

Project Summary

The Anoka Conservation District (ACD) completed a Sand Creek stormwater retrofit assessment for the Coon Creek Watershed District (CCWD) that identified cost-effective stormwater BMPs. As a result of the assessment, the existing Magnolia Street/Creek Villas dry pond was modified. The pond outlet elevation was raised by 12 inches and riprap berms were installed around the inlets to provide direct water quality benefits to Sand Creek via decreased nutrient and sediment loading. Modification of existing stormwater treatment ponds to increase their efficiencies is one of the most cost effective methods to enhance stormwater treatment. Much of the existing stormwater infrastructure was designed for rate control, and inexpensive retrofits such as this can add water quality benefits and volume reduction. Project dollars were provided by CCWD and the Clean Water Fund (CWF) from the Clean Water, Land and Legacy Amendment. Project promotion and construction oversight was conducted by CCWD.



Project Specs

Date InstalledNovember 2010
 Total Ponding Area 85,552 ft²
 Total Capacity265,237 ft³
 Watershed Treated 53 acres

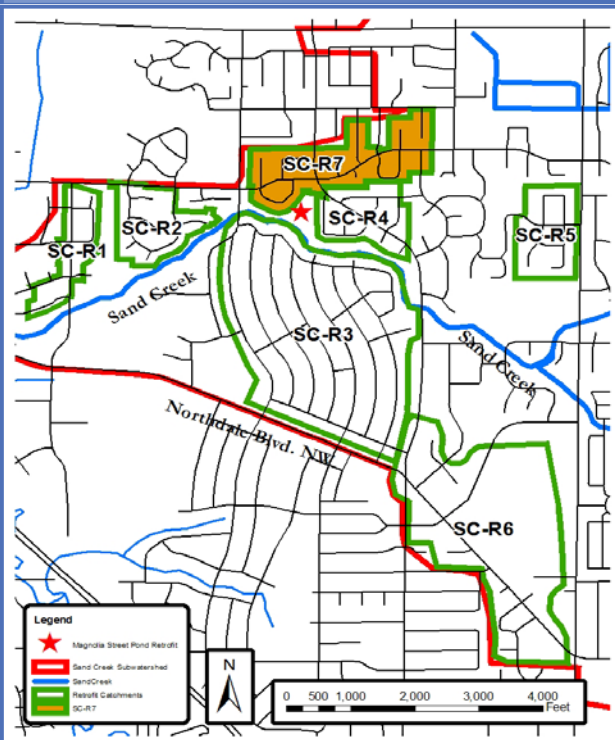
Installation Funding

CCWD\$2,182.00
 State of MN CWF..... \$2,668.00
 Total Project Cost \$4,850.00

Other Funding

Design \$1,411
 Construction Oversight..... \$1,853
 Ongoing Maintenance\$453/yr

SC-R7 Catchment



Within catchment SC-R7 of the Sandcreek Subwatershed Stormwater Retrofit Assessment, the Magnolia Street pond modification was identified to;

- Decrease stormwater volume,
- Decrease pollutant loads, and
- Increase infiltration to recharge groundwater.

The catchment land cover consists of 1/4 acre residential lots. The table below highlights important characteristics of the catchment as well as WinSLAMM model outputs of total phosphorus (TP), total suspended solids (TSS), and volume contributions prior to the pond modification. Wenck Assoc. Inc. designed the project.

Acres	53
Dominant Land Cover	Residential, 1/4 acre lots
Parcels	196
TP (lbs/yr)	22.5
TSS (lbs/yr)	10,597
Volume (acre-feet/yr)	16.3

Installation

The Magnolia Street/Creek Villas dry pond was identified as a potential retrofit site. A detailed analysis by Wenck Assoc. Inc. identified the potential to improve pollutant removal efficiency of the pond by raising the outlet elevation by 12 inches. Dry ponds typically provide little water quality treatment because of frequent resuspension of settled pollutants. Therefore, the increased ponding depth will increase runoff infiltration and removal of total phosphorus and total suspended solids.

Retrofit of existing stormwater infrastructure to raise pond outlet elevation by 12 inches and increase water quality benefits to Sand Creek.



Riprap berms installed at north-east and west pond inlets to capture incoming sediments and maintain pond infiltration.

The increased outlet elevation will increase pond storage capacity, promote infiltration, and ultimately improve water quality in Sand Creek.



Location of Magnolia Street/Creek Villas pond retrofit.

Site Monitoring/Post-Project

Pond operation maintenance was calculated assuming a 30 year period prior to required maintenance. Maintenance includes excavation and disposal of accumulated sediment at a rate of \$2,000 per 10 acres of contributing watershed. An additional \$3,000 was added for mobilization and site restoration.

Modeled Pollutant Reductions and Calculated Benefits

WinSLAMM modeling conducted by ACD estimated reductions in water volume, total suspended solids (TSS), and total phosphorus (TP) following pond modification. The table to the right highlights these reductions. Water quality benefits to receiving water bodies associated with these reductions include:

- Groundwater recharge,
- Increased water clarity,
- Reduced streambank erosion and flooding, and
- Decreased nutrient, pollutant, and toxin loading.

	Volume Reduction		TSS Reduction		TP Reduction	
	ft ³ /yr	%	lbs/yr	%	lbs/yr	%
Annual Total	556,445	78	7,891	74	17.2	76
30 Yr Project Total	16,693,350 ft ³		236,730 lbs		516 lbs	
Benefit / \$100 Spent* (over 30 years)	76,914 ft ³		1,091 lbs		2.38 lbs	
30 Yr Cost* / Unit	\$56.63/acre-ft		\$0.09/lb		\$42.06/lb	

* Includes installation, design, oversight, administration, and 30 year maintenance costs