

Water-Data Report 2013

**03454500 FRENCH BROAD RIVER AT HOT SPRINGS, NC**

French Broad-Holston Basin  
Upper French Broad Subbasin

LOCATION.--Lat 35°53'23.7", long 82°49'15.6" referenced to North American Datum of 1983, Madison County, NC, Hydrologic Unit 06010105, on right bank, 0.3 mi upstream of U.S. Highway 25/70, and 0.7 mi upstream from Spring Creek.

DRAINAGE AREA.--1,567 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--April 1934 to September 1949, August 2011 to current water year.

GAGE.--Water-stage recorder. Datum of gage is 1311.10 ft above National Geodetic Vertical Datum of 1988 (levels by USGS). Satellite telemetry at streamgage.

REMARKS.--No estimated daily discharges. Records fair. Some regulation from Redmon Dam. Maximum discharge for period of record from slope-area computation of peak flow. Minimum discharge for period of record also occurred September 28, 1936 and September 6, 1947. Minimum discharge for 2012 water year also occurred October 18 and September 13.

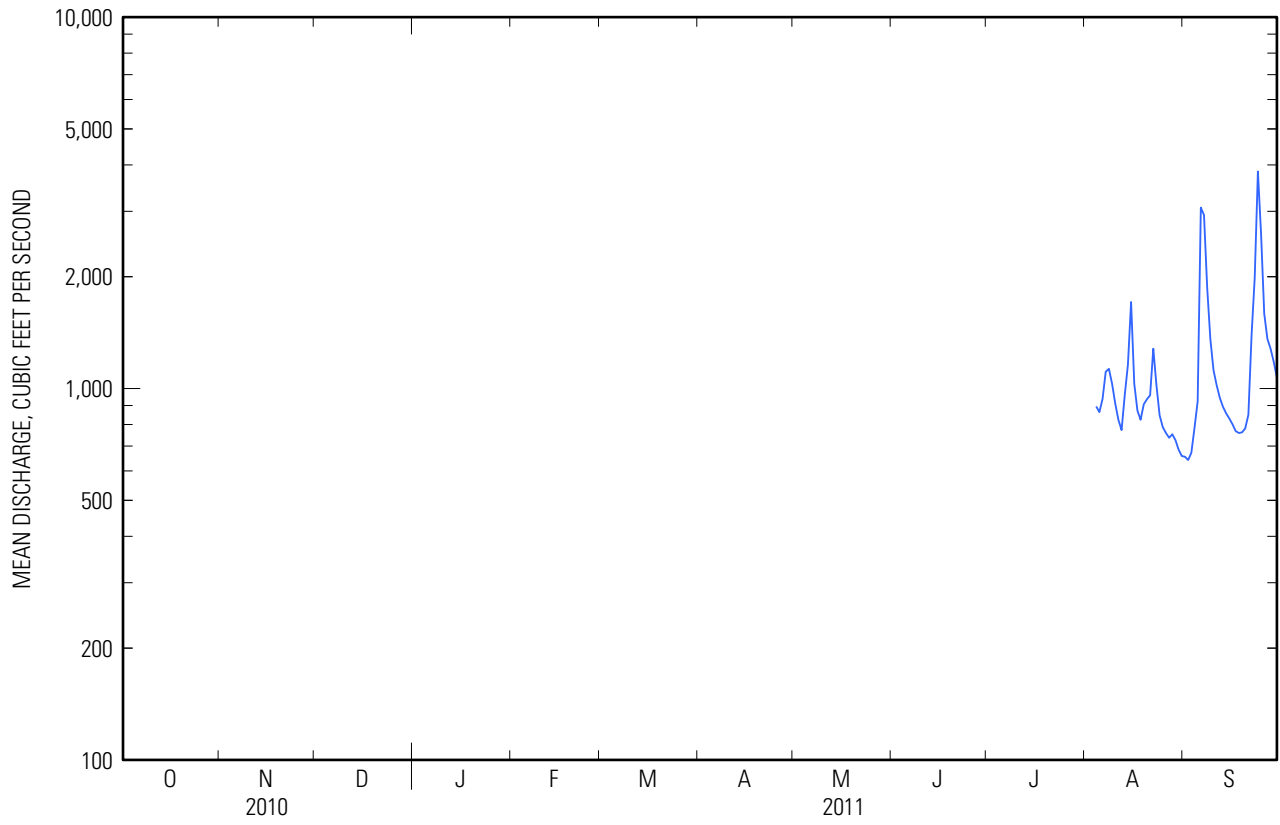
EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage observed, 19.3 ft from floodmarks, July 16 or 17, 1916, from floodmarks a quarter of a mile downstream.

