

Stream Monitoring

The Elm Creek watershed contains several large depressions and drainageways. Water is generally directed from the south and west to the northeast via four main drainageways – Rush Creek, North Fork Rush Creek, Diamond Creek, and Elm Creek. These drainageways converge in the Elm Creek Park Reserve and enter Hayden Lake. Water is eventually discharged to the Mississippi River near the Mill Pond in Champlin.

The monitoring station in Champlin, located at the Elm Creek Road crossing in the Elm Creek Park Reserve, is operated in cooperation with the United States Geological Survey (USGS). The exact location is: latitude 45°09'48", longitude 93°26'11" referenced to North American Datum of 1927, in NE ¼ NW ¼ Sec.35, T.120 N., R.22 W., Hennepin County, MN, Hydrologic Unit 07010206, on left bank, 33 feet downstream from bridge on Elm Creek Road, 2.5 mi southwest of Champlin. The Commission shares the costs of operating the station, which collects continuous flow data and periodic event and base water quality data. The watershed area above the gauging station is 86 square miles, or 81% of the hydrologic watershed.

Both grab samples and storm runoff samples are collected and analyzed for various parameters. Analyses of the streamflow and water quality monitoring data for Elm Creek and its tributaries are summarized below. Real time data from the monitoring station in Champlin may be viewed on the Internet at http://waterdata.usgs.gov/mn/nwis/uv/?site_no=05287890&PARAMeter_cd=00065,00060.

Flow Monitoring

Storm event samples are collected using an automatic sampler. Routine manual sampling occurs approximately monthly. The average daily discharge for the 2013 WY, October 1, 2012 through September 30, 2013, was 44.6 cubic feet per second (cfs) or 7.05 inches. During the same period, the minimum and maximum observed average daily discharge values were 0.50 cfs and 385 cfs, respectively. The long-term average daily discharge at the station is 39.3 cfs or 6.21 inches (years 1979-2013). A spreadsheet of the data received in 2013 water year (WY), including daily discharge and summary information, long-term flow volumes (calendar and water years), the flow hydrograph and the annual instantaneous peak discharge values at the gauging station for the period of record are also found in this appendix.

Elm Creek Annual Instantaneous Peak Discharge Rates							
Date	Peak Flow (cfs)	Date	Peak Flow (cfs)	Date	Peak Flow (cfs)	Date	Peak Flow (cfs)
4/4/79	307	3/31/89	159	5/15/99	538*	3/27/09	119
3/25/80	199	8/1/90	225	7/13/00	112	3/17/10	369
6/15/81	44	6/1/91	371	4/25/01	875**	3/24/11	803
4/3/82	471*	3/8/92	380	5/11/02	554	5/29/12	568
3/9/83	408	6/22/93	315	6/28/03	695	6/26/13	389
2/25/84	341	4/30/94	669*	6/03/04	350		
3/18/85	579*	3/17/95	237	10/30/04	118		
3/27/86	812*	3/19/96	407	10/09/05	295		
8/1/87	185	4/1/97	511*	3/17/07	223		
3/27/88	39	4/5/98	306	5/4/08	205		

*These values have been revised based on the 2001 rating curve.

**All-time instantaneous peak discharge. The estimated 100-year flood discharge at this site is 2,290 cfs.

U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES
 Station No 05287890 Elm Creek Nr Champlin, MN SourceAgencyUSGSState 27 County 053
 WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Daily Mean Values Discharge, cubic feet per second[e, estimated]

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.80	e2.5	1.7	e1.2	e1.1	1.3	e121	134	132	219	16	1.6
2	e0.70	e2.3	1.6	e1.3	e1.1	e1.3	e161	120	119	182	13	1.3
3	e0.60	e2.2	1.6	e1.2	e1.1	1.3	e199	106	105	156	10	1.3
4	e0.60	e2.1	1.6	e1.2	e1.1	1.3	210	97	91	133	8.7	1.3
5	e0.60	e2.1	1.5	e1.2	e1.1	1.3	186	86	80	114	10	1.2
6	e0.60	e2.3	e1.5	e1.1	e1.0	1.3	166	77	71	99	12	1.1
7	e0.60	e2.3	e1.5	e1.0	e1.0	1.3	153	69	63	88	10	1.0
8	e0.60	e2.1	e1.5	e1.0	e1.1	1.3	155	62	56	78	8.9	1.0
9	e0.60	e2.2	e1.6	e1.0	1.1	1.5	156	57	55	73	7.9	0.95
10	e0.60	e3.5	e1.6	e1.1	1.2	1.4	150	52	57	69	6.6	0.89
11	e0.60	e2.8	e1.8	e1.1	1.2	1.3	146	47	54	61	5.8	0.84
12	e0.60	e2.7	e1.8	e1.1	1.2	1.3	139	41	57	53	5.0	0.83
13	e0.60	e2.4	e1.8	e0.99	1.2	1.4	127	37	75	73	4.1	0.85
14	e0.60	e2.3	e1.8	e0.93	1.2	1.4	116	31	92	105	3.6	0.89
15	e0.60	e2.2	e1.8	e0.96	1.2	1.3	115	26	110	108	3.2	0.97
16	e0.50	e2.2	e1.7	e1.0	1.3	1.3	114	24	120	110	2.8	0.87
17	e0.50	e2.1	e1.8	e1.0	1.3	1.3	118	22	116	111	2.5	0.83
18	e0.50	e3.2	e1.8	e1.1	e1.2	1.3	124	25	102	105	2.2	0.88
19	e0.50	e2.7	e1.8	e1.1	e1.2	1.2	134	41	87	95	1.9	0.97
20	e0.50	e2.4	e1.8	e1.1	e1.1	1.1	136	109	73	84	1.9	0.93
21	e0.50	e2.2	e1.8	e1.0	e1.0	1.2	140	213	77	75	1.8	0.94
22	e0.80	e2.0	e1.9	e1.1	e1.0	1.3	163	328	132	67	1.7	0.93
23	e2.1	e1.9	e1.8	e1.0	e1.1	1.4	187	358	206	59	1.6	0.96
24	e5.2	e1.9	e1.7	e0.94	e1.2	1.6	207	344	308	51	1.4	0.97
25	e6.2	e1.9	e1.7	e1.0	1.3	1.7	215	312	370	44	1.4	0.97
26	e4.5	e1.8	e1.8	e1.1	1.3	1.8	211	270	385	38	1.3	1.0
27	e3.8	e1.8	e1.8	e1.1	1.3	1.8	200	225	374	32	1.3	1.1
28	e3.5	1.6	e1.8	e1.3	1.3	2.0	183	186	339	28	1.3	1.2
29	e3.2	1.6	e1.8	e1.3	---	3.0	168	160	305	22	1.3	1.2
30	e2.8	1.6	e1.6	e1.3	---	e22	150	144	263	20	1.3	1.1
31	e2.6	---	e1.4	e1.2	---	e77	---	141	---	19	1.6	---

