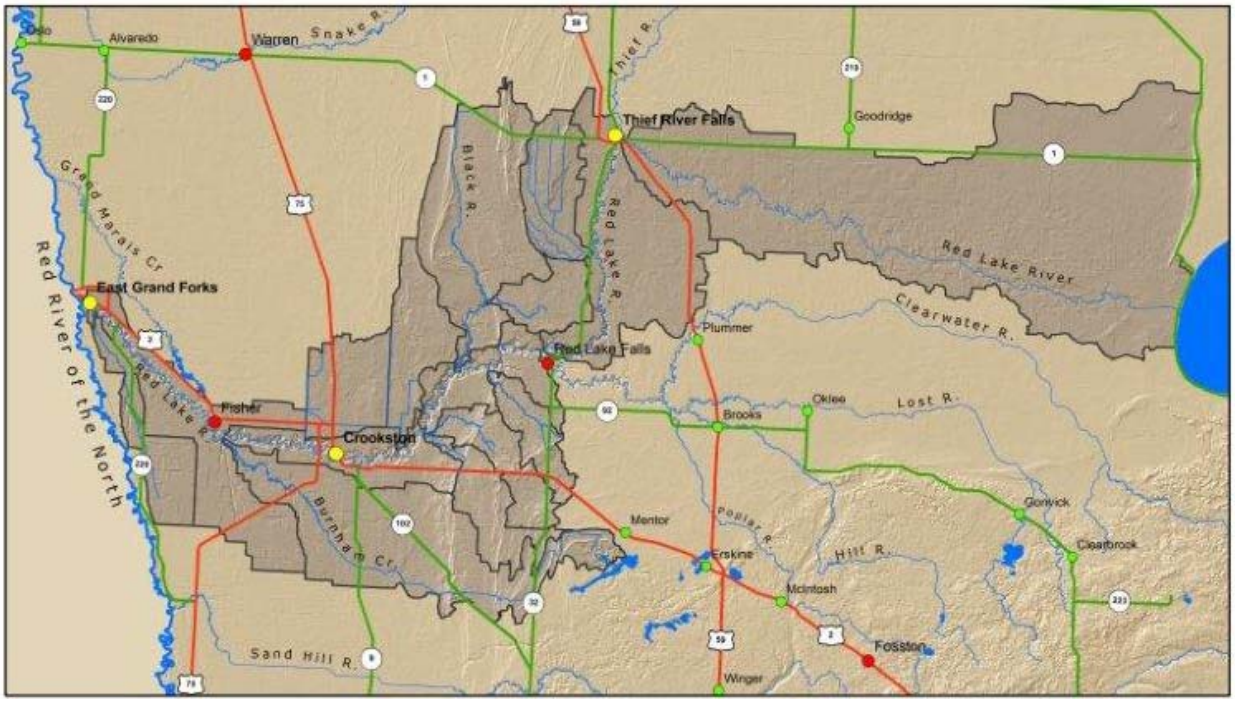
Red Lake River Watershed Assessment Project
(Watershed Restoration and Protection - WRAP)



A work plan for Phase II of this project was developed in February 2013. Phase II is planned to begin on July 1, 2013. The revision to the Phase I budget that added $9,900 to the $150,000 budget was completed in February, but won't become official until sometime in March.

- Task 10 – Civic Engagement
  - Two public stakeholders' update meetings will be held in April. We will be having two public information meetings for this project because of the length of this watershed. A meeting will be held in Grand Forks for people that live and/or work in the lower part of the Red Lake River watershed. People who live and/or work in the upper part of the watershed can go to a meeting in Thief River Falls.
    - On **April 9th** a Red Lake River Watershed Restoration and Protection Project Stakeholders' Update Meeting will be held at the **Guesthouse Inn in Grand Forks** from **10 am until noon**. An overview of the watershed, the WRAP project, water quality conditions, and civic engagement efforts will be presented. Tanya Hanson from the Red Lake County Soil and Water Conservation District will give a presentation on some of the projects that have been implemented to improve and protect water quality in the Red Lake River watershed. Karsten Klimek of the Minnesota Pollution Control Agency's Biological Monitoring Unit will be giving a presentation on the fish and aquatic macroinvertebrate sampling that was conducted in 2012. The schedule of this meeting is planned to be relaxed enough to allow for plenty of questions and discussion among attendees.

        - On **April 10th**, a Red Lake River Watershed Restoration and Protection Project Stakeholders' Meeting will be held at the **Red Lake Watershed District Office** (1000 Pennington Ave S) in Thief River Falls from **10 am until noon**. An overview of the watershed, the WRAP project, water quality conditions, and civic engagement efforts will be presented. Staff from the Pennington County SWCD will give a presentation on the projects they have implemented to improve and protect water quality in the Red Lake River watershed. Dave Friedl of the Minnesota department of Natural Resources will give a presentation on the geomorphology (stream channel stability assessment) work that was conducted in 2012. The schedule of this meeting is planned to be relaxed enough to allow for plenty of questions and discussion among attendees.
        - Brochures will be printed and mailed to residents of townships along the Red Lake River to provide information about the study and promote the public meetings.
    - Civic group presentations, public library presentations, an open house event at the RLWD, coordination with school field trips, coordination with Chamber of Commerce events, and website development are also in the plans for 2013.
    - A new blog site has been set up for the Red Lake River because the previous host's site was closing down. The blog can now be found at http://redlakeriver.wordpress.com/.
- Task 11 – Identification of Sources and Solutions
    - Mapped locations of gullies in ditches near the upper reach of the Red Lake River and shared them with the Pennington County SWCD.

RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

February 2013

ABOUT

The Red Lake Watershed District is currently studying the Red Lake River to determine the condition of this water resource and create plans that will guide future management and opportunities for grant funding.

This study began in 2012 and will be complete in 2016. Baseline data collection will continue through the fall of 2013. In 2014, data analysis will be used for assessing water quality conditions and planning projects. Final reports will be started in late 2014.

Three major steps:

1. Collect and assess data to determine the condition of the watershed
2. Discuss data and computer modeling results with stakeholders to set realistic targets for reduction of pollutants
3. Create management plans to achieve those targets

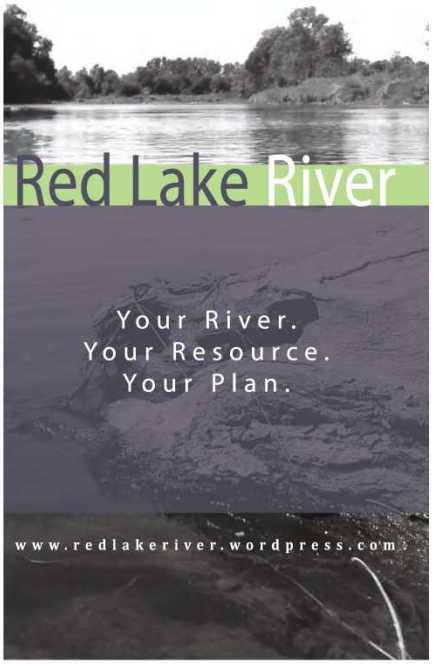
Red Lake Watershed District
1000 Pennington Ave
Thief River Falls, MN 56701
Email: coreyh@wiktel.com

JOIN THE CONVERSATION

www.redlakewatershed.org

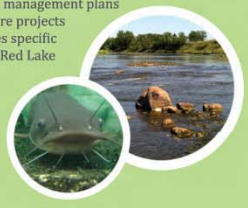
www.redlakeriver.wordpress.com

Find us on Facebook

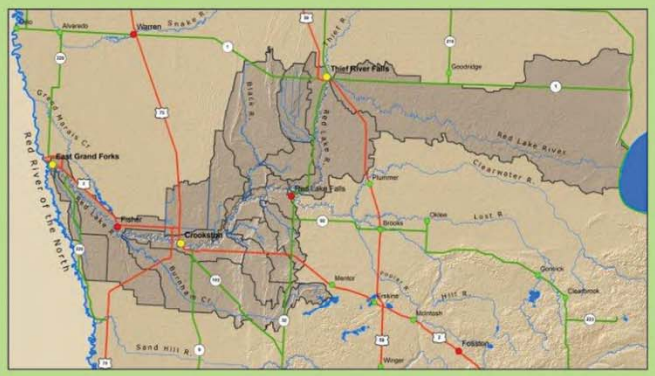


Watershed Restoration & Protection Plan

Bringing together local community knowledge and insight with quality data and technical resources to create management plans that will guide future projects and funding sources specific to the needs of the Red Lake River Watershed.



Red Lake River Watershed



Upcoming Meetings

Join us for a presentation and discussion on the quality of water in the Red Lake River and the work being done to understand and protect it.

Due to the size of this watershed, there will be two informational meetings, one in Thief River Falls and one in East Grand Forks. The content will be similar at both meetings.

Donuts and refreshments will be served

GuestHouse Inn
710 1st Ave N
Grand Forks, ND
April 9th, 2013
10:00 a.m. - 12:00 p.m.

OR

Red Lake Watershed District's Conference Room
Thief River Falls, MN
April 10th, 2013
10:00 a.m. - 12:00 p.m.

1

Data Collection

New baseline data will be collected in 2012 and 2013 and combined with historical data. Water chemistry, stream channel stability, and biological community data will also be collected to inform this study.

2

Discussions

Informational meetings and discussions will take place as information and data are collected. Please consider participating in these events to provide your individual perspective and knowledge about the watershed.

3

Final Plans

Final management plans will prioritize targeted activities in the watershed that will allow water bodies to safely meet water quality standards. These plans will guide local management of water resources in the Red Lake River Watershed.

