



Red Lake Watershed District



2010

Annual Report

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Letter from the President

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

The 2010 spring runoff event was very normal in the Red Lake Watershed District until May and June when large rain events hit our region. Although we received upwards of 10.6" of rain in the Thief River Falls area in those two months, there were areas upstream and downstream of Thief River Falls that witnessed nearly 16" of rain in that same time frame. This caused a lot of problems with drawdown to many flood damage reduction projects that are strategically located throughout our District. In many of them, it took upwards of an additional two months to release flood waters where we would normally see a one month drawdown period. Like every year, timing of these rainfalls is very important as even though we had these large rainfall events, a vast majority of the farmers got their crops in and ultimately had a very successful harvest.

In the year 2010, two of your Watershed District Board members were re-appointed by their respective counties. Dale M. Nelson, rural Thief River Falls, was reappointed by the Pennington County Board and Orville Knott, rural Red Lake Falls, was reappointed by the Red Lake County Board. We are also very glad to introduce our newest Board member Albert Mandt. Albert is from rural McIntosh and was appointed by the Polk County Commissioners to represent East Polk County. We are very glad to be part of the Red Lake Watershed District and hope to serve the folks of northwestern Minnesota to the best of our ability.

This year was a very busy year for our staff as we completed various on-going projects as well as starting many new. All projects are listed in detail in this report and I urge you to review them.

There is another exciting news item that I would like to share with the citizens of the Red Lake Watershed District. In December, 2010 at the Minnesota Association Watershed District annual meeting, the Red Lake Watershed District was awarded the Watershed District of the Year. This award is presented every year by the Minnesota Department of Natural Resources to the Watershed District that has gone beyond the call of duty to accomplish various goals. This award could not and would not have happened if we would not have had the cooperation of citizens in our District to assist us in completing various projects that ultimately put us in position to get this award. My hat goes off to all the citizens, staff and Board members in the great accomplishment!

I would like to remind the citizens that the goals of a watershed district are 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. You can also 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 2010 Annual Audit is included in this report in an abbreviated form. A complete copy of the 2010 Annual Audit may be obtained at the District office at 1000 Pennington Avenue South, Thief River Falls.

Once again, it was a pleasure to serve as President of the Board in 2010.

Sincerely,



Dale M. Nelson, President
Red Lake Watershed District

Board of Managers – 2010



Front Row (left to right): Albert Mandt, Dale M. Nelson and Orville Knott
Second Row (left to right): Lee Coe, Kelly Nordlund, LeRoy Ose and Gene Tiedemann



Dale M. Nelson was re-appointed to the RLWD Board of Managers for a 3-year term. Dale will represent Pennington County for the years 2010-2012.



Orville Knott was re-appointed to the RLWD Board of Managers for a 3-year term. Orville will represent Red Lake County for the years 2010-2012.



Albert Mandt was appointed to the RLWD Board of Managers for a 3-year term. Albert will represent East Polk County for the years 2010-2012.

Staff - 2010



Front row: Tammy Audette-Accounting Assistant/Secretary; Arlene Novak-Accounting/Secretary; **Back Row:** (left to right) Myron Jesme-Administrator; Jim Blix-Water Quality/Natural Resources Technician; Loren Sanderson- Engineering Assistant; Corey Hanson- Water Quality Coordinator; Gary Lane- Engineering Technician II

Office

The Red Lake Watershed District

Office is located at:

1000 Pennington Avenue South

Thief River Falls, MN 56701

Office Hours:

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Meetings

The Board of Managers held twenty-three regularly scheduled board meetings in 2010. These regular meetings are normally held the 2nd and 4th Thursday of each month at the District office at 9:00 a.m. Notice of these meetings are mailed or e-mailed to the Advisory Committees, county auditors, county commissioners, and SWCD/NRCS offices and by subscription. Minutes from board meetings are available by visiting our website at www.redlakewatershed.org/minutes. The 2010 General Fund Budget hearing was held on September 10, 2009. Notice for the General Fund Budget hearing was published in at least one newspaper in each of the 10 counties within the watershed district.

2010 Overall Advisory Committee

John A. Nelson, Walker Brook Area
Lloyd Wiseth, Marshall/Beltrami SWCD, Grygla
Steve Holte, Farmer/Landowner
Emmitt Weidenborner, Upper Red Lake Area
John Ungerecht, Upper Red Lake Area
Dan Schmitz, Black River Area
Gilbert Weber, Burnham Creek Area
John Gunvalson, Clearwater River Area
Roger Love, Grand Marais Area
Dave Rodahl, Thief River Area
Joel Rohde, Red Lake Band of Chippewa Indians

2010 Subwatershed Advisory Committee Members

Black River Area

*Dan Schmitz, RLF
Curt Beyer, RLF

Lost River Area

Gary Mathis, Gonvick

Walker Brook Area

*John A. Nelson, Clearbrook

Moose River Area

Wayne Larson, Middle River
Gordon Foss, Grygla
Elroy Aune, Gatzke

Grand Marais/Red Area

Jeep Mattson, EGF
Allen Love, Euclid
Conrad Zak, EGF

Pine Lake Area

Burnham Creek

*Gilbert Weber, Crookston
Dan Geist, Crookston

Poplar River Area

Red Lake River Area

Don Barron, TRF
Keith Driscoll, EGF

Clearwater River Area

Steve Linder, Oklee
*John Gunvalson, Gonvick
Arthur Wagner, Gonvick

Upper Red Lake Area

*Emmitt Weidenborner, Kelliher
*John Ungerecht, Northome

Clearwater Lake Area

John Cucci, Clearbrook

Hill River Area

Jake Martell, Oklee

Thief River Area

Richard Engelstad, Gatzke
*Dave Rodahl, TRF
Larry Hagen, Gatzke

*Overall Advisory Committee Member

The members of the Overall Advisory and the Subwatershed Advisory Committees met on March 24, 2010. Fifteen advisory members, four District Board members, and six District staff members were in attendance. Staff members from the Red Lake Watershed 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 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 Mahnomen, Polk, Itasca, Marshall, Clearwater, Beltrami, Roseau, and Koochiching Counties.

A governmental unit known as the Red Lake Drainage and Conservancy District preceded the Red Lake Watershed 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 Watershed 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 Red Lake Watershed 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, to be entitled "Permit and Drainage Rules of the Red Lake Watershed District."

In 1977, the Red Lake Watershed 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 Red Lake Watershed 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.

2010 District Projects

Grand Marais Sub Watershed Project (RLWD Project #60B)

In 1999, a Project Work Team was organized consisting of Local, State, Federal Agencies and local landowners; this project team was identified as Project 60 Work Team. Through a series of meetings and consensus based agreements, priorities were identified for the Project Work Team to focus on in the foreseeable future.

In 2003, the Project Work Team held 9 meetings in our District office. From these meetings, the Project Work Team identified a series of potential projects to an area east of East Grand Forks, MN that would help alleviate flooding problems to an area consisting of approximately 50 square miles. This area would be later identified as the “Grand Marais Creek Subwatershed Project”.

In May of 2003, the Board voted to proceed with the Step 1 submittal for funding to the Flood Damage Reduction Work Group in the event that the Board would decide to proceed with this project. This submittal was accepted by the Work Group and at their June meeting they appropriated \$20,000 toward the preliminary engineering of this project.

In the summer of 2003, Governor Pawlenty announced his vision for a Clean Water Initiative. Part of this Initiative was the selection of demonstration projects from four general areas that represent some of the state’s most unique and important water challenges. Projects were selected using criteria based on value, measurable results within three years, local support, and alignment of local and state priorities, transferability, and scale. As part of the Initiative, the “Grand Marais Subwatershed Project” was selected by the Governors Clean Water Cabinet as a pilot project for the Red River Basin. Selection of this project acknowledges that the Pawlenty administration has placed a priority on flood damage reduction efforts as well as water quality and Natural Resource Enhancement.

At their meeting in August of 2003, the Board voted to proceed with the preliminary engineers report to better identify the potential costs of this project.

In January of 2004, the Board instructed the District Administrator to proceed with the negotiations for the land required for this project. Discussion with the landowners progressed throughout the year and options were signed for acquisitions of property.

In May of 2004, the preliminary engineers report for both the Euclid East and the Brandt Impoundments was presented to the Board of Managers. Due to the Minnesota Legislature’s lack of action on a 2004 bonding bill, the board moved and passed a motion to table the two reports until state funding could be secured.

In April of 2005, the State of Minnesota passed a bonding bill which appropriated \$2,000,000 to assist in the land acquisition and construction of Euclid East and Brandt Impoundments. Although the District received less than the requested \$2,600,000, the Board of Managers instructed the Project Engineer to proceed with the development of the project and start preparations for the hearing at their regularly scheduled meeting held April 14, 2005.

On June 23, 2005, a public hearing was called to order at the Youngquist Auditorium in Crookston Minnesota, for the Grand Marais Creek Subwatershed Project, RLWD Project No. 60B.

On July 14, 2005 the Board of Managers accepted the Findings of Facts as written and approved the Chairman’s signature.

On August 25, 2005, the Board adopted a resolution for the Flood Hazard Mitigation Grant Agreement with the Department of Natural Resources for the Grand Marais Creek Subwatershed Project for the Euclid East Impoundment, RLWD Project #60C, and the Brandt Impoundment, RLWD Project #60D. This project was funded by the following entities: State of Minnesota 50%, Red River Watershed Management Board 37.5%, and the Red Lake Watershed District 12.5%.

At their regularly scheduled Board meeting on April 27, 2006, the Engineer presented the Final Engineer's Report for both the Euclid East (Project 60C) and Brandt (Project 60D) Impoundments. After considerable discussion, the Board approved the Final Reports and instructed the Administrator to proceed with the advertisement for bids with each impoundment bid separately.

Bids were opened on May 25, 2006, for the construction of Euclid East Impoundment. Six bids were received with the low bid being awarded to R.J. Zavoral & Sons Inc., East Grand Forks, MN, in the amount of \$1,574,672.13. Following the bid opening for the Euclid East Impoundment, the bid opening for Brandt Impoundment was held. Five bids were received with the low bid being awarded to R.J. Zavoral & Sons Inc., East Grand Forks, MN, in the amount of \$1,980,388.01.

On September 27, 2007, the Board of Managers held a final payment hearing for R.J. Zavoral & Sons Inc. for the construction of Euclid East Impoundment (RLWD Project 60C) and Brandt Impoundment (Project 60D). Construction cost for Euclid East Impoundment was \$1,625,090.36 and total construction costs for Brandt Impoundment to each project was \$2,043,389.26. A description of these two projects is provided later in this report.

In 2010, the District continued to meet with the project team to assist us in developing and funding of the Grand Marais Outlet Restoration Project.

Grand Marais Outlet Restoration (RLWD Project #60F)

Project 60F is a single component of the "Grand Marais Creek Subwatershed Flood Damage Reduction Project – Project 60B" which was described above. This project addresses the Natural Resource Enhancement goals of the 1998 Flood Damage Reduction Mediation Agreement and restoring an adequate and stable outlet to the Grand Marais Creek subwatershed and its several tributaries. The project objective focuses on restoring riparian and aquatic characteristics along the lower six miles of the Grand Marais Creek to its confluence with the Red River. This lower reach was abandoned in the early 1900's as a result of drainage improvements.

The project objectives for the 6 mile Grand Marais Creek Outlet Restoration Project are as follows:

- Restore the original Grand Marais Creek (channel and riparian area) aquatic features and wildlife habitat
- Protect the restored corridor along the entire 6 mile outlet of the Grand Marais Creek through establishment of a perpetual RIM easement
- Restore entire corridor with native vegetation
- Restore fish passage ability along the original Grand Marais Creek
- Enhance water quality in the Red River by significantly reducing existing outlet channel erosion

The project features proposed to achieve the intended project goals are as follows:

- Construction of a diversion structure ("Weir") capable of diverting all low flows from the existing outlet channel (Legal Drainage Ditch) to the restored Grand Marais Creek outlet
- Reconstruct original Grand Marais channel to restore, enhance and protect the original Natural Resource Benefits (riparian corridor, aquatic/wildlife habitat, fish passage, etc.)
- Construct setback levees to contain the diverted high flows and create a riparian buffer between the restored channel and agricultural land

- Construct grade stabilization structures on the existing outlet channel (Legal Drainage Ditch) to reduce erosion and improve water quality on the Red River
- Provide project partner information on site (signage, etc.)

This project is located within the boundaries of the Red Lake Watershed District and the Middle-Snake-Tamarac Rivers Watershed District (MSTRWD) and because of this, on December 15, 2008, the Red Lake Watershed District and the Middle-Snake-Tamarac Rivers Watershed District entered into a “Joint Powers Agreement” to follow this project through the necessary procedures. Part of this agreement was to establish a “Joint Board” comprised of three members of the RLWD and two members of the MSTRWD. This Board shall have all powers to exercise any power common to either watershed district Board of Managers.

In 2009, the Joint Board instructed the engineer to proceed with the Environmental Assessment Worksheet for the project. On May 28, 2009, the Joint Board approved the EAW and authorized the Red Lake Watershed District staff to proceed with the distribution and advertising of the document. On August 13, 2009, the engineer commented on the EAW submittal and the Joint Board adopted a Resolution approving the Negative EIS Declaration, Findings of Fact, Conclusion of Law, and Order.

The Joint Board also decided to move forward with land easement acquisition of approximately 470 acres of land which will be funded in part by Reinvest in Minnesota (RIM) program, a grant from Working Lands Initiative and the Red Lake Watershed District. This program will ensure that land easements will be in place at such time funding for the project becomes available.

In 2010 the Joint Powers Board, applied for a grant through the Lessard Sams Outdoor Heritage Council in the amount of \$4.7 million. This grant would have been funded through the constitutional amendment voted on and passed by the citizens of Minnesota in 2008. After making it through the hearing phase of the grant application, the Red Lake Watershed District was informed that funding was denied for the project.

On December 15, 2010 the District was approved for a grant which was applied for through Board of Water and Soil Resources Clean Water Fund Competitive Grant Program. The grant totaling \$662,000 will be used on a portion of the Grand Marais Outlet Restoration referred to as the Grand Marais Creek Cut Channel. This money along with matching funds will initiate a construction project that will reduce sediment loads that are presently settling into the Red River of the North. The proposed project consists of stabilizing the existing channel and stream banks, establishment of buffer strips, along with installation of side water inlet culverts. The District hopes to complete final engineering on this project in the spring of 2011 with construction occurring late 2011 and completion in 2012.



Looking west towards the Red River of the North



Looking west at erosion area upstream of the Red River of the North



Looking east at cut-channel from CSAH #64

Petition for a Lateral to Pennington Co. Ditch #75, (RLWD Ditch #13, Project #170)

On January 24, 2008, the Red Lake Watershed District Board of Managers received and accepted, upon receipt of the \$40,000 bond, a petition for Lateral to Pennington County Ditch #75 located in Star Township, Pennington County. The petition calls for approximately two miles of an east/west ditch to be connected at the northern part of the existing Pennington County Ditch #75. On March 11, 2008, the Board by motion hired Houston Engineering, Inc. to develop a Preliminary Survey Report for this project.

On October 23, 2008, a preliminary hearing was held at the Red Lake Watershed District office. The engineer presented the Preliminary Engineer's Survey Report to the public in accordance to the petition. (A video copy of the hearing is on file at the Red Lake Watershed District office and available for public viewing). Following the closing of the hearing, the Board approved the Preliminary Engineer's Survey Report which they deemed practical and feasible, appointed three viewers, and directed the engineer to prepare a detailed study and final report.

On May 14, 2009, the Red Lake Watershed District Board of Managers received a petition for the Improvement and extension of a lateral to Pennington County Ditch #75 including the lateral petition presented to the Board on January 24, 2008. Due to statutory reasons, the petition was sent back to the petitioner's attorney for clarification.

On October 22, 2009, a preliminary hearing was held at the Red Lake Watershed District office. The engineer presented the Preliminary Engineer's Report to the public in accordance to the petition. (A video copy of the hearing is on file at the Red Lake Watershed District office and available for public viewing). Following the closing of the hearing, the Board approved the preliminary engineers report which they deemed practical and feasible, appointed three viewers, and directed the engineer to prepare a detailed study and final report. This project is continuing to progress with the hopes of final hearing to be held sometime in 2010.

January 2010 a meeting was held with the Petitioners for the petitioned project. As a result of the meeting held in January, on March 9, 2010, at the District's regularly scheduled meeting, the Board by motion dismissed this project. At the request of some of the petitioners, the District reserved the issue of collection of costs for a reasonable time to see if any other petitions related to this drainage area are presented.

Petition for a Lateral to Pennington Co. Ditch #75, (RLWD Project #170A)

On September 9, 2010, the Red Lake Watershed District Board of Managers received and accepted a petition for Lateral to Pennington County Ditch #75 located in Star Township, Pennington County. The petition calls for approximately two miles of an east/west ditch to be connected at the northern part of the existing Pennington County Ditch #75. Houston Engineering was appointed by the Board to proceed with the drafting a Preliminary Engineers Report for this project.

On October 14, 2010, a preliminary hearing was held at the Red Lake Watershed District office. Houston Engineering, Inc. presented the Preliminary Engineers Report for a Lateral to Pennington County Ditch #75 to the public in accordance to the petition. (A video copy of the hearing is on file at the Red Lake Watershed District office and available for public viewing). Following the closing of the hearing, the Board approved the Preliminary Engineer's Survey Report which they deemed practical and feasible, appointed three viewers, and directed the engineer to prepare a detailed study and final report. It is the hopes of the District that upon filing of the Viewers report and receipt of the Directors Final Advisory Report, a final hearing will be held in April of 2011 and if the project is approved, advertise for bids in May or June of 2011.

Petition for an Improvement to Pennington Co. Ditch #1 (RLWD Project #171)

On September 24, 2009, the Red Lake Watershed District Board of Managers was presented and accepted, upon receipt of the \$40,000 bond, a petition for the Improvement to Pennington County Ditch #1 located in Rocksbury Township, Pennington County, and continues into the city limits of Thief River Falls. The petition calls for the improvement of approximately 4.7 miles of existing legal drainage system. At the same meeting, the Board of Managers appointed HDR Engineering, Inc. as the engineer for the project and instructed them to develop a Preliminary Engineer's Report. It is expected that due to the complexity of this project, engineering and design will proceed in 2010 with construction occurring sometime in 2011.

On June 30, 2010, a hearing was held at the Ralph Engelstad Arena located in Thief River Falls, MN. The engineer presented the Preliminary Engineer's Report to the public in accordance to the petition. (A video copy of the hearing is on file at the Red Lake Watershed District office and available for public viewing).

On July 8, 2010, at their regularly scheduled Board meeting, a motion was made and passed unanimously to approve the Preliminary Engineers Report which they deemed practical and feasible, appointed three viewers, and directed the engineer to prepare a detailed study and final report. This project is continuing to progress with the hopes of holding a final hearing sometime during the summer of 2011.

Thief River Falls Flood Damage Reduction Project (RLWD Project #171A)

On June 30, 2010, a hearing was held at the Ralph Engelstad Arena located in Thief River Falls, MN. The engineer presented the Preliminary Engineer's Report to the public. (A video copy of the hearing is on file at the Red Lake Watershed District office and available for public viewing).

On July 8, 2010, at their regularly scheduled Board meeting, a motion was made and passed unanimously to proceed with the preliminary design for the Flood Damage Reduction Option 3B, which includes a structure and diversion channel to the west.

On September 9, 2010, at their regularly scheduled Board meeting, a motion was made and passed unanimously to amend the motion approved on July 8, 2010, at the RLWD regularly scheduled Board meeting to reflect the Flood Damage Reduction Project would be established under 103D.605 for the Establishment of a Water Management District and to proceed with the Flood Damage Reduction Option 3B which includes a structure and diversion channel to the west and storm sewer pipe urbanization for the Thief River Falls Flood Damage Reduction, RLWD Project 171A.

On September 23, 2010, the Board was informed that their grant application through Minnesota Flood Damage Grant was approved to assist in the funding of Thief River Falls Flood Damage Reduction Project. The grant agreement will cost share up to 1/3 of the total project cost not to exceed \$700,000. The grant was signed and executed on November 2, 2010.

It is assumed that sometime in early 2011, a petition will be filed with the Board of Water and Soil Resources to amend the District's 10 Year Comprehensive Overall Plan which will allow the establishment of a Water Management District to assist in funding the local portion of the Flood Damage Reduction Project.

2010 Spring Flood

The Red River Basin once again experienced significant flooding during the 2010 spring runoff. For the second year in a row, the spring melt occurred much earlier than normal. The flooding conditions began in mid-March and rivers crested about a week to ten days later. Portions of the Red Lake Watershed District did not have severe spring flooding conditions. These areas were mainly the Northeastern and Eastern parts of the District. (Beltrami, Clearwater, Pennington, East Marshall, and Red Lake Counties). Most of the damage occurred in the western portion, nearer to the main stem of the Red River of the North, primarily in Polk County.



Ring dike protecting farmstead near Red River, Esther Township, Polk County



Thompson Bridge, Red River of the North, Tynsid Township, Polk County



Township road during spring flood and damages after flooding, Vineland Township, Polk County

Very wet conditions occurred in May and June during the growing season, and also in the Fall during September and October which generated heavy runoff. Rainfall in October caused river levels to rise above flood stage again.

FEMA

Due to the 2010 spring flood, a Federal Disaster was declared and included several counties that have lands located in the RLWD. Damage occurred to two RLWD projects, both located in Polk county; RLWD Ditch #12, and the Parnell Impoundment. Damage assessments, inspections, and cost estimates were performed by representatives from FEMA and the RLWD. Repairs to both projects were completed in 2010 by local contractors.



Field road and culvert erosion, Polk County Ditch 53,
RLWD Ditch 12, Project No. 169



Township road and culverts erosion, Polk County Ditch 53,
RLWD Ditch 12, Project No. 169



Spring flood erosion near structure between east and west pools, Parnell Impoundment

Flood Control Impoundments

Impoundments operated by the Red Lake Watershed 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 stoplogs, adjustable flood gates, or fixed crest weir structures.

Projects with adjustable flood gates and/or stoplogs have more flexibility for storing and also for controlling outflows from flood events. Fixed crest structures store water to the specific elevation of a weir, at which time outflows occur automatically. The pictures are examples of fixed crest outlet structures.

BR-6 Impoundment Onstad Township, Polk County



Control Structure



Outlet Pipe

Odney-Flaat Impoundment Onstad Township, Polk County



Control Structure



Outlet Pipe

During flood and large runoff events, flood waters are stored for a long duration within the impoundments and as downstream conditions allow, the stored water is released in a controlled manner. 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 of the impoundments are “dry pools” 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. The largest impoundment the Red Lake Watershed District operates is the Moose River Impoundment located northeast of Grygla. This impoundment does have a small permanent winter pool to allow for maximum storage capacity.

