425th St. SE
- Tributary of the Poplar River Diversion (Gerdin Lake Outlet) at 240th Ave SE, north of Erskine

Longitudinal samples were collected along the Clearwater River and the Lost River on May 31, 2016 after a runoff event. Higher concentrations of pollutants were found in the upstream portion of the Clearwater River that was sampled. Plumes of sediment-laden water were seen where drainage ditches emptied into the Clearwater River. The Lost River results, however, were unremarkable (a good thing). All of the samples met water quality standards. The maximum total suspended solids concentration in the Lost River on this day was just 3 mg/L. The maximum E. coli bacteria concentration was 114.5 MPN/100ml and total phosphorus topped-out at 0.042 mg/L. The most significant increase in pollutants in the Lost River was an increase in E. coli bacteria from sources upstream of Oklee.





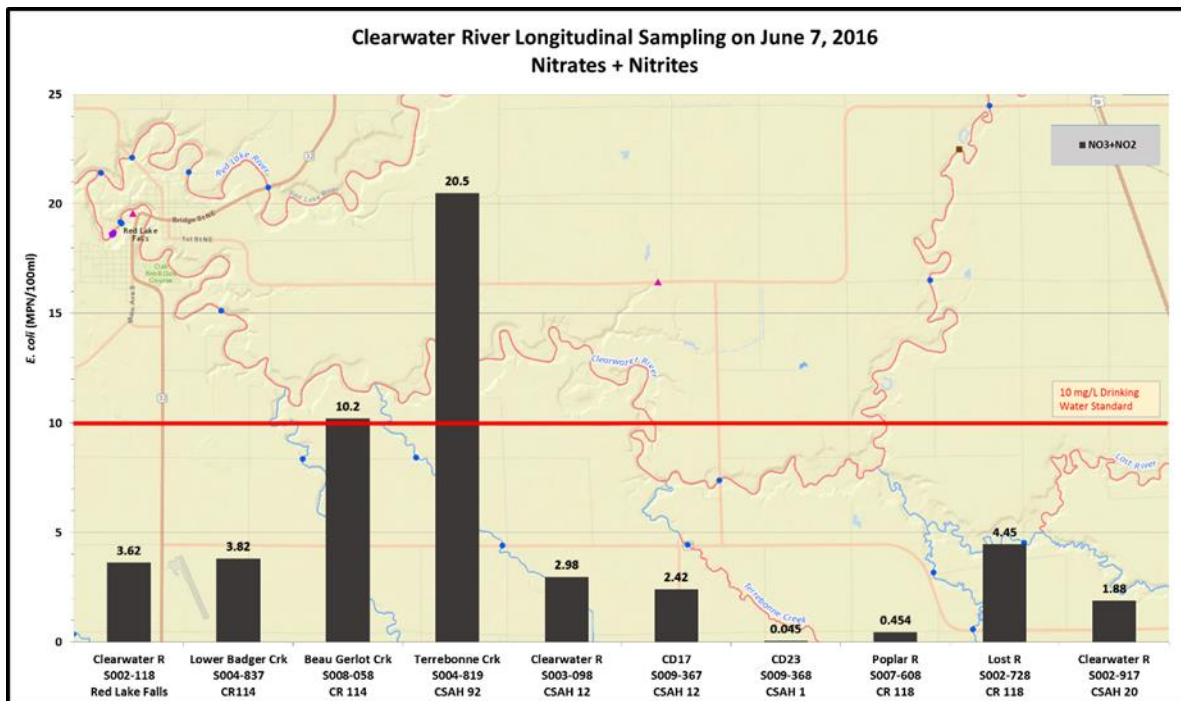
Longitudinal samples were collected along Lower Badger Creek on June 1, 2016 after a May 31, 2016 runoff event. Sediment concentrations were relatively low, with an 8 mg/L maximum concentration. *E. coli* concentrations, however, exceeded the 126 MPN/100ml standard at two sites on the downstream end of the reach. Nitrates and nitrites were relatively high along most of the reach. Nitrates and nitrites increased greatly between 320th St. SE and 290th St. SE.



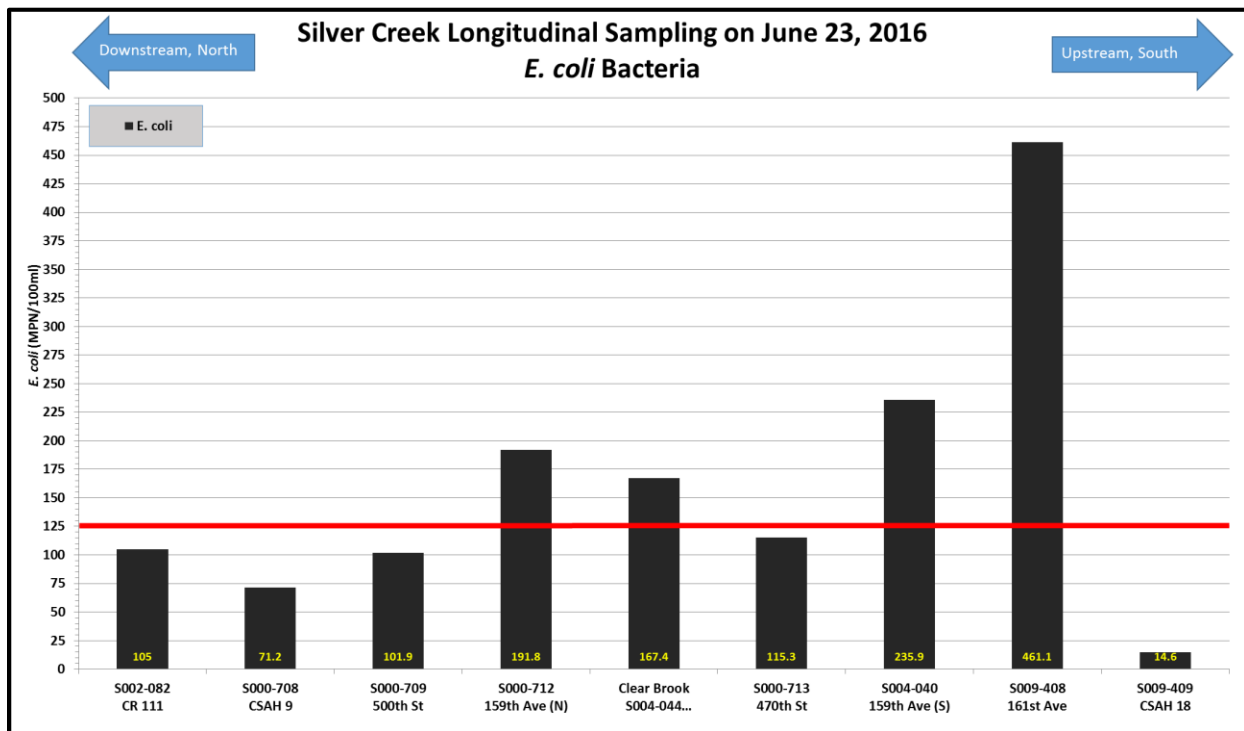
Windshield surveys were conducted within the Clearwater River watershed by the Water Quality Assistant and the Red Lake County SWCD to collect georeferenced photos of erosion problems.



Longitudinal samples were collected along the Clearwater River and its tributaries on June 7, 2016 after near-daily rainfall events during the first week of June 2016. Total suspended solids concentrations met the 30 mg/L standard at all sites (14 mg/L maximum in the Clearwater River at Red Lake Falls). Nitrates were extremely high, exceeding the 10 mg/L drinking water standard, in two tributaries of the Clearwater River: Beau Gerlot Creek and Terrebonne Creek.



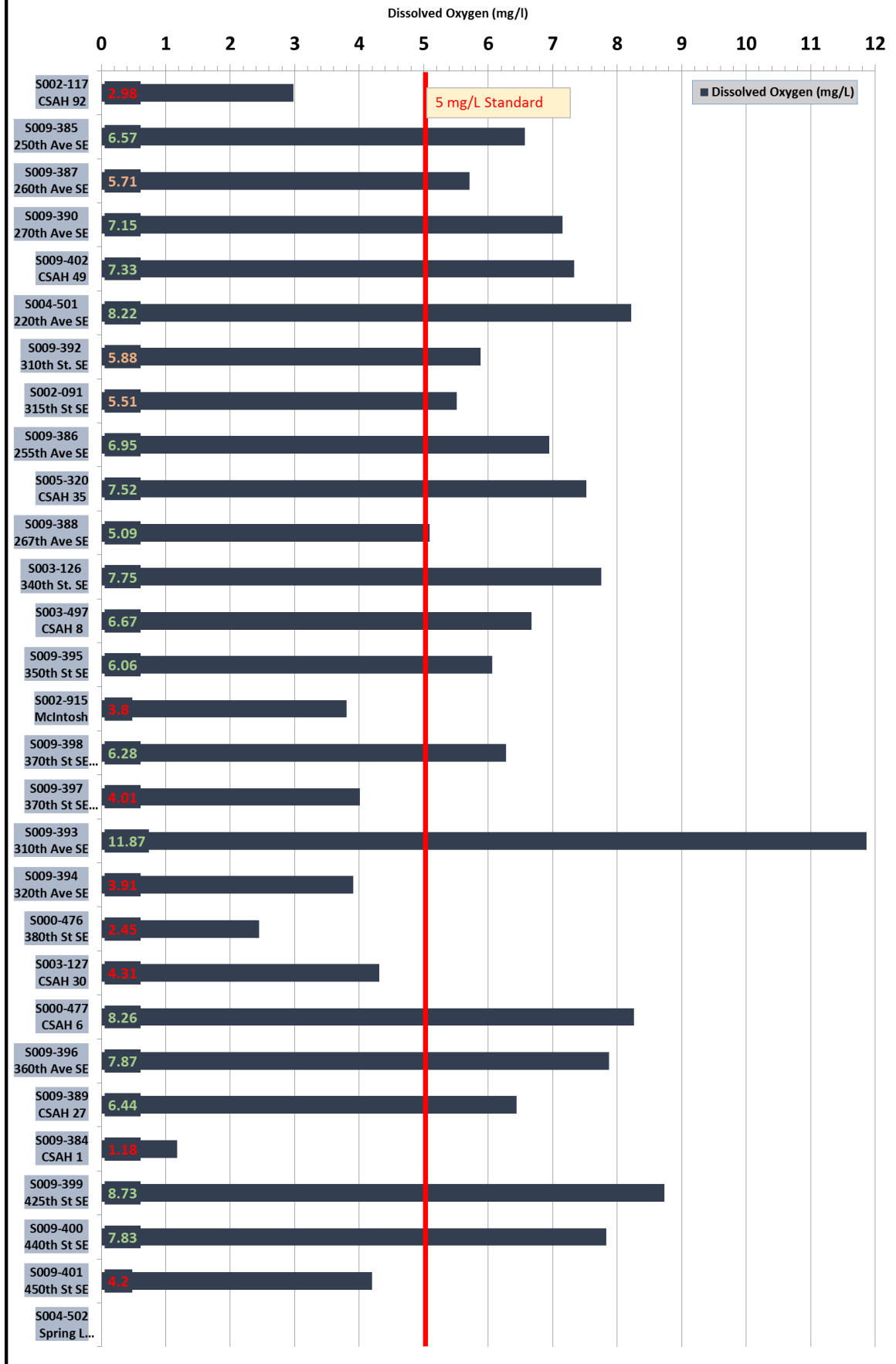
Longitudinal *E. coli* samples were collected along Silver Creek on June 23, 2016. *E. coli* concentrations peaked in the Clearbrook area, and then decreased at the downstream end of the stream. The most significant change was a 446.5 MPN/100ml increase between CSAH 18 and 161st Ave. The aerial photo (below) shows two livestock operations along Silver Creek between those two crossings. There appears to be a portion of the stream that is ponded and eutrophic. The ponding appears to be caused by an undersized culvert on a private driveway. Low dissolved oxygen readings were found at the furthest upstream site that was sampled at CSAH 18.



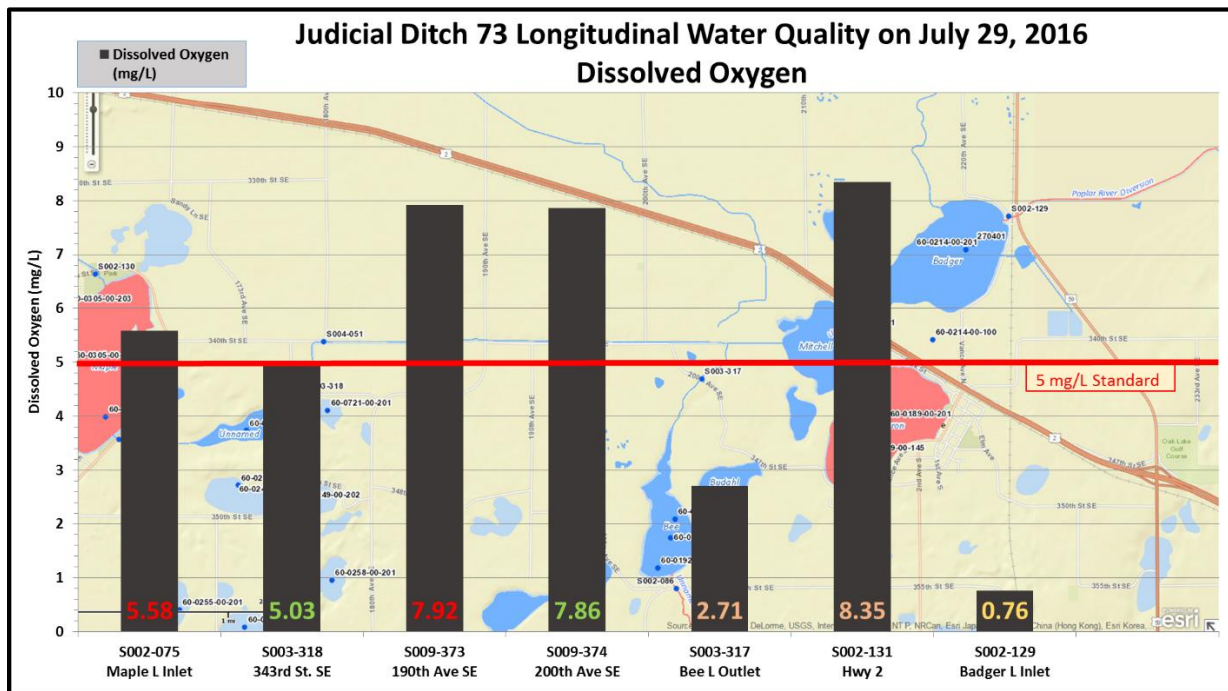
Longitudinal water quality measurements were recorded along the Poplar River. Dissolved oxygen is the main water quality concern along the Poplar River. Dissolved oxygen levels fluctuate significantly from site to site. Dissolved oxygen levels were relatively low at the two crossings upstream of Hwy 59 (310th St SE and 315th St. SE) on 7/7/16. Dissolved oxygen was also relatively low at 260th Ave, SE of Brooks and 267th Ave SE, north of McIntosh. Dissolved oxygen levels were less than the 5 mg/l water quality standard at a number of sites. Most of the sites in the following list were separated by sites with good dissolved oxygen levels. It seems that dissolved oxygen levels in the Poplar River can be depleted by natural features as the river flows through wetlands where gradient is low and decomposition rates are relatively high. Between those areas of dissolved oxygen depletion, however, are reaches in which dissolved oxygen levels recover to acceptable levels.

While collecting dissolved oxygen measurements along the Poplar River on 7/7/16, staff discovered that the Fosston lagoons were discharging into the Poplar River. The water smelled like excrement. The water was a “weird brown color.” The dissolved oxygen concentration at the CSAH 30 (downstream of the lagoons) crossing (4.31 mg/L) was just a little more than half of the concentration at the next crossing upstream (8.26 mg/l). The landowner downstream of this crossing called to complain about the water quality in the Poplar River on 7/7/2016. He was worried about whether or not it would be safe for his cattle to drink. RLWD staff collected a sample from the CSAH 30 crossing. Sampling results were provided to MPCA enforcement staff.

Poplar River Longitudinal Dissolved Oxygen on July 7, 2016

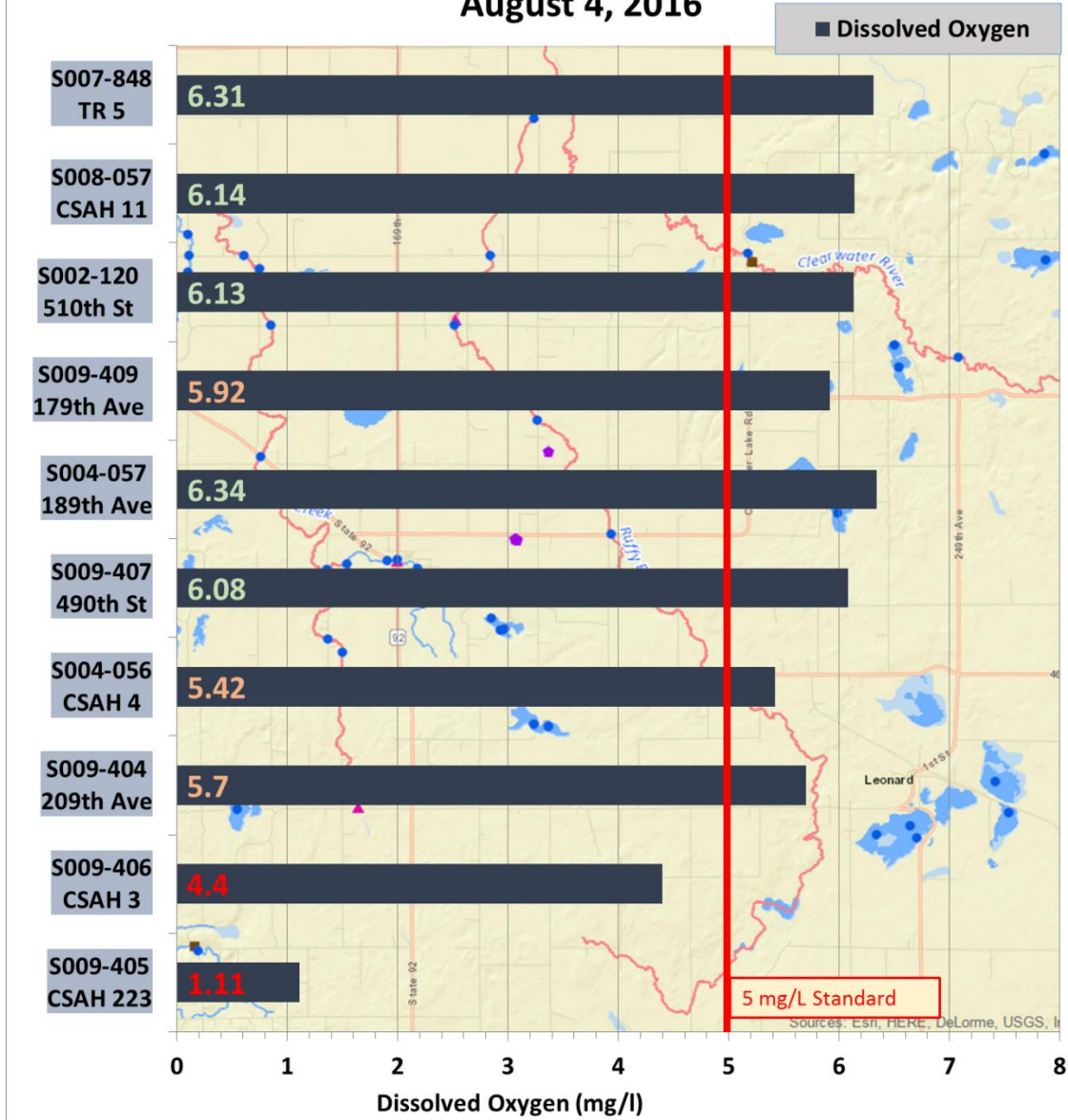


Longitudinal dissolved oxygen measurements were recorded along the Judicial Ditch 73 (Poplar River Diversion) drainage system on July 29, 2016. Dissolved oxygen levels fluctuated throughout the system. The dissolved oxygen concentration at the inlet of Badger Lake was only 0.76 mg/l (>5 mg/l is needed in order to meet the water quality standard). The Bee Lake outlet also had a very low dissolved oxygen concentration of 2.71 mg/l. The 343rd crossing just barely met the standard with a concentration of 5.03 mg/l. That measurement was recorded at 11:30 am. Due to the diurnal fluctuation of dissolved oxygen, the concentration was probably increasing at that time and would have been <5 mg/l if it had been measured earlier in the morning.

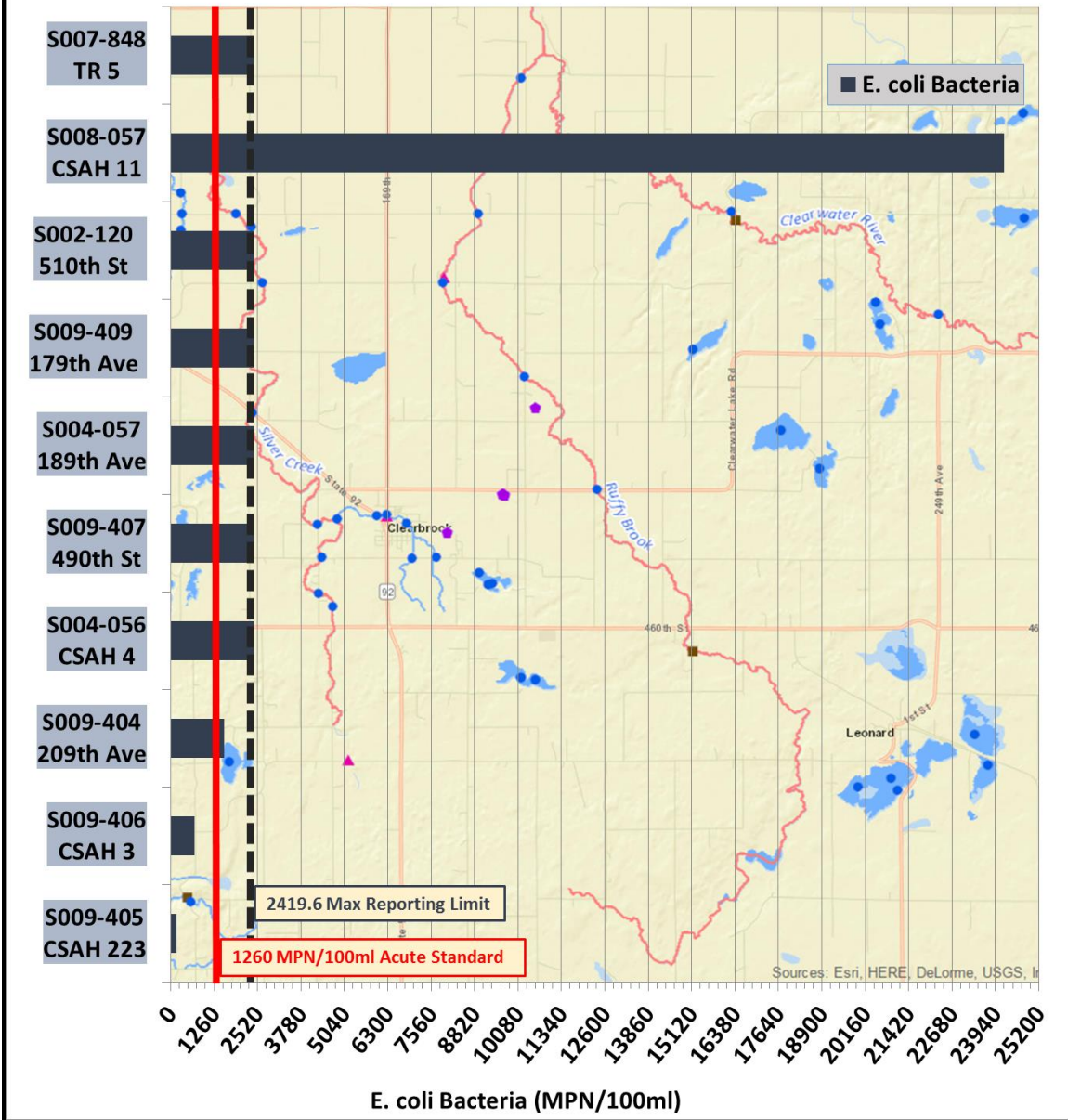


Longitudinal samples were collected along Ruffy Brook to identify the locations in which pollutants, particularly *E. coli* bacteria, increase along the stream. This will help identify the locations of pollutant sources in the watershed so that restoration efforts can be targeted and based upon real data. *E. coli* concentrations were greater than the maximum reporting limit of 2,419.6 MPN/100ml throughout much of the watershed – from CSAH 4 to the confluence with the Clearwater River. The lab performed a 10X dilution for the sample that was collected at CSAH 11 and the concentration still exceeded the diluted maximum reporting limit of 24,196 MPN/100ml. A measurable increase occurred between 209th Ave and CSAH 4, indicating that the Rydeen livestock operation along 199th Ave is contributing to the *E. coli* problem in Ruffy Brook. A significant increase in *E. coli* concentrations also occurred between CSAH 3 and 209th Ave. Livestock operations along that reach of the stream also seem to be contributing to the *E. coli* impairment. The unrestricted access to the stream also appears to be causing stream bank instability, causing portions of the channel to become wider and shallower. Livestock operations and other sources caused an increase in *E. coli* bacteria between CSAH 223 and CSAH 3. There also are sources of *E. coli* upstream of CSAH 223 that caused the concentration to exceed the chronic standard at that location (178.9). Low dissolved oxygen levels were found in the headwaters of Ruffy Brook at CSAH 3 and CSAH 223.

