

Table 1.BD. Beauford Ditch Monitoring Station Information



Station Address: 16265 State Highway 22, Mapleton, MN 56065
County: Blue Earth
Major Basin: Minnesota River Basin
Watershed: Le Sueur River
Drainage Area: 7.0 square miles

Station Operator: Metropolitan Council Environmental Services

Metropolitan Council Environmental Services Contact Information:

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Station Overview: MCES has conducted water quality monitoring of Beauford Ditch since 1999. The monitoring station is located near Mapleton, Minnesota, 0.06 mile upstream from the ditch confluence with the Cobb River. Beauford Ditch flows through agricultural land in Blue Earth County.

MCES is the sole operator of this monitoring station, which is located at the site of a former USGS station known as Cobb River Tributary (USGS station number 05320300). The USGS station was operated as a high flow partial-record station from 1958 to sometime in the 1980's. At this location, Beauford Ditch flows through a box culvert, and the MCES station intake line is situated near the opening of this culvert.

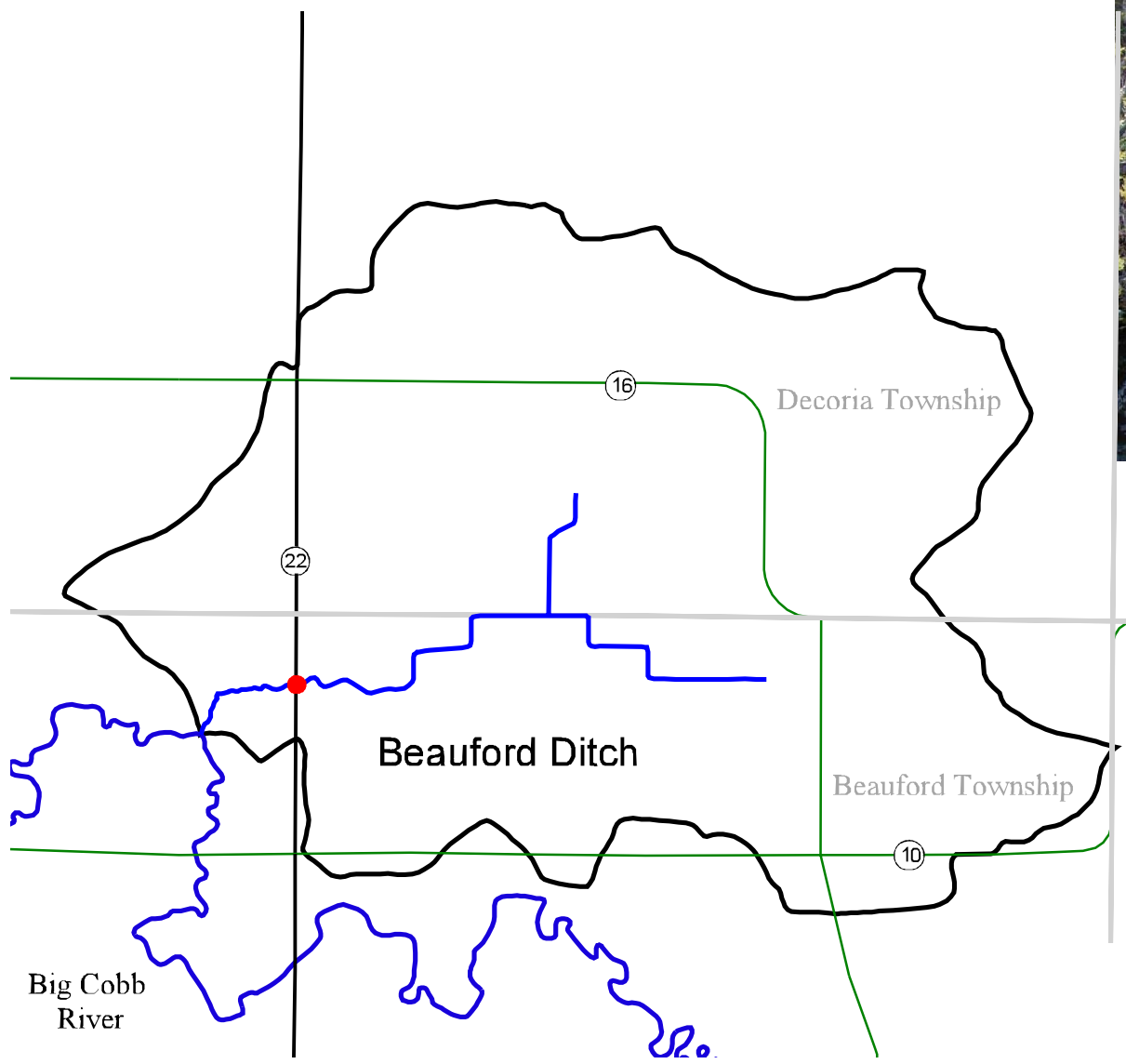
2001 Monitoring Year: Snowmelt began during the last week of March 2001. Daily average flows were estimated prior to the ice out date, which occurred on approximately March 20, 2001. The peak daily average flow of 300 cfs, with a stage of 18.50 feet, occurred on June 13, 2001.

