Water-Data Report 2012

07189000 ELK RIVER NEAR TIFF CITY, MO

Neosho Basin
Elk Subbasin

LOCATION.--Lat 36°37′53″, long 94°35′12″ referenced to North American Datum of 1927, in NE ¼ NE ¼ sec.22, T.22 N., R.34 W., McDonald County, MO, Hydrologic Unit 11070208, near right abutment of bridge on State Highway 43, 0.8 mi downstream from Blackfoot Branch, 2.8 mi upstream from Buffalo Creek, 3.0 mi southeast of Tiff City, and at mile 15.8.

DRAINAGE AREA.--851 mi^2, revised. From automated delineation using 10-meter National Elevation Dataset digital elevation model data dated 10/01/2006 and Watershed Boundary Dataset dated 10/01/2006, using Albers Equal-Area Projection, North American Datum 1983.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1939 to current year.

REVISED RECORDS.--WSP 927: 1940. WSP 1117: Drainage area. WDR 2012: Drainage area.

GAGE.--Water stage recorder. Datum of gage is 750.61 ft above NGVD of 1929 (levels by U.S. Army Corps of Engineers). Sept. 6, 1960 to Aug. 25, 1961, at site 100 ft downstream.

REMARKS.--Records good, except for estimated days which are poor. U.S. Army Corps of Engineers' satellite telemeter at station.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,000 ft^3/s and (or) maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar 22	1315	*10,000	*12.15

Suggested citation: U.S. Geological Survey, 2013, Water-resources data for the United States, Water Year 2012: U.S. Geological Survey Water-Data Report WDR-US-2012, site 07189000, accessed at http://wdr.water.usgs.gov/wy2012/pdfs/07189000.2012.pdf

07189000 ELK RIVER NEAR TIFF CITY, MO—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	229	151	721	511	369	410	1,040	407	197	69	34	101
2	212	151	658	478	354	426	929	541	182	67	33	112
3	198	165	614	448	347	420	832	543	177	63	33	89
4	185	168	617	429	474	407	761	476	197	61	34	74
5	177	170	628	412	877	394	704	424	177	59	36	62
6	168	173	627	398	897	377	651	383	164	e57	36	58
7	159	249	612	380	801	361	618	369	151	e56	38	63
8	153	908	589	369	738	356	607	381	142	e55	39	62
9	146	4,180	561	359	673	347	568	358	133	e56	38	58
10	150	2,410	529	347	623	332	532	336	127	e56	37	59
11	163	1,700	494	342	569	333	502	320	123	57	37	58
12	203	1,320	462	336	521	381	477	305	121	58	37	57
13	267	1,090	471	324	495	421	458	289	120	59	36	59
14	356	911	493	314	478	441	453	272	115	58	36	75
15	332	797	547	304	460	441	507	257	112	57	36	134
16	285	723	690	299	451	430	636	245	109	57	36	194
17	251	653	795	294	445	416	664	234	106	55	37	189
18	246	592	788	284	437	401	594	223	102	53	39	169
19	240	551	754	279	433	463	539	211	97	49	39	145
20	241	514	832	279	431	5,380	508	205	92	47	41	126
21	234	488	1,260	277	437	7,520	472	194	95	45	40	109
22	225	1,140	1,350	278	429	8,950	436	184	99	44	39	100
23	217	2,120	1,210	276	422	5,350	408	176	98	43	38	94
24	208	1,620	1,050	270	413	3,550	384	169	94	42	37	87
25	198	1,280	915	296	399	2,750	363	166	90	41	38	82
26	188	1,100	818	363	386	2,230	341	160	84	39	54	79
27	178	1,010	745	417	373	1,820	326	152	81	38	52	85
28	172	935	680	422	363	1,620	313	142	77	36	61	81
29	166	866	628	411	383	1,430	303	159	74	37	65	80
30	161	791	586	396	---	1,290	314	196	70	36	63	79
31	155	---	545	383	---	1,160	---	200	---	35	68	---
Total	6,463	28,926	22,269	10,975	14,478	50,607	16,240	8,677	3,606	1,585	1,287	2,820
Mean	208	964	718	354	499	1,632	541	280	120	51.1	41.5	94.0
Max	356	4,180	1,350	511	897	8,950	1,040	543	197	69	68	194
Min	146	151	462	270	347	332	303	142	70	35	33	57
Ac-ft	12,820	57,370	44,170	21,770	28,720	100,400	32,210	17,210	7,150	3,140	2,550	5,590
Cfsm	0.24	1.13	0.84	0.42	0.59	1.92	0.64	0.33	0.14	0.06	0.05	0.11
In.	0.28	1.26	0.97	0.48	0.63	2.21	0.71	0.38	0.16	0.07	0.06	0.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2012, BY WATER YEAR (WY)

