BWSR Snapshots September 2012

Maplewood Mall unveils clean water features

By Marcey Westrick, Clean Water Fund Specialist

Shopping at Maplewood Mall is suddenly looking a lot greener.

Through the efforts of the Ramsey-Washington Metro Watershed District (District), Ramsey County, the city of Maplewood and the owners of Maplewood Mall, 375 trees and 55 rainwater gardens have been installed over the past three years to control stormwater runoff.

Of the total $6.5 million project cost, 60 percent was funded through two grant sources: Clean Water Fund grants (from the Clean Water, Land and Legacy Amendment) through the Minnesota Board of Water and Soil Resources (BWSR) and U.S. EPA Section 319 grants through the Minnesota Pollution Control Agency.

The mall's parking lot now incorporates a whole new system of treatment technologies, specifically tree trenches designed to reduce the amount of runoff and pollutants reaching Kohlman Lake.

Cliff Aichinger, District Administrator, said the District learned runoff from roads and parking lots is one of the major contributors to polluting nearby Kohlman Lake, which is listed as one of the state's impaired waters.

"The District approached the mall's owners to see if a partnership could be established to retrofit the mall's parking areas," Aichinger said. "Capturing at least one inch of runoff would result in a large reduction in phosphorus entering Kohlman Lake."

Known as "vertical rain gardens," trees offer multiple benefits. When planted properly in urban environments, trees can capture rainwater and runoff. The solution is to design a system of underground reservoirs that provide water and good growing conditions for the trees but that also retain rain and melting snow so that it soaks into the ground instead of running off into storm sewers.

The trees at Maplewood Mall form rows between the parking lanes and are rooted in a special mixture of rock and soil that allows room for their roots to grow. Drainage features direct runoff from the parking lot into the infiltration trenches where some of the water gets absorbed by the trees, while the rest either soaks into the ground or is filtered and cleaned by the layers of rock before reaching the storm sewer system.

Another major part of the project was the expansion and reconstruction of the Mall entrance plaza. The existing main Mall entrance was expanded in size and includes a number of rain gardens and a large cistern that captures a portion of the runoff from the Mall roof. In addition, interactive educational features have been designed for visitors to help explain the impact of stormwater on the watershed and what individuals can do to help keep waters clean.

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Digging up bones on the Grand Marais

By Brian Dwight, Board Conservationist

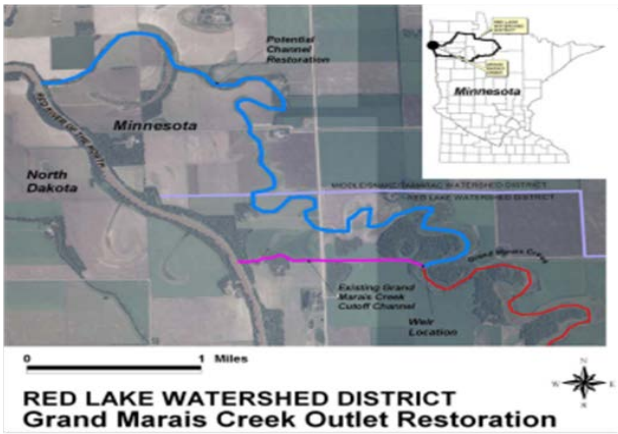
As the Red Lake Watershed's "Grand Marais Creek Outlet Restoration Project" progresses, it does not come without challenges and delays. The latest delay is of particular interest. No, it is not environmental permitting, landowner opposition, or even financial support. It relates to past land use activities. It appears the site chosen to install one of two drop structures to reduce severe bed and bank erosion in a cut off channel of the Grand Marais Creek to the Red River (constructed in the early 1900's) was previously chosen (about 8,000 years earlier) as an encampment site by the people of the early Archaic period. After an "in-depth" archeological dig the Archeologist reported:

"*The site is represented primarily by bison bone fragments. Several lithics (stone tools) were also found. These were made of Knife River flint and Swan River chert--both common materials in this region. The Phase I survey only sampled a very small portion of the site, but based on the finds, what we found is probably part of a habitation site on the Red River. Radiocarbon (C14) testing dates the site to BC 5680 ± 50 (7692 years old). This places this site in the early Archaic period. The people of the early Archaic period led a semi-nomadic lifestyle that revolved around the hunting of large game and collecting of wild food stuffs. It was in this period that the first long-term habitation sites and food storage first began in Minnesota. The site, preserved in a deeply buried paleosol, represents a resource with very-high research potential and importance.*"

The find leaves the District with a couple of options: complete a full recovery of the artifacts, or move the location of the structure. They decided to move the location of the structure and leave the remains where they lie.