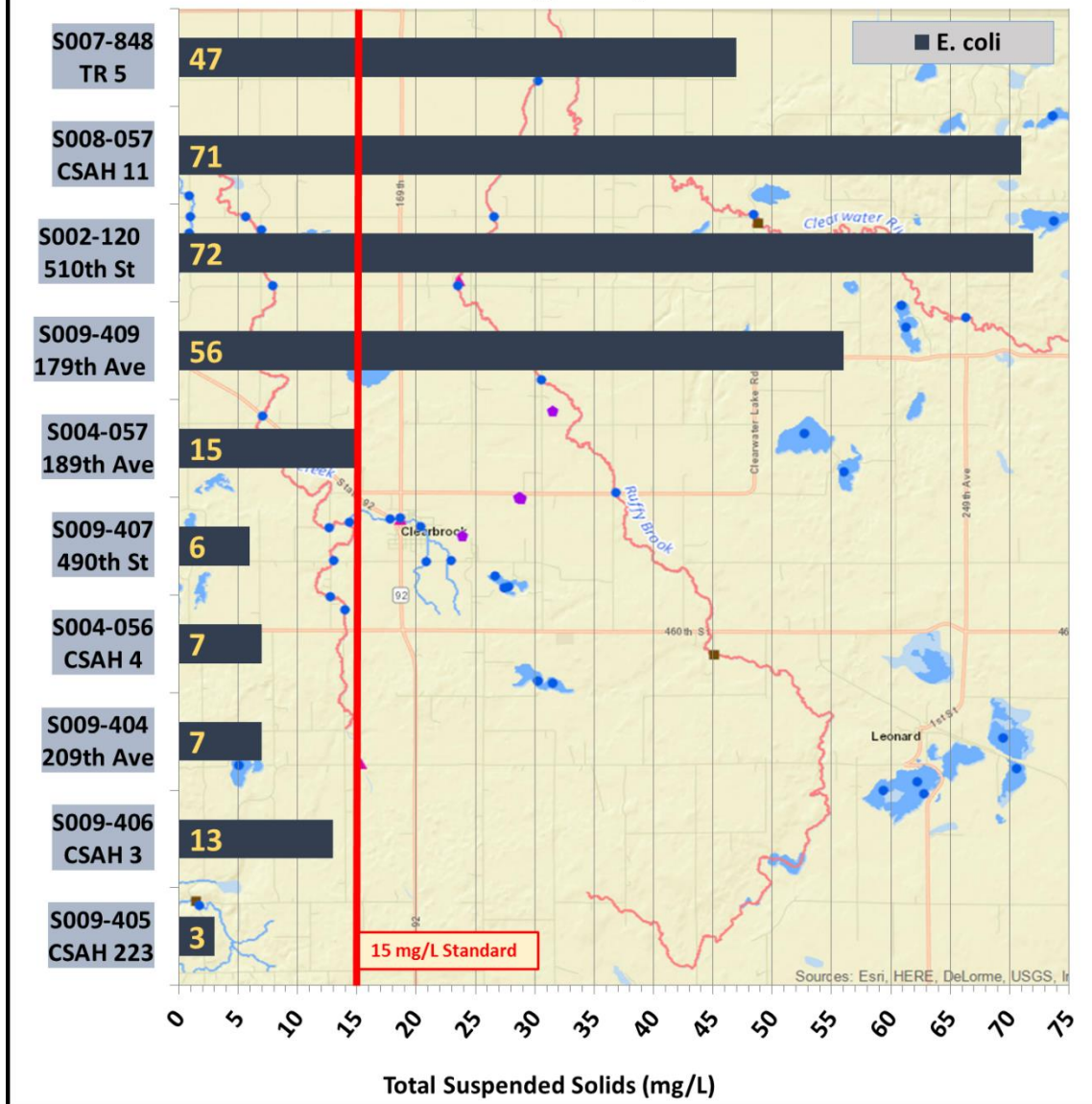
Ruffy Brook Longitudinal Dissolved Oxygen on August 4, 2016



Ruffy Brook Longitudinal *E. coli* on August 4, 2016

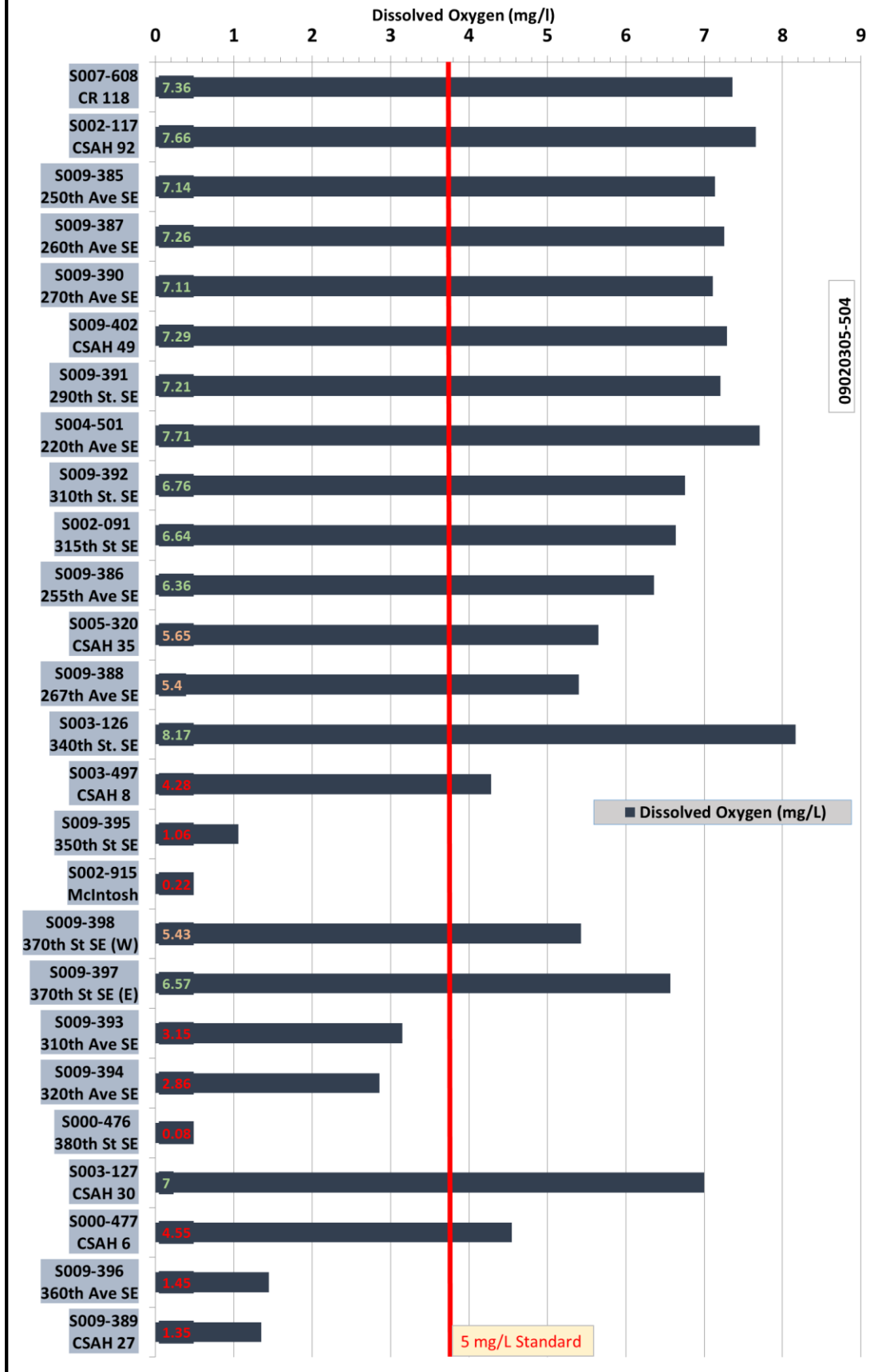


Ruffy Brook Longitudinal Total Suspended Solids on August 4, 2016

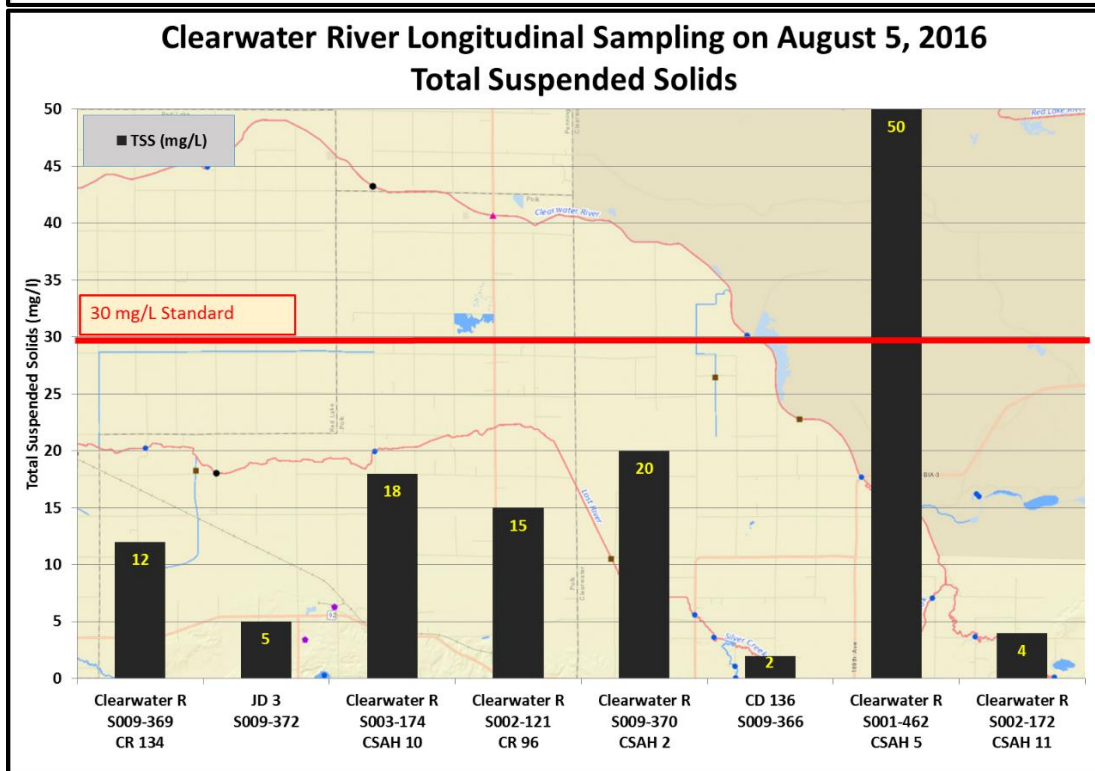
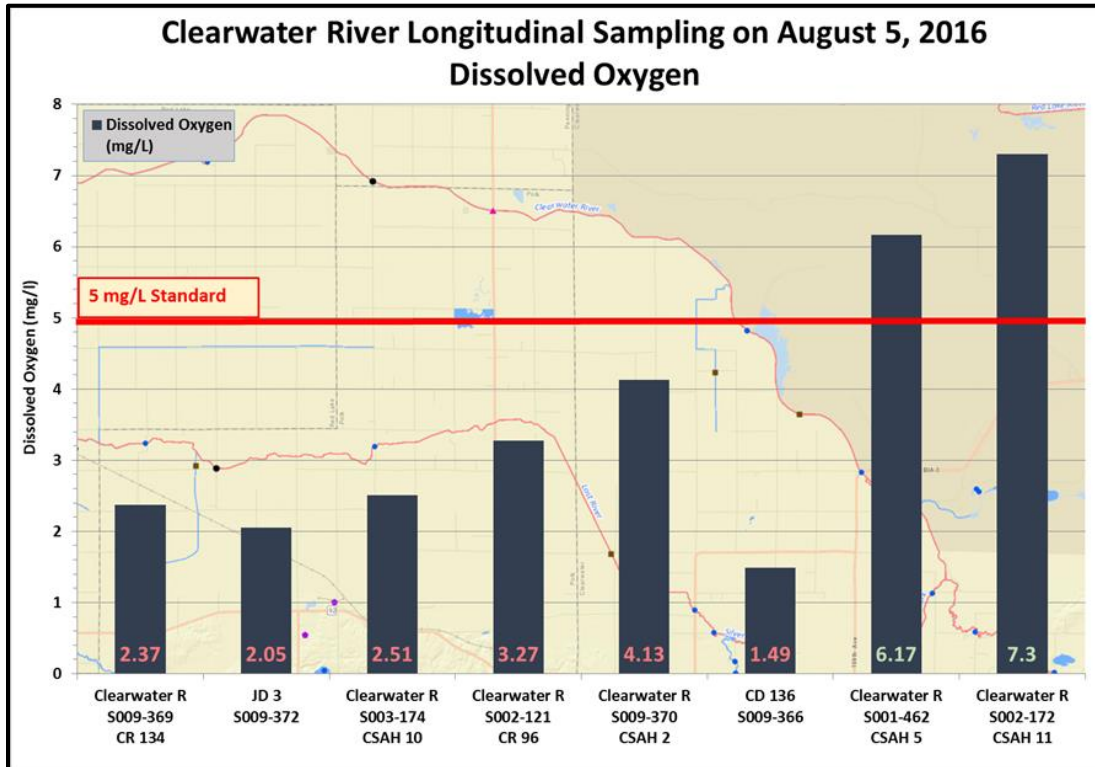


The Water Quality Assistant completed a set of longitudinal water quality measurements and samples along the Poplar River on 8/2/16 and 8/3/16. Dissolved oxygen levels were low at many of the crossings in the headwaters of the Poplar River. The dissolved oxygen concentration at the Spring Lake Outlet was okay, but DO levels were low at all of the crossings between that location and the CSAH 30 crossing near Fosston (450th St. SE, 440th St. SE, 425th St. SE, CSAH 1, CSAH 27, 360th Ave SE, and CSAH 6). Downstream of a good DO concentration of 7 mg/l at CSAH 30, dissolved oxygen crashed down to 0.08 at the next crossing (380th St. SE). Dissolved oxygen concentrations were also low at all of the other crossings upstream of 255th Ave SE, with the exception of the east crossing of 370th St. SE and 340th St. SE.

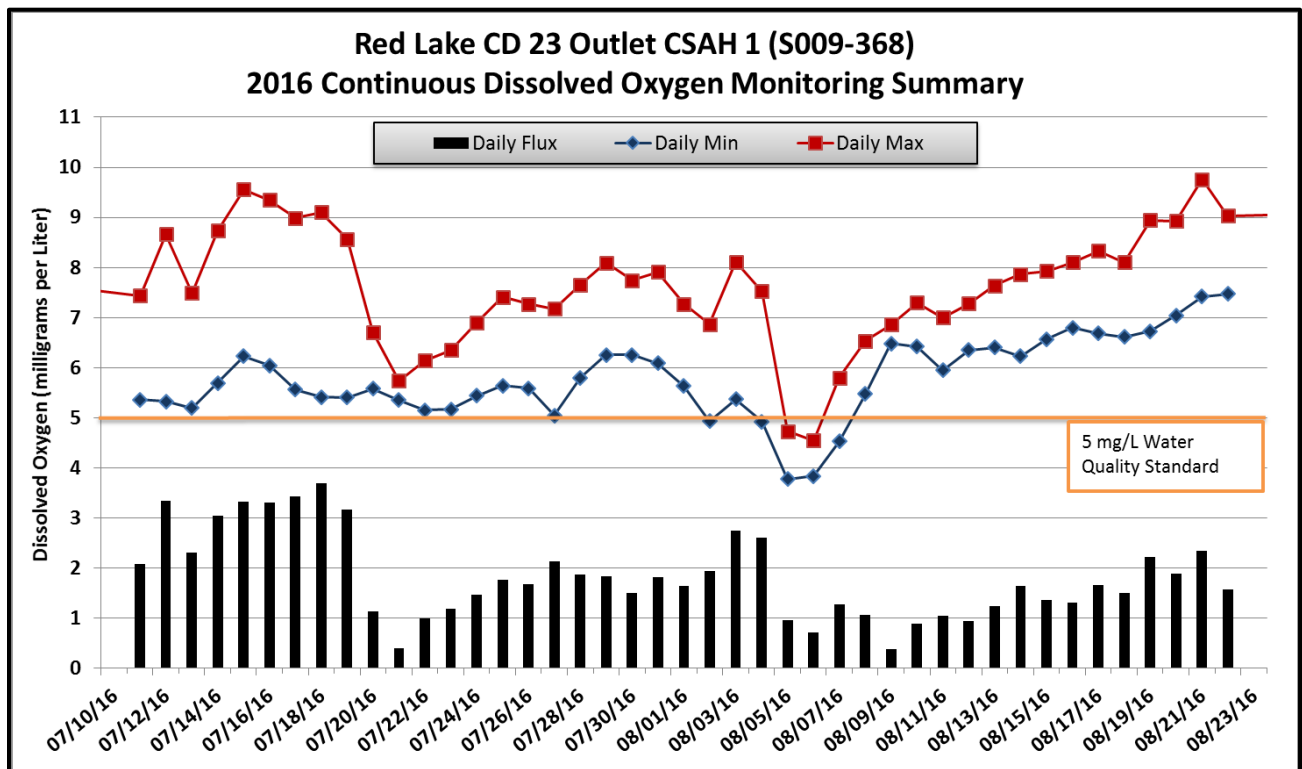
Poplar River Longitudinal Dissolved Oxygen August 1, 2016 through August 3, 2016

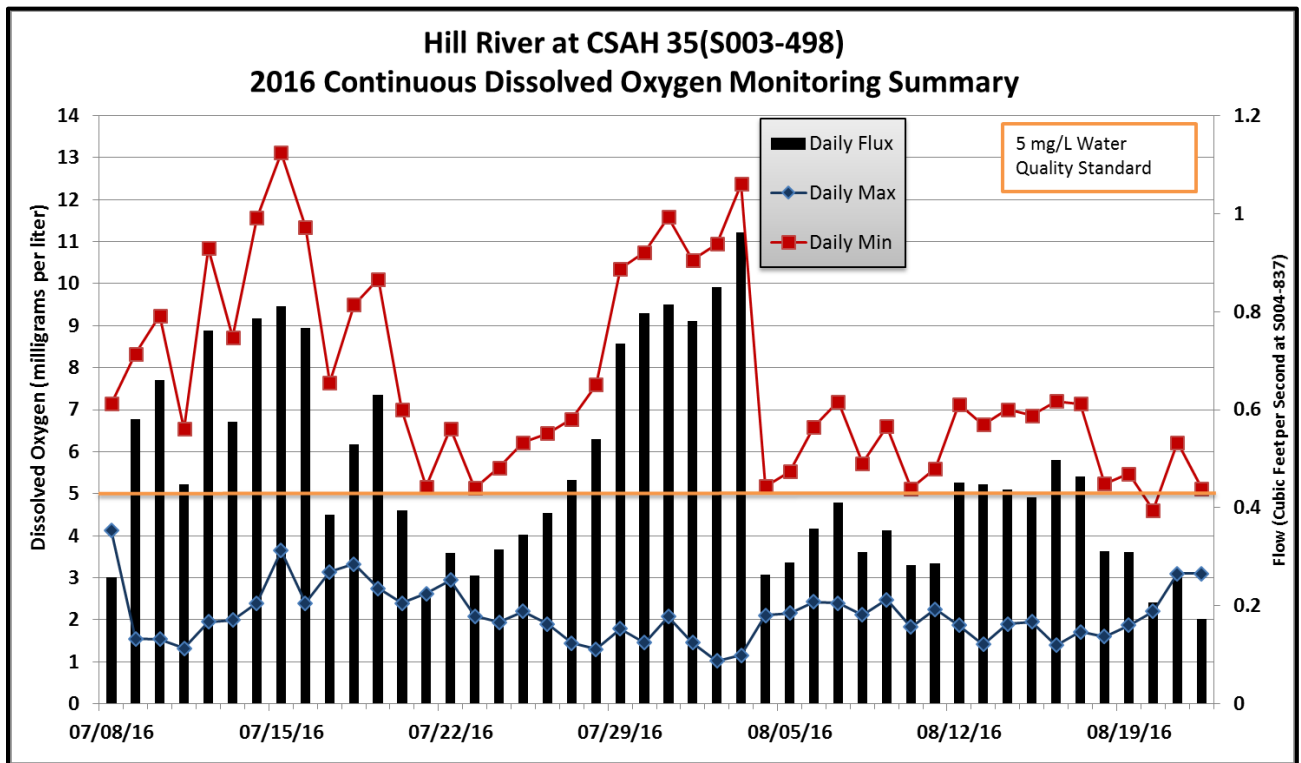
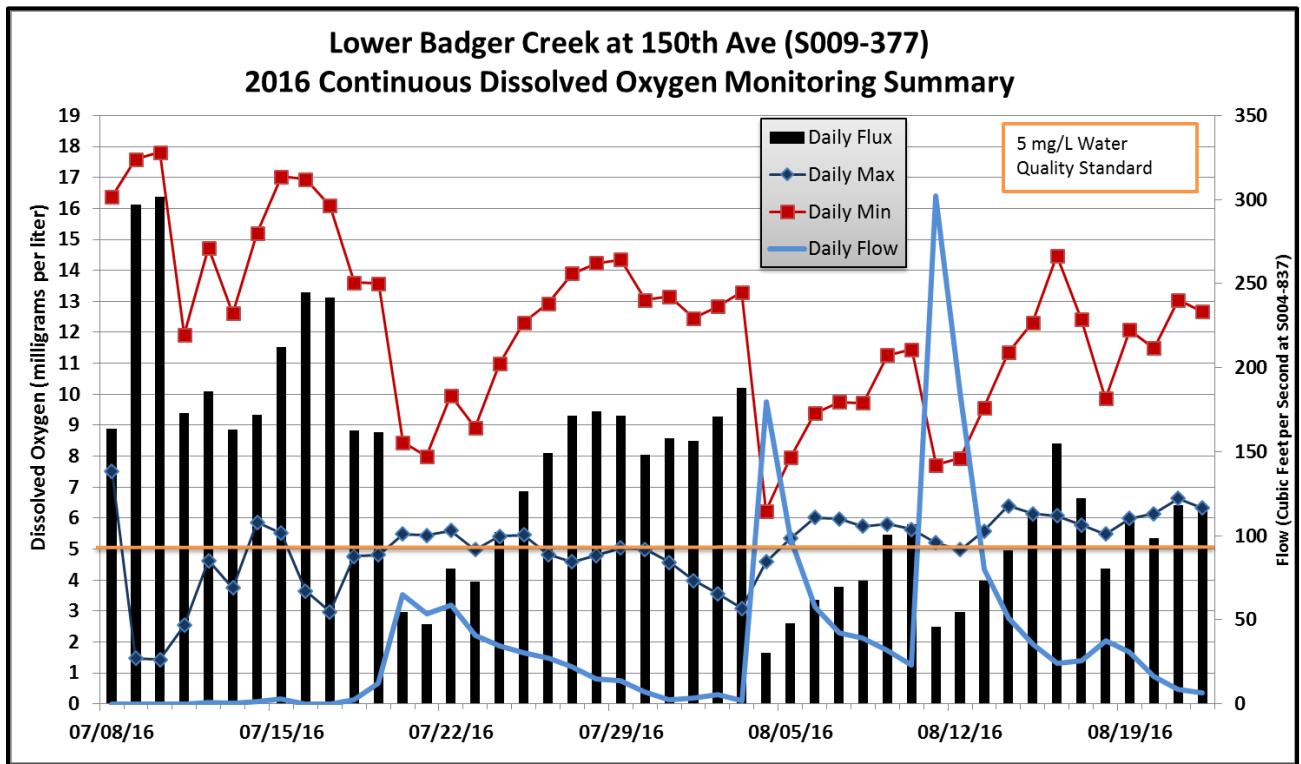


