

Table 1.EA. Eagle Creek Monitoring Station Information



Station Address: 8451 West 126th Street, Savage, MN 55378
County: Scott
Major Basin: Minnesota River Basin
Watershed: Sub-watershed of the Lower Minnesota River Watershed
Drainage Area: 3.4 square miles

Station Operator: City of Savage, MN

Metropolitan Council Environmental Services Contact Information:

Contact Person: Leigh Harrod, P.G.
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Watershed District or Watershed Management Organization:

Lower Minnesota Watershed District

Station Overview: MCES, with funding provided by the Minnesota Legislature via a grant from the Minnesota Pollution Control Agency (MPCA), has supported water quality monitoring of Eagle Creek since 1999. The monitoring station is located in Savage, Minnesota, 0.8 mile upstream from the creek confluence with the Minnesota River. The stream headwater is Boiling Springs, an artesian spring located approximately one mile upstream from the monitoring station. The bedrock source of the spring is the Prairie Du Chien aquifer. Since the flow in Eagle Creek is largely attributable to

continuous discharge from this limestone formation, the term “water yield” (flow volume / watershed area / time) does not apply well for this small subwatershed. Very little of the discharge in Eagle Creek is attributable to runoff generated within the sub-watershed area itself.

During the winter months, the temperature of the groundwater discharge is significantly warmer than atmospheric temperatures. Therefore, unlike most small streams in the Minnesota, Eagle Creek does not freeze or form ice during the winter.

Eagle Creek is a Minnesota Department of Natural Resources (MDNR) designated trout stream.

MCES partners with the MDNR to maintain the rating curve at this location, and with the City of Savage, which conducts all other monitoring duties associated with the station.

2001 Monitoring Year: Snowmelt began during the third week of March 2001. Daily average flows were estimated during the April 12-May 4 period. Due to backwater effects created by Minnesota River flooding, the water level in Eagle Creek rose more than 4 feet above its banks during this period, making accurate stream flow measurements impossible. The peak daily average flow of 26.2 cfs, with a stage of 1.76 feet, occurred on May 4, 2001.

There was a significant storm event on April 22, 2001, when 4.24 inches of rain coincided with the late spring snowmelt. Since Minnesota River floodwaters were inundating the lower Eagle Creek Watershed, no water quality samples representative of only Eagle Creek could be collected during this storm event.

Eighteen samples were collected for water chemistry analysis during 2001, including 10 composite samples and eight 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.

The rain gage at the Eagle Creek monitoring station was not operational during the last six months of 2001. Rainfall data for the July - December 2001 period were derived from a rain gage situated at nearby Riley Creek.

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

Figure 1.EA. Eagle Creek Monitoring Station Location and Watershed Characteristics