Statistics for Water Year October 2012 to September 2013

Total	47.00	66.9	52.7	34.02	32.5	141.0	4,750	3,944	4,474	2,571	152.1	30.87
Mean	1.52	2.23	1.70	1.10	1.16	4.55	158	127	149	82.9	4.91	1.03
Max	6.2	3.5	1.9	1.3	1.3	77	215	358	385	219	16	1.6
Min	0.50	1.6	1.4	0.93	1.0	1.1	114	22	54	19	1.3	0.83
Ac-ft	93	133	105	67	64	280	9,420	7,820	8,870	5,100	302	61
Cfsm	0.02	0.03	0.02	0.01	0.01	0.05	1.84	1.48	1.73	0.96	0.06	0.01
Inches	0.02	0.03	0.02	0.01	0.01	0.06	2.05	1.71	1.94	1.11	0.07	0.01

Statistics of monthly mean data for 1979-2013, by Water Year (WY)

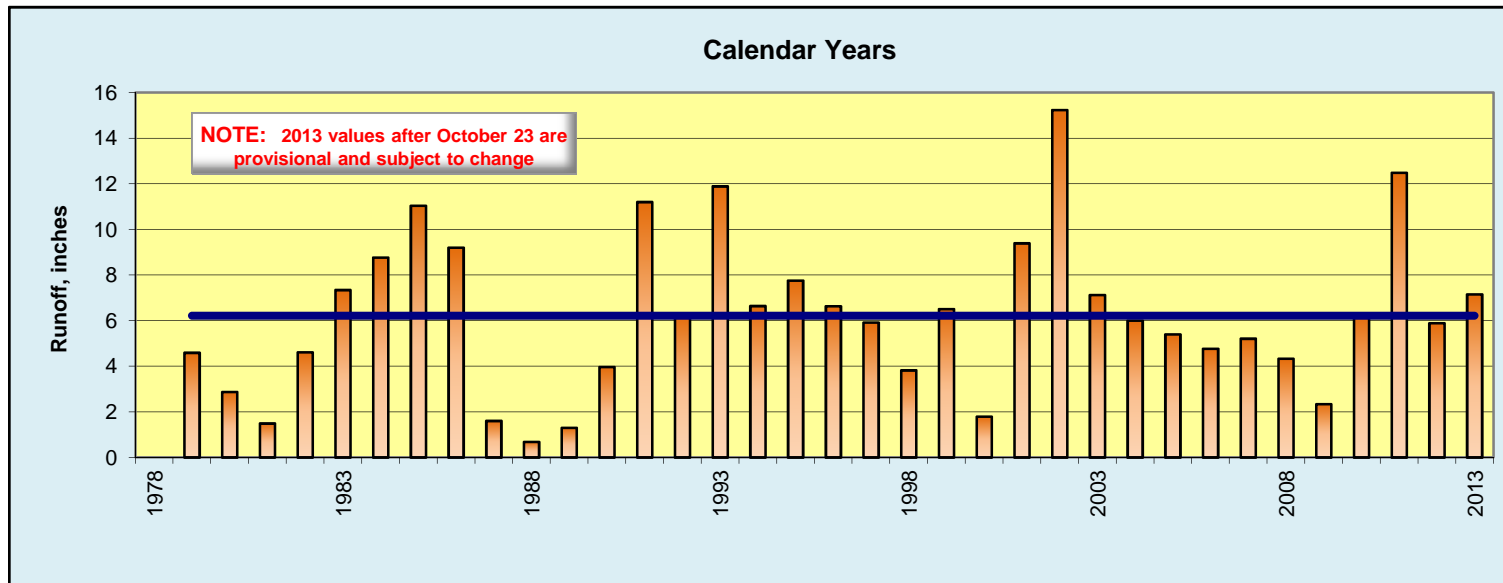
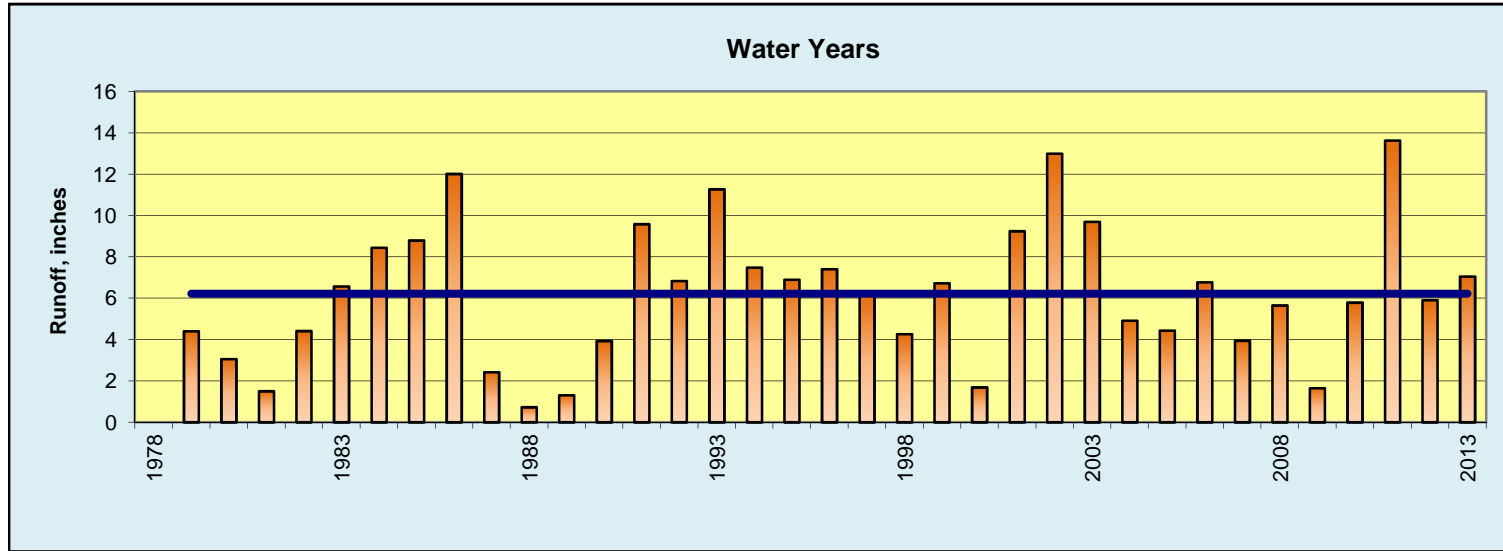
Mean	31.8	20.2	9.93	5.45	9.02	62.4	102	79.4	57.5	40.5	26.9	25.2
Max	240	67.4	41.3	22.0	99.1	189	414	255	196	157	151	170
(WY)	(1986)	(1994)	(1992)	(1992)	(1984)	(2011)	(2001)	(2011)	(2004)	(1993)	(2002)	(1991)
Min	1.13	1.03	0.92	0.74	0.91	3.86	5.31	3.54	1.34	0.76	1.37	1.03
(WY)	(1990)	(1990)	(1990)	(1991)	(1990)	(2001)	(1987)	(2000)	(1988)	(1988)	(2008)	(2013)