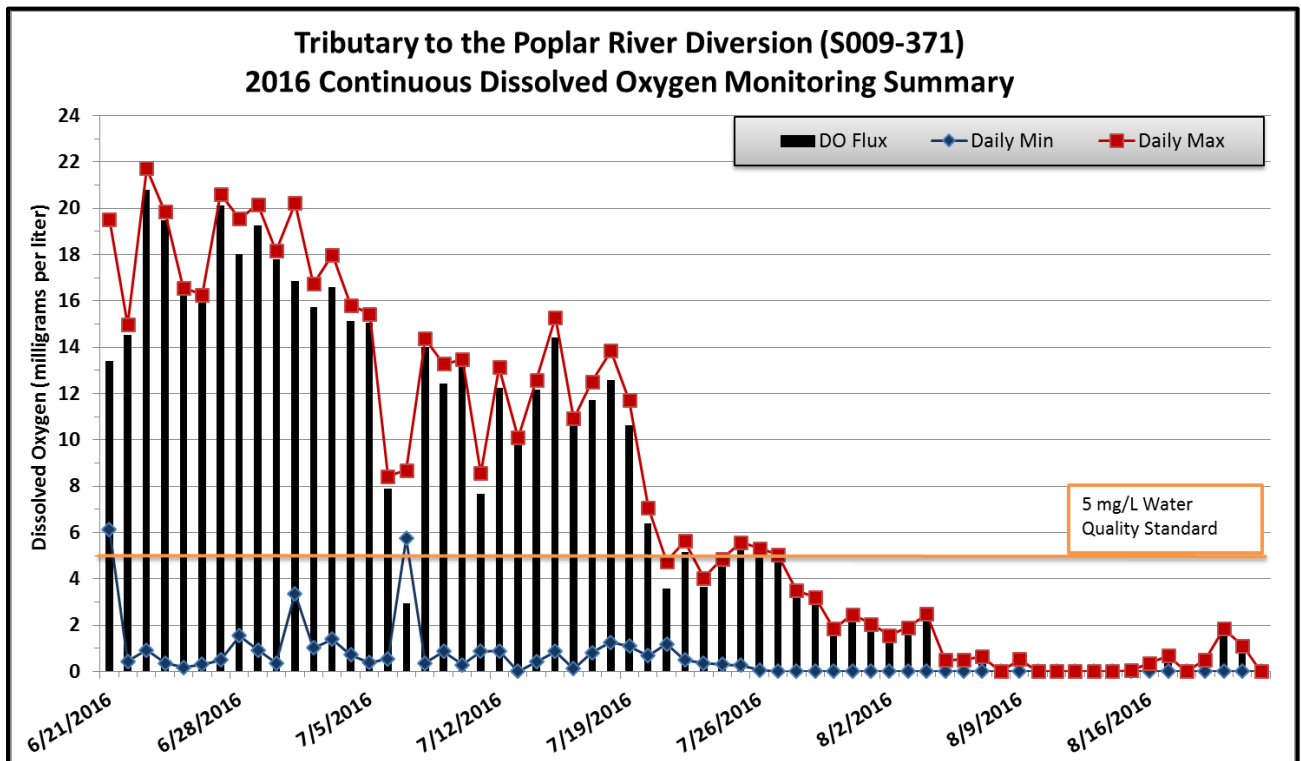
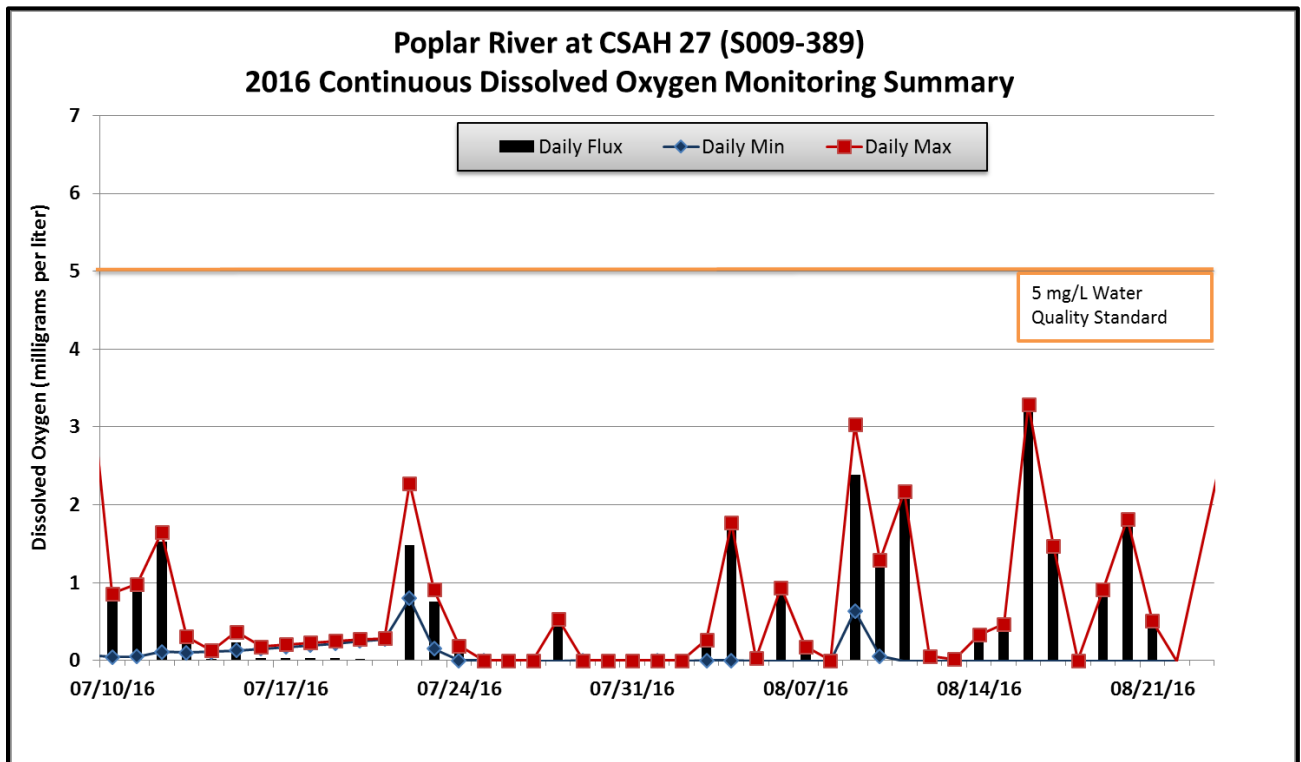
Longitudinal water quality samples and in-situ measurements were collected along the Clearwater River and its tributaries upstream and downstream of wild rice paddies while the paddies were being drained in preparation for harvest. Dissolved oxygen levels in the Clearwater River were clearly being negatively impacted by drainage from the paddies. Dissolved oxygen concentrations in ditches were very low, despite high and “normal” flows. Turbidity and TSS are also increased in the river downstream of the paddies, but only one site exceeded the 30 mg/l TSS standard. Nitrogen and phosphorus concentrations increase significantly.



HOBO dissolved oxygen loggers were deployed in Lower Badger Creek at 150th St., Poplar River at CSAH 27, Hill River at CSAH 35, Red Lake County Ditch 23 at CSAH 1, and the unnamed ditch that flows between Gerdin Lake and the Poplar River Diversion at 240th Ave SE. All of those sites are located on reaches where biological impairments have been found, but continuous dissolved oxygen data had not yet been collected. Continuous dissolved oxygen data was compiled and corrected in the fall. Continuous dissolved oxygen records (2016 and past years) were sent to Chuck Johnson, the MPCA employee that is writing the Clearwater River stressor identification report.







The Water Quality Assistant helped DNR staff with an assessment of culverts along biologically impaired reaches in the Clearwater River watershed. The culverts were surveyed to determine whether any were limiting fish passage. District staff assisted MN DNR staff with geomorphology assessments along biologically impaired reaches that were not assessed during previous geomorphological work.

- Poplar River upstream of CSAH 27, east of Fosston

- Poplar River downstream of 315th St. SE, north of Erskine
- Poplar River upstream of CSAH 30, near Fosston

Samples were collected from Whitefish Lake. Dissolved oxygen levels and index of biological integrity scores were low in the Poplar River near Whitefish Lake. The Poplar River passes through a wetland area that is adjacent to the lake. The Whitefish Lake sampling was conducted to determine whether eutrophication within the lake could be contributing to the dissolved oxygen and aquatic life deficiencies in the Poplar River. The lake met water quality standards in all of the samples that were collected during the summer of 2016, despite notable amounts of algae near shore during some sampling events.

Microbial Source Tracking (fecal DNA) samples were collected on July 14, 2016, July 28, 2016, and August 4, 2016.

- Beau Gerlot Creek (CR 114, S008-058) – 125.9 MPN/100ml
 - Birds: Present (trace)
 - Humans: Present (trace)
 - Ruminants: Absent
- Brooks Creek (Hwy 92, S006-506) – 248.1 MPN/100ml
 - Birds: Present (trace)
 - Humans: Present (trace)
 - Ruminants: Absent
- Hill River (CR 119, S002-134) – 435.2 MPN/100ml
 - Birds: Present (trace)
 - Humans: Present (trace)
 - Ruminants: Present
- Lost River, upstream of Pine Lake (109th Ave, S005-283) – 50.4 MPN/100ml
 - Birds: Present (trace)
 - Humans: Not detected
 - Ruminants: Not detected
- Judicial Ditch 73 near Rydell National Wildlife Refuge (343rd St. SE, S003-318) – 143.9 MPN/100ml
 - Birds: Present (trace)
 - Humans: Not detected
 - Ruminants: Not detected
- Terrebonne Creek (Hwy 92, S004-819) – 73.3 MPN/100ml
 - Birds: Not detected
 - Humans: Not detected
 - Ruminants: Not detected
- Silver Creek (159th Ave, S000-712) – >2,419.6 MPN/100ml
 - Birds: Present (trace)
 - Humans: Present (trace)
 - Ruminants: Present (high concentration)
 - Dog: Present (low concentration)
 - Goose: Absent
- Ruffy Brook (CSAH 11, S008-057) – >24,196 MPN/100ml
 - Birds: Absent
 - Humans: Absent
 - Ruminants: Present (moderate concentration)

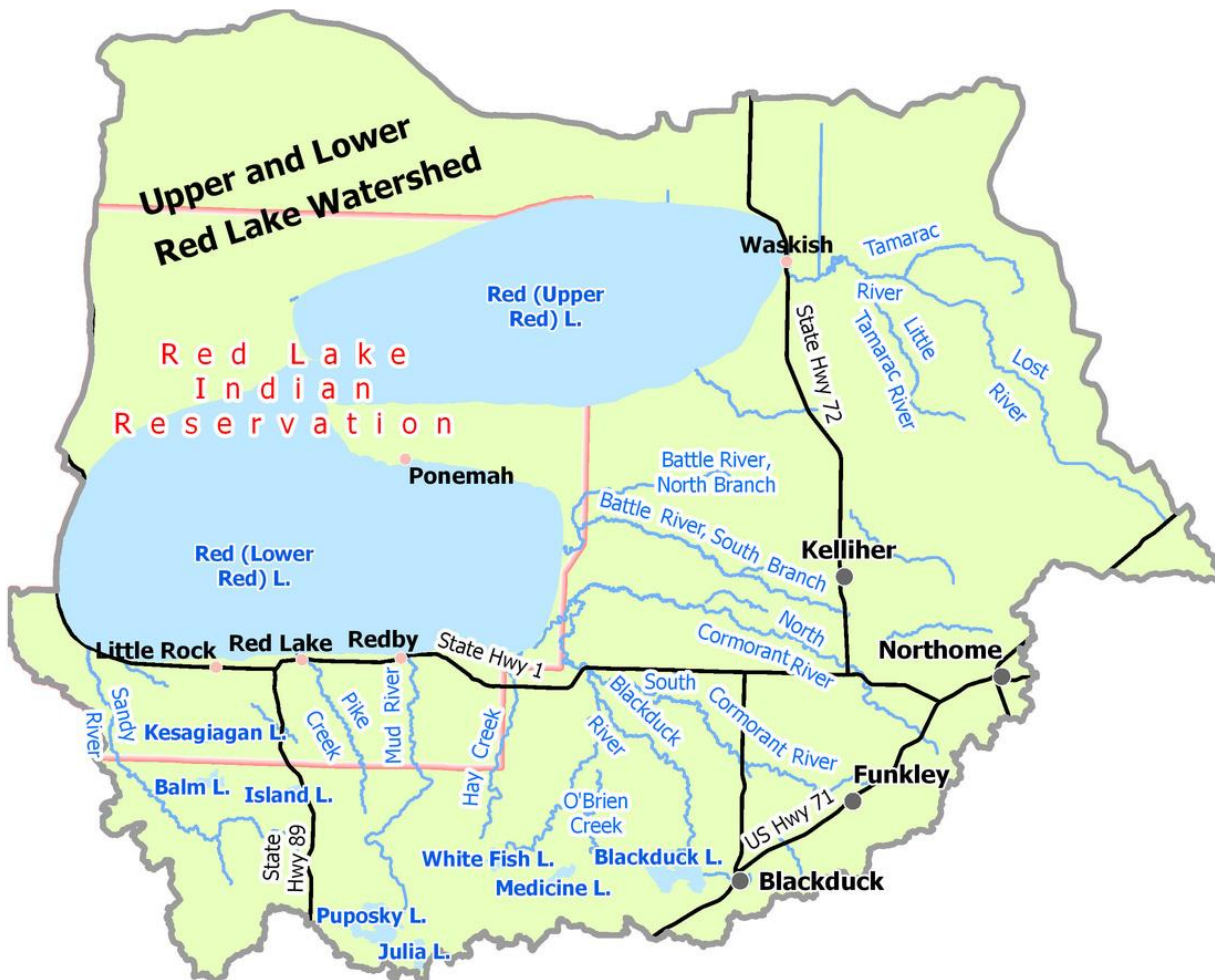
- Clearwater River (CSAH 10, S003-174) – 1,413.6 MPN/100ml
 - Birds: Absent
 - Humans: Absent
 - Ruminants: Present (low concentration)
 - Goose: Absent

A flow rating curve was created for the Hill River at the 335th Ave crossing. The rating curve was used to calculate a flow record from manual stage measurements and measurements recorded with a water level logger. The dissolved oxygen record was then filtered to remove days in which there was zero or low flow. Removing those data points did not meaningfully decrease the rate at which dissolved oxygen levels fail to meet the 5 mg/l standard. Therefore, something other than flow is negatively affecting dissolved oxygen concentrations in the Hill River.

Station establishment forms were completed and sent to the MPCA for monitoring sites that were sampled for the first time in 2016 (stressor identification monitoring and longitudinal sampling). The 2016 data that was collected for the Clearwater River WRAPS project was entered, reviewed, and submitted to the MPCA for storage in the EQuIS database.

Water level loggers were retrieved from Clearwater River watershed monitoring sites in early December as the weather was finally cold enough for the water in stream to begin freezing.

Upper/Lower Red Lakes Watershed Restoration and Protection Strategy (WRAPS)



The effort to complete a WRAPS project for the Upper and Lower Red Lakes major watershed is being led by the Red Lake DNR. They have been collecting flow data, sampling data, and continuous dissolved oxygen data. Stressor identification work was completed in 2016 along streams that failed to meet biological standards. That work included the dissolved oxygen logger deployments and geomorphological assessments. The watershed was assessed by the MPCA in 2016. District staff and Red Lake DNR staff contributed to the assessment process, particularly at the Professional Judgement Group meeting that was held for the watershed.

Improvements were made to Upper/Lower Red lakes web pages on the www.rlwdwatersheds.org website.

- <http://www.rlwdwatersheds.org/2297560-general-info>
- <http://www.rlwdwatersheds.org/2297608-wrap-info>

Anticipated New Impairments from the 2016 Assessment of the Upper/Lower Red Lakes Watershed						
AUID	Reach Name	Reach Description	Miles	Aquatic Life	Aquatic Rec	Potential New Impairments
09020302-544	O'Brien Creek	T149 R32W S2, south line to T150 R32W S23, north line	8.57	NS	NS	DO, E. coli
09020302-521	Pike Creek	Headwaters (Tenmile Lk 04-0267-00) to Lower Red Lk	14.69	NS	FS	DO, inverts
09020302-510	Blackduck River	Blackduck Lk to O'Brien Cr	17.86	FS	NS	E. coli
09020302-512	Blackduck River	South Cormorant R to North Cormorant R	7.94	IF	NS	E. coli
09020302-507	South Cormorant River	Headwaters to Blackduck R	31.59	FS	NS	E. coli
09020302-518	Hay Creek	Headwaters (Dark Lk 04-0167-00) to Lower Red Lk	14.59	FS	NS	E. coli
09020302-522	Sandy River	Headwaters (Sandy Lk 04-0307-00) to Lower Red Lk	25.5	FS	NS	E. coli
09020302-600	Unnamed creek	Headwaters to Upper Red Lk (04-0035-01)	0.57	NA	NS	E. coli
09020302-503	Battle River, North Branch	Headwaters (Unnamed ditch) to S Br Battle R	13	NS	NS	E. coli, fish
09020302-502	Shotley Brook	Headwaters to Upper Red Lk	11.56	NS	NS	E. coli, inverts
09020302-508	Darrigans Creek	Headwaters (Whitefish Lk 04-0137-00) to O'Brien Cr	11.39	NS	NS	E. coli, inverts
09020302-501	Tamarac River	Headwaters to Upper Red Lk	22.79	NS	FS	fish
09020302-602	Lost River	Unnamed cr to Tamarac R	10.67	NS	FS	fish
09020302-605	Perry Creek	Unnamed cr to Cormorant R	7.06	NS	IF	fish
09020302-506	North Cormorant River	Headwaters to Blackduck R	39.13	NS	NS	TSS, DO, E. coli
09020302-541	Mud River	T150 R33W S16, south line to Lower Red Lk	9.33	NS	NS	TSS, E. coli

Hg = Mercury | DO = Dissolved Oxygen | FS = Full Support | NS = Not Supporting | IF = Insufficient Data | CF = Carried Forward

Public Education

- District staff presented on the use of standard operating procedures for water quality monitoring at the 13th Annual Red River Basin Water Quality Monitoring Training Session.
- The District continued to support the River Watch program, which is described in more detail in its own section of this report.
- District staff participated in the Pennington County Outdoor Education Day
- District staff participated in the Northwest Minnesota Water Festival events in Warren and at Rydell National Wildlife Refuge
- Monthly water quality reports are available online at <http://www.redlakewatershed.org/monthwq.html>.
- An open house event was held for the Thief River WRAPS project in June 2016
- Information about the Red Lake Watershed District, programs, and contacts is available at the www.redlakewatershed.org.
- Watershed-based information (reports, photos, projects, contacts) for the Red Lake River, Upper/Lower Red Lakes, Clearwater River, Thief River, and Grand Marais Creek major watersheds can be found online at: www.rlwdwatersheds.org.
- The District maintains a Facebook page: <https://www.facebook.com/Red-Lake-Watershed-District-266521753412008/>.

River Watch

In 2016, nine schools located within Red Lake Watershed District’s boundaries participated in River Watch. Five of which received direct support from RLWD staff, they included: Grygla, Win-E-Mac, Red Lake County Central, Red Lake Falls and Clearbrook-Gonvick. International Water Institute (IWI) and University of MN Crookston led the remaining school groups in the watershed which included: Fisher, Red Lake, Crookston, and Sacred Heart of East Grand Forks, MN. River Watch water quality monitoring began late March and ended late October. Approximately 40 different sites were sampled in 2016 by River Watch schools with in RLWD boundaries.



November 2015, IWI held one of three River Watch 2016 Kick Offs at the RLWD office in Thief River Falls, MN. Schools received a poster assignment to be presented at the spring 2016 River Watch Forum. This year’s poster contest theme was “River Recreation”. River Watch teams were asked to develop and promote a recreation plan for their local river. On March 15, 2016, River Watch schools from North Dakota and Minnesota presented their posters and recreation plans at the annual River Watch Forum held at University of MN Crookston campus. Clearbrook-Gonvick hadn’t participated in a River Watch forum since 2011 and made a great showing in 2016 receiving silver from the judges for their poster. Fisher won gold in the people’s choice poster contest. Students and teachers attended several breakout session with topics ranging from aquatic invasive species, drones, and river access laws.

River Watch water quality data is part of a data set used by the Minnesota Pollution Control Agency to conduct use assessment, there are some areas within the watershed where River Watch data is the only data collected, making River Watch a very beneficial program for collecting water quality data within the watershed district.



River Watch Forum 2016

Clearwater – Gonvick - Silver Award “Judges Choice”



River Watch Forum 2016

Red Lake County Central



River Watch Forum 2016

Win-E-Mac



River Watch Forum 2016

Red Lake Falls



River Watch Forum 2016

River Explores Kayak Trip:

Clearbrook-Gonvick and Red Lake Falls River Watch teams both participated in a River Explorers kayak trip in June and July, respectively. Each trip was lead under the guidance of International Water Institute (IWI) staff. On both trips students observed river characteristics, local flora and fauna, and overcame challenges such as kayaking over beaver dams and around tree snags. Students were encouraged to take photos using water proof geotagging cameras, that log the exact location a picture is taken.



On June 6th, Clearbrook-Gonvick started their paddle at the Clearwater River dam ending where the Clearwater River passes under Clearwater Co Road 4 (3.8 miles) which is also one of the sampling sites for the river watch team. Two of the four students had never been kayaking before, which lead to many “swim breaks”. By the end of the trip they all realized how lucky they are to have such a beautiful river in their back yard.

