

**Table 1.NM. Nine Mile Creek Monitoring Station Information**



**Station Address:** James Road, Bloomington, MN  
**County:** Hennepin  
**Major Basin:** Minnesota River Basin  
**Watershed:** Nine Mile Creek  
**Drainage Area:** 38.3 square miles

**Station Operator:** Metropolitan Council Environmental Services

**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:**  
Nine Mile Creek Watershed District

**Station Overview:** MCES has conducted water quality monitoring of Nine Mile Creek since 1989. The monitoring station is located in Bloomington, Minnesota, 1.8 miles upstream from the creek confluence with the Minnesota River. MCES staff maintain the

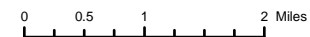
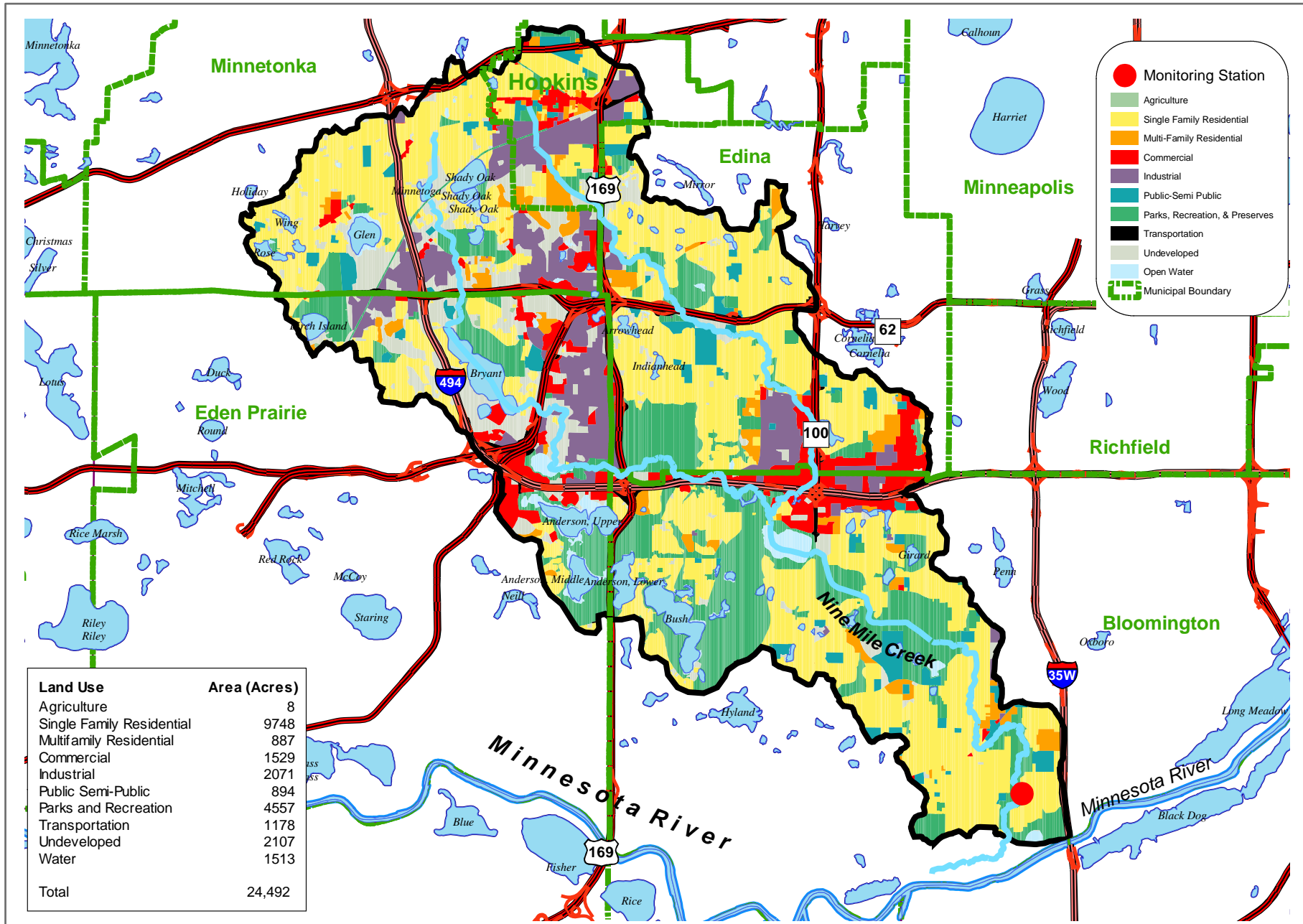
rating curve at this station. There is no rain gauge at this station; however, precipitation data are obtained from the Minnesota Climatology Working Group, Bloomington Station Number 217538.

