

**Table 1.LC. Little Cobb River Monitoring Station Information**



**Station Address:** Near County Road 16 Bridge, Beauford, MN  
**County:** Blue Earth  
**Major Basin:** Minnesota River Basin  
**Watershed:** Le Sueur River  
**Drainage Area:** 130.0 square miles

**Station Operator:** Metropolitan Council Environmental Services

**Metropolitan Council Environmental Services Contact Information:**

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**Station Overview:** MCES, with funding provided by the Minnesota Legislature via a grant from the Minnesota Pollution Control Agency (MPCA), has conducted water quality monitoring of the Little Cobb River since 1999. The monitoring station is located near Beauford, Minnesota, 1.6 miles upstream from the river confluence with the Big Cobb River. The Little Cobb River outlets from Trenton Lake and flows northwesterly until passing through Severson Lake. From Severson Lake, the river flows northeasterly, where Bull Run Creek joins prior to the confluence with the Big Cobb River. The Little Cobb River flows through mainly agricultural land in Freeborn, Waseca, and Blue Earth Counties.

MCES is the sole operator of this monitoring station, but partners with the USGS, which maintains the rating curve at this location. USGS has been monitoring river flow at this location, station number 05320270, since 1995. This site is also being studied as a part of the USGS National Water Quality Assessment (NAWQA) Program, including intermittent collection of water quality samples from 1995 to present. A rain gauge at this monitoring station collects rainfall data during the April-December period.

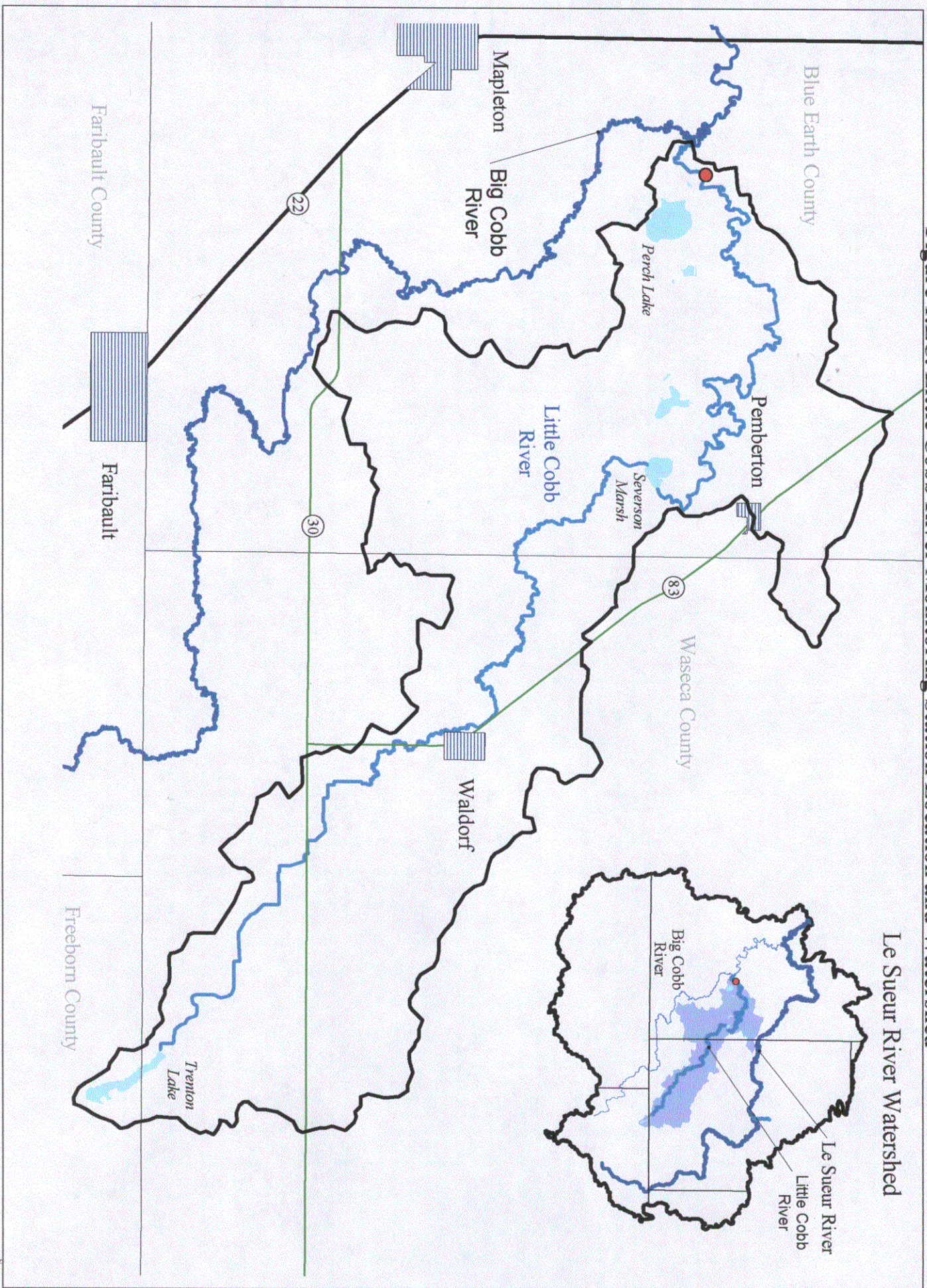
**2003 Monitoring Year:** Snowmelt began during the second week of March 2003. The peak daily average flow of 397 cfs, with a stage of 8.90 feet, occurred on May 16, 2003. After a runoff event in mid-July, the river receded and effectively ceased flowing by early August.