Summary Statistics	Calendar Year 2012	Water Year 2013	Water Years 1979 - 2013
Annual total	13,624.80	16,296.09	
Annual mean	37.2	44.6	39.3
Highest annual mean			86.4 2011
Lowest annual mean			4.54 1988
Highest daily mean	534 May 29	385 Jun 26	815 Apr 25, 2001
Lowest daily mean	0.50 Oct 16	^a 0.50 Oct 16	0.31 Jun 30, 1988
Annual seven-day minimum	0.51 Oct 15	0.51 Oct 15	0.35 Jun 26, 1988
Maximum peak flow		389 Jun 26	875 Apr 25, 2001
Maximum peak stage		8.72 Jun 26	10.02 Apr 25, 2001
Instantaneous low flow		^b 0.50 Oct 16	0.29 Jul 9, 1989
Annual runoff (ac-ft)	27,020	32,320	28,470
Annual runoff (cfs)	0.433	0.519	0.457
Annual runoff (inches)	5.89	7.05	6.21
10 percent exceeds	111	151	111
50 percent exceeds	2.7	1.8	11
90 percent exceeds	1.5	0.96	1.5

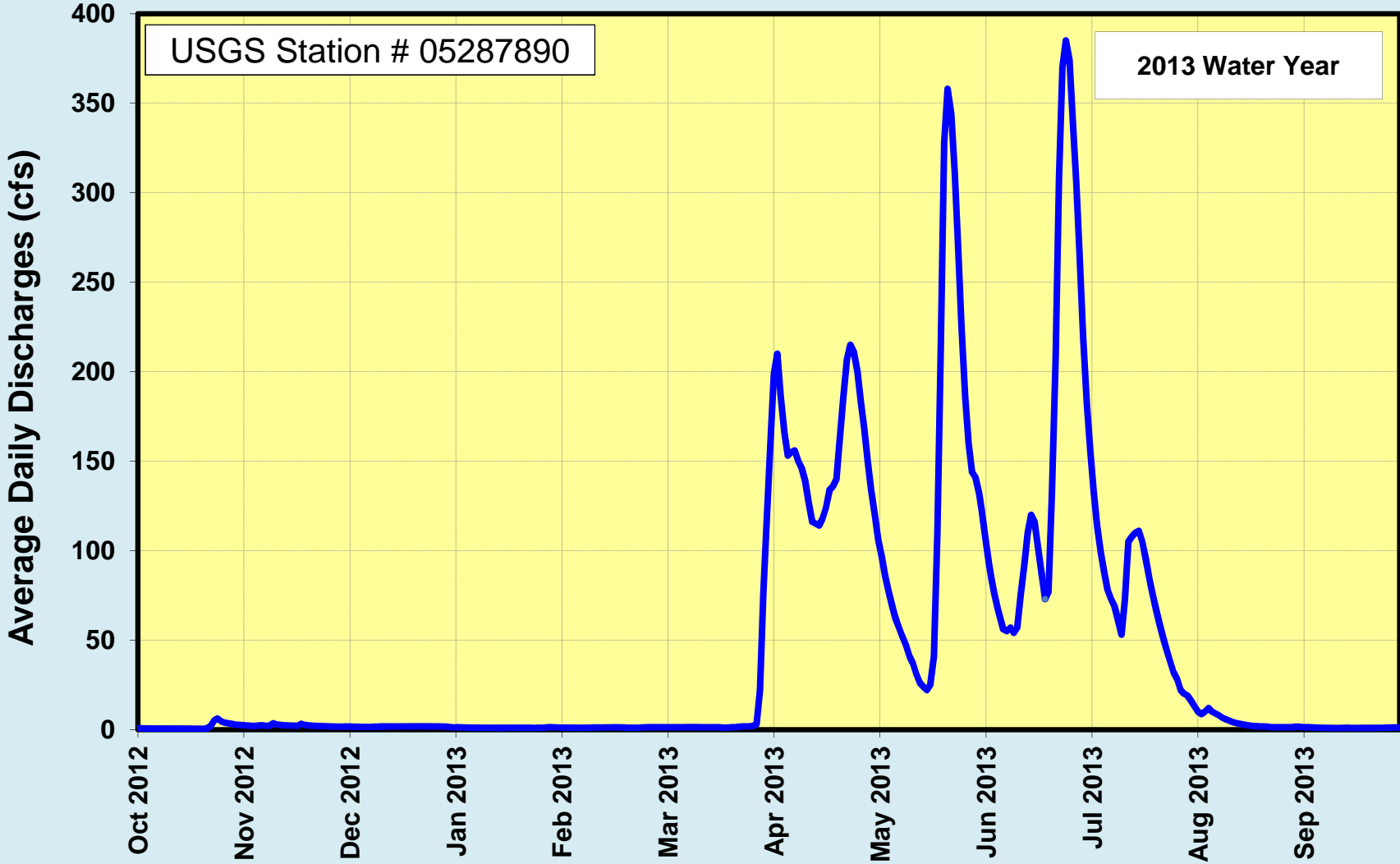
^a Estimated, backwater from beaver dam, also occurred Oct. 17 through 21. 29, 30.

^b Estimated daily-mean discharge.