Thief River Watershed Assessment Project
(Watershed Restoration and Protection - WRAP)

- Task 11 – Civic Engagement
  - Lori Clark has mapped some social networks within the watershed.
  - 2300 Brochures were mailed to residents of the watershed that provided information about the project and let people know how they could get involved.
  - A stakeholders' update meeting was held on February 20th at the Ralph Engelstad Arena Imperial Room in Thief River Falls
    - Water quality conditions and the overall progress of the project
      - Corey Hanson, RLWD
      - http://www.redlakewatershed.org/Presentations/2013/20130220%20Intro%20and%20Water%20Quality%20Conditions.pdf
    - Civic engagement activities and plans
      - Lori Clark, RMB Environmental Laboratories
      - http://www.redlakewatershed.org/Presentations/2013/20130220%20Civic%20Engagement%20RMB.pdf
    - Findings of the Agassiz National Wildlife Refuge Water Quality Study
      - Gregg Knutson
      - http://www.redlakewatershed.org/Presentations/2013/20130220%20ANWR%20WQ%20GAK.pdf
    - Stream channel stability assessment
      - Jason Vinje, Minnesota Department of Natural Resources
      - http://www.redlakewatershed.org/Presentations/2013/20130220%20Channel%20Stability%20-%20Vinje.pdf
      - Parts of Marshall County Ditch 20 are fairly stable.
      - Measurements will be repeated in 2021
    - HSPF modeling of the watershed by Houston Engineering, Inc.
      - Stephanie Johnson, Houston Engineering, Inc.
      - http://www.redlakewatershed.org/Presentations/2013/20130220%20HEI%20modeling%20presentation_HSPF.pdf
      - The HSPF model will provide benefits over the existing SWAT model by doing a better job at modeling in-channel processes and dissolved oxygen levels.
      - The HSPF water quality model should be completed by mid-summer 2013.
    - Marshall County SWCD's buffer initiative
      - Lisa Knutson, Marshall County Soil and Water Conservation District
    - Pennington County SWCD implementation projects
      - Bryan Malone, Pennington County SWCD

- http://www.redlakewatershed.org/Presentations/2013/20130220%20Penn%20Projects.pdf

- CD20 grade stabilization project
  - Corey Hanson, RLWD
- Using LIDAR data to find erosion problems
  - Jim Blix, RLWD
  - http://www.redlakewatershed.org/Presentations/2013/20130220%20LIDAR%20SPI%20Erosion%20Potential%20Blix.pdf
- Biological sampling and watershed assessment by the MPCA
  - Karsten Klimek, Minnesota Pollution Control Agency
  - http://www.redlakewatershed.org/Presentations/2013/Bio%20-%20Thief%20River%20Watershed%20Stakeholder_2.pdf
  - Higher quality species like coarse sediment and a lack of lithophilic species indicates that there are sedimentation problems.
  - Channelized reaches won't be officially assessed until new water quality standards are adopted.
  - Some sensitive species were found in the watershed (Northern Red Belly Dace)
  - Walleye were found at four stations in the lower part of the watershed. Otherwise, gamefish seem to be affected by fish passage barriers
- Future plans for the project
- Discussion and Comments
  - Look into ways to keep chloride out of our rivers.
    - Education programs for Hwy. Dept. staff
  - Thief Lake used to support a fishery (including walleye and sauger) in the early 1900s.
  - Suckers used to spawn in the Elm Lake watershed in the spring.

  - Civic group presentations, public library presentations, an open house event at the RLWD, coordination with school field trips (if possible), coordination with Chamber of Commerce events, and website development are also in the plans for the first six months of 2013.
  - A new blog site has been set up for the Thief River because the previous host's site was closing down. The blog can now be found at http://thiefriver.wordpress.com/.
- Task 12 – Identification of Sources and Solutions
  - Jim Blix has been working on a Stream Power Index for parts of the Thief River watershed. Stream Power Index layers have been generated for some of the subwatersheds of the Thief River. The layers can be "filtered" so that they only display the highest values with the highest risk of erosion problems. More work needs to be done on the task of determining the threshold at which SPI values begin to predict erosion problems. The pixilated SPI layers don't show up well on maps, though. So, shapefiles based on the SPI results will need to be generated so that the features can be made larger and more visible on a map.