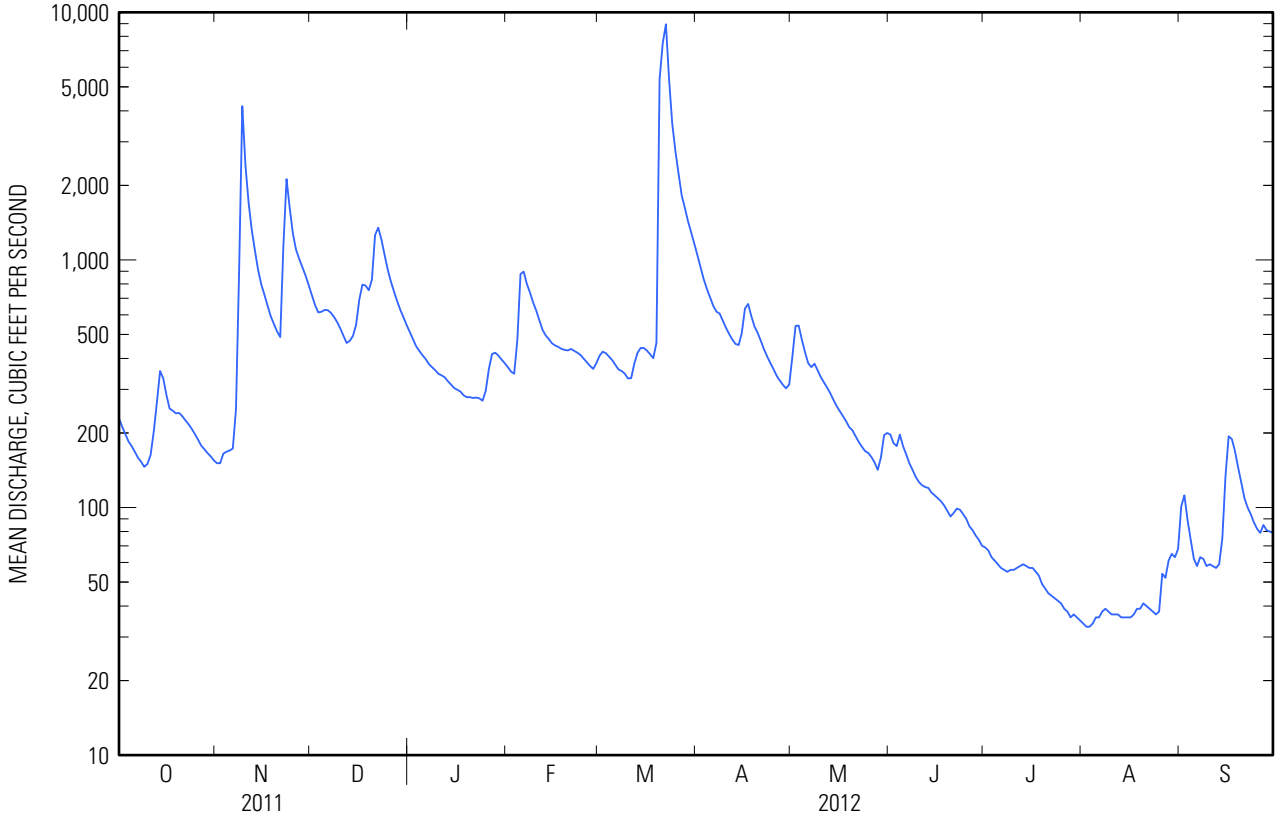
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	419	680	729	722	877	1,338	1,613	1,539	931	471	248	304
Max	2,938	4,094	3,651	4,025	2,971	5,020	6,119	8,964	4,245	2,565	2,418	2,164
(WY)	(1942)	(1975)	(1993)	(2005)	(1951)	(1945)	(1945)	(1943)	(1995)	(1976)	(1950)	(1993)
Min	25.7	49.8	58.5	55.9	70.7	75.7	145	227	78.6	14.3	12.0	30.9
(WY)	(1957)	(1964)	(1964)	(1964)	(1954)	(1956)	(1956)	(1964)	(1954)	(1954)	(1954)	(1953)