Water and Calendar Year Flow Volume



Elm Creek near Champlin Average Daily Discharges



U.S. Geological Survey
 Elm Creek near Champlin, Station Number 5287890
 Selected Water-Quality Data for Water Year 2013

agency cd	site no	sample dt	sample tm	sample end dt	sample end tm	sample start time datum	tm datum rlbty cd	coll ent cd	mediu m cd	tu id	body part id	p00004	p00010	p00025	p00061	p00063
5s	15s	10d	4d	10d	4d	1s	1s	8s	1s	11s	11s	12s	12s	12s	12s	12s
USGS	5287890	15-Oct-12	13:30			CDT	K	USGSMN	WS			28	8	737	0.48	3
USGS	5287890	6-Dec-12	13:30			CST	K	USGSMN	WS				3.5	734	1.5	5
USGS	5287890	29-Jan-13	11:00			CST	K	USGS-W	WS				0.1	727		3
USGS	5287890	14-Feb-13	11:30			CST	K	USGSMN	WS			17	1.4	734		3
USGS	5287890	28-Mar-13	10:30			CDT	K	USGS-W	WS				1.8	747	2.4	5
USGS	5287890	24-Apr-13	12:00			CDT	K	USGSMN	WS			30	4	737	200	5
USGS	5287890	18-May-13	11:18	21-May-13	08:26	CDT	K	USGSMN	WS							
USGS	5287890	21-May-13	13:12	23-May-13	07:12	CDT	K	USGSMN	WS							
USGS	5287890	23-May-13	10:30			CDT	K	USGSMN	WS				13.1	748	336	5
USGS	5287890	12-Jun-13	12:15	14-Jun-13	12:15	CDT	K	USGSMN	WS							
USGS	5287890	17-Jun-13	12:00			CDT	K	USGSMN	WS			34	20.7	742	113	5
USGS	5287890	21-Jun-13	04:43	24-Jun-13	01:44	CDT	K	USGSMN	WS							
USGS	5287890	24-Jun-13	07:42	27-Jun-13	04:42	CDT	K	USGSMN	WS							
USGS	5287890	10-Jul-13	11:00			CDT	K	USGSMN	WS			32	22.6	746	71	5
USGS	5287890	13-Jul-13	06:30	15-Jul-13	06:30	CDT	K	USGSMN	WS							
USGS	5287890	7-Aug-13	11:30			CDT	K	USGSMN	WS				18.9	741	12	5
USGS	5287890	6-Sep-13	11:00			CDT	K	USGSMN	WS			3	17.3		1	1

sample dt	sample tm	sample end dt	sample end tm	p00065	p00095	p00191	p00300	p00301	p00340	p00400	p00530	p00535	p00540	p00600	p00605	p00608	p00610
10d	4d	10d	4d	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s
15-Oct-12	13:30			3.54	707	0.00004	6.4	56	10	7.4	< 15	< 10	< 15	< 0.26	< 0.22	< 0.010	< 0.02
6-Dec-12	13:30			3.13	717	0.00002	10.6	83	< 10	7.7	< 15	< 10	< 15	0.41	0.24	0.096	0.11
29-Jan-13	11:00			3.62	697	0.00005	8.3	60	< 10	7.3	< 15	< 10	< 15	0.47	0.16	0.22	0.24
14-Feb-13	11:30			3.03	712	0.00005	9.5	68	< 10	7.3	< 15	< 10	< 15	0.67	0.29	0.277	0.29
28-Mar-13	10:30			3.18	846	0.00003	10.6	76	10	7.5	< 15	10	< 5	1.6	0.84	0.375	0.41
24-Apr-13	12:00			7.4	577	0.00009	11.1	88	30	7	< 15	< 10	< 15	2.3	1.1	0.021	0.04
18-May-13	11:18	21-May-13	08:26		624	0.00001			50	8	64			2	1.5	0.07	0.12
21-May-13	13:12	23-May-13	07:12		553	0.00002			20	7.7	23			1.5	1.1	0.045	0.08
23-May-13	10:30			8.53	555	0.00003	7	68	40	7.5	< 15	< 10	< 15	1.2	0.98	0.025	0.05
12-Jun-13	12:15	14-Jun-13	12:15		582	0.00001			50	8.1	< 15			1.4	1.1	0.034	0.08
17-Jun-13	12:00			6.18	573	0.00003	6.2	70	40	7.5	< 15	< 10	< 15	1.2	1	0.029	0.07
21-Jun-13	04:43	24-Jun-13	01:44		501	0.00001			50	7.9	32			1.5	1.2	0.034	0.06
24-Jun-13	07:42	27-Jun-13	04:42		479	0.00002			50	7.8	22			1.3	1.2	0.025	0.04
10-Jul-13	11:00			5.3	484	0.00004	4.7	55	40	7.5	29	< 10	< 29	1.9	1.4	0.36	0.44
13-Jul-13	06:30	15-Jul-13	06:30		426	0.00002			< 10	7.7	43			1.8	1.4	0.171	0.25
7-Aug-13	11:30			3.7	511	0.00002	6.5	71	< 10	7.7	< 15	< 10	< 15	1.5	1	0.16	0.24
6-Sep-13	11:00			3.16	694	0.00001	8.5		< 10	7.9	< 15	< 10	< 15	< 0.33	0.26	0.025	0.03

sample dt	sample tm	sample end dt	sample end tm	p00613	p00618	p00625	p00631	p00665	p00666	p00940	p30207	p30209	p50280
10d	4d	10d	4d	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s
41197	0.5625			< 0.001	< 0.040	0.22	< 0.040	0.1	0.09	13.2	1.08	0.01	1001
41249	0.5625			0.006	0.047	0.35	0.053	0.07	0.02	27.7	0.95	0.04	1001
41303	0.458333			0.004	0.063	0.4	0.066	0.06	0.02	19.4	1.1		
41319	0.479167			0.004	0.093	0.58	0.097	0.07	< 0.02	22.6	0.92		1001
41361	0.4375			0.013	0.364	1.2	0.377	0.14	0.04	106	0.97	0.07	1001
41388	0.5			0.015	1.15	1.1	1.16	0.14	0.09	95.2	2.26	5.7	1001
41412	0.470833	41415	0.351389	0.03	0.319	1.6	0.348	0.31	0.16	93.9			1099
41415	0.55	41417	0.3	0.021	0.25	1.2	0.271	0.22	0.16	84.7			1099
41417	0.4375			0.015	0.205	1	0.219	0.19	0.16	81.6	2.6	9.5	1001
41437	0.510417	41439	0.510417	0.012	0.136	1.2	0.148	0.2	0.14	81.8			1099
41442	0.5			0.005	0.048	1.1	0.054	0.21	0.16	77.3	1.88	3.2	1001
41446	0.196528	41449	0.072222	0.012	0.21	1.3	0.222	0.27	0.2	64.9			1099
41449	0.320833	41452	0.195833	0.006	0.077	1.2	0.083	0.29	0.23	59			1099
41465	0.458333			0.033	0.062	1.8	0.095	0.69	0.39	44.9	1.62	2	1001
41468	0.270833	41470	0.270833	0.034	0.157	1.7	0.19	0.47	0.27	45.1			1099
41493	0.479167			0.072	0.189	1.3	0.261	0.24	0.19	45.4	1.13	0.34	1001
41523	0.458333			0.003	< 0.037	0.29	< 0.040	0.07	0.05	13.8	0.96	0.03	1001