Grand Marais Creek Watershed Restoration and Protection Project

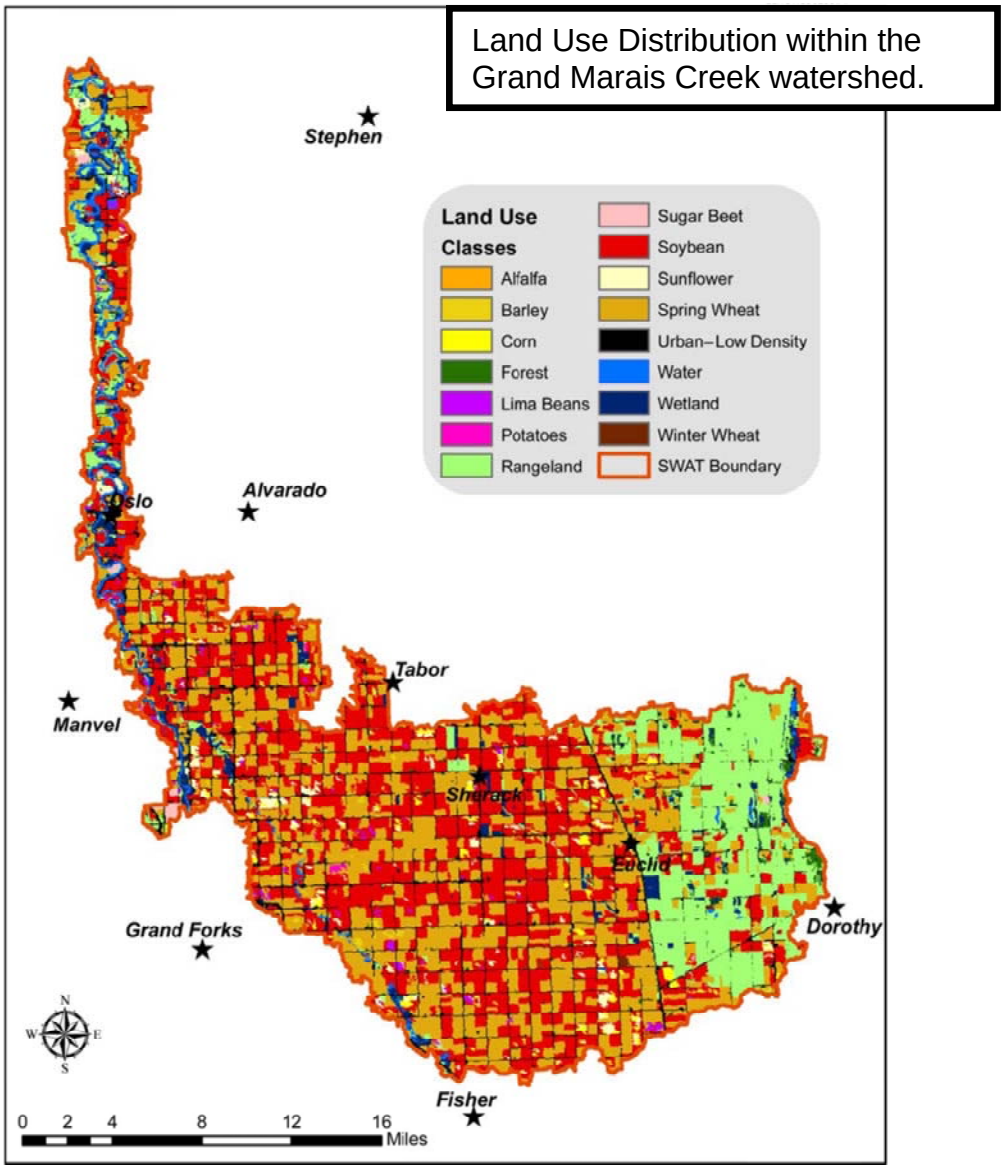
The Grand Marais Creek Watershed Restoration and Protection project began in February of 2013. $123,400 in Clean Water, Land, and Legacy funds will be used by the Red Lake Watershed District and EOR Engineering to complete the first phase of the project.

Some progress has been made toward gathering existing flow, water quality, and biological data and planning a public meeting for the project. A list of stakeholders was compiled and a public meeting has been scheduled for **April 18th, 2013 at 1:00 p.m**. at the conference room in the **East Grand Forks Cabela's store**.

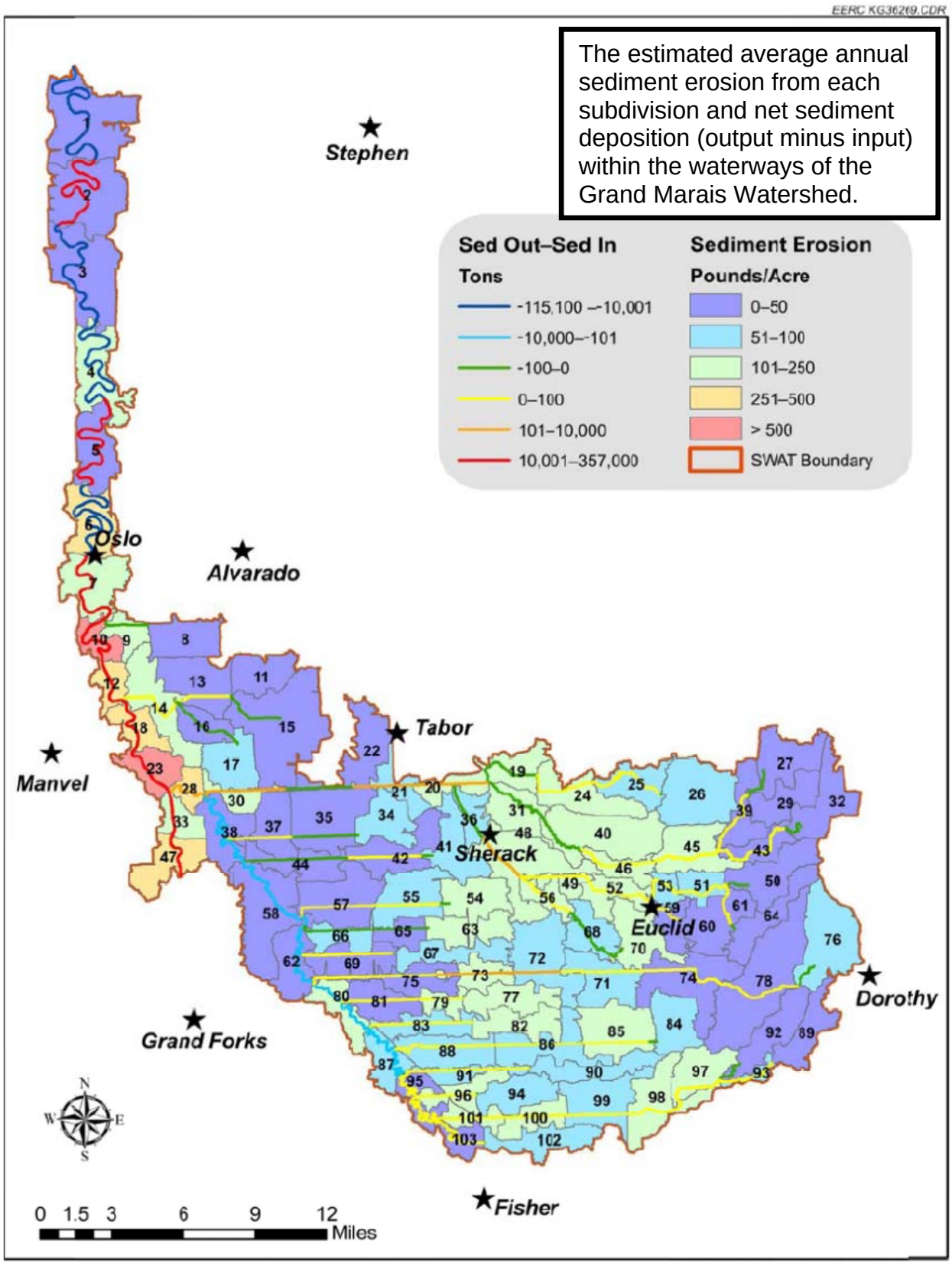
Previous reports have also been gathered and reviewed. One such report was the EERC's 2009 SWAT model report entitled *Development of the Soil and Water Assessment Tool (SQWAT) to Assess Water Quality in the Grand Marais Watershed.* Here are a few notes, deductions, and graphics from that report:

- There is a change in soil types, slopes, and land use from the land east of Highway 75 to the land west of highway 75.
  - The land east of Hwy 75 is mostly rangeland.
  - The land west of Highway 75 is nearly all agricultural land that is dominated by soybeans, wheat, alfalfa, and sugar beets.
- A significant reduction in sediment concentration can be achieved with implementation of buffer strips along agricultural fields.
  - 50 foot buffers reduce overland sediment erosion by as much as 80%.
- Target the entire Polk County Ditch 2 watershed for the implementation of best management practices, especially the Brandt Channel and the County Ditch 66 system downstream of the Euclid East Impoundment.
- Target the County Ditch 126 drainage area and the ditch systems south of CD 126 next.

- The model shows that there is a lot of overland erosion in the area of the planned Grand Marais Creek Outlet Restoration Project. This, combined with the estimated sediment reductions from buffers, means that the planned buffers along the restoration project will be very beneficial for reducing the amount of sediment delivered to the Red River from the Grand Marais Creek watershed.
- Areas next to the Red River had the highest sediment loading estimates.
- The CD40 and CD37 systems had lower net sediment deposition than the other systems. They appear to have side water inlets and some buffer strip protection. They also have smaller drainage areas than CD2 and CD126, so less flow would lead to less erosion.
- In summary, there is a lot of room for improvement in this watershed and significant reductions in overland sediment erosion are possible with the implementation of buffer strips and other best management practices.



Land Use Distribution within the Grand Marais Creek watershed.