Routine inspections are performed and the condition of the embankment and control structures is evaluated. Maintenance performed in 2010 included flood damage repairs (FEMA), debris removal, removal of beaver dams/debris, nuisance beaver, and vegetation control (mowing the grassed embankment area and spraying).

Major flooding occurred again in the Red River Basin during the 2010 spring event, and heavy runoff also occurred during large rainfall events in May and June. All of the RLWD impoundments stored significant flood water for prolonged periods. During these events, the impoundments were operated to temporarily store the excess runoff. This was done by operating flood gates or by adjusting stop-logs, depending on the respective flood storage facility. During the remainder of the year, there were no additional runoff events of concern to warrant flood gate operation and storage.

The District’s operation of our flood control facilities both gated and non-gated, consisted of flood gate operation during the June and October runoff, monitoring of pool elevations and routine maintenance work. Some of the impoundments are operated solely by the District, 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.

The following pages include descriptions and information on some of the larger impoundment facilities which have gated and/or stop-log control flexibility.

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 was functional for operation in the Spring of 2007. The project was funded jointly with the State of Minnesota, Red River Watershed Management Board, and the Red Lake Watershed 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 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

	Elev. (ft. – msl)	Storage (ac. – ft.)
Top of Dam (Total Storage)	908.0	2,443 (2.68 in. runoff)
Secondary Spillway	905.0	
Ungated Storage to Emergency Spillway	906.0	565 (0.62 in. runoff)
Gated Storage		1,878 (2.06 in. runoff)
Drainage Area – 17.1 sq. mi.		

OPERATIONAL: Summer 2007



Principal outlet structure

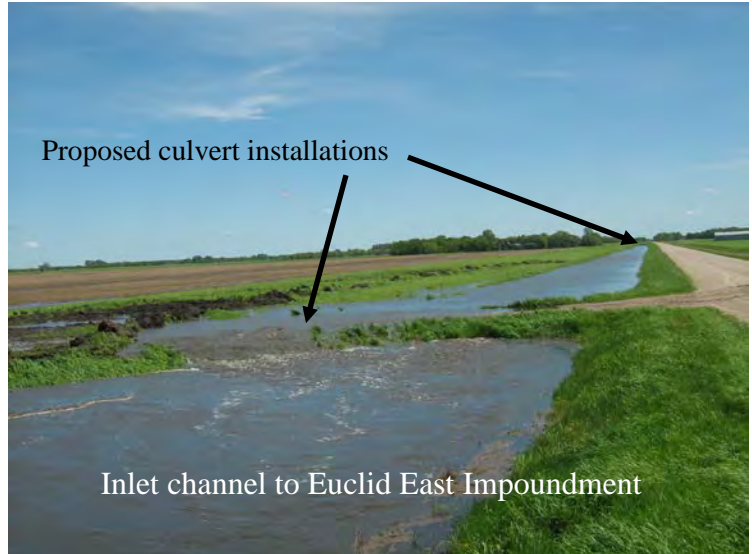


Outlet structure looking west

In 2010, the gate operation and extended storage occurred during spring runoff and rainfall events in May and June. The two highest pool elevations were March 17th - elev. 902.7 and June 12th – elev. 902.5

A storm event in May 2010, caused some minor field flooding along the inlet channel on the southeast part of the project. Since this is the primary inlet to the impoundment, questions arose as to the existing culvert capacity and should these be increased to allow water to enter the impoundment faster and more effectively.

On July 8, 2010, the Watershed District Board of Managers held a public hearing to discuss the proposed installation of two additional culverts to improve the efficiency of inlet flows. Comments from landowners were also received at the hearing. Designer of the project, HDR Engineering of Thief River Falls, was instructed to review information from the hearing and define the drainage area to determine options and recommendations. On August 12th, another public hearing was held, and the Watershed Board approved the following recommendations by HDR Engineering. 1) Install additional culverts in the inlet channel at two locations (township road, & field entrance), 2) install a rock spillway and 3) to construct 1500 feet of berm on the north side of the inlet to contain water in the channel and allow flows to enter the impoundment. Culverts were delivered to the site, but due to the timing of fall harvest and wet conditions, the work was not done in 2010. Completion will be in 2011 when conditions are acceptable.



Culvert to be installed in inlet channel of the Euclid East Impoundment

Brandt Impoundment (RLWD Project #60D)

GENERAL: Construction of the Brandt Impoundment began on July 31, 2006 and was completed and operational in the Fall of 2006. The project was funded by the State of Minnesota, Red River Watershed Management Board, and the Red Lake Watershed District.

LOCATION: Section 7, Belgium Township, Polk County, approximately 14 miles north of Crookston.

PURPOSE: The project is designed to 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” and legal County Ditch #2 system.

PROJECT COMPONENTS: 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.



Principal 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

	Elev. (ft. – msl)	Storage (ac. – ft.)
Top of Dam (Total Storage)	918.0	3,912 (3.1 in. runoff)
Secondary Spillway	914.5	
Ungated Storage to Emergency Spillway	916.0	786 (0.62 in. runoff)
Gated Storage		3,126 (2.48 in. runoff)
Drainage Area – 23.6 sq. mi.		

OPERATIONAL: Spring 2008

In 2010, gate operation and extended storage occurred during spring runoff and several rainfall events. Stored runoff water caused the Pool level to remain quite high until late July. The primary reason that the pool was not lowered sooner was due to the downstream outlet channel capacity and also being restricted with sediment and vegetation. This greatly limited the amount of flows that could be released. The outlet structure gate opening had to be monitored very extensively to control outflows. On July 4, 2010, the highest pool elevation of 912.5 was recorded.

In June 2010, the Red Lake Watershed District Board of Managers authorized surveying and cleaning of the channel to enhance drawdown of the pool. Red Lake Watershed District staff performed the ditch survey of approximately a 10 mile reach. The reach of the channel which was

cleaned consisted of approximately 8 miles, starting from Highway #75 (west edge of Section 11, Euclid Twp.) to Polk County Highway #20 (NW corner Section 25, Tabor Township). The excavation of the channel was completed in June and July.

Typical Brandt Channel downstream of Brandt Impoundment,
located in Euclid Township, Polk County



Before



After



Excavation of Brandt Channel

Parnell Impoundment (RLWD Project #81)

GENERAL: Construction of the Parnell Impoundment began in 1997 and was completed in 1999. In 2003 modifications were made to the original design by lowering the emergency spillway 1.5 feet, expanding the interpool connecting channel, and installing an operable screwgate on the weir structure in the JD #60 outlet. The impoundment is now better utilized to store floodwaters by operating control gates.

LOCATION: Sections 3 and 4, Parnell Township, Polk County, approximately 12 miles northeast of Crookston. The drainage area above the dam is approximately 23 square miles.

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 impoundment incorporates a 2 – pool design (no permanent pool), with two separate outlets, and an interpool 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:

	Elev. (ft. – msl)	Storage (ac. – ft.)
Top of Dam	943.0	4,000
Emergency Spillway	939.5	3,000
Drainage Area – 23 sq. mi.		

OPERATIONAL: 1999 – Original Design 2004 – Modified Plan

COST: Approximately - \$3,200,000
 Funded by: Red Lake Watershed District
 Red River Watershed Management Board

In 2010, gate operation and extended storage occurred during the spring runoff and rainfall events. The impoundment stored runoff and when downstream conditions were acceptable, controlled releases were made by adjusting the outlet structure gate. The west pool crested at 938.2 on March 29, 2010.

In August 2010, FEMA erosion repairs were made near the gated interpool structure. During the spring flood, an interior berm was breached, but this did not cause damage or jeopardize the main levee in any way. A local contractor, Garry Gravel of Euclid, made the necessary repairs using on-site clay borrow material.



Aerial view of Parnell Impoundment (looking east)

Historical ranking of five highest recorded pool elevations		
Ranking	Date	Elevation
1	March 25, 2009	939.75
2	April 13, 2006	939.0
3	June 12, 2002	937.1
4	June 17, 2005	937.0
5	March 31, 1999	935.9

Pine Lake (RLWD Project #35)

GENERAL: In 1980, the Clearwater County Board of Commissioners petitioned the Red Lake Watershed 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. The drainage area above the dam is 45 square miles.

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

FUNCTIONAL DESIGN DATA:

	Elev. (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



Adjustable stoplog - sheet pile dam

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 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 streamflow maintenance. This is very important for keeping some flow in the Lost River, especially during periods of low flow.

Monitoring “inflows” to the lake, the existing lake elevation, downstream conditions and predicted runoff are some of the factors to consider when adjusting the stop logs. Primarily based on the lake elevation, stop logs may be removed from the dam to allow additional outflow until the lake level recedes, and then are replaced to the typical summer or winter elevation.

Due to wet conditions, the 2010 Fall drawdown began earlier, and extended longer than normal. Drawdown began on August 24th and extended to November 29th. Staff personnel at the Sportsman's Lodge are very helpful to read the lake elevation gauge located inside the business and a local resident records rainfall data at the lake. In 2010, the lake crest elevation was 1284.13 on June 25th.

Historical ranking of five highest recorded pool elevations		
Ranking	Date	Elevation
1	April 11, 2009	1286.0
t2	July 5, 1997	1285.7
t2	June 26, 2002	1285.7
3	April 27, 1996	1285.5
4	April 18, 2001	1285.4
5	April 8, 1999	1285.1

Elm Lake-Farmes Pool (RLWD Project #52)

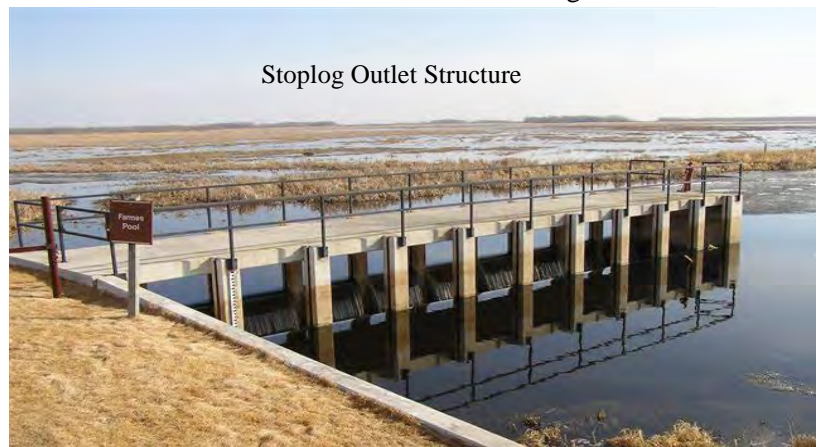
GENERAL: Elm Lake was drained in about 1920 by the construction of Branch #200 of Judicial Ditch #11. The Elm Lake project is a cooperative effort of the U.S. Fish and Wildlife Service, MN Department of Natural Resources, Red Lake Watershed District, and Ducks Unlimited. The majority of funding for the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

	Elev. (ft. – msl)	Storage (ac. – ft.)
Top of Dam	1145.0	19,700
Emergency Spillway	1142.0	11,000
Max Summer	1141.0	7,500
Typical Summer	1140.0	5,500
Typical Winter	1139.0	3,500
Drainage Area – 63.0 sq. mi.		

COST: Approximately - \$2 million

OPERATIONAL: 1991

Agassiz National Wildlife Refuge staff performs the actual operation of the outlet structure (stop logs and screwgate) with cooperation from the Red Lake Watershed District (RLWD).

2010

In 2010, the impoundment stored significant floodwater, mainly during several rainfall events. The 2010 spring runoff was not a big concern in this part of the District. The pool crested on September 27th at an elevation a 1140.25.

Historical ranking of five highest recorded pool elevations		
Ranking	Date	Elevation
1	April 23, 1997	1143.3
t2	April 28, 1996	1142.4
t2	April 4, 1999	1142.4
t2	June 14, 2002	1142.4
3	April 10, 2006	1142.0
4	April 3, 2009	1141.9
5	July 28, 1993	1141.3

Lost River Impoundment (RLWD Project #17)

GENERAL: Built 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 Red Lake Watershed 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, approximately 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:

	Elev. (ft. – msl)	Storage (ac. – ft.)
Top of Dam	1150.2	14,600
Emergency Spillway	1148.2	10,000
Typical Summer	1146.2	5,500
Typical Winter	1145.2	3,700
Drainage Area – 53.0 sq. mi.		

COST: To modify - approximately - \$109,000

OPERATIONAL: 1978

In 2010, Lost River Impoundment stored significant floodwater, mainly during several rainfall events. The spring runoff was not a big concern in this part of the Watershed District. The pool crested on May 13th at elevation 1146.4. No major operation of the screw gate or stop logs was necessary. The MnDNR staff performs the actual operation of the outlet structure with cooperation from the Red Lake Watershed District.



Lost River Pool Outlet Structure

Historical ranking of five highest recorded pool elevations		
Ranking	Date	Elevation
1	April 14, 1999	1147.8
t2	April 26, 1997	1147.6
t2	June 25, 2002	1147.6
3	April 1, 1985	1147.5
4	April 10, 2006	1147.45
5	August 20, 2001	1147.3

Good Lake Impoundment (RLWD Project #67)

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

LOCATION: The project area lies entirely within the Red Lake Indian Reservation. The site is approximately 30 miles east of Thief River Falls, in Clearwater and Beltrami Counties, within the Red Lake Indian Reservation. The drainage area above the dam is 82 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 wildrice 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:

	Elev. (ft. – msl)	Storage (ac. – ft.)
Top of Dam	1178.5	27,500
Flood Pool (Emer. Splwy.)	1176.1	13,100
Norm. Summer Pool	1173.0	3,250
Norm. Winter Pool	1172.0	1,800
Drainage Area – 73 sq. mi.		

COST: Approximately - \$2,129,000

Funding or in-kind contributions were provided by:

Red Lake Band of Chippewa Indians
Red Lake Watershed District
Red River Watershed Management Board
State of Minnesota

OPERATIONAL: 1996

On January 13, 2010, Red Lake Watershed District staff, Board Manager Lee Coe along with Red Lake Tribal DNR Wildlife Director Dr. Jay Huseby, met with the Red Lake Tribal Council.

This meeting was to discuss the overall project, and more specifically, to review the 20 year Special Land Permit which was granted to the Red Lake Watershed District in January of 1990 and is now due to expire. In part, the permit states “The purpose of this permit is for the Red Lake Watershed District Engineer, to

inspect, supervise, and certify the construction and maintenance of the Good Lake Flood Control Project”, thus, giving permission to the Watershed District to enter upon Tribal lands and the Good Lake Project.

The Red Lake Watershed District Board of Managers has been pleased with the cooperation, purpose, function, and working relationship for the past 20 years. At the meeting, the Tribal Council was asked to review and extend the Special Land Permit. After a lengthy discussion, the Tribal Council stated they would take the issue under advisement/review and contact the Watershed District at a later date with their decision.

By the end of 2010, the Watershed District had not received any correspondence from the Tribal Council. Therefore, during 2010, staff personnel of the Red Lake Watershed District did not access the project site to perform any maintenance, operation, or to record water elevation data.

Historical ranking of five highest recorded pool elevations		
Ranking	Date	Elevation
1	May 25, 2009	1176.8
2	May 6, 1997	1176.2
3	May 20, 1996	1176.0
4	April 21, 2009	1175.9
5	May 14, 1998	1175.8



Gated Principal Outlet Structure

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 Red Lake Watershed 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. The drainage area above the project is 125 square miles.

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

COST: The total project cost was approximately \$3.4 million. Funding was provided by the following:

State of Minnesota	\$1,690,000
Red Lake Watershed District	\$ 612,000
Red R. Watershed Management Board	\$ 1,126,000

OPERATIONAL: 1988

FUNCTIONAL DESIGN DATA:

	North Pool	South Pool	Total
Top of Dam Elev. (ft.-msl)	1218.0	1220.0	
Freeboard Flood Elev. (ft.-msl)	1217.2	1219.3	
Freeboard Flood Storage (ac.ft.)	16,250	38,250	54,500
Emer. Spillway Elev. (ft.-msl)	1216.0	1218.0	
Emer. Spillway Storage (ac.ft.)	12,000	24,250	36,250
Gated Pool Elev. (ft.-msl)	1215.3	1217.4	
Gated Pool Storage (ac.ft.)	9,750	19,750	29,500
Typical Summer Elev. (ft.-msl)	1211.7	1213.6	
Typical Summer Storage (ac.ft.)	2,000	4,000	6,000
Typical Winter Elev. (ft.-msl)	1210.5	1212.4	
Typical Winter Storage (ac.ft.)	800	1,800	2,600
Max No-Flood Elev. (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

Planned maintenance in 2011 includes work on the outlet structures and adding rock riprap to the emergency spillways. Routine maintenance also included mowing, gate operation, and monitoring pool levels throughout the year during runoff events.

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.



North Pool - Gated Principal Outlet Structure

The 2010 spring runoff was not a big concern in this part of the Watershed District. However, the Moose River Impoundment did store significant floodwater during several rainfall events, thus reducing downstream flood peaks. Based on downstream conditions, the control structure floodgates were operated at various times throughout the storage period.

Gordon Foss, a local weather observer, recorded 30 inches of rainfall from March through October, 2010. Because of the “untimely” and large rainfall events, the pool remained above the summer target elevation for most of the summer and fall seasons. Two large late season events, 3 to 4 inches on September 27 and 2.5 to 3 inches on October 25 and 26, 2010, created enough runoff to raise the pool significantly.

The typical Fall drawdown to winter level was finally obtained on November 17th. (Winter Pool – 1210.4)

The maximum North Pool elevation for 2010 was 1214.45 which occurred on October 4th and tied the fifth highest recorded pool crest.

Historical ranking of five highest recorded pool elevations		
Ranking	Date	Elevation
1	May 16, 1999	1215.9
t2	April 22, 1997	1215.85
t2	June 15, 2002	1215.85
3	May 21, 1996	1215.8
t4	June 14, 1994	1214.8
t4	August 7, 2001	1214.8
t4	April 19, 2009	1214.8
5	April 13, 2006	1214.45
t5	October 4, 2010	1214.45

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. Included between the pools is an interpool 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.



South Pool - Gated Principal Outlet Structure

The 2010 spring runoff was not a big concern in this part of the Watershed District. However, the Moose River Impoundment did store significant floodwater during several rainfall events, thus reducing downstream flood peaks. Based on downstream conditions, the control structure floodgates were operated at various times throughout the storage period.

Gordon Foss, a local weather observer, recorded 30 inches of rainfall from March through October. Because of the “untimely” and large rainfall events, the pool remained above the summer target elevation for most of the summer and fall seasons. Two large late season events, 3 to 4 inches on September 27 and 2.5 to 3 inches on October 25 and 26, 2010 created enough runoff to raise the pool significantly.

The typical Fall drawdown to winter level was finally obtained on December 7th. (Winter Pool – 1212.45)

The maximum South Pool elevation for 2010 was 1216.4 which occurred on October 4th.

Historical ranking of five highest recorded pool elevations		
Ranking	Date	Elevation
1	May 16, 1999	1218.05
2	May 9, 1997	1217.9
3	June 7, 1996	1217.8
4	July 11, 2002	1217.65
5	April 19, 2009	1216.75

Schirrick Dam (RLWD Project #25)

GENERAL: The Schirrick Dam was constructed on the Black River in 1984. The project is 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:

	Elev. (ft. – msl)	Storage (ac. – ft.)
Top of Dam	992.5	6,100
Gated Storage	987.0	4,000
Emergency Spillway	989.3	4,800
Permanent Pool	962.0	70
Drainage Area – 107.7 sq. mi.		

COST: Approximately - \$1,019,000

OPERATIONAL: 1985



Aerial view of Schirrick Dam looking south

In March 2010, the two hydraulic floodgates were ‘test’ operated and functioned properly. No floodgate operation during 2010 Spring runoff event as the predicted crests downstream did not require gate closure or storage. The highest recorded pool elevation is 988.75 occurred during historic flood of 1997.

Water Quality Report

Red Lake Watershed District Water Quality Program

One highlight from 2010 was the completion of the Thief River Watershed Sediment Investigation study. The RLWD's regular monitoring program continues to collect data at more than forty sites throughout the district. Monitoring was completed for two Surface Water Assessment Grant projects this year. As the result of monitoring that was done for a TMDL study, fecal coliform/E. coli impairments on a reach of the Clearwater River and a reach of the Lost River have been taken off the 303(d) List of Impaired Waters. Time was also spent on developing work plans for new projects and writing successful grant applications for projects that will begin in 2011.

Long-Term Monitoring

The RLWD has an ongoing monitoring program for sites throughout the watershed that began in the early 1980's and continues today. Field measurements of dissolved oxygen, temperature, turbidity, specific conductivity, pH, and stage are collected during site visits. 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. For the past two years, biochemical oxygen demand (BOD) analysis has been added for the sites that are located on reaches that are currently impaired or may become impaired by low dissolved oxygen.

Some adjustments were made to the RLWD long-term monitoring program this year. Monitoring site locations were evaluated in terms of TMDL development and safety. Some of the old sites would be bad TMDL flow monitoring and load calculation sites because of backwater issues. There also are a couple older sites that may have safer alternatives. Where site locations are changed, field measurements may continue at the old site so they can be compared to measurements made at the new site. Here are the changes that were made for the 2010 monitoring:

- Dropped TDS (total dissolved solids, \$10/sample). We don't use it in our analysis. We collect specific conductivity measurements in the field, which essentially give us the same information.
- Added BOD (biochemical oxygen demand, \$18/sample) at sites that are or may be impaired by low dissolved oxygen.
- Moved the ponded and unsafe Grand Marais Creek monitoring location from site number 826 on Highway 220 to a (relatively more) free-flowing and safer site named PC19 on CSAH 19, northeast of East Grand Forks.
- Moved the ponded Burnham Creek monitoring location from site #799 on 280th Ave SW (southwest of Crookston) to site #89 at CR216 (southeast of Fisher).
- Moved the ponded Lost River monitoring location (affected by backwater from Pine Lake) from site #50-I (the last crossing before Pine Lake) to site #LR10, which is further upstream and will be a better site for measuring flow and establishing TMDLs. Because loads can be calculated at this site, long-term RLWD sampling may now resume on the Lost River upstream of Pine Lake.
- Established a new monitoring site on the Red Lake River at the Greenwood Street Bridge in Thief River Falls. It will be called RLR Greenwood (S006-225). The RLWD will monitor this site instead of the 1st Street Bridge and the Pennington SWCD will continue to monitor the 1st Street Bridge. It will be possible to create a flow rating curve at this site if one is needed for a site in this reach of the Red Lake River. Also, the street is wide enough to park next to the sidewalk at the sampling site, making it a safe and efficient monitoring site.
- Total organic carbon (TOC) analysis was added to the RLWD's district monitoring program after its importance was brought to attention. Higher levels of total organic carbon increase the amount of water treatment and chlorination that is needed. Trihalomethanes are byproducts of chlorination of water that contains lots of organic matter. These lead to an increased risk of bladder cancer and birth defects. The concern over TOC is applicable to the cities of Thief River Falls and East Grand Forks, which both

draw drinking water from the Red Lake River. TOC will be added to the suite of tests that RMB runs on our district monitoring samples for just a few sites along the Red Lake River and at the pour points of the Thief River and Clearwater River.