sample dt	sample tm	sample end dt	sample end tm	p71845	p71846	p71851	p71856	p71999	p72105	p81904	p82398	p84164	p84171
10d	4d	10d	4d	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s
15-Oct-12	13:30			< 0.026	< 0.013	< 0.177	< 0.003	10	30		40	3070	10
6-Dec-12	13:30			0.142	0.123	0.208	0.021	10	20		40	3070	10
29-Jan-13	11:00			0.31	0.284	0.277	0.012	10			40	3070	
14-Feb-13	11:30			0.37	0.356	0.41	0.013	10	15		40	3070	10
28-Mar-13	10:30			0.527	0.484	1.61	0.042	10			40	3060	
24-Apr-13	12:00			0.05	0.027	5.08	0.049	10	20	1.2	40	3060	10
18-May-13	11:18	21-May-13	8:26	0.161	0.09	1.41	0.097	10			25	4115	10
21-May-13	13:12	23-May-13	7:12	0.104	0.057	1.11	0.068	10			25	4115	10
23-May-13	10:30			0.066	0.032	0.906	0.048	10	10		20	3054	10
12-Jun-13	12:15	14-Jun-13	12:15	0.099	0.044	0.602	0.038	10			25	4115	10
17-Jun-13	12:00			0.091	0.037	0.214	0.017	10	15		40	3070	10
21-Jun-13	04:43	24-Jun-13	1:44	0.082	0.044	0.931	0.038	10			25	4115	10
24-Jun-13	07:42	27-Jun-13	4:42	0.052	0.033	0.342	0.018	10			25	4115	10
10-Jul-13	11:00			0.561	0.464	0.275	0.109	10	15	1.1	40	3070	10
13-Jul-13	06:30	15-Jul-13	6:30	0.326	0.22	0.694	0.111	10			25	4115	10
7-Aug-13	11:30			0.309	0.206	0.838	0.236	10	10		40	3060	10
6-Sep-13	11:00			0.044	0.032	< 0.165	0.009	10			50	3071	10

U.S. Geological Survey

This file contains selected water-quality data for stations in the National Water Information System Water-quality database. Explanations of codes found in this file are followed by the retrieved data.

The data you have secured from the USGS NWISWeb database may include data that have not received Director's approval and as such are provisional and subject to revision. The data are released on the condition that neither the USGS nor the United States Government may be held liable for any damages resulting from its authorized or unauthorized use.

To view additional data-quality attributes output the results using these options:
 one result per row, expanded attributes. Additional precautions are at:
http://waterdata.usgs.gov/nwis/qwdata?help#Data_retrievals_precautions.

agency_cd..... - Agency Code P00625
 site_no..... - Station number
 sample_dt..... - Begin date
 sample_tm..... - Begin time
 sample_end_dt..... - End date
 sample_end_tm..... - End time
 sample_start_time_datum_cd.... - Time datum
 tm_datum_rlbtty_cd..... - Time datum reliability code
 coll_ent_cd..... - Agency Collecting Sample Code
 medium_cd..... - Medium code
 tu_id..... - Taxonomic unit code
 body_part_id..... - Body part code
 P00004..... - Stream width, feet
 P00010..... - Temperature, water, degrees Celsius
 P00020..... - Temperature, air, degrees Celsius
 P00025..... - Barometric pressure, millimeters of mercury
 P00061..... - Discharge, instantaneous, cubic feet per second
 P00063..... - Number of sampling points, count
 P00065..... - Gage height, feet
 P00095..... - Specific conductance, water, unfiltered,
 microsiemens per centimeter at 25 degrees Celsius
 P00191..... - Hydrogen ion, water, unfiltered, calculated, milligrams per liter
 P00300..... - Dissolved oxygen, water, unfiltered, milligrams per liter
 P00301..... - Dissolved oxygen, water, unfiltered, percent of saturation
 P00340..... - Chemical oxygen demand, high level, water, unfiltered,
 milligrams per liter
 P00400..... - pH, water, unfiltered, field, standard units
 P00530..... - Suspended solids, water, unfiltered, milligrams per liter
 P00535..... - Loss on ignition of suspended solids, water, unfiltered,
 milligrams per liter
 P00540..... - Suspended solids remaining after ignition, water, unfiltered,
 milligrams per liter
 P00600..... - Total nitrogen, water, unfiltered, milligrams per liter
 P00605..... - Organic nitrogen, water, unfiltered, milligrams per liter
 P00608..... - Ammonia, water, filtered, milligrams per liter as nitrogen
 P00610..... - Ammonia, water, unfiltered, milligrams per liter as nitrogen
 P00613..... - Nitrite, water, filtered, milligrams per liter as nitrogen
 P00618..... - Nitrate, water, filtered, milligrams per liter as nitrogen
 P00625..... - Ammonia plus organic nitrogen, water, unfiltered, milligrams per
 liter as nitrogen

- Ammonia plus organic nitrogen, water, unfiltered,
 milligrams per liter as nitrogen
 P00631..... - Nitrate plus nitrite, water, filtered, milligrams per liter as nitrogen
 P00665..... - Phosphorus, water, unfiltered, milligrams per liter as phosphorus
 P00666..... - Phosphorus, water, filtered, milligrams per liter as phosphorus
 P00940..... - Chloride, water, filtered, milligrams per liter
 P30207..... - Gage height, above datum, meters
 P30209..... - Discharge, instantaneous, cubic meters per second
 P50015..... - Transit rate, sampler, feet per second
 P50280..... - Site visit purpose, code
 P71845..... - Ammonia, water, unfiltered, milligrams per liter as NH4
 P71846..... - Ammonia, water, filtered, milligrams per liter as NH4
 P71851..... - Nitrate, water, filtered, milligrams per liter
 P71856..... - Nitrite, water, filtered, milligrams per liter
 P71999..... - Sample purpose, code
 P72104..... - Sample location, distance downstream, feet
 P72105..... - Sample location, distance upstream, feet
 P81904..... - Velocity at point in stream, feet per second
 P82398..... - Sampling method, code
 P84164..... - Sampler type, code
 P84171..... - Sample splitter type, field, code

Description of sample_start_time_datum_cd:
 CST - Central Standard Time
 CDT - Central Daylight Time

Description of tm_datum_rlbtty_cd: K - Known

Description of coll_ent_cd: USGSMNWC - USGS - Minnesota Water Science Center

Description of medium_cd: WS - Surface water

Description of tu_id: <http://www.itis.gov/>

Description of body_part_id:

Description of remark_cd:
 < - less than
 E - estimated

Data for the following sites are included: USGS 05287890 ELM CREEK NR CHAMPLIN,
 MN