EERC KG36269.CDR
The estimated average annual sediment erosion from each subdivision and net sediment deposition (output minus input) within the waterways of the Grand Marais Watershed.
Sed Out–Sed In
Tons
-115,100 –-10,001
-10,000–-101
-100–0
0–100
101–10,000
10,001–357,000
Sediment Erosion
Pounds/Acre
0–50
51–100
101–250
251–500
> 500
SWAT Boundary
Stephen
Oslo
Alvarado
Manvel
Tabor
Sherack
Euclid
Dorothy
Grand Forks
Fisher
N
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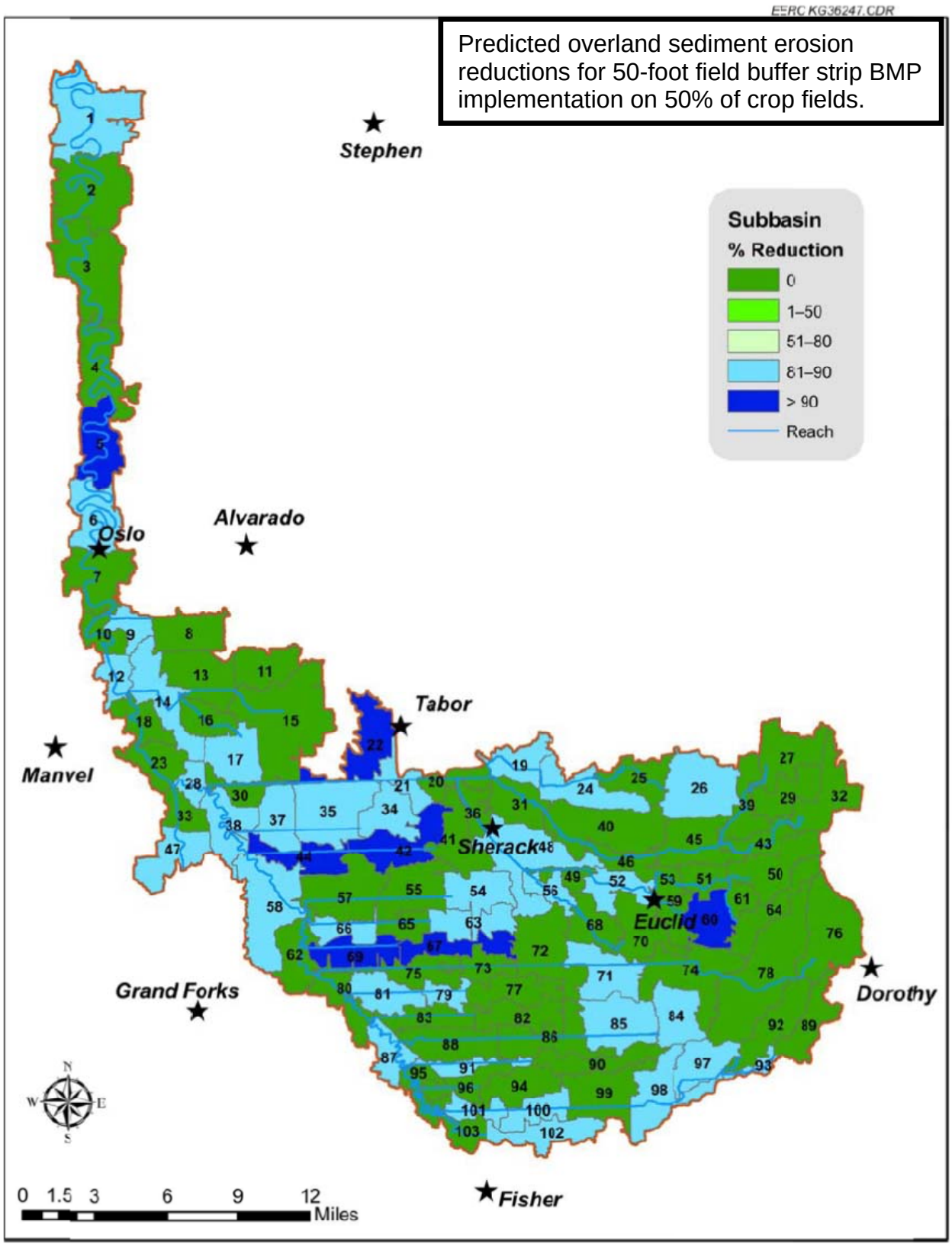
E
S
0 1.5 3 6 9 12
Miles


EERC KG36247.CDR
Predicted overland sediment erosion reductions for 50-foot field buffer strip BMP implementation on 50% of crop fields.
Subbasin
% Reduction
0
1–50
51–80
81–90
> 90
Reach
Stephen
Alvarado
Oslo
Tabor
Manvel
Sherack
Euclid
Grand Forks
Dorothy
Fisher
N
W
E
S
0 1.5 3 6 9 12
Miles

RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

February 2013

Current Activities:

Phase I:
Watershed Monitoring and Assessment

- EOR is working with the Red Lake Watershed District & the MPCA to create a Watershed Report for the Grand Marais Creek Watershed.
- Our team will be monitoring & collecting data throughout the watershed.
- In addition, there will be a series of public participation meetings through out the multi-year process.
- WRAP updates will be provided periodically by the Red Lake Watershed District and EOR.

BE THERE!
April 18, 1:00 pm
CABELA'S
E. Grand Forks
Kick-off Meeting

WRAP = Watershed Restoration And Protection plan

The Minnesota Pollution Control Agency (MPCA) is conducting WRAP projects in each major watershed to assess the health of the watershed, prepare plans for restoration of impaired lakes and rivers, and protect good quality waters for future generations. Through a grant from the MPCA, the Red Lake Watershed District (RLWD) has hired Emmons & Olivier Resources, Inc. (EOR) to assist in documenting the current health of Grand Marais Creek Watershed and develop management strategies for its protection and restoration.

Protecting Watersheds: what are we looking for?

Our main focus is assessing the waters of the Grand Marais Creek Watershed against state water quality standards for aquatic life and aquatic recreation. Where waters are meeting those standards, protection plans are prepared. Where waters are not meeting those standards, restoration plans are prepared and total maximum daily loads (TMDLs) are calculated. The RLWD is currently conducting two other WRAP projects.

WRAP Consists of 3-Phases:

Your Input is Valuable: how can you help?