Runoff event-based composite sampling began in mid-April 2003 and continued through mid-May. A 1.6-inch rainfall event in the early part of May resulted in the largest runoff event of 2003. Three smaller runoff events in June and July were characterized by grab samples. A grab sample collected on July 11, at the peak of the hydrograph for the last runoff event of the year, had the highest total suspended solids (TSS) concentration (261 mg/L) of all 2003 samples. After this mid-July runoff event, the river receded and ceased flowing by early August. Three additional grab samples were obtained during the August-October period, until the river was completely dry in November. No further samples were collected after this point.

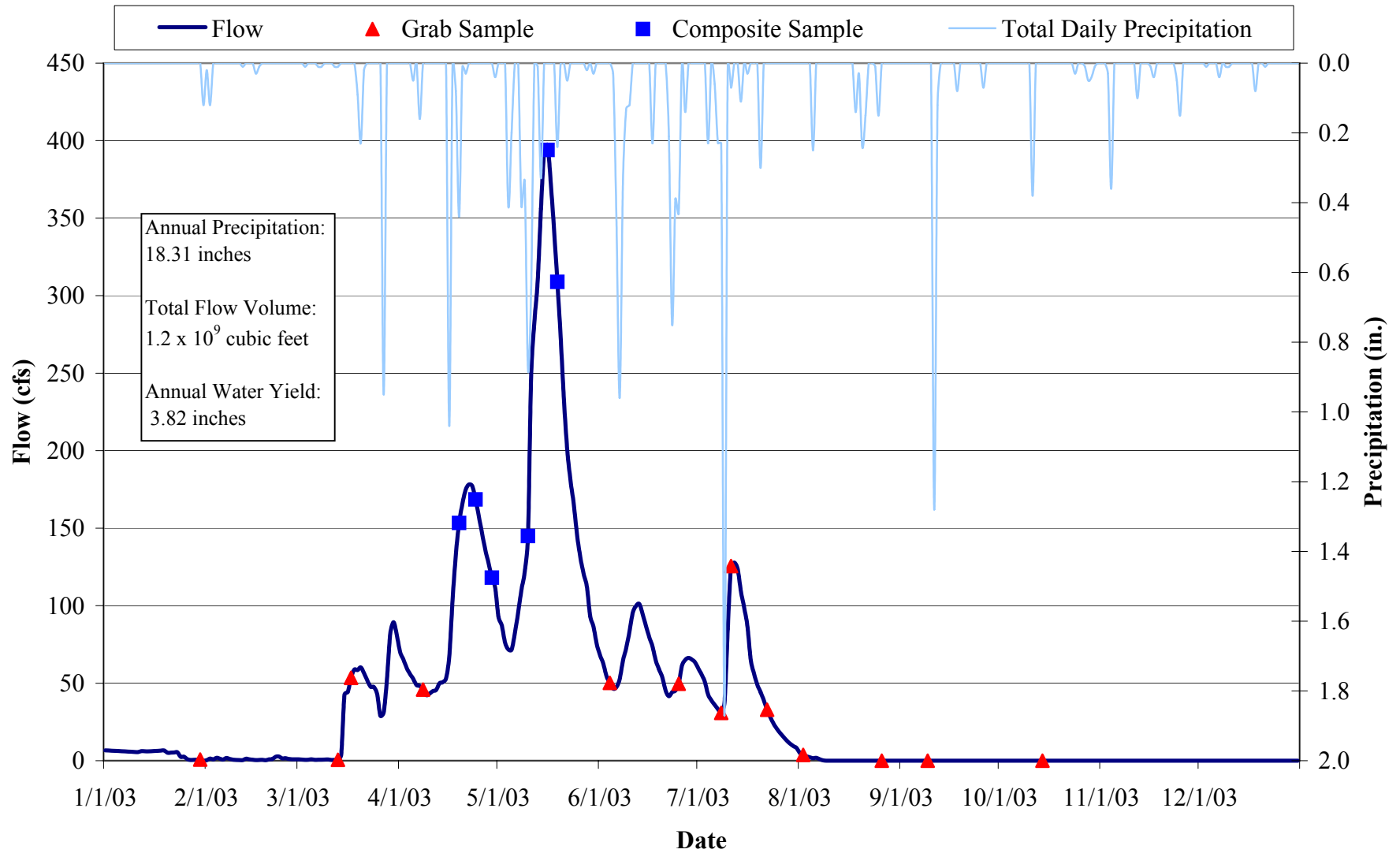
Nineteen samples were collected for water quality analysis during 2003, including 6 composite samples and 13 grab samples. The MCES annual water quality monitoring plan includes 12 monthly baseflow (“non-event”) grab samples and approximately 10 to 15 flow-weighted composite samples collected during all runoff events in the open-water season (March-November). The reduced number of composite and grab samples collected in 2003 is attributed to the small number of runoff events and lack of flow during the November-December period. 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](http://www.metrocouncil.org/environment/RiversLakes).**