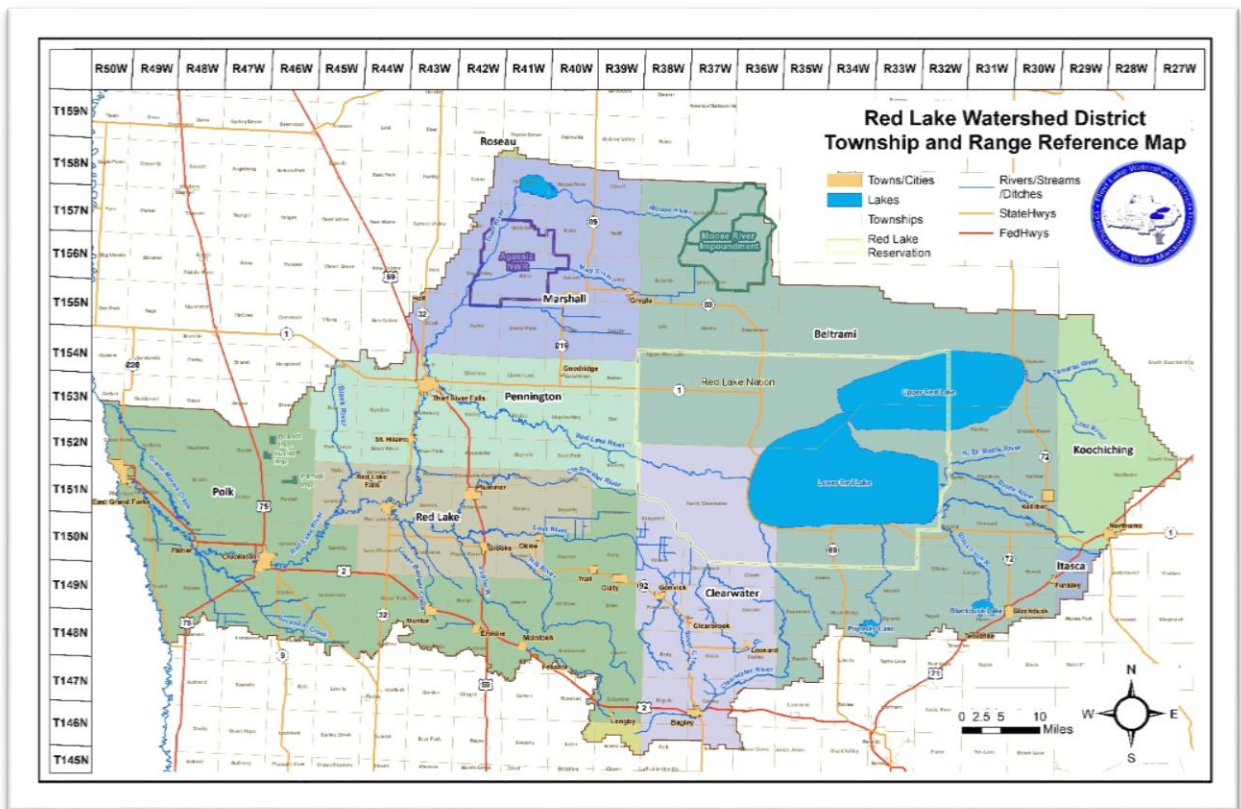
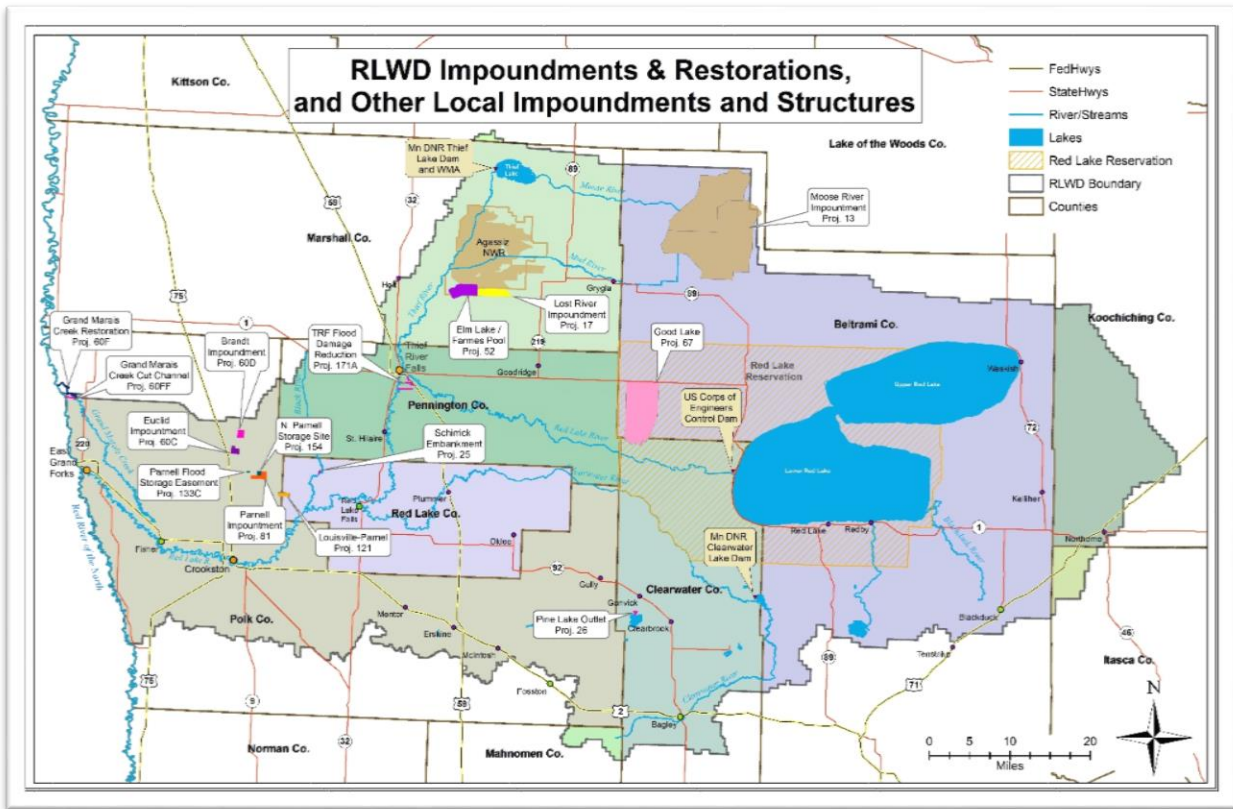


On July 19th, the Red Lake Falls River Watch team, three students and their advisor, paddled a 4.8 mile reach of the Red Lake River from MN Highway 32 to the confluence with the Clearwater River at Sportsmen's Park in Red Lake Falls, spotting many songbirds, hundreds of cliff swallows on the river bluffs, mature bald eagle, and many sunbathing turtles. Historic landmarks were pointed out along the river such as old saw mills, flour mills, hydroelectric plant, and fur trading posts.



Challenger Elementary Field Trip

2016 was the 6th consecutive year of RLWD involvement with 4th graders at Challenger Elementary in Thief River Falls. In October, RLWD staff and 4th grade science teacher Sherry Miller gathered students in Hartz Park to learn about watersheds and water quality. RLWD staff did a hands on activity demonstrating what a watershed is and how it works. Staff also demonstrated the use of a Van Dorn water sampler and Secchi transparency tube. Students were furnished with field kits to do their own water quality testing of Red Lake River water collected with the Van Dorn sampler.



PTMapp (Prioritize Target and Measure Application)

PTMapp uses LiDAR data and terrain analysis methods to prioritize field scale locations for conservation and best management practices. Generating data to prioritize resources/issues, target specific fields to place CPs and BMPs, and measure water quality improvement by tracking expected nutrient and sediment load reduction to priority resources.

The tool enables users to build prioritized and targeted implementation scenarios, measure the cost-effectiveness of the scenario for improving water quality, and report the results to pursue funds for project implementation.

PTMapp is being applied to the One Watershed One Plan development for the Red Lake River Watershed. RLWD staff continued to beta test PTMapp throughout 2016. More training and data development needs to take place before PTMapp can be used to generate data in other sub-watersheds within RLWD.

Water Quality Partnerships

The District provides support to other organizations that are working on projects that will improve water quality and habitat within the District's boundaries. That support can come in the form of technical advice/information, financial support, and project administration support. The District considers collaborations to be very important and encourage local governmental units to continue their request for assistance from the District wherever possible.

- The District continued to support the River Watch program.
- The District approved a \$10,000 funding request from the Marshall Clearwater SWCD to assist in paying for engineering and design of approximately 50 side water inlet culverts (SWI's) throughout the Thief River Watershed in Marshall County. Marshall County SWCD received 75% cost share assistance through BWSR Clean Water Funds, with landowners paying the remaining 25% for the construction of the installation of the SWI's.
- Bruce Anspach, Beltrami County Environmental Services/Aquatic Invasive Species (AIS) Lake Technician presented information to the Board regarding the Beltrami County AIS program. Anspach stated that Beltrami County received \$189,000 in funding to assist in the AIS program. From that funding, the county set aside \$100,000 that will aide in the inspection of watercraft and helps educate watercraft users of best management practices. Their goal is to help educate users to help prevent the spread of AIS in area water bodies. Anspach discussed the use of volunteer inspectors to help expand public awareness. Inspection and education of the Upper Red Lake has begun, with volunteers receiving mileage pay as an incentive to help defray the cost to the volunteer. Car counters have been purchased and installed at access points where they currently do not have volunteers. Anspach has received mixed emotions from resort owners that have private access to lakes. Discussion was held on the installation and funding of a decontamination unit to be operated in the Waskish area. The Board of Managers approved a one-time payment of \$35,000 to help fund mileage reimbursement for the Upper Red Lake access, increased inspection hours, inspections at several smaller lakes, installation of additional car counters, and the installation of an additional decontamination unit (\$4,000 was earmarked for the decontamination unit).
- The Red Lake River Corridor Enhancement Joint Powers Group has been revived. Funding is available for projects through the Greater Minnesota Parks and Trails Commission for trails of regional or statewide significance. The group successfully applied to get the Red Lake River corridor recognized as a trail of regional or statewide significance. That designation should open up funding opportunities to improve recreational infrastructure (e.g. boat/canoe/kayak accesses) along the Red Lake River. The effort was led by staff from the City of Crookston.
- The Board of Managers donated \$300 to the Area I Envirothon to promote education and awareness of water quality issues.

- The Board of Managers reviewed a letter of request from the Gully Area Sportsmen’s Club for funding assistance to replace a dissolved oxygen meter for testing oxygen levels on Pine Lake. Replacement parts are not available for the current meter. The Board of Managers voted to approve the funding assistance with the Gully Area Sportsmen’s Club for the purchase of a new Dissolved Oxygen meter for testing of oxygen levels in an effort to support water quality on Pine Lake.
- The District Board of Managers approved the request of the Clearwater SWCD in the amount of \$6,000 for two livestock exclusion projects along the Clearwater River and Lost River. The Clearwater River project included 1.5 miles of fencing which will exclude livestock from entering the Clearwater River. Total project costs is \$11,698. The Lost River project installed fence as well as alternative water source. Total project costs for this project is \$9,885.75.
- The Board of Managers provided financial assistance of up to \$500 to the June 8-10th Paddle Events that were hosted by the Wilderness Inquiry and International Water Institute in Thief River Falls, Crookston, and East Grand Forks. That funding contributed to money needed to provide a light meal for those in attendance. Managers and staff also attended some of the events.

2017 Plans

- Thief River Watershed Restoration and Protection Strategy public review process
 - New, small contract with the MPCA
 - Calculate an additional E. coli bacteria TMDL (Mud River) and incorporate associated discussion into the TMDL and WRAPS reports.
 - Prepare TMDL and WRAPS reports for public notice by addressing USEPA and MPCA staff comments in draft documents.
 - Assist MPCA staff in preparing responses to public comment and prepare TMDL and WRAPS reports for final approval by incorporating appropriate public comments into the documents.
- Red Lake River Watershed Restoration and Protection Strategy public review process
 - New, small contract with the MPCA
 - Prepare the draft TMDL and WRAPS reports for USEPA preliminary review, public notice and final state and federal approval.
 - Assist MPCA staff in responding to USEPA comments on draft TMDL Report.
 - Incorporate USEPA and MPCA staff suggested changes to document in preparation for public notice.
 - Assist MPCA staff in responding to public comments on draft TMDL and WRAPS reports.
 - Incorporate appropriate public comments into the TMDL and WRAPS reports and prepare documents for final state and USEPA approval.
- Write a draft Clearwater River Watershed Total Maximum Daily Load Report
- Write a draft Clearwater River Watershed Restoration and Protection Strategy
- Clearwater River Open House Event
- Sampling for the District’s long-term monitoring program in April, June, August, and October.
- Continuous dissolved oxygen monitoring at several locations.
- Stage and flow monitoring

Other Watershed Activities

Farmstead Ring Dike (RLWD Project #129AP)

The District constructed the Chris Ross farmstead ring dike in 2016; located in Fairfax Township, Polk County, east of the City of Crookston.

Dike Length (ft.)	Cubic Yards	Average Height (ft.)	Construction Cost
1,380	2,950	3.0	\$32,123.00

Construction costs for the ring dikes vary, and depend upon the amount of cubic yards needed for the dike, availability of clay borrow material, amount of tree clearing, culverts, flood gates, etc.

The funding breakdown for the ring dike program is shared by the following parties, in the following percentages:

- State of Minnesota 50%
- Red River Watershed Management Board 25%
- Red Lake Watershed District 12.5%
- Applicant 12.5%

At this time, no additional grant money is anticipated to help fund future farmstead ring dikes.

Ross Ring Dike, Fairfax Township, Polk County



North levee wall



South levee wall and control gate

Permits (RLWD Project #90)

A total of 189 permit applications were received in 2016. Subsurface drain tile is still relatively new (September 30, 2015) to the District's permitting policy. Since tile projects continue to be installed in most of the counties within the District, and to better inform the public, presentations were given at several County Township Association meetings to go over the need and criteria involved in the permitting procedure.

The District also dealt with permit violations relating to unpermitted/unauthorized work. Written warnings were sent explaining that if there is a second offense, the responsible person or entity could possibly be subject to an administrative fee, re-storing the work to the original condition, and paying for any engineering and attorney's fees incurred by the District.

Examples of non-permitted/unauthorized work

The District has performed surveys and established proposed grades/elevations. Final approval for the work will be discussed with the proper public road authorities. In these cases, it will be either the county or township.

Red Lake County – Terrebonne Township – township road right-of-way



Red Lake County – Co. Rd. #26 - (N.) Garnes Township – county road right-of-way

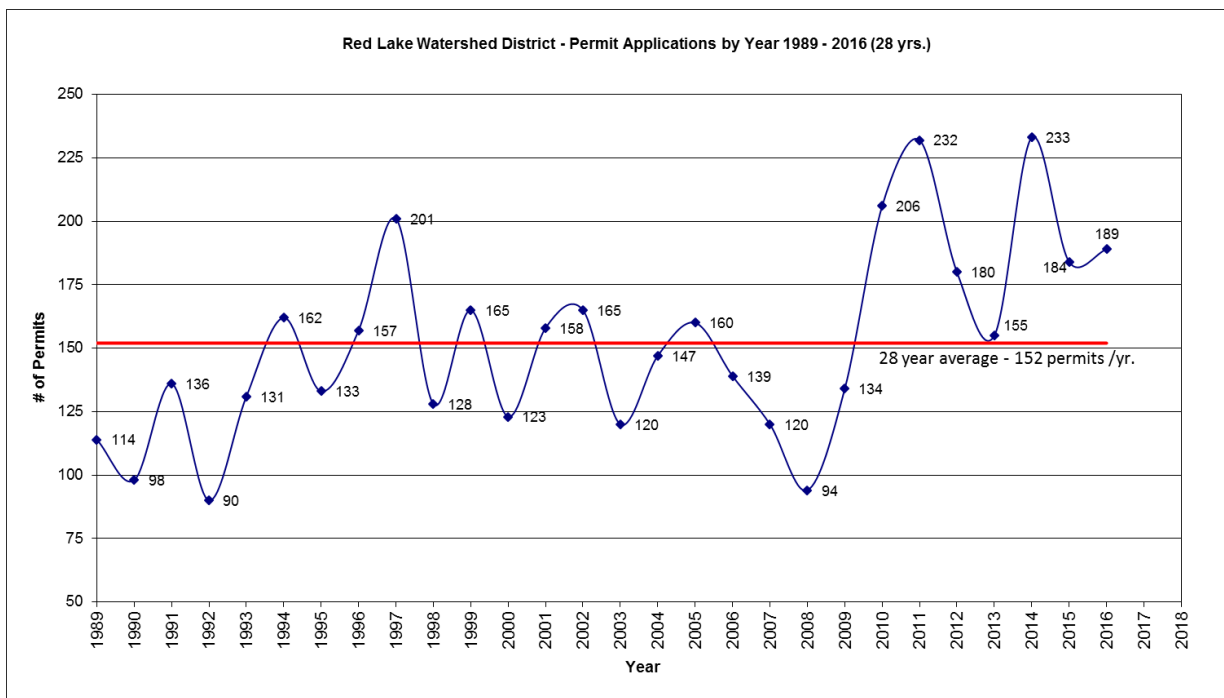


Of the permits 189 received in 2016, four were tabled, and one was denied. The numbers listed below indicate the permits and how they are categorized within our rules for permitting:

- 6 utility
- 3 re-grade
- 114 culvert/bridge
- 30 drainage
- 36 tile

Applicants included state and county highway departments, railroads, townships, cities, utility companies, State & Federal agencies, landowners, and private individuals. Examples of the work consisted of road and bridge projects, wetland restoration, culvert installations, and ditch cleaning. Work associated with permit review consists of, watershed delineations, detailed surveys, drainage area and culvert sizing recommendations, and meetings.

Permit applications are available on the District web site: www.redlakewatershed.org



Wild Rice Water Allocation (RLWD Project #45)

As a domesticated agricultural grain crop, wild rice is grown in paddies, flooded with water to an average depth of about 1 foot.

Wild rice production along the Clearwater River began in 1968, and the water allocation project was petitioned by the growers in 1984. This involves the appropriation of water from the Clearwater River, for the production of wild rice on approximately 12,000 acres of paddies.

Spring flood storage capacity in the paddies is substantial, and amounts to about 23,000 acre feet, which is equivalent to 1.1 inches of runoff. This storage helps to reduce downstream flood flows/peaks.

When there is substantial flow in the river, no water allocation is necessary and the grower's may pump as needed.

However, during periods of low flow, the District allocates water to the growers. The allocation program ensures that each grower receives their appropriate share of available flow and that the protected flow of 36 cubic feet per second (cfs) is maintained in the Clearwater River.

Paddies are typically drained during July and August to facilitate harvest.

Some growers partially flood paddies in the fall season through freeze up. By doing this, it helps to reduce the need of pumping activity in the spring, at which time, water supplies may not be sufficient to meet all of their needs.

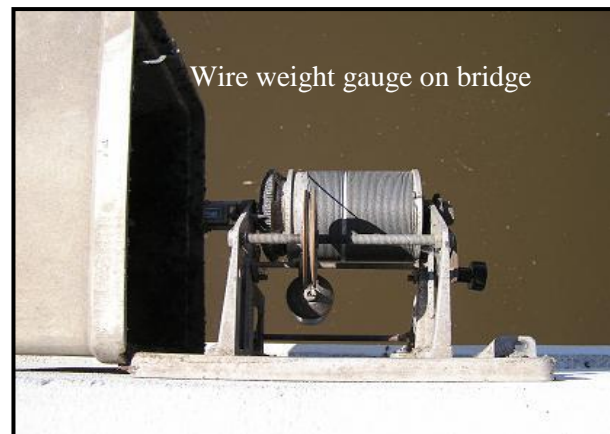
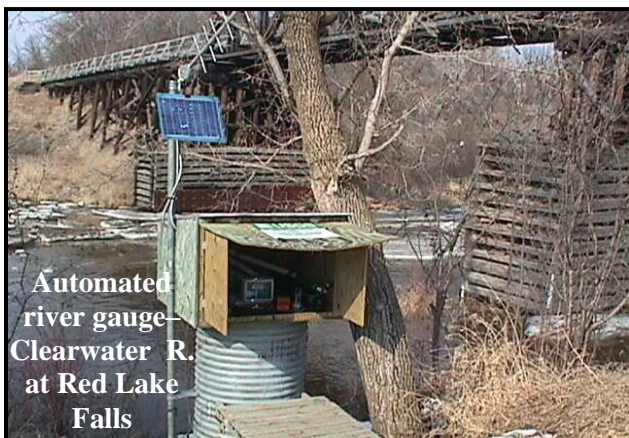
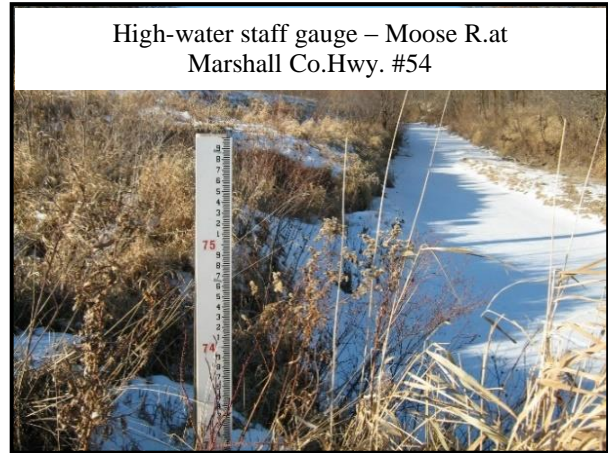
During most of 2016, flows in the Clearwater River were above the minimum that would require allocation. Allocation was necessary for about 1 month (March) in the spring and 1 month (October) in the fall. Normal duties include correspondence with growers, and recording river levels at various sites. The growers also provide valuable information on river conditions and stream gage data.



Stream Flow & Pool Elevation Monitoring (RLWD Project #21)

Stream flow monitoring is a vital on-going activity. The District has an active stream gauging program and local volunteers assist us in recording gauge readings and monitoring river conditions during runoff events. Approximately 160 gauges of various types (staff, wire weight, automated) are located throughout the District. Many automated river level gauges within the district can be accessed via the internet, and are extremely valuable to obtain “real time” data.

District staff performs flow measurements and continues to develop stage (gauge height) and discharge (flow in cubic feet per second) curves at many locations. This data, in conjunction with records and cooperative efforts from other agencies such as the U. S. Geological Survey (USGS), National Weather Service, and the MnDNR will help everyone better understand drainage and runoff characteristics within the District. With several years of recorded data, it is increasingly valuable for the Board of Managers and staff, in the operation and maintenance of existing projects and also for the development of potential projects.



Snow Surveys

Each year, the District performs snow surveys which usually begin in about the middle to late February and continues through the spring melt. Eight sampling sites are monitored throughout the District. The locations of these sites are near impoundment facilities which are designed and operated for floodwater retention.

Due to the existing weather and snowpack conditions, only one snow survey was obtained in 2016. On March 4th the average depth of the snow at our sampling sites was 8 inches and the water equivalent (moisture content) was 1.83 inches. The 2016 spring melt and runoff was basically “non-eventful” in the basin. By March 14th, the landscape was void of snow cover and the surface water runoff was gone.

The depth of the snowpack is measured and a ‘core sample’ is obtained. The tube and snow core are weighed, and the “water content” of the snow is calculated. Five samples are taken at each site and averaged for the data.



Establish base weight of empty sampling tube



Obtaining snow depth and core sample



Establishing weight of snow sample to calculate water content

This information is forwarded to the National Weather Service, the North Central River Forecast Center and also local officials. This helps them to estimate the amount of runoff and make flood forecasting predictions.

The relationship between snowpack and the amount of snowmelt runoff is complex, and depends on many factors.

Some of the criteria used to determine flood potential of spring snowmelt are:

- Depth of existing snow cover and snow moisture content
- Existing soil moisture (was it wet or dry the previous fall?)
- Depth of frost - or, is there any frost?
- River ice and ice jams

Fast and slow thaws:

- Gradual or intermittent thawing may reduce the potential for serious flooding, especially in areas with minimal frost depths
- Flood potential usually increases with late season melting, when a rapid melt is more likely; and if additional precipitation occurs during the runoff event.

Maintenance of Drainage Systems

One of the many tasks of the District staff is to inspect the 279.01 miles of legal drainage ditch systems that are under the jurisdiction of the District. Semi-annual or annual inspections are conducted on these legal drainage systems to determine what type of repairs or any maintenance work that may be needed to keep these ditches functioning in good working order. Some of the many things that the District is looking for are, erosion around culverts, runoff event water damage to slopes or scouring of the ditch bottom, violation to the right-of-ways or buffer strips, and cattails or other weeds that may need to be sprayed.

Larson Helicopters from Perham, Minnesota was contracted this year to spray the Districts ditches. A helicopter is used as a lot of our ditches are not accessible to a ground sprayer because of fences, wet ground, and some of the ditches go cross country with no right of way to drive on. Very limited cattail control was needed on the District ditches and other projects this year. There was only a total of 30.39 miles of ditch that needed to be sprayed for cattails out of the 279.01 miles of ditch that are under the jurisdiction of the Red Lake Watershed District.

Most of the District's ditches have a permanent grass buffer strip, on one or both sides; by state law the buffer strip is required to be a minimum of 16 ½ feet wide, but is wider on some ditches. The District is required to inspect these grass strips and maintain them. Maintenance of these buffer strips will consist of mowing the ditch and its right-of-way at least once a year, starting on or about July 1st, spraying for any noxious weeds as needed, and trying to keep them from being encroached on by farming practices. Four to five contractors are hired each year to mow the many watershed projects and the approximately 161 miles of ditches that have ditch right-of-way.

Clearwater County

Clearwater River, RLWD Project #3 (Clearwater, Polk, Pennington, and Red Lake Counties)

The District hired Ron Huderle, Bruce Huderle, and Craig Fetsch to Clear and Snag fallen trees and debris from the channel. Work was completed in the winter months when access was possible on the ice via snowmobile. The downstream portion of the system was the focus.



Fallen trees in channel.

First Cuts to a complete blockage.

Judicial Ditch 72, RLWD Project #41

Repairs had to be made this summer from erosion that took place along the back slope of the ditch. Erosion occurred in areas that were recently disturbed with the completion of a grade stabilization project in 2015. Spring inspection will be needed to see assess the project. A large culvert was found in the channel this summer. Staff spoke with the owner of the large culvert, a wind storm had pushed the culvert from a farm yard

into the channel. This culvert does not cause flowage restrictions. Spring inspection will also document if the culvert was removed from the channel.