**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 through mid-September. The peak daily average flow of 171 cfs occurred on June 28, 2003. Due to the large amount of impervious surface in the Nine Mile Creek Watershed, including storm drainage from the Interstate Highway 35W corridor, the stream hydrograph responds rapidly to rain events and is characterized by numerous sharp peaks.

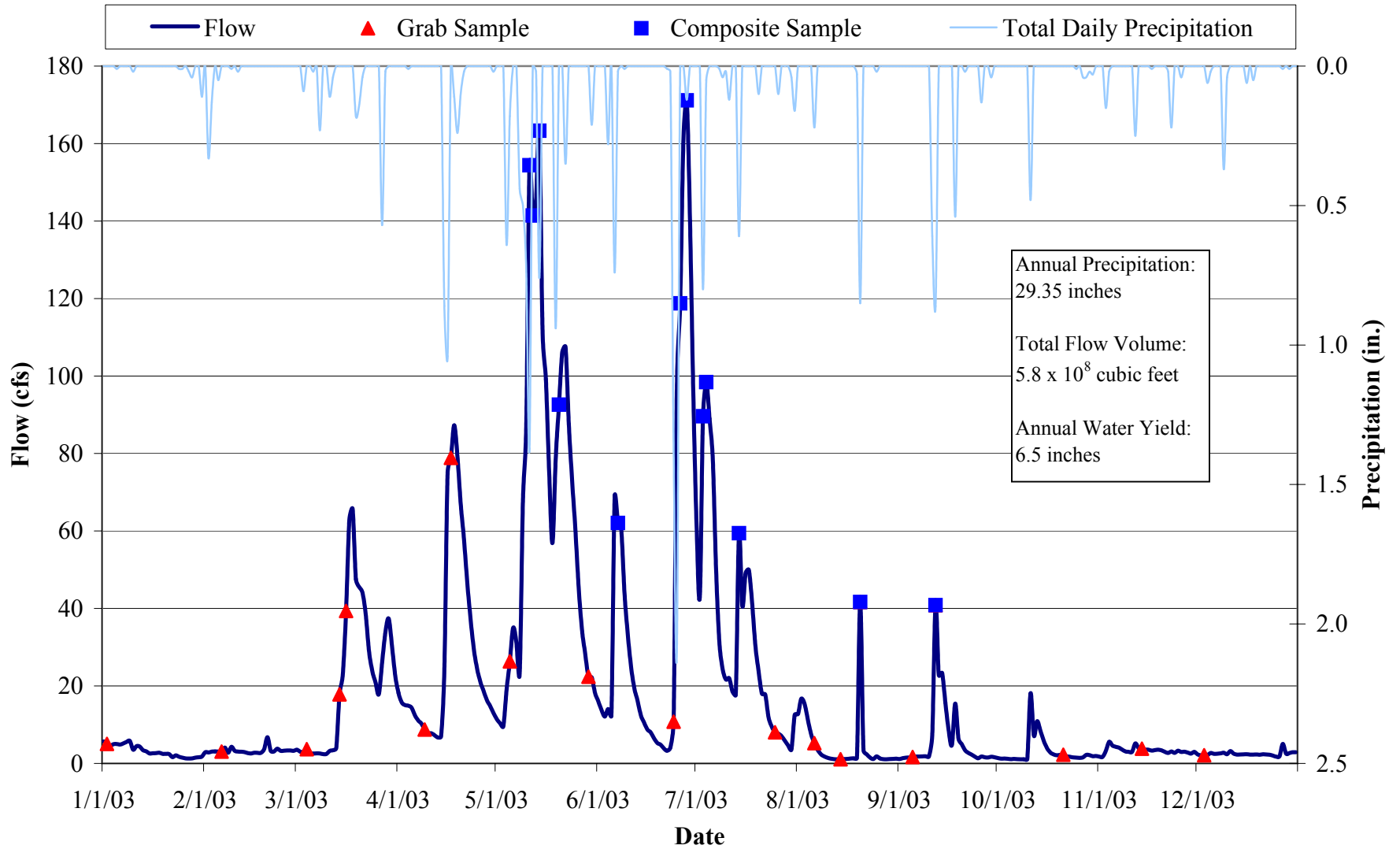
Thirty-one samples were collected for water quality analysis during 2003, including 12 composite samples and 19 grab samples. Samples were obtained throughout the year during varying stream flow conditions, to most accurately characterize Nine Mile Creek water quality. The MCES annual water quality monitoring 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). 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.NM. Nine Mile Creek Monitoring Station Location and Watershed Characteristics**



