

# Watershed Outlet Monitoring Program

East Chaska Creek Station - EC 1 site  
Chaska, MN

## Summary Report March – November 2011



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Prepared For: Lower Minnesota River Watershed District  
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## Introduction

The East Chaska Creek EC 1 site, located in Chaska near the Stoughton Avenue bridge as it crosses the Army Core of Engineers water diversion channel, has been monitored since 2003. The East Chaska Creek watershed drains 9,868 acres of various types of land uses including residential, agricultural, undeveloped, and park/recreation areas (Appendix A). This report summarizes the results of flow, precipitation, and water quality for the 2011 sampling season. This data is preliminary and is subject to change until the Metropolitan Council submits the final report for this period.

## Flow and Precipitation

Average flow in East Chaska Creek was 22.02 cubic feet per second (cfs) or 14.23 million gallons per day (mgd) (Table 1). This was several orders of magnitude higher than the average flow in 2010 (1.74 cfs) and can be contributed to the severe spring flooding. The 2011 sampling season was characterized by a very wet spring and an extremely dry late summer and fall. A graph describing flow and precipitation results is provided (Figure 1).

Table 1. Average flow and total precipitation at East Chaska Creek EC 1 Station April – October 2011

Period	Average Flow (cfs/mgd)	Precipitation (inches)	*Average Monthly Precipitation, 2000-2010 (inches)
APRIL	27.73 / 17.93	2.78	3.33
MAY	32.30 / 20.88	5.07	3.90
JUNE	31.30 / 20.23	4.16	4.20
JULY	29.70 / 19.20	5.15	2.64
AUGUST	15.58 / 10.21	4.43	4.65
SEPTEMBER	8.63 / 5.58	0.25	3.82
OCTOBER	8.66 / 5.60	0.80	2.56
TOTAL	22.02 / 14.23	22.62	25.09

\*Average monthly precipitation data obtained from the National Weather Service station located near the EC 1 site.