Figure 1.1.C. Little Cobb River Monitoring Station Location and Watershed



**Figure 2.LC. Little Cobb River 2003 Hydrograph, Precipitation and Sampling Information**



**Table 2.LC. Little Cobb River 2003 Water Chemistry Information**

Variable	N	Mean	Median	Minimum	Maximum	25%	75%	STD
Chloride, mg/L	18	21	18	14	41	16	23	7
Hardness, mg/L	6	312	307	228	440	269	341	70
Cadmium, ug/L	7	<0.1	<0.1	<0.1	0.1	<0.1	0.1	<0.1
Chromium, ug/L	7	1.8	1.0	0.1	4.6	0.3	4.4	1.9
Copper, ug/L	7	4.1	3.6	2.4	6.2	2.8	6.1	1.5
Lead, ug/L	7	1.6	1.0	0.1	4.0	0.2	3.4	1.6
Nickel, ug/L	7	6.4	6.1	4.1	8.3	5.5	8.2	1.5
Zinc, ug/L	7	8.6	5.1	2.1	19.2	2.4	18.9	7.4
Nitrogen, Total Kjeldahl, mg/L	19	1.58	1.60	0.68	2.40	1.30	1.80	0.42
Nitrogen, Total Nitrate, mg/L	19	9.02	10.00	0.03	17.10	2.59	13.80	5.79
Phosphorus, Total, mg/L	19	0.26	0.26	0.08	0.58	0.15	0.35	0.12
Phosphorus, Total Dissolved, mg/L	19	0.11	0.08	0.01	0.36	0.05	0.11	0.10
Solids, Total Suspended, mg/L	19	110	105	3	261	22	193	88
Solids, Volatile Suspended, mg/L	19	16	17	1	34	7	26	10
Turbidity, NTU	19	29	23	3	70	12	39	22
Transparency Tube, cm	16	21	14	6	60	8	35	18