**Figure 2.NM. Nine Mile Creek 2003 Hydrograph, Precipitation and Sampling Information**



**Table 2.NM. Nine Mile Creek 2003 Water Chemistry Information**

Variable	N	Mean	Median	Minimum	Maximum	25%	75%	STD
Chloride, mg/L	29	108	82	8	554	50	107	109
Hardness, mg/L	13	171	162	82	308	106	23	77
Cadmium, ug/L	11	0.1	<0.1	<0.1	0.6	<0.1	0.1	0.2
Chromium, ug/L	11	2.0	0.9	0.1	11.3	0.6	1.7	3.2
Copper, ug/L	11	7.4	4.0	1.5	39.0	2.9	6.3	10.7
Lead,ug/L	11	4.5	2.3	0.2	24.7	0.9	4.2	7.0
Nickel, ug/L	11	3.2	2.8	1.7	10.0	2.3	3.1	2.3
Zinc, ug/L	11	21.8	9.4	1.1	11.9	5.1	22.0	33.7
Total Kjeldahl Nitrogen, mg/L	29	1.18	0.99	0.24	4.70	0.56	1.50	0.95
Total Nitrate Nitrogen, mg/L	28	0.49	0.37	0.13	1.11	0.24	0.70	0.29
Total Phosphorus, mg/L	29	0.17	0.12	0.01	0.83	0.05	0.24	0.17
Total Dissolved Phosphorus, mg/L	27	0.09	0.04	0.01	1.25	0.01	0.06	0.24
Total Suspended Solids, mg/L	27	77	10	1	456	2	64	128
Volatile Suspended Solids, mg/L	27	19	5	1	96	1	29	26
Turbidity, NTU	28	14	6	1	100	2	17	21

