



GRAND MARAIS PROJECT PROVIDES ABUNDANT BENEFITS

While the Grand Marais Creek Subwatershed Flood Damage Reduction Project—"Project 60F"—is critical in providing an adequate and stable outlet to the Grand Marais Creek subwatershed and its several tributaries, the benefits will exceed drainage capacity and conveyance benefits. With a focus on restoring riparian and aquatic characteristics along six miles of the original Grand Marais Creek, the goals of the plan reflect the ambitions of the Natural Resource Enhancement objectives of the 1998 Mediation Agreement.

The Grand Marais Creek is a tributary of the Red River of the North. The current outlet into the Red River is located in a rural setting north of East Grand Forks, Mn. In the early 1900's a joint State and County initiative developed a drainage project to construct a 1.25 mile outlet that intercepted the Grand Marais Creek and proceeded west to an area where the channel terminated at the Red River. This new channel constructed between 1907 and 1910 known as the "Cutoff Ditch" provided a shorter outlet distance to the Red River and effectively abandoned the lower six miles of natural channel. This created a loss of aquatic and riparian habitat, as well as eliminated drainage abilities for adjacent agricultural lands.

Since the establishment of the ditch outlet, the cutoff ditch has eroded from its original shape to a channel of steep gradients and unstable banks. This has resulted in significant bank sloughing and nearly continuous channel erosion of hundreds of tons of sediment into the Red River annually.



Grand Marais Creek upstream of restoration project.

For the past two decades engineering reports focused on stabilizing the outlet. In 1998, the "Project 60" Project Team (PT) was established to address the NRE goals identified in the 1998 mediation agreement. These goals in the context of the Grand Marais Creek situation provided the backdrop for a more comprehensive solution.

THE PROBLEMS

The PT identified a number of problems and needs that had developed for over a century along the southern reach of the Grand Marais Creek.

Instability of the cutoff ditch channel banks had caused agricultural land to slide into the channel, causing a loss of land and diminishing drainage. Managing land use along the abandoned Grand Marais Creek bottom is unpredictable and difficult to properly maintain due to the loss of drainage and consistent hydrology.

Reducing flood stages on the Red River and to the tributaries of the Grand Marais Creek was needed. Due to the instability of the Cutoff Ditch and the resulting land loss, drainage improvement considerations upstream have been limited. It was difficult to increase the frequency of higher flows into the Cutoff Ditch as it continued to erode and fail. This meant

proposed drainage projects were unlikely until a comprehensive approach addressed the problem at the outlet. Since the Grand Marais subwatershed is considered an "early water" benefit to the Red River, improving drainage should tend to reduce flood stage on the Red River.

Environmental problems have also developed related to sediment transport in the Grand Marais and Red River. The entire Grand Marais channel is identified on the Clean Water Act 303(d) list as an impaired water due to turbidity and aquatic life. There are sections of the Red River near the confluence with the Grand Marais that are also listed with the same impairment. In addition, excessive nutrients and chemicals introduced in the stormwater runoff from farming practices, loss of aquatic habitat, loss of riparian buffer adjacent to the original Grand Marais channel, and reduced ability for fish passage are all identified as problems throughout the existing Grand Marais outlet.

THE PLAN

Of all options, the most feasible and practical approach consisted of restoration of the original Grand Marais channel downstream of the Cutoff Ditch as well as stabilizing the Cutoff Ditch itself. Flows up to a two-year flood event would flow through the original Grand Marais channel, and flows exceeding the two-year flood event would split between the stabilized Cutoff Ditch and the restored original channel.

The benefits of this option included:

- The project balances the needs of stabilizing the

Cutoff Ditch, maintaining similar hydraulic characteristics of the Grand Marais to upstream landowners during flood events, and restoring the original channel to its pre-1900 condition consisting of a riparian buffer, aquatic habitat, fish passage capabilities, and low-flow stream form and function.

- The balanced benefits presented by this alternative create attractive options to outside funding sources. This increases the ability to distribute the costs to a greater tax base, decreasing local costs.

- The NRE benefits of restoring nearly six miles of natural channel address the goals and objectives of the 1998 mediation agreement. These goals justify using Flood Damage Reduction funds for the project.