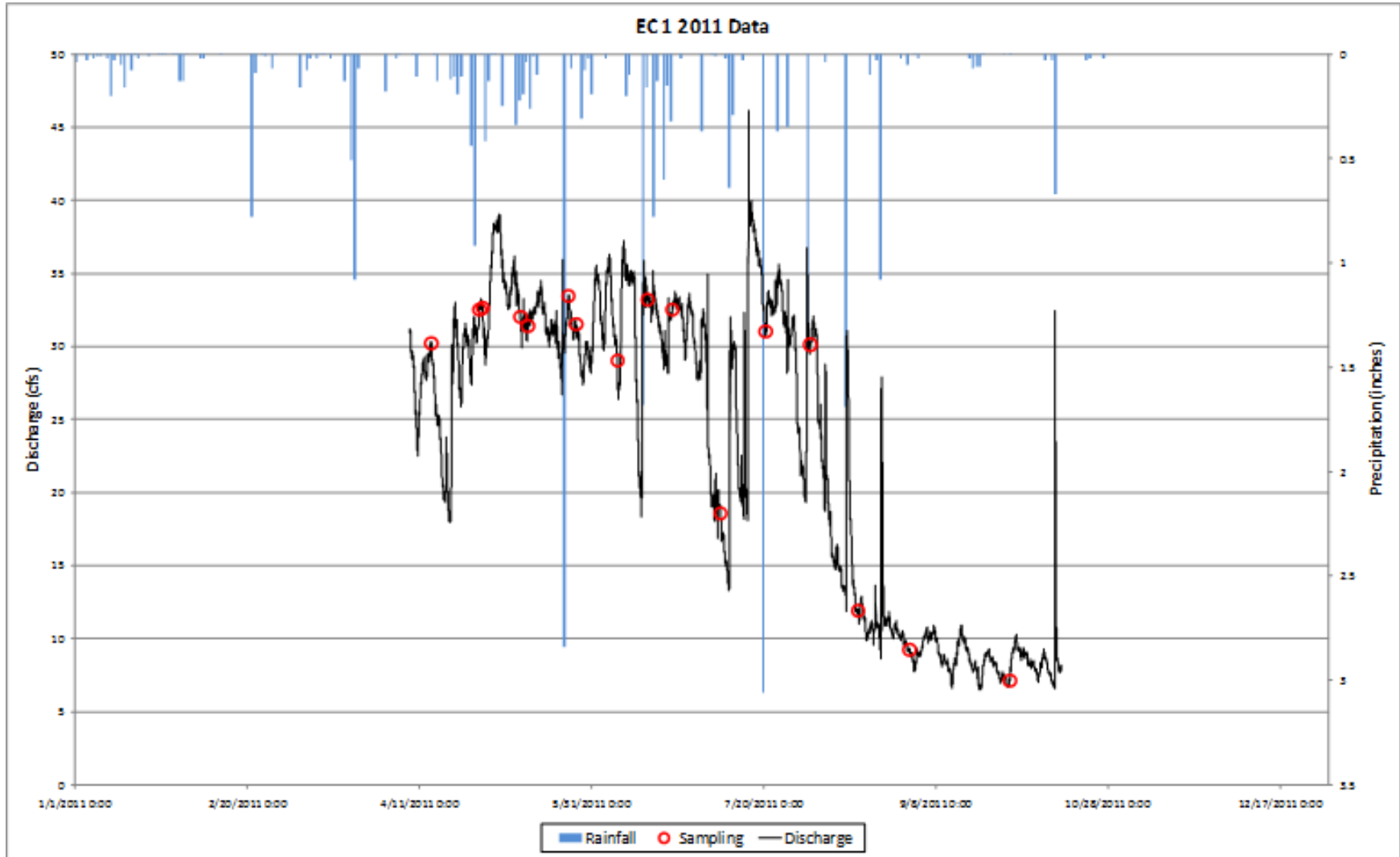


Figure 1. Flow and precipitation at EC 1 Station April - November 2011

## Water Quality

Eight nutrient samples and eleven Escherichia Coli (E.coli) samples were collected at the EC 1 station during the 2011 season. Overall, water quality at EC 1 improved when looking at the chemical results for the site. The only parameter that was higher in 2011 than in 2010 was alkalinity. The most dramatic improvement was in total phosphorus which declined from 0.127 mg/L in 2010 to 0.04 mg/L in 2011, a decrease of almost 70%. Turbidity and total suspended solids also improved substantially.