N: Sample Count

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

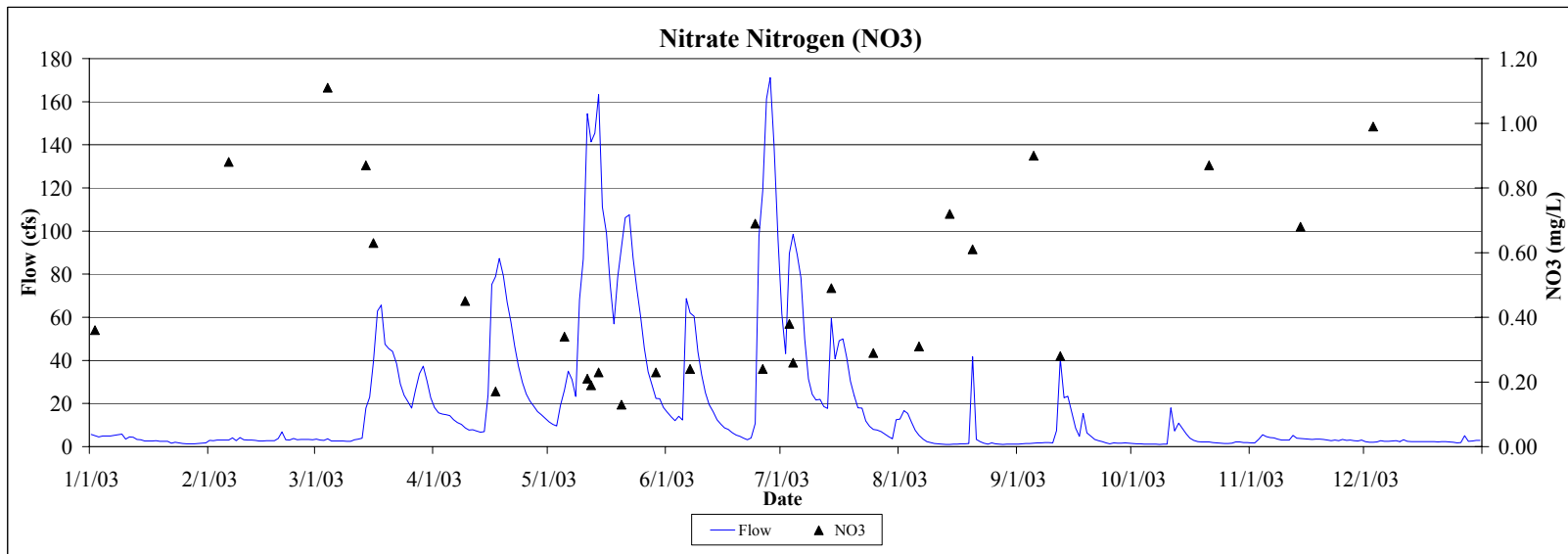
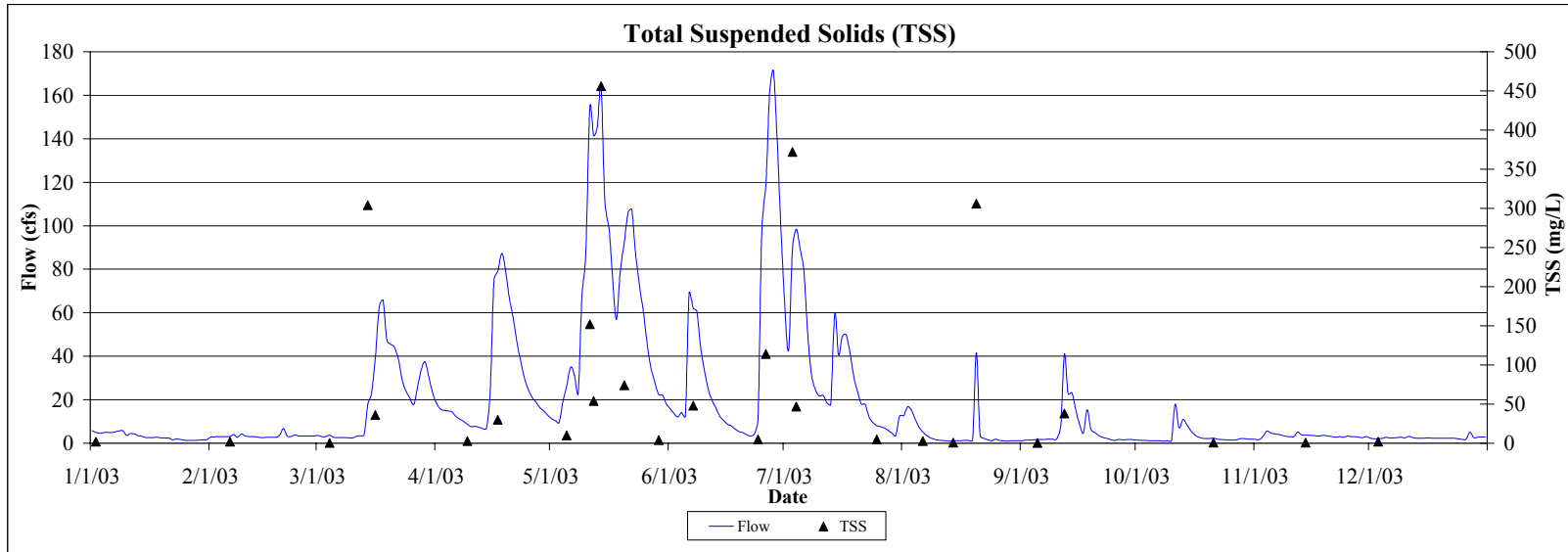
STD: Standard Deviation