Erosion around access crossing



Slope erosion that was fixed this spring

Main JD 2, RLWD Project #51

Inspection of this system in the summer is very limited and is only possible from various road crossings and some trails. Trees were noted that will need to be removed at a later date. Areas of any erosion will be located and mapped for future projects. No mowing was done on this system as there are no buffer strips on this system, no cattail spraying was needed.

Judicial Ditch 2A, RLWD Project #48

This system has no buffer strip to mow. No cattail spraying was required and there was no beaver issues this year.

Winsor/Hangaard, RLWD Project #113

Mowing of this ditch and its right-of-way was completed in late July. No cattail spraying was needed this year. Upon summer inspection it was noted that there are missing right-of-way markers and rock piles in the right-of-way that will have to be relocated.

Judicial Ditch 2B, RLWD Project #49

Mowing of the ditch and its right-of-way was completed in early August. Beaver were a problem again in this ditch system. A dam was found during our annual inspection, a hole was cut in the dam by hand to alleviate high water levels. A trapper was called in and removed the nuisance beaver. The beaver dam was removed with a backhoe in late summer. The District contracted Roy Abraham to spray thistle again this year. It was sprayed mid-summer. This application was very effective in killing of the thistle.



Beaver dam in system



Thistle that was sprayed

Lost River, RLWD Project #4 (Clearwater, Polk, and Red Lake Counties)

Aerial inspection took place in the late winter. Beaver dams and log jams were noted during the flight. No mowing or spraying was done on this ditch system.

Red Lake County

RLWD Ditch 1, Lateral A and B, RLWD Project #5

Mowing of this ditch and its right-of-way was completed in late July. Larson Helicopters sprayed the ditch for cattails. Some of the right-of-way stakes that the District had installed have been removed or destroyed, but the right-of-way is intact.

RLWD Ditch 1, Lateral C, RLWD Project #115

Mowing of this ditch and its right-of-way was completed in late July. 2.38 miles of cattail spraying was needed this year. Some right-of-way stakes on this system have been removed or destroyed, but the right-of-way is still intact.

RLWD Ditch 7, RLWD Project #20

Mowing of this ditch and its right-of-way was completed in late July. No spraying was done on this system this year. Some right-of-way stakes have been removed or destroyed on this system but the buffer strip is still intact. An access crossing was installed in the SW ¼ of Section 21, Equality Township, Red Lake County.



Finished access crossing - 30' top width

RLWD Ditch 3, RLWD Project #7

Mowing of this ditch and its right-of-way was completed in July. Larson Helicopters Sprayed 3.26 miles of the 4.98 mile system. A right of way infraction was found during the annual summer inspection. A registered letter was sent, and a contractor was hired to re-seed the encroached buffer strip.

RLWD Ditch 10, RLWD Project #161

Mowing of this system was completed in July. One right-of-way violation was found. Right-of-way markers were installed by District staff and the violation was remedied in quick fashion. A local landowner reported some flap gates that have been hit. Staff will inspect the flap gates in the spring when they're visible. The rock chute was built in the summer of 2005. It has held up very well over the years, with only some small cracks showing in the grout, and has needed very little maintenance in the past. This year however, it failed during a summer rainfall event. This resulted in a large erosion hole in the structure. Houston Engineering, Inc., was hired to come up with a sustainable solution. The spillway was collapsed where there was space caused by the erosion. Next, it was filled with rip rap to bring it back up to grade, finally, concrete was poured over the riprap areas. Inspection will be frequent in the spring and subsequent rain fall events.



Failure of outlet rock chute due to erosion



Placing rip-rap in the erosion hole



Completed repair of the failed chute

Polk County

RLWD Ditch 8, RLWD Project #36

Mowing of this ditch and its right-of-way was completed in early August. The right-of-way was inspected and was found to be intact with no encroachments.

Krostue Petition, RLWD Project #53

Mowing of the ditch and right-of-way was completed in July. The right-of-way was found to be out of compliance during the annual inspection. Since it appeared right of way stakes were placed incorrectly, the District decided to re-establish the right-of-way at the cost of the ditch system and not at the cost to the individual landowners.



Right-of-way encroached by farming practices

Kenneth Johnson Petition, RLWD Project #117

Mowing of ditch right-of-way was completed in early July. No spraying for cattails was needed in this ditch system this year. Some of the right-of-way stakes are missing or have been destroyed on this ditch system but the right-of-way is still intact.

Polk County Ditch Improvement, RLWD Project #119

Mowing of ditch right-of-way was completed in July, with no cattail maintenance required. Two centerline traps were damaged in Section 6 of Hammond Township. Both traps were able to be salvaged and repaired by Brault Construction. One of the pipes had 10 feet of the end section replaced due to damage.



End of pipe and trap repaired



End section of pipe and trap repaired

Scott Baatz Petition, RLWD Project #123

Mowing of right-of-way was completed in August. Although right-of-way appears to be in compliance, it was observed that a few of the right-of-way stakes have been removed.

Polk County Ditch 63, RLWD Project #134

Mowing of ditch right-of-way was completed in early July. Larson Helicopters sprayed cattails on 1.65 miles of the 2.91 miles that are in this ditch system. The right-of-way was checked in early July and was found to be in compliance, but some right-of-way stakes have been removed on this ditch system. In partnership with the West Polk SWCD, the District was notified that we received a \$103,000 Clean Water Legacy Fiscal Year 2017 Project and Practices Grant through the Board of Water and Soil Resources (BWSR) for repairs. This grant will install one grade stabilization structure within the channel to alleviate erosion along with two side water inlets. Final engineering is expected to be completed this summer, with construction completed in the fall.

Polk County Ditch 33, RLWD Project #135

Mowing of ditch right-of-way was completed in early July. No cattail spraying was necessary this year. The right-of-way was checked late fall, and was found to be in compliance. Some of the right-of-way stakes have also disappeared or been removed from this ditch system.

RLWD Ditch 11, RLWD Project #166

Part of this ditch system is still being mowed by a local landowner and it is used for hay, with the remainder of the ditch being mowed by the District. Mowing was completed in July. Larson Helicopters Sprayed 5.7 miles for cattails. The right-of-way was checked in the late fall and was in compliance but some of the right-of-way stakes have been removed or destroyed.

Burnham Creek, RLWD Project #43B

Mowing of ditch right-of-ways were completed by the middle of July. Approximately 11.05 miles of cattail spraying was needed this year on the system. The right-of-way was checked in late July and one parcel was found to be out of compliance. However, we did notice that some right-of-way stakes were either missing or destroyed. A local trapper was hired and 8 beavers were trapped. Two beaver dams were removed by Brault Construction. L&M Road Services were contracted to spray willows along the waterline in Section 31, Fairfax Township and Section 1, Russia Township, Polk County.

RLWD Ditch 12, Project #169

Mowing of ditch right-of-way was completed in early July. Larson Helicopters sprayed 1.35 miles for cattails out of the 17.34 miles in this ditch system this year. Some of the local landowners are haying parts of this ditch system. No snow was removed from the lateral ditches on this ditch system this year. The right-of-way was checked this summer and was found to be intact, but most of the right-of-way stakes on this ditch system have disappeared or have been destroyed.

RLWD Ditch 15, Project #175

Mowing ditch right-of-way was completed in August. After the mowing was completed, it was found that side water inlet flap gates were hit by the mower. A list was made of those flap gates and given to the mowing contractor. Aerial cattail spraying will need to be completed next year.

Pennington County

Red Lake River, RLWD Project #2

No inspection was completed this year and no complaints were received. The District Board authorized the outright release of the right-of-way easement using the quit claim option along the east side of the Red Lake River, RLWD Project No. 2, located in Section 34, Highlanding Township, Pennington County, to Pennington County to allow the county to develop wetland banking credits within the property.

Arveson Ditch, RLWD Project #109

Mowing ditch right-of-way was completed in early August. Spraying for cattails was not needed again this year in this ditch system. The right-of-way was checked late this fall and was found to be intact, most of the right-of-way stakes are there. A bee yard was placed within the right-of-way this year. The owner of the hive was contacted and directed to move the bee yard out of the right-of-way the following year.

Challenger Ditch, RLWD Project #122

Mowing of ditch right-of-way was completed in early August. The drop structure trash rack had to be cleaned a number of times again this year, due to grass, straw, household trash, and litter getting caught on it and severely restricting the flow of water. This is something that is monitored after each runoff event.



RLWD Ditch 13, RLWD Project #170A

Most of ditch right-of-way is being mowed by local landowners that are using it for hay, with other parts being mowed by the District. Mowing was completed in August. A report of cattail growth was reported this winter. Cattail spraying is dependent upon next summers' inspection.

Thief River Flood Damage Reduction, Project #171A

Most of the ditch right-of-way is being mowed by local landowners that are using it for hay, with other parts being mowed by the District. Mowing was completed in late August.

RLWD Ditch 14, RLWD Project #171

Most of the ditch right-of-way is being hayed by local landowners, with remaining right-of-way being mowed by the District. Right-of-way was checked late this fall and was found to be intact and most of the right-of-way stakes still standing. Clearing and Snagging was completed in partnership with the Sentence to Serve program. Clearing and snagging took place north of 1st street to the river. Landowners were contacted this spring and trees near the waterline were marked for removal. The sentence to serve crew completed the work in one day. A landowner reported "Sink Holes." These were investigated and marked with lath and ribbon. The cause of these was not determined. A Contractor was contacted and the holes were filled and seeded.



Pre-cleaned channel

Post cleaned channel

Sinkhole

Beltrami County

RLWD Ditch 9, RLWD Project #39

This ditch and right-of-way was mowed for both brush and weeds by Todd and Debra Stanley, late in the summer. Cattail spraying was not needed again this year in this ditch system. Inspection of the right-of-way was done late this fall and was found to be intact.

Marshall County

State Ditch 83, RLWD Project #14

Mowing was completed in August on most of the established access trails and all other areas of this ditch system that the District has been working on over the past 12 years. Some areas could not be reached again this year due to slumps that have occurred, and other areas where fields that were in CRP are now being cropped. State Ditch 83 had high flows most of the summer that prevented a timely start to spot cleaning work this year. The District staff again inspected the channel of State Ditch 83 by four wheeler and pickup truck where it was possible. Lunke Construction Inc. spent two days on-site leveling log piles that were burnt over the winter, clearing out a site to dig sediment before high-water levels put an early end to their progress for the year. No side water inlets were installed this year.

To date we have approximately two miles of ditch channel left to spot clean. Some of these areas have very large amounts of silt that has built up over the years which will be excavated from the channel. It is the goal of the District to once again partner with Marshall County Soil and Water Conservation District and continue to install side water inlet culverts with traps on an as need basis. To date there have been 84 sites cleaned in State Ditch 83 for a total construction cost of \$381,760.00

Year	Sites Completed	Construction Cost
2003	5	\$ 17,924.00
2004	High water levels	\$ 0.00
2005	7	\$ 39,033.00
2006	11	\$ 36,004.00
2007	16	\$ 42,144.00
2008	11	\$ 34,450.00
2009	7	\$ 41,574.00
2010	High water levels	\$ 0.00
2011	6	\$ 41,400.00
2012	11	\$ 80,480.00
2013	5	\$ 30,096.00
2014	High water levels	\$ 0.00
2015	4	\$ 16,040.00
2016	1	\$ 2,615.00
Total	84	\$381,760.00

Legal Drainage Systems under jurisdiction of Red Lake Watershed District

The District at present has jurisdiction of approximately 279.01 miles of legal drainage systems throughout the Watershed. The list of all the systems is shown below.

Ditch #	County	Length (mi.)
Red Lake River	Pennington	18.88
Clearwater River	Clearwater, Polk, Pennington, Red Lake	38.24
Lost River	Clearwater, Polk, Red Lake	23.32
RLWD Ditch #9	Beltrami	1.0
State Ditch #83	Marshall, Beltrami	23.36
Clifford Arveson Ditch	Pennington	2.2
RLWD Ditch 13	Pennington	2.04
RLWD Ditch 14	Pennington	4.42
TRF Flood Damage Reduction	Pennington	1.84
Challenger Ditch	Pennington	.44
RLWD Ditch #10	Red Lake	4.59
Equaity/RLWD Ditch #1	Red Lake	2.95
RLWD Ditch #3	Red Lake	4.98
RLWD Ditch #1, Lat A, B	Red Lake, Polk	4.0
RLWD Ditch #7	Red Lake, Polk	12.27
Main Judicial Ditch #2	Clearwater	1.6 (e)
Judicial Ditch #2A	Clearwater	5.44
Judicial Ditch #4	Clearwater	5.39
Judicial Ditch #5	Clearwater	2.72
County Ditch #1	Clearwater	5.5
Judicial Ditch 2B & C	Clearwater	5.52
Winsor-Hangaard	Clearwater, Polk	13.9
Judicial Ditch #72	Clearwater, Polk	14.51
RLWD Ditch #8	Polk	2.01
RLWD Ditch #11	Polk	6.36
RLWD Ditch #12	Polk	17.34
Polk County Ditch #63	Polk	2.91
Polk County Ditch #33	Polk	4.42
Polk County Ditch Improvement	Polk	13.42
Burnham Creek	Polk	14.43
Krostue Petition	Polk	1.7
Kenneth Johnson Petition	Polk	2.58
Scott Baatz Petition	Polk	1.47
RLWD Ditch #15	Polk	13.26
Total Mile of Ditches	Polk	279.01

Acronyms

The following is a list of common acronyms used by the Red Lake Watershed District.

State, Regional, and Local Government	
BWSR	Board of Water and Soil Resources
DNR	Department of Natural Resources
JPB	Joint Powers Board
LCMR	Legislative Commission on Minnesota Rivers
LGU	Local Governmental Unit
MnDOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
MSTRWD	Middle Snake Tamarac Watershed District
RLWD	Red Lake Watershed District
SWCD	Soil and Water Conservation District
TAC	Technical Advisory Committee
Federal Agencies	
Corps	U.S. Army Corps of Engineers
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FSA	Farm Services Administration
NRCS	Natural Resources Conservation Service
USF&WS	U.S. Fish & Wildlife Service
USGS	U.S. Geological Survey
Organizations	
MAWD	Minnesota Association of Watershed Districts
Programs	
CLWP	Comprehensive Local Water Planning
CRP	Conservation Reserve Program
EQIP	Environmental Quality Incentive Program
FDR	Flood Damage Reduction
RIM	Reinvest in Minnesota Program
WCA	Wetland Conservation Act
SWAG	Surface Water Assessment Grant
WRAP	Watershed Restoration and Protection
WRAPS	Watershed Restoration and Protection Strategy
Terms	
CP	Conservation Practice
BMP	Best Management Practice
GIS	Geographic Information System
GPS	Geographic Positioning System
LIDAR	Laser Imaging Detection and Ranging
NPS	Nonpoint Source Pollution
TMDL	Total Maximum Daily Load
PTMApp	Prioritize Target Measure Application

**RED LAKE WATERSHED DISTRICT
THIEF RIVER FALLS, MINNESOTA**

AUDITED FINANCIAL STATEMENTS

FOR THE YEAR ENDED DECEMBER 31, 2016



CERTIFIED PUBLIC ACCOUNTANTS
AND CONSULTANTS

INDEPENDENT AUDITOR'S REPORT

Board of Managers
Red Lake Watershed District
Thief River Falls, Minnesota

Report on the Financial Statements

We have audited the accompanying financial statements of the governmental activities, each major fund, and the remaining fund information of the Red Lake Watershed District as of and for the year ended December 31, 2016, and the related notes to the financial statements, which collectively comprise the District's basic financial statements-modified cash basis as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with the modified cash basis of accounting described in Note 1; this includes determining that the modified cash basis of accounting is an acceptable basis for the preparation of the financial statements in the circumstances. Management is also responsible for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes

evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities, each major fund, and the remaining fund information of the Red Lake Watershed District, as of December 31, 2016, and the respective changes in financial position for the year then ended in conformity with the basis of accounting described in Note 1.

Emphasis of a Matter

We draw attention to Note 1 of the financial statements, which describes the basis of accounting. The financial statements are prepared on the modified cash basis of accounting, which is a basis of accounting other than accounting principles generally accepted in the United States of America. Our opinion is not modified with respect to the matter.

Other Matters

Other Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the Red Lake Watershed District's basic financial statements. The official directory, management's discussion and analysis, budgetary comparison schedule, and the accompanying supplementary statements as shown in the table of contents are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The budgetary comparison schedule and the supplementary statements are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the budgetary comparison schedule and the supplementary statements are fairly stated in all material respects in relation to the financial statements as described in the basis of accounting described in Note 1.

The official directory and the management's discussion and analysis section have not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on them.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated March 10, 2017 on our consideration of the Red Lake Watershed District's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering Red Lake Watershed District's internal control over financial reporting and compliance.



**BRADY, MARTZ & ASSOCIATES, P.C.
THIEF RIVER FALLS, MINNESOTA**

March 10, 2017 March 10, 2017

RED LAKE WATERSHED DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS
FOR THE YEAR ENDED DECEMBER 31, 2016

Our discussion and analysis of the Red Lake Watershed District's financial performance provides an overview of the District's financial activities for the fiscal year ended December 31, 2016, within the limitations of the District's modified cash basis of accounting. Please read it in conjunction with the District's financial statements that begin on page 15.

FINANCIAL HIGHLIGHTS

- The District's governmental funds total revenues exceeded total expenditures, on the modified cash basis of accounting, by \$267,309 for the year ended December 31, 2016.
- The general fund showed an increase on the modified cash basis fund balance in the amount of \$31,543.
- The District's General Fund ended the year with a fund balance of \$469,029.
- The District's combined fund balance at the close of the current year was \$5,487,822.

Overview of the Financial Statements

This annual report is presented in a format consistent with the presentation requirements of the Governmental Accounting Standards Board (GASB) Statement No. 34, as applicable to the District's modified cash basis of accounting.

Report Components

This annual report consists of five parts as follows:

Government—Wide Financial Statements: The Statement of Net Cash Position and the Statement of Activities Arising from Cash Transactions on pages 15 and 16 provide information about the activities of the District government-wide (or "as a whole") and present a longer-term view of the District's finances.

Fund Financial Statements: Fund financial statements (starting on page 17) focus on the individual parts of the District government. Fund financial statements also report the District's operations in more detail than the governmental-wide statements by providing information about the District's most significant ("major") funds. For governmental activities, these statements tell how these services were financed in the short term as well as what remains for future spending.

Notes to the Basic Financial Statements: The notes to the basic financial statements are an integral part of the government-wide and fund financial statements and provide expanded explanation and detail regarding the information reported in the statements.

Other Supplementary Information: This Management's Discussion and Analysis and the General Fund Budgetary Comparison Schedule (starting on page 36) represent other financial information. Such information provides users of this report with additional data that supplements the government-wide statements, fund financial statements, and notes (referred to as "the basic financial statements").

RED LAKE WATERSHED DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS - CONTINUED
FOR THE YEAR ENDED DECEMBER 31, 2016

Other Supplementary Statements: This part of the annual report (starting on page 38) includes other supplemental financial information which is provided to address certain specific needs of various users of the District's annual report. These statements and schedules include individual Fund Statements for Governmental units.

Basis of Accounting

The District has elected to present its financial statements on a modified cash basis of accounting. This modified cash basis of accounting is a basis of accounting other than accounting principles generally accepted in the United States of America. Basis of accounting is a reference to when financial events are recorded, such as the timing for recognizing revenues, expenses, and their related assets and liabilities. Under the District's modified cash basis of accounting, revenues and expenses and related assets and liabilities are recorded when they result from cash transactions, except for the recording of depreciation expense on the capital assets in the government-wide financial statements.

As a result of the use of this cash basis of accounting, certain assets and their related revenues (such as accounts receivable and revenue for billed or provided services not yet collected) and certain liabilities and their related expenses (such as accounts payable and expenses for goods or services received but not yet paid, and accrued expenses and liabilities) are not recorded in the basic financial statements. Therefore, when reviewing the financial information and discussion within this annual report, the reader should keep in mind the limitations resulting from the use of the modified cash basis of accounting.

Reporting the District as a Whole

The District's Reporting Entity Presentation

This annual report includes all activities for which the Red Lake Watershed District Board of Managers is fiscally responsible. These activities, defined as the District's reporting entity, are operated within separate legal entities that make up the primary government. The District has no reportable component units.

The Government-Wide Statement of Net Cash Position and the Statement of Activities Arising from Cash Transactions

Our financial analysis of the District as a whole begins on page 7. The government-wide financial statements are presented on pages 15 and 16. One of the most important questions asked about the District's finances is, "Is the District as a whole better off or worse off as a result of the year's activities?" The Statement of Net Cash Position and the Statement of Activities Arising from Cash Transactions report information about the District as a whole and about its activities in a way that helps answer this question. These statements include all of the District's assets and liabilities resulting from the use of the modified cash basis of accounting.

These two statements report the District's net cash position and changes in them. Keeping in mind the limitations of the modified cash basis of accounting, you can think of the District's net cash position—the difference between assets and liabilities—as one way to measure the District's financial health or financial position. Over time, increases or decreases in the District's net cash position are one indicator of whether its financial health is improving or deteriorating. You will need to consider other nonfinancial factors, however, such as changes in the District's property tax base and the condition of the District's infrastructure, to assess the overall health of the District.

RED LAKE WATERSHED DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS - CONTINUED
FOR THE YEAR ENDED DECEMBER 31, 2016

In the Statement of Net Cash Position and the Statement of Activities Arising from Cash Transactions, the District has one type of activity:

Government Activities - The District's basic services are reported here, including the general administration and capital projects. Property taxes, state aids, and state and federal grants finance most of these activities.

The Fund Financial Statements

The fund financial statements begin on page 17 and provide detailed information about the most significant funds. Some funds are required to be established by state law and by bond covenants.

However, the Board of Managers establishes certain other funds to help it control and manage money for particular purposes or to show that it is meeting legal responsibilities for using certain taxes, grants, and other money. The District's two kinds of funds—governmental and fiduciary—use different accounting approaches.

Governmental funds— Most of the District's basic services are reported as governmental funds, which focus on how money flows into and out of those funds and the balances left at year-end that are available for spending. These funds report the acquisition of capital assets and payments for debt principal as a detailed short-term view of the District's general government operations and the basic services it provides. Governmental fund information helps you to determine (through a review of changes to fund balance) whether there are more or fewer financial resources that can be spent in the near future to finance the District's programs.

The District considers the General Fund and various Capital Project funds as significant or major governmental funds. All other governmental funds are aggregated in a single column entitled other governmental funds.

Fiduciary funds— These fund types are often used to account for assets that are held in a trustee or fiduciary capacity such as pension plan assets, assets held per trust agreements, and similar arrangements.

A FINANCIAL ANALYSIS OF THE DISTRICT AS A WHOLE

Net Cash Position

The District's combined government-wide Net Position, resulting from modified cash basis transactions increased by \$390,963 between fiscal years 2016 and 2015. As noted earlier, net position - modified cash basis may serve over time as a useful indicator of a government's financial position. In the case of Red Lake Watershed District, assets exceeded liabilities by \$18,536,505 at December 31, 2016, which is an increase of \$390,963 over the year ended December 31, 2015; which is more than a 2.15% increase over the prior year.

A portion of Red Lake Watershed District's net position (\$13,048,683 or 70.39%) reflects its investment in capital assets. Red Lake Watershed District uses these capital assets to provide services to citizens; consequently, these are not available for future spending.

A portion of Red Lake Watershed District's net position (\$183,984) reflects a portion of net position that is restricted for ditch maintenance.