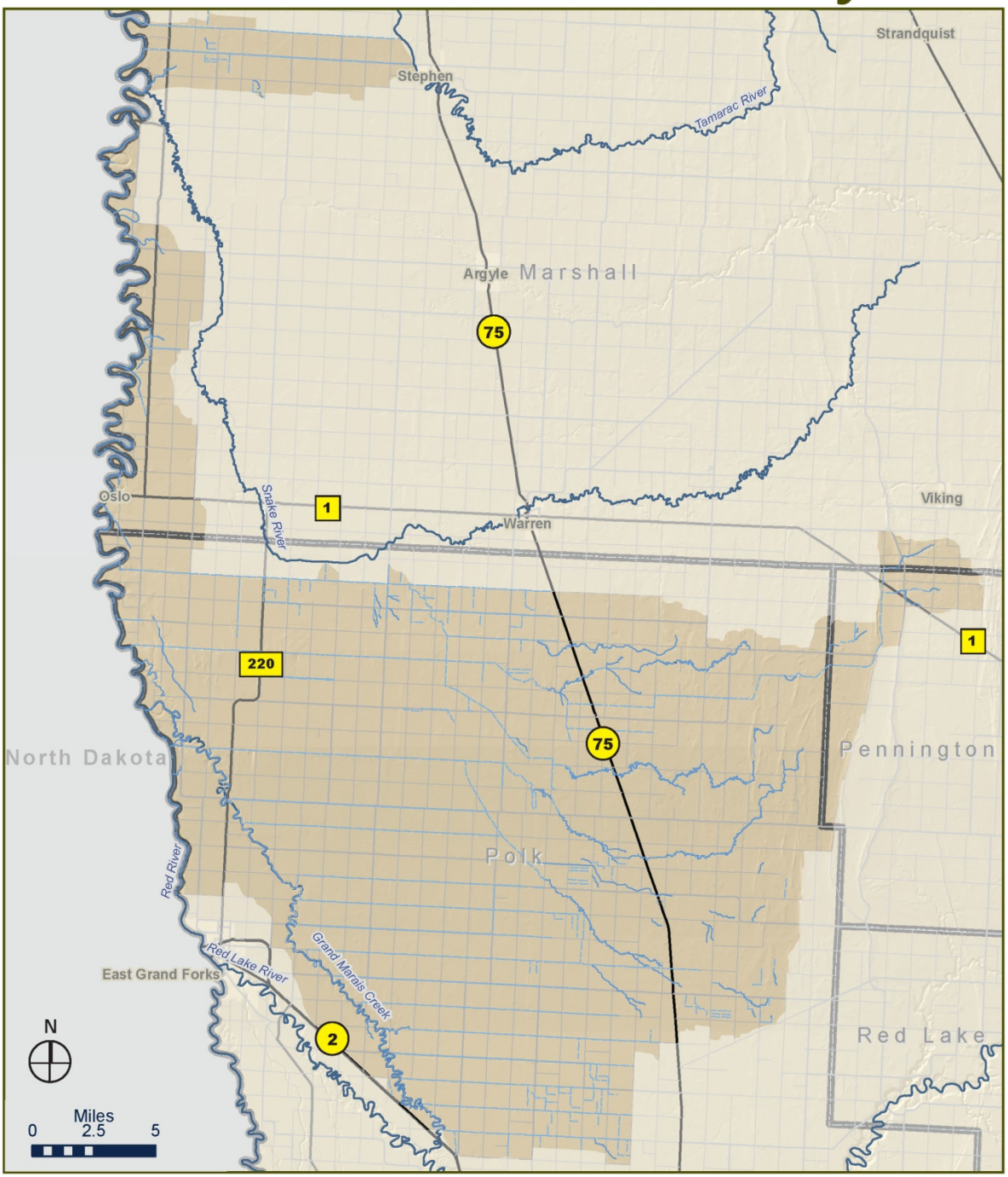
The complete process involves your input - from data compilation to plan review & public comment to the implementation of projects that will help improve the watershed's water quality. **Stay informed about the Grand Marais Creek WRAP with local postings such as this one and by visiting the Red Lake Watershed District's webpage: www.redlakewatershed.org.**

EOR water ecology community

RED LAKE WATERSHED DISTRICT
MONTHLY WATER QUALITY REPORT

February 2013

Grand Marais Creek WRAP Study Area



EOR water ecology community

Other Notes

- A lot of time was spent on completing final reports for the RLWD's 2011 BWSR Clean Water Fund Projects (Grade Stabilization for Sediment Reduction in the Thief River, Grand Marais Creek Cut-Channel Stabilization).
- Wrote articles for the RLWD 2012 Annual Report.

February Meetings and Events

- **February 1, 2013** - BWSR CWF Grant semi-annual progress reports are due.
- **February 1, 2013** - MPCA Thief River Watershed Assessment Project semi-annual progress report is due.
- **February 7, 2013 –** Pennington County SWCD and Red Lake Watershed District project planning and brainstorming meeting.
    - Reviewed current projects and discussed possible new projects.
    - Buffers have been established along the CD1 system.
    - The Halvorson bank stabilization project along the Thief River has been completed.
    - Ralph Engelstad Arena rain Garden Project
        - Rainfall runoff has caused problems that can be alleviated with rain gardens
            - So many washouts from rainfall that they can' establish grass.
        - A swale will capture water and water will be piped to a storage basin so it doesn't run across the sidewalk and lawn. The overflow from the storage basin will flow into the storm sewer.
        - Curb cuts will be used to direct runoff into rain gardens.
    - JD30/18 Buffer Initiative
        - Not many side water inlets were needed along the ditch.
        - Money will be used for a grade stabilization project near the outlet of the ditch where there are steep, sloughing banks.
    - The Erickson Group Streambank Stabilization Clean Water Fund project along the Thief River hasn't been completed yet
    - Fix the erosion problem by the Greenwood Street Bridge in Thief River Falls. The SWCD has already prepared a Clean Water Fund application.
    - Slumping bank along the Thief River at the Thief River Falls Golf Club.
    - Address gullies along ditches that flow into the Red Lake River.
    - Fix a badly eroding stream bank along the Red Lake River in the town of St. Hilaire.
    - Constant tile flow in ditches reduces their capacity for handling storm events compared to ditches that are dry.
    - The SWCD has had some success in implementing continuous CRP along the Red Lake River.

