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# Letter from the President

Greetings to all the citizens of the Red Lake Watershed District and other interested parties. This is my second round as President for the District and I am presently serving the final year of my third, three year term on the Board of Managers, representing Pennington County. The winter of 2006 produced some very good snow falls for the snowmobile enthusiasts, but with that comes some concerns for us in the Watershed business. The spring started with a very slow snow melt, which appeared it would replenish our groundwater supply as it was being absorbed into the ground. Like all springs however, it only takes an untimely rain along with mild temperatures to make things very interesting. This untimely rain occurred March 30 and with that caused overland flooding that has not been witnessed since 1997. Some landowners in our District indicated that the flooding compared to the flood of 1997, which we all know was the flood of all floods. We did however, recover from this to enjoy one of our driest summers we have witnessed in years. The farming communities thrived with some very good crops being harvested and due to these dry conditions, the Districts construction season was second to none.

In the year 2006, two of your Watershed District Board members were re-appointed by their respective counties. Gene Tiedemann, West Polk County, was appointed to serve for his first three year term as a Red Lake Watershed District Board of Managers. Gene, as you remember, was appointed in 2004 to serve the unexpired term of Bob Proulx who resigned in March of 2004. Vernon Johnson, Clearwater County, was appointed to serve for his seventh, three year term from Clearwater. I would like to welcome those two managers back and look forward to working with both of them.

Our goals as a watershed district are to manage water in the areas of flood control, drainage, and water quality. We continue to hold meetings on the second and fourth Thursdays of each month and welcome public interest and/or attendance at these meetings.

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 are two more subjects that I would like to mention. One is the fact that the District has completed our Ten Year Comprehensive Plan. The development of this plan was a very complex project which took three years to complete. The District mailed out several versions of the "Draft" plan for public comments during early spring of 2006 and on June 22, 2006, the Board approved a recommendation from the Board of Soil and Water Resources to make a minor amendment to the already approved plan. This plan is available upon request to our office or you may view the entire document on our website (www.redlakewatershed.org). The second item that I would like to share with our readers is, after long and laborious discussions concerning the present condition of the District office, it was decided that the District would proceed with the construction of a new office in Thief River Falls, MN. Construction of the new office started late in October of 2006, with the completion anticipated in late May of 2007. We hope to have an open house sometime in June, see you there.

Our 2006 Annual Audit is included in this report in an abbreviated form. A complete copy of the 2006 Annual Audit may be obtained at the District office prior to June 2007 at 102 Main Avenue North, Thief River Falls.

Once again, it was a pleasure to serve as President of the Board in 2006.

Sincerely,

Dale M. Nelson, President Red Lake Watershed District

### **Board of Managers – 2006**



Front Row (*left to right*): Dale M. Nelson, Gene Tiedemann Second Row (*left to right*): Lee Coe, Vernon Johnson, Arnold Stanley, Allan Carlson, Orville Knott



**Gene Tiedemann** 

Gene Tiedemann was re-appointed to the RLWD Board of Managers for a 3-year term. Gene will represent West Polk County for the years 2006-2009.

#### Vernon Johnson



Vernon Johnson was re-appointed to the RLWD Board of Managers for a 3-year term. Vernon will represent Clearwater County for the years 2006-2009.

### **Staff - 2006**



**Front row**: Tammy Audette-Accounting Assistant/Secretary; Arlene Novak- Accounting Technician/Secretary II; Jim Blix, Water Quality/Natural Resources Technician **Back Row**: (*left to right*), Myron Jesme-Administrator; Corey Hanson-Water Quality Coordinator; Gary Lane-Engineering Technician II; Loren Sanderson-Engineering Assistant; Summer staff (*not pictured*): Chris Thompson and Shane Peterson.

#### Office

The Red Lake Watershed District Office is located at: 102 Main Avenue North Thief River Falls, MN 56701 Office Hours: Monday – Friday, 8:00 a.m. – 4:30 p.m. Phone: 218-681-5800 Fax: 218-681-5839 Website: redlakewatershed.org E-Mail: <u>rlwaters@wiktel.com</u>



### **Meetings**

The Board of Managers held twenty-four regularly scheduled board meetings in 2006. These regular meetings are held the 2<sup>nd</sup> and 4<sup>th</sup> 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 subsricption. Minutes from boards meetings are available by visiting our website at <u>www.redlakewatershed.org/minutes</u>. The 2006 General Fund Budget hearing was held on September 8, 2005. Notice for the General Fund Budget hearing was published in at least one newspaper in each of the 10 counties within the watershed district.

#### 2006 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

### 2006 Subwatershed Advisory Committee Members

Black River Area \*Dan Schmitz, RLF Curt Beyer, RLF <u>Moose River Area</u> Wayne Larson, Middle River Gordon Foss, Grygla Elroy Aune, Gatzke

Burnham Creek \*Gilbert Weber, Crookston Dan Geist, Crookston

<u>Clearwater River Area</u> Steve Linder, Oklee \*John Gunvalson, Gonvick Arthur Wagner, Gonvick <u>Hill River Area</u> Jake Martell, Oklee Lost River Area Gary Mathis, Gonvick

<u>Grand Marais/Red Area</u> Jeep Mattson, EGF Allen Love, Euclid Conrad Zak, EGF

Poplar River Area

Upper Red Lake Area \*Emmitt Weidenborner, Kelliher \*John Ungerecht, Northome

<u>Thief River Area</u> Richard Engelstad, Gatzke \*Dave Rodahl, TRF Larry Hagen, Gatzke Walker Brook Area \*John A. Nelson, Clearbrook

Pine Lake Area

Red Lake River Area Don Barron, TRF Keith Driscoll, EGF

Clearwater Lake Area John Cucci, Clearbrook

\*Overall Advisory Committee Member

In 2006, the members of the Overall Advisory and the Subwatershed Advisory Committees met on March 15 with 14 members, two District Board members, and three District staff members in attendance. Staff members from the Red Lake Watershed District gave presentations on projects within the District, followed by questions from the Advisory Committee members.

# History of the Red Lake Watershed District

The Red Lake Watershed District covers an area of 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.

# 2006 DISTRICT PROJECTS

# **Red Lake Watershed District Ditch #10 (RLWD Project #161)**

In July of 2003, the Board received a petition for the establishment of a new drainage ditch in River and Gervais Townships in Red Lake County, Minnesota. The petition requested that the ditch would be approximately 3 <sup>3</sup>/<sub>4</sub> miles of open channel. Subsequent to receiving the petition, the Board adopted a resolution that, upon the approval of the bond, the petition received was to be designated as RLWD Ditch #10. Also, an Engineer was appointed and directed to make the preliminary survey, and prepare the necessary plans and reports as required by law. In August of 2003, the required bond was received.

In 2004, at their regularly scheduled Board meeting held on February 26<sup>th</sup>, 2004, the project engineers presented the Preliminary Engineers Report to the Board of Managers. At that meeting, the Board decided that upon the filing of the Preliminary Engineers Report, a public hearing would be set in accordance with Minnesota Statutes 103D and 103E.

The preliminary hearing for this project was held on March 25, 2004 at the RLWD Board room. The Engineer presented to the public the Preliminary Engineers Report in accordance to the petition. (A video copy of the hearing is on file at the RLWD office and available for public viewing). Following the closing of the hearing, the Board passed by unanimous vote they deem the Preliminary Engineers report practical and feasible, to appoint three viewers, and direct the Engineer to prepare a detailed study and final report.

On December 9, 2004 at the RLWD Board room, the final hearing was held concerning the Final Engineers Report and Viewers Report. After lengthy testimony and questions, the hearing was adjourned until December 23, 2004. On December 23, the hearing was reconvened and after testimony and questions from the public was entertained, the hearing was closed. After the completion of the hearing, a motion was made and passed by unanimous vote that the Board request Legal Counsel prepare the Detailed Findings and Order by the Drainage Authority of the RLWD for the establishment of this ditch system at their next meeting in January of 2005.

On January 27, 2005 at the Red Lake Watershed District Board room, Legal Counsel presented the Detailed Findings and Order by the Drainage Authority of the RLWD for the establishment of the project. On March 24, 2005 eleven bids were opened for the construction of this project, Olson Construction TRF, Inc. was the low bid in the amount of \$145,810.10. Due to the delay in receiving a U.S. Army Corps of Engineers permit, construction on this project was delayed until late July, 2005. Construction was completed in late September 2005 with the final payment hearing for Olson Construction TRF, Inc. held on October 13, 2005. With the inclusion of change orders, the construction costs for this project totaled \$160,201.94.

On May 25, 2006 a petition was presented to the Board of Managers to make a revision in the northerly portion of the legal system. It was determined at this meeting that a hearing was necessary as the petition would change the original design of the system. The hearing for the petition was held on July 27 in the District Board Room. The purpose of the hearing was to address the installation of an 18" culvert through a dry crossing approximately 300 feet south of the Pennington County line and to block the north end of an existing culvert through a township road, which was located on the Red Lake and Pennington County line. A motion was made and passed unanimously to proceed with the request. The project was completed in the fall of 2006.

### Seeger Dam (RLWD Project #50)

Seeger Dam is located approximately two miles west of the city of Red Lake Falls, in Section 29 of Red Lake Falls Township, Red Lake County. Emergency repairs were necessary because a slope failure occurred on the downstream slope of the earthen embankment. The top of the dike is a township road used for bus/mail routes and road closure was necessary for safety concerns.

<u>1973</u> – The Natural Resource Conservation Service (NRCS), formerly called the Soil Conservation Service (SCS), designed and contracted for the construction of Seeger Dam. The earthen dam was constructed using clay borrow material from the pool area of the site. The compacted embankment is approximately 800 feet in length, 46 feet in height, with a 3H: 1V upstream slope, 2H: 1V downstream slope and a top width of 14 feet. The control structure is a fixed crest concrete drop inlet structure with a 48 inch diameter concrete outlet pipe. The flood pool has the ability to store 450 acre feet of water from a 6.4 square mile drainage area.

2000 – The first slide occurred on the downstream embankment slope. The area of failure was relatively small and near the extreme south end of the embankment. The slide area was excavated and recompacted to a slightly flatter slope than originally designed.

<u>2002</u> – In June, a second failure occurred. This slide area was also on the downstream embankment slope, and immediately north of the first slide area. This larger slide occurred after approximately 7.4 inches of rainfall in a 6 day period, including a 6.3 inch total rainfall in one day. The consulting firm, HDR Engineering, Inc., assisted the District with geo-technical support and repair plan recommendations. The slide area was repaired by excavating the failed soils and reconstructing to a slightly flatter slope than originally designed.

<u>2003</u> – Two slide areas occurred in July, both being on the downstream slope of the embankment. No large precipitation events were noted in conjunction with these failures. One of these slides occurred in the same general location as in 2002 and the other was directly above the outlet pipe. NRCS and MN Board of Soil and Water Resources Engineers, NRCS soil specialist, local NRCS, Red Lake County Soil and Water Conservation District, and Red Lake Watershed District personnel inspected the site, and in September, a report was submitted by the NRCS. HDR Engineering, Inc. also assisted with the repair, which consisted of extending the 48 in. outlet pipe, excavating the slide area, obtaining clay borrow material from an offsite borrow pit, constructing the entire downstream embankment slope to a 3H: 1V cross section, using selfpropelled scrapers and compacting equipment. Compaction specifications required at least 95 percent of the maximum dry density as established by ASTM D698. An independent testing lab performed density tests during construction. Cost for the repair includes: inspections, engineering, surveying, administration, and construction totaling \$59,969.00.

2004 – In the fall of 2004, this dam encountered another failure at approximately the same location as the one in 2000. The Board of Managers determined that until a plan can be developed to accomplish a long term repair, the pool should be lowered from its normal level to help reduce the risk of damages should the dam fail completely.

In November, Davidson Construction of Holt, MN was hired to excavate, re-slope, and modify the existing outlet structure to draw-down the permanent pool. The original structure was constructed with a fixed crest weir with no screw gate for draw-down purposes. Two holes at different elevations were made in the structure for the draw-down and excavations were performed on the downstream embankment slope to inspect for seepage. No seepage/saturated soils were found during this inspection.

In 2005, there was considerable discussion between the Red Lake Watershed District Board of Managers and the Engineer of this project to design an alternative plan that would remedy the problem that is occurring on this project. In late fall of 2005 the Board of Managers approved an alternative presented by an HDR Engineer to lower the dam and install a gated culvert to permanently lower the existing pool and construct flatter side slopes. It is the hopes of the District that this will stabilize the bank. The District is presently pursuing a Dam Safety Permit from the Minnesota Department of Natural Resources.