- Grade control structures placed in the outlet of the Cutoff Ditch and the original Grand Marais Channel will stabilize the channel, reducing future bank failures and loss of adjacent agricultural land and downstream sediment loading, improving water quality. In addition, splitting the flows will allow the Cutoff Ditch time to vegetate and stabilize itself, reducing the need for costly grade control structures.

The balanced benefits of this option allowed outside funding sources to become a reality. The Lessard-Sams Outdoor Heritage Council (LSOHC) will provide \$2.32 million of the funding of this \$5.285 million-dollar project from The Outdoor Heritage Fund, a funding source made possible by the Clean Water, Land and Legacy Amendment in Minnesota.

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WATERSHED DISTRICT DEVELOPMENTS

RED LAKE WD

The Red Lake WD reported on the Flood Damage Reduction/Improvement to Pennington County Ditch #1. Bids and Specification are anticipated to be completed December 2011 for both projects. In January of 2012 advertisements for bids will be placed.

The District has retained Houston Engineering for a district-wide hydrologic modeling system review. Ron Adrian will be the contact person for the project.

WILD RICE WD

The WRWD board met with All Seasons Contracting to explore the reasons behind their withdrawal from the Project 30- 2006 FEMA Repair project. After new bids are opened in early 2012 a decision will be made on the All Seasons bid bond.

The District has purchased all the properties targeted for acquisition that had clear titles and easements. When properties have been vacated, demolition and related work bids will be announced.

ROSEAU RIVER WD

Seeding of the dikes on the Norland Impoundment will take place this fall. Inlet and outlet structures on the impoundment are nearing completion. In addition, the District met with representatives from the USACE at the Bemidji regulatory office to discuss the current permit for the project as well as possible amendments to it.

The Board of Managers met with representatives from the Minnesota Department of Natural Resources to discuss the Roseau River Wildlife Management Area project and status at their November board meeting. Also, the District met with the Flood Damage Reduction Work Group (FDRWG) at their October 19 meeting. The District received a \$10,000 acceleration grant from the FDRWG. A Step I submittal was presented at the RRWMB November meeting.

PROJECT FEATURES

Channel Restoration, Setback Levees and Flood Plain Restoration -- The six-mile restoration of the channel is the primary focus of the proposed project, with a NRE focus on environmental goals. The detailed design phase will identify the characteristics required to

develop a healthy and stable channel to accomplish both hydraulic and environmental goals. The approximate 50-year floodplain area for a majority of the channel length is proposed for the RIM program to provide for a long-term land use and maintenance plan for this historically difficult-to-manage agricultural land.

RRWMB MEETING HIGHLIGHTS

At its regularly scheduled November meeting, the RRWMB:

- *Approved a Resolution of Conceptual Approval of the Red River Basin Flood Damage Reduction Work Group Technical and Scientific Advisory Committee's (TSAC) Technical Paper No. 14.*
- *Discussed the space selected for the Red River Retention Authority offices at Pioneer Crossing in West Fargo, North Dakota.*
- *Received a report from Naomi Erickson, RRWMB District Administrator.*
- *Received a project funding request from the Roseau River Watershed District for the Roseau River Wildlife Management Area (RRWMA) Project and discussed a possible December 2011 RRWMB board tour of the project.*
- *Received a report from Dan Thul, DNR/Red River Coordinator, on the RRWMA Project relative to the prospect of better timing of river flows.*
- *Received a report from Chuck Fritz of the International Water Institute that included the current capabilities of the Red River Basin Decision Information Network (RRBDIN) technology.*

EVENTS COMING UP

The next meeting of the RRWMB will be on Tuesday, December 20, 2011 at 9:30 a.m. at the Badger Community Center, 111 North Main Street, Badger, MN.

Diversion Structure/Weir -- A diversion structure will direct flows up to a two-year event into the reconstructed original Grand Marais Channel. The weir length is estimated at 100 ft, and the diversion structure is expected to incorporate a combination of compacted clay, sheet piling, rip rap, structurally armored spillway, vegetated slopes, and controlled drawdown culvert.

Road and Driveway Crossings -- Two major crossings are required to

carry the proposed flows along the restored Grand Marais channel; the crossings include a county road and a township road.

Channel Stabilization Structure with Fish Passage Abilities -- Several rip rap drop structures are planned to stabilize the outlet into the Red River. Fish passage abilities will be incorporated into the design as this feature is a primary project goal in re-establishing fish migration/spawning into the upper reaches of the Grand Marais Creek.

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