

Table 1.CW. Crow River (Rockford) Monitoring Station Information



Station Address: 8200 State Highway 55, Rockford, MN
County: Wright
Major Basin: Mississippi River Basin
Watershed: Crow River
Drainage Area: 2,620 square miles

Station Operator: Wright County Soil and Water Conservation District

Metropolitan Council Environmental Services Contact Information:

Contact Person: Leigh Harrod, P.G.
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Watershed District or Watershed Management Organization:
Crow River Organization of Water (CROW)

Station Overview: MCES, with funding provided by the Minnesota Legislature via a grant from the Minnesota Pollution Control Agency (MPCA), has supported water quality monitoring of the Crow River since 1999. The monitoring station is located in Rockford, Minnesota, 23.1 miles upstream from the river confluence with the Mississippi River. The Crow River flows through the following Minnesota counties: Pope, Stearns, Kandiyohi, Meeker, Renville, McLeod, Sibley, Carver, Wright and Hennepin. The Crow River has three major branches: the North, Middle, and South Forks. The North

and Middle Forks converge in Manannah, Minnesota, where the North Fork then continues downstream. The North and South Forks intersect about one mile upstream from the MCES monitoring station. Buffalo Creek is a major tributary of the South Fork. The eastern part of the Crow River Watershed is developing into exurban areas. Agriculture is the predominant land use in the remainder of the watershed.

MCES partners with the USGS to maintain the rating curve at this location. USGS has been monitoring flow at this location, station number 05280000, since 1906. USGS also intermittently collected water quality samples at this station during the 1952-1997 period. A rain gauge is present at this location for measurement of precipitation.

2002 Monitoring Year: Daily average flows were estimated prior to the ice-out date, which occurred on March 29, 2002. Snowmelt began during the last week of March 2002. The peak daily average flow of 11,557 cfs, with a stage of 14.27 feet, occurred on June 30, 2002. This peak flow was the result of a series of large rain events upstream from the Crow River station at Rockford.

Precipitation was recorded on 120 days at this location in 2002. The highest daily rainfall total was 3.03 inches on September 6, 2003. Several unseasonably large precipitation events occurred during the July-September period. Runoff event-based composite sampling began in late March 2002 and continued through early October.

Thirty-six samples were collected for water quality analysis during 2002, including 20 composite samples and 16 grab samples. The MCES annual water quality monitoring plan includes 12 monthly baseflow (“non-event”) grab samples and approximately 10 to 15 flow-weighted composite samples collected during all runoff events in the open-water season (March-November). The 2002 sampling scheme met the goals of the MCES monitoring work plan.

For additional stream monitoring information and monitoring methods regarding this site, see www.metrocouncil.org/environment/RiversLakes.