On April 13, 2006 the Board declared the failure of Seeger Dam an emergency and instructed the administrator to seek quotes to immediately repair the dam. The project consisted of lowering the existing pool by installing a gated structure and catwalk, lowering the elevation of the dam and flattening of the slopes. Major work items consisted of: a new opening at the structure flowline installation of an 18 inch diameter culvert into pool area for drawdown purposes, backfill around structure, remove/lower approximately 3 feet from the top of the embankment (this is also a township roadway), shape/grade some of the sideslopes, emergency spillway area, install screw gate apparatus and walkway, seed, fertilize and mulch disturbed areas. This portion of the project will allow the District to keep the pool level to a manageable elevation therefore minimizing the risk of failure to the levee. During the inspection of the dam by the Minnesota Department of Natural Resources, it was brought to the attention of the District that there appeared to be some cracks in the joints of the outlet culvert. It was determined that the outlet pipe would have to be reinforced, thereby stabilizing the outlet of the concrete culvert. This project was completed in November of 2006.



Structure Repair



Installation of 18" gated pipe



Embankment and road excavation/repair



Outlet structure with walkway and gate

### **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 for 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 Legislator's lack of progress 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 will be 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 Engineers 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 being 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.

### **Euclid East Impoundment (RLWD Project #60C)**

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

**<u>PURPOSE</u>**: 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.

**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 will be functional for operation in the Spring of 2007. The Red Lake Watershed District and HDR Engineering of Thief River Falls performed construction surveying and inspection duties. The project is funded jointly with the State of Minnesota, Red River Watershed Management Board and the Red Lake Watershed District.

**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

Ele	ev. (ft. – msl)	Storage	e (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. rinoff)
Drainage Area – 17.1 sq. mi.			



Embankment key core trench excavation



Clay embankment construction



Typical borrow pit operation



Pipe boring Polk County Road 19









Outlet Structure Construction



Placing topsoil

Dormant Seeding

### Brandt Impoundment (RLWD Project #60C)

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

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

**GENERAL:** Construction of the Euclid East Impoundment began on July 31, 2006 and was substantially completed by the middle of November. After some minor work items are completed and the vegetation is well established the project should be operational in 2007. The Red Lake Watershed District and HDR Engineering of Thief River Falls jointly performed construction surveying and inspection duties. The project is funded by the State of Minnesota, Red River Watershed Management Board, and the Red Lake Watershed District.

**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.

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

Ι	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 Spillw	ay 916.0	786 (0.62 in. runoff)
Gated Storage		3,126 (2.48 in. runoff)
Drainage Area – 23.6 sq. mi.		



Key Core Trench



Embankment Fill



Core Trench Excavation



Various Construction Equipment

The following pictures show various clay borrow pit excavation within the Brandt Impoundment.



The following pictures show installation of 8' x 6' box culvert at inlet channel.





Principal Outlet Structure





![](_page_14_Picture_6.jpeg)

![](_page_14_Picture_7.jpeg)

![](_page_14_Picture_8.jpeg)

Dormant Seeding

# Ten Year Comprehensive Plan (RLWD Project #149)

The Red Lake Watershed District last updated their Ten Year Comprehensive Plan in 1988 and approved by the Minnesota Board of Water and Soil Resources in 1990. Due to delays at the State and local levels, the District started the process of updating their 10 Year Comprehensive Plan in 2003. The adoption of this Plan sets forth a long range planning process which will assess the current water related activities of the District to set forth a proposed management plan.

A Technical Advisory Committee (TAC) and a Citizens Advisory Committee (CAC) were organized as part of this process. These committees consist of local, state and federal agencies, and citizens within the District. The committees have assisted the District in defining plan priorities, collecting issues and concerns, and aiding in the writing of this plan. The first meeting of the committee was held in 2003 and the committees have met periodically to discuss various water management issues and provide input to the Board of Managers for development of the 10 Year Comprehensive Plan.

Funding is through the State of Minnesota, Flood Damage Reduction Project; Red River Watershed Management Board; and the RLWD.

A public hearing was held in the Red Lake Watershed District Board room by the Board of Soil and Water Resources on May 22, 2006. This hearing was intended to allow input from the public on the Ten Year Comprehensive Overall Plan which was approved by the Red Lake Watershed District Board of Managers at their regularly scheduled meeting April 27, 2006.

On June 14, 2006 a meeting was held in Fergus Falls by the "ad hoc" committee of the Board of Water and Soil Resources for them to review the comments presented before and after the public hearing. At that meeting, the Board of Soil Resources approved the Red Lake Watershed District Comprehensive Ten Year Overall Plan with one amendment. The amendment that they asked the District to consider was that the Marshall County Water Plan Coordinator be listed as a partner in the water quality efforts of the District. At the regularly scheduled Board meeting on June 22, the amendment request was approved to the plan. The Plan is available for distribution through the watershed website www.redlakewatershed.org.

### **Improvement of Polk County Ditch 40, (RLWD Ditch 11, Project #166)**

In February 10, 2005, the Red Lake Watershed District Board of Managers accepted a petition for the improvement of approximately 4.25 miles of open channel on Polk County Ditch #40. The existing ditch system is a 10.5 mile ditch which was established in 1903 and is a located in Sullivan and Keystone Townships in Polk County, Minnesota. At this same meeting, the Board of Managers appointed Jerry Pribula, Pribula Engineering, as the engineer for the project and instructed him to develop a Preliminary Engineers Report.

In August 11, 2005, Pribula Engineering presented the Preliminary Engineer's Report. After the Engineer presented his report, followed by discussion between the Board and landowners, the petitioners requested that an additional two miles be added the improvement. The Board agreed and instructed the Engineer to revise his report and present it to the Board at a later date.

On October 27, 2005, the RLWD Board of Managers approved the revised Preliminary Engineer's Report presented to them by Pribula Engineering.

The preliminary hearing for this project was held on December 8, 2005 at the RLWD Board room. The Engineer presented to the public, the Preliminary Engineers Report 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 procedure was approved at the regularly scheduled Board meeting held December 29, 2005.

A public hearing was held on July 20, 2006 at the Northland Community and Technical College located in East Grand Forks, Minnesota concerning the Final Engineers Report and Viewers Report. After lengthy testimony and questions, the hearing was adjourned.

On August 24 at their regularly scheduled Board meeting, Legal Counsel presented the Findings of Fact and Order to the Board. Upon completion of the presentation, the Board, by unanimous decision, approved the Details of the Findings of Fact and Order.

Bids for construction were taken on October 12, 2006. The low bid was awarded to R.J. Zavoral & Sons, Inc. in the amount of \$499,802.26 for the improvement of the lower 6.4 miles of ditch.

After completion of the application for General Storm Water Permit, the District was informed by the Minnesota Pollution Control Agency, that there would be a 30 day public review of the Storm Water Pollution Prevention Plan. After the 30 day public review was completed, a permit was received. Construction started on this project November 21 and because of mild temperatures and very little snow, four miles of the improvement was substantially completed. The remainder of the project will be completed in the summer of 2007.

![](_page_16_Picture_5.jpeg)

Township road culvert installation

![](_page_16_Picture_7.jpeg)

Ditch excavation

![](_page_16_Picture_9.jpeg)

Ditch excavation and seeding/mulching

![](_page_16_Picture_11.jpeg)

Completed ditch with erosion control

# Louisville/Parnell Impoundment (RLWD Project #121)

In the spring of 2005, a small leak was noticed along the south embankment of the impoundment. Upon further review, the Board of Managers instructed HDR Engineering, Inc. to design a plan to reconstruct the berm and report back to the Board with a proposal. In May 2005, the Board approved to move ahead with the repair of the berm by seeking quotes and submitting Part I and Part II wetland application permits that would be required for this repair.

Due to the wet conditions and the delay in permitting, construction did not get completed in 2005. Approximately 0.6 mile reach of the south berm/embankment was repaired and completed in early August 2006. This work consisted of stripping the existing topsoil vegetation, excavation of mainly the upstream (pool side) slope and, in some areas, the top section of berm/embankment for a clay liner. Suitable clay material was obtained from borrow pits, placed, and compacted to provide a more impermeable layer for water storage. After final grading/shaping of the borrow pits and the berm/embankment area, the top soil was replaced and seed, fertilizer and mulch was applied.

![](_page_17_Picture_3.jpeg)

Borrow pit

Embankment repair

# Watershed Ditch System Inventory and Mapping (RLWD Project #167)

The Ditch Inventory Project was made possible by utilizing a Challenge Grant awarded by the Minnesota Board of Water and Soil Resources. This project is primarily concerned with efficient information storage and retrieval, both in electronic and printed forms. The inventory and specifications of the drainage systems within the jurisdiction of the Red Lake Watershed District have traditionally been recorded on drawings and paper files and, as such, are not easily available to other agencies or the general public.

The work plan of Project 167 consists of making an inventory of the ditch systems for which the Red Lake Watershed District is legally responsible and to make that inventory available to District staff, the Board of Managers, and the general public.

The inventory will be available as

- GIS data files on the District computer network
- Documents on the District web site
- A set of hard copy maps
- GIS tools for viewing and editing data

The GIS tools referred to in the Project 167 work plan will consist of a customized data entry form that will allow a staff member to enter ditch inspection and maintence records according to the name of the particular ditch system, the location of the channel segment, and the particular

data items that relate to that location. This data can then be displayed visually in the ArcView GIS platform or in a GIS browser such as ArcExplorer.

![](_page_18_Figure_1.jpeg)

Example of a hardcopy document for Project 167 (Original Size: 8.5"x 11")

### <u>Geographic Information Technology/Database Management (RLWD Project</u> <u>#145)</u>

#### Database Management

District data is in transition from being stored as a set of spreadsheet files toward a true centralized database environment in which data validity protocols are embedded in software, and

in which powerful analytical tools are available. For instance, in 2005, it was necessary to input the District water quality monitoring data twice - once in a spreadsheet file, and again in an online form on the District website. Both methods were visually tasking and devoid of embedded validity controls. To eliminate the redundant data entry effort (and minimize the inevitable entry errors), a custom data entry interface was developed by Houston Engineering and further modified by District staff to enter the data a single time into a primary database. This process was functional by the summer of 2006

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and has received some minor revisions. Currently the database, while left physically intact, can be sorted and queried with a variety of tools for analysis and display.

#### New data entry interface

Efforts continue to improve the efficiency of data input and to employ new data management tools in other areas of District operations. Near-term goals include:

- Maintaining the water quality data collected by River Watch schools in the district to a database prototype that will enforce data validity controls and minimize manual data entry. This design will also make data available for virtually any end use, including spreadsheet analysis, uploading to the centralized data pool at the IWI, and more efficient analysis through the use of very powerful database queries.
- Develop a ditch inspection/maintenance database schema that can be integrated with an existing Arcview spatial geodatabase. This will allow the data to be stored and processed (spatially or otherwise) in a database, and quickly and efficiently displayed in map form.
- Continue to improve accuracy and efficiency of data input by uplinking data captured by our instruments (thus reducing manual input) and using more efficient querying tools to process the USGS streamgage data captured from the internet.

#### **GIS - Geographic Information Systems**

GIS is an abbreviation for Geographic Information Systems and refers to the set of technologies that manage, analyze, and display spatially referenced data. GIS is commonly thought of as map-making software, but that is only a portion of its capabilities. GIS software is essentially a spatially referenced database management system capable of displaying its output as maps.

As the District is acquiring larger and more diverse quantities of raw data as it adopts new technologies in surveying and water quality measurement. This in turn increases our need for data storage capacity and processing. In 2006, the District staff has learned to use ArcMap GIS software to filter large sets of land use data to derive statistics for small, irregular catchments. This important analytical tool has also been applied to soil types and can be extended to include almost any type of spatially relevant data.

The District, with the help of Houston Engineering consultants, has also developed a linearly referenced database design for all ditch channels within its legal durisdiction. Refer to the section of this report, RLWD Project #167, for further details. Once established, this set of linear references can be linked to ditch maintenance events, bank erosion, channel morphology, and many other types of data.

As the District staff develops expertise with GIS software, more possibilities arise for analysis and presentation. One example, developed on 2006, involves the analysis of land use and land cover for various catchment areas.