07189000 ELK RIVER NEAR TIFF CITY, MO—Continued

SUMMARY STATISTICS

	Calendar Year 2011		Water Year 2012		Water Years 1940 - 2012	
Annual total	449,044		167,933			
Annual mean	1,230		459		822	
Highest annual mean					1,881	1993
Lowest annual mean					135	1954
Highest daily mean	52,600	Apr 25	8,950	Mar 22	68,600	Apr 19, 1941
Lowest daily mean	70	Sep 15	33	Aug 2[a]	5.1	Sep 5, 1954
Annual seven-day minimum	74	Sep 10	34	Jul 30	5.6	Sep 2, 1954
Maximum peak flow			10,000	Mar 22	137,000	Apr 19, 1941
Maximum peak stage			12.15	Mar 22	28.40	Apr 19, 1941
Annual runoff (ac-ft)	890,700		333,100		595,200	
Annual runoff (cfsm)	1.45		0.539		0.965	
Annual runoff (inches)	19.63		7.34		13.12	
10 percent exceeds	1,480		842		1,700	
50 percent exceeds	449		287		345	
90 percent exceeds	133		46		87	

[a] Also Aug. 3.



07189000 ELK RIVER NEAR TIFF CITY, MO—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--August 1962 to June 1963, November 1965 to July 1975, October 1980 to September 1981, October 1982 to June 1990, November 1992 to current year.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 1 of 6

[%, percent; ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated]

Date	Sample start time	Medium name	Sample type	Temperature, air, °C (00020)	Discharge, instantaneous, ft^3/s (00061)	Dissolved oxygen, water, unfiltered, mg/L (00300)	Dissolved oxygen, water, unfiltered, % saturation (00301)	pH, water, unfiltered, field, standard units (00400)
10-18-2011	**1000**	Surface water	Regular	11.2	222	6.7	72	7.3
11-08-2011	**0945**	Surface water	Regular	15.1	516	8.2	84	7.7
11-08-2011	***0946***	*QC sample - Surface water*	*Replicate*	*15.1*	--	*8.1*	*84*	*7.7*
12-13-2011	**0930**	Surface water	Regular	8.2	414	11.1	97	8.2
01-11-2012	**1145**	Surface water	Regular	11.8	277	14.1	125	8.4
02-07-2012	**1000**	Surface water	Regular	5.9	811	11.4	98	8.0
03-14-2012	**0920**	Surface water	Regular	19.4	487	8.0	81	7.9
04-17-2012	**0930**	Surface water	Regular	12.5	603	8.3	86	7.6
05-15-2012	**0945**	Surface water	Regular	19.2	256	7.9	89	8.0
06-19-2012	**1320**	Surface water	Regular	26.4	95	8.7	113	7.3
07-11-2012	**0815**	Surface water	Regular	25.7	60	5.2	66	7.4
08-07-2012	**0855**	Surface water	Regular	24.0	45	4.8	62	7.5
09-11-2012	**0940**	Surface water	Regular	21.4	60	6.0	71	7.5

07189000 ELK RIVER NEAR TIFF CITY, MO—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 2 of 6

[%, percent; ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated]

