

Table 1.WR. West Raven Stream Monitoring Station Information



Station Address: 26149 Church Avenue, Belle Plaine, MN
County: Scott
Major Basin: Minnesota River Basin
Watershed: Sand Creek
Drainage Area: 14.85 square miles

Station Operator: Scott County Soil and Water Conservation District

Metropolitan Council Environmental Services Contact Information:

Contact Person: Tim Pattock or Mike Ahlf
Address: 2400 Childs Road
St. Paul, MN 55106
Phone: 651-602-8084 (Tim) or 651-602-8082 (Mike)
E-mail: timothy.pattock@metc.state.mn.us
mike.ahlf@metc.state.mn.us

Watershed District or Watershed Management Organization:

Scott County Soil and Water Conservation District

Station Overview: MCES has supported water quality monitoring of the West Branch of Raven Stream since 1999. The monitoring station is located about 5 miles southeast of Belle Plaine, Minnesota, approximately 4.7 miles upstream from the stream confluence with Sand Creek. MCES partners with the Scott County Soil and Water Conservation District to operate the West Raven Stream monitoring station. The rain gauge at this station was not functional in 2003, so precipitation data were obtained from the Minnesota Climatology Working Group, Jordan Station Number 214176.

2003 Monitoring Year: Spring snowmelt and ice-free stream conditions occurred in mid-March 2003. Runoff event-based sampling began in mid-March and continued into late July. From early August until the end of the year, no flow existed in the stream at this monitoring station. A large rainfall event of 1.65 inches on May 10, 2003 created a significant runoff event that produced a peak daily average flow of 88 cfs on May 12. A May 11 composite sample collected on the rising limb of the hydrograph for this runoff event had the second highest total suspended solids (TSS) concentration (128 mg/L) of all 2003 samples.

Twelve samples were collected for water quality analysis during 2003, including 5 composite samples and 7 grab samples. Until early August, when stream flow ceased, samples were obtained during varying flow conditions, to most accurately characterize West Raven Stream water quality. 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). Due to dry conditions, no flow existed at this monitoring station for nearly 7 months of the year, and there were a limited number of runoff events. During the portion of year when stream flow existed, the 2003 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.WR. West Raven Stream Monitoring Station Location and Watershed