The Minnesota DNR provides a large body of land use/land cover data through its Data Deli website, but it is available only in USGS quad tile units, as shown in the illustration below.

![](_page_20_Figure_0.jpeg)

A catchment area is superimposed with four quadrangles (data supplied by the DNR) of land use/land cover delineations.

Each quad tile is attached to a data table, each record of which represents one of the many small polygons (in gray outline) that delimit a particular land use classification. In order for the data in a USGS quad tile to provide information about a particular catchment (outlined in red), it must be "clipped" into a subset and merged with other clipped sets to isolate the data that coincides with the catchment area.

![](_page_20_Figure_3.jpeg)

Color shaded areas represent clipped data

![](_page_20_Figure_5.jpeg)

Merged Data - Color Coded by Land Use Category

Once the data is organized by catchment area, statistical inferences can be developed from it. Maps for soil, vegetation, population density and any other spatially referenced entity can be similarly developed and analyzed.

This procedure has been used in portions of the 2006-2007 River Watch data analysis as an educational tool to encourage the awareness of streams and drainage areas as total systems.

The tools in ArcView (and increasing assortment of open source programs) are becoming more powerful every year, and they allow us to gather and display relevant and the useful information buried within an increasing amount of raw data in the public domain.

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1 0	BJECTID	GAPLVL4PAC	GAPLVL4TXT	GAPLVLID	GAPLVLIPAC	GAPLVL3TXT	GAPLVL2ID
367	366	59	Upland Conifer	61	59	Upland Conifer	84
368	367	50	Upland Shrub	54	100	Upland Shrub	82
369	368	28	Sedge Meadow	57	50	Marsh	83
370	369	45	Broadleaf Sedoe/Cattal	57	50	Marsh	83
371	370	28	Sedge Meadow	57	50	Marsh	83
372	371	55	Aspen/White Birch	66	55	Aspen/White Birch	86
373	372	50	Upland Shrub	54	100	Upland Shrub	82
374	373	82	Upland Deciduous	69	82	Upland Deciduous	86
375	374	55	AspenWhite Birch	66	55	Aspen/White Birch	86
376	375	50	Grassland	53	100	Grassland	81
377	376	59	Upland Conifer	61	59	Upland Conifer	84
378	377	55	Aspen/White Birch	66	55	Aspen/White Birch	86
379	378	0	Cropland	52	0	Cropland	81
380	379	50	Grassland	53	100	Grassland	81
381	380	66	Lowland Deciduous Shrub	55	100	Lowland Shrub	82
382	381	0	Cropland	52	0	Cropland	81
383	382	59	Upland Conifer	61	59	Upland Conifer	84
384	383	66	Lowland Deciduous Shrub	55	100	Lowland Shrub	82
385	384	50	Upland Shrub	54	100	Upland Shrub	82
386	385	50	Upland Shrub	54	100	Upland Shrub	82
387	386	45	Broadleaf Sedge/Cattal	57	50	Marsh	83
388	387	0	Cropland	52	0	Cropland	81
389	388	66	Lowland Deciduous Shrub	55	100	Lowland Shrub	82
390	389	26	Sedge Meadow	57	50	Marsh	83
391	390	77	Maple/Basswood	68	77	Maple/Basswood	86
992	391	28	Sedge Meadow	57	50	Marsh	83
593	392	51	Tamarack	63	51	Tamarack	85
194	393	66	Lowland Deciduous Shrub	55	100	Lowland Shrub	82
395	394	50	Grassland	53	100	Grassland	81

Data file from "clipped" GIS Layer imported to Excel

#### District GIS/Database projects to be initiated in 2007:

- Completion of Project 167 initiatives.
- Expantion of the inventory geodatabase to include elevation, channel slope, channel base width, culvert placement, culvert type, and benefitted area rate breakdown.
- Design a database for the set of survey references within the Watershed District boundaries. Each reference will be linked to a point within a GIS layer file and implemented as required.

# **River Watch**

River Watch is a volunteer water quality monitoring program that is growing in importance as a source of water quality data in the Red River basin. The program began in Minnesota in 1995 in response to a need for reliable water quality information and has since grown to include volunteer groups in North Dakota and Manitoba. These groups gather water quality data on a regular basis at predetermined sites in exchange for a variety of education experiences and an opportunity to participate in real-world environmental monitoring and data analysis. Some groups use River Watch as part of their environmental science curriculum or as a supplement to other programs such as Envirothon or the Science Fair.

A River Watch Forum was held at the University of Minnesota Crookston in March of 2006. Seven of the nine RLWD schools attended, and all participating schools contributed a data set to the RRWMB for submission to the EPA STORET database.

Increased water quality activity in 2006 created potential conflicts for equipment within the water quality department. Staff requested and received from the Board of Managers permission to purchase equipment necessary to allow the River Watch to operate independently of other District water quality activities. This equipment included a Hach 2100P turbidometer, additional transparency tubes, and a water sample capture device.

# 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.

![](_page_21_Picture_15.jpeg)

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%

To date 97 requests have been received for the program. Of these, 58 have been completed 4 are pending, and 35 have declined to participate. Currently, the Watershed District has 4 applicants remaining on our list of requests. Funding has been secured and we hope that when construction estimates are received, we will be able to construct two (2) of the four ring dikes. The funding and ring dike program will continue into 2007.

### Permits (RLWD Project #90)

The District received 139 permit applications in 2006. The work consisted of culvert installations, ditch cleaning, and road and bridge projects. The dry conditions during 2006 construction season were perfect for completing projects on and ahead of schedule. The graph below is a recording of the number of yearly permit applications from 1987 to 2006.

![](_page_22_Figure_7.jpeg)

# FLOOD CONTROL IMPOUNDMENTS

The major 2006 runoff event occurred during the spring thaw. Floodwaters were stored for a long duration, and when downstream conditions were acceptable, control gates were opened and floodwaters from the impoundments were released in a controlled manner. The remainder of the year was drier than average with no additional runoff events of concern.

Due to the dry conditions, the District's operation of our flood control facilities both gated and non-gated, was limited to mainly routine monitoring of pool elevations. 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.

Impoundments operated by the Red Lake Watershed District vary based on available 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. During flood and large runoff events, flood waters are stored for a long duration within the impoundments and as downstream conditions allow and the stored water is released in a controlled manner. Storage is calculated in acre feet which is an area one acre in size by one foot depth. Storage capacity varies depending on area of water stored and depth of water. 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 after stored flood waters are released the pool is basically drained dry. Other impoundment the Red Lake Watershed District operates is the Moose River Impoundment located northeast of Grygla. The impoundment does have a small permanent winter pool as indicated on the graph shown below.

![](_page_23_Figure_4.jpeg)

Routine inspections are performed and the condition of the embankment and control structures is evaluated. Maintenance performed in 2006 included debris removal, removal of beaver debris, nuisance beaver, graveling and vegetation control (brushing woody vegetation & mowing the grassed embankment area).

### 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.

**<u>PURPOSE</u>**: 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.		

**<u>OPERATIONAL</u>**: 1999 – Original Design 2004 – Modified Plan

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

![](_page_24_Picture_9.jpeg)

Emergency spillway

![](_page_24_Picture_11.jpeg)

Principal outlet structure

![](_page_25_Figure_0.jpeg)

![](_page_25_Figure_1.jpeg)

### 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.

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

![](_page_26_Picture_4.jpeg)

![](_page_26_Figure_5.jpeg)

# 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.

**<u>PURPOSE</u>**: 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
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### **OPERATIONAL:** 1991

![](_page_27_Picture_9.jpeg)

Stoplog Outlet Structure

![](_page_28_Figure_0.jpeg)

![](_page_28_Figure_1.jpeg)

# Lost River Impoundment (RLWD Project #17)

**GENERAL:** Approximately 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.

**<u>PURPOSE</u>**: 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

![](_page_29_Picture_10.jpeg)

Lost River Impoundment Outlet Structure

![](_page_30_Figure_0.jpeg)

![](_page_30_Figure_1.jpeg)

### Good Lake Impoundment (RLWD Project #67)

**<u>GENERAL</u>**: 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.

**<u>PURPOSE</u>**: 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.

#### **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

![](_page_32_Picture_0.jpeg)

Gated Principal Outlet Structure

![](_page_32_Figure_2.jpeg)

![](_page_32_Figure_3.jpeg)

### 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.

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

**<u>COST</u>**: 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. (ftmsl)	1218.0	1220.0	
Freeboard Flood Elev. (ftmsl)	1217.2	1219.3	
Freeboard Flood Storage (ac.ft)	16,250	38,250	54,500
Emer. Spillway Elev. (ftmsl)	1216.0	1218.0	
Emer. Spillway Storage (ac.ft.)	12,000	24,250	36,250
Gated Pool Elev. (ftmsl)	1215.3	1217.4	
Gated Pool Storage (ac.ft.)	9,750	19,750	29,500
Typical Summer Elev. (ftmsl)	1211.7	1213.6	
Typical Summer Storage (ac.ft.)	2,000	4,000	6,000
Typical Winter Elev. (ftmsl)	1210.5	1212.4	
Typical Winter Storage (ac.ft.)	800	1,800	2,600
Max No-Flood Elev. (ftmsl)	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

#### **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.

![](_page_34_Picture_2.jpeg)

North Pool - Gated Principal Outlet Structure

![](_page_34_Figure_4.jpeg)

![](_page_35_Figure_0.jpeg)

**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.

![](_page_35_Picture_3.jpeg)

South Pool - Gated Principal Outlet Structure




## Schirrick Dam (RLWD Project #25)

**<u>GENERAL</u>**: 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.

**<u>PURPOSE</u>**: 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.

#### **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.		
Highest recorded pool elevation is 9	988.75 during historic flood of	1997.

**<u>COST:</u>** Approximately - \$1,019,000

## **OPERATIONAL:** 1985



Principal outlet structure hydraulic gate operation

Looking downstream from outlet structure



## Long Term Stream Monitoring Program

The Red Lake Watershed District continued its long-term stream monitoring program at 33 sites in 2006. This monitoring program consists of at least 4 site visits each year. Field measurements of turbidity, transparency, dissolved oxygen, temperature, pH, specific conductance, and stage are recorded during each site visit. Samples are collected and analyzed for total phosphorus, orthophosphorus, total suspended solids, total dissolved solids, total Kjeldahl nitrogen, ammonia nitrogen, nitrates plus nitrites, fecal coliform, and E. coli.



Despite flooding that occurred in the spring, 2006 turned out to be a tame year in terms of summer runoff events. In fact, parts of Silver Creek and the Lost River went completely dry and we were unable to collect samples during some site visits. Regular rounds of sampling at long-term monitoring sites were completed in May, June, August, and October. Extra fecal coliform samples have been collected during summer months for the last two years to provide adequate data for statewide assessments.

The MPCA has proposed a new standard for E. coli. Even though we have only been collecting E. coli data for the last two years, many of our sites have already had instances where the water E. coli concentrations have exceeded the proposed standard. In fact, there seems to be a higher rate of exceedance of the state E. coli standard of 126 cfu/100 ml than the fecal coliform standard of 200 cfu/100 ml. There is a good correlation between the two measurements based on RLWD data. Based upon the last two years of data, the E. coli equivalent of the 200 cfu/100 ml fecal coliform standard from RLWD data is actually 291 cfu/100 ml. Several more years worth of data will be necessary to determine whether or not any of our sites will be officially listed as impaired by high E. coli bacteria concentrations.

The 2005 assessment process revealed that we need to collect more fecal coliform data for the months of June through August in order for the MPCA to assess some of our monitoring sites. Therefore, we are collecting some "supplemental" fecal coliform samples during the summer months (starting in 2005) so that we will have a minimum of 5 samples per calendar month over the last 10 years of sampling at each site. Before the new alternating schedule, samples were collected in the same 4 months every year so all summer samples were collected in July. So, most sites have plenty of fecal coliform samples for the month of July, but have very few for the months of June and August. Those three warm summer months are the most critical months for fecal coliform monitoring because these are the months in which people may be engaging in activities that bring them in contact with the water. So, these are the months in which the health risk indicated by high fecal coliform is relevant.

Investigative monitoring was conducted to learn more about a turbidity problem on the Thief River above Agassiz NWR. Field measurements at road crossings showed that the problem starts at least a mile downstream of the Thief Lake outlet, between the outlet and CR6. No one had heard of any work occurring in the river at the time. Chlorophyll-a sampling ruled out algae growth as the cause of the problem so the problem must be related to sediment in some way. The soil types are similar along this reach. An abrupt increase in turbidity occurs along the lower part of a reach that has been channelized as the main channel of Judicial Ditch 21. This problem will be further investigated in 2007.