Monitoring at some of the newer monitoring sites was funded by a Minnesota Pollution Control Agency Surface Water Assessment Grant (SWAG) that was administered by the Red River Watershed Management Board. Four relatively new (in 2007) sites in Beltrami County (Lower Red Lake watershed) were monitored using grant money along with several newer (in 2008) sites in the Red Lake River and Clearwater River watersheds. The streams that are being monitored using funding from this grant are the Blackduck River, Cormorant River, Darrigan’s Creek, O’Briens Creek, Lower Badger Creek, and Kripple Creek. Nasset Brook and the Lost River, south of Pine Lake, were also monitored by the Bagley River Watch program using funding from a SWAG grant that was awarded to the RLWD.

Samples were collected in April, June, August, and October in 2010. To prepare for a 2011 statewide water quality assessment, extra E. coli samples were collected at select sites in 2010 to get the RLWD data up to the minimum amount number of samples needed to meet the state’s minimum data requirements for water quality assessments. The MPCA’s complete switch from fecal coliform to E. coli (numeric bacterial water quality standard for the protection of aquatic recreation) will exclude the 1,098 fecal coliform measurements that were recorded by the RLWD from 2001 to 2007. The RLWD first began collecting E. coli data in 2005. Because of the four-times-per-year monitoring schedule, some of the RLWD sites still needed more data.

Due to the large rainfall events that occurred in 2010, flows in most rivers and streams remained relatively high throughout the year. Flows were especially high after August and September rainfall events. The water was exceptionally clean and clear in Clearwater Lake on June 15th.

* Indicates additional “offenses”

High E. coli (>126 CFU/100ml) levels were found in samples from:

- Thief River, at County Road 7 near Agassiz NWR
- Thief River, at CSAH 12
- Thief River, at County Road 44
- Thief River, at Hillyer Bridge, north of Thief River Falls
- Silver Creek, northern/downstream end of the reach*
- Silver Creek, west of Clearbrook**
- Clear Brook, at Highway 92*
- Clearwater River, upstream of Clearwater Lake*
- Cyr Creek
- Clearwater River, near Plummer
- Hill River, north of Brooks*
- Branch 200, of Judicial Ditch 11
- Poplar River, upstream of Highway 59*
- Poplar River, west of Brooks
- Black River, at CSAH 18*****
- Ruffy Brook, (impairment confirmed)*****
- Grand Marais Creek*
- Burnham Creek
- Gentilly Creek, in Gentilly (impairment confirmed)**
- Nasset Brook, (last crossing) *****
- Nasset Brook, (2nd-to-last crossing)*****
- Lost River, at County Highway 18**
- Kripple Creek, north of Gentilly*****
- Lower Badger Creek*****
- Blackduck River*****
- Darrigan’s Creek*****
- O’ Briens Creek*****
- South Cormorant River*****

Supplemental E. coli samples were collected at these sites in 2010

Surface Water Assessment Grant Sampling Sites

High Turbidity (>25 NTU) levels were found in:

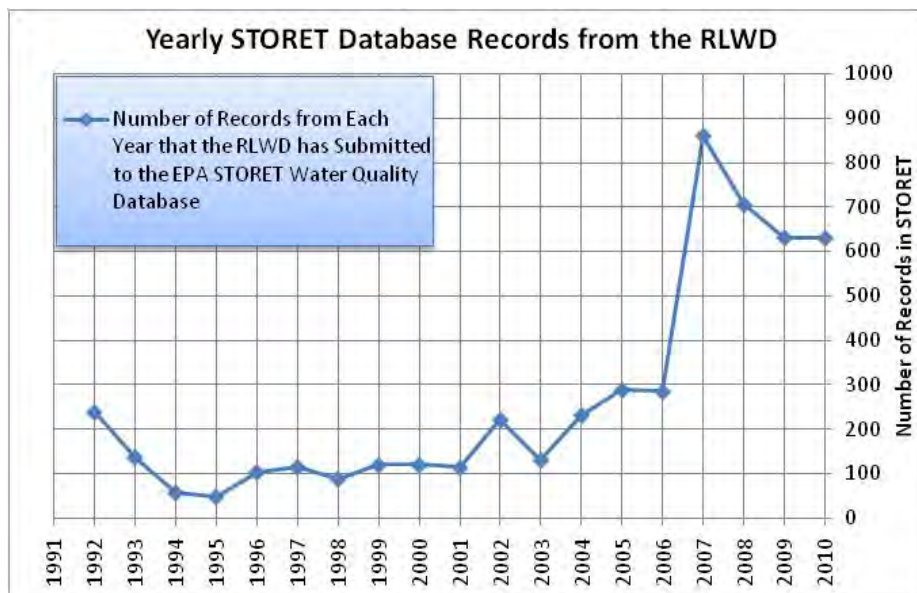
- Red Lake River, at the Murray Bridge in East Grand Forks**
- Kripple Creek, north of Gentilly*****
- Black River, at CSAH 18**
- Burnham Creek*
- Thief River, at CSAH 12
- Thief River, near Thief River Falls*
- Red Lake River, in Crookston*
- Cyr Creek
- Darrigan's Creek

Low Dissolved Oxygen (<5 mg/L) levels occurred at:

- Walker Brook**
- Clearwater River, downstream of Bagley
- Grand Marais Creek**
- Lost River, upstream of Pine Lake
- Brandt Channel, at Highway 75*
- Poplar River, diversion at the Badger Lake inlet*
- Clear Brook*
- Polk County Ditch 2*
- Thief River, at CSAH 12

Continuous stage/flow records will be needed at an increasing number of sites throughout the RLWD to prepare for upcoming TMDL studies and to accomplish effectiveness monitoring for completed TMDLs. The installation of HOBO water level loggers as part of the RLWD stream-gauging program is a cost-effective way to accomplish this. In 2010, a HOBO water level logger was installed at site #81 (CR111) on Silver Creek and at nine sites in the Thief River watershed. The Thief River watershed's HOBOS will bridge the gap between the monitoring conducted for the Thief River Watershed Sediment Investigation Study and the Thief River Watershed Assessment Project.

Every year, RLWD staff enter data and submit it to the MPCA for entry into the STORET database. The following graph shows contributions from routine district monitoring, supplemental E. coli sampling, Red River Watershed Management Board Surface Water Assessment Grant (SWAG) sampling, and Bagley River Watch SWAG monitoring. River Watch monitoring data is submitted separately by the schools, with assistance from the RLWD Natural Resources Technician and the International Water Institute.



Clearwater River Dissolved Oxygen and Fecal Coliform TMDL Study

A revision the Silver Creek E. coli TMDL Report was completed in February and submitted to the MPCA. A revision of the Draft Poplar River Dissolved Oxygen TMDL report was completed and submitted to the MPCA in June. For the Poplar River TMDL, the pollutant (orthophosphorus) and the loads remained the same as it is still the most influential pollutant (with the data that is available). The MPCA is planning to begin the public review period for the Silver Creek and Poplar River TMDLs in early 2011.

Thief River Watershed Sediment Investigation

Prior to 2007, monthly/bi-monthly condition monitoring results indicated that there were water quality problems within the Thief River watershed, but didn't tell us much about how bad the problems actually were or what was causing them. The Thief River Watershed Sediment Investigation (TRWSI) was an opportunity to diagnose the impact of hydrologic modification as well as other anthropogenic and natural factors influencing water quality in the Thief River watershed. It was funded by a Clean Water Partnership (CWP) grant that was awarded to the Red Lake Watershed District (RLWD) by the Minnesota Pollution Control Agency (MPCA). Intensive water quality monitoring, flow monitoring, and the development of a Soil and Water Assessment Tool (SWAT) model were used to more accurately assess conditions throughout the watershed.



This study involved investigative water quality monitoring at more than 11 sites throughout the watershed to verify the impairments. Flow and sediment monitoring was conducted in order to develop sediment budgets (FLUX modeling) for the impoundments. Water quality results were loaded in the Soil and Water Assessment Tool (SWAT) to model contributions from various sources, estimate pollutant loads and evaluate pollutant reduction strategies. Data was entered into the EPA STORET water quality database and the State of Minnesota's HYDSTRA continuous monitoring database. Specific and general project ideas for the improvement of water quality were identified. Sediment budgets from the SWAT modeling results give us an idea of how much sediment is being deposited in the impoundments. Sources of pollutants (suspected and confirmed) throughout the watershed were identified. Water quality improvement project ideas are also described in the final report. The comprehensive final report was written, published by the RLWD, and made available on the RLWD website (www.redlakewatershed.org).

Another goal of this project was the creation of a TMDL work plan. The MPCA has allocated money for the completion of a watershed-based TMDL and watershed assessment project. A work plan was developed as part of this project and it was submitted to the MPCA in January of 2010. The work done during this CWP project was one of the factors that helped increase the Thief River's priority for this funding.

2010 accomplishments

- Stakeholder's meetings were held in January and July at the RLWD office.
- Compiled, corrected, and assessed 2009 continuous monitoring data at RLWD monitoring sites.
 - "Worked the record" for each deployment period by adjusting data based on fouling and calibration drift using Aquarius software.
- Deployed HOBO water level loggers as soon as deployment tubes became accessible. Technically, the monitoring phase of this study was completed in 2009. The stage monitoring was continued in 2010 under the RLWD's stream gauging project. Once the water level loggers have been purchased, collecting stage data with HOBO water level loggers is relatively cheap way of collecting a record of water levels and flow. The Moose River was the first to allow access to the deployment tube. Water levels at the Thief River sites remained high for a long time. Water was too high at many sites in the spring to safely access the top of the deployment tubes. Frequent field

measurements were collected to compensate for this circumstance. Water levels also remained too high at the end of the fall monitoring season to allow safe retrieval of several loggers. They will have to be retrieved when water levels recede after the 2011 spring snowmelt.

- Analyzed sampling data for the Thief River Watershed Sediment Investigation.
- Formatted continuous data records for the state's HYDSTRA database.
- The Thief River SWAT model was completed by the end of April 2010 by Houston Engineering, Inc. The Thief River watershed SWAT modeling report is available on the RLWD website. (http://www.redlakewatershed.org/waterquality/TRW_Report.pdf)
- Provided the Energy and Environmental Research Center with Thief River SWAT information for use in the Red Lake River SWAT modeling effort.
- Completed a work plan for a watershed-based TMDL project entitled: Thief River Watershed Assessment Project.
- A 227 page report for the Thief River Watershed Sediment Investigation was completed on August 30th and revised in September. It can be downloaded from a link on the RLWD website: ([http://www.redlakewatershed.org/waterquality/Thief River Watershed Sediment Investigation Final Report.pdf](http://www.redlakewatershed.org/waterquality/Thief_River_Watershed_Sediment_Investigation_Final_Report.pdf))
- Completed a final grant report (separate, template-based report) for the MPCA. It is required for approval of the final payment from the MPCA. This report is a summary of the accomplishments made during the project and the project's expenditures.
- The RLWD has received all of the incremental payments from the MPCA for the Thief River Watershed Sediment Investigation, for a total of \$96,500.
- A reconnaissance of the Thief River watershed was conducted by road and kayak to estimate Bank Erosion Hazard Index scores throughout the watershed, identify station locations for stream bank stability assessments, identify problem areas, and identify potential projects. Here are a few of the ideas that we thought of during and after the reconnaissance:
 - Restore meanders in the Thief River between CSAH 6 and the crossing at the north boundary of Agassiz National Wildlife Refuge.
 - We found a couple of livestock operations along the Mud River where cattle have access to the stream. One of the sites is particularly bad – the trampling of the banks has caused stream instability and channel widening. These are two sources of the high E. coli levels that have been found in the Mud River.
 - The Mud River upstream of Grygla is very poorly buffered. Some fields are plowed into the ditch slope. This area is most likely a significant source of sediment in the Mud River watershed.
 - Gully formation where field drainage enters the rivers and ditches is a significant source of sediment.
 - Major gullies along the new Hwy 54 construction.
 - Headcutting in private and township road ditches flowing into CD20
 - Some gullies along the Moose River



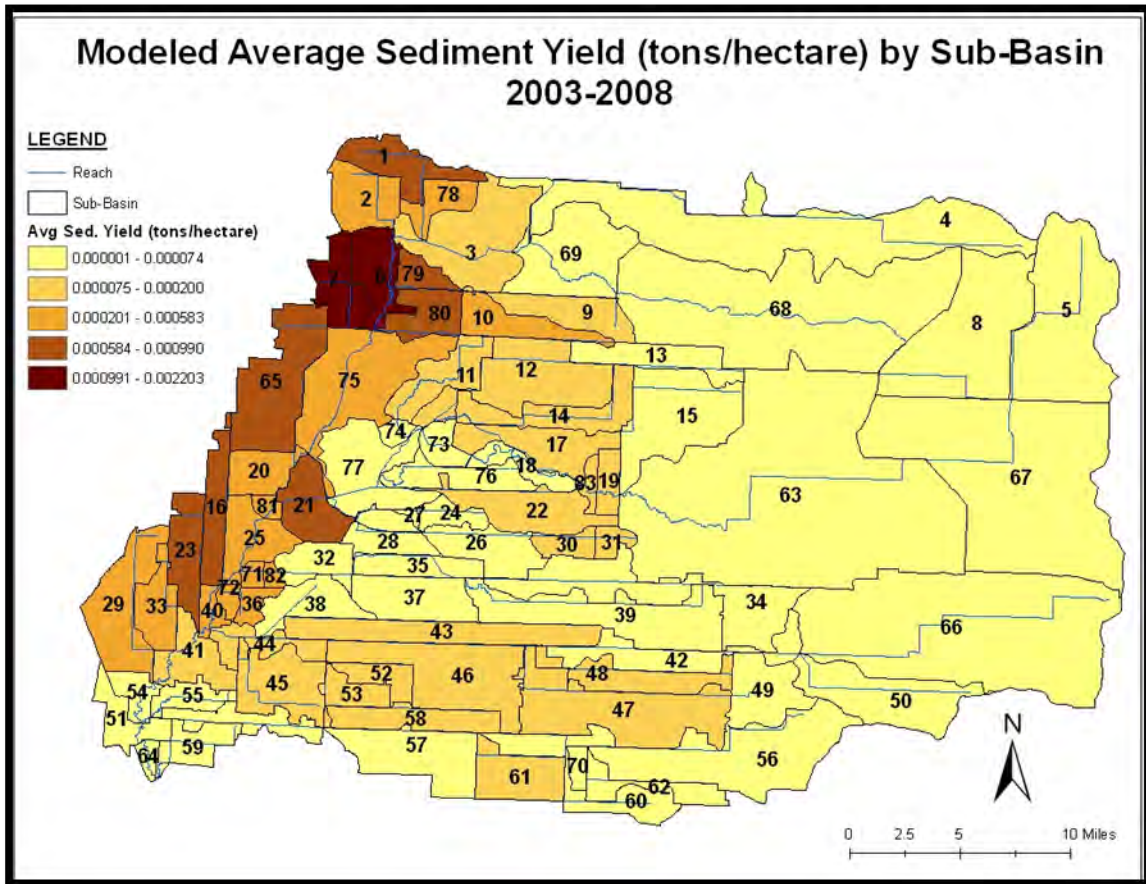
- There is a bend in the River near the Golf Course in Thief River Falls where there is erosion along the outside bend, gully erosion that has nearly cut off the meander, and erosion threatening a house just downstream.



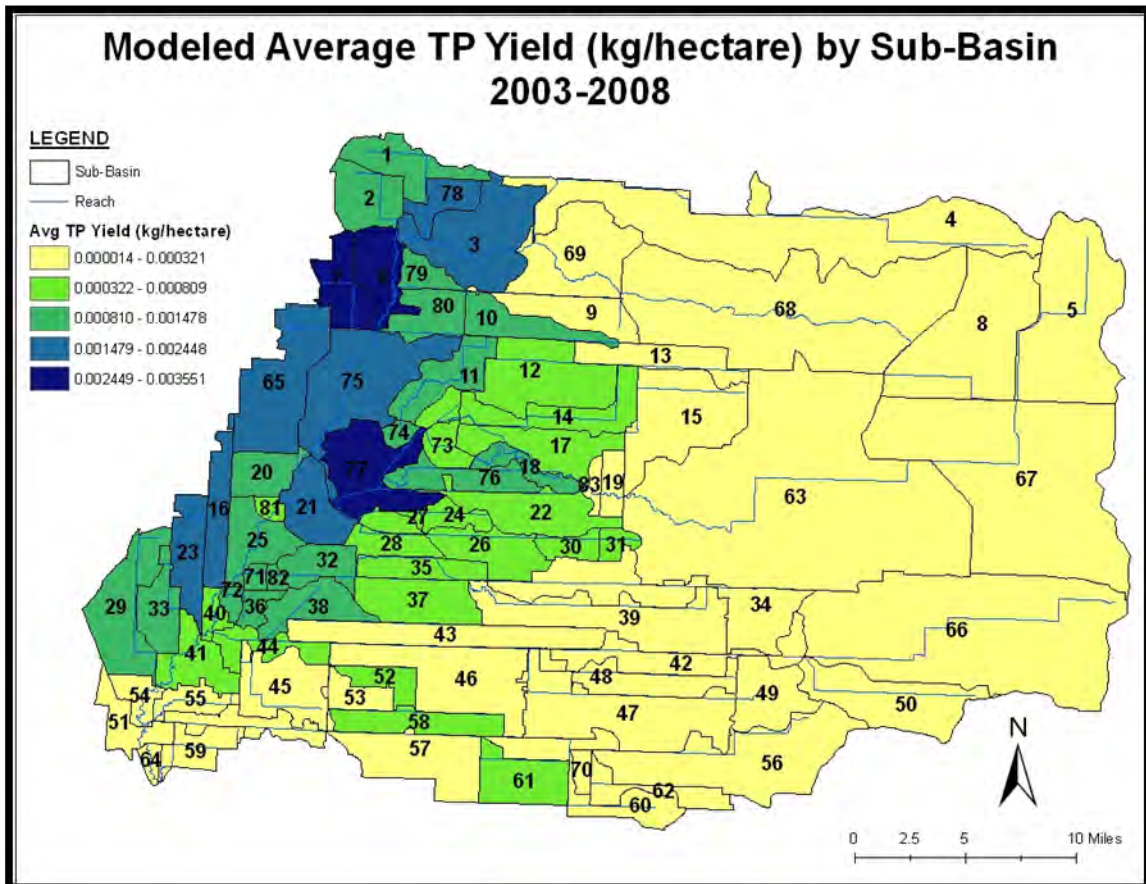
Erosion near the Thief River Golf Club

- There is at least one area where restoration of meanders in the straightened portion of the Moose River may be possible without disrupting farming operations.
- During the May 2010 stream reconnaissance, we observed a lot of recent sedimentation in the Thief River between CR7 (Agassiz Headquarters road) and CSAH 12 (Rangeline Road). The grass growing up through the cracks, from beneath the layer of organic sediment, shows how quickly and recently it had been deposited. The fresh sediment layer in this photo was about 6 inches deep.





Thief River SWAT Model Results: Sediment Yield



Thief River SWAT Model Results: Total Phosphorus Yield

Thief River Watershed Assessment Project

A work plan for the Thief River Watershed Assessment Project was completed as part of the Thief River Watershed Sediment Investigation Project and was submitted to the MPCA on January 14, 2010. The MPCA has approved \$250,000 for the development of a watershed-based TMDL for the Thief River watershed through the four fiscal years of 2010 through 2013. The project was scheduled to begin in 2010, but the MPCA contracting department has fallen severely behind schedule. Even though the money for this project was allocated for the 2010 fiscal year (July 2009 – June 2010), there still is no contract as of January 2011.

The primary goal of this project is the completion of a watershed-based TMDL, which will provide water quality assessments, protection plans and TMDL reports for all the significant (12-digit HUC) waterways in the watershed. There are several objectives that take this project beyond a typical TMDL, including biological monitoring, stream channel stability assessments and civic engagement. Civic engagement is an enhanced version of stakeholder development that is being incorporated into watershed-based TMDL projects throughout the state. Meetings and teleconferences were held with the MPCA throughout 2010 to discuss the civic engagement component of the project.

- Tasks planned for the Thief River Watershed Assessment Project:
 - Evaluation of existing data
 - Water quality sampling
 - The RLWD has been awarded a Surface Water Assessment Grant to conduct the 2011 and 2012 sampling that is planned for the Thief River watershed.
 - Continuous water quality monitoring
 - Biological data collection and analysis
 - Stage and flow monitoring
 - Stream channel stability assessment
 - Stressor identification
 - BASINS model development and environmental assessment
 - Monitoring data entry
 - Monitoring data analysis
 - Civic engagement
 - Identification of sources and solutions
 - Final report and semi-annual reporting

Red Lake River Watershed Assessment Project

The MPCA approved the allocation of \$150,000 for Phase I of a watershed-based TMDL for the Red Lake River Watershed that was scheduled to start in the 2011 fiscal year (which began July 1, 2010). A work plan was developed for the Red Lake River Watershed Assessment Project. It will be a watershed-based TMDL, assessment, and civic engagement project similar to the one planned for the Thief River watershed. The local MPCA office hopes this project could begin in 2011. There has been no news from the St. Paul MPCA about when the contract for this project will be executed. The St. Paul MPCA office likely needs to finish executing its FY2010 contracts (like the Thief River watershed-based TMDL and others throughout the state) before it will start on its FY2011 contracts. The components of the Red Lake River Watershed Assessment Project will be nearly identical to those that are planned for the Thief River Watershed Assessment Project. Comparatively more water quality and flow data collection may be needed because the Red Lake River hasn't been the subject of an intensive water quality study like the Thief River watershed Sediment Investigation.

Tile Drainage Study

Although the study has been completed, the flow measurement structures were still in place. Water level loggers were returned to the field in the spring of 2010 in order to capture one more year of data (just in case it can be used in the future). Water level loggers were retrieved at the end of 2010. The flume measuring surface drainage runoff was actually washed away by the runoff generated by the

August/September rainfall events. Fortunately, the water level logger was found in the woods downhill from the culvert. 2010 has been the last year of monitoring that is planned for this project.

