

# City of Glenwood

## Water of Concern

Lake Minnewaska and Chippewa River Watershed

## Impairments (if any)

Phosphorus & sediment runoff

## CWL Grant Awarded

Type \$ 209179

## Funds Returned to State

Type 0.00

Date Fund Returned: NA

## Grant Period (incl. extensions)

From: 1-1-2010

To: 12-31-2012

## CWL Expenditures by Category

### Technical Assistance Funds

SSTS Funds	0
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Professional Development	0
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Hired Positions	No additional positions needed to complete the project
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Total TA Funds	\$2,092
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### Implementation Funds

Gimp Loans	0
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Clean Water Assistance Funds	\$209,175
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Leveraged Dollars	\$52,294
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Total Imp. Funding	0
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Total CWL Expenditures	\$209,175
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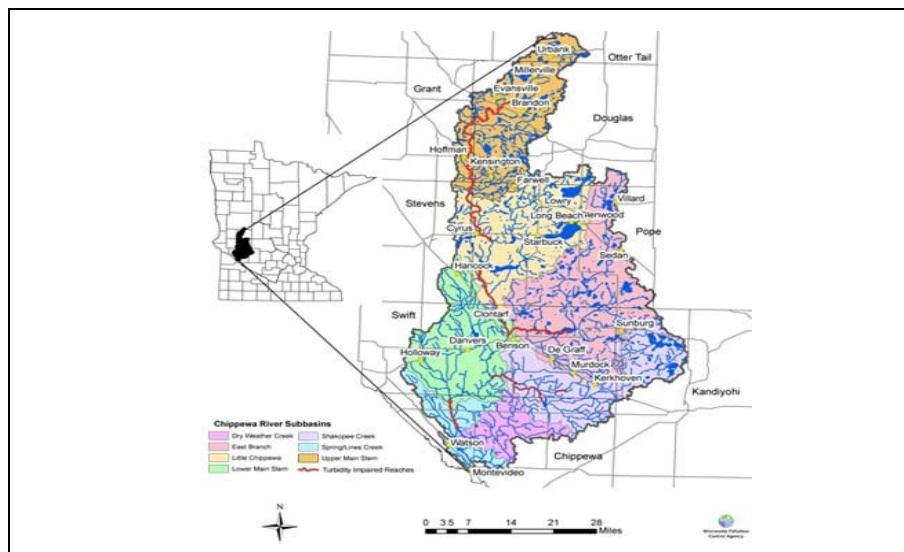
## PROJECT CONTACT

Pope SWCD

320-634-5327

info@popeswcd.org

## Project Title: Stormwater Mitigation



## Overall Project Description (abstract)

### City of Glenwood Ravine Repair Project

The City of Glenwood (City), Pope Soil & Water Conservation District (Pope SWCD) and Winsted, Smith & Nolting (WSN) have taken an active roll protecting the water quality for the City, Pope County, and Lake Minnewaska. The City, Pope SWCD and WSN developed the Stormwater Management Plan that is included in the Pope County Comprehensive Local Water Plan and Land Use Ordinance 10.24; Stormwater Management.

The Stormwater Management Plan divided the City into five (5) drainage basins that flow into Lake Minnewaska. These identified drainage basins total 1796-acres. The land in these areas are mainly developed, however there are some areas of field and forest that provide habitat for fowl and wildlife. State Highways 28, 29 and 55 and County Highway 104 add to the impervious surfaces located in the five (5) drainage basins. Estimated runoff concentration times for Dairyland Basin range from 39.7 to 97.1 minutes before Stormwater reaches Lake Minnewaska.

The most imminent mitigation projects are located in the Dairyland basin. This area covers 462 acres (26% of the City) and has 82.9 acres of impervious surfaces and 379.1 acres of pervious surfaces. Ravines originate from a 24" culvert that runs under Highway 55. The State of Minnesota took over management of Highway 55 in 1939; however the worst of the erosion in this area has been in the last ten (10) years. These ravines measure up to 20' deep and 30' wide in some places and have up-rooted trees, rocks and other debris.

Improving the parking lot at City Beach on the shoreline of Lake Minnewaska will decrease the direct flow of stormwater entering Lake Minnewaska. The new parking area will be installed so that stormwater flows into a holding area located between County Road 104 and the parking lot.