Very little stream water quality data has been collected by the RLWD within Beltrami County and the Upper and Lower Red Lakes watershed. The Red Lake River Watch and Red Lake Nation Department of Natural Resources do a great job of monitoring the tributaries as they enter the Red Lakes, but there is a lack of data throughout the rest of the watershed. Utilizing the mapbased search for water quality monitoring sites and data on the MPCA's Environmental Data Access web page, it has been possible to identify stream reaches that are lacking data. After prioritizing river reaches and monitoring sites, 6 priority sites have been selected. One day of each round of the RLWD long-term monitoring program will be dedicated to monitoring in this watershed. Monitoring at these sites will begin in 2007.



Future Beltrami County Stream Water Quality Monitoring Sites. Small dots represent past and present monitoring sites from the MPCA Environmental Data Access web page.

# Water Quality Assessments

Every two years, the Minnesota Pollution Control Agency conducts a statewide assessment of water quality. An assessment is conducted on every odd year and a new official 303(d) List of Impaired waters is released on every even year. The 2005 assessment process included data collected by the RLWD long-term monitoring program through 2004. This was the first round of assessments in which RLWD long-term data was available. So, the 2006 assessment results were able to include many more stream reaches within the Red Lake Watershed District. Many, but not all, of these newly assessed reaches were found to be impaired. The newly listed reaches are located on the Thief River, Moose River, Silver Creek, Grand Marais Creek, Poplar River Diversion, Clearwater River, Lost River, and some "unnamed creeks".



2006 List of Impaired Waters - Conventional Pollutants

The MPCA will be conducting another round of assessments in 2007. This will be the first statewide assessment in which data from area Soil and Water Conservation Districts and high school River Watch monitoring programs will be available. To prepare for the assessment process, the RLWD has assessed its own data along with available data from SWCDs, River Watch programs, and the Red River Basin Monitoring Network. A detailed site-by-site assessment report has been written for inclusion in the next RLWD comprehensive water quality report.

## **Long-Term Lake Monitoring**

The RLWD collects total phosphorus, chlorophyll-a, and Secchi disk transparency data in order to calculate a Trophic State Index (TSI) value for each sampling site visit. A higher TSI value means a higher concentration of nutrients, lower transparency, and a higher probability of nuisance algae blooms. Desirable TSI values for a good balance of productivity and water quality (fishing and swimming) range from 40 to 50. Lakes in this range are referred to as mesotrophic. Lakes with excess phosphorus and poor transparency are considered eutrophic (50 – 70) or even hyper-eutrophic (>70).

In 2006, the RLWD added two lakes to its lake monitoring program. A noted lack of monitoring sites in Beltrami County prompted the RLWD to begin a cycle of lake monitoring within that county. Buzzle and Blackduck Lakes will be the first of these lakes to be monitored by the RLWD. The RLWD found that Buzzle Lake has exceptionally clean and clear water. It is a deep lake that is anoxic (without oxygen) near its bottom.



Map of Blackduck Lake, from the RMB Environmental Laboratories online Lake Mapping Tool



Map of Buzzle Lake, from the RMB Environmental Laboratories online Lake Mapping Tool

Clearwater Lake had good overall water quality this year and was improved over last year. Because of the "up-and-down" nature of the water quality on this lake, Mann-Kendall statistical analysis of data collected since the year 2000 shows no significant trend.



Map of Clearwater Lake, from the RMB Environmental Laboratories online Lake Mapping Tool

Cameron Lake continues to be eutrophic. Although the average TSI score for 2006 was improved compared to the 2005 average, there is no significant trend in water quality on the lake since the RLWD began monitoring there in 2003.



Map of Cameron Lake, from the RMB Environmental Laboratories online Lake Mapping Tool



# Maple Lake Monitoring

2006 was the third year of the partnership between the Red Lake Watershed District and the Maple Lake Improvement District. For the last three years, monthly samples have been collected from the inlet(s), outlet of the lake, and from within the lake itself. We have collected a good set of data for characterizing "normal" water quality for the inlet of the lake. We are lacking data from large events, however. It is the impact of large rain events upon the lake (plumes of sediment) that motivated the MLID and the RLWD to monitor the lake more intensively.

- During the last couple of years, water quality within the lake has not been all that bad during parts of the year. We have found that decreases in water quality correspond with increases in lake use.
- Powerful outboard motors can disturb sediment in shallow lakes like Maple Lake and increase the amount of phosphorus available for algae growth.
- Spawning carp are having a negative impact upon water quality at the inlet of the lake.

Although regular monitoring will continue at the inlet and outlet of the lake, special effort should be made in the future to collect extra samples during/after rain events. Also, coordination and planning should be increased in the next few years for the purpose of developing some implementation related efforts. The intensive monitoring schedule could be renewed at a later data to monitor results of projects in the watershed.

# **Ruffy Brook Monitoring Project**

Some of the people living near Ruffy Brook remember being able to catch trout within this stream. After land was sold by the government and cleared for agriculture, Ruffy Brook was no longer able to support trout. Some of the current residents of the Ruffy Brook area would like to see the stream restored to what it once was. The main things that trout need to survive are habitat, sufficient levels of



dissolved oxygen, and cool water temperatures. For the last two years, a continuous record of dissolved oxygen concentration, water temperature, water level, pH, and conductivity has been collected at three locations along the former trout stream reach of Ruffy Brook.

Statistical analysis and reporting for this project will be completed for the next comprehensive water quality report. There also are plans for a brochure summarizing the findings of the study that can be distributed to landowners in the Ruffy Brook watershed.

# **Project 60 Water Quality Monitoring**

The Red Lake Watershed District began work on a Challenge Grant received from the Minnesota Board of Water and Soil Resources for augmentation of the Euclid East/Brandt Impoundments in the Grand Marais Creek watershed. This money will be used for some restoration work on the Brandt Channel restoration Project 60E downstream of the outlet of the Brandt impoundment. A portion of this grant will also be used to monitor any



changes in water quality that may result from the impoundments and channel restoration. The hope is that by reducing flow rates and improving channel stability, there will be an improvement in water quality.

The continuous monitoring equipment for



the Project 60 water quality (turbidity) and flow monitoring was all installed by early April of 2006. Turbidity probes and level loggers were placed in stilling wells (left) that protect the equipment and provide easy access for calibration and downloading of data. The turbidity stilling wells needed a larger diameter pipe to provide accurate readings and to avoid contact between the sensitive sensor and the sides of the well. It also took some time to get the stilling wells constructed and installed due to delays from high flows and other concurrent project. There is now a Stevens TS300 turbidity probe and an Onset HOBO Water Level Logger at each of the two continuous monitoring sites. The equipment takes measurements once every 30 minutes.

It was decided to move the monitoring site at the downsteam end of the County Ditch 2 system from Stream Gauge #70 (Hwy 220 crossing) to Stream Gauge # 71 that is a few miles upstream. The Hwy 220 site had deep water, backwater from the Red River (this would hinder the development of a rating curve), and too much traffic that combine to make the site a poor monitoring site. I picked Stream Gauge #71 because it was the first site upstream at which stage was not being affected by backwater from the Red River. Flow had stopped completely at both monitoring sites by the end of June.







# **Red River Basin Buffer Initiative Monitoring**

The Red Lake Watershed District continued to conduct monitoring for the Red River Basin Buffer Initiative Project. The Red River Basin Buffer Initiative activities in the RLWD started with a targeted riparian buffer strip program in the Silver Creek watershed. With funding from the RLWD, the Clearwater SWCD was able to intensify efforts to promote and implement buffers within this watershed. The Red River Basin Commission was able to obtain EPA 319 Grant funding to continue the work being done in the Silver Creek watershed and expand the idea of targeting a watershed for intensive buffer implementation to other areas throughout the Red River Basin. In addition to the Clearwater SWCD, the Counties of Wilkin, Becker, Norman, and Mahnomen have also been involved with the RRBC project.

The RLWD long-term monitoring site on Silver Creek has been visited on a monthly basis since the beginning of the Buffer Initiative (2002). Sites were recently added further upstream on

Silver Creek and on Clear Brook. This monitoring effort is designed to track any changes in water quality that may result from this implementation project.

# **Tile Drainage Water Quality Study**

The amount of tile drainage in northwestern Minnesota has been increasing. There has been interest among natural resource and water management professionals about the effect this trend will have upon water quality within the Red River Basin. Prior to this study, there were differing opinions about what water quality from tile drainage would be like, even though little data had been collected. The theories being tested with this study are:

- Tile drainage will produce lower suspended solids concentrations than surface drainage
- Tile drainage will produce lower total phosphorus concentrations than surface drainage
- Tile drainage will produce higher nitrate concentrations than surface drainage
- A tile drained field will have lower peak flows than a surface drained field

• A tile drained field will have a greater total volume of runoff over time than a surface drained field

For the study, total suspended solids, turbidity, total phosphorus, orthophosphorus, nitrate, total nitrogen, total Kjeldahl nitrogen, weather, dissolved oxygen (where possible), pH (where possible), conductivity (where possible), temperature, and flow data were collected. The data collected for this study up to this point supports these theories. There also are some exceptions and other questions that have been answered through this monitoring. First of all, monitoring of wild rice paddies during drawdown in late summer has shown that without <u>main line</u> tile and elimination of internal ditching, wild rice



paddy drainage has a very detrimental effect upon water quality in the Clearwater River. The main line tile drainage from wild rice paddies had all the benefits that were expected from tile drainage, plus, it had low nitrate levels.

A major recommendation of this study would be the complete conversion of wild rice paddies to main line tile drainage. There should also be further research into the effect that higher nitrate discharges may have upon our rivers (i.e. the amount of denitrification that can be expected in a river system. The net result of conversion to tile drainage from surface drainage appears to be less sediment and phosphorus loss due to water erosion, but increased total nitrogen loss due to excessive leaching of nitrates (even though surface drainage has higher concentrations of total Kjeldahl nitrogen - ammonia plus organic nitrogen).

After the second year of water quality and flow monitoring for this project, a preliminary final report and an informational brochure have been produced to summarize the results of the project. These are available on the RLWD website at <u>www.redlakewatershed.org/projects.html#Tile</u>. The deadline for the final report of the water quality study is January 31, 2008. A final report for the flow study is planned for late 2007.



Sediment bar in the Clearwater River at the outlet of a surface-drained wild rice paddy.

# **<u>Clearwater River Dissolved Oxygen and Fecal Coliform TMDL Study</u></u>**

The Minnesota Pollution Control Agency has contracted with the Red Lake Watershed District to study impaired water within the Clearwater River watershed. The MPCA has decided to give \$100,000 to the RLWD to conduct a TMDL study on some of the impaired reaches within the Clearwater River Watershed. As the "Third-Party" that will be managing the Clearwater Dissolved Oxygen and Fecal Coliform study, the RLWD will be responsible for monitoring/data collection, stakeholder/community outreach, modeling (part of the budget is allocated to the EERC for SWAT modeling), data evaluation, allocation, and the implementation plan. Work for the Clearwater River TMDL project began on November 1, 2006. The first meeting for this project was held December 1<sup>st</sup>, 2006. This was a public information meeting that had a good attendance, due in part to press releases. A Stakeholder Advisory Committee was assembled from the people who attended this meeting or expressed interest in attending future meetings. This group will meet twice each year. A Technical Advisory Group will meet more frequently to discuss details of the project such as monitoring and modeling strategies. The reaches that will be a part of this study are:

- 1. <u>Clearwater River</u>; Ruffy Brook to Lost River <u>Low Oxygen</u>
  - Possible delisting
- 2. <u>Clearwater River</u>; Ruffy Brook to Lost River <u>Fecal Coliform</u>
  - Possible delisting
- 3. Lost River; Silver Creek to Hill River Fecal Coliform
  - This reach may still be impaired.
- 4. <u>CD #57</u>; Unnamed ditch to Clearwater River <u>Low Oxygen</u>
  - This should be re-classified as a limited resource value waterway since it is an intermittent roadside ditch that was monitored as part of the Clearwater Nonpoint Study.
- 5. <u>Poplar River</u>; Spring Lake to Lost River <u>Low Oxygen</u>
  - This is actually impaired and the study will identify the causes.
- 6. <u>Silver Creek;</u> Headwaters to Anderson Lake <u>Fecal Coliform</u>
  - This is a newly listed reach so, unlike the above listings, the impairment is based upon current data.
- 7. Walker Brook Low Oxygen
  - Reclassification is still pending on this stream.