Date	Sample start time	Specific conductance, water, unfiltered, µS/cm at 25°C (00095)	Temperature, water, °C (00010)	Dissolved solids dried at 180°C, water, filtered, mg/L (70300)	Hardness, water, mg/L as $CaCO_3$ (00900)	Suspended solids, water, unfiltered, mg/L (00530)	Calcium, water, filtered, mg/L (00915)	Magnesium, water, filtered, mg/L (00925)	Potassium, water, filtered, mg/L (00935)	Sodium, water, filtered, mg/L (00930)
10-18-2011	**1000**	299	16.7	175	137	< 15	48.9	3.64	2.73	6.91
11-08-2011	**0945**	308	15.4	--	--	< 15	--	--	--	--
11-08-2011	***0946***	*309*	*15.4*	--	--	*< 15*	--	--	--	--
12-13-2011	**0930**	312	8.5	--	--	< 15	--	--	--	--
01-11-2012	**1145**	306	8.5	184	146	< 15	52.2	3.68	2.16	5.86
02-07-2012	**1000**	314	7.9	--	--	< 15	--	--	--	--
03-14-2012	**0920**	307	14.9	--	--	< 15	--	--	--	--
04-17-2012	**0930**	292	15.9	--	--	< 15	--	--	--	--
05-15-2012	**0945**	309	20.0	192	147	< 15	53.0	3.63	2.49	6.33
06-19-2012	**1320**	336	27.2	--	--	< 15	--	--	--	--
07-11-2012	**0815**	321	26.9	170	134	< 15	45.1	5.13	4.00	10.9
08-07-2012	**0855**	334	27.4	--	--	< 15	--	--	--	--
09-11-2012	**0940**	350	22.9	--	--	< 15	--	--	--	--

07189000 ELK RIVER NEAR TIFF CITY, MO—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 3 of 6

[%, percent; ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated]

Date	Sample start time	ANC, water, unfiltered, inflection-point, incremental titration method, field, mg/L as $CaCO_3$ (00419)	Bi-carbonate, water, unfiltered, inflection-point, incremental titration method, field, mg/L (00450)	Carbonate, water, unfiltered, inflection-point, incre-mental titration method, field, mg/L (00447)	Chloride, water, filtered, mg/L (00940)	Fluoride, water, filtered, mg/L (00950)	Sulfate, water, filtered, mg/L (00945)	Ammonia plus organic nitrogen, water, unfiltered, mg/L as N (00625)	Ammonia, water, filtered, mg/L as N (00608)
10-18-2011	**1000**	131	159	0.2	10.4	< .04	9.19	0.21	0.012
11-08-2011	**0945**	--	--	--	--	--	--	.23	.013
11-08-2011	***0946***	--	--	--	--	--	--	*.25*	*.029*
12-13-2011	**0930**	--	--	--	--	--	--	.10	.012
01-11-2012	**1145**	116	141	.6	11.7	.07	8.55	.13	.020
02-07-2012	**1000**	--	--	--	--	--	--	.14	< .010
03-14-2012	**0920**	--	--	--	--	--	--	.12	.011
04-17-2012	**0930**	--	--	--	--	--	--	.10	< .010
05-15-2012	**0945**	127	153	.9	8.60	< .04	8.59	.15	.018
06-19-2012	**1320**	--	--	--	--	--	--	.10	.021
07-11-2012	**0815**	87.3	106	.2	16.1	.05	14.0	.23	< .010
08-07-2012	**0855**	--	--	--	--	--	--	.20	< .010
09-11-2012	**0940**	--	--	--	--	--	--	.11	.010

07189000 ELK RIVER NEAR TIFF CITY, MO—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
Part 4 of 6

[%, percent; ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft³/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated]

Date	Sample start time	Nitrate plus nitrite, water, filtered, mg/L as N (00631)	Nitrite, water, filtered, mg/L as N (00613)	Orthophosphate, water, filtered, mg/L as P (00671)	Phosphorus, water, filtered, mg/L as P (00666)	Phosphorus, water, unfiltered, mg/L as P (00665)	Escherichia coli, modified m-TEC MF method, water, col/100 mL (90902)	Fecal coliform, M-FC MF (0.7 micron) method, water, col/100 mL (31625)	Aluminum, water, filtered, µg/L (01106)
10-18-2011	**1000**	1.85	0.001	0.020	0.04	< .02	E 22	E 330	< 2.2
11-08-2011	**0945**	1.88	.003	.013	.02	.03	460	520	--
11-08-2011	***0946***	*1.85*	*.003*	*.012*	*< .02*	*.03*	*400*	*480*	--
12-13-2011	**0930**	3.21	.003	.020	< .02	< .02	E 10	E 52	--
01-11-2012	**1145**	2.92	.003	.005	< .02	.02	E 10	E 18	3.8
02-07-2012	**1000**	2.64	.002	.022	.03	.04	23	34	--
03-14-2012	**0920**	2.24	.005	.018	< .02	.04	34	33	--
04-17-2012	**0930**	2.25	.006	.008	< .02	< .02	30	59	--
05-15-2012	**0945**	1.81	.004	.016	.03	.03	24	180	< 2.2
06-19-2012	**1320**	.923	.005	.019	.03	< .02	51	40	--
07-11-2012	**0815**	.636	.006	.007	< .02	.03	35	E 69	< 2.2
08-07-2012	**0855**	.146	.002	.011	< .02	< .02	E 15	39	--
09-11-2012	**0940**	.449	.002	.018	< .02	< .02	E 8	21	--