U.S. Geological Survey
 Elm Creek near Champlin, Station Number 5287890
 Selected Water-Quality Data for Water Year 2013

agency cd	site no	sample dt	sample tm	sample end dt	sample end tm	sample start time datum	tm datum rlbty cd	coll ent cd	mediu m cd	tu id	body part id	p00004	p00010	p00025	p00061	p00063
5s	15s	10d	4d	10d	4d	1s	1s	8s	1s	11s	11s	12s	12s	12s	12s	12s
USGS	5287890	15-Oct-12	13:30			CDT	K	USGSMN	WS			28	8	737	0.48	3
USGS	5287890	6-Dec-12	13:30			CST	K	USGSMN	WS				3.5	734	1.5	5
USGS	5287890	29-Jan-13	11:00			CST	K	USGS-W	WS				0.1	727		3
USGS	5287890	14-Feb-13	11:30			CST	K	USGSMN	WS			17	1.4	734		3
USGS	5287890	28-Mar-13	10:30			CDT	K	USGS-W	WS				1.8	747	2.4	5
USGS	5287890	24-Apr-13	12:00			CDT	K	USGSMN	WS			30	4	737	200	5
USGS	5287890	18-May-13	11:18	21-May-13	08:26	CDT	K	USGSMN	WS							
USGS	5287890	21-May-13	13:12	23-May-13	07:12	CDT	K	USGSMN	WS							
USGS	5287890	23-May-13	10:30			CDT	K	USGSMN	WS				13.1	748	336	5
USGS	5287890	12-Jun-13	12:15	14-Jun-13	12:15	CDT	K	USGSMN	WS							
USGS	5287890	17-Jun-13	12:00			CDT	K	USGSMN	WS			34	20.7	742	113	5
USGS	5287890	21-Jun-13	04:43	24-Jun-13	01:44	CDT	K	USGSMN	WS							
USGS	5287890	24-Jun-13	07:42	27-Jun-13	04:42	CDT	K	USGSMN	WS							
USGS	5287890	10-Jul-13	11:00			CDT	K	USGSMN	WS			32	22.6	746	71	5
USGS	5287890	13-Jul-13	06:30	15-Jul-13	06:30	CDT	K	USGSMN	WS							
USGS	5287890	7-Aug-13	11:30			CDT	K	USGSMN	WS				18.9	741	12	5
USGS	5287890	6-Sep-13	11:00			CDT	K	USGSMN	WS			3	17.3		1	1

sample dt	sample tm	sample end dt	sample end tm	p00065	p00095	p00191	p00300	p00301	p00340	p00400	p00530	p00535	p00540	p00600	p00605	p00608	p00610
10d	4d	10d	4d	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s
15-Oct-12	13:30			3.54	707	0.00004	6.4	56	10	7.4	< 15	< 10	< 15	< 0.26	< 0.22	< 0.010	< 0.02
6-Dec-12	13:30			3.13	717	0.00002	10.6	83	< 10	7.7	< 15	< 10	< 15	0.41	0.24	0.096	0.11
29-Jan-13	11:00			3.62	697	0.00005	8.3	60	< 10	7.3	< 15	< 10	< 15	0.47	0.16	0.22	0.24
14-Feb-13	11:30			3.03	712	0.00005	9.5	68	< 10	7.3	< 15	< 10	< 15	0.67	0.29	0.277	0.29
28-Mar-13	10:30			3.18	846	0.00003	10.6	76	10	7.5	< 15	10	< 5	1.6	0.84	0.375	0.41
24-Apr-13	12:00			7.4	577	0.00009	11.1	88	30	7	< 15	< 10	< 15	2.3	1.1	0.021	0.04
18-May-13	11:18	21-May-13	08:26		624	0.00001			50	8	64			2	1.5	0.07	0.12
21-May-13	13:12	23-May-13	07:12		553	0.00002			20	7.7	23			1.5	1.1	0.045	0.08
23-May-13	10:30			8.53	555	0.00003	7	68	40	7.5	< 15	< 10	< 15	1.2	0.98	0.025	0.05
12-Jun-13	12:15	14-Jun-13	12:15		582	0.00001			50	8.1	< 15			1.4	1.1	0.034	0.08
17-Jun-13	12:00			6.18	573	0.00003	6.2	70	40	7.5	< 15	< 10	< 15	1.2	1	0.029	0.07
21-Jun-13	04:43	24-Jun-13	01:44		501	0.00001			50	7.9	32			1.5	1.2	0.034	0.06
24-Jun-13	07:42	27-Jun-13	04:42		479	0.00002			50	7.8	22			1.3	1.2	0.025	0.04
10-Jul-13	11:00			5.3	484	0.00004	4.7	55	40	7.5	29	< 10	< 29	1.9	1.4	0.36	0.44
13-Jul-13	06:30	15-Jul-13	06:30		426	0.00002			< 10	7.7	43			1.8	1.4	0.171	0.25
7-Aug-13	11:30			3.7	511	0.00002	6.5	71	< 10	7.7	< 15	< 10	< 15	1.5	1	0.16	0.24
6-Sep-13	11:00			3.16	694	0.00001	8.5		< 10	7.9	< 15	< 10	< 15	< 0.33	0.26	0.025	0.03

sample dt	sample tm	sample end dt	sample end tm	p00613	p00618	p00625	p00631	p00665	p00666	p00940	p30207	p30209	p50280
10d	4d	10d	4d	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s
41197	0.5625			< 0.001	< 0.040	0.22	< 0.040	0.1	0.09	13.2	1.08	0.01	1001
41249	0.5625			0.006	0.047	0.35	0.053	0.07	0.02	27.7	0.95	0.04	1001
41303	0.458333			0.004	0.063	0.4	0.066	0.06	0.02	19.4	1.1		
41319	0.479167			0.004	0.093	0.58	0.097	0.07	< 0.02	22.6	0.92		1001
41361	0.4375			0.013	0.364	1.2	0.377	0.14	0.04	106	0.97	0.07	1001
41388	0.5			0.015	1.15	1.1	1.16	0.14	0.09	95.2	2.26	5.7	1001
41412	0.470833	41415	0.351389	0.03	0.319	1.6	0.348	0.31	0.16	93.9			1099
41415	0.55	41417	0.3	0.021	0.25	1.2	0.271	0.22	0.16	84.7			1099
41417	0.4375			0.015	0.205	1	0.219	0.19	0.16	81.6	2.6	9.5	1001
41437	0.510417	41439	0.510417	0.012	0.136	1.2	0.148	0.2	0.14	81.8			1099
41442	0.5			0.005	0.048	1.1	0.054	0.21	0.16	77.3	1.88	3.2	1001
41446	0.196528	41449	0.072222	0.012	0.21	1.3	0.222	0.27	0.2	64.9			1099
41449	0.320833	41452	0.195833	0.006	0.077	1.2	0.083	0.29	0.23	59			1099
41465	0.458333			0.033	0.062	1.8	0.095	0.69	0.39	44.9	1.62	2	1001
41468	0.270833	41470	0.270833	0.034	0.157	1.7	0.19	0.47	0.27	45.1			1099
41493	0.479167			0.072	0.189	1.3	0.261	0.24	0.19	45.4	1.13	0.34	1001
41523	0.458333			0.003	< 0.037	0.29	< 0.040	0.07	0.05	13.8	0.96	0.03	1001