The main project tasks are:

- 1. Verify the impairments
  - Intensive monitoring, including continuous monitoring stations on reaches impaired by low dissolved oxygen
  - Data analysis for each reach
- 2. Assess the conditions in the watersheds
  - Report of water quality conditions
  - Land use
  - Sources of pollution
    - Ability to reduce pollution from each source
- 3. Define current loads (load = concentration x flow)
- 4. Estimate desired loads
- 5. Suggest strategies to achieve loads
  - SWAT modeling will be able to predict pollution reductions from implementation of riparian buffers and other best management practices.
  - Implementation plan for each of the watersheds.
  - Draft Total Maximum Daily Load Study for each reach that is determined to be impaired.

In August, some scouting was done along the reaches that are listed as impaired by dissolved oxygen. If a river is going to have low oxygen during the open water months, it will likely occur during the warm weather and low flow conditions we had in August. Low dissolved oxygen concentrations weren't found on the Clearwater River.

The Poplar River, however, did have some low dissolved oxygen levels in certain places. Dissolved oxygen concentrations in the river seemed to be affected by the possible stressors of low flow, presence of fens (oxygen is consumed from the water as it flows through organic soils), and wastewater treatment facilities (decreased downstream of the Fosston plant and increased downstream of the McIntosh plant). I also found a fish passage problem at the outlet of Spring Lake (where the Poplar River begins). The tailwater of the culvert is below the bottom lip of the culvert and there are a lot of fish trapped in the pool below. This is something that likely could be remedied using rock riffles to raise the elevation of the tailwater enough to allow fish passage or by redesigning the culvert.



Culvert that is blocking fish passage at the outlet of Spring Lake in Lengby.

# **Red Lake River Corridor Enhancement**

Since the RLRCE project did not receive bonding bill funding, this will be an important meeting in deciding the future of the project and how cities and agencies will work together to make accomplishments. The RLWD contribution to the project will consist of finding ways to inventory and assess erosion sites along the river. There are several methods for assessing erosion sites. After priority sites are identified, there also are methods for assessing channel stability to look at what may be the overall driving factor behind the streambank erosion. This channel stability assessment will be necessary to ensure that the implemented erosion control projects are successful.

A streambank erosion assessment has been proposed that will fulfill one of the Red Lake River Corridor Enhancement Project goals and will fit into the current Red River Turbidity TMDL work plan. The assessment will likely begin with areas near road crossings or other visible/accessible sites. It will likely be expanded upon to include application of the Pfankuch Channel Stability Assessment method to priority/representative sites. The planning of this assessment has sparked thought and discussions about this type of monitoring, possible



methods, and the participation of volunteers such as River Watch students and landowners. Some documentation of erosion sites may take place during the 2007 Red Lake River Rendezvous canoe/kayak expedition.

## **Thief River Watershed Sediment Investigation Clean Water Partnership Project**

The Red Lake watershed district has been awarded a \$96,500 grant by the MPCA for the Thief River Watershed Sediment Investigation. This Clean Water Partnership project was one of the 8 CWP proposals in the state that received funding this year. The total budget of the project is \$193,000.

The Thief River Watershed Sediment Investigation is intended to diagnose the impact of hydrologic modification and other anthropogenic and natural factors influencing water quality in the Thief River watershed. The watershed is heavily managed with more than 30 impoundments and many miles of channelized streams and man-made ditches. Some of the impoundments were built to address flooding concerns but most are operated primarily for wildlife habitat management. Because it is home to Agassiz National Wildlife Refuge and Thief Wildlife Management Area, the area is productive and important for waterfowl, shorebirds, and migrating birds. It is also productive and important farmland.

The Thief River flows to the Red Lake River, which is a drinking water source for the cities of Thief River (just downstream of the confluence), East Grand Forks, and Grand Forks. It most directly affects the Thief River Falls Reservoir and water supply.



Sediment plumes from the Thief River at its confluence with the Red Lake River in Thief River Falls

Monitoring by the Red Lake Watershed District led to designation of three reaches – the Moose River, the Thief River from Thief Lake to Agassiz Pool, and the Thief River from Agassiz Pool to the confluence with the Red Lake River as impaired for turbidity, oxygen and ammonia. Discharges from the larger pools have been shown, at times, to negatively influence water quality for the system (Red Lake Watershed District monitoring data). On the other hand, research conducted by Houston Engineering and the Pennington SWCD indicates that two-thirds of the sediment flowing into the Refuge's main pool is deposited there. Questions about the movement of sediment into and out of impoundments, contributions from agricultural ditches, current monitoring efforts (adequacy), channel erosion, etc. have made this intensive study necessary.

The impaired reaches in the Thief River Watershed are:

- 1. Thief River, Agassiz Pool to Red Lake River, 09020304-501, Low Oxygen
- 2. Thief River, Agassiz Pool to Red Lake River, 09020304-501, Turbidity
- 3. Thief River, Thief Lake to Agassiz Pool, 09020304-504, Ammonia
- 4. Moose River, Headwaters to Thief Lake, 09020304-505, Low Oxygen

A goal of this project will be the identification of the true sources of these water quality problems. Recommendations and priorities established by this study will guide future project implementation activities within the watershed.

## **Clearwater River Trout Stressor Study**

The Clearwater River is designated as a trout stream from the border of Beltrami and Clearwater Counties downstream to Clearwater Lake. The DNR stock this reach with rainbow and brown trout. Unfortunately, the trout production in the area has been disappointing. Of particular concern to the DNR are the lack of size, overwintering capability, and natural reproduction. Potential stressors in the watershed include excessive water temperatures (lack of shade), fish passage through culverts, effect of fens on dissolved oxygen levels, lack of habitat diversity, lack of cover, excess sediment, groundwater with low dissolved oxygen, and low dissolved oxygen coming from the headwaters of the Clearwater River.



The RLWD has purchased equipment for a Trout Stressor Study on the trout stream reach of the Clearwater River. The study was initiated by Steve Youngs, who owns land along the river and enjoys trout fishing. In addition to the RLWD, he has brought together Trout Unlimited, the Minnesota Department of Natural Resources, and Bemidji State University to work on the project. Tony Kennedy of the MNDNR and Youngs have planned and implemented the project through the present.



The equipment purchased by the RLWD will provide continuous records of dissolved oxygen, temperature, and water level at five monitoring sites. Eureka Midge<sup>TM</sup> loggers used in this study are programmed record hourly measurements of dissolved oxygen and temperature. The Onset HOBO level loggers will provide a continuous record of hourly water level measurements.

The DNR also plans to use radio telemetry to track fish movements and their responses to changes in dissolved oxygen and temperature. This technology will also allow the DNR to document mortalities.



# **Public Education**

Crookston High School will have an opportunity to participate in the International Water Institute's National Science Foundation Grant funded "Understanding the Science Connected to Technology" project. This project provides funding for stipend money for teachers and students, day camps, travel support, materials, and supplies. The schools learn how to use GIS software, create video documentaries that are aired on PBS, receive a college level River Watch credit, conduct video conferencing for training purposes, partake in online training courses, and attend day camps. Crookston already has much of the technology required for the project and there is a possibility of having a class dedicated to the project.

Wayne Goeken, Monitoring Coordinator – Red River Watershed Management Board, has put together a Northwest Minnesota Foundation grant application that will enhance River Watch programs at schools along the Red Lake River Corridor. Through this project, River Watch will partner with the activities of the Red Lake River Corridor Enhancement Project and other existing projects. It will also increase the involvement of River Watch programs in the assessment of waters for impairment, community education and watershed awareness, and the Adopt-A-River Program.

In addition to activities related to River Watch, the RLWD has continued to participate in other public education opportunities such as the Northwest Minnesota Water Festival (Warren and Fertile), Pennington County Outdoor Education Day and Envirothon. Presentations on water quality methods, monitoring, and results of special studies have been made to the Minnesota-Iowa Drainage Research forum, 2006 Ag Drainage Workshop (Moorhead), Red River Basin Water Quality Team, RLWD Board of Managers, RLWD Overall Advisory Committee, Northwest Regional Sustainable Development Partnership, Lincoln High School Natural Science class Thief River Falls, Annual Red River Basin Water Quality Monitoring Training, 2006 River Watch Forum, Crookston High School Board of Education, Clearwater Lake Area Association, and the Maple Lake Improvement District.

# **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.

# 2006 Spring Flood

During the end of March and first of April the watershed experienced a rapid thaw and runoff. At the time of the melt, there was 6 to 8 inches of snow pack on the ground over most of the district, with a water content equal to 2.10 to 2.6 inches. To make matters even worse, an additional 1.0 to 1.5 inches of precipitation occurred at the same time, which resulted in much flooding. Widespread damages occurred to roads, bridges, culverts, drainage systems, municipalities, and farmsteads.



Red River of the North - East Grand Forks



Hwy. 32 near Red Lake Falls - Red Lake River



East Grand Forks Floodwall



Riverside Avenue Floodwall - Crookston

Due to the 2006 flood, a Federal Disaster was declared including the following counties that have lands located within the RLWD: Marshall, Polk, Red Lake, Roseau. Damages occurred to two RLWD projects, Schirrick Dam, and RLWD Ditch #10, both are located in Red Lake County. Damage assessments, inspections and cost estimates were performed by representatives from FEMA and the RLWD. Repairs to both projects were completed in 2006.

• Schirick Dam (RLWD Project #25) - Black River, Red Lake County



Outlet Structure – full pool

Outlet Structure – tail water

#### • <u>RLWD Ditch #10 (Project #161), Red Lake County</u>

Erosion occurred at the top of the outlet structure, several side inlet pipes and a county road crossing pipe was washed out. The following work was completed: the retaining wall was anchored to the outlet structure and extended down 4 to 5 feet by 2 feet wide in front of the rock outlet shoot; ditch slopes were extended on both sides; geotextile fabric and rock rip-rap was placed in the front of the outlet shoot to a depth of 1.5 feet thick and upstream for 10 feet in the bottom of the ditch; all side inlet pipes had geotextile fabric and rock rip-rap installed on the outlet ends; county road crossing pipe was re-laid, graveled, and rock rip-rap installed on both end and riprap installed at the field entrance pipes. All disturbed areas were then reseeded back to grass.



Side inlet pipe erosion



Erosion on inlet end



Riprap at county road pipe repair



Rock chute repair

• <u>Parnell Impoundment (RLWD Project #81)</u>



Emergency Spillway



White caps on nearly full pool





Scott Mattson ring dike



Scott Boushee ring dike

# 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.

In 2006, the Wild Rice Growers requested recalibration of their pumping facilities. This work will be completed in 2007 by the RLWD Staff and help from the landowners. Due to the low flow conditions of the Clearwater River for a majority of the year, the wild rice growers performed fall flooding of the paddies throughout the winter season in preparation of a potential low spring runoff.

# **Stream Flow Monitoring (RLWD Project #21)**

Gary Lane, Loren Sanderson, James Blix, and Corey Hanson participated in a flow Measurement Training Seminar in Hawley that was conducted by Minnesota Pollution Control Agency staff. This was a refresher course on bridge board and wading techniques plus instruction on the use of AquaCalc computers. Also, we learned about new technology that makes readings more reliable (optical/magnetic and acoustic Doppler velocity meters).

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



## **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 empty sampling tube is weighed to establish a "base weight", and is then twisted down through the snowpack to the ground surface. Gradations on the side of the tube indicate the depth of the snowpack. The tube and snow core are weighed, and the snow "water content" 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 end of March and first of April the watershed experienced the fast thaw scenario described above. At the time of the melt, there was 6 to 8 inches of snowpack on the ground over most of the district, with a water content equal to 2.10 to 2.6 inches. To make matters even worse, an additional one to 1.5 inches of precipitation occurred at the same time, which resulted in much flooding.



Establish base weight of empty sampling tube



Obtaining snow depth and core sample



Establishing weight of snow sample to obtain water content

## **Maintenance of Drainage Systems**

Inspection of the Red Lake Watershed District's many miles of drainage ditches and other projects was again a very busy function for the staff of the Red Lake Watershed District. Annual inspections are done to determine what type of maintenance work that needs to be preformed, if any, to these ditch systems and projects to keep them in good working order. A helicopter was again utilized for the spraying of most of our ditches and other projects because of accessibility and cost factor. Following is a listing by county, project name and number, of the work that was completed to these ditches and/or projects in part or in whole in 2006.