## 03454500 FRENCH BROAD RIVER AT HOT SPRINGS, NC—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	---	---	---	---	---	---	---	---	---	---	---	655
2	---	---	---	---	---	---	---	---	---	---	---	642
3	---	---	---	---	---	---	---	---	---	---	---	671
4	---	---	---	---	---	---	---	---	---	---	895	783
5	---	---	---	---	---	---	---	---	---	---	864	924
6	---	---	---	---	---	---	---	---	---	---	938	3,070
7	---	---	---	---	---	---	---	---	---	---	1,110	2,930
8	---	---	---	---	---	---	---	---	---	---	1,130	1,870
9	---	---	---	---	---	---	---	---	---	---	1,030	1,360
10	---	---	---	---	---	---	---	---	---	---	911	1,120
11	---	---	---	---	---	---	---	---	---	---	823	1,020
12	---	---	---	---	---	---	---	---	---	---	773	943
13	---	---	---	---	---	---	---	---	---	---	960	892
14	---	---	---	---	---	---	---	---	---	---	1,160	857
15	---	---	---	---	---	---	---	---	---	---	1,710	830
16	---	---	---	---	---	---	---	---	---	---	1,030	801
17	---	---	---	---	---	---	---	---	---	---	872	768
18	---	---	---	---	---	---	---	---	---	---	824	759
19	---	---	---	---	---	---	---	---	---	---	907	762
20	---	---	---	---	---	---	---	---	---	---	936	781
21	---	---	---	---	---	---	---	---	---	---	959	850
22	---	---	---	---	---	---	---	---	---	---	1,280	1,390
23	---	---	---	---	---	---	---	---	---	---	1,020	1,990
24	---	---	---	---	---	---	---	---	---	---	847	3,840
25	---	---	---	---	---	---	---	---	---	---	787	2,610
26	---	---	---	---	---	---	---	---	---	---	759	1,590
27	---	---	---	---	---	---	---	---	---	---	737	1,360
28	---	---	---	---	---	---	---	---	---	---	753	1,280
29	---	---	---	---	---	---	---	---	---	---	726	1,180
30	---	---	---	---	---	---	---	---	---	---	684	1,070
31	---	---	---	---	---	---	---	---	---	---	658	---
<b>Total</b>	---	---	---	---	---	---	---	---	---	---	---	39,598
<b>Mean</b>	---	---	---	---	---	---	---	---	---	---	---	1,320
<b>Max</b>	---	---	---	---	---	---	---	---	---	---	---	3,840
<b>Min</b>	---	---	---	---	---	---	---	---	---	---	---	642
<b>Cfsm</b>	---	---	---	---	---	---	---	---	---	---	---	0.84
<b>In.</b>	---	---	---	---	---	---	---	---	---	---	---	0.94

