

Table 1.RUM. Rum River Monitoring Station Information



Station Address: 2117 First Avenue, Anoka, MN 55303
County: Anoka
Major Basin: Mississippi River Basin
Watershed: Rum River
Drainage Area: 1,552 square miles

Station Operator: Anoka County Soil and Water Conservation District

Metropolitan Council Environmental Services Contact Information:

Contact Person: Casandra Champion
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Watershed District or Watershed Management Organization:

Station Overview: MCES has supported water quality monitoring of the Rum River since 1996. The monitoring station was moved to its present location in 2000 and began operation in April 2001. The monitoring station is located at the Rum River Dam in Anoka, Minnesota, 0.5 mile upstream from the river confluence with the Mississippi River. The rating curve at this location is based on the empirical formulas for the dam and sluice gate control structures. The Rum River flows from Lake Mille Lacs through Mille Lacs, Isanti, and Anoka Counties.

2001 Monitoring Year: Snowmelt began during the last week of March 2001. Daily average flows were estimated during the January-April period, using data from the USGS flow gage at St. Francis, MN, about 15 miles upstream. The peak daily average flows at Anoka and St. Francis, recorded on April 29, 2001, were 8,134 cfs and 8,270 cfs, respectively. The flow at St. Francis (8,270 cfs) was the sixth highest peak flow on record, compared to the highest recorded daily average flow of 10,100 cfs in 1965 and 1969. The Rum River flow at Anoka overtopped the dam sluice gate during the April 13-20, April 27-May 3, July 20-26, and August 1-2 periods. During these periods, flow was not captured by the empirical rating curve formula and the overflow was estimated by assuming the top of the sluice gate acted as a sharp-crested weir. This assumption may have resulted in a slight underestimation of the flow, which could explain discrepancies between the Anoka and St. Francis gaging stations.

An extended period of runoff occurred between June 10 and July 6, 2001. Rum River flow peaked at 2,834 cfs on June 26. The rising limb of this runoff event, from June 15 to June 18, contributed the highest total suspended solids (TSS) concentrations of the year. A composite sample collected on this rising hydrograph had the highest TSS concentration (105 mg/L) of all 2001 samples.

Twenty-two samples were collected for water quality analysis during 2001, including three composite samples and 19 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 2001 sampling scheme did not meet the goals of the MCES monitoring work plan because of logistics related to the first year of operation at this location.