The final report for this project can be downloaded from the RLWD website by going to the following web address: [http://www.redlakewatershed.org/projects/Red Lake Watershed Farm to Stream Tile Drainage Study Final Report R3.pdf](http://www.redlakewatershed.org/projects/Red%20Lake%20Watershed%20Farm%20to%20Stream%20Tile%20Drainage%20Study%20Final%20Report%20R3.pdf)

Planning for a Rain Garden at the RLWD Office

The RLWD Board of Managers approved the investigation of the feasibility of the creation of a rain garden at the RLWD office. The size of a rain garden is determined by measuring the area of impervious surface that is draining into it. The wet areas in the RLWD lawn along the western edge of the parking lot wouldn't work well as rain gardens because the water might be standing in those locations too long. Also, the wet areas collect runoff from both the building and the parking lot, so the square-footage of a rain garden in those locations would need to be very large. Wade Robinson of the Pennington County SWCD has some experience with rain garden installation, so he visited our office to help determine where the rain gardens could be located and how big they would need to be. We found two possible locations. One would be a 600 ft² rain garden that would capture rainfall from the southwest portion of the office. The other would be approximately 470 ft² and would capture runoff from the northwest portion of the building. The garden near the northwest corner of the building would be the most aesthetically pleasing, so that is the spot that was chosen. It could also be contoured to complement the existing landscaping. Quotes were received from two potential contractors, one from Moorhead and one from Thief River Falls. The local landscaper was the most cost-effective option. The RLWD Board of Managers accepted the quote from Breiland Landscaping. The design of the garden will be loosely based on the sketch below. There will be a stepping stone path down the middle and the clusters of plants will be labeled for additional educational value.



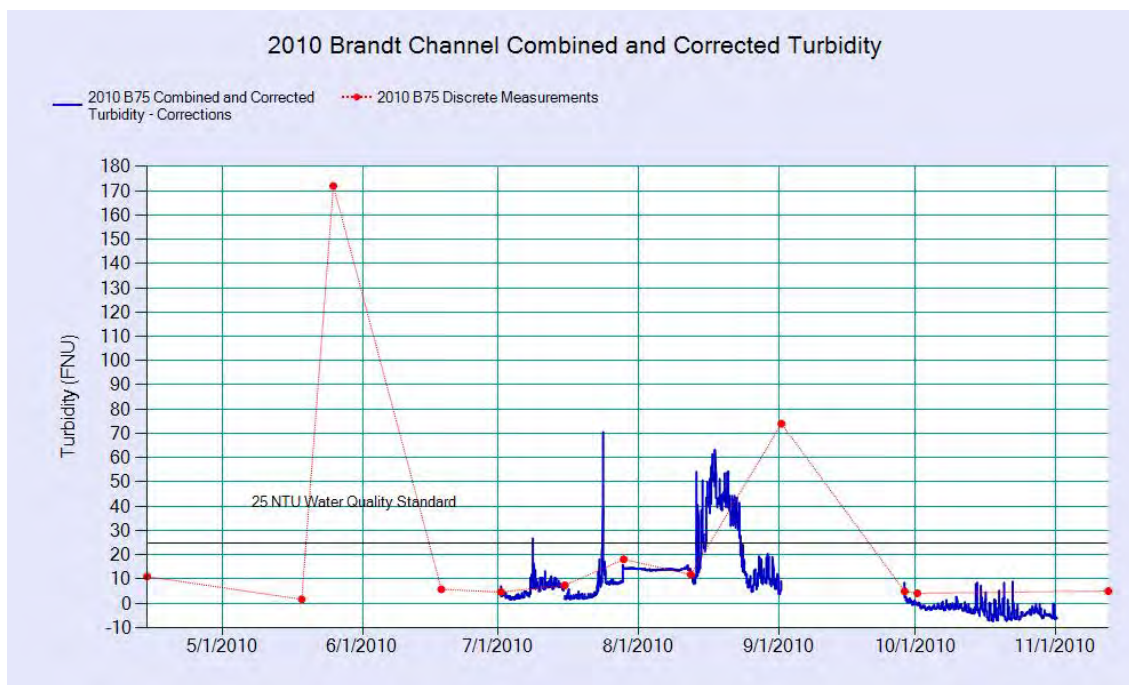
Brandt Outlet Channel Water Quality Monitoring

Continuous turbidity and water level monitoring equipment has been installed yearly on the Brandt Channel (at Highway 75) and Polk County Ditch 2 (stream gauge #71 at CR 62) since 2006. A routine of monthly cleaning, maintenance, and discrete water quality measurements has been conducted through each summer. International Water Institute staff also collect samples and record field water quality measurements. The long-term collection of data at these sites will allow us to compare “before” and “after” data relative to the impoundment construction and channel restoration.

HOBO water level loggers were installed at the CD2 and Brandt channel monitoring sites in 2010. The deployment pipes at the CD2 site was destroyed by ice in the spring of 2010. Pieces of the pipe were found downstream, but the HOBO water level logger was not found. It was difficult to search for the logger because the ditch never dried up like it typically does in the late summer.

A TS300 turbidity logger was installed at the Brandt Channel monitoring site in 2010. Because only one site had a deployment pipe in 2010, the two TS300 turbidity loggers were swapped on a 2-week deployment interval. During site visits, a clean calibrated turbidity logger would be swapped for the deployed logger at the Brandt channel monitoring site. Field measurements were conducted at both of the monitoring sites.

Flow continued in the Brandt Channel and CD2 throughout the summer. Water level loggers were retrieved in November. A beaver dam at the site complicated the stage measurement and flow estimation process. The Brandt Channel was cleaned-out downstream of the Hwy 75 crossing in July and the beaver dam at the Hwy 75 crossing was also removed.



Education

The RLWD Water Quality staff helped educate grade school students at the Pennington County Outdoor Education Day and the Northwest Water Festival. The water quality coordinator was a judge at the Franklin Middle School 7th and 8th grade science fair in Thief River Falls and also gave presentations at Thief River Watershed Stakeholder Meetings, the Red River Basin Water Quality Monitoring Training Session, Red River Basin Water Quality Team meetings, a Pennington County Water Resources Advisory Committee meeting, RLWD Board of Managers meetings, and a RLWD Overall Advisory Committee meeting. Monthly water quality reports continue to be available on the RLWD website (<http://www.redlakewatershed.org/monthwq.html>).

Predicted Results of Future Statewide Water Quality Assessments

In recent years, the Minnesota Pollution Control Agency (MPCA) has assessed water quality across the entire state on every odd year and released a 303(d) List of Impaired Waters on even years. Increased amounts of data and decreases in State staff have prompted a new strategy. The MPCA has adopted a watershed-based strategy to water quality assessments. There are 81 major subwatersheds in the State. Each year, approximately 8 watersheds will be assessed. Each watershed will be assessed once in a 10-year cycle. The MPCA will be conducting Intensive Watershed Monitoring (IWM) in each watershed before it is assessed. The IWM monitoring will also be repeated once every ten years. This strategy is intended to align with the watershed-based TMDL studies that are being funded by the State. The water quality sampling for the IWM effort is conducted by local agencies and is funded by Surface Water Assessment Grants (SWAG). MPCA staff collect biological data in the watershed. The following table shows the anticipated schedule for SWAG monitoring, TMDLs, assessments, and lists of impaired waters for the major subwatersheds within the RLWD.

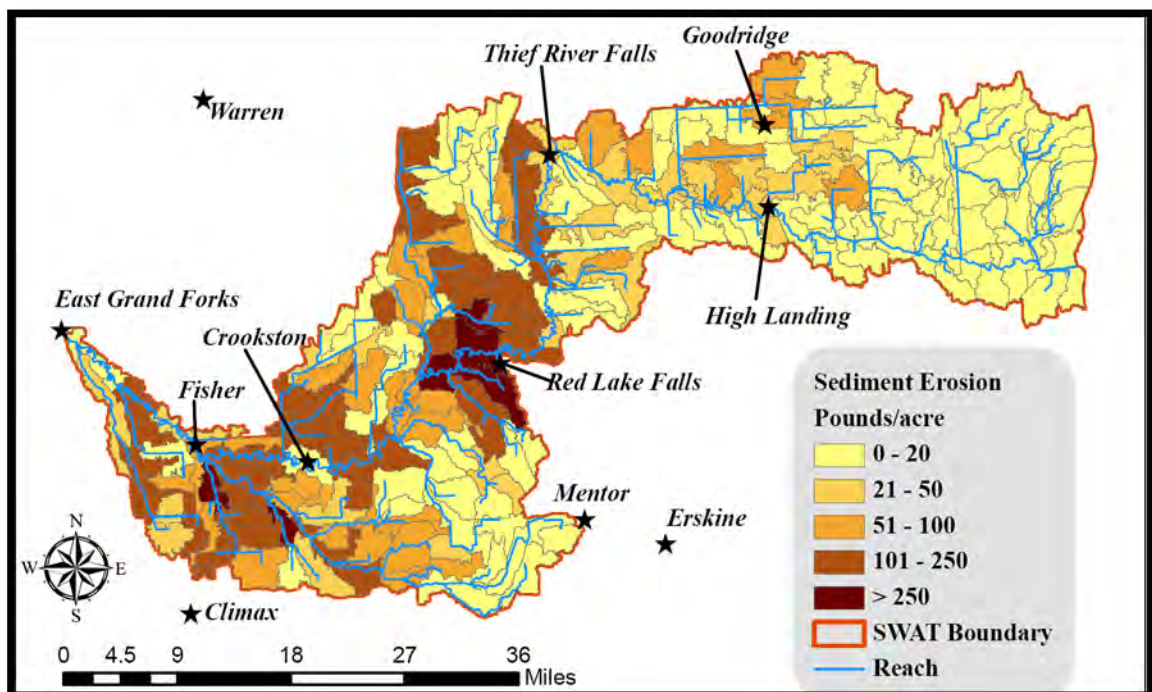
	Intensive Watershed Monitoring	Watershed-Based TMDL	Water Quality Assessment	New Impairments Listed on the 303(d) List of Impaired Waters
Thief River	2011	2011	2013	2014
Red Lake River	2012	2012	2014	2016
Grand Marais Creek	2012	2012	2014	2016
Clearwater River	2014	2014	2016	2018
Upper/Lower Red Lakes	2014	2014	2016	2018

Assessments use the most recent 10 years of water quality data (2001-2010) to determine which rivers, streams, and lakes are meeting the State of Minnesota's water quality standards. Much of this data comes from local agencies and organizations such as the RLWD, SWCDs, and the River Watch program. Even though no watersheds within the RLWD will be officially assessed by the State in 2011, we can still look at our own monitoring data to understand where water quality problems exist so we can take actions that address them. Here are some new impairments that were identified during the 2010 monitoring season:

- Supplemental E. coli sampling has verified some additional aquatic recreation impairments within the RLWD:
 - Grand Marais Creek
 - Gentilly Creek
 - Ruffy Brook
- The Red River Watershed Management Board Surface Water Assessment Grant (SWAG) and the Upper Lost River SWAG sampling has provided the extra E. coli samples that were needed to confirm impairments in:
 - South Cormorant River
 - O' Briens Creek
 - Kripple Creek
 - Lower Badger Creek
 - Lost River upstream of Pine Lake
 - Nasset Brook (tributary of the Lost River, south of Pine Lake)
- The Red River Watershed Management Board SWAG monitoring has identified a turbidity impairment in Kripple Creek.
- The Red River Watershed Management Board SWAG monitoring has identified a low dissolved oxygen impairment in O' Briens Creek.

Other Notes from 2010

- ✓ All of the RLWD water quality data that was collected and available through October was entered and submitted to the MPCA for entry into the EPA STORET database (RLWD district monitoring program and the Thief River Watershed Sediment Investigation study).
- ✓ Data reviews were also completed for the 2010 STORET submittals.
- ✓ Status of Soil and Water Assessment Tool (SWAT) modeling efforts within the Red Lake Watershed District:
 - The Clearwater River watershed SWAT model was completed in 2009.
 - The Thief River watershed SWAT model was completed in 2010.
 - The Clearwater SWCD worked with the Energy and Environmental Research Center to create a SWAT model for the Silver Creek watershed.
 - The Grand Marais Creek watershed has been modeled by the EERC for the MPCA using SWAT.
 - The EERC was working on a SWAT model for the Red Lake River for the MPCA in 2010. Here is one of the preliminary maps generated by that model:



- ✓ Wrote a work plan for a watershed-based TMDL project for the Red Lake River watershed (Red Lake River Watershed Assessment Project).
- ✓ Reviewed a draft of the Grand Marais Creek Turbidity TMDL Report that is being developed by the Detroit Lakes MPCA office.
- ✓ Wrote a “success story” article for the MPCA about the Clearwater River and how it is no longer impaired by E. coli or fecal coliform bacteria.

- ✓ The May 23-25 rain caused flooding and erosion problems throughout the western portion of the RLWD.

- Churning slurry of muddy water in a ditch flowing to the Hill River.



- Massive washout of a tall embankment and its side-water-inlet culvert(s) along the Hill River, east of Brooks along Hwy 92.

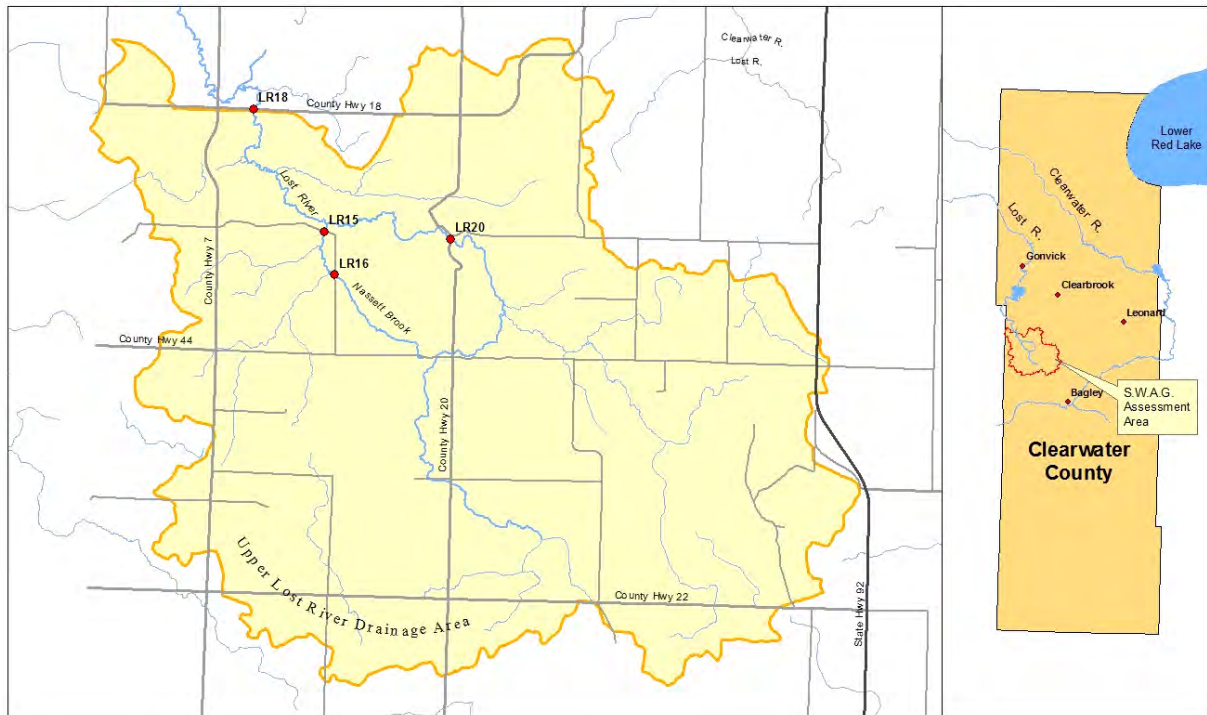


- ✓ Flooding also occurred in August and September of 2010. These photos were taken in Thief River Falls during the September flood:



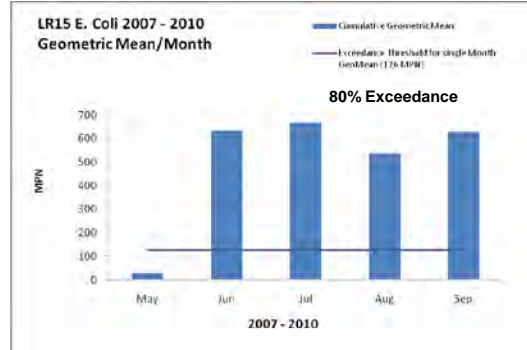
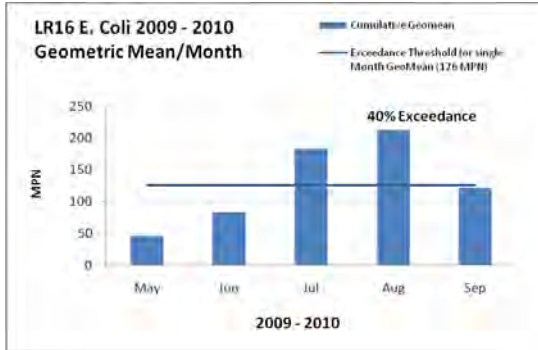
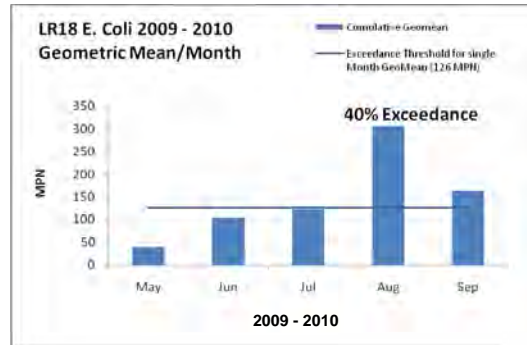
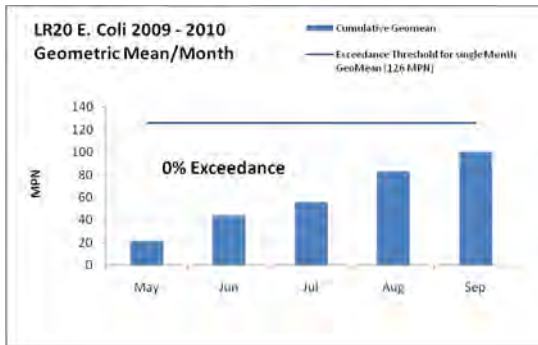
Surface Water Assessment Grant (Project 82FF)

The Red Lake Watershed District was awarded a \$13,000 Surface Water Assessment Grant in 2009 by the Minnesota Pollution Control Agency for a water quality assessment of the Nasset Brook and Lost River in Eddy Township, Clearwater County. This grant has provided funding for labor, equipment, lab services, and administrative expenses to collect data on the Lost River upstream of Clearwater County Road 18, and its tributary, Nasset Brook. Each of the four sites chosen for monitoring is located on a designated trout reach. The funding period was spread over two years and the work plan has been carried out by student volunteers from the Bagley High School River Watch team.



In 2009, the District procured a sonde (YSI 600QS), a turbidimeter (Hach 2100P), a polycarbonate sampling bottle, and calibration standards and other consumables, all for use by the project volunteers. The equipment will continue to be available to River Watch groups after this project is completed.

The two-year work plan was carried out according to schedule and was completed with no significant cost overruns. Each site was monitored twice per month in 2009 and three times per month in 2010 in order to meet the criteria for E. coli assessment. The volunteer supervisor, Bagley science teacher Jill Bakken, did an excellent job in maintaining a demanding schedule, overseeing the students, and enforcing quality control protocols. Ms. Bakken played a key role in the successful execution of the project work plan.



Monthly geometric mean aggregated over 2009 and 2010 (shown in graphic form above and tabular form below) suggest an overall impairment condition at LR15, LR16, and LR18. These sites will qualify for a formal assessment after 2010.

LR20 Month GeoMean for 2009-10		Count
Apr	NA	0
May	20.68	5
Jun	43.52	5
Jul	55.54	5
Aug	82.99	5
Sep	100.26	4
Oct	NA	0
Nov	NA	0

LR18 Month GeoMean for 2009-10		Count
Apr	NA	0
May	38.58	5
Jun	104.99	5
Jul	122.44	5
Aug	306.70	5
Sep	162.94	4
Oct	NA	0
Nov	NA	0

LR16 Month GeoMean for 2009-10		Count
Apr	NA	0
May	45.28	5
Jun	83.64	5
Jul	182.96	5
Aug	213.02	5
Sep	121.87	4
Oct	NA	0
Nov	NA	0

LR15 Month GeoMean for 2009-10		Count
Apr	NA	0
May	26.95	5
Jun	635.65	5
Jul	666.37	5
Aug	535.59	5
Sep	629.79	4
Oct	596.01	0
Nov	209.80	0

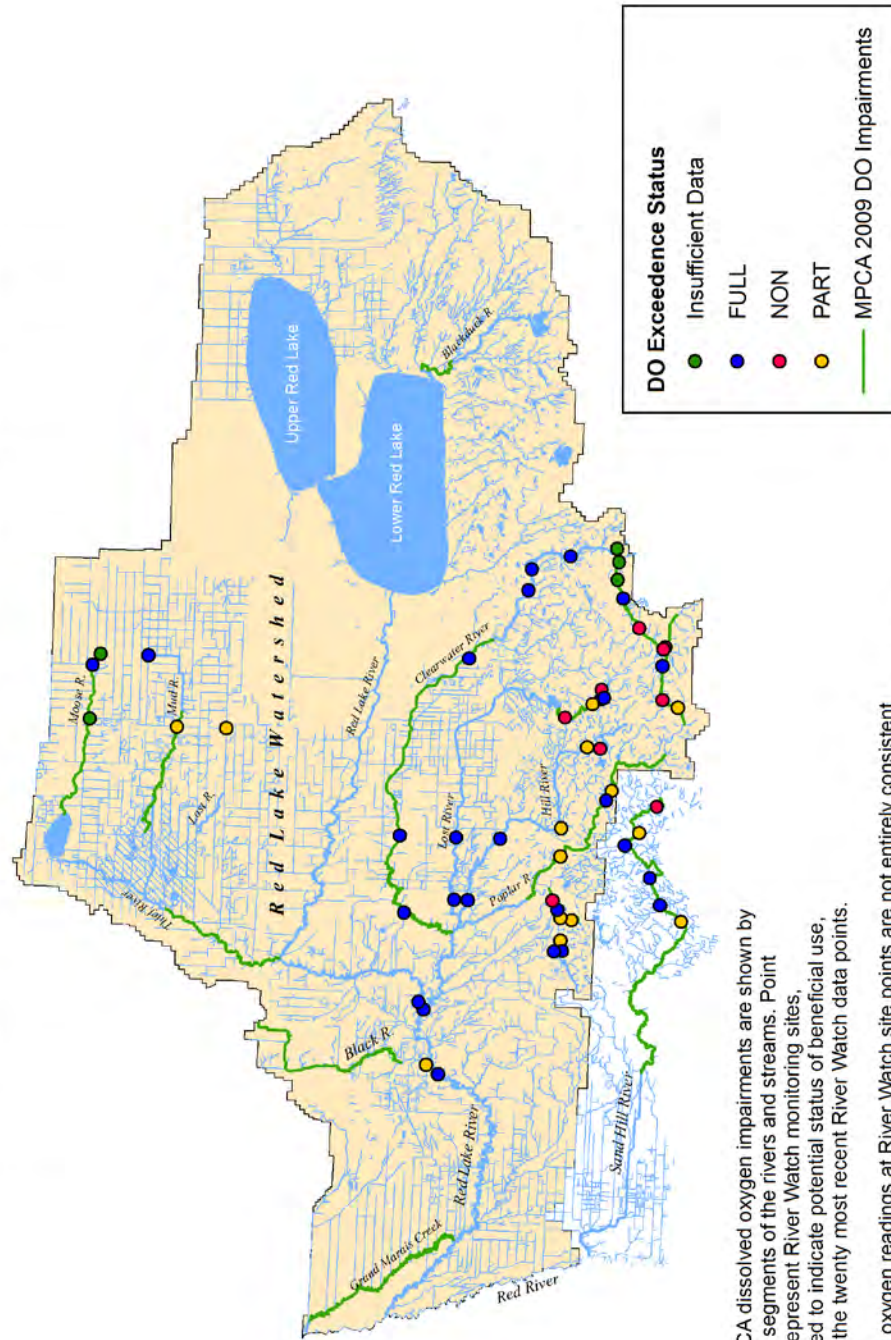
The data show the tendencies of three out of four SWAG sites to exceed the benchmarks for impairment 303(d) and non-support 305(b). The MPCA can make a formal assessment with five data points each for May, June, July, and August, aggregated over 2009 and 2010. The impairment criteria for E. coli is specified in MPCA's Guidance Manual for Surface Water Assessment:

If the geometric mean of the aggregated monthly values for one or more months exceed 126 organisms per 100 ml, that reach is placed on the 305(b) and 303(d) lists. Also, a waterbody is considered impaired if more than 10 percent of individual values over a ten year period (independent of month) exceed 1260 organisms per 100 ml.