N: Sample Count

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

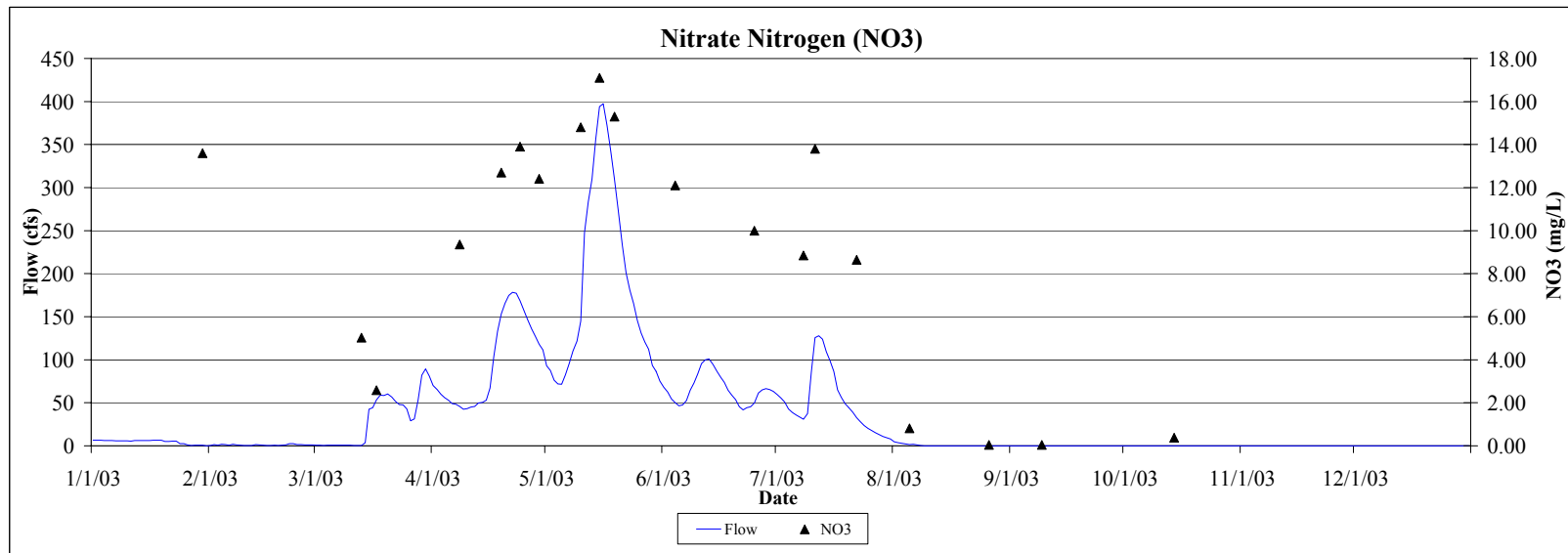
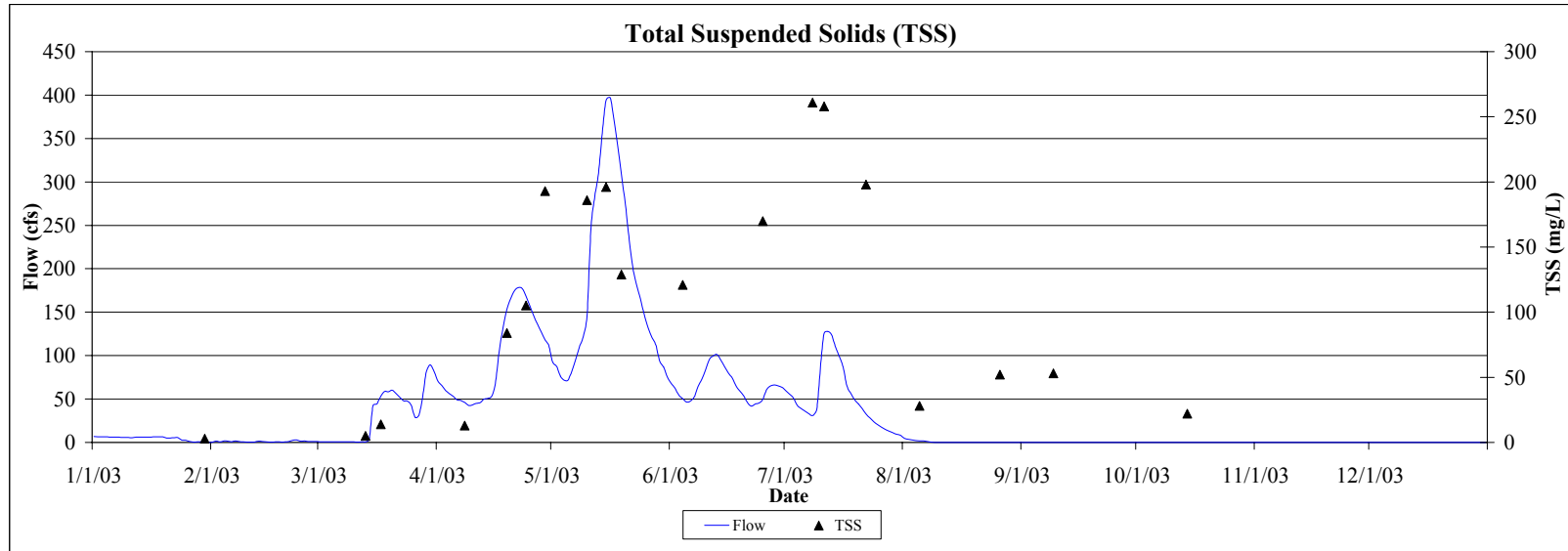
STD: Standard Deviation