sample dt	sample tm	sample end dt	sample end tm	p71845	p71846	p71851	p71856	p71999	p72105	p81904	p82398	p84164	p84171
10d	4d	10d	4d	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s
15-Oct-12	13:30			< 0.026	< 0.013	< 0.177	< 0.003	10	30		40	3070	10
6-Dec-12	13:30			0.142	0.123	0.208	0.021	10	20		40	3070	10
29-Jan-13	11:00			0.31	0.284	0.277	0.012	10			40	3070	
14-Feb-13	11:30			0.37	0.356	0.41	0.013	10	15		40	3070	10
28-Mar-13	10:30			0.527	0.484	1.61	0.042	10			40	3060	
24-Apr-13	12:00			0.05	0.027	5.08	0.049	10	20	1.2	40	3060	10
18-May-13	11:18	21-May-13	8:26	0.161	0.09	1.41	0.097	10			25	4115	10
21-May-13	13:12	23-May-13	7:12	0.104	0.057	1.11	0.068	10			25	4115	10
23-May-13	10:30			0.066	0.032	0.906	0.048	10	10		20	3054	10
12-Jun-13	12:15	14-Jun-13	12:15	0.099	0.044	0.602	0.038	10			25	4115	10
17-Jun-13	12:00			0.091	0.037	0.214	0.017	10	15		40	3070	10
21-Jun-13	04:43	24-Jun-13	1:44	0.082	0.044	0.931	0.038	10			25	4115	10
24-Jun-13	07:42	27-Jun-13	4:42	0.052	0.033	0.342	0.018	10			25	4115	10
10-Jul-13	11:00			0.561	0.464	0.275	0.109	10	15	1.1	40	3070	10
13-Jul-13	06:30	15-Jul-13	6:30	0.326	0.22	0.694	0.111	10			25	4115	10
7-Aug-13	11:30			0.309	0.206	0.838	0.236	10	10		40	3060	10
6-Sep-13	11:00			0.044	0.032	< 0.165	0.009	10			50	3071	10

U.S. Geological Survey

This file contains selected water-quality data for stations in the National Water Information System Water-quality database. Explanations of codes found in this file are followed by the retrieved data.

The data you have secured from the USGS NWISWeb database may include data that have not received Director's approval and as such are provisional and subject to revision. The data are released on the condition that neither the USGS nor the United States Government may be held liable for any damages resulting from its authorized or unauthorized use.

To view additional data-quality attributes output the results using these options:
 one result per row, expanded attributes. Additional precautions are at:
http://waterdata.usgs.gov/nwis/qwdata?help#Data_retrievals_precautions.

agency_cd..... - Agency Code P00625
 site_no..... - Station number
 sample_dt..... - Begin date
 sample_tm..... - Begin time
 sample_end_dt..... - End date
 sample_end_tm..... - End time
 sample_start_time_datum_cd.... - Time datum
 tm_datum_rlbtty_cd..... - Time datum reliability code
 coll_ent_cd..... - Agency Collecting Sample Code
 medium_cd..... - Medium code
 tu_id..... - Taxonomic unit code
 body_part_id..... - Body part code
 P00004..... - Stream width, feet
 P00010..... - Temperature, water, degrees Celsius
 P00020..... - Temperature, air, degrees Celsius
 P00025..... - Barometric pressure, millimeters of mercury
 P00061..... - Discharge, instantaneous, cubic feet per second
 P00063..... - Number of sampling points, count
 P00065..... - Gage height, feet
 P00095..... - Specific conductance, water, unfiltered,
 microsiemens per centimeter at 25 degrees Celsius
 P00191..... - Hydrogen ion, water, unfiltered, calculated, milligrams per liter
 P00300..... - Dissolved oxygen, water, unfiltered, milligrams per liter
 P00301..... - Dissolved oxygen, water, unfiltered, percent of saturation
 P00340..... - Chemical oxygen demand, high level, water, unfiltered,
 milligrams per liter
 P00400..... - pH, water, unfiltered, field, standard units
 P00530..... - Suspended solids, water, unfiltered, milligrams per liter
 P00535..... - Loss on ignition of suspended solids, water, unfiltered,
 milligrams per liter
 P00540..... - Suspended solids remaining after ignition, water, unfiltered,
 milligrams per liter
 P00600..... - Total nitrogen, water, unfiltered, milligrams per liter
 P00605..... - Organic nitrogen, water, unfiltered, milligrams per liter
 P00608..... - Ammonia, water, filtered, milligrams per liter as nitrogen
 P00610..... - Ammonia, water, unfiltered, milligrams per liter as nitrogen
 P00613..... - Nitrite, water, filtered, milligrams per liter as nitrogen
 P00618..... - Nitrate, water, filtered, milligrams per liter as nitrogen
 P00625..... - Ammonia plus organic nitrogen, water, unfiltered, milligrams per
 liter as nitrogen

- Ammonia plus organic nitrogen, water, unfiltered,
 milligrams per liter as nitrogen
 P00631..... - Nitrate plus nitrite, water, filtered, milligrams per liter as nitrogen
 P00665..... - Phosphorus, water, unfiltered, milligrams per liter as phosphorus
 P00666..... - Phosphorus, water, filtered, milligrams per liter as phosphorus
 P00940..... - Chloride, water, filtered, milligrams per liter
 P30207..... - Gage height, above datum, meters
 P30209..... - Discharge, instantaneous, cubic meters per second
 P50015..... - Transit rate, sampler, feet per second
 P50280..... - Site visit purpose, code
 P71845..... - Ammonia, water, unfiltered, milligrams per liter as NH4
 P71846..... - Ammonia, water, filtered, milligrams per liter as NH4
 P71851..... - Nitrate, water, filtered, milligrams per liter
 P71856..... - Nitrite, water, filtered, milligrams per liter
 P71999..... - Sample purpose, code
 P72104..... - Sample location, distance downstream, feet
 P72105..... - Sample location, distance upstream, feet
 P81904..... - Velocity at point in stream, feet per second
 P82398..... - Sampling method, code
 P84164..... - Sampler type, code
 P84171..... - Sample splitter type, field, code