River Watch (RLWD Project #82F)

- Six River Watch school groups, Bagley, Fosston, Red Lake Falls, RLCC, Win-E-Mac, and Grygla, contributed 326 site visits in the 2010 monitoring season. The science teacher from Grygla, Isaac Kvsager, organized a new group of students, made five monitoring trips, and added two additional monitoring sites.
- The 2010 Forum was attended by schools from within the Red River Basin, each bringing a display of their 2009 monitoring season. The displays were competitively judged for overall clarity, knowledge of the empirical methods of science, and the quality of presentation. Those groups from the Red Lake Watershed District who received recognition were Bagley, Red Lake County Central, Red Lake Falls, and Win-E-Mac.
- *2010 River Watch Data:* The map graphics presented below contrast and compare 2009 MPCA impairment listings with the most recent 20 River Watch data points for these monitoring sites.

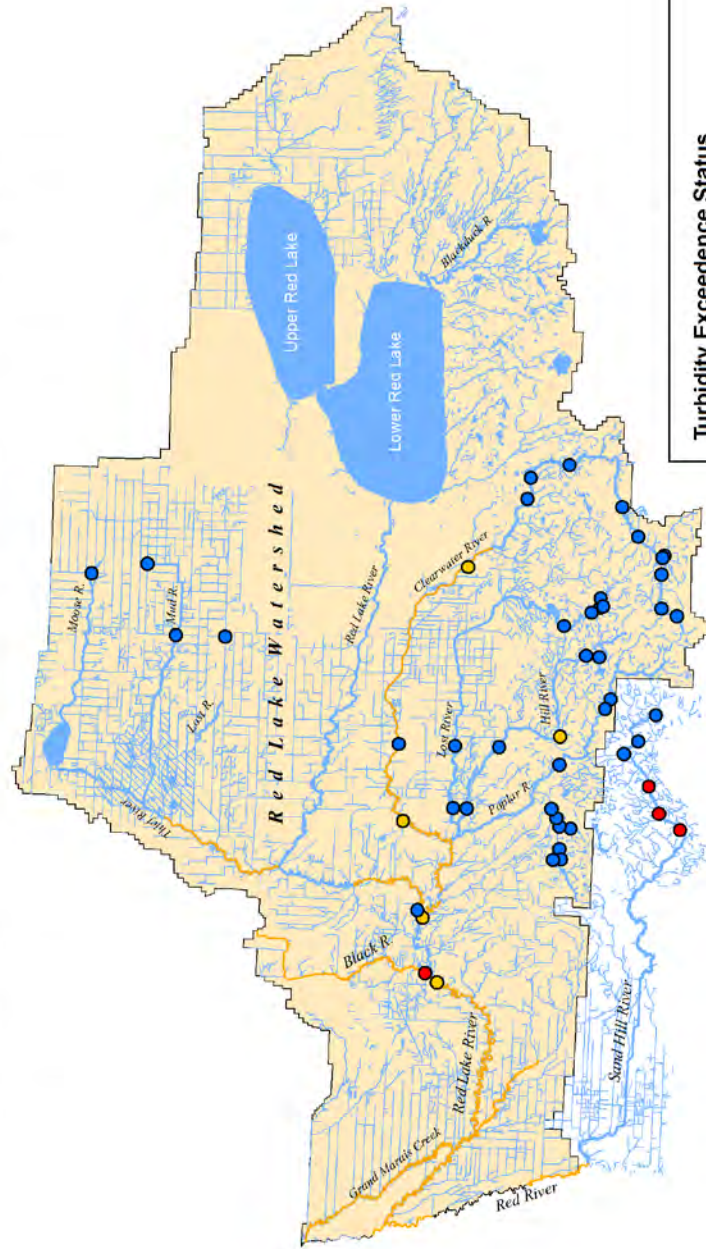
Dissolved Oxygen Exceedences Based on River Watch Data



2009 MPCA dissolved oxygen impairments are shown by the green segments of the rivers and streams. Point features represent River Watch monitoring sites, color-coded to indicate potential status of beneficial use, based on the twenty most recent River Watch data points.

Dissolved oxygen readings at River Watch site points are not entirely consistent with MPCA impairment listings. MPCA assessments are usually based on a larger data set.

Turbidity Exceedences Based on River Watch Data



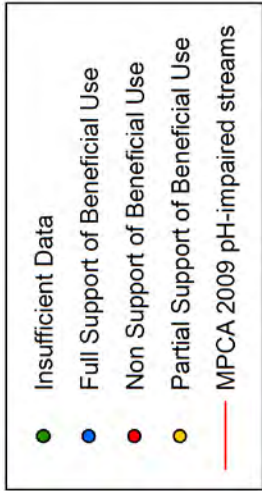
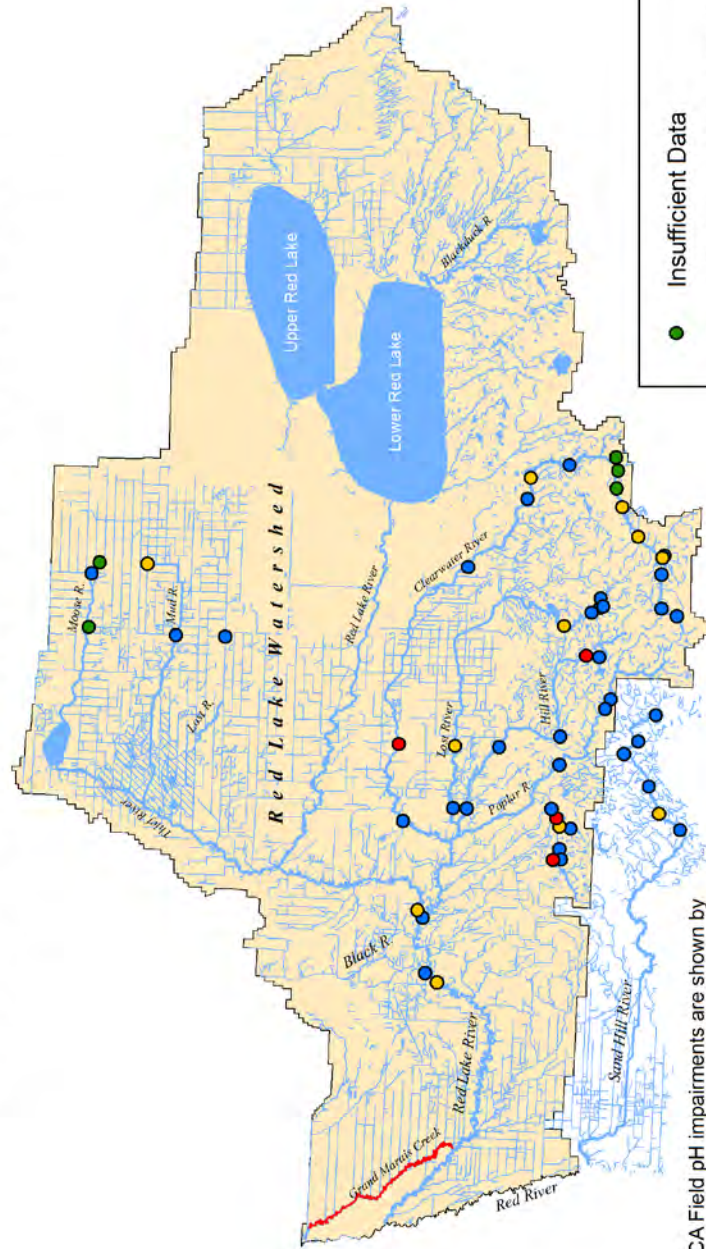
Turbidity Exceedence Status

- Full Support of Beneficial Use
- Non Support of Beneficial Use
- Partial Support of Beneficial Use
- MPCA Designated Turbidity Impairments 2009

2009 MPCA Turbidity impairments are shown by the orange segments of the rivers and streams. Point features represent River Watch monitoring sites, color-coded to indicate potential status of beneficial use, based on the twenty most recent River Watch data points.

River Watch site point turbidity data appears to confirm the MPCA impairment listings within the Red Lake River basin.

Field pH Exceedences Based on River Watch Data



2009 MPCA Field pH impairments are shown by red segments of the rivers and streams. Point features represent River Watch monitoring sites color-coded to indicate potential status of beneficial use, based on the twenty most recent data points.

The MPCA pH impairment listing is based on data from additional sources. River Watch sites throughout the watershed exhibit pH values generally consistent with MPCA benchmarks.

Other Watershed Activities

Other on-going activities include water appropriation for wild rice growers, stream flow monitoring, benchmark surveys, hydrologic analysis, flood studies and inspection, operation and maintenance of watershed district projects and facilities.

Farmstead Ring Dikes (RLWD Project #129)

Since the historic flood of 1997, the District has received grants to assist landowners with the construction of farmstead ring dikes. With the funds, the District has established a cost share program for new construction and for upgrading of existing ring dikes.

Design Criteria

- Elevation of the dike will be two feet above previous high-water elevation or 1 foot above the administrative 100-year flood, whichever is higher.
- Sideslopes of three feet horizontal to one foot vertical.
- Top width of six feet (minimum).

Construction includes all material for constructing embankment, culvert flapgates, any clearing/grubbing, seed, fertilizer and mulch, gravel, etc. The funding breakdown for the ring dike program will be 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%

Two state funded farmstead ring dikes were constructed during 2010, both located in Polk County. One was built for Wes and Calien Christensen located south of Crookston in Hammond Township, and the other for Jason and Patty Stordahl in Esther Township, north of East Grand Forks. 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, etc.

Name	Dike Length	Cubic Yards	Avg. Ht.	Construction Cost
Christensen	2,600 ft.	7,145	4.0 ft.	\$35,632.00
Stordahl	1,000 ft.	2,800	3.7 ft.	\$20,080.00

To date, 65 ring dikes have been completed with funding assistance from the state. State funded ring dikes will be difficult to attain in 2011 due to state cut backs.

Wes and Calien Christensen
Hammond Township, Polk County
Near Burnham Creek



Ring Dike Construction

Jason & Patty Stordahl Ring Dike Construction
Esther Township, Polk County - Near Red River of the North



Additional funding source for Farmstead Ring Dikes in 2010

The Natural Resource Conservation Service (NRCS) and Red Lake Watershed District cooperated using federal funds, to help construct four farmstead ring dikes located in Marshall, Pennington, and Polk Counties. Various NRCS offices, the District, and consulting Engineers worked with the landowners in the design phase through construction.



Mitch Srnsky Ring Dike, Reiner Township, Pennington County
2010 Spring Runoff



Barry Newton, Smiley Township, Pennington County
Ring Dike Construction

Permits (RLWD Project #90)

At their April 8, 2010 meeting, the Board of Managers, held a hearing to amend their Permit and Drainage Rules. The amendment refers to “after the fact” permit applications and /or unpermitted/unauthorized work. The first course of action is a written warning to the person or entity that performed the work. If there is a second offense, it states, (in this abbreviated version) that the responsible person or entity could possibly be subject to a fine, restoring the work to the original condition, and paying for the actual engineering and attorneys fees incurred by the District. Refer to complete amendment in the Permit and Drainage Rules of the Red Lake Watershed District (Section 5 Permits – L).

A record number of permit applications were received by the District in 2010. A total of 206 applications were submitted, which is an increase of 72 applications from 2009. We believe that the increase is due to a couple of factors 1) the amendment to the rules and regulations and 2) the very wet conditions in May and June during the growing season and also in the fall during September and October.

Of the permits received six were tabled until spring 2011, one was withdrawn, and four denied. The numbers listed below indicate the permits approved and how they are categorized within our rules for permitting:

- 1 utilities
- 6 re-grade
- 131 culvert/bridge
- 66 drainage
- 1 wetlands

Some of the applicants were State and County Highway Departments, The Nature Conservancy, townships, cities, utility companies, State & Federal agencies, landowners, and private individuals. Examples of work associated with permit review consists of, watershed delineations, detailed surveys, drainage area and culvert sizing recommendations, and meetings.

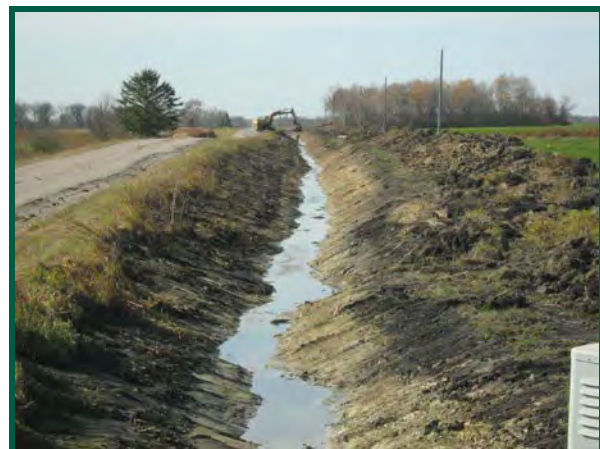


Darrell Payment Ditch Cleaning,
Gervais Township, Red Lake County

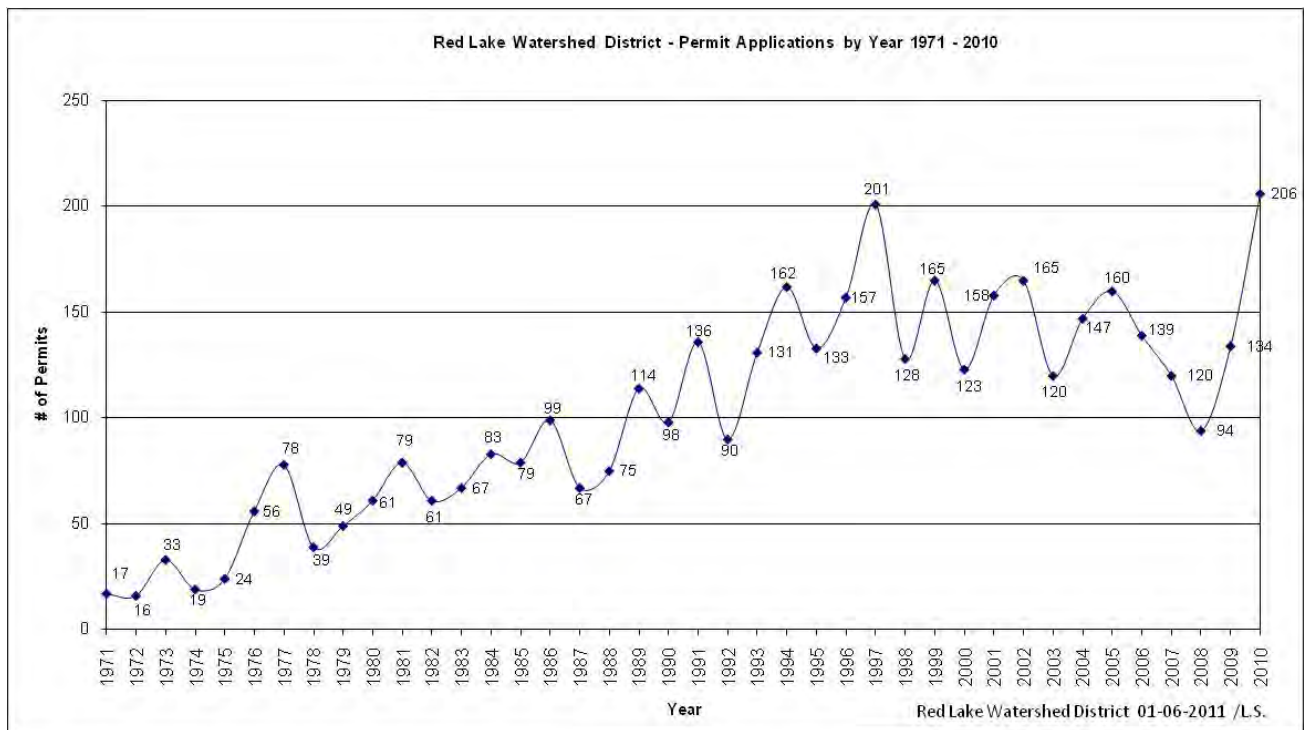
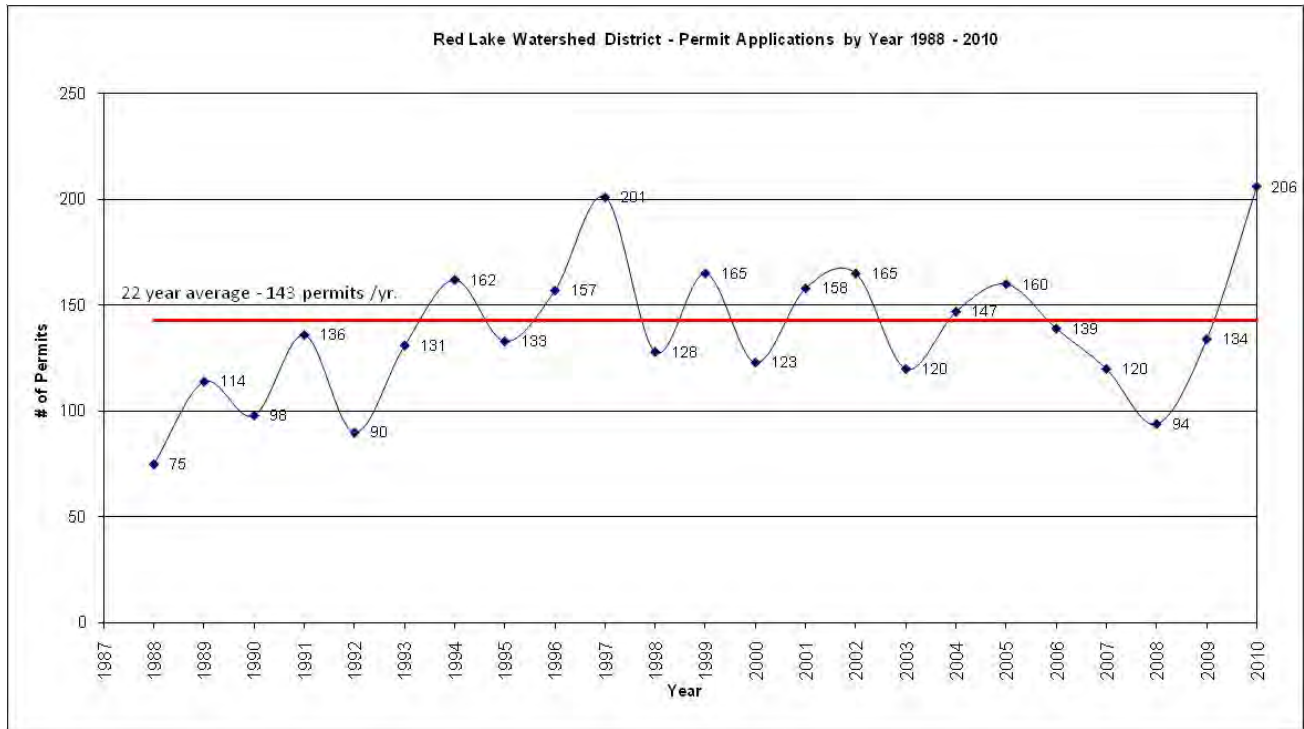
1971 was the first year of permitting activity. The following two graphs, is a record of the number of permit applications received during a given year, (1971 to 2010) and the number of yearly permit applications from 1988 through 2010 with the 22 year average.

Permit applications are available on the Red Lake Watershed District web site:

www.redlakewatershed.org



Unpermitted work located in King Township, Polk County



Wild Rice Water Allocation (RLWD Project #45)

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

The District allocates water to the growers during periods of low flow. 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.

Wild rice, as a domesticated agricultural grain crop, is grown in paddies flooded with water to an average depth of about 1 foot. Most of the water is appropriated during the spring runoff and continues to June. Spring flood storage capacity is about 23,000 acre feet, which is equivalent to 1.1 inches of runoff. The paddies are drained during July and August to facilitate harvest.



Typical pumping station

When there is adequate flow, some growers partially flood paddies in the fall or late winter. 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.

As mentioned above, rice paddy spring flood storage is quite substantial. Some of that storage was utilized during this year's event and helped to reduce downstream flood flows/peaks.

For most of 2010 during the growing season, sufficient flows in the Clearwater River watershed provided the growers adequate water for flooding paddies. Allocation was performed in September and October for fall flooding. Normal duties include correspondence with growers, recording river levels at various sites, and flow measurements. The growers also provide valuable river level gage data.



Surveying water lift from river to pump



Harvesting Wild Rice

Stream Flow Monitoring (RLWD Project #21)

Our stream flow monitoring is a vital on-going activity. The district has an active stream gaging program and local volunteers assist us in recording gage readings and monitoring river conditions for each runoff event. Approximately 150 gages of various types (staff, wire weight, automated) are located throughout the District. District staff performs flow measurements and continues to develop stage (gage height) and discharges (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), and the MnDNR will help us better understand drainage and runoff characteristics within the District. With several years of recorded data, it will become increasingly valuable for the Board of Managers and staff for the operation of existing projects and development of potential projects.



