



Cascading success: On a former golf course, a Rochester stream, floodplain restoration

June 2017 Snapshot



Skip Langer of the Olmsted County Soil & Water Conservation District, left, and Glen Roberson, Technical Service Area 7 administrator/ Goodhue County Soil & Water Conservation District, made a site visit during construction of a project that will reroute a stream prone to erosion, and create a floodplain wetland habitat on the site of a former golf course in Rochester, Minnesota.

South Branch Cascade Creek, once an erosion problem that sliced through a former golf course in Rochester, Minnesota, is being restored in a multi-year project that incorporates natural channel design and a planned floodplain.

The erosion issues at the site were caused by the creek being so incised that it could not access its own floodplain. Engineers from the Minnesota Department of Natural Resources were able to address that erosion by creating a new channel pattern and a floodplain. The three-part restoration also includes wetland creation.

Ultimately, the project is meant to create a stable channel, cut the amount of sediment carried downstream, and improve stream and upland habitat.

The project is made possible through three grants – two Clean Water Fund grants plus an Outdoor Heritage Fund grant – totaling nearly \$1.2 million.

The Clean Water Fund grants financed the first two phases of the project. They included \$575,000 awarded in 2012 (with \$250,000 city/county match) and \$400,000 awarded in 2015 (with \$100,000 city/county match). A \$198,800 Conservation Partners Legacy Grant was awarded in 2017 through the Outdoor Heritage Fund. It will

complete the third and final phase of the project – creating five wetland complexes and 20 acres of native prairie seeding.

Partnerships among the City of Rochester, Olmsted County, the Minnesota DNR, the Minnesota Pollution Control Agency and the U.S. Geological Survey allowed the project to advance. Achieving each of the three major stream restoration goals involves several steps. The major elements include:

Construction of three off-channel basins – Led by the Olmsted County SWCD, this part of the project was completed in winter 2014-15 and included the construction of about 7 total acres of basins, creating a channel inside the basins to better distribute sediment.

The basins were selected based on landowner interest and site feasibility. The intent was to reduce the volume and velocity of runoff, stabilize the drainage and stream system, reduce sediment and flood damage, address Total Suspended Solids (TSS) impairments, and improve water quality immediately downstream, and increase flood attenuation.

Stream restoration – The DNR took the lead on design and construction oversight, sharing project management duties with the SWCD. The county secured a construction easement totaling nearly 40 acres. When the project is finished, the city of Rochester will become the fee-title owner.

The channel design replicated the dimensions, patterns and profiles at work in natural streams. The new channel and floodplain are meant to stop the erosion that was only getting worse. Natural materials such as toe-wood sod mats will stabilize the stream banks.

The restoration is meant to not only cut down erosion, but also stabilize the stream bank, improve water quality by reducing sediment and flood damage (which addresses TSS impairments), and enhance ecological function (which helps address fish impairment).

Wetlands creation – Construction began in spring 2016 with channel and floodplain work. Constructing wetlands and connecting the new channel was slated for 2017.

Eventually, nongame species such as mussels and fish could be introduced.

Toe-wood sod mats and riffles are among the unique design elements. The toe-wood sod mats will help stabilize the bank by layering trees and branches on the outside bends of a river, and then creating a small, vegetated floodplain bench on top. The resulting structure lowers the erosion potential and gives the stream a place to deposit sediment flowing downstream. It also provides aquatic invertebrate and deep-pool fish habitat. The trees used came from Olmsted County's 55th Street extension project – providing a way to recycle that natural resource. Olmsted County helped get access to the woody materials at 55th Street.

The riffles will help hold the grade and increase habitat value. The riffle elements for this design will be spaced throughout the project, helping to hold the grade so the finished channel won't unravel, as well as providing habitat for the sorts of aquatic critters that require clean gravel to spawn, live and eat.

Once complete, the resulting restoration could see other recreational uses. The city of Rochester has expressed interest in using the land as green space with a bike path.