Figure 1.CW. Crow River Monitoring Station Location and Watershed

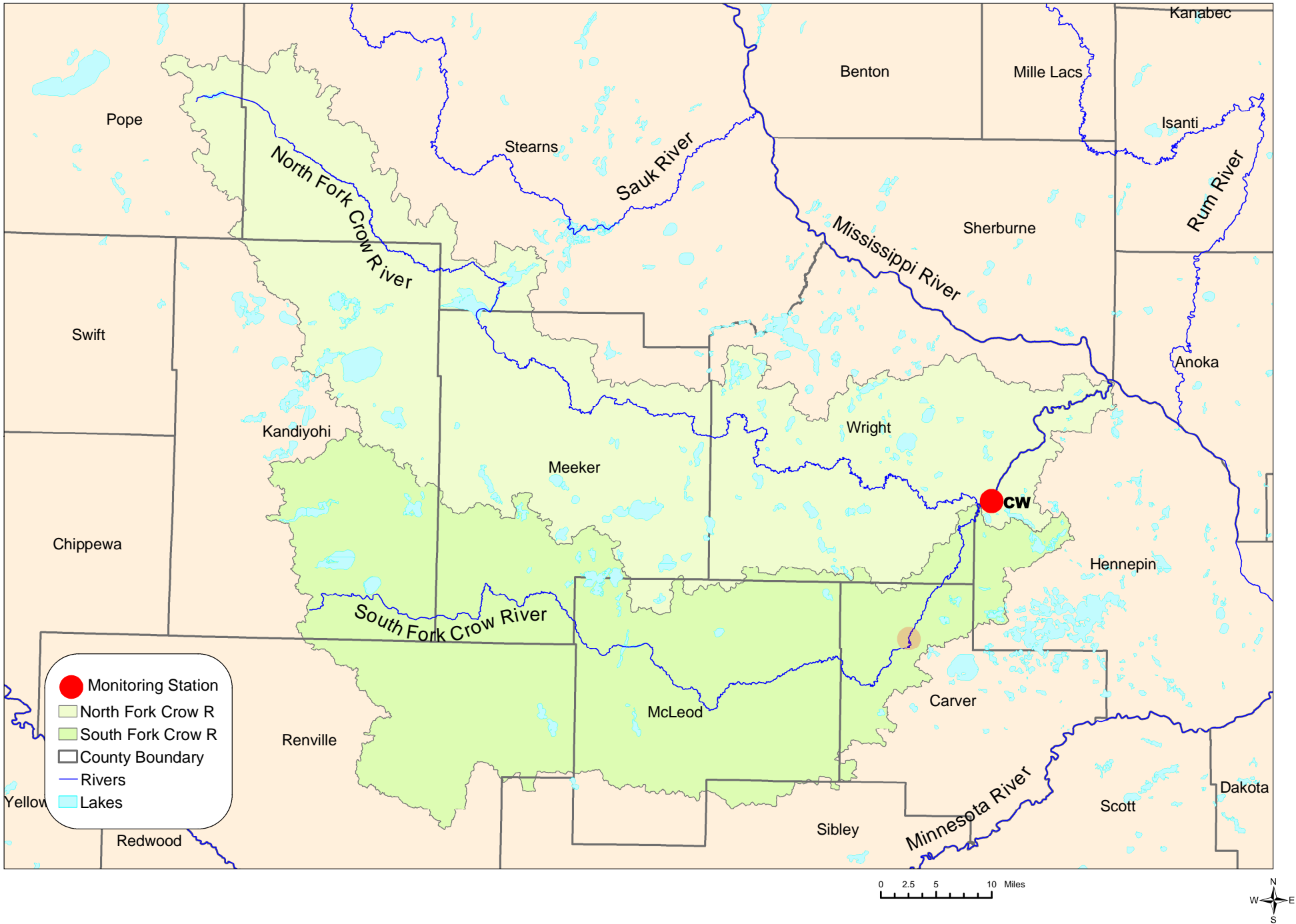


Figure 2.CW. Crow River 2002 Hydrograph, Precipitation and Sampling Information

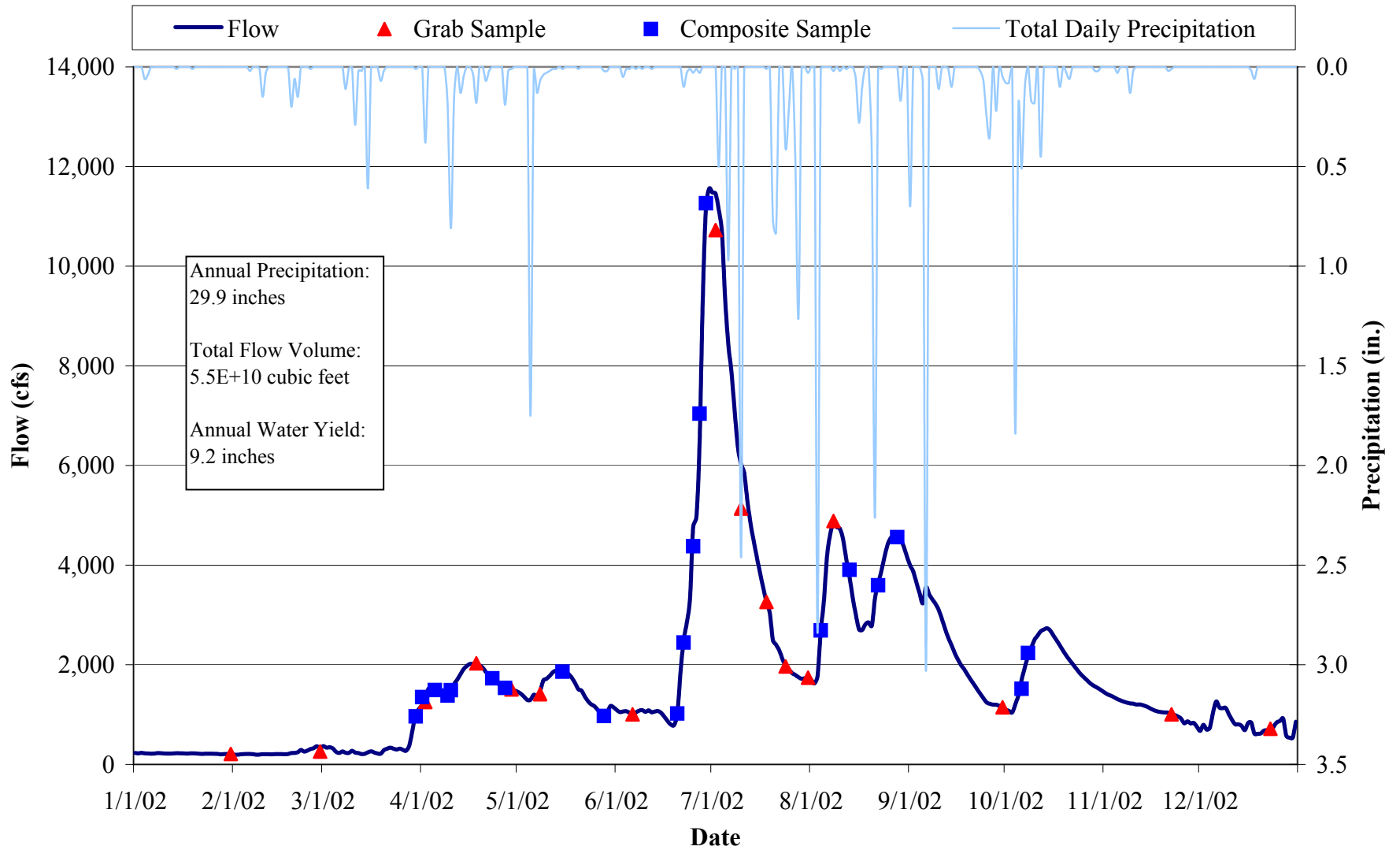


Table 2.CW. Crow River 2002 Water Chemistry Information

Variable	N	Mean	Median	Minimum	Maximum	25%	75%	STD
Chloride, mg/L	36	24	20	9	86	16	25	15
Hardness, mg/L	37	232	226	144	364	190	262	53
Cadmium, ug/L	8	0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1
Chromium, ug/L	8	1.6	0.5	0.2	7.7	0.5	1.2	2.6
Copper, ug/L	8	2.5	2.0	1.6	5.0	1.8	2.7	1.1
Lead, ug/L	8	0.6	0.5	0.1	1.7	0.5	0.7	0.5
Nickel, ug/L	8	9.3	3.6	3.3	35.0	3.4	7.6	11.7
Zinc, ug/L	8	6.4	4.9	3.4	16.8	4.2	6.0	4.4
Total Kjeldahl Nitrogen, mg/L	37	1.47	1.40	0.84	2.10	1.20	1.70	0.36
Total Nitrate Nitrogen, mg/L	37	1.71	1.43	0.21	3.44	0.95	2.56	0.93
Total Phosphorus, mg/L	37	0.31	0.33	0.10	0.59	0.24	0.40	0.12
Total Dissolved Phosphorus, mg/L	37	0.19	0.22	0.04	0.37	0.11	0.26	0.09
Total Suspended Solids, mg/L	37	54	40	3	202	21	77	46
Volatile Suspended Solids, mg/L	37	10	10	2	52	5	12	9
Turbidity, NTU	37	16	16	2	65	5	21	13

N: Sample Count

25%, 75%: 25th and 75th Percentiles

STD: Standard Deviation

Table 3.CW. Crow River 2002 Annual Loading Information* for Suspended Solids and Nutrients

Variable	Annual Load (tons)	Annual Yield (lbs/acre)	Annual Normalized Yield (lbs/acre/in of water)	Flow Weighted Mean Concentration (mg/L)
Total Suspended Solids	106,000	126	14	60
Total Phosphorus	603	0.71	0.08	0.34
Total Dissolved Phosphorus	377	0.45	0.05	0.21
Total Nitrate Nitrogen	2,950	3.49	0.38	1.68

* 2002 Annual Loading Information is provisional and may be subject to minor revisions.