RED LAKE WATERSHED DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS - CONTINUED
FOR THE YEAR ENDED DECEMBER 31, 2016

	Governmental		Change 15-16
	Activities		
	2016	2015	
ASSETS			
Total Current Assets	\$ 5,487,822	\$ 5,220,513	\$ 267,309
Net Capital Assets	<u>13,048,683</u>	<u>12,925,029</u>	<u>123,654</u>
Total Assets	<u>\$ 18,536,505</u>	<u>\$ 18,145,542</u>	<u>\$ 390,963</u>
Net Position	<u>\$ 18,536,505</u>	<u>\$ 18,145,542</u>	<u>\$ 390,963</u>

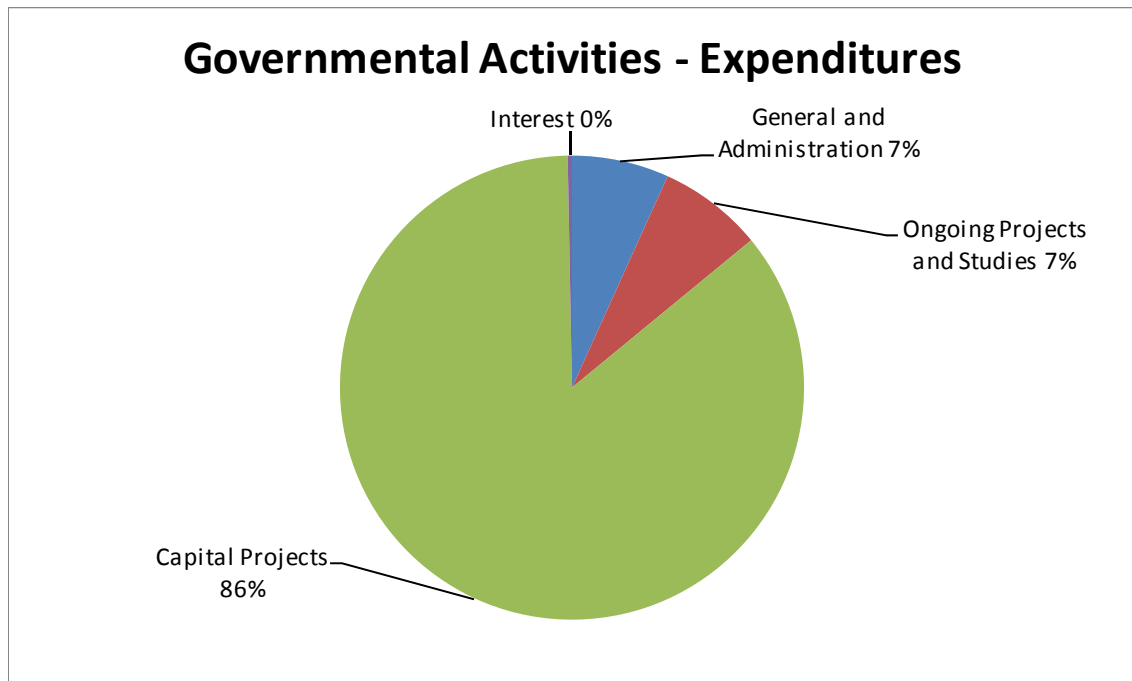
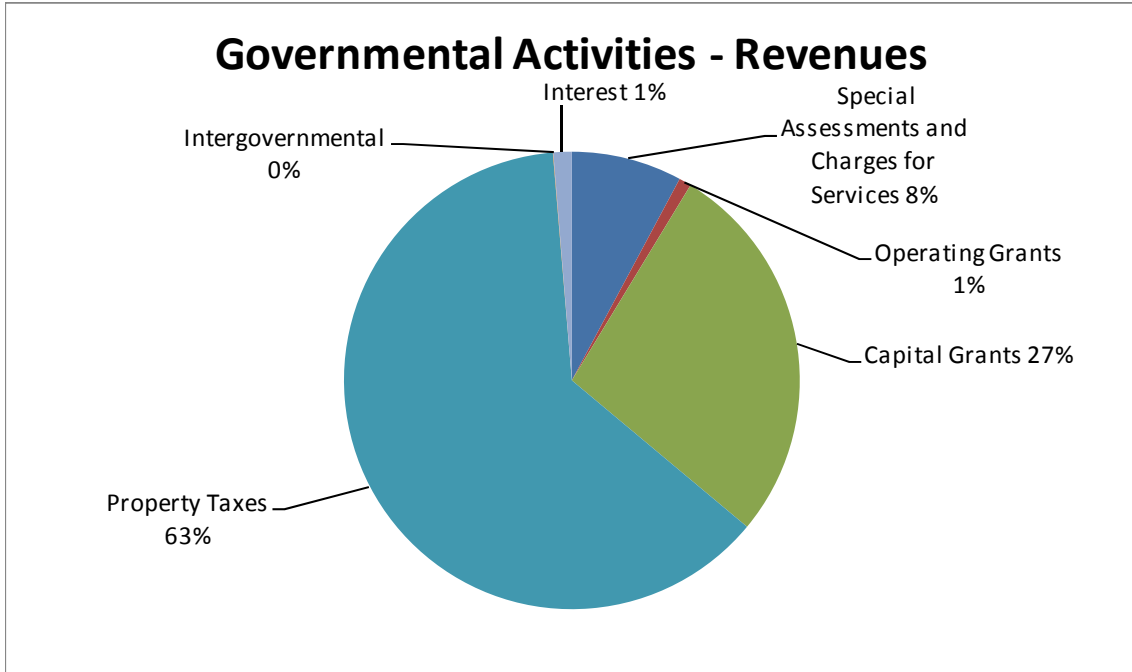
Changes in Net Cash Position

For the years ended December 31, 2016 and 2015, Net Position of the primary government (resulting from modified cash basis transaction) changed as follows:

	Governmental		Change 15-16
	Activities		
	2016	2015	
Revenues			
Program Revenues			
Special Assessments and Charges for Services	\$ 187,479	\$ 1,662,262	\$ (1,474,783)
Operating Grants	20,720	24,496	(3,776)
Capital Grants	653,358	1,690,332	(1,036,974)
General Revenues			
Property Taxes	1,496,117	1,345,842	150,275
Intergovernmental	903		903
Interest	<u>31,049</u>	<u>34,334</u>	<u>(3,285)</u>
Total Revenues	<u>\$ 2,389,626</u>	<u>\$ 4,757,266</u>	<u>\$ (2,367,640)</u>
Expenses			
General and Administration	\$ 135,125	\$ 131,864	\$ 3,261
Ongoing Projects and Studies	145,602	1,470,789	(1,325,187)
Capital Projects	1,712,057	1,896,345	(184,288)
Allocated Interest	<u>5,879</u>	<u>12,556</u>	<u>(6,677)</u>
Total Expenses	<u>\$ 1,998,663</u>	<u>\$ 3,511,554</u>	<u>\$ (1,512,891)</u>
Increase in Net Position	<u>\$ 390,963</u>	<u>\$ 1,245,712</u>	

RED LAKE WATERSHED DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS - CONTINUED
FOR THE YEAR ENDED DECEMBER 31, 2016

Below are specific graphs which provide comparisons of the governmental activities revenues and expenditures for the year ended December 31, 2016:



RED LAKE WATERSHED DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS - CONTINUED
FOR THE YEAR ENDED DECEMBER 31, 2016

Governmental Activities

To aid in the understanding of the Statement of Activities Arising from Cash Transactions on page 16, some additional explanation is given. Of particular interest is the format that is significantly different from a typical Statement of Revenues, Expenses, and Changes in Fund Balance. You will notice that expenses are listed in the first column, with revenues from that particular program reported to the right. The result is a Net (Expense)/Revenue. This type of format highlights the relative financial burden of each of the functions on the District's taxpayers. It also identifies how much each function draws from the general revenues or if it is self-financing through fees and grants or contributions. All other governmental revenues are reported as general. It is important to note that all taxes are classified as general revenue, even if restricted for a specific purpose.

A FINANCIAL ANALYSIS OF THE DISTRICT'S FUNDS

General Fund Budgetary Highlights

For the year ended December 31, 2016, General Fund expenditures were \$19,188 under final budget. The budget was not amended during the year.

CAPITAL ASSET AND DEBT ADMINISTRATION

Capital Assets—Modified Cash Basis

At December 31, 2016, the District had approximately \$13,048,683 (net of accumulated depreciation) invested in capital assets. This investment in capital assets consists of building, equipment, and infrastructure assets necessary for the District to carryout watershed and conservation management within its service area.

	2016			2015	
	Cost	Accumulated Depreciation	Cost - Less Accumulated Depreciation	Cost - Less Accumulated Depreciation	Cost - Less Accumulated Depreciation
Building and Improvements	\$ 775,594	\$ 274,173	\$ 501,421	\$ 511,234	\$ 511,234
Infrastructure Improvements	12,601,966	2,361,710	10,240,256	10,389,763	10,389,763
Engineering Equipment	395,732	337,143	58,589	75,055	75,055
Office Equipment	138,639	125,846	12,793	27,273	27,273
Land and Permanent Easements	1,906,922	-	1,906,922	1,876,922	1,876,922
Construction in Progress	328,702	-	328,702	44,782	44,782
	\$ 16,147,555	\$ 3,098,872	\$ 13,048,683	\$ 12,925,029	\$ 12,925,029

ECONOMIC FACTORS AND NEXT YEAR'S BUDGET

As noted below, construction was completed or substantially completed on several projects as well as work on several water quality grants, flow through-grants, cooperative projects with other agencies, and investigation into a flood control project.

RED LAKE WATERSHED DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS - CONTINUED
FOR THE YEAR ENDED DECEMBER 31, 2016

OTHER ITEMS OF INTEREST

Water Quality grants from the State of Minnesota, Minnesota Pollution Control Agency, for Surface Water Assessment Grants, Watershed Assessment Projects (watershed based TMDL), are ongoing for Clearwater River, Red Lake River, Thief River and Grand Marais Creek. Expenses over and above the grants are expended from the Capital Projects Fund.

The Red River Watershed Management Board (RRWMB) was awarded funding for farmstead ring dike construction in the Red River Valley in 2015, by a grant provided by the Minnesota Department of Natural Resources, through an appropriation by the Minnesota State Legislature. Since the Red Lake Watershed District (RLWD) is a part of the RRWMB, funding for up to 3 ring dikes was appropriated. During the summer of 2016, a ring dike was constructed at a farmstead in Polk County as part of this funding. The grant was cost shared at 50% by the Minnesota Department of Natural Resources, 25% by the RRWMB, 12.5% landowner, and 12.5% RLWD. The cost share of the RLWD is paid from the Capital Project Funding.

In 2013, the Red Lake Watershed District, in partnership with the United States Geological Survey, applied for and was approved for a \$400,000 flow through grant from the Legislative-Citizen Commission on Minnesota Resources (LCCMR) for a project referred to in this report as Glacial Ridge Water Quality Study, Project 152B. The project's goals are intended to measure and characterize water flows through all parts of the water cycle in 4 surface (SW) and groundwater (GW) basins covering 28,754 acres as well as measure and characterize water quality in four groundwater and surface-water basins for comparison with pre-restoration water quality. Although the LCCMR grant was intended to cover all costs of the project, it is assumed any overrun of Red Lake Watershed District staff time will be paid from the Capital Project Funding. Due to various grant extensions, this project continued through 2016 and is scheduled to be completed by June 30, 2017.

In August of 2014, the Red Lake Watershed District, in partnership with the United States Geological Survey, was approved for a \$168,000 flow through grant from the Legislative-Citizen Commission on Minnesota Resources (LCCMR) for a project referred to in this report as Glacial Ridge Water Quality Study, Project 152C. The project's goals are intended work in conjunction with the existing \$400,000 grant mentioned above which is to measure and characterize water flows through all parts of the water cycle in 4 surface (SW) and groundwater (GW) basins covering 28,754 acres as well as measure and characterize water quality in four groundwater and surface-water basins for comparison with pre-restoration water quality. Although the LCCMR grant was intended to cover all costs of the project, it is assumed any overrun of Red Lake Watershed District staff time will be paid from the Capital Project Funding. Due to various grant extensions, this project continued through 2016 and is scheduled to be completed by June 30, 2017.

State of Minnesota flow-through grant with Federal Emergency Management Agency (FEMA) for flood plan analysis along on the Red Lake River in Polk, Red Lake, and Pennington Counties was extended to April 30, 2015. This extension was intended to allow time for FEMA to determine how past modeling within the Cities of Crookston and East Grand Forks will match present datum. Public meetings were held in 2016 and presently the District is waiting for final approval from FEMA to implement the findings of the study.

RED LAKE WATERSHED DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS - CONTINUED
FOR THE YEAR ENDED DECEMBER 31, 2016

In the mid 1980's, the Soil Conservation Service (SCS) worked with local landowners to fund eight erosion control and habitat restoration projects mostly in Red Lake County. In the late 1980's and at the request of SCS, the Red Lake Watershed District agreed to take over the inspection and repair of the dams in the foreseeable future. In 2015, after District staff inspected all eight dams, it was determined that three dams known by the public as Odney Flaot, Latendresse, and Miller Dams were all in need of substantial repair. At the direction of the Board, plans and specifications were developed for Odney Flaot and three quotes were accepted with low quote in the amount of \$68,125 being awarded to Wright Construction Inc. The Board of Managers also asked staff to review and prioritize all the dams and bring recommendations back to the Board. Upon completion of the review, the Board decided to move forward with the plans and specification for repairs to Latendresse and Miller Dams as well. Bids were opened for Latendresse Dam and the contract to complete the repairs was awarded to Brummund Excavating LLC in the amount of \$80,718. Quotes were opened for Miller Dam and Paul Zavoral Inc., dba Higher Ground, was awarded the construction contract in the amount of \$55,026. Construction of all 3 dams were either completed or substantially completed in 2016.

In January of 2016, the Board approved contributing \$35,000 to the Beltrami County Environmental Services to assist in the Aquatic Invasive Species (AIS) program in the Red Lake watershed area of Beltrami County. The funds will be used to assist in mileage reimbursement for volunteer inspectors for the Upper Red Lake access, increase inspection hours, fund inspection on several smaller lakes, installation of additional car counters, and to assist in obtaining a decontamination unit. A report of the progress to the Board of Managers will be scheduled in early 2017.

Early fall of 2016, two supervisors from Hines Township, located in Beltrami County, Minnesota, requested the Red Lake Watershed Board of Managers take ownership of a failing rock dam located at the outlet of Blackduck Lake near Blackduck, MN. Due to possible hurdles that may occur with the transfer of the dam, the Red Lake Watershed District agreed the best method would be to enter into a maintenance agreement with Hines Township to repair the dam. The District applied for a \$50,000 grant through the Minnesota Department of Natural Resources which would be applied to the possible construction of the new dam. Late 2016, the District was notified by the MNDR that the grant was approved. It is the hopes of the District that the project will be constructed in late fall 2017.

On September 8, 2016, the Red Lake Watershed District Board of Managers approved a motion to proceed with the completion of plans and specification for the City of Erskine Memorial Park, RLWD Project #164, in conjunction with a partnership with the City of Erskine and the East Polk Soil Water Conservation District. The project was to repair sloughs on Cameron Lake near the public swimming pool. Engineering was completed with construction starting late fall of 2016. The project was substantially completed with construction being halted due to winter, it is assumed that construction will be completed early summer 2017. Total project costs for construction is estimated to be \$74,880.

Red Lake Watershed District entered into a grant agreement with the Natural Resource Conservation Service for the study of projects which qualify for the Regional Conservation Partnership Programs (RCPP). The grant for the Pine Lake Watershed will fund 70 percent, not to exceed \$500,000, which will include a study for the completion of a Watershed Protection Plan.

RED LAKE WATERSHED DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS - CONTINUED
FOR THE YEAR ENDED DECEMBER 31, 2016

Red Lake Watershed District entered into a second grant agreement with the Natural Resource Conservation Service for the study of projects which qualify for the Regional Conservation Partnership Programs (RCPP). The grant for the Four Legged Lake Watershed will fund 70 percent, not to exceed \$365,088, which will include a study for the completion of a Watershed Protection Plan.

Red Lake Watershed District and local partners entered into a grant agreement with the Board of Soil Resources (BWSR) to complete a Pilot Project referred to the public as "*Red Lake River One Watershed One Plan*". The grant, administered by Pennington Soil and Water Conservation District in the amount of \$127,266, was for the development of a comprehensive 10 year plan for the Red Lake River Watershed. The planning and writing of the grant was completed in 2016 with final approval by the BWSR Board expected in early 2017.

As part of a \$38,700 grant agreement applied for and approved by the Board of Soil and Water Resource, the Red Lake Watershed District will develop a Drainage Database which will better record maintenance which can be used for development of future Inspection Plans and Reports. It is the hopes of the District that this project will be completed by December 31, 2018.

Red Lake Watershed District approved by motion to proceed with the investigation of developing a flood damage reduction project referred to as the Black River Impoundment. The RLWD has entered into agreements with three landowners and preliminary engineering has been ordered with the hopes of determining the project's merits by June 30, 2017.

More details of the 2016 construction, maintenance, and ongoing water quality programs of Red Lake Watershed District are included in the 2016 Annual Report or by contacting the Red Lake Watershed District.

CONTACTING THE DISTRICT'S FINANCIAL MANAGEMENT

This financial report is designed to provide a general overview of Red Lake Watershed District's finances for all those with an interest in the government's finances. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to the Red Lake Watershed District, 1000 Pennington Avenue South, Thief River Falls, Minnesota 56701.

BASIC FINANCIAL STATEMENTS

RED LAKE WATERSHED DISTRICT
STATEMENT OF NET CASH POSITION
AS OF DECEMBER 31, 2016

	Total
Assets	
Current Assets:	
Petty Cash	\$ 100
Pooled Cash and Investments	5,487,722
Total Current Assets	5,487,822
Capital Assets:	
Property and Equipment	16,147,555
Less: Accumulated Depreciation	(3,098,872)
Net Capital Assets	13,048,683
Total Assets	18,536,505
Net Position	
Investment in Capital Assets	13,048,683
Restricted for Ditch Maintenance	183,984
Unrestricted	5,303,838
Total Net Position	\$ 18,536,505

See Notes to the Basic Financial Statements

RED LAKE WATERSHED DISTRICT
STATEMENT OF ACTIVITIES ARISING FROM CASH TRANSACTIONS
FOR THE YEAR ENDED DECEMBER 31, 2016

Functions/Programs	Expenses				Program Receipts and Sources			Net Cash Sources (Uses) and Changes in Net Cash Position
	Direct	Allocated Salaries and Overhead	Total	Special Assessments and Charges For Services	Operating Grants and Contributions	Capital Grants and Contributions	Governmental Activities	
Governmental Activities:								
General and Administrative	\$ (715,498)	\$ 580,373	\$ (135,125)	\$ 7,886	\$ -	\$ -	\$ (127,239)	
Ongoing Projects and Studies	(91,509)	(54,093)	(145,602)	151,956	20,720	-	27,074	
Capital Projects	(1,185,777)	(526,280)	(1,712,057)	27,637	-	653,358	(1,031,062)	
Allocated Interest	(5,879)	-	(5,879)	-	-	-	(5,879)	
Total Governmental Activities	\$ (1,998,663)	\$ -	\$ (1,998,663)	\$ 187,479	\$ 20,720	\$ 653,358	\$ (1,137,106)	
<u>General Receipts:</u>								
Tax Levies							\$ 1,496,117	
Intergovernmental (not restricted to specific programs)							903	
State MV, Disparity Reduction Credits, and PERA Aid							31,049	
Allocated Interest							1,528,069	
Total General Receipts							390,963	
Change in Net Position							18,145,542	
Net Position - Beginning								
Net Position - Ending							\$ 18,536,505	

See Notes to the Basic Financial Statements

RED LAKE WATERSHED DISTRICT
STATEMENT OF BALANCES ARISING FROM CASH TRANSACTIONS – GOVERNMENTAL FUNDS
AS OF DECEMBER 31, 2016

<u>ASSETS</u>	General Fund	Special Revenue Fund	Capital Project Fund	Total Governmental Funds
Petty Cash	\$ 100	\$ -	\$ -	\$ 100
Pooled Cash and Investments	468,929	183,984	4,834,809	5,487,722
Total Assets	\$ 469,029	\$ 183,984	\$ 4,834,809	\$ 5,487,822
 <u>FUND BALANCES</u>				
Fund Balances:				
Restricted for Ditch Maintenance	\$ -	\$ 183,984	\$ -	\$ 183,984
Committed for Capital Projects	-	-	4,834,809	4,834,809
Unassigned	469,029	-	-	469,029
Total Fund Balances	469,029	183,984	4,834,809	5,487,822
Total Fund Balances	\$ 469,029	\$ 183,984	\$ 4,834,809	\$ 5,487,822

Amounts reported from governmental activities in the Statement of Net Cash Position are different because:

Total Fund Balance per Statement of Balances Arising from Cash Transactions, from above	\$ 5,487,822
---	--------------

When capital assets (land, building, equipment and infrastructure) that are to be used in governmental activities are purchased or constructed, the cost of those assets are reported as expenditures in governmental funds. However, the statement of net cash position includes those capital assets among the assets of the District as a whole.

	Cost of Capital Assets	16,147,555
	Accumulated Depreciation	(3,098,872)
Total Net Position		\$ 18,536,505

See Notes to the Basic Financial Statements

RED LAKE WATERSHED DISTRICT
STATEMENT OF CASH RECEIPTS, DISBURSEMENTS, AND CHANGES IN CASH FUND BALANCES – GOVERNMENTAL FUNDS
FOR THE YEAR ENDED DECEMBER 31, 2016

<u>RECEIPTS</u>	<u>General Fund</u>	<u>Special Revenue Fund</u>	<u>Capital Project Fund</u>	<u>Total Governmental Funds</u>
Property Taxes	\$ 155,815	\$ -	\$ 1,340,302	\$ 1,496,117
Special Assessments	-	151,956	-	151,956
Intergovernmental:				
Federal	-	59	164,752	164,811
State	903	16,000	451,945	468,848
Local	-	4,661	36,661	41,322
Other:				
Miscellaneous	7,886	-	27,637	35,523
Allocated Interest	3,566	1,128	26,355	31,049
	<u>168,170</u>	<u>173,804</u>	<u>2,047,652</u>	<u>2,389,626</u>
Total Receipts	<u>168,170</u>	<u>173,804</u>	<u>2,047,652</u>	<u>2,389,626</u>
<u>DISBURSEMENTS</u>				
General and Administrative	135,125	-	-	135,125
Ongoing Projects and Studies	-	145,602	-	145,602
Capital Projects	-	-	1,835,711	1,835,711
Allocated Interest	1,502	429	3,948	5,879
	<u>136,627</u>	<u>146,031</u>	<u>1,839,659</u>	<u>2,122,317</u>
Total Disbursements	<u>136,627</u>	<u>146,031</u>	<u>1,839,659</u>	<u>2,122,317</u>
Net Change in Fund Balances	31,543	27,773	207,993	267,309
FUND BALANCE JANUARY 1	<u>437,486</u>	<u>156,211</u>	<u>4,626,816</u>	<u>5,220,513</u>
FUND BALANCE DECEMBER 31	<u>\$ 469,029</u>	<u>\$ 183,984</u>	<u>\$ 4,834,809</u>	<u>\$ 5,487,822</u>

See Notes to the Basic Financial Statements

RED LAKE WATERSHED DISTRICT
RECONCILIATION OF CHANGES IN FUND BALANCES OF GOVERNMENTAL FUNDS TO THE
STATEMENT OF ACTIVITIES
FOR THE YEAR ENDED DECEMBER 31, 2016

Net Change in Fund Balances - Total Governmental Funds	\$ 267,309
Governmental funds report capital outlay as expenditures, while governmental activities report depreciation expense allocating those expenditures over the life of the asset:	
Capital Additions	681,680
Depreciation Expense	<u>(558,026)</u>
Change in Net Position - Governmental Activities	<u>\$ 390,963</u>

See Notes to the Basic Financial Statements

RED LAKE WATERSHED DISTRICT
STATEMENT OF NET CASH POSITION – FIDUCIARY FUNDS
AS OF DECEMBER 31, 2016

<u>ASSETS</u>	<u>Agency Funds</u>
Cash	\$ _____ -
Total Assets	\$ _____ -
 <u>LIABILITIES AND FUND BALANCES</u>	
Due To Red River Watershed Management Board	\$ _____ -
Total Liabilities	\$ _____ -

See Notes to the Basic Financial Statements

RED LAKE WATERSHED DISTRICT
NOTES TO THE BASIC FINANCIAL STATEMENTS
AS OF DECEMBER 31, 2016

NOTE 1 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The Red Lake Watershed District, (the "District"), was established under the Minnesota Watershed Act as an agency of the State of Minnesota. The purpose of the District is to carry out conservation of the natural resources of the State of Minnesota through land utilization, flood control, and other needs upon sound scientific principles for the protection of the public health and welfare and the provident use of natural resources. The District serves an area in Northwestern Minnesota and includes all of Red Lake County and parts of the following counties: Beltrami, Clearwater, Itasca, Koochiching, Mahnomen, Marshall, Pennington, Polk, and Roseau. The District is governed by the Board of Managers, which is composed of seven members appointed by the county boards in accordance with Minnesota Statutes.