## Conservation Practices Implemented

Conservation Practices Installed	Number or Linear Feet Installed	Estimated Pollutant Load Reduction (include units)	Total Cost
Erosion Control	Series of 3 rock check dams, inlet structure, underground stormwater line with line access chimneys, control structure, culverts and rip rap	603.02T/yr sediment; 512.57 lbs/yr Phosphorus	\$162,738.49
Urban Stormwater Control	Project on hold	.29 T/yr sediment; 1.13 Lbs/yr phosphorus	\$100,157 est.
Shoreline Restoration	1250 feet	65.45 lbs/yr phosphorus; 77 T/yr sediment; 77 T/yr soil savings	\$106,259.75

## Conservation Planning Activities

Name of Plan (s) Written	Number of Landowners Contacted	Number of Plans Written	Total Cost	Types of Practices Identified	Number of Practices Identified	Number of Practices Implemented
Dairyland Basin Ravine Repair-City of Glenwood	10	1	\$162,738.49	MNDOT engineering standards-standard specification for construction	1	1
City of Glenwood parking lot	Project put on hold	1				
Lakeshore Restoration	1	1	\$106,259.75	DNR lakeshore restoration standards	1	1

## Contributing Partners

Partner	Description	Project Contribution	Leveraged Funds
City of Glenwood	Engineering design costs, equipment and staff time	\$84,719.75	0.00

## Project Informational/Educational Activities

Type of Activity	Newsletters, Brochures, Posters, Etc.	Work with Youth Groups	Tours, Demos, Etc.	Presentations Given	Presentations by guest speakers	Other
Community meeting				1		
News release	Pope SWCD Conservation News					Pope County Tribune news articles appeared 2/8/2011, 2/15/2011, 10/24/2011, 5/2012

A public meeting was held before grant application to outline the project and gather landowner support and understanding. The landowners agreed that something had to be done; they were losing land during high water events. The ravine was getting deeper and wider with each high water event, so it was fast becoming a safety and health hazard for the community.

The shoreline restoration project is across from Glenwood City Park and near a public boat landing, so there is a significant amount of boat, vehicle and pedestrian traffic. Several community events are held in this area throughout the year. There are several opportunities to promote the project so that the public sees their tax dollars at work.

## Project Outcomes

Detail specific project outcomes that work towards meeting Restoration (total maximum daily load studies) and Protection (local water plans) water quality goals. For restoration projects, please include overall TMDL Point Source Reductions Needed (% & Pounds)  
Overall TMDL Non-Point Source Reductions Needed (% & Pounds) Estimated Total TMDL Non-Point Source Reduction (% & Pounds) from Project (s).

Ravines originate from a 24" culvert that runs under Highway 55. The State of Minnesota took over management of Highway 55 in 1939; however the worst of the erosion in this area has been in the last ten (10) years. These ravines measure up to 20' deep and 30' wide in some places and have uprooted trees, rocks and other debris. Estimated outcomes upon project completion include 603.02 tons per year sediment, 603.02 tons per year soil, and 512.57 pounds per year phosphorus.

Removing a 50'X 490' impervious surface parking lot at City Beach on the shoreline of Lake Minnewaska will decrease the direct flow of stormwater entering Lake Minnewaska. The new parking lot will be installed so that stormwater flows into a holding area located between County Road 104 and the parking lot. To further hold Stormwater out of Lake Minnewaska, three (3) rain gardens, with plants native to Pope County, will be installed in the grassy area where the parking lot was located. This project will keep an estimated 400,000 gallons of stormwater filled with debris and various pollutants from entering Lake Minnewaska annually. Sediment reduction estimates of 0.29 tons per year and 1.13 pounds of phosphorus per year.

\*\* The cost of relocating the parking lot at City Beach was much higher than the initial estimates, so the project was put on hold. During that time, high water, wind and wave action eroded the shoreline along Lake Minnewaska. The City requested moving the money from the parking lot project to restoring the lakeshore. BWSR agreed that this was a more imminent problem and would significantly reduce the amount of sediment entering Lake Minnewaska. The Shoreline Restoration Project resulted in saving 77 T/Yr sediment, 77 T/yr soil and 65.45 lbs/year phosphorus from entering Lake Minnewaska.





## Project Photos

Ravine located in the City of Glenwood Dairyland Basin before and after .

These projects are funded in part by the Lean Water Land & Legacy Amendment.



Example of Lake Minnewaska lakeshore erosion from high water, wave and wind action before and after.