**Table 3.NM. Nine Mile Creek 2003 Annual Loading Information\* for Suspended Solids and Nutrients**

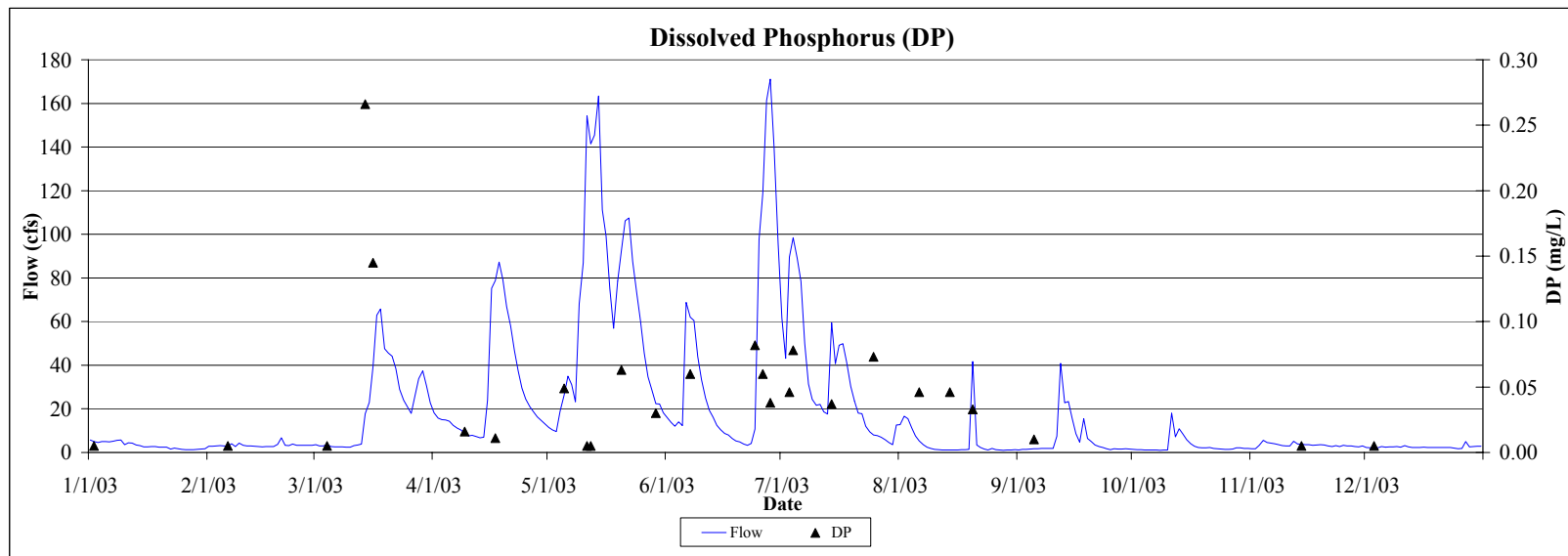
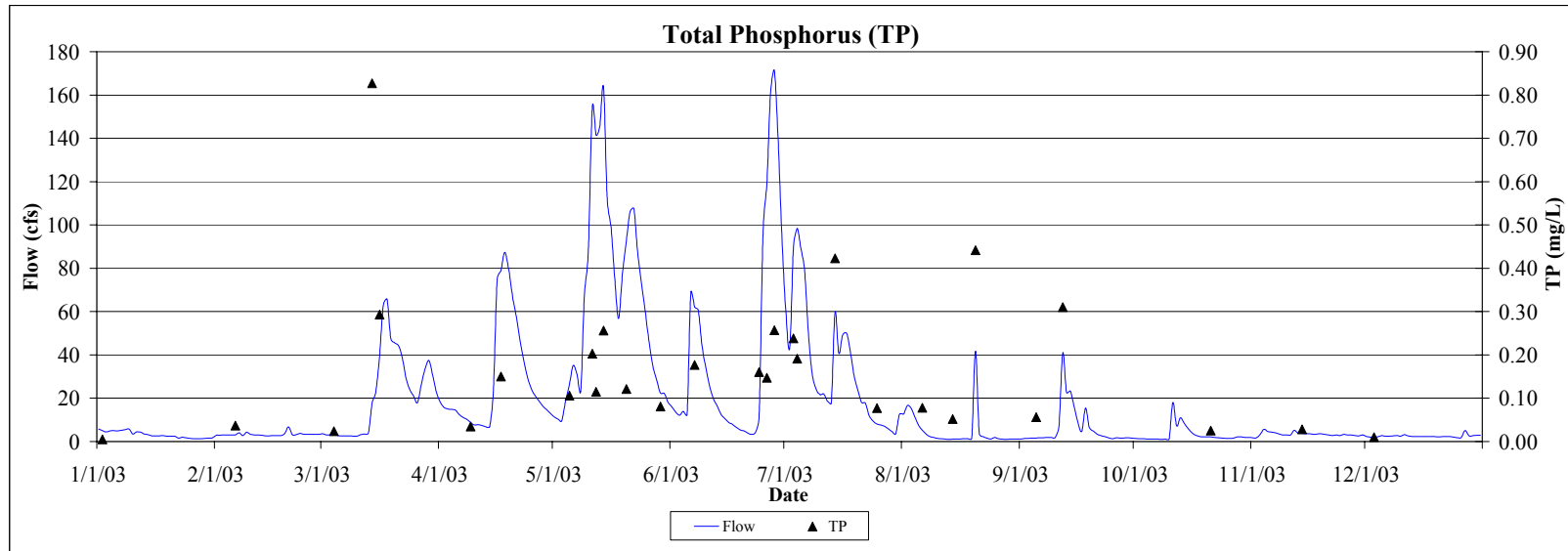
Variable	Annual Load (tons)	Annual Yield (lbs/acre)	Annual Normalized Yield (lbs/acre/in of water)	Flow Weighted Mean Concentration (mg/L)
Total Suspended Solids	1,360	111	17	76
Total Phosphorus	3.95	0.32	0.05	0.22
Total Dissolved Phosphorus	0.83	0.07	0.01	0.05
Total Nitrate Nitrogen	8.96	0.73	0.11	0.50