Measuring flow beneath ice



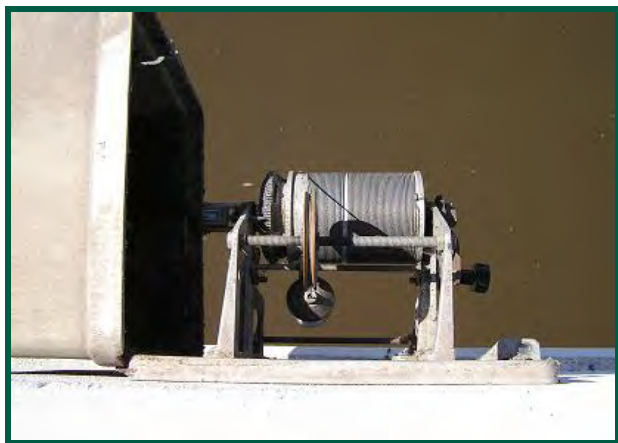
Typical staff gage at structure



Measuring flow with bridge crane



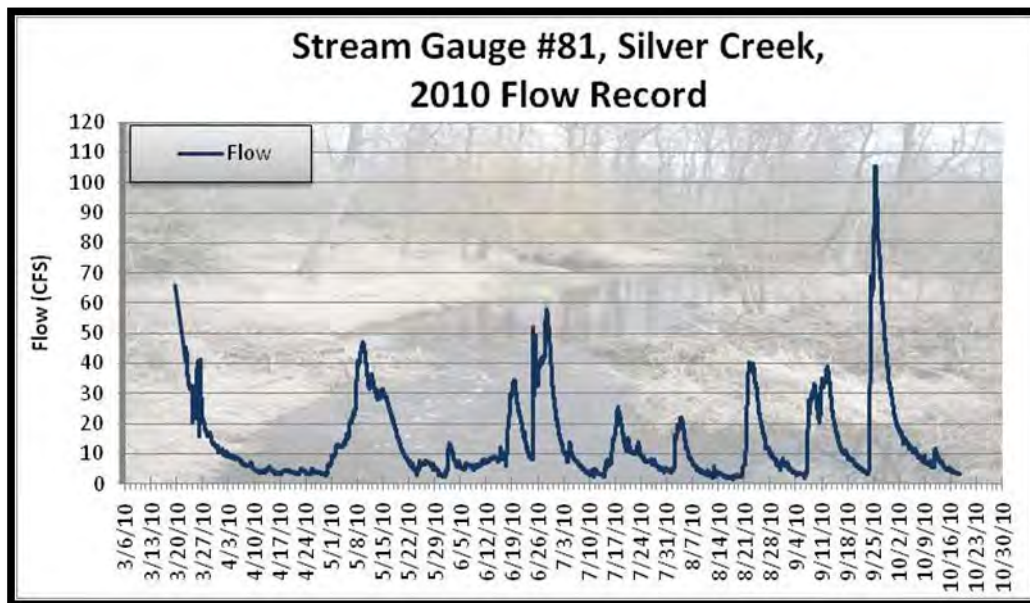
Automated river gage



Wire weight gage on bridge

2010 Stream Gauging Accomplishments

- Managed flow data from 2009, including filing of flow measurements and stage records.
- HOBO water level loggers were deployed in the Thief River watershed and Silver Creek as soon as the ice thawed and the deployment pipes were accessible.
- In March, much time was spent recording water levels during spring runoff and installing HOBO water level loggers when water levels were low enough.
- HOBO water level loggers were installed at the following sites in 2010:
 - Stream gauge 98, Thief River near the Thief Lake Outlet
 - X4/Stream Gauge 43, Moose River at CSAH 54.
 - 71, Polk County Ditch 2
 - B75, Brandt Channel at Hwy 75.
 - Barometric pressure logger at B75
 - 81, Silver Creek at CR111
 - Barometric pressure logger at the Bachand tile monitoring site.
 - Stream gauge 41, on Marshall County Ditch 20
 - Stream gauge 6, on Ditch 200 downstream of Farmes Pool.
 - Stream gauge 156, Thief River at CR 44
 - 757, Mud River at Hwy 89 (temporary, high-water installation).
 - Stream gauge 160, new flow monitoring site on JD21 at Marshall CR48
 - JD30/TR, JD30, north of Thief River Falls.
 - Stream gauge 40, on the Thief River at CR7
- Some flow measurements were made during the high spring flows:
 - Stream gauge 156 on the Thief River, 2468.2 CFS on 3/18
 - S.G. 160 – new site on JD21 at Marshall CR48, 24.1 CFS on 3/30
 - B75 – Brandt Channel at Hwy 75, 118.9 CFS on 3/17
 - S. G. 41 on Marshall CD20, 1000 CFS on 3/18
- Collected water level measurements in the Thief River watershed while the water was high.
- Flow was measured in Ruffy Brook (3 times) and Ditch 200 (twice) during the month of May.



Snow Surveys

The Red Lake Watershed District performs weekly snow surveys each year, beginning in about the middle of February. Seven sampling sites are monitored throughout the watershed district. The locations of these sites are near impoundment facilities which are designed and operated for floodwater retention.

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 weekly data.

This information is forwarded to the National Weather Service and the North Central River Forecast Center. Obtaining snowpack information helps 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 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.

During the 2nd week of March 2010, and just prior to the rapid melt, the average depth of the snowpack was 7.7 inches and the water equivalent (moisture content) was 2.2 inches. Within 4 days, a rapid melt occurred and parts of the Watershed District encountered major flooding once again. The 2010 Fall season was very wet going into freeze up. Precipitation totals for the autumn and December snowfall/precipitation were far above the long-term averages for the Red River basin. Another substantial runoff in the spring of 2011 is possible.



Establish base weight of empty sampling tube



Obtaining snow depth and core sample



Establishing weight of snow sample to obtain water content

Proposed Watershed District Boundary Changes

A governmental unit known as the Red Lake Drainage and Conservancy District preceded the Red Lake Watershed District. The Red Lake Watershed District, as known today, and whose territory includes approximately the same lands, was officially established in 1970. Since establishment, the Red Lake Watershed District has made proper changes to the original boundary as necessary and/or as we become aware of them.

During 2010, the Watershed District conducted both office and field work pertaining to proposed changes to the existing legal boundary. Two specific areas are being reviewed for possible changes to either add lands to, or remove lands from the Red Lake Watershed District. In both cases, to determine the hydrologic boundary, a detailed field inspection was made, landowners consulted, US Geological Survey topographic maps, and aerial photographs were used.

Two areas for review are:

- ❖ 1) Hydrologic boundary between the Red Lake Watershed and the Mississippi Headwaters Watershed
 - East of the city of Blackduck – in Summit Township, Beltrami County and a small portion in Moose Creek Township, Itasca County
 - This area was brought to our attention by a landowner and all the lands in question would be removed from the Red Lake Watershed District (approx. 2200 acres)

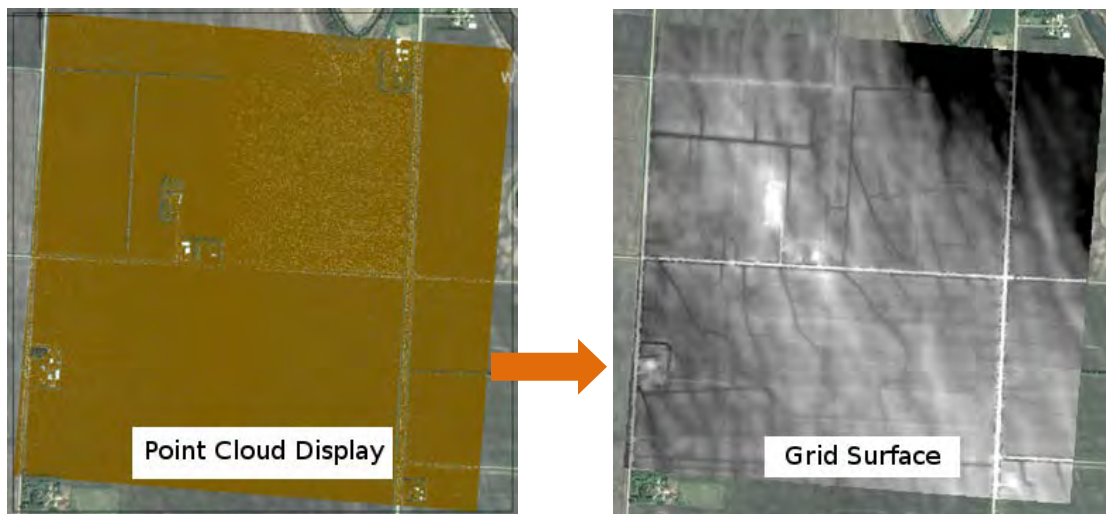
- ❖ 2) Hydrologic boundary between the Red Lake Watershed District and the Sand Hill Watershed District
 - Primarily in Polk County - basically from the Red River of the North in Vineland Township and easterly to Columbia Township near Lengby, MN.

The proposed changes will be submitted to the Minnesota Board of Water and Soil Resources. This agency is responsible for scheduling the time and location for public hearings, which are required for boundary changes. These hearings will take place during 2011.

LIDAR/GIS Technology (RLWD Project #145)

The acquisition of AutoDesk Civil 3D and ArcMap/Spatial Analyst software was an important step in extending the GIS capabilities at the Watershed District. This software, in combination with the newly distributed LIDAR surface data, has the potential of providing unprecedented precision and productivity for project assessment, permit processing, and land surface modeling. The new software tools are complex and the LiDAR data set is massive. Consequently, a significant time investment is required to reap the new benefits. Performing a task of any significant size with this technology can lead to various dead ends, especially for the novice, unless a standardized work flow is employed that may require using two or more software tools in sequence. For example, a stream flow analysis requires AutoCAD Civil 3D, ArcGIS, and two extension packages. RLWD staff is currently developing a hierarchy of workflow procedures consisting of roughly three levels:

1. *Program configuration:* Civil 3D is a collection of engineering tools that include AutoCAD and Map 3D. Our applications require that we combine aspects of AutoCAD and Map 3D into a customized Civil 3D workspace.
2. *Conversion and preparation of digital surface data:* Surface data is available in the original LiDAR point cloud form and as interpolated grid surface files. For any type of hydrologic analysis it is usually necessary to insert corrections for culverts and bridges, combine blocks of surface data into mosaics, and interpolate data voids.
3. *Surface analyses:* Once the software environment is established and the surface data is prepared, the analysis can be performed.



A block of point cloud data is converted to a bare earth surface and interpolated to form a grid surface.

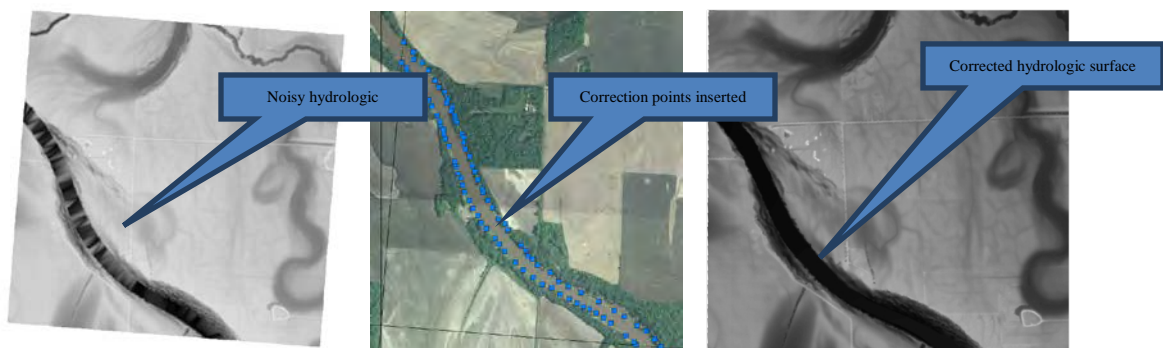
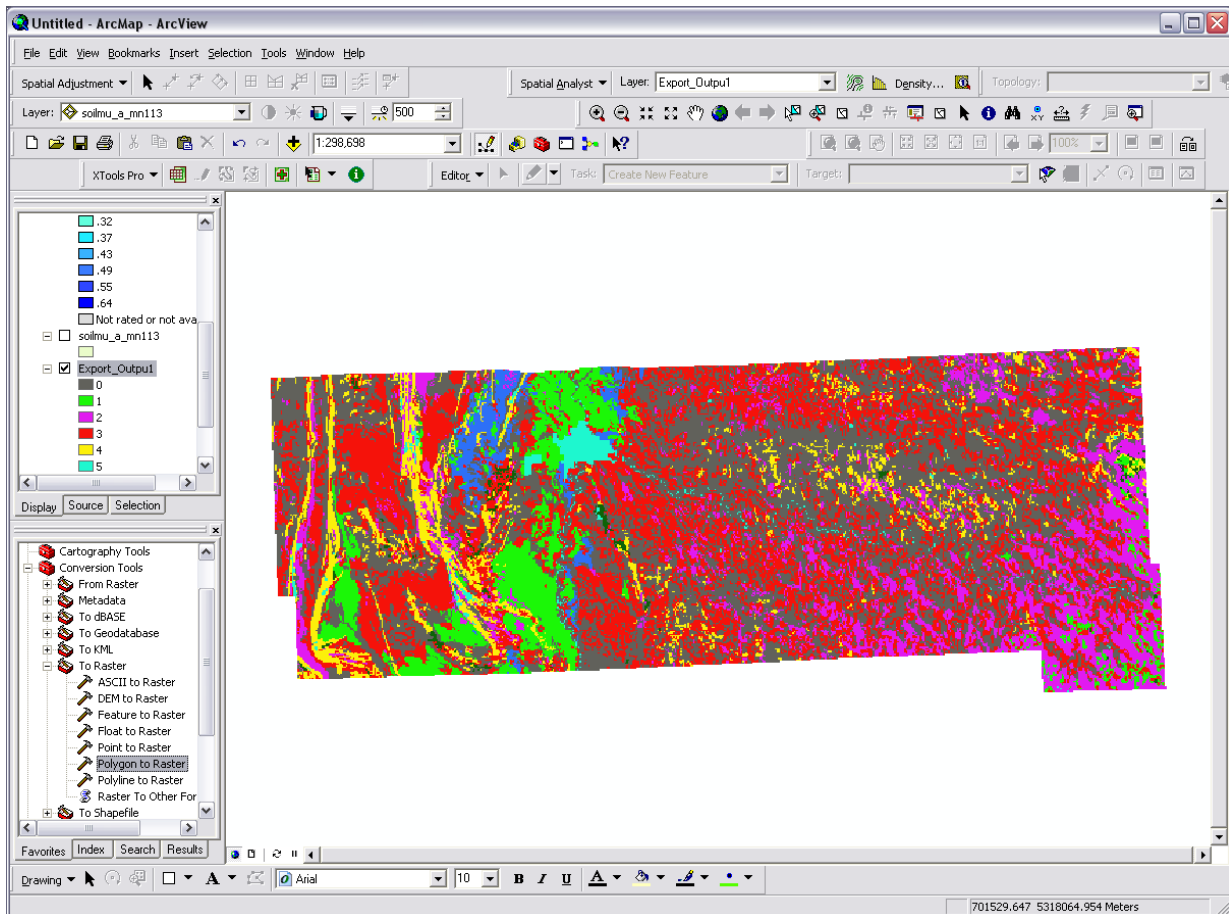


Figure 1: Hydrological corrections are inserted to a bare earth grid surface.

In this example, parameters have been extracted from the SSURGO soil database and rasterized for use with LIDAR-based surface grids. The actual surface analysis is done at regularly gridded intervals, usually three meters apart.



Rasterized map showing the erosion factor of surface soils.

Efforts began in 2010 with the evaluation of computer system needs, procurement and installation of the software, and a rigorous review of product documentation and tutorials. As the example procedures were being reviewed, they were also being adapted and adjusted to the real world applications at the Watershed District. Each step has been documented in a concise workflow document in order to shorten the learning path for current and future RLWD staff, and to provide a framework for additional RLWD GIS procedures and future technologies.

The potential uses of LiDAR-based elevation data at the Red Lake Watershed District include:

1. Terrain analysis to more accurately identify erosion and flood risks
2. Bare earth elevation data for preliminary surveys and permit inspections
3. Integration of such survey points as culvert elevations into the LiDAR data set for more precise channel profiling.
4. Visual inspection of trees, vegetation, buildings and ditches
5. Development of 3-dimensional educational aids for watershed education and project-related presentations.

In 2011 and beyond, efforts will continue to develop workflow documents for:

1. Establishing a standard procedure for inserting hydrological corrections into a digital surface. Such corrections create flow paths through digital dams created by culverts and bridges.
2. Integration of GPS survey points into a LIDAR-based surface (i.e., insert ground-truthed data points).
3. Delineation of catchments and drainage areas based on LIDAR elevation data.
4. Acquiring true elevations for all measure-down points at RLWD water quality monitoring sites.
5. Integrating GIS-based technology with overall work flow to improve productivity and expand in-house capabilities.

Most of the analytical tasks that make LIDAR data valuable can be executed within Civil 3D or ArcMap Spatial Analyst with a few well chosen mouse clicks. The bulk of the effort lies in learning the software, preparing the data set, and documenting/standardizing the workflow. As this process continues, and we accumulate a more complete and accurate data repository, the benefits of LIDAR technology could become accessible to all of the RLWD staff. As LIDAR becomes more commonplace throughout the state and country, open source software such as U.S. Forest Service's [Fusion](#) and [Quantum GIS](#) are being developed to meet a demand for effective analytical tools that do not require thousands of dollars in annual licensing fees.

Maintenance of Drainage Systems

The inspection of the District's many miles of drainage ditches and numerous other projects is a very busy function for the Red Lake Watershed and its staff. Semi annual inspections are conducted to determine what type of repairs may be needed if any, due to any damage that may have occurred during the spring runoff, and any other maintenance work to keep them in good working order.

A helicopter was utilized for spraying cattails in the watersheds ditches and other projects. The helicopter has the ability to spot spray only where it is needed and also generates a GPS map giving all the locations, distances that were sprayed, weather, wind speeds, etc, which is valuable information and is also a big savings to the District. With the use of a helicopter, we have the ability to access places that ground spraying would be impossible, but still at a relatively low cost per mile. With the recent re-establishment of the permanent 16 ½ foot wide grass buffer strips on the ditch right-of-ways, the District is now required to inspect this grass strip, maintain it by mowing at least once a year, and spray for any noxious weeds, and try to keep them from being encroached on. Four contractors were hired to mow the watershed projects and approximately 133 miles of ditch and ditch right-of-way, with mowing taking place on one or both sides of each ditch.



Spray helicopter landing on support truck to refill with chemical and also to refuel.

Following is a listing by county, project name and number, and a description of the work and spraying that was completed to each of these ditches or projects in 2010.

Clearwater County

- Judicial Ditch 72 (RLWD Project #41).
Spoil along the 2 1/2 miles of the JD 72 Main ditch that was cleaned last year was leveled and reseeded to grass this fall and some trees and brush that had been removed from the ditch were buried. Rock rip rap had to be placed on the outlet end of a pipe in the SW corner of section 18 of Winsor Township to stop an erosion problem. Spraying of cattails was completed in September on 3.76 miles out of the 11.4 miles of this ditch system that is under the jurisdiction of the Red Lake Watershed District. There is no right of way or grass buffer strip on this ditch system, so no mowing was done.



Rock rip rap installed at outlet end of pipe



Spoil to be leveled and seeded

- Judicial Ditch 2A (RLWD Project #48).
No spraying for cattails was needed on this ditch system this year. There is no right of way or grass buffer strip on this ditch system, so no mowing was done.
- Judicial Ditch 2B (RLWD Project #49).
Spraying for cattails was completed in September on .20 miles of out of the 5.6 miles of in this ditch system. Mowing of the ditch and its right of way was completed in July where we have right-of-way. Re-installation of one washed out side water inlet pipe was completed. A local landowner sprayed the thistles on the ditch right of way and may have inadvertently killed the grass buffer strip. This will be monitored and may have to be reseeded the summer of 2011. One old beaver dam was removed from this ditch system.
- Judicial Ditch 5 (RLWD Project #102).
Calls of high water, damage to a road bed, and wet basements, led to the trapping of 5 beaver by a local trapper and the removal of one beaver dam that was close to the outlet of this ditch system. Beaver still remain a big problem at 3 different culvert locations on this system. The beaver and beaver dams will be monitored and removed as needed. Talk of the outlet pipe being raised (in the dark of the night) and creating the high water in this system has led to considerable surveying and some engineering in an attempt to establish the ordinal grade and pipe elevations. Two informational meetings have been held with the landowners within the benefitted area and it is yet to be determined what should be done with the outlet pipe. Some type of action on this matter will come after the spring runoff in 2011. There is no right-of-way on this system, so no mowing was done. No spraying for cattails was needed on this ditch system.
- Winsor / Hangaard (RLWD Project #113).
Mowing of this ditch system and its right-of-way was completed in July on areas not plagued by fences. Spraying for cattails was completed in September on 4.82 miles out of the 13.9 miles in this ditch system. There still are areas that have old abandoned fences that should be removed for better access for mowing of this ditch system and its right-of- way.

Red Lake County

- RLWD Ditch 1, Lateral A & B (RLWD Project #5).
Mowing of this ditch and its right-of-way was completed in July with more rocks being encountered again this year, even after the large number of rocks that were removed last year. Spraying for cattails was completed in September on 1.88 miles out of the 6.5 miles in this ditch system.

- RLWD Ditch 10 (RLWD Project #161).

A local landowner mows this ditch right-of-way and bales it for hay. No spraying was done to this ditch this year. The District had the bottom of this ditch mowed late in the year to remove some woody vegetation and cattails that were starting to grow in the bottom of the ditch. Inspection of the rock shoot for any damage from frost or water erosion was completed after the spring runoff. Inspection of the wetland mitigation site that was part of the ditch project was completed this summer. Staff from the Red Lake Watershed District, Army Corp of Engineers, and BWSR visited the site to check for wetland plants, hydrology, size of wetland and the upland buffer area, and for any erosion.

- RLWD Ditch 3 (RLWD Project #7).

Mowing of this ditch and its right-of-way was completed in July. Spraying for cattails was completed in September on 1.82 miles out of the 5 miles in this ditch system. A wet summer made for some less than desirable mowing conditions on this system with the mower tractor getting stuck once. Some minor repairs to the ditch will be made when conditions allow next summer. The Red Lake Watershed District is working together with the Red Lake County Soil and Water Conservation District in obtaining a funding source for the installation of a number of side water inlet pipes with traps for this ditch system. The purpose of the side water inlet pipes is for erosion control and also to reduce flooding.



Tractor stuck in RLWD Ditch 3

- RLWD Ditch 1 Lateral A (RLWD Project #115).

Mowing of this ditch and its right-of-way was completed in July. Spraying for cattails was completed in September on 2.22 miles out of the 3.0 miles in this ditch system. Some of the land on this system came out of the CRP program this year and the landowner inadvertently plowed up the right of way. The Watershed staff will have to measure the right-of-way, install permanent stakes, and a grass buffer strip will also have to be established this coming year.