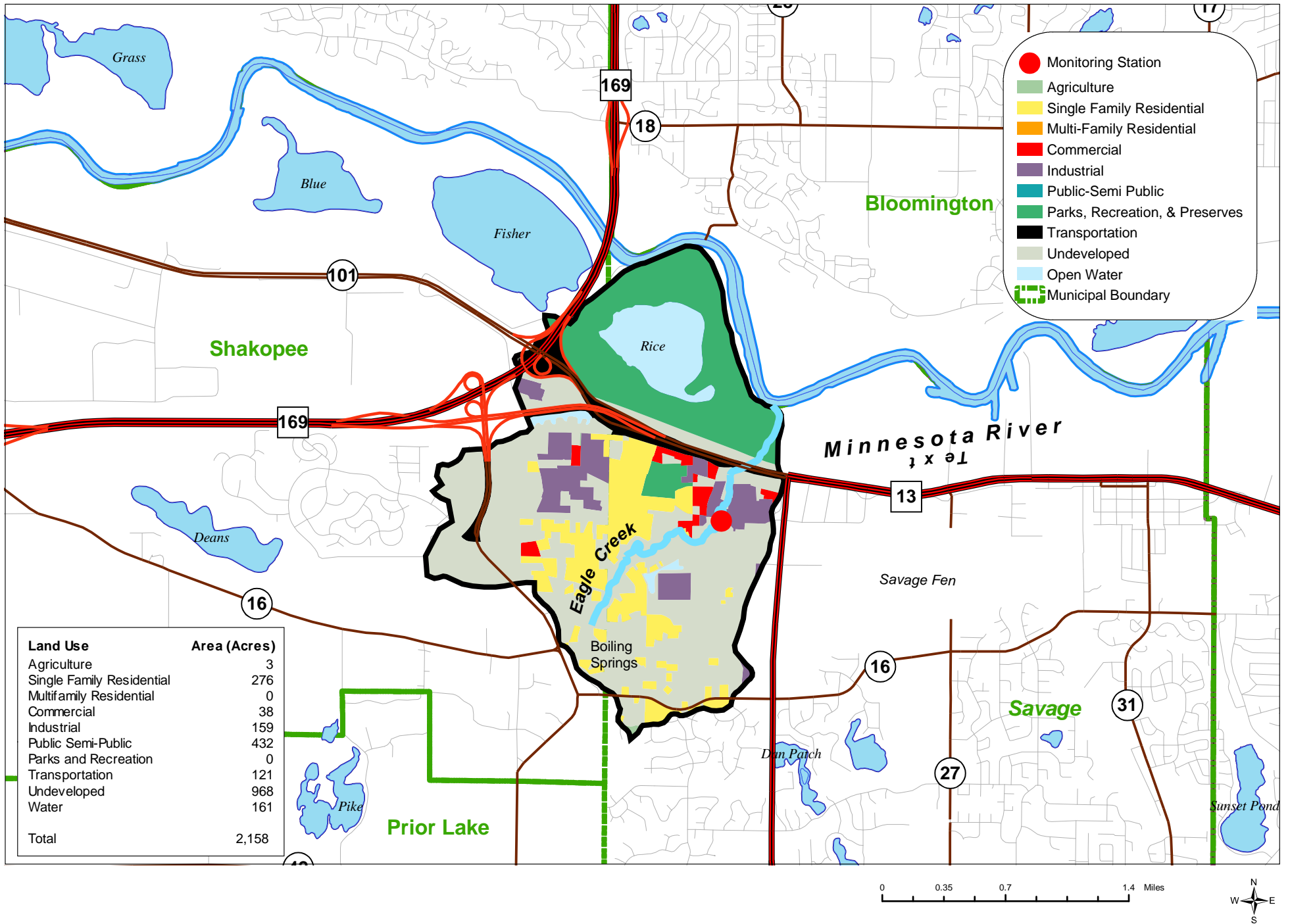


Figure 2.EA. Eagle Creek 2001 Hydrograph with Rainfall and Sampling Information

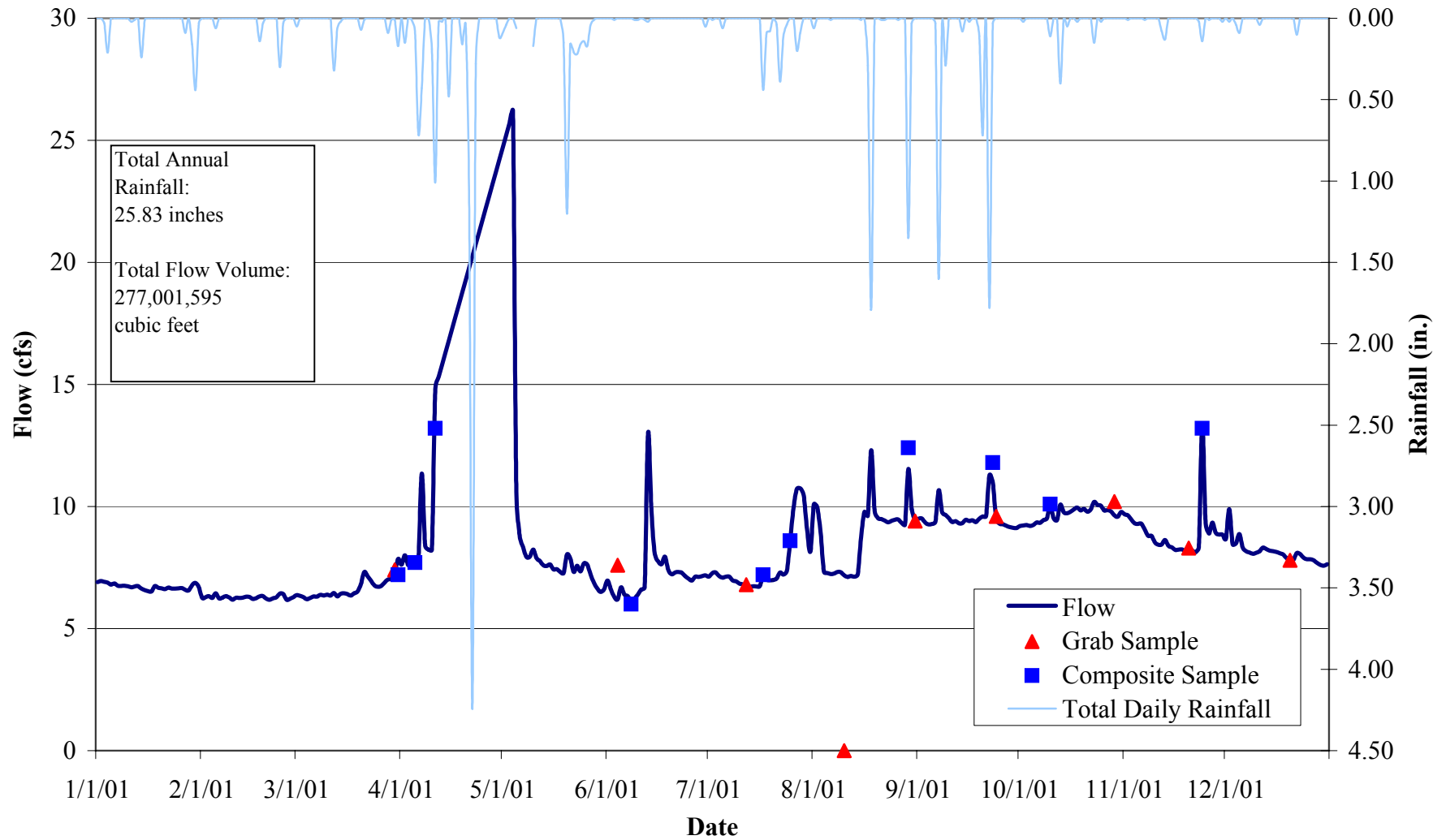


Table 2.EA. Eagle Creek 2001 Water Chemistry Information

Variable	N	Mean	Median	Minimum	Maximum	25%	75%	STD
Chloride, mg/L	19	15	16	10	17	15	16	2
Hardness, mg/L	20	266	274	198	288	263	282	24
Cadmium, ug/L	20	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Chromium, ug/L	19	0.6	0.5	0.5	1.8	0.5	0.5	0.3
Copper, ug/L	19	1.8	1.6	0.6	6.7	0.8	2.4	1.5
Lead, ug/L	19	0.5	0.5	0.5	1.3	0.5	0.5	0.2
Nickel, ug/L	19	2.4	2.3	1.3	4.3	2.1	2.8	0.6
Zinc, ug/L	19	2.0	1.0	1.0	6.0	1.0	2.0	1.0
Nitrogen, Total Kjeldahl, mg/L	20	0.20	0.20	0.20	0.70	0.20	0.20	0.10
Nitrogen, Total Nitrate, mg/L	20	0.22	0.19	0.05	0.48	0.14	0.28	0.13
Phosphorus, Total, mg/L	20	0.04	0.03	0.01	0.17	0.02	0.04	0.04
Phosphorus, Total Dissolved, mg/L	19	0.03	0.02	0.01	0.11	0.01	0.04	0.03
Solids, Total Suspended, mg/L	19	8	4	1	59	2	8	13
Solids, Volatile Suspended, mg/L	19	3	2	1	13	2	3	3
Turbidity, NTU	8	3	2	2	5	2	4	1