Description of sample_start_time_datum_cd:
 CST - Central Standard Time
 CDT - Central Daylight Time

Description of tm_datum_rlbtty_cd: K - Known

Description of coll_ent_cd: USGSMNWC - USGS - Minnesota Water Science Center

Description of medium_cd: WS - Surface water

Description of tu_id: <http://www.itis.gov/>

Description of body_part_id:

Description of remark_cd:
 < - less than
 E - estimated

Data for the following sites are included: USGS 05287890 ELM CREEK NR CHAMPLIN,
 MN

Elm Creek Near Champlin (USGS Station 05287890)

Manual Water Quality Samples for Water Year 2013

(Selected Parameters)

USGS Parameter #		P00010	P00020	P00025	P00061	P00095	P00300	P00301	P00340	P00400
DATE	Sample Start Time	Water Temp. °C	Air Temp. °C	Barom Press mm Hg	Disch Inst cfs	Sp cond mS/cm	DO mg/L	DO % Satur	COD mg/L	pH
15-Oct-12	13:30	8.0		737	0.48	707	6.4	56	10	7.4
6-Dec-12	13:30	3.5		734	1.5	717	10.6	83	< 10	7.7
29-Jan-13	11:00	0.1		727		697	8.3	60	< 10	7.3
14-Feb-13	11:30	1.4		734		712	9.5	68	< 10	7.3
28-Mar-13	10:30	1.8		747	2.4	846	10.6	76	10	7.5
24-Apr-13	12:00	4.0		737	200	577	11.1	88	30	7
23-May-13	10:30	13.1		748	336	555	7	68	40	7.5
17-Jun-13	12:00	20.7		742	113	573	6.2	70	40	7.5
10-Jul-13	11:00	22.6		746	71	484	4.7	55	40	7.5
7-Aug-13	11:30	18.9		741	12	511	6.5	71	< 10	7.7
6-Sep-13	11:00	17.3			1	694	8.5		< 10	7.9

USGS Parameter #		P00530	P00535	P00608	P00613	P00625	P00631	P00665	P00666	P00940
DATE	Sample Start Time	TSS mg/L	Volatile Residue mg/L	Ammonia mg/L	Nitrite mg/L	Total Nitrogen mg/L	Dissolved NO ₂ +NO ₃ mg/L	Total P mg/L	Dissolved P mg/L	Dissolved Chloride mg/L
15-Oct-12	13:30	< 15	< 10	< 0.010	< 0.001	0.22	< 0.040	0.10	0.09	13.2
6-Dec-12	13:30	< 15	< 10	0.096	0.006	0.35	0.053	0.07	0.02	27.7
29-Jan-13	11:00	< 15	< 10	0.220	0.004	0.40	0.066	0.06	0.02	19.4
14-Feb-13	11:30	< 15	< 10	0.277	0.004	0.58	0.097	0.07	< 0.02	22.6
28-Mar-13	10:30	< 15	10	0.375	0.013	1.20	0.377	0.14	0.04	106.0
24-Apr-13	12:00	< 15	< 10	0.021	0.015	1.10	1.160	0.14	0.09	95.2
23-May-13	10:30	< 15	< 10	0.025	0.015	1.00	0.219	0.19	0.16	81.6
17-Jun-13	12:00	< 15	< 10	0.029	0.005	1.10	0.054	0.21	0.16	77.3
10-Jul-13	11:00	29	< 10	0.36	0.033	1.80	0.095	0.69	0.39	44.9
7-Aug-13	11:30	< 15	< 10	0.16	0.072	1.30	0.261	0.24	0.19	45.4
6-Sep-13	11:00	< 15	< 10	0.025	0.003	0.29	< 0.040	0.07	0.05	13.8

Data are provisional and are subject to change

E = Estimated

Automatic Event Samples for Water Year 2013

(Selected parameters)

USGS Parameter #			P00095	P00340	P00400	P00530	P00608	P00613	P00625	P00631	P00665	P00666	P00940
DATE & TIME			Sp Cond μS/cm	COD mg/L	pH	TSS mg/L	Ammoni a mg/L	Nitrite mg/L	Total N mg/L	Dissolved NO ₂ +NO ₃ mg/L	Total P mg/L	Dissolved P mg/L	Dissolved Chloride mg/L
18-May-13	11:18	to	624	50	8	64	0.07	0.03	1.6	0.348	0.31	0.16	93.9
21-May-13	08:26												
21-May-13	13:12	to	553	20	7.7	23	0.045	0.021	1.2	0.271	0.22	0.16	84.7
23-May-13	07:12												
12-Jun-13	12:15	to	582	50	8.1	< 15	0.034	0.012	1.2	0.148	0.2	0.14	81.8
14-Jun-13	12:15												
21-Jun-13	04:43	to	501	50	7.9	32	0.034	0.012	1.3	0.222	0.27	0.2	64.9
24-Jun-13	01:44												
24-Jun-13	07:42	to	479	50	7.8	22	0.025	0.006	1.2	0.083	0.29	0.23	59
27-Jun-13	04:42												
13-Jul-13	06:30	to	426	< 10	7.7	43	0.171	0.034	1.7	0.19	0.47	0.27	45.1
15-Jul-13	06:30												

USGS Parameters

- # P00010 - Temperature, water, degrees Celsius
- # P00020 - Temperature, air, degrees Celsius
- # P00025 - Barometric pressure, millimeters of mercury
- # P00061 - Discharge, instantaneous, cubic feet per second
- # P00095 - Specific conductance, water, unfiltered, microsiemens per centimeter at 25 degrees Celsius
- # P00300 - Dissolved oxygen, water, unfiltered, milligrams per liter
- # P00301 - Dissolved oxygen, water, unfiltered, percent of saturation
- # P00340 - Chemical oxygen demand, high level, water, unfiltered, milligrams per liter
- # P00400 - pH, water, unfiltered, field, standard units
- # P00530 - Residue, total nonfilterable, milligrams per liter
- # P00535 - Loss on ignition, from nonfilterable residue, milligrams per liter
- # P00608 - Ammonia, water, filtered, milligrams per liter as nitrogen
- # P00613 - Nitrite, water, filtered, milligrams per liter as nitrogen
- # P00625 - Ammonia plus organic nitrogen, water, unfiltered, milligrams per liter as nitrogen
- # P00631 - Nitrate plus nitrite, water, filtered, milligrams per liter as nitrogen
- # P00665 - Phosphorus, water, unfiltered, milligrams per liter
- # P00666 - Phosphorus, water, filtered, milligrams per liter
- # P00940 - Chloride, water, filtered, milligrams per liter