As discussed further in Note 1C, these financial statements are presented on a modified cash basis of accounting. This basis of accounting differs from accounting principles generally accepted in the United States of America (GAAP). Generally accepted accounting principles include all relevant Governmental Accounting Standards Board (GASB) pronouncements.

A. FINANCIAL REPORTING ENTITY

The financial statements of the District include all organizations, funds and account groups over which the District's Board exercises significant influence over and, or is financially accountable for organizations for which the nature and significance of their relationship with the District is such that exclusion would cause the Red Lake Watershed District's financial statements to be misleading. In addition, there are no component units as defined in Governmental Accounting Standards Board Statement 61 which are included in the District's reporting entity.

B. BASIS OF PRESENTATION

GOVERNMENT-WIDE FINANCIAL STATEMENTS

The Statement of Net Cash Position and Statement of Activities Arising from Cash Transactions display information about the reporting government as a whole. They include all funds of the reporting entity except for fiduciary funds. The statements distinguish between governmental and business-type activities. The District has only governmental activities which are generally financed through taxes, intergovernmental revenues, and other non-exchange revenues; because of this, all of the District's activities are reported as governmental activities.

FUND FINANCIAL STATEMENTS

Fund financial statements of the reporting entity are organized into funds, each of which is considered to be a separate accounting entity. Each fund is accounted for by providing a separate set of self-balancing accounts that constitutes its assets, liabilities, fund equity, revenues, and expenditures/expenses. Funds are typically organized into three major categories: governmental, fiduciary and proprietary. The District currently has no proprietary funds.

RED LAKE WATERSHED DISTRICT
NOTES TO THE BASIC FINANCIAL STATEMENTS - CONTINUED
AS OF DECEMBER 31, 2016

An emphasis is placed on major funds within the governmental categories. A fund is considered major if it is the primary operating fund of the District or meets the following criteria:

- a. Total assets, liabilities, revenues, or expenditures/expenses of the individual governmental or enterprise fund are at least 10% of the corresponding total for all funds of that category or type, AND
- b. Total assets, liabilities, revenues, or expenditures/expenses of the individual governmental fund or enterprise fund are at least 5% of the corresponding total for all governmental and enterprise funds combined.

The funds of the financial reporting entity are described below:

Governmental Funds

General Fund

The General Fund is the primary operating fund of the District and always classified as a major fund. It is used to account for all activities except those legally or administratively required to be accounted for in other funds.

Special Revenue Fund

The special revenue fund is used to account for the proceeds of specific revenue sources (other than capital projects) where the expenditures are legally restricted for purposes specified in the grant or project agreements. The reporting entity includes the special revenue fund as a major fund.

Capital Projects Fund

The Capital Projects Fund is used to account for resources committed for the acquisition, construction and maintenance of specific capital projects or items. The reporting entity includes the capital projects fund as a major fund.

Fiduciary Funds

Agency Funds

Agency funds account for assets held by the District in a purely custodial capacity. The reporting entity includes one agency fund. Since agency funds are custodial in nature (i.e., assets equal liabilities), they do not involve the measurement of results of operations. The agency fund is as follows:

<u>Fund</u>	<u>Brief Description</u>
Red River Water Management Board	Property Taxes are levied by the District and submitted to the Management Board.

RED LAKE WATERSHED DISTRICT
NOTES TO THE BASIC FINANCIAL STATEMENTS - CONTINUED
AS OF DECEMBER 31, 2016

Major Funds

<u>Fund</u>	<u>Brief Description</u>
General Governmental	See above for description
Capital Projects Fund	See above for description
Special Revenue Fund	See above for description

C. MEASUREMENT FOCUS AND BASIS OF ACCOUNTING

Measurement focus is a term used to describe “how” transactions are recorded within the various financial statements. Basis of accounting refers to “when” transactions are recorded regardless of the measurement focus applied.

MEASUREMENT FOCUS

In the government-wide Statement of Net Cash Position and Statement of Activities Arising from Cash Transactions, governmental activities are presented using the economics resources measurement focus, within the limitations of the modified cash basis of accounting as defined below.

In the fund financial statements, the “current financial resources” measurement focus or the “economic resources” measurement focus, as applied to the modified cash basis of accounting, is used as appropriate.

All governmental funds utilize a “current financial resources” measurement focus. Only current financial assets and liabilities are generally included on their balance sheets. Their operating statements present sources and uses of available spendable financial resources during a given period. These funds use fund balance as their measure of available spendable financial resources at the end of the period.

BASIS OF ACCOUNTING

In the government-wide Statement of Net Cash Position and Statement of Activities Arising from Cash Transactions and the fund financial statements, governmental activities are presented using a modified cash basis of accounting. This basis recognized assets, liabilities, net position/fund equity, revenues, and expenditures/expenses when they result from cash transactions with the provisions for capital assets, deferred inflows of resources, deferred outflows of resources, and debt and depreciation in the government wide statements. This basis is a comprehensive basis of accounting other than accounting principles generally accepted in the United States of America.

If the District utilized the basis of accounting recognized as generally accepted, the fund financial statements for governmental funds would use the accrual basis of accounting. All government-wide financials would be presented on the accrual basis of accounting.

RED LAKE WATERSHED DISTRICT
NOTES TO THE BASIC FINANCIAL STATEMENTS - CONTINUED
AS OF DECEMBER 31, 2016

D. ASSETS, LIABILITIES, AND EQUITY

CASH AND CASH EQUIVALENTS

For the purpose of financial reporting, "cash and cash equivalents" includes all demand and savings accounts and certificates of deposit or short-term investments with an original maturity of one year or less. Cash balances from all funds are pooled and invested to the extent available in authorized investments authorized by Minnesota statutes. Earnings from such investments are allocated to the respective funds on the basis of average cash balance participation by each fund. Funds with deficit averages are charged with the investment earnings lost in financing the deficits.

CAPITAL ASSETS

The District's modified cash basis of accounting reports capital assets resulting from cash transactions and reports depreciation where appropriate.

All capital assets are valued at historical cost, or if donated, recorded at its estimated fair value. Infrastructure assets acquired prior to January 1, 2004 are not capitalized, but subsequent acquisitions are recorded at cost. Costs associated with infrastructure on property not owned by the District are immediately expensed.

In the government-wide financial statements, capital assets arising from cash transactions are accounted for as an expense in the Statement of Net Cash Position, with accumulated depreciation reflected in the Statement of Net Cash Position. Depreciation is provided over the assets' estimated useful lives using the straight-line method of depreciation. Capitalization thresholds of \$500 for equipment and building improvements of \$5,000 for infrastructure are used to report capital assets. Estimated useful lives being used are summarized below:

Building and Improvements	19-40 years
Equipment, Furniture and Fixtures	3-15 years

In governmental fund financial statements, capital assets arising from cash transactions acquired for use in governmental fund operations are accounted for as capital outlay expenditures of the governmental fund upon acquisition.

DEFERRED OUTFLOWS/INFLOWS OF RESOURCES

In addition to assets, the statement of net cash position will sometimes report a separate section for deferred outflows of resources. This separate financial statement element, deferred outflows of resources, represents a consumption of net position that applies to a future period(s) and so will not be recognized as an outflow of resource (expense/expenditure) until then. In addition to liabilities, the statement of net cash position will sometimes report a separate section for deferred inflows of resources. This separate financial statement element, *deferred inflows of resources*, represents an acquisition of net position that applies to a future period(s) and so will *not* be recognized as an inflow of resources (revenue) until that time. The District does not have any items that qualify for reporting in these categories.

RED LAKE WATERSHED DISTRICT
NOTES TO THE BASIC FINANCIAL STATEMENTS - CONTINUED
AS OF DECEMBER 31, 2016

LONG-TERM DEBT

All long-term debt arising from cash transactions to be repaid from governmental fund resources is reported as a liability only in the government-wide statements.

Long-term debt arising from cash basis transactions of governmental funds is not reported as liabilities in the fund financial statements. The debt proceeds are reported as other financing sources and the payment of principal and interest are reported as expenditures.

COMPENSATED ABSENCES

Full-time employees employed for six months with the District accrue 80 hours per year of vacation for the first five years of employment. During the next five years of employment, an employee accrues 120 hours per year and after ten years of employment, an employee accrues 160 hours per year of vacation. Qualifying part-time employees are entitled to vacation based on the percentage of hours worked per pay period. The maximum accumulation of vacation leave is 200 hours. Unused vacation leave is paid only upon termination of employment.

Full-time employees employed with the District accrue eight hours of sick leave per month. Part-time employees who have worked 60% of the time for a period of nine months shall be entitled to sick leave based on the percentage of hours worked per pay period. The maximum accumulation of sick leave is 336 hours and does not vest upon termination of employment. As of January 1, 2014, half of the employee's remaining sick leave will be paid at the employee's current hourly rate to the employee upon retirement. If the employee quits or is terminated for any reason, no payment shall be made to the employee. District Office shall maintain leave records by posting leave earned and taken, and calculating a current balance for each employee. There will be no payment in lieu of sick leave, except when retirement of employment occurs. No vested or accumulated liability has been recorded for accumulated compensated absences.

PENSIONS

Plan contributions are recognized as of employer payroll paid dates and benefit payments and refunds are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.

EQUITY

Government-Wide Statements

Equity is classified as Net Position and displayed in three components:

- a. Restricted Net Position – Consists of Net Position with constraints placed on the use either by (1) external groups such as creditors, grantors, contributors, or laws and regulations of other governments; or (2) law through constitutional provisions or enabling legislation.
- b. Unrestricted Net Position – All other Net Position that does not meet the definition of “restricted” or “invested in capital assets, net of related debt.”
- c. Investment in Capital Assets – Consists of capital assets including restricted capital assets, net of accumulated depreciation.

RED LAKE WATERSHED DISTRICT
NOTES TO THE BASIC FINANCIAL STATEMENTS - CONTINUED
AS OF DECEMBER 31, 2016

It is the District's policy to first use restricted Net Position prior to the use of unrestricted Net Position when an expense is incurred for purposes for which both restricted and unrestricted Net Position are available.

EQUITY CLASSIFICATION

Fund Financial Statements

Governmental fund equity is classified as fund balance.

E. REVENUES, EXPENDITURES AND EXPENSES

PROGRAM REVENUES

In the Statement of Activities Arising from Cash Transactions, modified cash basis revenues that are derived directly from each activity or from parties outside the District's taxpayers are reported as program revenues. The District has the following program revenues: direct project cost reimbursements and project special assessments, rental income and operating and capital grants specific to projects. All other governmental revenues are reported as general revenue. All taxes are classified as general revenue even if restricted for a specific purpose.

F. USE OF ESTIMATES

The preparation of financial statements in conformity with the other comprehensive basis of accounting (OCBOA) used by the District required management to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

G. FUND BALANCE CLASSIFICATIONS

In the fund financial statements, governmental funds report fund balance in classifications that disclose constraints for which amounts in those funds can be spent. These classifications are as follows:

Nonspendable – consists of amounts that are not in spendable form, such as inventory and prepaid items.

Restricted – consists of amounts related to externally imposed constraints established by creditors, grantors or contributors; or constraints imposed by state statutory provisions.

Committed – consists of internally imposed constraints. These constraints are established by the Board of Managers.

Assigned – consists of internally imposed constraints. These constraints reflect specific purpose for which it is the District's intended use. These constraints are established by the Board of Managers and/or management.

Unassigned – is the residual classification for the general fund and also reflects negative residual amounts in other funds.

RED LAKE WATERSHED DISTRICT
NOTES TO THE BASIC FINANCIAL STATEMENTS - CONTINUED
AS OF DECEMBER 31, 2016

When both restricted and unrestricted resources are available for use, it is the District's policy to first use restricted resources, and then use unrestricted resources as they are needed.

When committed, assigned or unassigned resources are available for use, it is the District's policy to use resources in the following order; 1) committed, 2) assigned and 3) unassigned.

INTERFUND BALANCES

In the process of aggregating the fund information for the government-wide Statement of Net Cash Position and Statement of Activities Arising from Cash Transactions, some amounts reported as interfund activity and balances in the fund financial statements have been eliminated or reclassified.

H. NET POSITION

Net position represents the difference between (a) assets and deferred outflows of resources and (b) liabilities and deferred inflows of resources in the District's financial statements. Net investment in capital assets consists of capital assets, net of accumulated depreciation, reduced by the outstanding balances of any long-term debt attributable to the acquisition, construction, or improvement of those assets. Restricted net position consists of restricted assets reduced by liabilities and deferred inflows of resources related to those assets. Unrestricted net position is the net amount of assets, deferred outflows of resources, liabilities, and deferred inflows of resources that are not included in the determination of net investment in capital assets or the restricted component of net position.

NOTE 2 STEWARDSHIP, COMPLIANCE AND ACCOUNTABILITY

By its nature as a local government unit, the district is subject to various federal, state, and local laws and contractual regulations. There are no instances of noncompliance that are considered material to the financial statements.

NOTE 3 DETAIL NOTES-TRANSACTION CLASSES/ACCOUNTS

The District maintains a cash account at its depository bank. Investments are carried at fair value. The District considers Certificates of Deposit to be cash.

Interest Rate Risk

The District does not have a formal investment policy that limits investment maturities as a means of managing its exposure to fair value losses arising from increasing interest rates.

Credit Risk

The District may invest idle funds as authorized in Minnesota Statutes, as follows:

- a. Direct obligations or obligations guaranteed by the United States or its agencies.
- b. Shares of investment companies registered under the Federal Investment Company Act of 1940 and whose only investments are in securities described in (a) above.
- c. General obligations of the State of Minnesota or any of its municipalities.

RED LAKE WATERSHED DISTRICT
NOTES TO THE BASIC FINANCIAL STATEMENTS - CONTINUED
AS OF DECEMBER 31, 2016

- d. Bankers Acceptance of United States banks eligible for purchases by the Federal Reserve System.
- e. Commercial paper issued by United States corporations or their Canadian subsidiaries, of the highest quality, and maturing in 270 days or less.
- f. Repurchase or reverse repurchase agreements with banks that are members of the Federal Reserve System with capitalization exceeding \$10,000,000, a primary reporting dealer in U.S. government securities to the Federal Reserve Bank of New York, or certain Minnesota securities broker-dealers.
- g. Futures contracts sold under authority of Minnesota Statutes 471.56, Subd. 5.

The District has no investment policy that would further limit its investment choices.

Concentration of Credit Risk

The District places no limit on the amount the District may invest in any one issuer.

Custodial Credit Risk - Deposits

In accordance with Minnesota Statutes, the District maintains deposits at those depository banks authorized by the District's Board, all of which are members of the Federal Reserve System.

Minnesota Statutes require that all District deposits be protected by insurance, surety bond, or collateral. The market value of collateral pledged must equal 110% of the deposits not covered by insurance or bonds.

At December 31, 2016, the carrying amount of the District's deposits was \$5,487,822 and the bank balance was \$5,567,154. The bank balance was covered by Federal Depository Insurance and by collateral held by the District's agent in the District's name at December 31, 2016.

NOTE 4 PROPERTY TAXES

The District levies property taxes on property owners within the District, which becomes an enforceable lien as of January 1. Taxes are levied in September and are payable to counties on May 15 and October 15 (November 15 for farm property) of the following year. The District levies the tax, while the respective counties collect and remit the tax collections to the District. Property taxes are recognized when received from the counties under the modified cash basis of accounting.

The District also levies special assessments through the counties against property owners who obtain direct benefits from projects or property owners who request, through the petition process, to have a project undertaken. The special assessment collections are recorded in a manner similar to that for property taxes.

RED LAKE WATERSHED DISTRICT
NOTES TO THE BASIC FINANCIAL STATEMENTS - CONTINUED
AS OF DECEMBER 31, 2016

NOTE 5 DEFINED BENEFIT PENSION PLANS

The District prepares its financial statements on the modified cash basis of accounting as described in Note 1 and has not adopted GASB Statement No. 68, *Accounting and Financial Reporting for Pensions – an Amendment of GASB Statement No. 27*, or GASB Statement No. 71, *Pension Transition for Contributions Made Subsequent to the Measurement Date*. The following footnote is for informational purposes only and includes amounts for deferred inflows of resources, deferred outflows of resources and net pension liability that would have been recorded under generally accepted accounting principles.

PLAN DESCRIPTION

The District participates in the following cost-sharing multiple-employer defined benefit pension plans administered by the Public Employees Retirement Association (PERA). PERA's defined benefit pension plans are established and administered in accordance with Minnesota Statutes, Chapters 353 and 356. PERA's defined benefit pension plans are tax qualified plans under Section 401 (a) of the Internal Revenue Code.

General Employees Plan

All full-time and certain part-time employees of the District are covered by the General Employees Plan. General Employees Plan members belong to either the Coordinated Plan or the Basic Plan. Coordinated Plan members are covered by Social Security and Basic Plan members are not. The Basic Plan was closed to new members in 1967. All new members must participate in the Coordinated Plan.

Benefits Provided – PERA provides retirement, disability, and death benefits. Benefit provisions are established by state statute and can only be modified by the state legislature.

Benefit increases are provided to benefit recipients each January. Increases are related to the funding ratio of the plan. Members in plans that are at least 90% funded for two consecutive years are given 2.5% increases. Members in plans that have not exceeded 90% funded, or have fallen below 80%, are given 1% increases.

The benefit provisions stated in the following paragraphs of this section are current provisions and apply to active plan participants. Vested, terminated employees who are entitled to benefits but are not receiving them yet are bound by the provisions in effect at the time they last terminated their public service.

Benefits are based on a member's highest average salary for any five successive years of allowable service, age, and years of credit at termination of service. Two methods are used to compute benefits for PERA's Coordinated and Basic Plan members. The retiring member receives the higher of a step-rate benefit accrual formula (Method 1) or a level accrual formula (Method 2). Under Method 1, the annuity accrual rate for a Basic Plan member is 2.2% of average salary for each of the first ten years of service and 2.7% for each remaining year. The annuity accrual rate for a Coordinated Plan member is 1.2% of average salary for each of the first ten years and 1.7% for each remaining year. Under Method 2, the annuity rate is 2.7% of average salary for Basic Plan members and 1.7% for Coordinated Plan members for each year of service.

RED LAKE WATERSHED DISTRICT
NOTES TO THE BASIC FINANCIAL STATEMENTS - CONTINUED
AS OF DECEMBER 31, 2016

For members hired prior to July 1, 1989, a full annuity is available when age plus years of service equal 90 and normal retirement age is 65. For members hired on or after July 1, 1989, normal retirement age is the age for unreduced Social Security benefits capped at 66.

Contributions – Minnesota Statutes Chapter 353 sets the rates for employer and employee contributions. Contribution rates can only be modified by the state legislature.

Basic Plan members and Coordinated Plan members were required to contribute 9.1% and 6.5%, respectively, of their annual covered salary in calendar year 2016. The District was required to contribute 11.78% of pay for Basic Plan members and 7.5% for Coordinated Plan members in calendar year 2016. The District's contributions to the General Employees Fund for the year ended December 31, 2016, were \$27,201. The District's contributions were equal to the required contributions for each year as set by state statute.

Pension Costs – At December 31, 2016, the District's liability is \$470,931 for its proportionate share of the General Employees Fund's net pension liability. The net pension liability was measured as of June 30, 2016, and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation as of that date. The District's proportion of the net pension liability was based on the District's contributions received by PERA during the measurement period for employer payroll paid dates from July 1, 2015, through June 30, 2016, relative to the total employer contributions received from all of PERA's participating employers. At June 30, 2016, the District's proportion was .0058% which was a decrease of .0012% from its proportion measured as of June 30, 2015.

At December 31, 2016, the District's proportionate share of the General Employees Plan's deferred outflows of resources and deferred inflows of resources related to pensions were from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual economic experience	\$ -	\$ 40,346
Changes in proportion	-	56,038
Changes in actuarial assumptions	92,208	
Difference between projected and actual investment earnings	93,802	-
Contributions paid to PERA subsequent to the measurement date	13,600	-
Total	\$ 199,610	\$ 96,384

\$13,600 of deferred outflows of resources related to pensions resulting from District contributions subsequent to the measurement date will be recognized as a reduction of the net pension liability in the year ending December 31, 2017. Other amounts reported as deferred outflows and inflows of resources related to pensions will be recognized in pension expense as follows:

Year Ending December 31	Pension Expense Amount
2017	\$ 20,607
2018	20,607
2019	31,401
2020	17,011

RED LAKE WATERSHED DISTRICT
NOTES TO THE BASIC FINANCIAL STATEMENTS - CONTINUED
AS OF DECEMBER 31, 2016

Actuarial Assumptions – The total pension liability in the June 30, 2016, actuarial valuation was determined using the following actuarial assumptions:

Inflation	2.50% per year
Active Member Payroll Growth	3.25% per year
Investment Rate of Return	7.50%

Salary increases were based on a service-related table. Mortality rates for active members, retirees, survivors and disabilitants were based on RP-2014 tables for males or females, as appropriate, with slight adjustments. Cost of living benefit increases for retirees are assumed to be one percent per year for all future years.

Actuarial assumptions used in the June 30, 2016, valuation were based on the results of actuarial experience studies. The most recent four-year experience study in the General Employees Plan was completed in 2015.

The following changes in actuarial assumptions occurred in 2016:

- The assumed post-retirement benefit increase rate was changed from 1.0% per year through 2035 and 2.5% per year thereafter to 1.0% per year for all future years.
- The assumed investment return was changed from 7.9% to 7.5%. The single discount rate was changed from 7.9% to 7.5%.
- Other assumptions were changed pursuant to the experience study dated June 30, 2015. The assumed future salary increases, payroll growth, and inflation were decreased by 0.25% to 3.25% for payroll growth and 2.50% for inflation.

The State Board of Investment, which manages the investments of PERA, prepares an analysis of the reasonableness on a regular basis of the long-term expected rate of return using a building-block method in which best-estimate ranges of expected future rates of return are developed for each major asset class. These ranges are combined to produce an expected long-term rate of return by weighting the expected future rates of return by the target asset allocation percentages. The target allocation and best estimates of geometric real rates of return for each major asset class are summarized in the following table:

<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long-Term Expected Real Rate of Return</u>
Domestic Stocks	45%	5.50%
International Stocks	15%	6.00%
Bonds	18%	1.45%
Alternative Assets	20%	6.40%
Cash	2%	0.50%

RED LAKE WATERSHED DISTRICT
NOTES TO THE BASIC FINANCIAL STATEMENTS - CONTINUED
AS OF DECEMBER 31, 2016

Discount Rate – The Discount rate used to measure the total pension liability in 2016 was 7.5%, a reduction from the 7.9% used in 2015. The projection of cash flows used to determine the discount rate assumed that contributions from the plan members and employers will be made at rates set in Minnesota Statutes. Based on these assumptions, the fiduciary net position of the General Employers Fund was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Pension Liability Sensitivity – The following presents the District’s proportionate share of the net pension liability for all plans it participates in, calculated using the discount rate disclosed in the preceding paragraph, as well as what the District’s proportionate share of the net pension liability would be if it were calculated using a discount rate one percentage point lower or one percentage point higher than the current discount rate:

District's Proportionate Share of NPL					
1% Decrease (6.5%)		Current (7.5%)		1% Increase (8.5%)	
\$	668,862	\$	470,931	\$	307,890

Pension Plan Fiduciary Net Position – Detailed information about each pension plan’s fiduciary net position is available in a separately issued PERA financial report that includes financial statements and required supplementary information. That report may be obtained on the Internet at www.mnpera.org.

Related-Party Investments

As of December 31, 2016, the District held no related-party investments.

NOTE 6 RISK MANAGEMENT

The District is exposed to various risks of loss related to torts; theft of, damage to, or destruction of assets; errors and omissions; injuries to employees; employees’ health and life; and natural disasters. The District manages these various risks of loss with the purchase of insurance through commercial insurance providers. The District carries commercial insurance coverage on its commercial property and for liability, personal and advertising injury, non-owned auto and a miscellaneous floater.

Management believes such coverage is sufficient to preclude any significant uninsured losses to the District. Settled claims have not exceeded this insurance coverage in any of the past three fiscal years.

