

Watershed Outlet Monitoring Program

West Chaska Creek Station – CH 1.0 Site
Chaska, MN

Summary Report

February – October 2011



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Prepared For: Lower Minnesota River Watershed District
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Introduction

The West Chaska Creek CH 1.0 site, located in Chaska north of US Highway 212 along Creek Road, has been in operation since 1998. The West Chaska Creek Watershed drains approximately 9,900 acres of mostly agricultural and undeveloped land (Appendix A). This report summarizes the results of flow, precipitation, and water quality for February – October 2011. The 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 West Chaska Creek was 11.63 cubic feet per second (cfs) or 7.52 million gallons per day (mgd) (Table 1). This is lower than the average from 2010 (13.36 cfs). 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 West Chaska Creek CH 1.0 Station February – October 2011.

Period	Average Flow (cfs/mgd)	Precipitation (inches)	*Average Monthly Precipitation, 2000-2010 (inches)
FEBRUARY	32.6 / 21.1	1.15	0.92
MARCH	29.02 / 18.76	1.95	1.85
APRIL	12.83 / 8.29	2.85	3.33
MAY	13.66 / 8.83	4.17	3.90
JUNE	10.44 / 6.75	4.05	4.20
JULY	17.27 / 11.16	5.82	2.64
AUGUST	6.72 / 4.34	2.22	4.65
SEPTEMBER	1.89 / 1.22	0.41	3.82
OCTOBER	1.19 / 0.77	1.12	2.56
TOTAL	11.63 / 7.52	22.57	27.86

*Ave. monthly precipitation data obtained from the National Weather Service station located near the CH 1.0 site

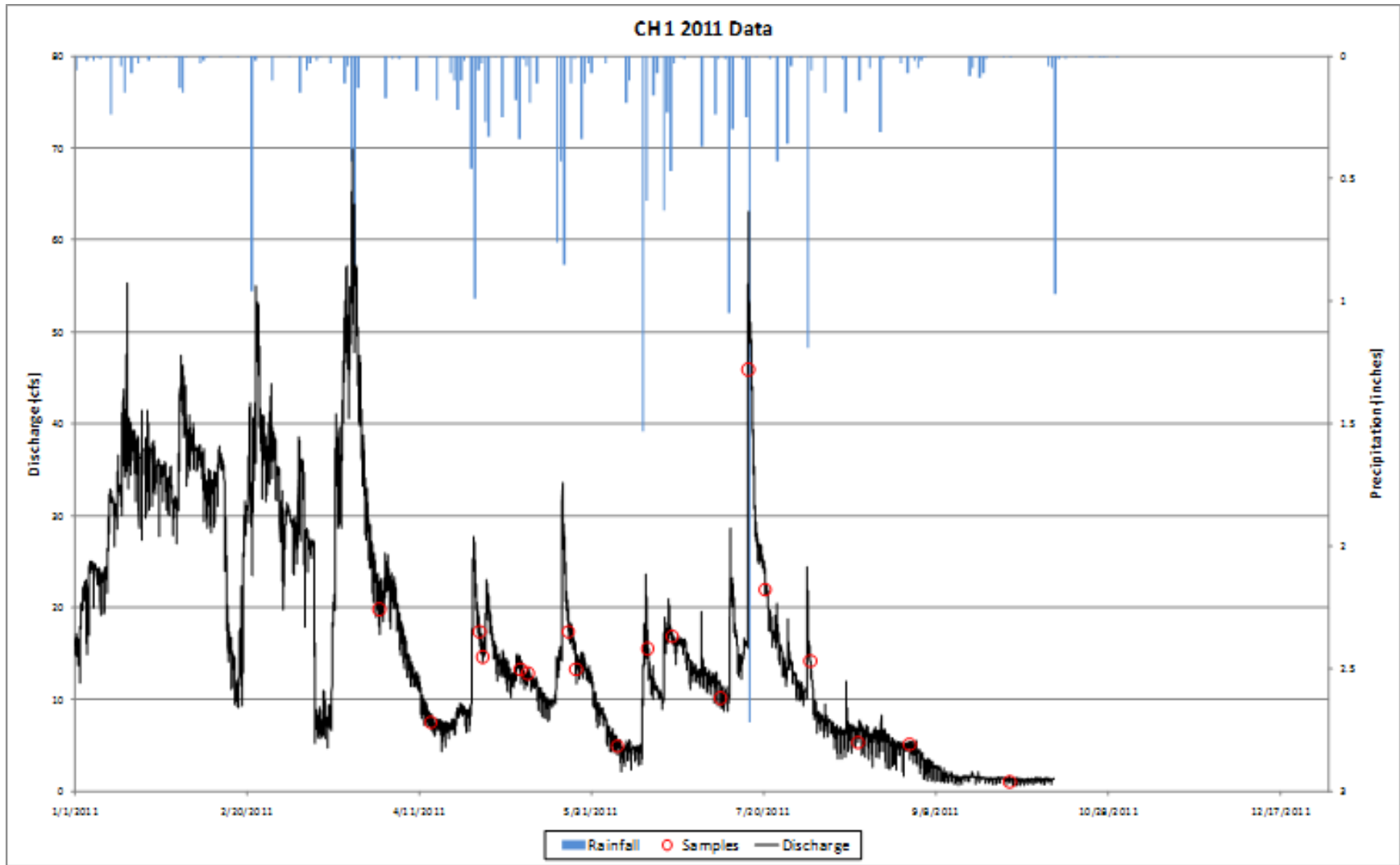


Figure 1. Flow and precipitation at CH 1.0 Station March-November 2011

Water Quality

Nine nutrient samples and eleven Escherichia Coli (E. coli) grab samples were collected at the CH 1.0 Station during the 2011 season. Some water quality parameters for West Chaska Creek declined from the previous year while others improved. The levels of alkalinity, E. coli, and nitrate were all higher in 2011 than they were in 2010. Chemical oxygen demand, ammonia, and total phosphorus were all lower in 2011 than in 2010. Suspended solids, turbidity, and volatile solids were almost unchanged from the previous year.