- RLWD Ditch 7 (RLWD Project #20).

Mowing of this ditch and its right-of-way was completed in July with more rocks being encountered by the mower again this year, even after having picked rocks the year before. Spraying for cattails was completed in September on 2.95 miles out of the 12.6 miles in this ditch system. One small old beaver dam was dug out by hand next to a large culvert. Brushing was performed on the right of way on this

ditch system late last winter, at two different locations for a total of 1.25 miles being cleared. More right-of-way stakes will need to be installed this coming summer on the area that was cleared. The Red Lake Watershed District is working together with the Red Lake County Soil and Water Conservation District in obtaining a funding source for the installation of a number of side water inlet pipes with traps in this ditch system. The purpose of the side water inlet pipes is for erosion control and also to reduce flooding.



Brushing being done on RLWD 8 Right of Way



Clearing completed on Ditch 8

Polk County

- **RLWD Ditch 8 (RLWD Project #36).**
Brushing of the ditch and its right-of-way for 1 mile was completed in late winter with the use of a backhoe with a brush mowing attachment. Mowing of the grass and weeds in this ditch and its right-of-way was completed in July. Spraying for cattails was completed in September on 1.34 miles out of the 2.00 miles in this ditch system.
- **Krostue Petition (RLWD Project #53).**
Mowing of this ditch and its right-of-way was completed in July. Spraying for cattails was completed in September on 1.03 miles out of the 1.6 miles in this ditch system.
- **Kenny Johnson Petition, RLWD Project #117).**
Mowing of this ditch and its right-of-way was completed in July. Spraying for cattails was completed in September on 1.03 miles out of the 1.60 miles in this ditch system.
- **Polk County Ditch Improvement (RLWD Project #119).**
Mowing of this ditch and its right-of-way was completed in July. Spraying for cattails was completed in September on 11.10 miles out of the 12.7 miles in this ditch system.
- **Scott Baatz Petition (RLWD Project #123).**
Mowing of this ditch and its right-of-way was completed in July. Spraying for cattails was completed in September on 1 mile out of the 1.50 miles in this ditch system.
- **Louisville/Parnell Impoundment (RLWD Project #121).**
Mowing of all inlet and outlet ditches and right-of-way was completed by a local landowner and the Red Lake Watershed District in July. No spraying for cattails was needed on the inlet and outlet ditches of this project this year.

- Polk County Ditch 63 (RLWD Project #134)
Mowing of this ditch and its right-of-way was completed in July. Spraying for cattails was completed in September on 1.20 miles out of the 3.00 miles in this ditch system.
- Polk County Ditch 33 (RLWD Project #135)
Mowing of this ditch and its right-of-way was completed in July. No spraying for cattails was needed in the 4.5 miles of this ditch system this year.
- RLWD Ditch 11(RLWD Project #166)
Part of this ditch is being mowed by a local landowner and is being used for hay, with the remainder of the ditch being mowed by the Red Lake Watershed District in July. No spraying for cattails was needed in the 6.30 miles in this ditch system. Wet ditch conditions were again a problem, with the mower tractor getting stuck and also for the tractor that was going to pull him out. The third one was on its way.



Mower tractor stuck in the bottom of the ditch



First rescue tractor was also stuck

- Burnham Creek (RLWD Project #43B)
Mowing of this ditch and its right-of-way was completed in July. More rocks were encountered when this ditch was mowed, more rocks will need to be picked on this ditch system next year. Spraying for cattails was completed in September on 11.20 miles out of the 14.00 miles in this ditch system. A total of 6 beaver dams were remove from this system at the following locations: 1 in section 30 of Fairfax Township, 4 in section 31 of Fairfax Township, and 1 in section 1 of Hammond Township. Willows and silt has been building up over the years at both the inlet and outlet ends at some of the road crossings pipes. This was restricting the flows into these pipes and was removed in the fall from several different locations. This work was performed at the following locations: Section 25 of Andover Township, Section 30 and 31 of Fairfax Township, Section 1 of Hammond Township, and Section 7 of Russia Townships. Spoil piles will have to dry out and then be leveled and seeded back to grass during the summer of 2011.



Sediment and willows being removed at the inlet end of pipes in Section 1, Hammond Township



Pipe after cleaning, Section 1, Hammond Township

- RLWD Ditch #12 (RLWD Project #169)

This ditch system was under construction most of the summer and fall of 2009. A part of this ditch (1.5 miles) had to be opened with a backhoe in the spring of 2010 to prevent flooding of farm buildings. Establishment of a permanent grass buffer strip that is a minimum of 16.5 feet on the right-of-way was created along the three lateral ditches and the main ditch. Grass was established on the slope of the main ditch. Mowing of the main ditch and the ditch laterals was completed in July where needed, with parts of the main ditch being mowed again later in the fall to try and keep the weeds at bay. No spraying for cattails was needed in this ditch system this year. Pipes were replaced in two different driveways to make the top of the driveways adequate for large truck traffic, one in Branch 1 and one in Branch 2. Two landowners removed a row of bushes and trimmed one row of trees that were on the Branch 1 ditch right of way and causing a snow problem. This ditch system was hit quite hard by the spring flood damage. Repair work was completed with help from FEMA. Work consisted of pipes installed where the road washed out and the pipes were crushed, rock rip rap at a number of locations to stop erosion around pipes, roads, ditch banks, and the ditch bottom, and some right of way needed to be reseeded. A number of washed out side water inlet pipes had to be reinstalled. Silt was removed from several locations of the main ditch. Gravel was replaced on some of the roads, while erosion areas were reshaped and seeded back to grass.



Pipes washing out in Ditch 12



Cleaning snow out of ditch to relieve floodwaters



Main Ditch 12 right-of-way being seeded.



Pipe installation - Branch 1, Ditch 12

Pennington County

- Arveson Ditch (RLWD Project #109)
Mowing of the ditch and its right-of-way was completed in July. Some more old abandoned fence and fence posts were removed by the landowner making mowing a lot easier this year. Spraying for cattails was completed on 1.22 miles out of the 2.20 miles in this ditch system. Reinstallation of one washed out side water inlet pipe was completed late this fall and seeded to grass.
- Challenger Ditch (RLWD Project #122)
Mowing of the ditch and its right-of-way was completed in July. No spraying for cattails can be done by the helicopter in this ditch because of its location. Removal of some trash and litter from around the outlet structure was done again this year.

Beltrami County

- RLWD Ditch 9 (RLWD Project #39)
This ditch was mowed for both brush and weeds in July. Cattail spraying was not needed this year.

Marshall County

- State Ditch 83 (RLWD Project #14)
Mowing was completed in July on all of the areas of this ditch that the district has been working on over the past 8 years. A few of the areas could not be reached or were too wet to mow due to the rain and high water level in the ditch.

The District staff inspected the channel of State Ditch 83 by way of boat, 4 wheeler, and pickup truck this year and found that no removal of fallen trees was required.

A number of areas that need to be cleaned and widened out were located for the 2011 construction season. Due to the extremely rainy and wet summer, and the fact that Agassiz Wildlife Refuge had Agassiz pool in a draw down and had their main water control gates open all year, the water levels were too high to do any channel cleaning this year in State Ditch 83.

On 3 different occasions the District cleaned out log jams and other debris from a bridge that is located on the north side of Agassiz Wildlife Refuge and was restricting the flow of water in State Ditch 83.

Clearing of brush and trees and the leveling off of the top of the old spoil bank that will now serve as an access and inspection trail was completed on 6,115 feet of the right-of-way north of the Agassiz Bridge road (County Road 7) up to the Agassiz boundary. Side water inlet pipes and flap gates of various sizes that needed to be replaced due to rusting out were installed at 7 different locations. All areas that were disturbed were seeded back to grass and then mulched.



Semi load of pipe for State Ditch 83



Rolling pipes off the truck

One of the Districts top priorities for 2011 will be to continue discussions with the Marshall County Ditch Authority and to assist them in developing a plan which will reduce sediment deposits into State Ditch 83 that appear to be coming from Marshall County Ditch 20. These deposits have been a maintenance problem in the past years and continue to be a problem. The District will also be looking for a possible funding source through grants or other sources to help with any construction and engineering costs to correct the problem.

To date there have been 57 sites cleaned in State Ditch 83 for a total construction cost of \$ 211,129.

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
Total	57	\$211,129.00

Legal Drainage Systems under jurisdiction of Red Lake Watershed District

The Red Lake Watershed District at present has jurisdiction of approximately 296 miles of legal drainage systems throughout the Watershed. The list of all the systems is shown below.

Ditch #	County	Length (mi.)
Red Lake River	Clearwater, Pennington	27.0
Clearwater River	Clearwater, Polk, Pennington, Red Lake	48.0
Lost River	Clearwater, Polk, Red Lake	43.3
RLWD Ditch #9	Beltrami	1.0
State Ditch #83	Marshall, Beltrami	22.0
Clifford Arveson Ditch	Pennington	2.2
Challenger Ditch	Pennington	0.32
RLWD Ditch #10	Red Lake	4.76
Equality/RLWD Ditch #1	Red Lake	2.25
RLWD Ditch #3	Red Lake	5.0
RLWD Ditch #1 lat A, B,	Red Lake, Polk	6.5
RLWD Ditch #7	Red Lake, Polk	12.6
Main Judicial Ditch #2	Clearwater	2.25 (e)
Judicial Ditch #2A	Clearwater	5.25
Judicial Ditch 2 Branch B & C	Clearwater	5.6
Judicial Ditch #4	Clearwater	3.6
Judicial Ditch #5	Clearwater	2.75
County Ditch #1	Clearwater	5.5
Winsor-Hangaard	Clearwater, Polk	13.9
Judicial Ditch #72	Clearwater, Polk	16.0
RLWD Ditch #8	Polk	2.0
RLWD Ditch #11	Polk	6.5
RLWD Ditch #12	Polk	17.5
Polk County Ditch #63	Polk	3.0
Polk County Ditch #33	Polk	4.5
Polk County Ditch Improv.	Polk	12.7
Burnham Creek	Polk	14.0
Krostue Petition	Polk	1.6
Kenneth Johnson Petition	Polk	2.75
Scott Baatz Petition	Polk	<u>1.5</u>
Total Miles of Ditches		295.83

Projections for 2011

The basic activities of the District are expected to continue in 2011 much as they did in 2010. It is expected that the District will proceed with the development and construction of a portion of the Clearbrook Stormwater Retention Project, take requests and secure funding for farmstead ring dikes, continue with Grand Marais Outlet Restoration Project which includes completing the land easement acquisitions and construction of the stabilization of the Cut Channel portion of the project, complete the wetland banking site within the Louisville Parnell Impoundment, have final hearings for the Construction of a Lateral to Pennington County Ditch #75 and Improvement of Pennington County Ditch #1, Amend the District's 10 Year Overall Plan for the establishment of a Water Management District, and hold a hearing and start construction on the Thief River Falls Flood Damage Reduction Project.

In August of 2010, a public hearing was held concerning the proposed 2011 General Fund budget. Notice of the hearing and the proposed budget was published as required by Minnesota State Statutes. The General Fund budget was adopted and the levies were set for 2011. The General Fund levy was set at \$178,900.

Work should begin on the Thief River Watershed Assessment Project sometime in 2011. Ideally, the project will begin before the monitoring season starts so that there will be time to review existing data and plan the additional monitoring necessary to fill in the data gaps, conduct stressor ID sampling, collect flow data, assist the MPCA with biological monitoring, complete a stream channel stability assessment, initiate a civic engagement effort, begin LIDAR terrain analysis, and work with the MPCA to begin the BASINS modeling process.

Sampling for the RLWD's long-term monitoring program will take place in April, May, July, and September of 2011. In 2011, the Thief River Watershed is targeted for the MPCA's 10X intensive watershed monitoring program. This monitoring will include the collection of data for most of the MPCA's assessment criteria, including biological data. The RLWD has been awarded a Surface water Assessment Grant (SWAG) to assist with the water quality monitoring for the 10x program. The Marshall and Pennington County Water Plan staff will conduct most of the sampling and the RLWD will administer the grant. The MPCA 10x monitoring program will target the Red Lake River and Grand Marais Creek watersheds in 2012.

The Red Lake River Watershed Assessment Project (watershed-based TMDL) was technically supposed to start in fiscal year 2011 (July 1, 2010 – June 30, 2011). Once the MPCA has completed administration of its 2010 contracts, there may be a chance that the Red Lake River project could begin before the end of 2011. The project will start with reviewing existing data and plan the additional monitoring necessary to fill in the data gaps. The RLWD will apply for a Surface Water Assessment Grant for the 2012 and 2013 monitoring seasons to pay for most of the water quality monitoring that will be needed. Some flow monitoring and civic engagement could also be accomplished if the project starts in 2011.

The RLWD has been awarded a Clean Water Fund grant from the BWSR for the Grade Stabilization for Reduction of Sedimentation in the Thief River. This project will install six rock riffle grade stabilization structures along the lower two and a half miles of Marshall County Ditch 20 (CD20), stabilize a section of the CD20 stream bank, and install two side-inlet structures along that lower reach of CD20. The RLWD was awarded \$187,974 for the project, which has a total budget of \$235,049.

The Silver Creek and Poplar River draft TMDL reports will likely go through the public notice and EPA approval phases in 2011. TMDLs are typically open for public comment for 30 days. If extensive changes are made, there may be another public comment period required. When that phase is completed, the TMDL is submitted to the EPA.

Financial Report

Red Lake Watershed District
Management Discussion and Analysis

MANAGEMENT'S DISCUSSION AND ANALYSIS

As management of the Red Lake Watershed District, we offer readers of the Red Lake Watershed District's financial statements this narrative overview and analysis of the financial activities of the District for the fiscal year ended December 31, 2010. We encourage readers to consider the information presented here in conjunction with the District's basic financial statements following this section.

Financial Highlights

- The assets of Red Lake Watershed District exceeded its liabilities at the close of the recent fiscal year by \$10,936,334 (Net assets). Of this amount, \$2,838,607 (unrestricted net assets) may be used to meet the government's ongoing designations and fiscal policies.
- The Districts total net assets increased by \$439,689.
- As of the close of the current fiscal year, Red Lake Watershed District's governmental funds reported combined ending fund balance was \$2,838,607. This total amount is designated or reserved through legal restrictions and board member authorization.
- At the end of the current fiscal year the general fund balance of \$234,402 of which all was unrestricted.

Overview of the Financial Statements

The discussion and analysis are intended to serve as an introduction to the Red Lake Watershed District's basic financial statements. The District's basic financial statements comprise three components: 1) government-wide financial statements, 2) fund financial statements, and 3) notes to the financial statements. This report also contains other supplementary information in addition to the basic financial statements themselves.

Basis of Accounting. The District has elected to present its financial statements on a modified cash basis of accounting. The modified cash basis of accounting is a basis of accounting other than generally accepted accounting principles. 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 the modified cash basis of accounting, certain assets and their related revenues (such as accounts and taxes receivable and related revenue not collected yet) and certain liabilities and their related expenses (such as accounts payable and expenses for goods or services received but not paid yet) are not recorded in these 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.

Red Lake Watershed District
Management Discussion and Analysis

Government-Wide Financial Statements. The government-wide financial statements are designed to display information about the Red Lake Watershed District taken as a whole.

Over time, increased or decreased in net assets – modified cash basis may serve as a useful indicator of whether the financial position of the Red Lake Watershed District is improving or deteriorating.

The government-wide financial statements can be found on pages 9 and 10 of this report.

Fund Financial Statements. The fund financial statements focus on the individual parts of the District. A fund is a grouping of related accounts that is used to maintain control over resources that have been segregated for specific activities or objectives. Red Lake Watershed District, like other state and local governments, uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements. All the funds of Red Lake Watershed District are governmental funds.

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.

Red Lake Watershed District maintains three individual major governmental funds. Information is presented separately in the governmental fund balance sheet and in the governmental fund statement of revenues, expenditures, and changes in fund balances for the General Fund, Special Revenue Fund, and the Administrative Construction/Capital Projects Fund, which are considered to be major funds.

Red Lake Watershed District adopts an annual appropriated budget for its General Fund for Statutory/Management purposes.

The basic government fund financial statements can be found on pages 9 through 13 of this report.

Notes to the financial statements. The notes provided additional information that is essential to a full understanding of the data provided in the government-wide and fund financial statements. The notes to the financial statements can be found on pages 14 through 23 of this report.

Financial Analysis of the Watershed District

As noted earlier, net assets – modified cash basis may serve over time as a useful indicator of a government's financial position. In the case of the Red Lake Watershed District, assets exceeded liabilities by \$10,936,334 by the close of the most recent fiscal year, which is an increase of \$439,689 over the prior year; more than a 4% increase over the prior year.

A portion of Red Lake Watershed District's net assets (\$8,097,727 or 74%) reflects its investment in capital assets less any related debt to acquire those assets that are still outstanding. Red Lake Watershed District uses these capital assets to provide services to citizens; consequently, these are not available for future spending. Although Red Lake Watershed District's investment in its capital assets is reported net of related debt, it should be noted that the resources needed to repay this debt must be provided from other sources, since the capital assets themselves cannot be used to liquidate these liabilities.

Red Lake Watershed District
 Management Discussion and Analysis

RED LAKE WATERSHED DISTRICT'S NET ASSETS – MODIFIED CASH BASIS

	2010	2009
ASSETS		
Total current assets	\$ 2,838,607	\$ 2,602,360
Net capital assets	8,097,727	7,909,735
TOTAL ASSETS	\$ 10,936,334	\$ 10,512,095
LIABILITIES		
Note payable	\$ -	\$ 15,450
NET ASSETS	\$ 10,936,334	\$ 10,496,645

At the end of 2010 and 2009, the Red Lake Watershed District is able to report positive balances in net assets.

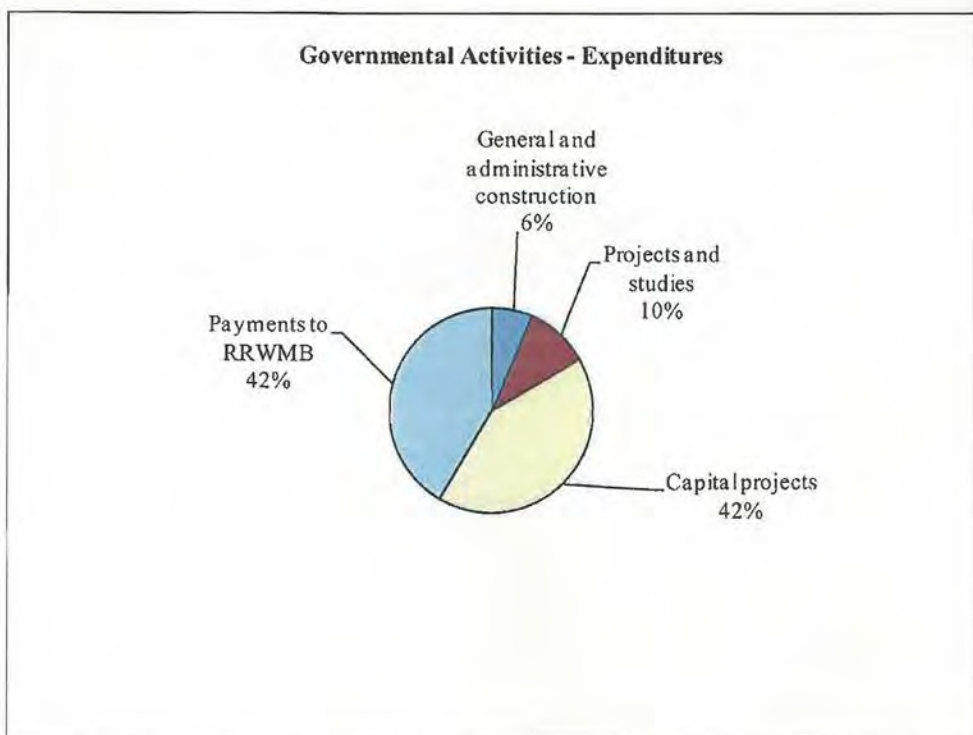
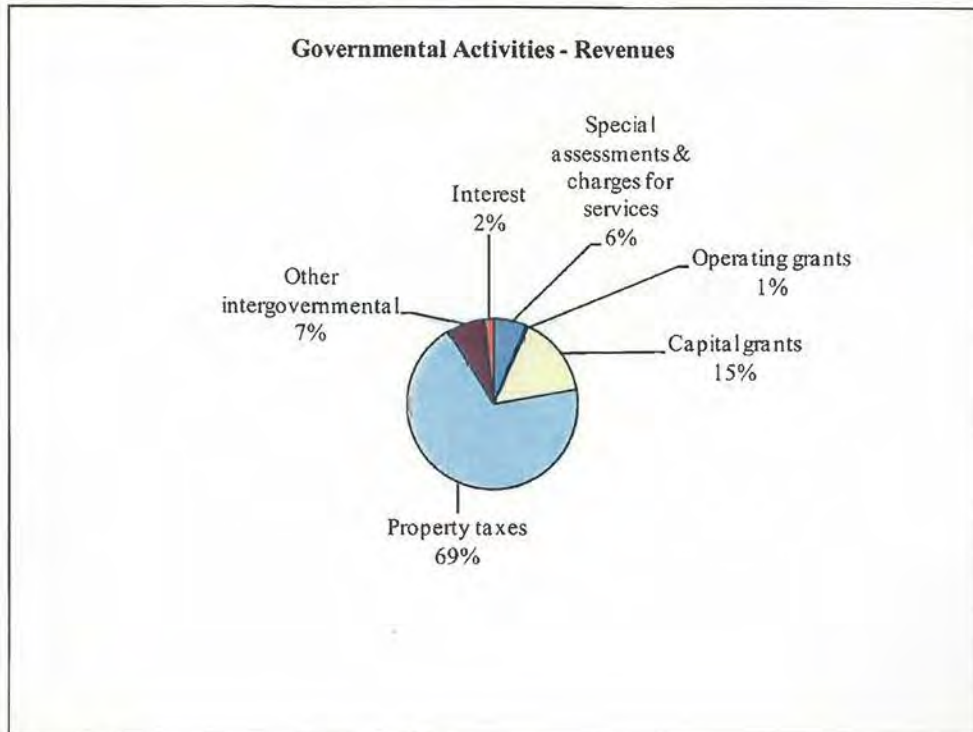
**RED LAKE WATERSHED DISTRICT'S CHANGE IN NET ASSETS
 – MODIFIED CASH BASIS**

Governmental activities resulted in an increase of Red Lake Watershed District's net assets from the fiscal year 2009 to the fiscal year 2010 in the amount of \$439,689. The details of the increase are as follows:

	2010	2009
REVENUES		
Special assessments and charges for services	\$ 188,493	\$ 135,399
Operating grants	16,000	-
Capital grants	465,547	1,328,735
General revenues:		
Property taxes	2,080,919	1,895,927
Other intergovernmental	216,035	216,035
Interest	54,674	51,145
TOTAL REVENUES	3,021,668	3,627,241
EXPENSES		
General and administration		
construction	641,237	114,652
Ongoing projects and studies	97,972	304,057
Capital projects	769,447	945,520
Payments to RRWMB	1,073,323	977,926
TOTAL EXPENSES	2,581,979	2,342,155
CHANGE IN NET ASSETS	\$ 439,689	\$ 1,285,086

Red Lake Watershed District
Management Discussion and Analysis

Below are specific graphs which provide comparisons of the governmental activities revenues and expenditures for the year ended December 31, 2010:



Red Lake Watershed District
 Management Discussion and Analysis

Financial Analysis of the Government's Funds

At the end of the current fiscal year, Red Lake Watershed District's governmental funds reported combined ending fund balances of \$2,838,607. The total fund balance can be attributed to 1) General Fund, \$234,402; 2) Capital Projects Fund, \$2,757,370; as well as Special Revenue Fund with a deficit fund balance of (\$153,165).