## **Red Lake County**

• <u>RLWD Ditch 3 (RLWD Project #7)</u>

A total of 1.6 miles of cattail spraying was completed in all or part of Sections 28, 27, 34, 35, and a small amount of brush mowed in Section 28 all in River Township.

A complaint was received from a landowner adjacent to this ditch about the outlet portion, stating that he thought the ditch needed some repair work as it was causing flooding. The outlet end of this ditch had a very thick growth of cattails that had been sprayed two years in a row. The cattails in this portion of the ditch were now dead from the spraying but there wasn't enough water pressure to knock them down or break them off to allow water to flow unobstructed in the channel.

A survey was completed on this portion of the ditch and it was found that the ditch was still on grade, meaning that it was the





dead cattails that were causing the ditch to be functioning so poorly.

A track hoe with a 6 foot cutting head was brought in and 1 mile of cattails and any small trees and brush were mowed within the right of way of the ditch and should be fully functioning in Spring 2007.

• Ditch 7 (RLWD Project #20)

Cattail spraying was done in all or part of Sections 19, 20, and 21, Johnson Township, Polk County for a total of 2.5 miles. No spraying was needed in the Red Lake County portion of this ditch.

- <u>Equality/RLWD Ditch 1 Lateral C (RLWD Project #115)</u> Spraying was done for cattails in all or part of Section 1, Chester Township, Polk County, and Sections 25 and 36, Equality Township, Red Lake County, for a total of 1.9 miles.
- <u>RLWD Ditch #10 (RLWD Project #161)</u> Due to the 2006 spring flood event damage was done and maintenance was performed on the outlet structure, a road crossing culvert and several side inlet culverts. Landowners were assessed on the amount that exceeded the FEMA grant.

#### **Clearwater County**

• <u>Winsor/Hangaard (RLWD Project #113)</u>

Cattail spraying was completed in all or part of Sections 3, 8, 9, 10, and 15, Winsor Township, for a total of 6.5 miles. Some unauthorized digging was discovered at the outlet of this ditch and the repairs to the area will be made in the summer of 2007, at no cost to the ditch system.

Ingalls Brushing from Lengby, MN was hired, and armed with his track hoe with a 6 foot mowing head attached to the backhoe arm that will mow up to an 8 to 10 inch tree. 1.8 miles in Section 14 and 15, Winsor Township was cleared of willow brush and small poplar trees. Now with an aggressive brush spraying program on these areas of the ditch, the brush should be kept at bay for years to come.



Sharpening the blades

#### • J.D. 72, RLWD Project #41

Spraying of cattails was completed in Section 20 and 29 for a total of one mile in Winsor Township. Brushing was completed on 1.35 miles of parts of Branch 12, Branch 13, and Branch.15, Section 31, Hangaard Township and Section 6, Winsor Township. On this system, the right of way is only to the top of the slope. Most of the brush and trees were small enough so they could be mowed, but some trees where so large that they had to be cut with a chainsaw. Keeping the trees and brush cleaned from these systems should help them open earlier in the spring as the sun can now melt the snow out a little faster. More work will be done to this system in years to come. These areas will now be monitored, and sprayed as needed to control the regrowth of any trees or brush.





## • J.D. # 2 Branch B & C, RLWD Project #49

The Red Lake Watershed District received a petition for a portion of this system to be cleaned. A survey was conducted on the part in question and it was found that a cleaning was in order. Found where a lot of areas that had large sediment deposits that were plugging the ditch. These areas from the side inlet ditches from farm fields and old beaver dams and were restricting the flow of water and needed to be addressed.

A contractor was hired to clean 2.25 miles of the main ditch and install 9 side water inlet pipes for erosion control. Completion of the ditch cleaning, installation of the side inlet pipes, and most of the spoil banks were leveled late last fall, just before freeze up. The remainder of the spoil banks will be leveled in the spring 2007. The side slopes and the mandatory 16.5 foot buffer strip on both sides of the ditch will be seeded as soon as conditions allow in the spring of 2007.



Brushing was completed on both sides of part of Branch B (approximately 2 miles) in Sections 31, Greenwood Township and Sections 36, Winsor Township. These areas will now be sprayed as needed to control any re-growth of trees and brush.

This ditch system has had an on going problem with beaver. The beaver have been trapped out and the dams removed a number of times, only to have new ones show up in a month or two. Bounty was paid for on the removal of 11 beaver from this ditch system throughout the course of the spring, summer, and fall of 2006.

- J.D. # 2 Branch A and Branch 1 of A (RLWD Project #48) Bounty was paid for on the removal of 4 beaver from this ditch system in the fall of 2006. Two beaver dams were also removed from this ditch system by backhoe.
- <u>Pine Lake Dam (RLWD Project #35)</u> Bounty was paid for on the removal of 4 beaver from this project in the fall of 2006. Two beaver dams where removed from this project by hand.

## **Polk County**

- <u>Polk Co. Ditch Improvement (RLWD Project #119)</u> Cattail spraying was done in all or part of Section 25, Rome Township, Sections 30 and 31, Andover Township; Sections 1 and 12, Vineland Township; and Sections 5, 6, 7, 8, and 9, Hammond Township, for a total of 8.7 miles.
- <u>Polk County Ditch 107 (RLWD Project #53)</u> Cattail spraying was done in all or part of Sections 11 and 14, Bygland Township, for a total of 1.9 miles.

- <u>Polk County Ditch 63 (RLWD Project #134)</u> Cattail spraying was done in all or part of Sections 3 and 9, Andover Township, for a total of 1.5 miles.
- Jensen Petition (RLWD Project #106) Cattail spraying was done in all or part of Sections 29 and 32, Tilden Township and Section 1, Onstad Township, for a total of 3.3 miles.
- <u>RLWD Ditch # 8 (RLWD Project #36)</u> Cattail spraying was done in all or part of Sections 22 and 23, Johnson Township, for a total of 1.5 miles.
- Lost River (RLWD Project #4) A sheet pile weir and rock rip-rap shoot that is part of the Lost River Project and is located at the end of RLWD Ditch 1, Lateral A, has had some washing and erosion problems in the past. With the dry conditions the summer of 2006 it was the opportune time to fix this problem before it got any worst. A local contractor was hired to remove and salvage the old rock rip-rap and reshape the area and rebuild the area from the weir to the river, with new geotextile fabric, and rock rip-rap, and seed the disturbed area.



#### **Pennington County**

• Challenger Ditch (RLWD Project #122)

Because of the location of this ditch, Pennington County Highway Department was hired to spray this ditch by ground. Approximately .32 miles of ditch was sprayed for cattails and small brush.

#### **Beltrami County**

## • <u>RLWD Ditch #9 (RLWD Project #39)</u>

This ditch is only 1 mile long and is located in Section 35, Benville Township. A local landowner was hired to mow the slopes for weeds and brush.

• Moose River Impoundment (RLWD Project #13)

Approximately 4 miles of the north inlet ditch on the Moose River Impoundment was brushed. The two pictures below were taken standing in the same location at the center of the Morehouse Trail, over the top of a 30 inch corrugated metal pipe, and looking south. The bottom of the ditch and the west slope was all that could be reached without causing severe damage to the rest of the ditch system due to soft ground. These areas will be watched and sprayed to control any re-growth.



Before

After

With onset of spring and the low water levels in area swamps, lakes, rivers, and creeks, and a high beaver population they were on the move looking for new places to call home. This large rodent can and have caused a lot of problems in our impoundments and ditches systems in the past years. If left unchecked, beaver will build dams in culverts and ditches completely stopping the flow of water and causing crop damage and flooding and washouts of roads. They have even burrowed into dikes that have caused leaks, breaching and failure of the dike itself, making for costly repairs. Bounty was paid for the removal of 21 beaver from this impoundment through the course of the year.

#### **Marshall County**

#### • State Ditch #83 (RLWD Project #14)

At the end of June, Watershed staff canoed State Ditch 83 (Thief River) and located areas that should have maintenance work completed. There were 13 sites identified, consisting of both sloughed areas and large sediment deposits.



With the nice weather, dry conditions and low water levels, it was the opportune time to access these areas and perform maintenance work. Landowners were contacted and worked with to obtain access to and from these work areas with heavy equipment. Verbal easements were obtained, at no cost to the ditch system, to place the spoil material and to bury trees on their land. Only 10 sites were completed. The other 3 sites were not completed due to lack of landowner cooperation. A contractor was hired that had a backhoe with an extra long reach so most of the work could be done with one pass which helps to reduce costs. Work would consist of removing the sloughed areas that had now fallen into the river channel, reshaping the ditch bank back to solid clay, slope the banks to about a 2 to 1 side slope, and blend this new area into the old ditch banks both up and downstream.

The areas that had large sediment deposits were cut back to what appeared to be the old river bank. The spoil dirt from these areas were cast behind the old original spoil banks and sloped away from the ditch and then drainage was provided to an outlet to help stop any water erosion or future sloughing. Spoil slopes were left flat enough so they could be farmed, if so desired in the future.

The side slopes and a 16.5 foot buffer strip of grass was then seeded and will remain as a permanent part of the ditch system with all other areas seeded back to grass or CRP.



Before

After

The above pictures are located just downstream of were Marshall County Ditch 20 enters State Ditch 83. The first picture was taken from the north side looking south and is showing a very large sand bar on the north side (bottom of photo) of the ditch and a very large sloughed area on the south side (middle of photo). The picture to the right is the same area after it was cleaned up and re-sloped.

More areas will be targeted in other reaches of the ditch as funds become available, weather conditions permit and landowner cooperation can be obtained.

One beaver dam was removed from this ditch system two times, once by hand and once by backhoe at the request of a local landowner.

With the nice weather conditions and very little snow and low water made for good ice conditions and travel in the month of December, the Sentence to serve program was again utilized. Cutting was done on any trees that where leaning into or had fallen into the ditch and any snags or log jams that may have occurred within the channel over the past year. The cutting



was started at the confluence of State Ditch 83 and the Thief River in Section 34, Excel Township and continued upstream and ended at County Road 7 (Agassiz Bridge) located in Section 32, East Valley Township.

# Land Added to Ditch System

#### **Clearwater County**

• Winsor / Hangaard (RLWD Project #113)

At the February 9<sup>th</sup>, 2006 Board meeting there was a hearing held on a petition that had been received from the Red Lake Band of Chippewa Indians for the addition of land to one of our ditch systems located in Clearwater County. This petition was for the addiction of 60 acres of land to be added to the Winsor-Hangaard Ditch benefited area and drainage area, also known as Project 113. It was the consensus of the Board to except this petition, establish a benefited cost per acre, and notify the public and Clearwater County of the Boards decision.

# Legal Drainage Systems under jurisdiction of Red Lake Watershed District

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	Pennington, 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 #2B	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
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
Kramer Petition	Polk	1.1
Krostue Petition	Polk	1.6
Jensen Petition	Polk	5.5
Kenneth Johnson Petition	Polk	2.75
Scott Baatz Petition	Polk	<u>1.5</u>
-4-1 Miles of Dital as		27(12

The Red Lake Watershed District at present has jurisdiction of approximately 276 miles of legal drainage systems throughout the Watershed. The list of all the systems is shown below.

#### **Total Miles of Ditches**

276.13

## **Boundary Change**

In October of 2005 the Red Lake Watershed District received a petition from Clearwater County for the removal of lands located in Copley, Shevlin, and Moose Creek Townships. After several field observations from RLWD staff, it was determined that there were various lands in this area that indeed did flow into the Mississippi River watershed.

On March 22, 2006, the Minnesota Board of Water and Soils Resources issued its Findings of Fact and Order. The Findings state that a petition had been filed jointly by the Clearwater County Board of Commissioners and the Red Lake Watershed District on December 1, 2005; the proposed territory to be removed totals 3,637.5 acres of land in Clearwater County; the petitioned area has not received and will not receive any benefits from the operation of the district; the watershed district can perform the functions for which it was established without the inclusion of the Petitioned Area. The Findings further state that Legal Notice of Filing was published in the Bemidji Pioneer on January 22, 2006, the Leader Record on January 25, 2006, Farmers Independent on January 25, 2006, the Thief River Falls Times on January 25, 2006, the Thirteen Towns on January 24, 2006, and the Oklee Herald on January 26, 2006, and on January 23, 2006 and was also sent to several addresses including the affected county board of commissioners, county auditors, Soil and Water Conservation District, Watershed District, and the Department of Natural Resources Division of Waters. No requests for hearing were received during the specified period of time and no hearing was held. The lands selected for exclusion are on file at the RLWD office upon request.