**Table 3.LC. Little Cobb River 2003 Annual Loading Information\* for Suspended Solids and Nutrients**

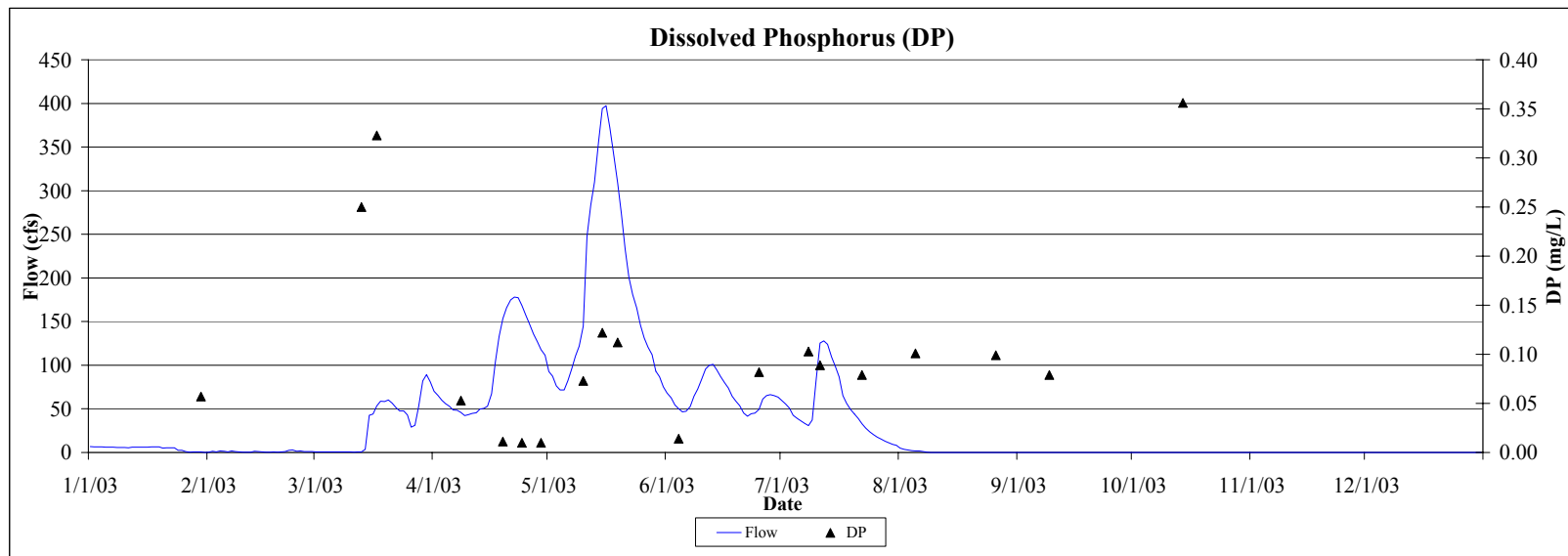
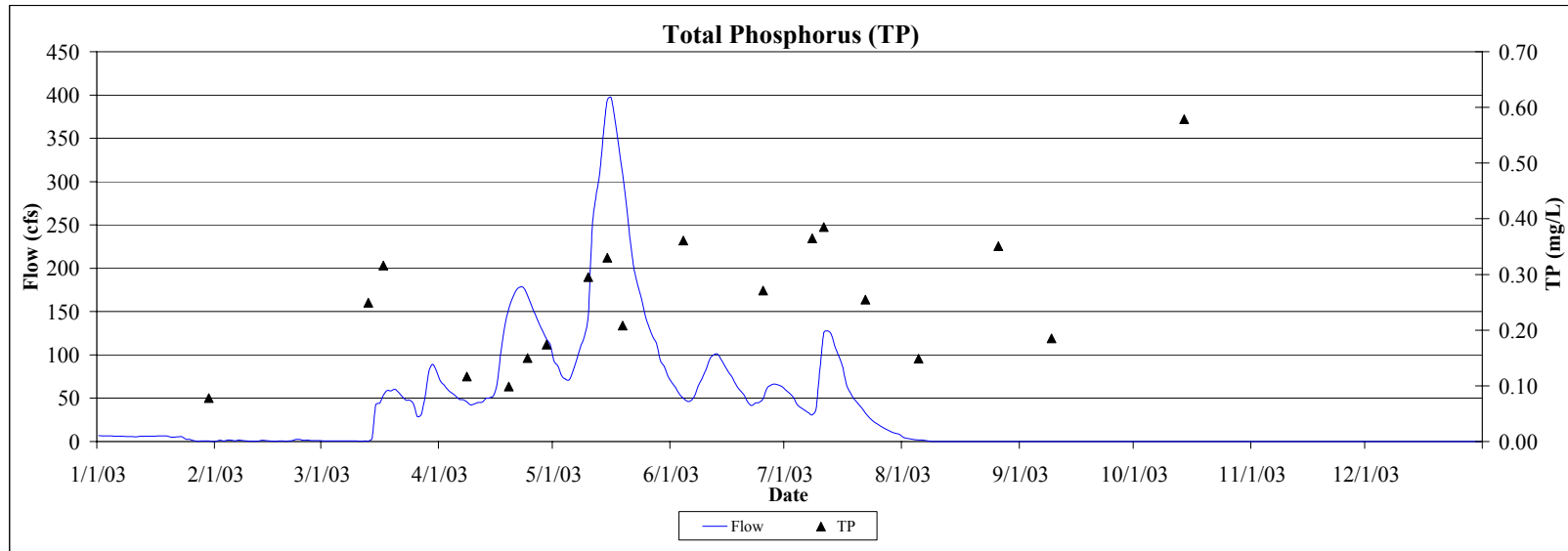
Variable	Annual Load (tons)	Annual Yield (lbs/acre)	Annual Normalized Yield (lbs/acre/in of water)	Flow Weighted Mean Concentration (mg/L)
Solids, Total Suspended	4,870	117	31	135
Phosphorus, Total	8.75	0.21	0.01	0.24
Phosphorus, Total Dissolved	2.99	0.07	0.02	0.08
Nitrogen, Total Nitrate+Total Nitrite	470	11.3	2.96	13.1