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

Figure 1. RUM. Rum River Monitoring Station Location and Watershed

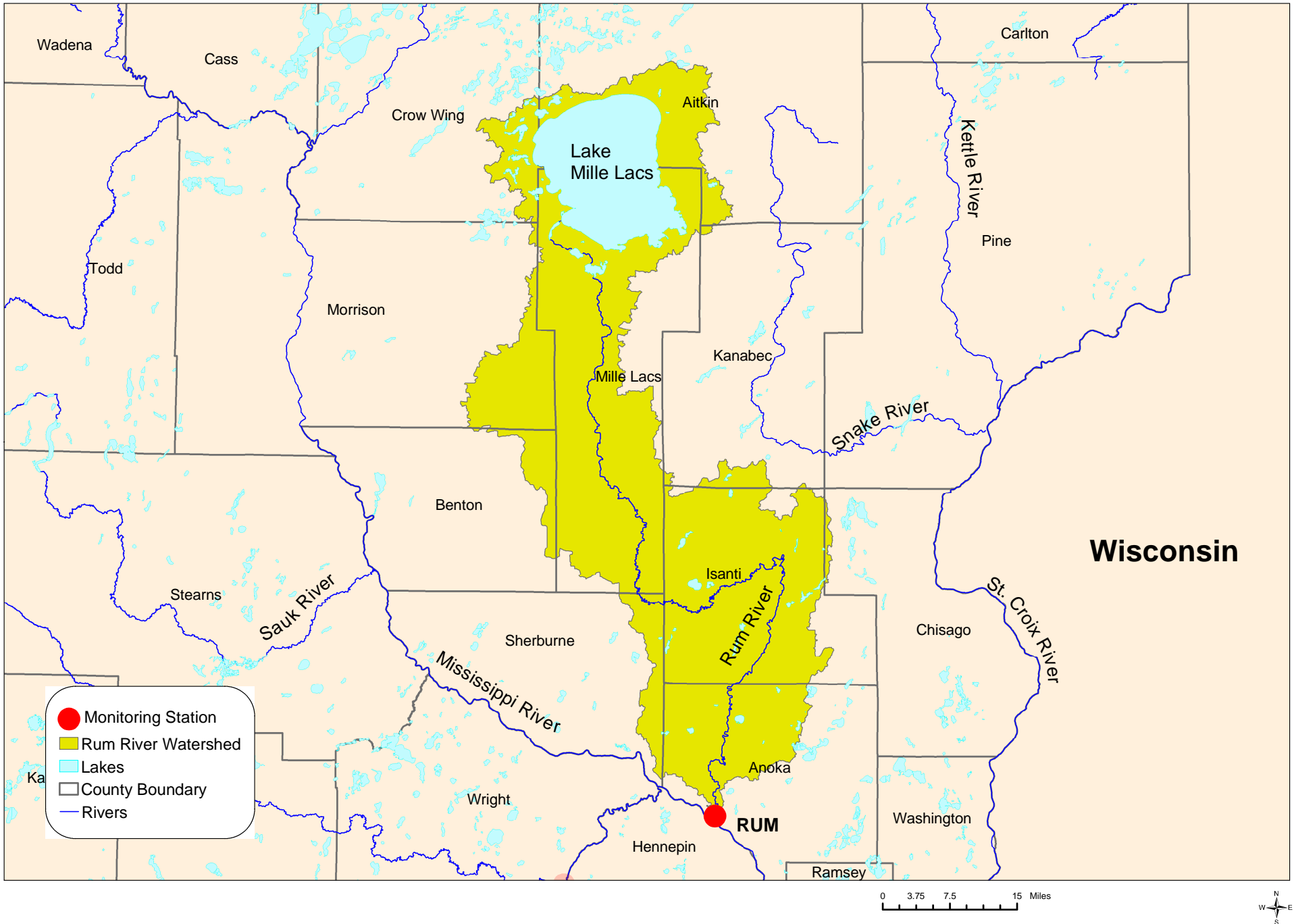


Figure 2.RUM. Rum River 2001 Hydrograph with Rainfall and Sampling Information

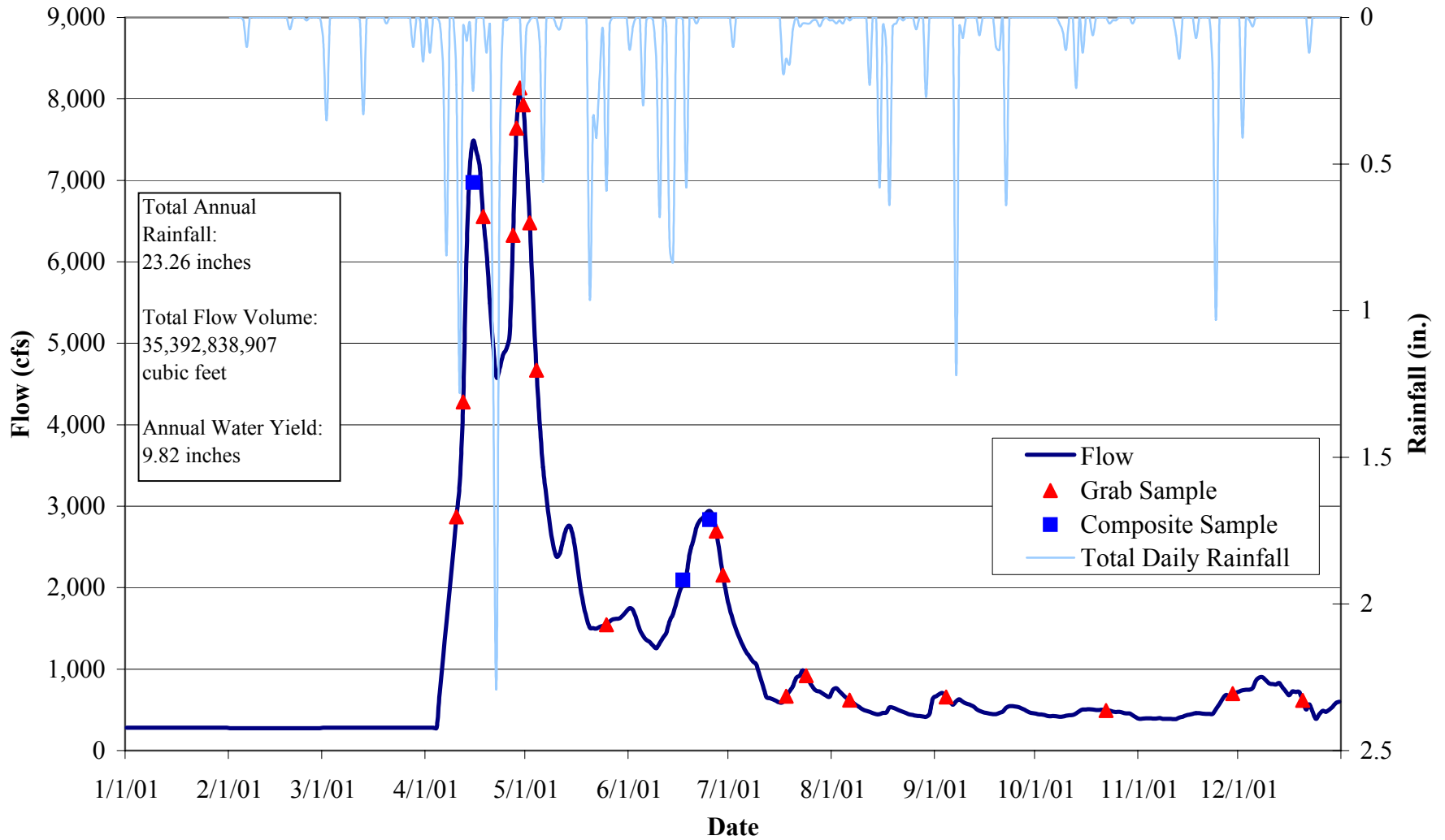


Table 2.RUM. Rum River 2001 Water Chemistry Information

Variable	N	Mean	Median	Minimum	Maximum	25%	75%	STD
Chloride, mg/L	16	8	6	4	19	5	9	4
Hardness, mg/L	24	98	104	50	172	55	131	42
Cadmium, ug/L	7	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Chromium, ug/L	7	0.6	0.5	0.5	0.8	0.5	0.7	0.1
Copper, ug/L	7	2.6	2.3	1.6	4.2	1.6	4.1	1.1
Lead, ug/L	7	0.6	0.5	0.5	1.1	0.5	0.9	0.2
Nickel, ug/L	7	2.1	2.1	1.4	3.0	1.7	2.8	0.5
Zinc, ug/L	7	4.0	4.0	2.0	6.0	2.0	6.0	2.0
Nitrogen, Total Kjeldahl, mg/L	23	1.00	1.00	0.50	2.20	0.90	1.20	0.40
Nitrogen, Total Nitrate, mg/L	24	0.55	0.48	0.05	2.37	0.23	0.62	0.52
Phosphorus, Total, mg/L	23	0.15	0.13	0.06	0.34	0.10	0.18	0.07
Phosphorus, Total Dissolved, mg/L	24	0.07	0.07	0.02	0.14	0.05	0.08	0.03
Solids, Total Suspended, mg/L	24	27	21	3	105	10	33	24
Solids, Volatile Suspended, mg/L	24	6	5	2	21	3	8	5
Turbidity, NTU	22	11	11	2	25	4	18	7

Table 3.RUM. Rum River 2001 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	31,589	64	6	29
Phosphorus, Total	165.05	0.33	0.03	0.15
Phosphorus, Total Dissolved	75.38	0.15	0.02	0.07
Nitrogen, Total Nitrate	548.09	1.10	0.11	0.50

* 2001 Annual Loading Information is provisional and may be subject to minor revisions.