Table 3.EA. Eagle Creek 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	38	36	na	4
Phosphorus, Total	0.25	0.23	na	0.03
Phosphorus, Total Dissolved	0.19	0.18	na	0.02
Nitrogen, Total Nitrate	1.99	1.85	na	0.23

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

Table 4.1.EA. Eagle Creek 2001 Macroinvertebrate Monitoring Results and Metrics

Monitoring Date 06/06/01

Class	Order	Family	Common Name	Life Stage	Organism Count
Crustacea	Amphipoda		Scuds		9
Crustacea	Isopoda		Sowbugs		9
Gastropoda			Snails		2
Hirudinea			Leeches		6
Insecta	Diptera	Chironomidae	Midges	Larvae	16
Insecta	Diptera	Simuliidae	Black Flies	Larvae	5
Insecta	Ephemeroptera	Baetidae	Small Minnow Mayflies	Larvae	21
Insecta	Ephemeroptera	Leptophlebiidae	Pronggills	Larvae	1
Insecta	Trichoptera	Limnephilidae	Northern Case Makers	Larvae	78

Macroinvertebrate Taxa Metrics

Total Taxa	9
EPT Taxa	3
% EPT Taxa	33
Diptera Taxa	2
% Diptera Taxa	22
Mean Tolerance Value	5.11

Macroinvertebrate Organism Metrics

Total Organisms	147
EPT Individuals	100
% EPT Individuals	68
Diptera Individuals	21
% Diptera Individuals	14
Chironomidae Individuals	16
% Chironomidae Individuals	11

Water Quality

Degree of Organic Pollution

Hilsenhoff Biotic Index	4.80	Good	Some organic pollution
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Table 4.2.EA. Eagle Creek 2001 Macroinvertebrate Monitoring Results and Metrics

Monitoring Date 10/09/01

Class	Order	Family	Common Name	Life Stage	Organism Count
Crustacea	Amphipoda		Scuds		15
Crustacea	Isopoda		Sowbugs		12
Insecta	Coleoptera	Dytiscidae	Predaceous Diving Beetles	Adult	1
Insecta	Coleoptera	Noteridae	Burrowing Water Beetles	Adult	6
Insecta	Diptera	Simuliidae	Black Flies	Larvae	14
Insecta	Ephemeroptera	Baetidae	Small Minnow Mayflies	Larvae	256
Insecta	Hemiptera	Belostomatidae	Giant Water Bugs		1
Insecta	Trichoptera	Brachycentridae	Humpless Case Makers	Larvae	12
Insecta	Trichoptera	Hydropsychidae	Common Netspinners	Larvae	1
Insecta	Trichoptera	Limnephilidae	Northern Case Makers	Larvae	2

Macroinvertebrate Taxa Metrics

Total Taxa	10
EPT Taxa	4
% EPT Taxa	40
Diptera Taxa	1
% Diptera Taxa	10
Mean Tolerance Value	4.50

Macroinvertebrate Organism Metrics

Total Organisms	320
EPT Individuals	271
% EPT Individuals	85
Diptera Individuals	14
% Diptera Individuals	4
Chironomidae Individuals	0
% Chironomidae Individuals	0

Water Quality

Degree of Organic Pollution

Hilsenhoff Biotic Index	4.13	Very Good	Possible slight organic pollution
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