RED LAKE WATERSHED DISTRICT
NOTES TO THE BASIC FINANCIAL STATEMENTS - CONTINUED
AS OF DECEMBER 31, 2016

NOTE 7 CAPITAL ASSETS

Capital assets activity resulting from modified cash basis transactions for the year ended December 31, 2016 was as follows:

	Beginning Balance	Additions	Deletions	Ending Balance
<u>Capital Assets</u>				
Building and Improvements	\$ 762,888	\$ 12,706	\$ -	\$ 775,594
Infrastructure Improvements	12,260,172	341,794	-	12,601,966
Engineering Equipment	389,267	11,970	5,505	395,732
Office Equipment	139,308	1,290	1,959	138,639
Land and Permanent Easements	1,876,922	30,000	-	1,906,922
Construction in Progress	44,782	328,702	44,782	328,702
Total	<u>\$ 15,473,339</u>	<u>\$ 726,462</u>	<u>\$ 52,246</u>	<u>\$ 16,147,555</u>
	Beginning Balance	Additions	Deletions	Ending Balance
<u>Accumulated Depreciation</u>				
Building and Improvements	\$ 251,654	\$ 22,519	\$ -	\$ 274,173
Infrastructure Improvements	1,870,409	491,301	-	2,361,710
Engineering Equipment	314,212	28,436	5,505	337,143
Office Equipment	112,035	15,770	1,959	125,846
Total	<u>2,548,310</u>	<u>558,026</u>	<u>7,464</u>	<u>3,098,872</u>
	<u>\$ 12,925,029</u>	<u>\$ 168,436</u>	<u>\$ 44,782</u>	<u>\$ 13,048,683</u>

Depreciation expense of \$558,026 for the year ended December 31, 2016 is included in general and administrative program costs.

NOTE 8 OVERHEAD COST ALLOCATION

Overhead costs are allocated to all projects at 150% of direct salaries to projects. Overhead costs represent those costs incurred by the District for administration, employee benefits, engineering, and related operating expenditures, which are not charged directly to the project. The total overhead costs charged to projects in 2016 was \$580,373.

NOTE 9 CONTINGENCIES

Grants

The District participates in state and federal grant programs, which are governed by various rules and regulations of the grantor agencies. Costs charged to the respective grant programs are subject to audit and adjustment by the grantor agencies; therefore, to the extent that the District has not complied with the rules and regulations governing the grants, refunds of money received may be required and the collectability of any related receivable at December 31, 2016, may be impaired. The District is not aware of any significant contingent liabilities relating to compliance with the rules and regulations governing the respective grants.

Claims and Litigation

The District is not presently involved in any legal actions relating to projects undertaken or attempted to be undertaken.

RED LAKE WATERSHED DISTRICT
NOTES TO THE BASIC FINANCIAL STATEMENTS - CONTINUED
AS OF DECEMBER 31, 2016

NOTE 10 CONSTRUCTION COMMITMENTS

During the year, the District had entered into construction projects that have not been completed at year end. The amounts committed for the Pine Lake FDR project was \$171,906, \$150,379 for Four Legged Lake, and \$6,417 for Black River Impoundment at December 31, 2016.

NOTE 11 SUBSEQUENT EVENTS

No significant events occurred subsequent to the District's year end. Subsequent events have been evaluated through March 10, 2017, which is the date these financial statements were available to be issued.

SUPPLEMENTARY INFORMATION

RED LAKE WATERSHED DISTRICT
BUDGETARY COMPARISON SCHEDULE - GENERAL FUND
FOR THE YEAR ENDED DECEMBER 31, 2016

REVENUES	Original and Final Budget	Actual 2016	Variance
Tax Levies	\$ 155,815	\$ 155,815	\$ -
Intergovernmental			
State	-	903	903
Miscellaneous	-	7,886	7,886
Allocated Interest	-	3,566	3,566
	<u>155,815</u>	<u>168,170</u>	<u>12,355</u>
Total Revenues	<u>155,815</u>	<u>168,170</u>	<u>12,355</u>
EXPENDITURES			
General and Administrative	155,815	135,125	(20,690)
Interest	-	1,502	1,502
	<u>155,815</u>	<u>136,627</u>	<u>(19,188)</u>
Total Expenditures	<u>155,815</u>	<u>136,627</u>	<u>(19,188)</u>
Revenue Over Expenditures	-	31,543	<u>31,543</u>
FUND BALANCE JANUARY 1	<u>437,486</u>	<u>437,486</u>	
FUND BALANCE DECEMBER 31	<u>\$ 437,486</u>	<u>\$ 469,029</u>	

See Note to the Budgetary Comparison Schedule

RED LAKE WATERSHED DISTRICT
NOTE TO THE BUDGETARY COMPARISON SCHEDULE
FOR THE YEAR ENDED DECEMBER 31, 2016

NOTE 1 – BUDGETARY COMPARISON

The budget is prepared using the same method of accounting as the financial statements. The annual adopted budget is not legally binding on the District, with the exception of the budget for the general fund, which is limited by state statute at \$250,000 and set by the Board for 2016 at \$155,815. All appropriations lapse at year-end.

RED LAKE WATERSHED DISTRICT
STATEMENT OF RECEIPTS AND DISBURSEMENTS AND CHANGES IN FUND BALANCE – ALL FUNDS –
MODIFIED CASH BASIS
FOR THE YEAR ENDED DECEMBER 31, 2016

	Revenues					Expenses			Transfer		Fund Balance (Deficit) December 31
	Fund Balance (Deficit) January 1	Assessments and Other Charges for Services	Operating/ Capital Grants and Contribution	Allocated Interest Earned	Taxes	Direct	Allocated Interest Charged	Allocated Salary and Overhead	In (Out)		
GENERAL FUND	\$ 437,486	\$ 7,886	\$ 903	\$ 3,566	\$ 155,815	\$ 715,498	\$ 1,502	\$ (580,373)	\$ -	\$ -	\$ 469,029
SPECIAL REVENUE FUND JOBS:											
Red Lake River Project	58,068	-	-	264	-	484	-	3,488	-	-	54,360
Clearwater River Project	26,536	-	-	-	-	33,883	17	1,508	-	-	(8,872)
Lost River Project	8,618	-	-	33	-	-	-	2,378	-	-	6,273
RLWD Ditch #1	2,238	4,551	-	14	-	1,900	-	1,055	-	-	3,848
RLWD Ditch #3	5,158	4,722	1,548	24	-	3,114	-	1,761	-	-	6,577
State Ditch #83	(17,728)	24,344	16,059	9	-	5,592	-	3,617	-	-	13,475
RLWD Ditch #7	8,423	178	-	32	-	3,261	-	2,421	-	-	2,951
Pine Lake Maintenance	1,334	3,149	-	4	-	812	-	3,633	-	-	42
RLWD Ditch #8	(5,652)	9,857	-	-	-	-	11	715	-	-	3,479
RLWD Ditch #9	2,215	-	-	7	-	313	-	719	-	-	1,190
J.D. Ditch #72	(2,061)	2,832	3,113	-	-	2,768	9	1,418	-	-	(311)
Clearwater/Wild Rice River	(7,739)	9,277	-	-	-	-	37	7,153	-	-	(5,652)
Branch A & 1, J.D. #2	1,129	963	-	5	-	-	-	654	-	-	1,443
Main J.D. #2 and Branch B&C	(184)	2,161	-	-	-	1,665	2	1,530	-	-	(1,220)
Main J.D. 2C, Eck	2,610	3	-	5	-	140	-	4,802	-	-	(2,324)
Krostatue Petition	2,692	-	-	9	-	708	-	892	-	-	1,101
Clearwater County Joint Ditch #1	(137)	-	-	-	-	-	-	-	-	-	(137)
Clearwater County Joint Ditch #4	345	500	-	2	-	-	-	258	-	-	589
Clearwater County Joint Ditch #5	(37)	-	-	-	-	-	-	68	-	-	(105)
Clearwater County Ditch #1	290	-	-	-	-	-	-	-	-	-	290
Clifford Arveson Ditch	1,922	2,968	-	8	-	-	-	613	-	-	4,285
Winsor/Hangaard/Clearwater County Petition	(4,391)	6,644	-	-	-	-	11	1,124	-	-	1,118
Equality RLWD Ditch #1, lat C	3,771	70	-	29	-	904	-	893	-	-	2,073
K. Johnson Petition	3,990	95	-	19	-	200	-	167	-	-	3,737
Polk County Ditch #s 104, 61, 47, 94	(5,285)	7,000	-	-	-	3,550	19	382	-	-	(2,236)
TRF Drainage Ditch (Challenger Ditch)	1,934	21	-	8	-	-	-	454	-	-	1,509
Scott Beatz Petition	968	1,000	-	5	-	200	-	143	-	-	1,630
Polk County Ditch #63 Improvement	8,497	-	-	38	-	1,127	-	275	-	-	7,133
Polk County Ditch #33 Improvement	310	2,501	-	3	-	1,000	-	236	-	-	1,578
RLWD Ditch #10	(2,824)	3,343	-	-	-	1,477	13	819	-	-	(1,790)
RLWD Ditch #11	31,583	-	-	145	-	3,639	-	359	-	-	27,730
RLWD Ditch #12	(13,442)	14,865	-	-	-	4,363	51	1,143	-	-	(4,134)
RLWD Ditch #14	(4,670)	2,853	-	-	-	(1,636)	31	2,407	-	-	(2,619)
RLWD Ditch #15	99,570	(1)	-	450	-	4,467	-	2,573	-	-	92,979
Burnham Creek Channel	(46,924)	48,060	-	-	-	13,223	175	2,018	-	-	(14,280)
RLWD Ditch #13	3,086	-	-	15	-	-	-	96	-	-	3,005
Thief River Falls Flood Damage Reduction Project	(8,002)	-	-	-	-	4,355	53	2,321	-	-	(14,731)
TOTAL SPECIAL REVENUE	\$ 156,211	\$ 151,956	\$ 20,720	\$ 1,128	\$ -	\$ 91,509	\$ 429	\$ 54,093	\$ -	\$ -	\$ 183,984

RED LAKE WATERSHED DISTRICT
STATEMENT OF RECEIPTS AND DISBURSEMENTS AND CHANGES IN FUND BALANCE – ALL FUNDS –
MODIFIED CASH BASIS – CONTINUED
FOR THE YEAR ENDED DECEMBER 31, 2016

	Revenues					Expenses			Transfer		Fund Balance (Deficit) December 31
	Fund Balance (Deficit) January 1	Assessments and Other Charges for Services	Operating/ Capital Grants and Contribution	Allocated Interest Earned	Taxes	Direct	Allocated Interest Charged	Allocated Salary and Overhead	In (Out)		
CAPITAL PROJECT FUND JOBS:											
Moose River Project	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 17,039	\$ 57	\$ 8,236	\$ 25,332	\$ -	\$ -
Lost River Impoundment	-	-	-	-	-	-	-	74	74	-	-
Stream Gauging	-	-	-	-	-	21,978	87	10,511	32,576	-	-
Culvert Sizing	-	-	-	-	-	-	27	10,900	10,927	-	-
Schrick Dam	-	-	-	-	-	535	1	614	1,150	-	-
Pine Lake PWT	(71,358)	-	97,505	-	-	174,402	534	17,093	-	-	(165,882)
Hydrologic Analysis	-	-	-	-	-	-	32	10,245	10,277	-	-
Benchmarks	-	-	-	-	-	-	-	112	-	-	-
Emergency Maintenance	109,251	-	-	528	-	-	-	-	-	-	109,779
RRWMB - Technical Com	-	244	-	-	-	244	-	-	-	-	-
Water Quality	-	-	-	-	-	70,476	328	57,405	128,209	-	-
Maintenance Dams	-	-	-	-	-	-	5	1,760	-	-	-
Odney Flat Dam	(14,780)	-	-	-	-	91,030	301	5,359	111,469	-	(1)
Latundresse Dam	(15,478)	-	-	-	-	119,547	362	7,084	142,470	-	(1)
Miller Dam	(16,760)	-	-	-	-	87,308	276	3,519	107,863	-	-
Blackduck Lake Structure	-	-	-	-	-	15,010	23	2,909	-	-	(17,942)
Elm Lake	-	-	-	-	-	24,722	88	2,663	27,473	-	-
Red Lake Res./Good Lake	-	-	-	-	-	12,977	18	4,278	17,273	-	-
Parnell Impoundment	-	3,210	-	5	-	60	-	1,903	(1,252)	-	-
Greenwood 27 Bank Stabilization	-	-	-	-	-	229	-	-	229	-	-
Permits	-	-	-	-	-	4,331	227	103,375	107,933	-	-
Project Development	-	-	-	-	-	5,892	117	39,555	45,564	-	-
Louisville/Parnell Project	-	-	-	-	-	277	3	1,138	1,418	-	-
Ring Dike Program - General	1	-	-	-	-	-	2	249	250	-	-
Ross Ring Dike	(349)	4,515	-	-	-	31,645	57	1,952	29,488	-	-
Strandell Ring Dike	-	-	-	-	-	3,211	9	806	-	-	(4,026)
G.I.S.	-	-	-	-	-	-	40	15,412	15,452	-	-
Wetland Banking	4,720	-	-	12	-	2,355	-	1,977	-	-	400
Ten Year Overall Plan	(32,573)	-	4,421	-	-	13,243	227	23,277	64,899	-	-
Clearwater River - TMDL	-	-	-	-	-	108	6	2,969	3,053	-	-
Red River Corridor	-	-	-	-	-	461	6	1,836	2,303	-	-
Erosion Control Projects	-	-	4,050	-	-	68,769	105	7,064	71,888	-	-
WS Ditch System Inventory & Mapping	19,290	-	15,011	5	-	16,031	-	2,991	-	-	273
FEMA D-Firm Grant	-	-	-	5	-	3,408	-	1,363	(10,245)	-	-
Black River Impoundment	-	-	1,500	-	-	36,500	15	1,471	-	-	(37,986)
Web Page Development	-	-	60,565	-	-	153	1	2,017	671	-	-
Administrative Construction	4,744,718	-	-	25,800	1,340,302	-	-	-	(1,042,101)	-	5,129,284
Burnham Creek - BR6	-	2,993	-	-	-	-	2	674	676	-	-
Euclid East Impoundment	-	102	-	-	-	2,969	11	2,184	2,171	-	-
Brandt Impoundment	-	-	-	-	-	452	8	3,656	4,014	-	-

RED LAKE WATERSHED DISTRICT
STATEMENT OF RECEIPTS AND DISBURSEMENTS AND CHANGES IN FUND BALANCE – ALL FUNDS–
MODIFIED CASH BASIS – CONTINUED
FOR THE YEAR ENDED DECEMBER 31, 2016

	Fund Balance (Deficit) January 1	Revenues				Expenses			Transfer		Fund Balance (Deficit) December 31
		Assessments and Other Charges for Services	Operating/ Capital Grants and Contribution	Allocated Interest Earned	Taxes	Direct	Allocated Interest Charged	Allocated Salary and Overhead	In (Out)		
Brandt Channel Restoration	-	-	-	-	-	-	-	28	-	28	-
Grand Marais - Restoration	-	13,700	-	-	20,003	-	86	12,757	19,146	-	-
Grand Marais Cut Channel Stabilization	-	-	-	-	1,020	-	6	1,162	2,188	-	-
Cleanwater Public Education (River Watch)	-	383	-	-	4,216	-	57	18,899	22,789	-	-
Red River Basin Long Term Flood Control	-	-	-	-	18,992	-	86	6,201	25,279	-	-
Four Legged Lake PWT	(41,928)	-	83,347	-	152,281	-	363	14,328	-	-	(125,553)
BWSR Flood Storage Pilot Project	-	-	-	-	-	-	1	266	267	-	-
Glacial Ridge/LCCMR/400k	-	1,658	148,067	-	149,739	-	58	2,766	2,838	-	-
Glacial Ridge/LCCMR/168k	-	832	69,406	-	70,245	-	26	1,914	1,947	-	-
Thief River, TMDL	(16,853)	-	32,552	-	3,114	-	75	23,164	10,654	-	-
Red Lake River Watershed Assessment	(11,424)	-	25,826	-	2,400	-	83	45,236	-	-	(33,317)
Grand Marais WRAP	(14,065)	-	53,646	-	41,182	-	55	5,165	-	-	(6,821)
Cleanwater River WRAP	(11,456)	-	54,609	-	20,877	-	69	35,605	-	-	(13,398)
Cleanwater River SWAG	(4,140)	-	2,853	-	-	-	8	158	1,453	-	-
Total Capital Projects	4,626,816	27,637	653,358	26,355	1,340,302	1,309,431	3,948	526,280	-	-	4,834,809
Total All Funds	\$ 5,220,513	\$ 187,479	\$ 674,981	\$ 31,049	\$ 1,496,117	\$ 2,116,438	\$ 5,879	\$ -	\$ -	\$ -	\$ 5,487,822

RED LAKE WATERSHED DISTRICT
STATEMENT OF DIRECT EXPENDITURES BY CLASSIFICATION –
GOVERNMENTAL FUNDS - MODIFIED CASH BASIS
FOR THE YEAR ENDED DECEMBER 31, 2016

DIRECT EXPENDITURES:

Salaries -		
Inspection	\$	2,640
Survey - preliminary		6,046
Survey - construction		119
Drafting		5,352
Engineering		72,291
Project Administration		222,445
Field Work - Water Programs		48,034
Other		23,679
Compensated Absences		31,241
Payroll Taxes and Benefits		112,595
Manager's Expense		26,956
Travel, Mileage, Meetings and Per Diems		7,868
Audit		9,000
Legal		11,756
Other Professional Fees		187,930
Office Supplies		13,323
Office Equipment		1,290
Dues and Subscriptions		6,103
Insurance and Bonds		20,260
Repairs and Maintenance		56,856
Utilities		7,609
Telephone		9,062
Advertising and Publications		5,455
Truck Expense		11,165
Land Acquisition and Easements		30,000
Construction		460,766
Engineering Costs and Fees		5,853
Engineering Fees		490,967
Engineering Equipment		11,970
Glacial Ridge		217,473
Ring Dike Reimbursement		334
		<hr/>
Total Expenditures	\$	<u><u>2,116,438</u></u>

RED LAKE WATERSHED DISTRICT
STATEMENT OF RECEIPTS AND DISBURSEMENTS AND CHANGES IN AMOUNTS
DUE TO OTHER GOVERNMENTAL UNITS –
TRUST AND AGENCY FUND – MODIFIED CASH BASIS
FOR THE YEAR ENDED DECEMBER 31, 2016

RECEIPTS

<u>Property Taxes</u>	
Beltrami County	\$ 88,236
Clearwater County	180,981
Itasca County	898
Koochiching County	7,814
Mahnomen County	1,642
Marshall County	55,761
Pennington County	236,430
Polk County	657,147
Red Lake County	111,262
Roseau County	131
State - MV	<u>60,565</u>
 TOTAL RECEIPTS	 <u>1,400,867</u>

DISBURSEMENTS

Red River Watershed Management Board	<u>1,400,867</u>
 EXCESS OF RECEIPTS OVER (UNDER) DISBURSEMENTS	 -
 AMOUNT DUE TO OTHER GOVERNMENTAL UNITS, JANUARY 1	 <u>-</u>
 AMOUNT DUE TO OTHER GOVERNMENTAL UNITS, DECEMBER 31	 <u>\$ -</u>



CERTIFIED PUBLIC ACCOUNTANTS
AND CONSULTANTS

INDEPENDENT AUDITOR'S REPORT ON MINNESOTA LEGAL COMPLIANCE

Board of Managers
Red Lake Watershed District
Thief River Falls, Minnesota

We have audited, in accordance with auditing standards generally accepted in the United States of America and the standards applicable to the financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States, the financial statements of the governmental activities, each major fund, and the remaining fund information of the Red Lake Watershed District of Thief River Falls, Minnesota as of and for the year ended December 31, 2016 and the related notes to the financial statements, and have issued our report thereon dated March 10, 2017.

Legal Compliance

The *Minnesota Legal Compliance Audit Guide for Other Political Subdivisions*, promulgated by the State Auditor Pursuant to Minn. § Stat. 6.65 contains six categories of compliance to be tested: contracting and bidding, deposits and investments, conflicts of interest, claims and disbursements, miscellaneous provisions, and tax increment financing. Our study included all of the listed categories, except for tax increment financing.

In connection with our audit, nothing came to our attention that caused us to believe that Red Lake Watershed District failed to comply with the provisions of the *Minnesota Legal Compliance Audit Guide for Other Political Subdivisions*. However, our audit was not directed primarily toward obtaining knowledge of such noncompliance. Accordingly, had we performed additional procedures, other matters may have come to our attention regarding the District's noncompliance with the above referenced provisions.

Purpose of the Report

The purpose of this report is solely to describe the scope of our testing of compliance and the result of that testing, and not to provide an opinion on compliance. Accordingly, this communication is not suitable for any other purpose.

A handwritten signature in black ink that reads "Brady Martz".

BRADY, MARTZ & ASSOCIATES, P.C.
THIEF RIVER FALLS, MINNESOTA

March 10, 2017



CERTIFIED PUBLIC ACCOUNTANTS
AND CONSULTANTS

INDEPENDENT AUDITOR'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH GOVERNMENT AUDITING STANDARDS

Board of Managers
Red Lake Watershed District
Thief River Falls, Minnesota

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of the governmental activities, each major fund, and the remaining fund information of the Red Lake Watershed District, as of and for the year ended December 31, 2016, and the related notes to the financial statements, which collectively comprise the Red Lake Watershed District's basic financial statements and have issued our report thereon dated March 10, 2017.

Internal Control Over Financial Reporting

In planning and performing our audit, we considered the Red Lake Watershed District's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of Red Lake Watershed District's internal control. Accordingly, we do not express an opinion on the effectiveness of the Red Lake Watershed District's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies and therefore, material weaknesses or significant deficiencies may exist that were not identified. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. We did identify a certain deficiency in internal control, described in the accompanying schedule of findings and responses as item 2016-001 that we consider to be a significant deficiency.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether Red Lake Watershed District's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Red Lake Watershed District's Response to Finding

Red Lake Watershed District's response to the finding identified in our audit is described in the accompanying schedule of findings and responses. The District's response was not subjected to the auditing procedures applied in the audit of the financial statements and, accordingly, we express no opinion on it.

Purpose of this Report

This purpose of this report is solely to describe the scope of our testing of internal control and compliance and the result of that testing, and not to provide an opinion on the effectiveness of the District's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the District's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.



**BRADY, MARTZ & ASSOCIATES, P.C.
THIEF RIVER FALLS, MINNESOTA**

March 10, 2017

RED LAKE WATERSHED DISTRICT
SCHEDULE OF FINDINGS AND RESPONSES
FOR THE YEAR ENDED DECEMBER 31, 2016

2016-001 Finding

Criteria

An appropriate system of internal controls requires that a District make a determination that financial statements and the underlying general ledger accounts are properly stated on the modified cash basis of accounting. This requires the District's personnel to maintain a working knowledge of current accounting principles generally accepted in the United States of America and required financial statement disclosures.

Condition

The District's auditors prepared the financial statements as of December 31, 2016. An appropriate system of internal controls requires that a District must make a determination that financial statements and the underlying general ledger accounts are properly stated on the modified cash basis of accounting. This requires the District's personnel to maintain a working knowledge of current modified cash basis accounting principles and required financial statement disclosures.

Cause

The District could put together the financial statements on the modified cash basis of accounting; however, they have requested assistance in ensuring all required disclosures are properly included and changes made by GASB are implemented.

Effect

The District requested that the auditors prepare the financial statements.

Recommendation

Compensating controls could be provided through client preparation of the financial statement preparation and/or review function.

Management's Response

The District will continue to have the auditor prepare the financial statements; however, the District has established an internal control policy to document the annual review of the financial statements.

RED LAKE WATERSHED DISTRICT
CORRECTIVE ACTION PLAN
FOR THE YEAR ENDED DECEMBER 31, 2016

CORRECTIVE ACTION PLAN (CAP):

1. Explanation of Disagreement with the Audit Finding
There is no disagreement with the audit finding.
2. Actions Planned in Response to Finding
The District will implement recommendations to establish internal control policies for findings immediately.
3. Official Responsible for Insuring CAP
The administrator is the official responsible for insuring corrective action of the deficiency.
4. Planned Completion Date for CAP
The District will implement recommendations to establish internal control policies for findings immediately.
5. Plan to Monitor Completion of CAP
The Board of Managers will be monitoring this corrective action plan.

Red Lake Watershed District