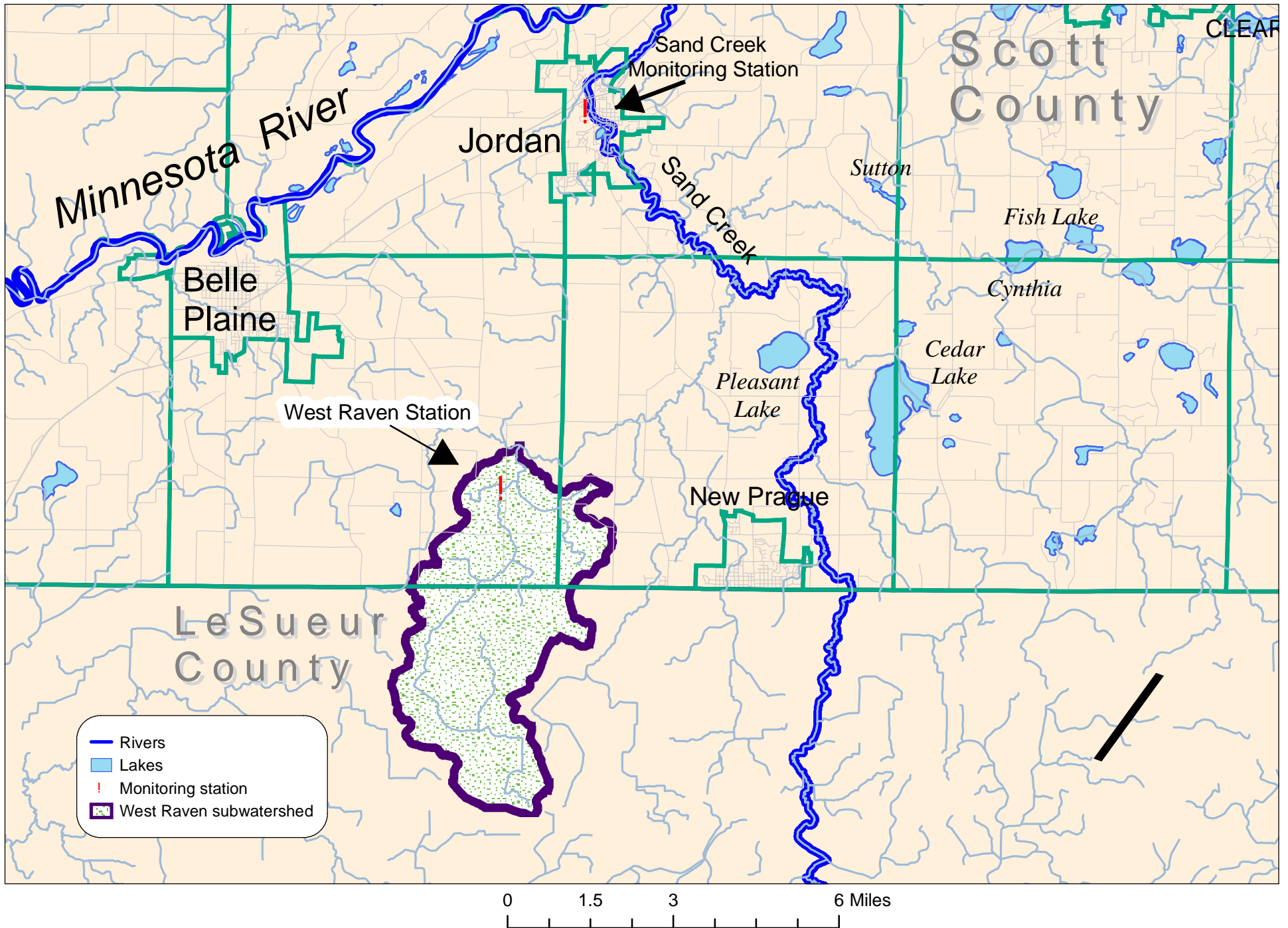


Figure 2.WR. West Raven Stream 2003 Hydrograph, Precipitation and Sampling Information