Figure 3.CW. Crow River 2002 Hydrograph with Total Suspended Solids and Nitrate Nitrogen Concentrations

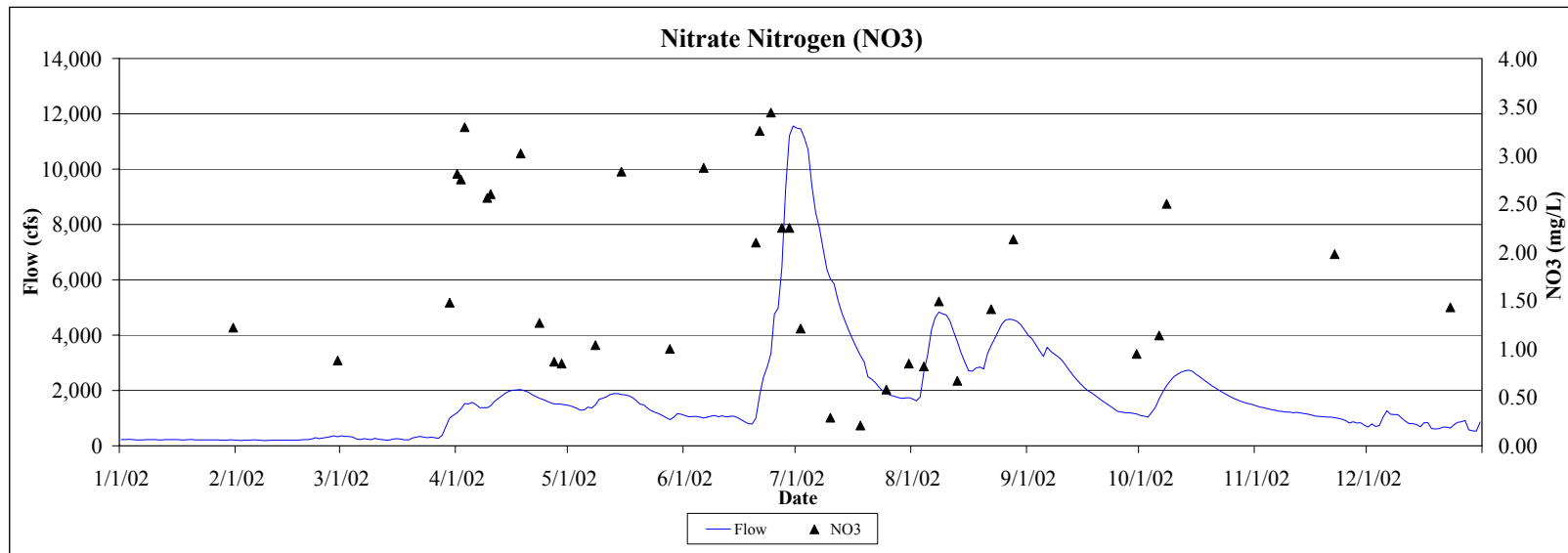
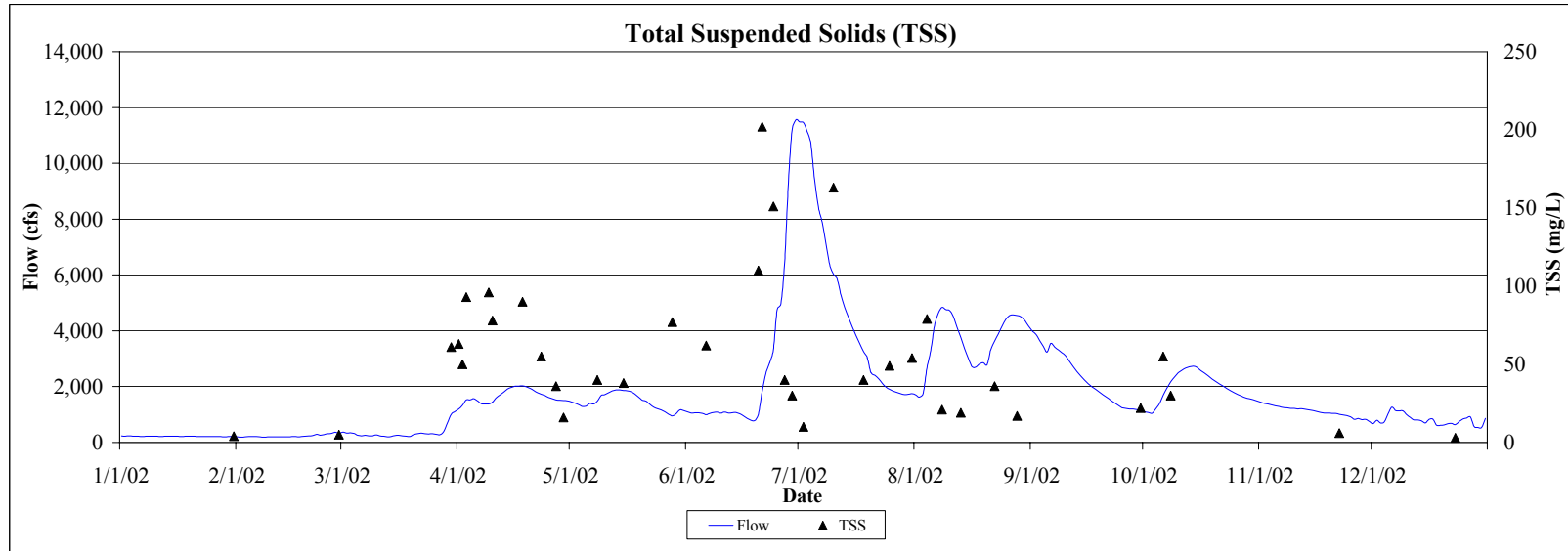