- **February 13, 2013 –** Maintenance, Land Alterations, and Management of drainage Areas meeting at the Newfolden Community Center
- **February 20, 2013 –** Thief River Watershed Restoration and Protection Project Stakeholders' Update Meeting. Ralph Engelstad Arena Imperial Room in Thief River Falls
    - Water quality conditions
    - Overall progress of the project
    - Civic engagement activities and plans
    - Findings of the Agassiz National Wildlife Refuge Water Quality Study
    - Stream channel stability assessment
    - HSPF modeling of the watershed by Houston Engineerins, Inc.
    - Marshall County SWCD's buffer initiative
    - Pennington County SWCD implementation projects
    - CD20 grade stabilization project
    - Using LIDAR data to find erosion problems
    - Biological sampling and watershed assessment by the MPCA
    - Future plans for the project

Plans for March and April 2013

- Thief River Watershed Restoration and Protection Project.
    - Work with the MPCA to complete an official assessment of the Thief River watershed.
    - Stream power index analysis of sub-basins in the Thief River watershed.
    - Create a web page dedicated to the Thief River Watershed
    - Compile and apply corrections to continuous water quality data.
- Red Lake River Watershed Assessment Project
    - Produce an updated assessment of water quality conditions in the watershed.
    - Create a webpage dedicated to the Red Lake River
    - Compile and apply corrections to continuous dissolved oxygen data.
    - Plan and conduct stakeholders' update meetings
    - Purchase a HOBO optical dissolved oxygen logger to replace one of the malfunctioning Eureka Midge DO loggers.
- Finish the final E-Link reports for BWSR CWF projects.
- Get new batteries installed by Onset in some of the older HOBO water level loggers. The loggers were first used in 2005, so the original batteries lasted through eight monitoring seasons!
- Prepare for stage and flow monitoring
- District Monitoring in April
- Flow measurements during spring runoff
- HOBO Water Level Logger deployment
- Compile flow and turbidity data from the Polk County Ditch 2 system for use in the Grand Marais Creek WRAP project.
- Stressor ID sampling for WRAP projects during spring runoff.

Future Meetings/Events

- **March 11, 2013 -** Pennington County Water Resources Advisory Committee meeting, 9 am
- **March 14, 2013** – 10th Annual Red River Basin Water Quality Monitoring Training Session; 8:30 am to 4:00 pm; Younquist Auditorium, University of Minnesota, Crookston
- **March 21, 2013 –** RLWD Overall Advisory Committee meeting
- **April 2, 2013 –** Thief River Best Professional Judgment Group (official State water quality assessment) meeting at the Detroit Lake MPCA Office.
- **April 9, 2013 –** Red Lake River Watershed Restoration and Protection Project Stakeholders' Update Meeting.
    - 10:00 am to 12:00 pm
    - Guesthouse Inn, Grand Forks, ND
    - Watershed overview
    - Description of the project.
    - Water quality conditions
    - Civic Engagement
    - Red Lake County SWCD projects
    - Biological monitoring in the Red Lake River watershed.
- **April 10, 2013 –** Red Lake River Watershed Restoration and Protection Project Stakeholders' Update Meeting.
    - 10:00 am to 12:00 pm
    - Red Lake Watershed District Office meeting room, Thief River Falls
    - Watershed overview
    - Description of the project.
    - Water quality conditions
    - Civic Engagement
    - Pennington County SWCD projects
    - Stream channel stability assessment within the Red Lake River watershed.
- **April 17, 2013 -** Marshall County Water Resources Advisory Committee
- **April 18, 2013 –** Grand Marais Watershed Restoration and Protection Project Kick-Off Meeting at Cabela's in East Grand Forks at 1:00 pm
- **April 25, 2013 –** Thief River and Red Lake River Watershed Restoration Project displays and booth at the Thief River Falls Community Expo Booth at the Ralph Engelstad Arena in Thief River Falls.
    - 4:00 pm to 7:00 pm
- **June 10, 2013** – Pennington County Water Resources Advisory Committee – 9 am
- **June 30, 2013** – Expiration of the Thief River Watershed Assessment Project Contract.
- **June 30, 2013** – Expiration of the Red Lake River Watershed Assessment Project – Phase I Contract.
- **June 30, 2013 –** Final report for the Thief River SWAG grant is due

- **July 30, 2013** – Due date for the final progress report and final invoice for the Thief River Watershed Assessment Project
- **July 1, 2013** – Beginning of Phase II of the Thief River and Red Lake River Watershed Restoration and Protection Projects.
- **July 17, 2013** – Marshall County Water Resources Advisory Committee
- **July 31, 2013** – Final payment request for the Thief River SWAG is due.
- **October 16, 2013** - Marshall County Water Resources Advisory Committee

Red Lake Watershed District Monthly Water Quality Reports are available online at: http://www.redlakewatershed.org/monthwq.html.

"Like" the Red Lake Watershed District on Facebook to stay up-to-date on RLWD reports and activities.

Quotes of the Month:

"Problems can become opportunities when the right people come together."
– Robert South

"Coming together is a beginning. Keeping together is progress. Working together is success."
– Henry Ford

"Defeat should never be a source of discouragement, but rather a fresh stimulus."
– Robert South