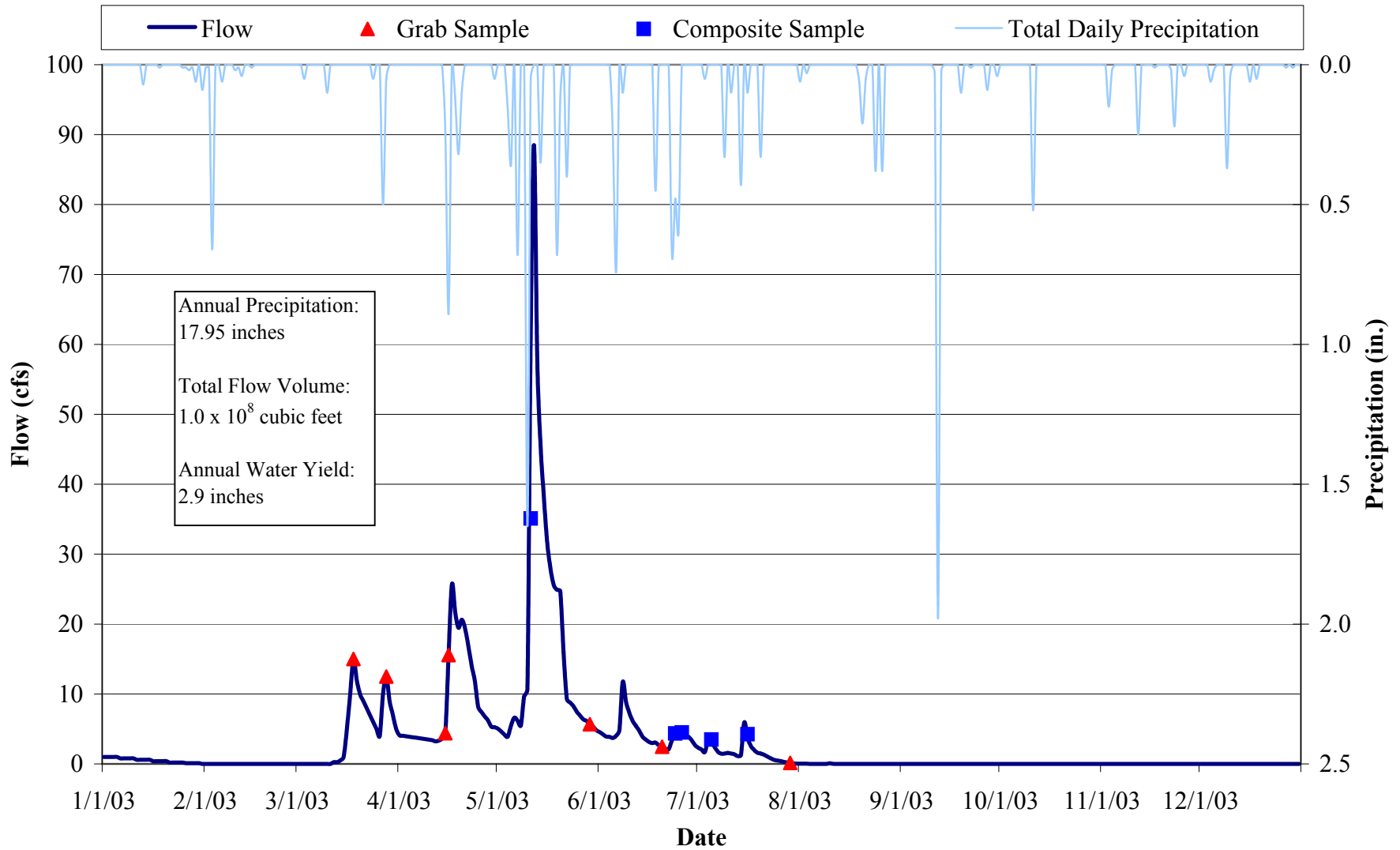


Table 2.WR. West Raven Stream 2003 Water Chemistry Information

Variable	N	Mean	Median	Minimum	Maximum	25%	75%	STD
Chloride, mg/L	12	24	22	19	29	21	27	4
Hardness, mg/L	0	na	na	na	na	na	na	na
Cadmium, ug/L	0	na	na	na	na	na	na	na
Chromium, ug/L	0	na	na	na	na	na	na	na
Copper, ug/L	0	na	na	na	na	na	na	na
Lead, ug/L	0	na	na	na	na	na	na	na
Nickel, ug/L	0	na	na	na	na	na	na	na
Zinc, ug/L	0	na	na	na	na	na	na	na
Total Kjeldahl Nitrogen, mg/L	12	1.66	1.45	0.86	3.70	1.15	1.88	0.80
Total Nitrate Nitrogen, mg/L	11	6.75	7.25	2.76	9.55	5.18	8.31	2.23
Total Phosphorus, mg/L	12	0.35	0.34	0.09	0.69	0.24	0.44	0.17
Total Dissolved Phosphorus, mg/L	12	0.25	0.26	0.10	0.50	0.14	0.30	0.12
Total Suspended Solids, mg/L	12	53	32	5	144	13	83	48
Volatile Suspended Solids, mg/L	12	8	7	1	17	4	11	5
Turbidity, NTU	12	11	8	2	24	5	16	7

na: Data are insufficient to calculate these statistics.

N: Sample Count

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

STD: Standard Deviation

Table 3.WR. West Raven Stream 2003 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	266	56	19	86
Total Phosphorus	1.17	0.25	0.08	0.38
Total Dissolved Phosphorus	0.85	0.18	0.06	0.27
Total Nitrate Nitrogen	25.2	5.31	1.82	8.14

* 2003 Annual Loading Information is provisional and may be subject to minor revisions.

Figure 3.WR. West Raven Stream 2003 Hydrograph with Total Suspended Solids and Nitrate Nitrogen Concentrations