A previous project has affected the encampment. The cut- off channel constructed in the early 1900s appears to have gone right through the heart of the encampment removing many artifacts or leaving them to erode away with sloughing of the banks of the cut channel.

This outlet repair and restoration project is an integral component of the 2003 Governor's Cleanwater Cabinet Pilot Project, the "Grand Marais Creek Subwatershed Flood Damage Reduction Project." The Grand Marais Creek is a tributary of the Red River of the North. The project area is located in a rural setting 7 miles north of East Grand Forks. In the early 1900s, a joint State-County effort constructed a 1¼-mile cutoff channel to the Red River to eliminate an alleged public nuisance and drainage problem. The cut-off abandoned about six miles of the Grand Marais Creek's natural channel, which resulted in the loss of aquatic and riparian habitat. The cut-off itself has relatively little environmental value in its present state. The steep gradients are a hindrance to fish passage and are causing significant bank sloughing and erosion.



Project components include:

- Installation of a weir to divert base flows into the natural channel with high flows spilling over the weir and flowing to the Red River of the North by means of the cut-off channel
- Excavation in the natural channel to remove sediment and restore the six miles of natural channel
- Fish passage/grade control structures, and re-sloping of the cut-off channel, which stabilizes this channel
- Creation of a riparian buffer along the restored channel
- Culverts and other infrastructure

Funding for the Outlet Restoration Project:

1. Land acquisition and vegetation establishment:
   - $675,000 R.I.M. Red River Valley Restoration Initiative program.
   - $132,500 DNR working land initiative.
2. Cut-off channel stabilization and fish passage:
   - $662,000 Clean Water Funds
   - $150,000 U.S. Fish and Wildlife Service
   - $250,000 Polk county ditch funds
   - $250,000 Red Lake Watershed District
3. Old channel Restoration:
   - $2.32 million Lessard-Sams Outdoor Heritage
4. Other funding sources used to support undetermined aspects of the project:
   - $1.3 million DNR flood damage reduction funds
   - $800,000 Red River Water Management board
   - $500,000 Red lake Watershed District

Managers Dale Nelson and Gene Tiedemann inspecting one of the Grand Marais Creek cut off channel drop structures.

If you would like a detailed accounting of the find, or project, or have questions, feel free to query Gene Tiedemann.

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The Year of Soil

By Megan Lennon, Soil Specialist

2012 has been a remarkable year for soils in Minnesota. In April, the Minnesota Legislature designated the Lester soil series as the Official Minnesota State Soil. With this declaration, Lester joined the ranks of iconic Minnesota symbols like the loon, walleye and the pink and white lady's slipper.

Lester soils are found in 17 counties in south-central Minnesota, covering more than 500,000 acres. These soils formed under alternating prairie and forest vegetation and the majority is now in agricultural production. Lester soils are extremely productive and are of significant importance to the Minnesota economy. Declaring an official state soil and recognizing the importance of Minnesota's soil resource set the stage for soil-related outreach and education.

Extent of Lester Soil Series

2012 not only marked the designation of Lester, but also implementation of a Soil Health initiative by the Minnesota NRCS office as well as the beginning of the University of Minnesota Department of Soil, Water and Climate's Centennial Celebration.

The Minnesota NRCS office provided training for all field office staff to better integrate soil health practices into the day to day operations and interactions with private landowners. The Minnesota NRCS, in coordination with the Land Stewardship Project and the Minnesota Grazing Lands Conservation Association, hosted a statewide Soil Health workshop for producers, crop advisors and natural resource professionals. The University of Minnesota's Department of Soil, Water and Climate's 100th anniversary is in 2013, but centennial celebrations kickoff this September with the start of the Special Seminar Series.

In November, the Smithsonian exhibit *Dig it! The Secrets of Soil* is on display at the University of Minnesota's Bell Museum of Natural History. Soil claimed a prominent role in the 2012 Clean Water Summit which focused on *Green Infrastructure for Clean Water: The Essential Role of Soil*.