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

**Figure 3.LC. Little Cobb River 2003 Hydrograph with Total Suspended Solids and Nitrate Nitrogen Concentrations**



**Figure 4.LC. Little Cobb River 2003 Hydrograph with Total and Dissolved Phosphorus Concentrations**



**Table 4.LC. Little Cobb River: Comparison of 2001-2003 Hydrology and Water Chemistry**

	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Hydrology</b>			
<b>Total Precipitation (inches)</b>	26.91	23.79	18.31
<b>Water Yield (inches)</b>	11.2	4.1	3.8
<b>Total Volume (cubic feet)</b>	$3.4 \times 10^9$	$1.2 \times 10^9$	$1.2 \times 10^9$
<b>Annual Load (tons)</b>			
<b>Total Suspended Solids</b>	8,850	6,730	4,870
<b>Total Phosphorus</b>	32.7	11.8	8.75
<b>Total Dissolved Phosphorus</b>	22.6	4.47	2.99
<b>Total Nitrate Nitrogen</b>	1,120	470	470
<b>Annual Yield (lbs/acre)</b>			
<b>Total Suspended Solids</b>	213	161	117
<b>Total Phosphorus</b>	0.79	0.28	0.21
<b>Total Dissolved Phosphorus</b>	0.54	0.11	0.07
<b>Total Nitrate Nitrogen</b>	26.8	11.3	11.3
<b>Annual Normalized Yield (lbs/acre/inch of water)</b>			
<b>Total Suspended Solids</b>	19	40	31
<b>Total Phosphorus</b>	0.07	0.07	0.06
<b>Total Dissolved Phosphorus</b>	0.05	0.03	0.02
<b>Total Nitrate Nitrogen</b>	2.40	2.78	2.96
<b>Flow-Weighted Mean Concentration (mg/L)</b>			
<b>Total Suspended Solids</b>	84	175	135
<b>Total Phosphorus</b>	0.31	0.31	0.24
<b>Total Dissolved Phosphorus</b>	0.21	0.12	0.08
<b>Total Nitrate Nitrogen</b>	10.6	12.3	13.1