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

**Figure 3.NM. Nine Mile Creek 2003 Hydrograph with Total Suspended Solids and Nitrate Nitrogen Concentrations**



**Figure 4.NM. Nine Mile Creek 2003 Hydrograph with Total and Dissolved Phosphorus Concentrations**



**Table 4.NM. Nine Mile Creek: 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>	34.69	45.29	29.35
<b>Water Yield (inches)</b>	10.8	15.3	6.5
<b>Total Volume (cubic feet)</b>	$9.5 \times 10^8$	$1.3 \times 10^9$	$5.8 \times 10^8$
<b>Annual Load (tons)</b>			
<b>Total Suspended Solids</b>	2,050	3,440	1,360
<b>Total Phosphorus</b>	5.99	9.73	3.95
<b>Total Dissolved Phosphorus</b>	1.43	2.02	0.83
<b>Total Nitrate Nitrogen</b>	15.2	20.6	8.96
<b>Annual Yield (lbs/acre)</b>			
<b>Total Suspended Solids</b>	169	283	111
<b>Total Phosphorus</b>	0.49	0.80	0.32
<b>Total Dissolved Phosphorus</b>	0.12	0.17	0.07
<b>Total Nitrate Nitrogen</b>	1.25	1.70	0.73
<b>Annual Normalized Yield (lbs/acre/inch of water)</b>			
<b>Total Suspended Solids</b>	16	18	17
<b>Total Phosphorus</b>	0.05	0.05	0.05
<b>Total Dissolved Phosphorus</b>	0.01	0.01	0.01
<b>Total Nitrate Nitrogen</b>	0.12	0.11	0.11
<b>Flow-Weighted Mean Concentration (mg/L)</b>			
<b>Total Suspended Solids</b>	69	82	76
<b>Total Phosphorus</b>	0.20	0.23	0.22
<b>Total Dissolved Phosphorus</b>	0.05	0.05	0.05
<b>Total Nitrate Nitrogen</b>	0.51	0.49	0.50

**Table 5.NM. Nine Mile Creek 2003 Macroinvertebrate Monitoring Results and Metrics**

**Monitoring Date 10/9/2003**

<b>Class</b>	<b>Order</b>	<b>Family</b>	<b>Common Name</b>	<b>Organism Count</b>
Arthropoda	Amphipoda		Scuds	21
Arthropoda	Isopoda		Sowbugs	1
Gastropoda			Snails	1
Hirudinea			Leeches	1
Insecta	Coleoptera	Elmidae	Riffle Beetles	3
Insecta	Coleoptera	Dytiscidae	Predaceous Diving Beetles	3
Insecta	Coleoptera	Noteridae	Burrowing Water Beetles	7
Insecta	Diptera	Tipulidae	Crane Flies	7
Insecta	Diptera	Chironomidae	Midges	88
Insecta	Diptera	Simuliidae	Black Flies	18
Insecta	Diptera	Tabanidae	Horse and Deer Flies	1
Insecta	Ephemeroptera	Baetidae	Small Minnow Mayflies	129
Insecta	Ephemeroptera	Heptageniidae	Flatheaded Mayflies	5
Insecta	Hemiptera	Belostomatidae	Giant Water Bugs	1
Insecta	Hemiptera	Nepidae	Water Scorpion	1
Insecta	Odonata	Aeshnidae	Darners	1
Insecta	Odonata	Calopterygidae	Broadwinged Damselflies	6
Insecta	Trichoptera	Philopotamidae	Fingernet Caddisflies	139
Insecta	Trichoptera	Hydropsychidae	Common Netspinners	166
Turbellaria	Tricladida	Planariidae	Planarians	9

**Macroinvertebrate Taxa Metrics**

Total Taxa	20
EPT Taxa	4
% EPT Taxa	20
Diptera Taxa	4
% Diptera Taxa	20
Mean Tolerance Value	5.3

**Macroinvertebrate Organism Metrics**

Total Individuals	608
EPT Individuals	439
% EPT Individuals	72
Diptera Individuals	114
% Diptera Individuals	19
Chironomidae Individuals	88
% Chironomidae Individuals	14

**Water Quality**

**Degree of Organic Pollution**

<b>Family-Level Biotic Index</b>	4.2	Very Good	Slight Organic Pollution
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