Besides a combined snowmelt/rainfall runoff event that occurred in early April, two spring runoff events contributed high levels of sediment and nutrient loading to Beauford Ditch in 2001. On May 20, 1.87 inches of rain caused the ditch's stage to exceed 16 feet (12.32 feet is equivalent to zero flow). During the next month, however, with minimal rainfall, water stage held steady until a major thunderstorm occurred on June 13. In eight hours, 2.76 inches of rain fell at the monitoring station. At one point during the rain event, 0.75 inch of rain was recorded within a 15-minute period. Stage in the ditch rose from 12.67 feet to over 18.40 feet in seven hours. The highest total suspended solids (TSS) concentration for the entire year (676 mg/L) was measured in the composite sample collected during this runoff event.

Thirty-one samples were collected for water quality analysis during 2001, including 20 composite samples and 11 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 met the goals of the MCES monitoring work plan.

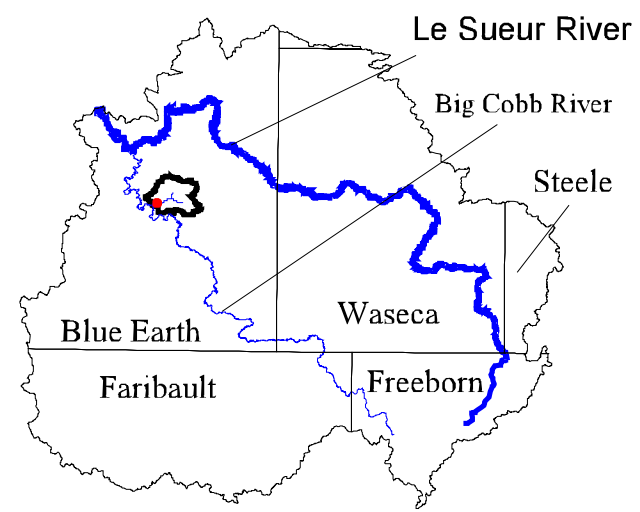
For additional stream monitoring information and monitoring methods regarding this site, see www.metrocouncil.org/environment/RiversLakes.

Figure 1.BD. Beauford Ditch Monitoring Station Location and Watershed



Beauford Ditch October 2002

Le Sueur River Watershed



0 0.5 Miles



Figure 2.BD. Beauford Ditch 2001 Hydrograph with Rainfall and Sampling Information