BWSR approved the exclusion of the 3,637.5 acres of the noted preceding land from the Red Lake Watershed District.



The activities of the District are expected to continue in 2007 much as they did in 2006. It is expected that construction will be completed on Euclid East Impoundment and Brandt Impoundment in early summer of 2007. The District will also continue with the ring dike agreements, ditch maintenance and complete the construction for the petition to improve Polk County Ditch #40 (RLWD Ditch #11).

In September of 2006, a public hearing was held concerning the proposed 2007 General Fund budget. Notice of the hearing and the proposed budget was published as required by state statutes. The General Fund budget was adopted and the levies were set for 2007. The General Fund levy was set at \$178,600.



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, 2006. 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 \$7,375,534 (Net assets). Of this amount, \$2,050,255 (unrestricted net assets) may be used to meet the government's ongoing designations and fiscal policies.
- The Districts total net assets increased by \$4,708,140.
- As of the close of the current fiscal year, Red Lake Watershed District's governmental funds reported combined ending fund balance was \$2,050,255. 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 \$686,996 of which all was unrestricted.
- The District had debt outstanding of \$108,153 at the end of the current fiscal year.

#### **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 expenses 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.

**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. A budgetary comparison statement has been provided for this fund.

The basic government fund financial statements can be found on pages 11 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 indictor of a government's financial position. In the case of the Red Lake Watershed District, assets exceeded liabilities by \$7,375,534 by the close of the most recent fiscal year, which is an increase of \$4,708,140 over the prior year; more than a 175% increase over the prior year.

A portion of Red Lake Watershed District's net assets (\$5,325,2779 or 72%) 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'S NET ASSETS - MODIFIED CASH BASIS**

	2006			2005			
ASSETS Total current assets	\$	2,050,255	\$	1,971,712			
Net capital assets		5,433,432		834,736			
TOTAL ASSETS	\$	7,483,687	\$	2,806,448			
LIABILITIES Note payable	\$	108,153	\$	139,054			
NET ASSETS	\$	7,375,534	\$	2,667,394			

At the end of 2006 and 2005, 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 2005 to the fiscal year 2006 in the amount of \$4,708,140. The details of the increase are as follows:

	2006	2005		
REVENUES				
Special assessments and charges				
for services	\$ 507,217	\$	136,121	
Operating grants	4,651,768		525,591	
Capital grants	6,011		12,512	
General revenues:				
Property taxes	1,323,068		1,227,992	
Other intergovernmental	180,370		144,088	
Interest	106,150		64,569	
TOTAL REVENUES	 6,774,584		2,110,873	
EXPENSES				
General and administration				
construction	62,261		102,667	
Ongoing projects and studies	535,003		202,614	
Capital projects	800,114		931,108	
Payments to RRWMB	 669,066		619,882	
TOTAL EXPENSES	 2,066,444		1,856,271	
CHANGE IN NET ASSETS	\$ 4,708,140	\$	254,602	

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, 2006:



#### 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 \$2,050,255. The total fund balance can be attributed to 1) General Fund, \$686,996; 2) Capital Projects Fund, \$1,671,932; as well as the Special Revenue Fund with deficit fund balance of \$308,673.

The general fund increased by \$462,860 in 2006, which was due to a slightly higher net increases in general revenues over expenses than was originally expected in the budget and transfers in for the to cover construction costs of office building.

#### **Budgetary Highlights**

**General Fund.** The General Fund exceeded budgeted revenues and had expenditures below the budgeted amounts for the year ended December 31, 2006.

#### **Capital Asset and Debt Administration**

**Capital assets.** Red Lake Watershed District's investment in capital assets for its governmental activities as of December 31, 2006, amounts to \$5,433,432 (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.

<b>Red Lake Watershed District's Capital Asset</b>	s
(Net of Depreciation)	

	2006				2005		
		Cost		Accumulated Depreciation	Cost Less Accumulated Depreciation	( Ac De	Cost Less comulated
Building and improvements Engineering equipment	\$	129,560 319,885	\$	73,306 191,904	\$ 56,254 127,981	\$	61,544 101,888
Office equipment Construction in progress		45,371 5,240,552		36,726	 8,645 5,240,552		10,467 660,837
Total	\$	5,735,368	\$	301,936	\$ 5,433,432	\$	834,736

**Long-term debt.** In December 31, 2006 the District had \$108,153 in long-term debt arising from modified cash basis transactions compared to \$139,054 at December 31, 2005.

**Other Items of Interest.** In the fiscal years 2006 and 2007 the Red Lake Watershed District had and will continue to have considerable construction costs incurred for the implementation of a Flood Damage Reduction Project commonly referred to as Brandt and Euclid East Impoundments. This project is being funded by a cost share agreement between the State of Minnesota, Red River Watershed Management Board, and the Red Lake Watershed District. The estimated cost of this project is \$5.7 million with a cost share of 50% from the State of Minnesota, 37.5% cost share from the Red River Watershed Management Board and 12.5% from the Red Lake Watershed District. The District will also continue with the construction to the Improvements of Polk County Ditch #11 which will be financed through special revenue funding.

The Red Lake Watershed District's new office facility is on schedule to be completed in early summer of 2007. The bid price of the construction was \$590,000 with the costs to be borne from the Red Lake Watershed District General Fund Budget. The new physical address of the Red Lake Watershed District, which may occur in early summer of 2007, will be 1000 Pennington Avenue South, Thief River Falls, MN 56701.

#### <u>RED LAKE WATERSHED DISTRICT</u> <u>THIEF RIVER FALLS, MINNESOTA</u> <u>STATEMENT OF NET ASSETS - MODIFIED CASH BASIS</u> <u>DECEMBER 31, 2006</u>

ASSETS	
Current Assets:	
Petty cash	\$ 100
Pooled cash and investments	2,050,155
Total Current Assets	2,050,255
Capital Assets:	
Property and equipment	5,735,368
Less: accumulated depreciation	(301,936)
Net Capital Assets	5,433,432
TOTAL ASSETS	7,483,687
LIABILITIES Current portion of loan payable	30,901
State loan payable, net of current portion	77,252
TOTAL LIABILITIES	108,153
NET ASSETS	
Investment in capital assets, net of related debt	5,325,279
Unrestricted	2,050,255
TOTAL NET ASSETS	\$ 7,375,534

See accompanying notes to the basic financial statements.
		FOF	UT S										Net (	(Expenses)
													Rand	evenues I Changes
			щ	Sxpenses				F	rogr	am Revenues			in	Vet Assets
								Special						
			4	Allocated			AS	ssessments	0	)perating	Capital	_		
	Ċ	-	S	alaries &		Tatal	an	d Charges	G c	trants and	Grants ar	pu	Q0V A	ernmental
CION/PROGRAMS	17	Icri	1	Actifican		T DIAL	TO	1 201 1 1002	5	SHOTINOTINT	COLLING	0112	\$	CULY 105
ral and administrative construction	ی ج	542,420)	69	458,117	64	(184,303)	69	388	69	,	69	,	69	(183,915)
ing projects and studies	2	196,809)		(60,958)		(557,767)		254,441		26,690	4,	,955		(271,681)
al projects	0	258,149)		(397,159)		(655,308)		252,388		4,625,078	1,	,056		4,223,214
ents to RRWMB	0	569,066)		1		(669,066)		,		,		1		(669,066)
ated interest		(46,995)		"		(46,995)		3		1		'		(46,995)
al Governmental Activities	\$ (2,	113,439)	64	1	S	(2,113,439)	5	507,217	\$	4,651,768	\$ 6,	011		3,051,557
			Gen	leral Revenues	Ð									
			(- L	ax levies	104	and wood about	4 4 4	and an an and an	10000					1,323,068
			Ψ	State MV and Ilocated intere	l dis	parity reduction	ion c	specture progr	(SIIIIIB)	_				180,370 153,145
				Total Ganaral	Der	ottuot								1 656 592
				I DIAL COLORA	D'L	venue								1,020,000
			Cha	nges in Net A.	ssets									4,708,140
			Net	Assets - Begin	nint	60								2,667,394
			Net	Assets - Endir	SI SI								\$	7,375,534

RED LAKE WATERSHED DISTRICT THIEF RIVER FALLS, MINNESOTA STATEMENT OF ACTIVITIES - MODIFIED CASH BASIS FOR THE YEAR ENDED DECEMBER 31, 2006

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### RED LAKE WATERSHED DISTRICT THIEF RIVER FALLS, MINNESOTA BALANCE SHEET - MODIFIED CASH BASIS GOVERNMENTAL FUNDS DECEMBER 31, 2006

		General	Special Revenue Fund		Capital Project Fund	Total
ASSETS						 
Petty cash	\$	100	\$ -	\$	-	\$ 100
Pooled cash and investments		686,896	-		1,363,259	2,050,155
Due from other funds		-	 		308,673	 308,673
TOTAL ASSETS	\$	686,996	\$ -	\$	1,671,932	\$ 2,358,928
LIABILITIES						
Due to other funds	\$	-	\$ 308,673	\$	-	\$ 308,673
TOTAL LIABILITIES	<b>L</b>		 308,673		-	 308,673
FUND BALANCE						
Unrestricted		686,996	 (308,673)	-	1,671,932	 2,050,255
TOTAL LIABILITIES AND FUND BALANCE	\$	686,996	\$ -	\$	1,671,932	\$ 2,358,928

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

Total fund balance per Balance Sheet, from above	ve	\$ 2,050,255
When capital assets (land, building, equipment a in governmental activities are purchased or cons reported as expenditures in governmental funds. includes those capital assets among the assets of	and infrastructure) that are to be used structed, the costs of those assets are However, the statements of net assets f the District as a whole.	
	Cost of capital assets Accumulated depreciation	5,735,368 (301,936)
Some liabilities, including long-term notes payal period and therefore are not reported in the fund	ble, are not due and payable in the current s.	 (108,153)
Total Net Assets		\$ 7,375,534

See accompanying notes to the basic financial statements.

#### RED LAKE WATERSHED DISTRICT THIEF RIVER FALLS, MINNESOTA STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCES MODIFIED CASH BASIS - GOVERNMENTAL FUNDS FOR THE YEAR ENDED DECEMBER 31, 2006

	General	R	Special evenue Fund		Capital Project Fund		Total
REVENUES	 					-	
Tax levies	\$ 163,500	\$	-	\$	1,159,568	\$	1,323,068
Intergovernmental							
Federal flow through State	-		-		35,176		35,176
State	-		4,955		4,631,848		4,636,803
Local	-		26,690		139,480		166,170
Special assessments	-		253,091		-		253,091
Miscellaneous	388		1,350		252,388		254,126
Allocated interest	 19,771		11,835		121,539		153,145
Total Revenues	 183,659		297,921		6,339,999		6,821,579
EXPENDITURES							
General and administrative construction	203,284		-		-		203,284
Ongoing projects and studies	-		557,767		-		557,767
Capital projects	-		-		5,235,023		5,235,023
Payments to RRWMB	-		-		669,066		669,066
Loan principal payments	-		-		30,901		30,901
Allocated interest	 7,703		9,621		29,671	-	46,995
Total Expenditures	 210,987		567,388		5,964,661		6,743,036
Revenues Over (Under) Expenditures	(27,328)		(269,467)		375,338		78,543
OTHER FINANCING SOURCES (USES)							
Transfers in	851,188		_		1.221.786		2.072.974
Transfers out	(361,000)		-		(1,711,974)		(2,072,974)
Net Other Sources (Uses)	 490,188		-		(490,188)		
Revenues & Other Sources Over							
(Under) Expenditures & Other Uses	462,860		(269,467)		(114,850)		78,543
Fund Balance (Deficit), January 1	224,136		(39,206)	No. of	1,786,782	Red age of the	1,971,712
Fund Balance (Deficit), December 31	\$ 686,996	\$	(308,673)	\$	1,671,932	\$	2,050,255

# RED LAKE WATERSHED DISTRICT THIEF RIVER FALLS, MINNESOTA RECONCILIATION OF CHANGE IN FUND BALANCES OF GOVERNMENTAL FUNDS TO THE STATEMENT OF ACTIVITIES