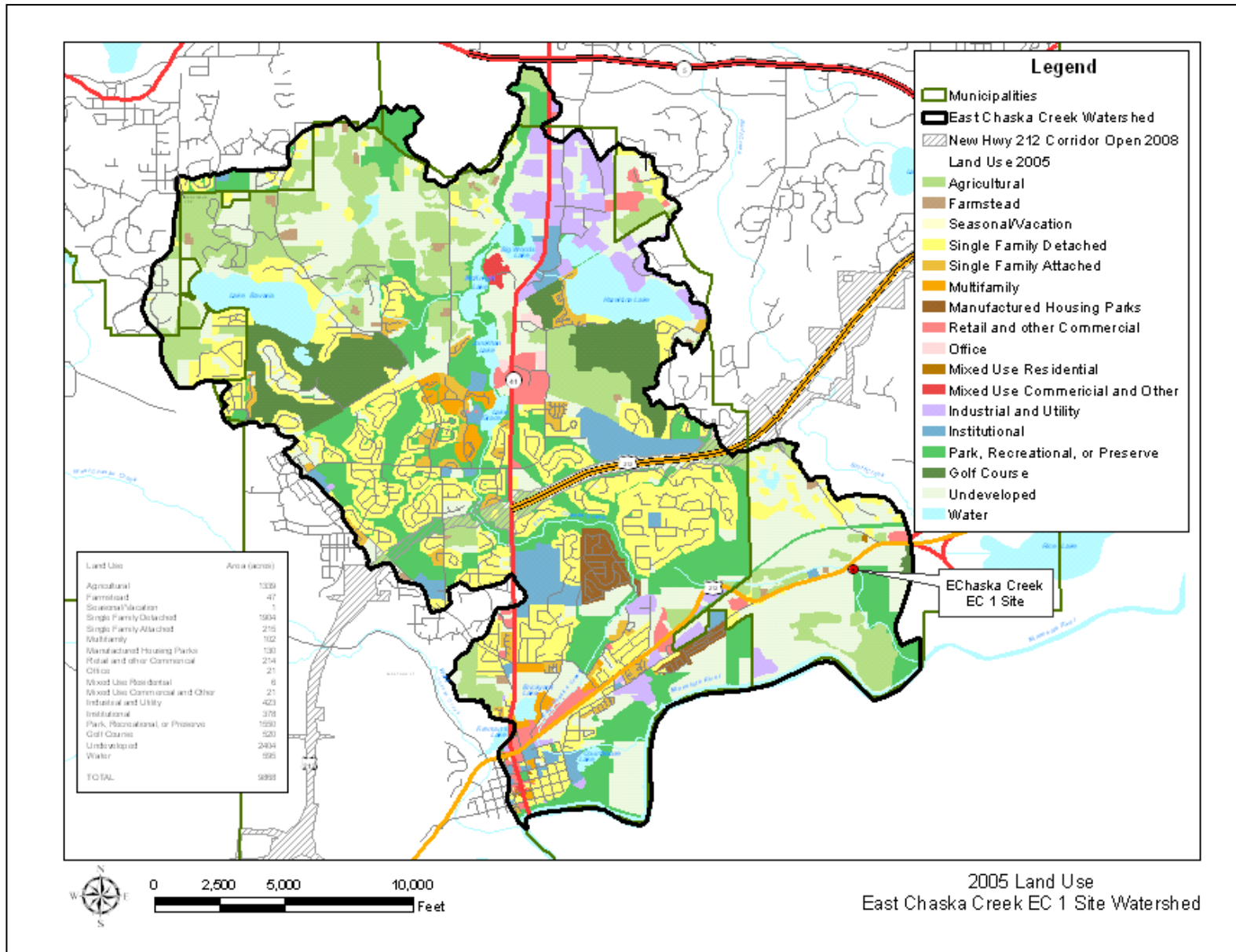
When compared to typical water quality values in the North Central Hardwood Forest ecoregion, the total phosphorus concentration actually fell below the range for the ecoregion in 2011. The geometric mean for E. coli in 2011 (76 MPN per 100 mL) also fell below the state standard. Average values for turbidity and total suspended solids for EC 1 in 2011 fell within the ecoregion range. The only parameter in 2011 higher than the ecoregion mean or exceeding a state standard was nitrate+nitrite. At 450 µg/L, nitrate+nitrite concentrations, while slightly lower than those in 2010, were still almost twice the upper range value for the ecoregion. This information and graphs showing long term trends can be found in the 2011 Carver County Water Quality Report that can be downloaded or accessed through an interactive GIS water quality mapping program (<http://www.co.carver.mh.us/departments/LWS/wqmp.asp>).

Table 2. Average concentrations at East Chaska Creek EC 1 Station April – October 2011.

Parameter	2011 Ave. Concentration	Notes
Alkalinity	217.88 mg/L CaCO <sub>3</sub>	
Chemical Oxygen Demand	27.25 mg/L	
Cadmium	N/A	Not tested at this site
Chloride	N/A	Not tested at this site
Chlorophyll-a	N/A	Not tested at this site
Chromium	N/A	Not tested at this site
Conductivity	N/A	Not tested at this site
Copper	N/A	Not tested at this site
E. Coli (mean/ geomean)	203/ 76 MPN per 100 mL	Standard is 126/ 1260*
Hardness	N/A	Not tested at this site
Lead	N/A	Not tested at this site
Nickel	N/A	Not tested at this site
Nitrogen Ammonia	80 µg/L	
Nitrate + Nitrite	450 µg/L	Ecoregion mean (40-260 ug/L)
Phosphorus, Total	0.04 mg/L	Ecoregion mean (0.06 -0.160 mg/L)
Suspended Solids	9.5 mg/L	Ecoregion mean (4.8 - 16 mg/L)
Turbidity	8.4 NTRU	Ecoregion mean (3-8.5 NTU)
Volatile Solids	2.5 mg/L	
Zinc	N/A	Not tested at this site

\*As stated in MN Rules Chapter 7050.0222, E. coli shall not exceed 126 organisms per 100 mL as a geometric mean of not less than five samples, nor shall more than ten percent of all samples taken during any calendar month individually exceed 1,260 organisms per 100 mL.

# Appendix A



2005 Land Use data source provided by Metropolitan Council Environmental Services