The general fund decreased by \$6,695 in 2010, which was due to a slightly lower net increases in general revenues over expenses than was originally expected in the budget. The general fund cash balance remained relatively unchanged, however. The board voted to annually allocate the remaining revenue over expenses in the general fund budget to the capital projects fund until all monies borrowed for the new building are paid. The remaining balance of the new watershed district building is reflected on page 19, interfund balances.

Budgetary Highlights

General Fund. The General Fund exceeded budgeted revenues and had expenditures above the budgeted amounts for the year ended December 31, 2010.

Capital Asset and Debt Administration

Capital assets. Red Lake Watershed District's investment in capital assets for its governmental activities as of December 31, 2010, amounts to \$8,097,727 (net of accumulated depreciation). 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.

**Red Lake Watershed District's Capital Assets
 (Net of Depreciation)**

	2010			2009	
	Cost	Accumulated Depreciation	Cost Less Accumulated Depreciation	Cost Less Accumulated Depreciation	
Building and improvements	\$ 762,888	\$ 107,749	\$ 655,139	\$ 634,966	
Infrastructure Improvements	6,498,253	671,693	5,826,560	5,574,637	
Engineering equipment	402,916	257,727	145,189	145,000	
Office equipment	87,790	54,731	33,059	38,142	
Land & Permanent Easements	1,437,780	-	1,437,780	1,395,335	
Construction in progress	-	-	-	121,655	
Total	<u>\$ 9,189,627</u>	<u>\$ 1,091,900</u>	<u>\$ 8,097,727</u>	<u>\$ 7,909,735</u>	

Red Lake Watershed District
Management Discussion and Analysis

Other Items of Interest. The District will continue to work on and hold hearings required for the Thief River Falls Flood Damage Project (TRF FDR), RLWD Project 171A, and Improvement of Pennington County Ditch #1, RLWD Project #171. Funding for the TRF FDR Project is expected to be paid in part by a Minnesota Flood Damage Reduction Grant, matched by the Red Lake Watershed District using Capital Projects funds, and dollars collected by the establishment of a Water Management District, which will be paid from Special Revenue Funds. If these projects proceed as expected, construction may start in late 2011 and continue into 2012.

It is expected that a final hearing will be held on the construction of a lateral to Pennington County Ditch #75, RLWD Project #170A, will be held in early 2011 and upon approval of the Board of Managers, construction may be completed in 2011. Funding for this petitioned project will be paid from the Special Revenue Fund.

It is expected that the District will complete the construction of the Clearbrook Stormwater Retention Pond, RLWD Project #160, which will be funded from the Capital Projects Fund.

The District will also continue to develop plans and specification for the construction of two projects, CD#20 Grade Stabilization/SD#83, RLWD Project #14D, and Grand Marias Cut Channel, RLWD Project #60F. These projects will be funded through grants received from the Board of Water and Soil Resources' Clean Water Competitive Grant. Funding for RLWD Proj. #14D will be from the Special Revenue Fund and funding for RLWD Proj. #60F will be from the Capital Projects Fund.

More details of the 2010 construction and maintenance of Red Lake Watershed District projects are included in the 2010 Annual Report or by contacting the Red Lake Watershed District.

Requests for information. 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.

RED LAKE WATERSHED DISTRICT
THIEF RIVER FALLS, MINNESOTA
STATEMENT OF NET ASSETS - MODIFIED CASH BASIS
DECEMBER 31, 2010

ASSETS	
<u>Current Assets:</u>	
Petty cash	\$ 100
Pooled cash and investments	<u>2,838,507</u>
Total Current Assets	<u>2,838,607</u>
<u>Capital Assets:</u>	
Property and equipment	9,189,627
Less: accumulated depreciation	<u>(1,091,900)</u>
Net Capital Assets	<u>8,097,727</u>
 TOTAL ASSETS	 <u>10,936,334</u>
NET ASSETS	
Investment in capital assets, net of related debt	8,097,727
Unrestricted	<u>2,838,607</u>
 TOTAL NET ASSETS	 <u>\$ 10,936,334</u>

See accompanying notes to the basic financial statements.

RED LAKE WATERSHED DISTRICT
THIEF RIVER FALLS, MINNESOTA
STATEMENT OF ACTIVITIES - MODIFIED CASH BASIS
FOR THE YEAR ENDED DECEMBER 31, 2010

	Expenses			Program Revenues			Net (Expenses) Revenues and Changes in Net Assets
	Direct	Allocated Salaries & Overhead	Total	Special Assessments and Charges for Services	Operating Grants and Contributions	Capital Grants and Contributions	
FUNCTION/PROGRAMS							
General and administrative construction	\$ (641,237)	\$ 478,633	\$ (162,604)	\$ 915	\$ -	\$ -	\$ (161,689)
Ongoing projects and studies	(197,876)	(66,924)	(264,800)	160,260	16,000	56,066	(32,474)
Capital projects	(669,543)	(411,709)	(1,081,252)	27,318	-	409,481	(644,453)
Payments to RRWMB	(1,073,323)	-	(1,073,323)	-	-	-	(1,073,323)
Allocated interest	(25,189)	-	(25,189)	-	-	-	(25,189)
Total Governmental Activities	\$ (2,607,168)	\$ -	\$ (2,607,168)	\$ 188,493	\$ 16,000	\$ 465,547	\$ (1,937,128)
General Revenues:							
Tax levies							2,080,919
Intergovernmental, (not restricted to specific programs)							216,035
State MV and disparity reduction credits							79,863
Allocated interest							2,376,817
Total General Revenue							4,396,645
Changes in Net Assets							439,689
Net Assets - Beginning							10,496,645
Net Assets - Ending							\$ 10,936,334

See accompanying notes to the basic financial statements.

RED LAKE WATERSHED DISTRICT
THIEF RIVER FALLS, MINNESOTA
NOTES TO BASIC FINANCIAL STATEMENTS

NOTE 4. CAPITAL ASSET

Capital assets activity resulting from modified cash basis transactions for the year ended December 31, 2010, was as follows:

	<u>Beginning</u> <u>Balance</u>	<u>Additions</u>	<u>Deletions</u>	<u>Ending</u> <u>Balance</u>
<u>Capital Assets</u>				
Building and Improvements	\$ 712,140	\$ 50,748	\$ -	\$ 762,888
Infrastructure Improvements	5,993,666	504,587	-	6,498,253
Engineering equipment	398,315	53,505	(48,904)	402,916
Office equipment	85,161	2,629	-	87,790
Land & Permanent Easements	1,395,335	42,445	-	1,437,780
Construction in progress	121,655	-	(121,655)	-
Total	<u>\$ 8,706,272</u>	<u>\$ 653,914</u>	<u>\$ (170,559)</u>	<u>\$ 9,189,627</u>
	<u>Beginning</u> <u>Balance</u>	<u>Additions</u>	<u>Deletions</u>	<u>Ending</u> <u>Balance</u>
<u>Accumulated Depreciation</u>				
Building and Improvements	\$ 77,174	\$ 30,575	\$ -	\$ 107,749
Infrastructure Improvements	419,029	252,664	-	671,693
Engineering equipment	253,315	47,315	(42,903)	257,727
Office equipment	47,019	7,712	-	54,731
Total	<u>796,537</u>	<u>338,266</u>	<u>(42,903)</u>	<u>1,091,900</u>
Net Capital Assets	<u>\$ 7,909,735</u>	<u>\$ 315,648</u>	<u>\$ (127,656)</u>	<u>\$ 8,097,727</u>

Depreciation expense of \$338,266 for the year ended December 31, 2010 is included in general and administrative program costs.

NOTE 5. OVERHEAD COST ALLOCATION

Overhead costs are allocated to all projects at 150% of direct salaries charged 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 2010 were \$478,633.

**RED LAKE WATERSHED DISTRICT
THIEF RIVER FALLS, MINNESOTA
SCHEDULE OF CHANGES IN FUND BALANCES - MODIFIED CASH BASIS
FOR THE YEAR ENDED DECEMBER 31, 2010**

	Fund Balance (Deficit) January 1	Revenues				Expenditures			Transfers		Fund Balance (Deficit) December 31
		Assessments and Other Charges for Services	Operating / Capital Grants and Contributions	Allocated Interest Earned	Taxes	Direct	Allocated Interest Charged	Salary & Overhead Allocation	In (Out)		
GENERAL FUND	\$ 241,097	915	-	12,576	180,900	671,966	7,753	(478,633)	-	\$ 234,402	
SPECIAL REVENUE FUND JOBS:											
Branch A & 1, J.D. #2	5,900	-	-	112	-	-	-	549	-	5,463	
Burnham Creek channel	(2,924)	21,745	-	149	-	11,008	-	4,605	-	3,356	
Clearwater County ditch #1	405	-	-	8	-	-	-	-	-	413	
Clearwater County joint ditch #1	(230)	-	-	-	-	-	5	-	-	(235)	
Clearwater County joint ditch #4	1,193	-	-	23	-	-	-	225	-	991	
Clearwater County joint ditch #5	1,589	-	-	-	-	1,394	9	6,218	-	(6,032)	
Clearwater River project	27,197	-	-	550	-	-	-	325	-	27,422	
Cleanwater/Wild Rice River	5,623	2,080	-	142	-	369	-	1,039	-	6,437	
Clifford Arveson ditch	2,377	1,001	-	37	-	1,405	-	337	-	1,673	
Equality RLWD ditch #1, lat C	(5,039)	4,758	-	-	-	1,153	78	612	-	(2,124)	
Improvement to Penn. Co. Dt. 1	(971)	-	-	-	-	33,764	680	5,481	-	(40,896)	
J.D. ditch #72	(22,466)	19,882	-	-	-	8,899	155	961	-	(12,599)	
K. Johnson petition	(2,058)	6,150	-	3	-	730	-	949	-	2,416	
Kroskus petition	696	2,013	-	28	-	1,186	-	200	-	1,351	
Lateral Petition to Penn. CD #31	-	-	-	-	-	-	-	23	-	(23)	
Lost River project	19,527	-	-	391	-	-	-	650	-	19,268	
Main J.D. #2 and branch B & C	(20,613)	4,708	-	-	-	575	389	687	-	(17,556)	
Main J.D. ZC. ECK	515	5	-	11	-	-	-	531	-	1,041	
Pine Lake maintenance	(6,376)	8,152	-	-	-	-	71	2,291	-	414	
Polk Cnty ditch #33 improvement	4,979	1,939	-	131	-	680	-	300	-	6,069	
Polk Cnty ditch #63 improvement	(21,459)	14,831	-	-	-	901	277	479	-	(8,285)	
Polk Cnty ditch #s 104, 61, 47, 94	(11,814)	14,634	-	-	-	7,177	160	3,395	-	(7,912)	
Red Lake River project	66,115	-	-	1,338	-	49	-	674	-	66,730	
RLWD ditch #1	14,872	-	-	293	-	1,214	-	549	-	13,402	
RLWD ditch #3	6,572	-	-	119	-	1,763	-	637	-	4,291	
RLWD ditch #7	2,800	8,166	-	86	-	4,389	-	1,342	-	5,321	
RLWD Ditch #8	(11,923)	-	-	-	-	2,429	293	1,103	-	(15,748)	
RLWD Ditch #9	2,908	696	-	66	-	-	-	75	-	3,595	
RLWD Ditch #10	(23,064)	8,590	-	-	-	-	-	400	-	(15,407)	
RLWD Ditch #11	42,936	-	-	846	-	1,952	-	1,286	-	40,544	
RLWD Ditch #12	(8,533)	1,003	-	-	-	19,471	480	14,101	-	(41,582)	
RLWD Ditch #12 FEMA	-	-	56,066	-	-	50,042	418	1,846	-	3,760	
RLWD Ditch #13 - project dismissed	(74,020)	-	-	-	-	(13,205)	(365)	(3,080)	-	(87,370)	
RLWD Ditch #13	-	-	-	-	-	33,084	433	5,914	-	(39,431)	
Scott Baatz petition	(5,221)	4,000	-	24	-	550	-	275	-	2,677	
Sate ditch #83	(5,577)	25,055	-	21	-	23,978	-	6,799	-	4,722	
Thief River Falls drainage ditch	2,869	1,001	-	58	-	270	-	13	-	3,645	
Thief River Falls Flood Damage Reduction Proj.	-	-	-	-	-	99,904	891	4,582	-	(105,377)	
Witson/Hangard/Cleanwater County petition	(11,298)	9,851	-	-	-	4,494	189	949	-	(7,079)	
Total Special Revenue	(18,814)	160,260	72,066	4,436	-	299,626	4,563	66,924	-	(153,165)	

RED LAKE WATERSHED DISTRICT
THIEF RIVER FALLS, MINNESOTA
SCHEDULE OF CHANGES IN FUND BALANCES - MODIFIED CASH BASIS

	Fund Balance (Deficit) January 1	Revenues				Expenditures			Transfers		Fund Balance (Deficit) December 31
		Assessments and Other Charges for Services	Operating / Capital Grants and Contributions	Allocated Interest Earned	Taxes	Direct	Allocated Interest Charged	Allocated Salary & Overhead	In	(Out)	
CAPITAL PROJECT FUND JOBS:											
Administrative construction	2,481,653	-	246,630	60,616	1,900,019	1,073,323	3,856	-	(775,484)	-	2,836,255
Badger Creek / Poplar River	6,437	-	-	131	-	-	-	-	-	-	6,568
Bench Marks	-	-	-	-	-	-	13	1,066	-	1,079	-
Black River project	-	-	-	-	62	-	20	1,161	-	1,243	-
BWSR flood storage pilot project	-	-	-	-	275	-	27	1,571	-	1,873	-
Clearwater nonpoint	-	-	-	-	15,450	-	210	-	-	15,660	-
Clearwater public education	-	-	-	-	3,340	-	329	26,857	-	30,526	-
Clearwater River - habitat	-	-	-	-	-	-	25	-	-	25	-
Clearwater River - TMDLS	-	-	-	-	-	-	2	298	-	300	-
Clearwater River DISOXY TMDL	-	-	-	-	-	-	37	2,316	-	2,353	-
Clearwater stream water	-	-	-	-	10,180	-	75	3,111	-	-	(13,366)
Culvert Sizing	-	-	-	-	-	-	55	6,168	-	6,223	-
Ditch 66 WQ Study	355	-	40,091	-	45,570	-	5	1,526	-	6,655	-
Elm Lake	-	-	-	-	1,343	-	51	1,542	-	2,936	-
Emergency maintenance	-	-	-	2,104	-	-	-	-	-	-	105,327
Erosion control PITS	103,223	-	-	-	-	49,390	271	2,776	-	52,437	-
Farm to stream water quality	-	-	-	-	-	-	6	572	-	578	-
Flood control studies	-	-	-	-	-	-	28	2,668	-	2,696	-
G.I.S.	-	-	-	-	-	370	441	40,228	-	41,039	-
Glacial ridge	-	-	5,479	-	-	-	42	1,542	-	-	3,895
Euclid East Impoundment	-	1,291	-	-	-	20,728	197	3,810	-	23,444	-
Brandt Channel Restoration	-	722	295	-	-	826	16	2,987	-	2,812	-
Grand Marais - Restoration	-	-	42,860	-	-	53,995	304	9,211	-	20,650	-
Brandt Impoundment	-	-	-	-	-	40,596	507	15,756	-	56,859	-
FEMA D-Firm Grant	(1,166)	-	49,306	-	-	90,355	422	11,872	-	14,094	(40,415)
Grand Marais Creek Subwatershed	-	-	6,177	-	-	5,561	53	5,565	-	4,797	(205)
Hydrologic analysis	-	-	-	-	72	-	153	19,736	-	19,961	-
Jerome Street Bank Stabilization	(25,509)	-	-	-	-	27,221	709	408	-	53,847	-
Lost River impoundment	-	-	-	-	-	-	5	406	-	411	-
Louisville/Parnell project	-	1,703	-	-	-	3,472	46	838	-	2,653	-
LRRWMB - Technical Com	-	4,908	133	-	-	243	35	4,785	-	22	-
Maintenance dams	-	-	-	-	-	-	16	1,091	-	1,107	-
Moose River project	-	-	-	-	-	7,560	130	6,330	-	14,020	-
Parnell impoundment	-	2,400	6,241	-	-	17,308	188	8,008	-	16,863	-

RED LAKE WATERSHED DISTRICT
THIEF RIVER FALLS, MINNESOTA
SCHEDULE OF CHANGES IN FUND BALANCES - MODIFIED CASH BASIS

	Fund Balance (Deficit) January 1	Revenues			Expenditures		Transfers		Fund Balance (Deficit) December 31	
		Assessments and Other Charges for Services	Operating / Capital Grants and Contributions	Allocated Interest Earned	Taxes	Direct	Allocated Interest Charged	Allocated Salary & Overhead		In (Out)
CAPITAL PROJECT FUND JOBS (continued)										
Permits	-	-	-	-	-	16,501	903	80,021	97,425	-
Project Development	-	-	-	-	-	914	412	40,354	41,680	-
Red Lake Res./Good Lake	-	-	-	-	-	198	34	1,633	1,865	-
Red River Basin Long Term Flood Control	-	-	-	-	-	13,462	40	3,893	3,893	(10,001)
Red River Corridor	-	-	-	-	-	-	-	25	25	-
Ring dike program -	-	-	-	-	-	-	-	-	-	-
General	(258)	-	-	-	-	64	-	6,692	2,714	-
Christenson - RLWD	(80)	4,756	4,300	-	-	35,632	-	1,780	4,669	(9)
Hipscher - RLWD	(186)	-	28,058	-	-	-	-	-	186	-
Egeland - RLWD	2,203	(959)	7,258	-	-	9,576	-	179	1,220	(33)
Smrsky - NRCS	(60,252)	1,759	59,814	-	-	3,500	-	166	586	(1,759)
Wagner - NRCS	(9,389)	-	-	-	-	15,058	-	713	3,146	(22,014)
G. Peterson - NRCS	(6,203)	-	-	-	-	3,304	-	134	1,205	(8,436)
Gld. Stengl - NRCS	(5,210)	4,046	-	-	-	22,693	-	584	-	(24,441)
L. Hanson - NRCS	(15)	-	-	-	-	-	-	-	15	-
Newton - NRCS	(3,110)	3,490	6,010	-	-	4,903	-	-	2,003	-
Liedberg	(9,180)	-	61,465	-	-	55,423	-	352	-	-
Vannsdal	-	-	-	-	-	55,079	-	2,131	-	(57,210)
Stordahl	-	-	-	-	-	5,028	-	702	1,432	(4,298)
Radt	-	2,761	15,783	-	-	20,080	-	978	2,632	118
Adams	-	-	-	-	-	3,448	-	188	-	(3,636)
Bible Baptist Church	-	-	408	-	-	-	-	570	71	(91)
Stream gauging	-	-	47	-	-	-	-	75	9	(19)
Ten Year Overall Plan	-	-	-	-	-	10,749	298	19,507	30,554	-
Thief River TMDL	-	-	-	-	-	48	1	357	406	-
TR WS Sediment Inves	-	-	-	-	-	120	9	1,102	-	(1,231)
Upper Lost River/Nassett Brook	(90,414)	-	43,660	-	-	43,798	2,275	25,751	118,578	-
WQ Assessment Grant	(2,822)	-	-	-	-	2,130	82	2,595	-	(7,629)
Water Quality	-	441	-	-	-	18,287	485	34,287	52,618	-
Web Page Development	-	-	1,501	-	-	1,221	20	2,493	2,233	-
Wetland Banking	-	-	-	-	-	5,373	65	3,718	9,156	-
Total Capital Projects	2,380,077	27,318	625,516	62,851	1,900,019	1,813,829	12,873	411,709	-	2,757,370
Total - All Funds	2,602,360	188,493	697,582	79,863	2,080,919	2,785,421	25,189	-	-	2,838,607

RED LAKE WATERSHED DISTRICT
THIEF RIVER FALLS, MINNESOTA
SCHEDULE OF DIRECT EXPENDITURES BY CLASSIFICATION - MODIFIED CASH BASIS
GOVERNMENTAL FUNDS
FOR THE YEARS ENDED DECEMBER 31, 2010 AND 2009

	<u>2010</u>	<u>2009</u>
<u>DIRECT EXPENDITURES:</u>		
Salaries -		
Inspection	\$ 4,683	\$ 11,830
Survey - preliminary	8,811	5,349
Survey - construction	426	522
Reducing field notes	-	-
Drafting	7,161	7,927
Engineering	78,261	62,935
Project administration	182,954	184,828
Field work -water programs	12,459	16,364
Other	28,972	29,640
Compensated absences	31,852	28,573
Payroll taxes and benefits	109,258	111,080
Manager's expenses	19,673	24,686
Travel, mileage, meetings and per diems	2,412	3,261
Audit	8,105	8,039
Legal	22,689	13,620
Appraisal and viewers	8,837	7,688
Other professional fees	136,266	52,767
Office supplies	12,481	12,660
Office equipment	2,629	5,342
Dues & subscriptions	3,757	2,253
Insurance and bonds	30,544	23,731
Rent	1,210	1,210
Repairs and maintenance	9,227	9,229
Utilities	5,500	5,697
Telephone	8,755	10,524
Advertising and publications	8,480	4,118
Truck expense	15,412	15,370
Red River Watershed Management Board	1,073,323	977,926
Cost share assistance	-	569
Land acquisition and easements	42,445	100,218
Construction	502,266	973,785
Engineering costs & fees	4,558	9,119
Engineering fees	301,073	222,101
Engineering equipment	35,951	62,654
Glacial Ridge	45,570	94,098
Ring dike reimbursement	3,971	-
Loan payments	15,450	30,901
	<u>2,785,421</u>	<u>3,130,614</u>
Total Expenditures	\$ 2,785,421	\$ 3,130,614