Net Change in Fund Balances - Total Governmental Funds	\$ 78,543
Governmental funds report capital outlay as expenditures, while governmental activities	
report depreciation expense allocating those expenditures over the life of the asset:	
Capital additions	4,639,731
Depreciation expense	(41,035)
Repayment of debt principal is an expenditure in the governmental funds, but the repayment	
reduces the long-term note payable in the Statement of Activities	 30,901
Change in Net Assets - Governmental Activities	\$ 4,708,140

		SCHEDULE OF	RED LAKE V THIEF RIVE CHANGES IN FU	VATERSHED L R FALLS, MIN ND BALANC	DISTRICT NESOTA ES - MODIFIEI (BER 31, 2006	CASH BASIS					
			Ĩ				1			1	
			Revenu	les			Expenditu	res		Transfers	
	Fund Balance (Deficit) January 1	Assessments and Other Charges for Services	Operating / Capital Grants and Contributions	Allocated Interest Earned	Taxes	Direct	Allocated Interest Charged	s o s	llary & ⁄erhead location	In (Out)	Fund Balance (Deficit) December 31
GENERAL FUND	\$ 224,136	\$ 388	S	S 19,771	163,500	\$ 661,401	s 7,7	03 S	(458,117) \$	490,188	\$ 686,996
SPECIAL REVENUE FUND JOBS:											
Branch A & I, J.D. #2 Burnham Create channel	5,930	101,1		279		160			252		6,898
Clearwater County ditch #1	918	-		40		-			-		958
Clearwater County joint ditch #1	(198)			•	'			6			(207)
Clearwater County joint ditch #4	1,109	1	ſ	48				,	65	•	1,093
Clearwater County joint ditch #5	1,354			59	,			,		•	1,413
Clearwater River project	23,916			1,046				,			24,962
Clearwater/Wild Rice River	11,349	1,958	,	502		371		,	7,196		6,242
Clifford Arveson ditch Equality RLWD ditch #1. lat C	2.382	1.262	.,	112		463			ç0		3 271
J.D. ditch #72	4,203	1,857	,		,	7,025		13	1,929		(2,907)
Jensen petition	6,221		'	266	,	815			131		5,541
K. Johnson petition	3,492	448	'	202	r	(613)	-		131		4,924
Krostue pention	6/6 909 PC	C10,1		1 031		2 469			109		1,058
Main J.D. #2 and branch B & C	(1.736)	1.221		-		16,301	-	- 16	4,164		(121.12)
Main J.D. 2C. ECK								2	129		(131)
Pine Lake maintenance	(3,294)	6,494		,	·	524		75	2,119	'	482
Polk Cnty ditch #19 petition	(11,088)		,		'	(450)	4	50	(721)		(10,367)
Polk Cuty ditch #63 improvement	11111	11 000		510		2 505	-	(1)	340	•	7,508
Polk Cnty ditch #'s 104, 61, 47, 94	7,221	331	,	308	,	2,175			282		5.403
Red Lake River project	58,427		,	2,554	,			Ţ	,		60,981
RLWD ditch #1	18,770		, ,	817	'	,		,	011	•	19,477
RLWD ditch #3	17,134		,	697		1,588		i.	942	,	15,301
RLWD ditch #7	14,802	1,052		189	,	1,447			308		14,780
RLWD Ditch #9	3,486	329		165	'	125		• •		,	3,855
PI WD Ditch #10	(10 823)	260,092	21,28	,	r 1	202 077	3,4	52	72 410		(14,486)
Scott Baatz petition	3,409	298		154		-	2	2 '	601		3 757
State ditch #83	54,057	126	,	1,509	,	36,093			10,735		8,864
Thief River Falls drainage ditch	1,837	36		78		061		,	44	,	1,717
Tynsid Township erosion	(9.361)			•	,	474	4	44	721	,	(11,000)
v hison riangaau Cical water County petition	(8,860)	13,900		8		216.5		,	2.784	,	(3.653)
2006 FEMA - RLWD DT. 10			4,387			19,888	2	12	2,747		(18,460)
Total Special Revenue	(39,206)	254,441	31,645	11,835		496,809	9,6	21	60,958		(308,673)

# See accompanying acres to the basic financial statements.

RED LAKE WATERSHED DISTRICT THIEF RIVER FALLS, MINNESOTA SCHEDULE OF CHANGES IN FUND BA	LANCES - MODIFIED	CASH BASIS						
			Revenu	es			Expenditures	
	Fund	Assessments	Operating /					
	Balance	and Other	Capital Grants	Allocated			Allocated	All
	(Deficit)	Charges for	and	Interest			Interest	Sa
	January 1	Services	Contributions	Earned	Taxes	Direct	Charged	ð
CAPITAL PROJECT FUND JOBS:								
Administrative construction	2,035,115		178,564	102,992	1,159,568	669,066	16,477	
Badger Creek / Poplar River	6,446			280	,		•	

			Revenue	ss			Expenditures		Transfers	
	Fund Balance	Assessments and Other	Operating / Capital Grants	Allocated			Allocated	Allocated		Fund Balance
	(Deficit) January 1	Charges for Services	and Contributions	Interest Earned	Taxes	Direct	Interest Charged	Salary & Overhead	In (Out)	(Deficit) December 31
CAPITAL PROJECT FUND JOBS:										
Administrative construction	2,035,115		178,564	102,992	1,159,568	669,066	16,477	• •	(1,222,015)	1,568,681
Badger Creek / Poplar River	6,446			280	,		•	45		6,681
Baird - Beyer Dam							4	135	139	
Beaver Damage Control Project	'	'	,	,	,	,	21	487	508	
Bench Marks					,		215	7,939	8,154	
Black River project			,	•	•	2,931	105	1,041	4,077	
Burnham Creek			'	,		'	9	221	227	
BWSR flood storage pilot project			'	,	•	12,600	107	783	13,490	
Cameron Lake water quality monitoring				ï		7	3	179	189	
Cemetary Site - St. Hilliare							1	61	62	
Clearwater conservation						4,612	202		4,814	
Clearwater FDR PJT						12,568	67	135	12,800	
Clearwater nonpoint						30,901	506		31,407	
Clearwater public education						792	400	15,712	16,904	
Clear water River - habitat		,				'	126	3,262	3,388	
Clearwater River TMDLS		,	,		,	4,907	215	712	5,834	
Clearwater River DISOXY TMDL		·		,	•		1	169		(110)
Clearwater stream water			'	•	,	,	38	186	610'1	
Culvert Sizing				•	•	'	106	3,706	3,812	•
Elm Lake	,		,	,	,	3,757	156	4,878	8,791	
Emergency maintenance	88,825			3,883		'				92,708
Erosion control PJTS			•	,	,	17,500	112	2,925	20,537	
Farm to stream water quality	(7,966)	,	8,750	,	ĩ	3,155	326	9,668	14,193	1,828
Flood control studies		×	,	ł	•		01	616	626	
G.I.S.			,	'	,	'	138	7,602	7,740	
Glacial ridge	16,311		90,500	1,442	,	109,672	,	561	10,000	8,020
Greenwood Township 27			,	•	,	,	2	94	96	
Grand Marais - Euclid East	(503,176)	3,984	2,022,942	'	,	1,799,562	,	52,969	294,463	(34,318)
Grand Marais - Challenge			50,000	794	,	20,360	•	7,685		22,749
Grand Marais - Brandt	(41,796)	950	2,381,169		'	2,637,142	•	45,099	340,504	(1,414)
Grand Marais Creek Subwatershed	7,686		(8,390)	,	,	8,348	627	10,561	11.700	(8,540)
Hydrologic analysis		,	,			,	169	5,417	5,586	
Lost River impoundment				•		'	14	465	479	
Louisville/Parnell project			ĩ	x		41,988	012	3,468	46,166	•
Maintenance dams			1,056	,	•	73,429	1,788	7,515	81,676	
Maple Lake / JD 73 water quality	•	,		r	,	22	44	1,771	1,837	
Maple Lake project	252,547	242,840	'	11,858	,	16,402	,	654	(490,189)	
Moose River project	•	,	,	,	,	14,168	410	5,610	20,188	
North Parnell storage site		'	,	,	,	,	1	28	29	
Parnell impoundment		2,400		x		4,871	111	2,860	5,442	

OF CHANGES IN FUND BALANCES - MODIFIED CASH BASIS

			Reven	es			Expenditures		Transfers	
	Fund	Assessments	Operating /							Fund
	Balance	and Other	Capital Grants	Allocated			Allocated	Allocated		Balance
	(Deficit)	Charges for	and	Interest			Interest	Salary &	In	(Deficit)
	January 1	Services	Contributions	Earned	Taxes	Direct	Charged	Overhead	(Out)	December 31
CAPITAL PROJECT FUND JOBS (continued)										
Permits			,	•	,	3,518	1,165	50,109	54,792	,
Red Lake Res./Good Lake		•	'	,		•	49	1,843	1,892	
Red River buffer strip	•		'	•	'	289	35	1,259	1,583	,
Red River Corridor		20	'	·		123	28	1,157	1,288	,
Rocksbury section 20 erosion	,		·	ľ	,	,	-	61	62	,
Ring dike program -										
General			293	1		ſ	•	1,478	988	(161)
Amundson	×	,	·	T	x		•	111	70	(41)
Cwikla	(17,482)	2,194	10,374	,		6,519		3,258	13,068	(1.623)
R. Stengl	(663)		,	•		,		•	375	(288)
Schauer	,	•	110	ľ	'	,	,	618	276	(232)
Swanson	×	'	,	'	,			398	249	(149)
RRWMB protocol grant		×	,	1	,	308	611	6,469	6,895	
Stream gauging		,	'	,		593	748	23.270	24,611	,
TR WS Sediment Inves	•			•		•	~	338	'	(339)
WS Ditch System Inventory & Mapping	3,752	•	12,500	,		5,835	016	36,074	25,000	(1,627)
Water Quality		ľ		•		27,625	1,669	54,199	83,493	
Wetland Banking	•		•	•	,	160	4	56	220	
2006 FEMA - Shirrick			20,038	289	•	'	,	124	,	20,203
10 year overail plan	(52,817)		38,598	•	•	4,101	1,634	10,323	30,277	
Total Capital Projects	1,786,782	252,388	4,806,504	121,539	1,159,568	5,537,831	29,671	397,159	(490,188)	1,671,932
Total - All Funds	\$ 1 71,712	\$ 507,217	\$ 4,838,149	\$ 153,145	\$ 1,323,068	\$ 6,696,041	\$ 46,995		-	\$ 2,050,255

## RED LAKE WATERSHED DISTRICT THIEF RIVER FALLS, MINNESOTA SCHEDULE OF DIRECT EXPENDITURES BY CLASSIFICATION - MODIFIED CASH BASIS GOVERNMENTAL FUNDS FOR THE YEAR ENDED DECEMBER 31, 2006 AND 2005

	2006		2005
DIRECT EXPENDITURES:			
Salaries -			
Inspection	\$ 37,267	\$	20,811
Survey - preliminary	6,302		8,477
Survey - construction	4,611		4,014
Reducing field notes	53		245
Drafting	2,552		1,516
Engineering	28,127		34,253
Project administration	163,427		148,521
Field work -water programs	14,886		14,160
Other	34,962		18,271
Compensated absences	24,400		22,455
Payroll taxes and benefits	80,708		75,829
Manager's expenses	17,291		11,050
Travel, mileage, meetings and per diems	2,891		2,456
Audit	5,980		5,855
Legal	32,160		18,121
Appraisal and viewers	6,186		2,260
Other professional fees	50,004		59,023
Office supplies	12,458		12,896
Office equipment	1,884		-
Dues & subscriptions	2,221		2,250
Insurance and bonds	24,020		24,064
Rent	1,210		1.210
Repairs and maintenance	4,690		10,577
Utilities	6,135		6.275
Telephone	9,878		9,132
Advertising and publications	25.011		5.339
Truck expense	14,433		14.392
Red River Watershed Management Board	669,066		619,882
Cost share assistance	4.612		4.612
L and acquisition and easements	709.379		486,122
Construction	4,116,221		379.031
Engineering costs & fees	4 492		5 131
Engineering fees	393,651		155,380
Engineering coupment	44,300		52,021
Glacial Ridge	109 672		306,960
Other			6.652
Loan payments	 30,901		30,901
Total Expenditures	\$ 6,696,041	\$	2,580,144
	and the second se	Property in case of	the second se