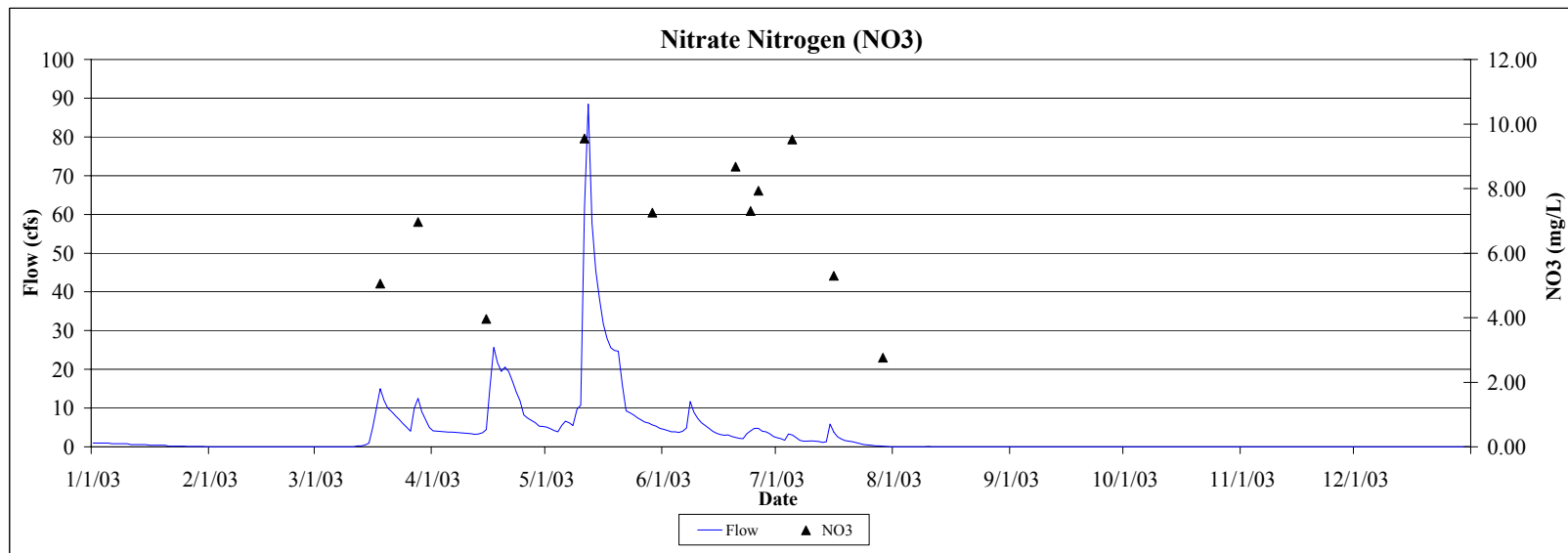
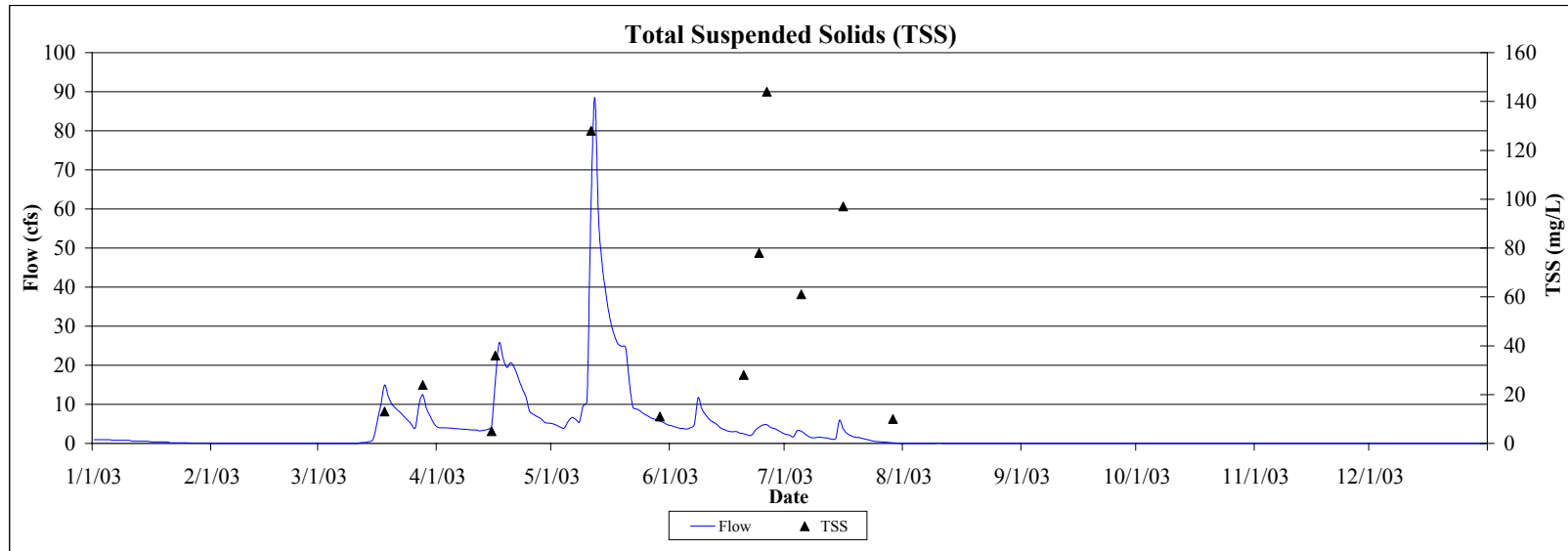


Figure 4.WR. West Raven Stream 2003 Hydrograph with Total and Dissolved Phosphorus Concentrations