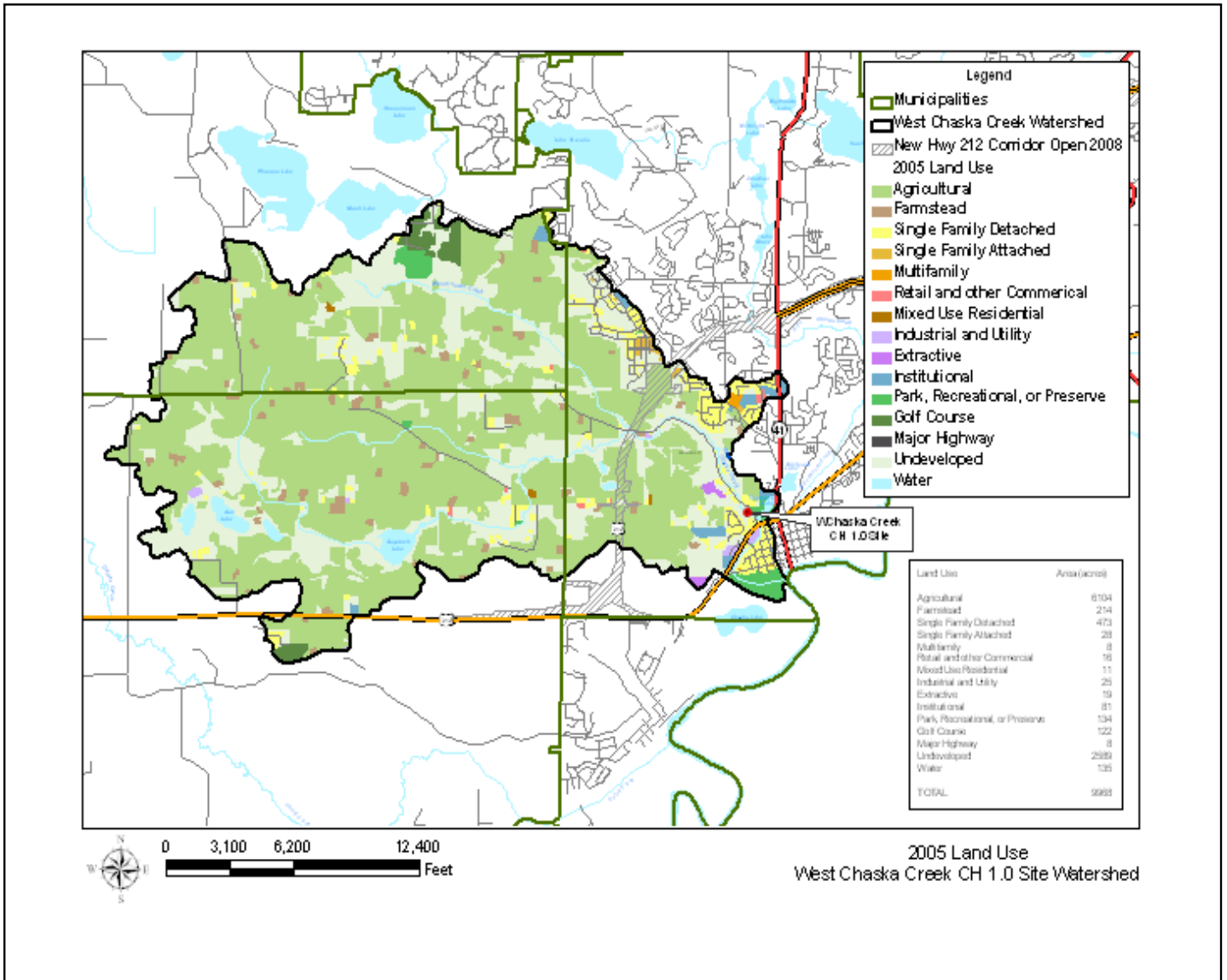
All parameters still exceeded that of typical streams in the North Central Hardwood Forest ecoregion (see Table 2). The 2011 average concentration of total phosphorus (0.23 mg/L) was roughly twice the typical ecoregion mean while the concentration of nitrate+nitrite (2040.0 µg/L) was far higher than the typical range. E. coli levels, which showed a slight improvement from 2009 to 2010, were higher again in 2011. The geometric mean of 218 MPN per 100 mL is almost twice the state standard. This information can also 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 West Chaska Creek CH 1.0 Station February – October 2010.

Parameter	2011 Ave. Concentration	Notes
Alkalinity	272 mg/L CaCO ₃	
Chemical Oxygen Demand	39.22 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)	422/ 218 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	40 µg/L	
Nitrate + Nitrite	2040.0 µg/L	Ecoregion mean (40-260 ug/L)
Phosphorus, Total	0.23 mg/L	Ecoregion mean (0.060-0.160 mg/L)
Suspended Solids	88.67 mg/L	Ecoregion mean (4.8 - 16 mg/L)
Turbidity	57 NTRU	Ecoregion mean (3-8.5 NTU)
Solids, Volatile	12 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.