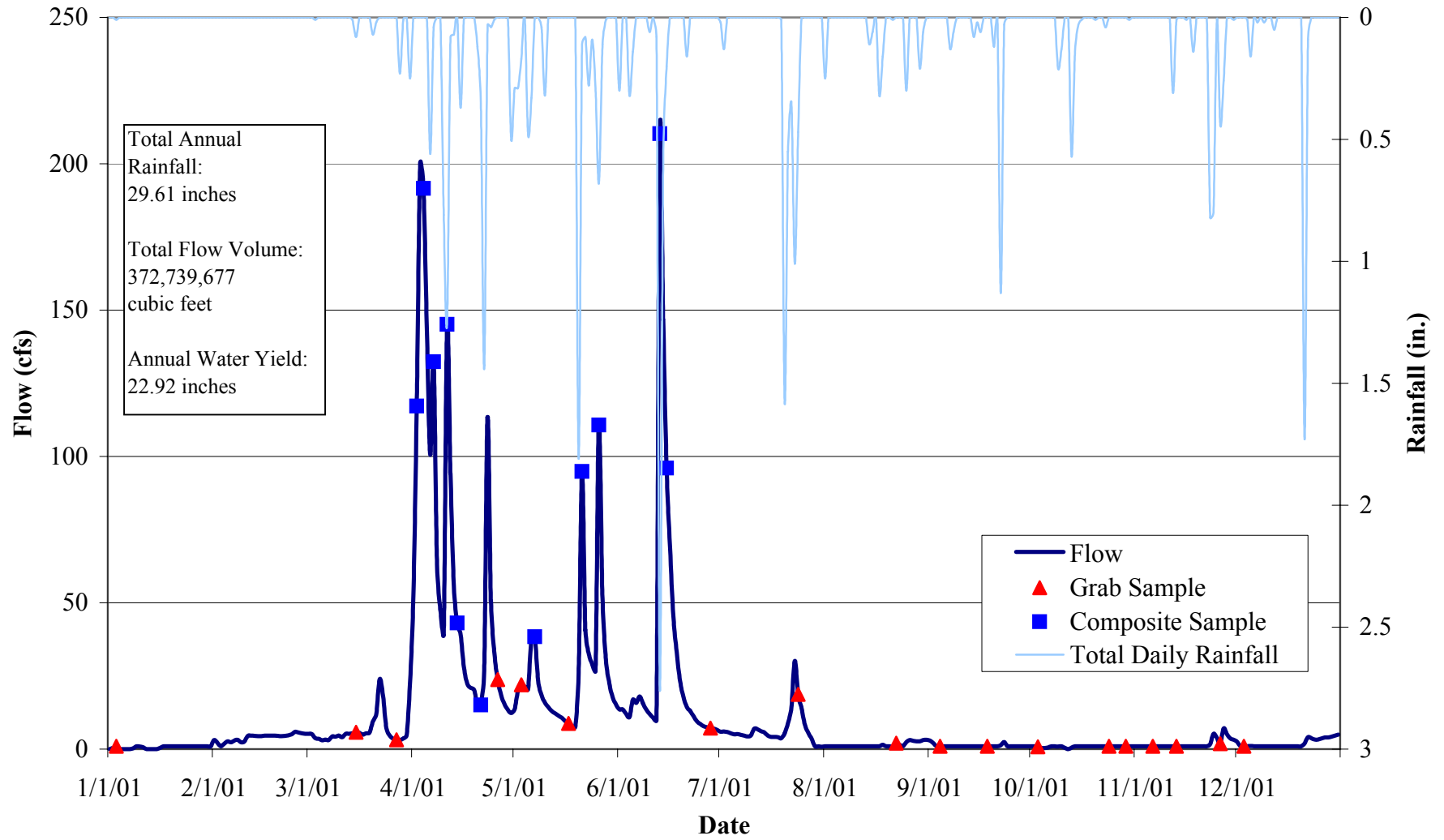


Table 2.BD. Beauford Ditch 2001 Water Chemistry Information

Variable	N	Mean	Median	Minimum	Maximum	25%	75%	STD
Chloride, mg/L	28	22	17	3	79	10	32	16
Hardness, mg/L	30	249.0	257.0	80.0	416.0	199.0	303.0	81.0
Cadmium, ug/L	18	0.1	0.1	0.1	0.3	0.1	0.2	0.1
Chromium, ug/L	18	3.6	1.2	0.5	14.0	0.5	7.1	4.1
Copper, ug/L	18	6.9	4.3	1.9	18.0	3.2	11.9	4.9
Lead, ug/L	18	2.4	1.0	0.5	9.8	0.5	4.3	2.7
Nickel, ug/L	18	7.1	5.4	3.4	16.8	5.0	9.7	3.5
Zinc, ug/L	18	20.00	9.00	2.00	57.00	4.00	42.00	19.00
Nitrogen, Total Kjeldahl, mg/L	31	1.80	1.50	0.40	4.40	0.90	2.70	1.10
Nitrogen, Total Nitrate, mg/L	31	7.93	8.76	0.05	18.20	0.84	14.33	6.41
Phosphorus, Total, mg/L	31	0.38	0.30	0.05	0.93	0.15	0.59	0.26
Phosphorus, Total Dissolved, mg/L	31	0.21	0.18	0.03	0.74	0.1	0.29	0.14
Solids, Total Suspended, mg/L	31	140	36	3	676	13	257	186
Solids, Volatile Suspended, mg/L	31	18	9	2	92	4	32	22
Turbidity, NTU	30	54	17	2	310	10	99	75
Transparency Tube, cm	13	34	32	5	60	21	57	19

Table 3.BD. Beauford Ditch 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	2,717	1,213	53	234
Phosphorus, Total	5.53	2.47	0.11	0.48
Phosphorus, Total Dissolved	2.77	1.24	0.05	0.24
Nitrogen, Total Nitrate+Total Nitrite	147.30	65.76	2.87	10.76

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