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
Part 5 of 6

[%, percent; ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft³/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated]

Date	Sample start time	Aluminum, water, unfiltered, recoverable, µg/L (01105)	Cadmium, water, filtered, µg/L (01025)	Cadmium, water, unfiltered, µg/L (01027)	Copper, water, filtered, µg/L (01040)	Iron, water, filtered, µg/L (01046)	Lead, water, filtered, µg/L (01049)	Lead, water, unfiltered, recoverable, µg/L (01051)	Lithium, water, filtered, µg/L (01130)	Manganese, water, filtered, µg/L (01056)
10-18-2011	**1000**	25.0	< .016	< .016	< .80	< 3.2	< .025	0.08	1.07	1.94
11-08-2011	**0945**	--	--	--	--	--	--	--	--	--
11-08-2011	***0946***	--	--	--	--	--	--	--	--	--
12-13-2011	**0930**	--	--	--	--	--	--	--	--	--
01-11-2012	**1145**	7.2	< .016	.026	< .80	5.5	< .025	< .04	.88	.42
02-07-2012	**1000**	--	--	--	--	--	--	--	--	--
03-14-2012	**0920**	--	--	--	--	--	--	--	--	--
04-17-2012	**0930**	--	--	--	--	--	--	--	--	--
05-15-2012	**0945**	14.0	.118	.115	< .80	< 3.2	< .025	< .04	.96	2.19
06-19-2012	**1320**	--	--	--	--	--	--	--	--	--
07-11-2012	**0815**	16.3	< .016	< .016	< .80	3.3	< .025	.21	1.56	6.47
08-07-2012	**0855**	--	--	--	--	--	--	--	--	--
09-11-2012	**0940**	--	--	--	--	--	--	--	--	--

07189000 ELK RIVER NEAR TIFF CITY, MO—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 6 of 6

[%, percent; ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; MF, membrane filter; N, nitrogen; P, phosphorus; col/100 mL, colonies per 100 milliliters; ft^3/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; --, no data; <, less than; E, estimated]

Date	Sample start time	Mercury, water, unfiltered, recover-able, µg/L (71900)	Strontium, water, filtered, µg/L (01080)	Zinc, water, filtered, µg/L (01090)	Zinc, water, unfiltered, recover-able, µg/L (01092)	Arsenic, water, filtered, µg/L (01000)	Boron, water, filtered, µg/L (01020)	Selenium, water, filtered, µg/L (01145)
10-18-2011	**1000**	< .005	52.8	2.2	< 3.0	0.24	15	0.12
11-08-2011	**0945**	--	--	--	--	--	--	--
11-08-2011	***0946***	--	--	--	--	--	--	--
12-13-2011	**0930**	--	--	--	--	--	--	--
01-11-2012	**1145**	< .005	51.8	< 1.4	< 3.0	.21	8.3	.20
02-07-2012	**1000**	--	--	--	--	--	--	--
03-14-2012	**0920**	--	--	--	--	--	--	--
04-17-2012	**0930**	--	--	--	--	--	--	--
05-15-2012	**0945**	< .005	54.7	< 1.4	< 3.0	.31	14	.16
06-19-2012	**1320**	--	--	--	--	--	--	--
07-11-2012	**0815**	< .005	55.2	< 1.4	3.0	.43	21	.14
08-07-2012	**0855**	--	--	--	--	--	--	--
09-11-2012	**0940**	--	--	--	--	--	--	--