Figure 4.CW. Crow River 2002 Hydrograph with Total and Dissolved Phosphorus Concentrations

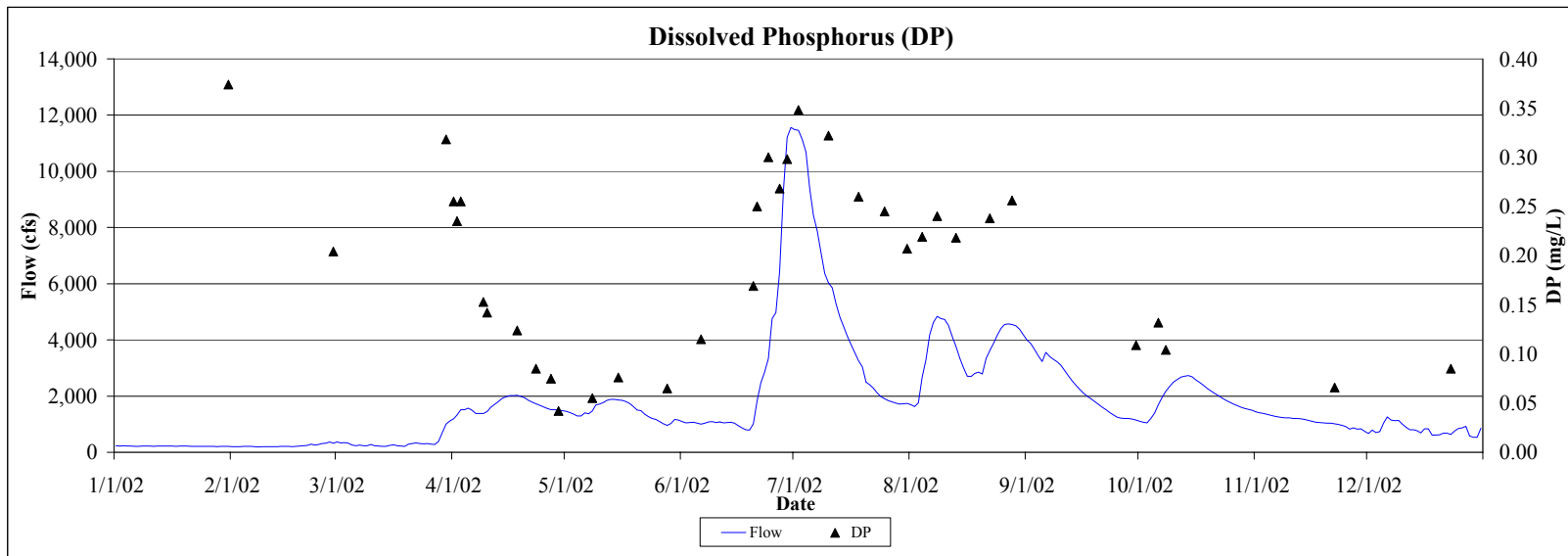
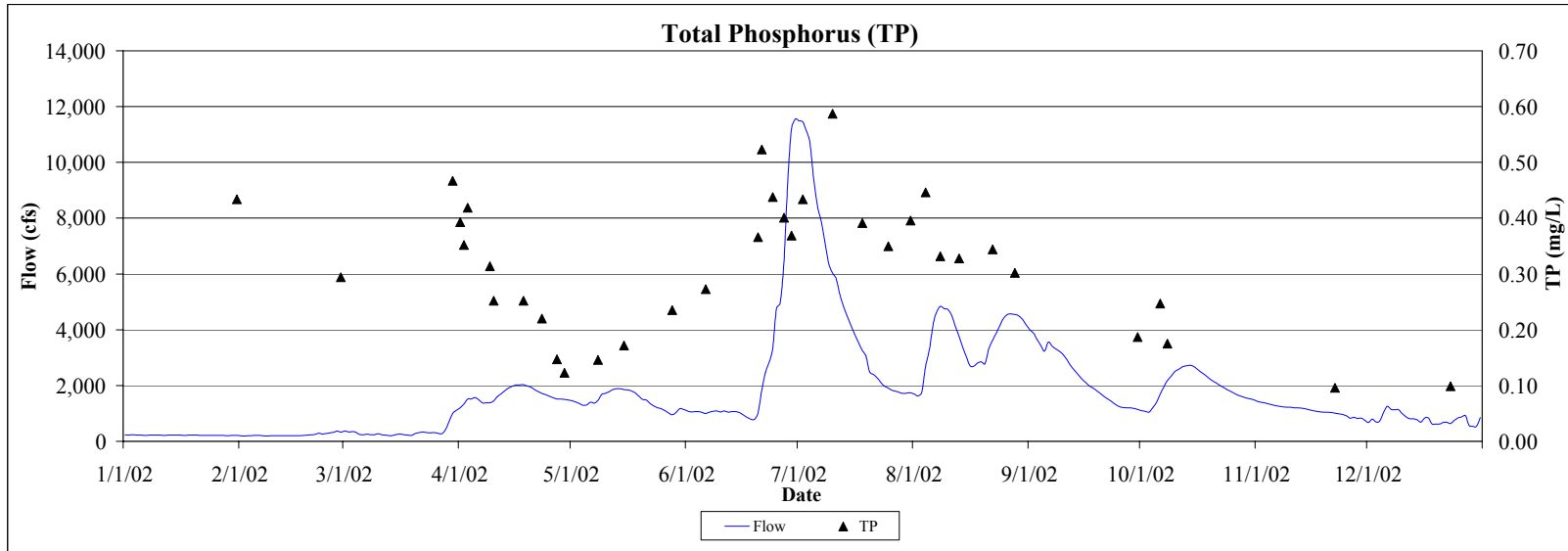


Table 4.CW. Crow River: Comparison of 2001-2002 Hydrology and Water Chemistry

	2001	2002
Hydrology		
Total Precipitation (in)	21.04	29.90
Water Yield (in)	6.5	9.1
Total Volume (cf)	7.4E+10	5.6E+10
Annual Load (tons)		
Total Suspended Solids	53,600	106,000
Total Phosphorus	450	603
Total Dissolved Phosphorus	327	377
Total Nitrate Nitrogen	4,930	2,950
Annual Yield (lbs/acre)		
Total Suspended Solids	63	126
Total Phosphorus	0.53	0.71
Total Dissolved Phosphorus	0.39	0.45
Total Nitrate Nitrogen	5.83	3.49
Annual Normalized Yield (lbs/acre/in of water)		
Total Suspended Solids	10	14
Total Phosphorus	0.08	0.08
Total Dissolved Phosphorus	0.06	0.05
Total Nitrate Nitrogen	0.90	0.38
Flow-Weighted Mean Concentration (mg/L)		
Total Suspended Solids	43	60
Total Phosphorus	0.36	0.34
Total Dissolved Phosphorus	0.26	0.21
Total Nitrate Nitrogen	3.98	1.68