The multitude of outreach, education and training events focused on soils provides a venue to discuss the importance of soil to Minnesotan's everyday life. The BWSR continues promoting activities to improve soil quality, communicating soil's fundamental role in achieving water quality goals and building an appreciation for Minnesota's soil resource.

Although BWSR submitted a proposal to the LCCMR in 2012 to support "The Year of Soil" that did not get selected, we are working with NRCS and other partners to help contribute to making the connection between soil health, agricultural productivity and water quality.

A teaspoon of quality topsoil contains up to one billion bacteria and over 4,000 species

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The Grant that keeps on giving

By Jen Maleitzke, Communications Director

If you've visited Ramsey Park in Redwood County lately, you may notice it's looking a lot tidier.

In early September, National Guard units from Redwood Falls and Hutchinson worked in the park to remove two more acres of the invasive plant, buckthorn, which is smothering out native plants.

From equipment purchased through BWSR's Cooperative Weed Management Program, the Redwood Soil and Water Conservation District (SWCD) has partnered with the National Guard for the past four years to battle this invasive plant.

"We were awarded an $8,000 grant in 2008, and the Guard removed 4.5 acres of buckthorn in Ramsey Park in 2009-2010," Marilyn Bernhardson, Redwood SWCD District Administrator, said. "This has been the grant that keeps on giving. Even though the grant expired, the equipment we were able to purchase through those funds continues to provide benefits to our community through additional removal and control of this invasive plant."

A member of the National Guard cut and hauled away buckthorn at Ramsey Park in Redwood Falls this September.

The BWSR Cooperative Weed Management Program started in 2008 and has aided the development of twenty partnerships around the state to cooperatively manage invasive species. Redwood SWCD chose to focus on buckthorn, as it is a highly invasive plant that out-competes native plants for nutrients, light and moisture, and degrades wildlife habitat. It is spread widely by birds, so its control at Ramsey Park will prevent it from being spread to other parts of the county.

Mark Hiles, BWSR Board Conservationist, said this project embodies what the grant program is all about. "After a minimal initial investment by the state, a long-term effort is now in place to remove buckthorn and to restore native plant communities. This project is a great example of a local, state and federal partnership that makes a lasting impact in our community."

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Fish Lake conservation drainage retrofit project

By Matt Drewitz, Clean Water Specialist

Fish Lake, which is a headwater to the Watonwan River and located in both Jackson and Cottonwood counties, is an important regional water resource. The lake itself is a regionally significant fishery due to its relatively deep depth (>20') for this region, lack of a muddy bottom, and a naturally reproducing small mouth bass fishery. This project, which is nearly complete, will help restore Fish Lake's water quality by installing practices to reduce inputs from upland areas of nitrogen and phosphorus.

A number of drainage water management and erosion control practices are being installed around the lake, including nine wood chip bioreactors, drainage water control structures, open tile intake replacements, and four grade stabilization structures. In order to make this innovative project become a reality, the Jackson and Cottonwood SWCDs have worked with a number of

local and regional partners, including local landowners, the Fish Lake Association, Cottonwood County Game & Fish Protective League, Minnesota Department of Natural Resources, Minnesota Department of Agriculture, University of Minnesota, and the US Fish and Wildlife Service.

Earlier this summer, the Jackson and Cottonwood SWCDs held a field day that attracted more than 50 lakeshore landowners, farmers, county, and state and federal staff who gathered for an informative discussion on this innovative project. This event showcased the great collaborative nature of this project, perspectives from landowners and local staff working on the project, and current work being done by universities and agencies to monitor the lakes water quality to assess the effectiveness of installed practices.

To learn more about this project, contact Brian Nyborg, Jackson SWCD at 507-662-6682, ext. 3 or Kay Clark or David Bucklin, Cottonwood SWCD at 507-831-1153, ext. 3. Other project information can be found at the following webpage www.cottonwoodswcd.org.

Before: Active eroding shoreland gully depositing sediment and agricultural drainage water directly into Fish Lake.

After: Gully stabilized and bioreactor and water control structures installed nearby up in the watershed to stabilize flows and to reduce nitrogen inputs into the Fish Lake.

Before: Active eroding gully and head cut a source of sediment to Fish Lake.

After: Gully stabilized and bioreactor and water control structure installed up in watershed to stabilize flows and to reduce nitrogen inputs into the lake.

Fish Lake

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