**03454500 FRENCH BROAD RIVER AT HOT SPRINGS, NC—Continued**



## 03454500 FRENCH BROAD RIVER AT HOT SPRINGS, NC—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1,000	948	8,230	2,800	2,890	1,850	2,220	2,540	2,130	915	2,130	1,220
2	952	920	6,510	2,560	3,020	1,830	2,210	2,370	2,220	1,680	1,820	1,160
3	923	918	3,280	2,420	2,840	2,900	2,180	2,130	1,790	1,340	1,510	1,250
4	925	1,460	2,540	2,220	2,650	3,840	2,920	1,980	1,620	1,160	1,980	1,660
5	904	1,980	2,270	2,200	3,040	2,880	2,760	1,990	1,600	1,080	3,060	1,870
6	875	1,510	2,540	2,130	3,240	2,360	5,260	1,930	1,610	1,050	2,200	2,190
7	873	1,220	10,100	2,070	2,870	2,120	5,810	1,920	1,680	1,090	2,300	1,510
8	851	1,140	10,100	2,100	2,630	2,020	3,990	1,950	1,590	963	2,220	1,310
9	835	1,070	6,270	2,170	2,490	2,890	3,150	2,950	1,490	901	2,080	1,220
10	833	1,070	4,200	2,980	2,410	2,910	2,740	3,260	1,380	983	2,350	1,140
11	858	1,020	3,290	3,560	2,310	2,460	2,500	2,410	1,370	2,060	3,270	1,080
12	1,130	1,020	2,820	9,260	2,170	2,230	2,350	2,030	2,210	4,220	2,260	1,020
13	1,330	993	2,550	6,370	2,060	2,250	2,200	1,880	1,980	2,230	1,830	982
14	1,270	956	2,340	4,280	2,050	2,180	2,070	2,710	1,840	3,150	1,620	965
15	1,050	979	2,180	3,540	2,030	2,090	1,920	5,880	1,760	3,210	1,470	959
16	969	1,170	2,320	3,080	2,010	2,410	1,850	4,620	1,520	2,620	1,470	948
17	900	1,840	2,780	2,820	2,000	3,010	1,810	3,300	1,450	2,140	1,290	1,030
18	899	1,910	2,400	3,180	1,950	3,170	5,420	3,420	1,400	1,930	1,250	5,390
19	999	1,490	2,120	3,280	1,940	3,510	6,870	2,890	1,340	1,840	1,260	8,390
20	1,480	1,290	1,960	2,900	2,340	3,020	4,670	2,550	1,300	2,080	1,480	5,780
21	1,490	1,250	2,030	3,780	2,270	2,970	3,600	2,280	1,240	2,010	1,480	3,770
22	1,180	1,380	2,450	4,770	2,050	2,620	3,120	2,840	1,370	2,030	1,510	2,370
23	1,060	2,250	7,680	4,140	2,270	2,390	3,160	2,870	1,530	1,640	1,400	1,820
24	1,000	2,330	6,870	5,220	2,180	2,670	2,730	3,260	1,400	1,530	1,560	1,590
25	987	1,810	5,040	4,510	2,010	2,950	2,830	2,530	1,320	1,660	1,390	1,460
26	948	1,520	3,510	3,740	1,880	2,700	3,290	2,130	1,240	1,500	1,270	1,390
27	961	1,390	3,380	4,150	1,790	2,370	4,330	1,890	1,100	1,330	1,290	1,320
28	930	1,590	5,240	4,560	1,750	2,170	3,620	1,770	1,010	1,290	1,180	1,270
29	958	11,300	4,400	3,820	1,720	2,100	3,020	1,760	959	1,190	1,100	1,330
30	1,020	8,790	3,570	3,390	---	2,080	2,660	2,280	943	1,080	1,180	1,390
31	992	---	3,130	3,060	---	2,240	---	1,970	---	1,270	1,290	---
<b>Total</b>	31,382	58,514	128,100	111,060	66,860	79,190	97,260	80,290	45,392	53,172	53,500	58,784
<b>Mean</b>	1,012	1,950	4,132	3,583	2,306	2,555	3,242	2,590	1,513	1,715	1,726	1,959
<b>Max</b>	1,490	11,300	10,100	9,260	3,240	3,840	6,870	5,880	2,220	4,220	3,270	8,390
<b>Min</b>	833	918	1,960	2,070	1,720	1,830	1,810	1,760	943	901	1,100	948
<b>Cfsm</b>	0.65	1.24	2.64	2.29	1.47	1.63	2.07	1.65	0.97	1.09	1.10	1.25
<b>In.</b>	0.74	1.39	3.04	2.64	1.59	1.88	2.31	1.91	1.08	1.26	1.27	1.40

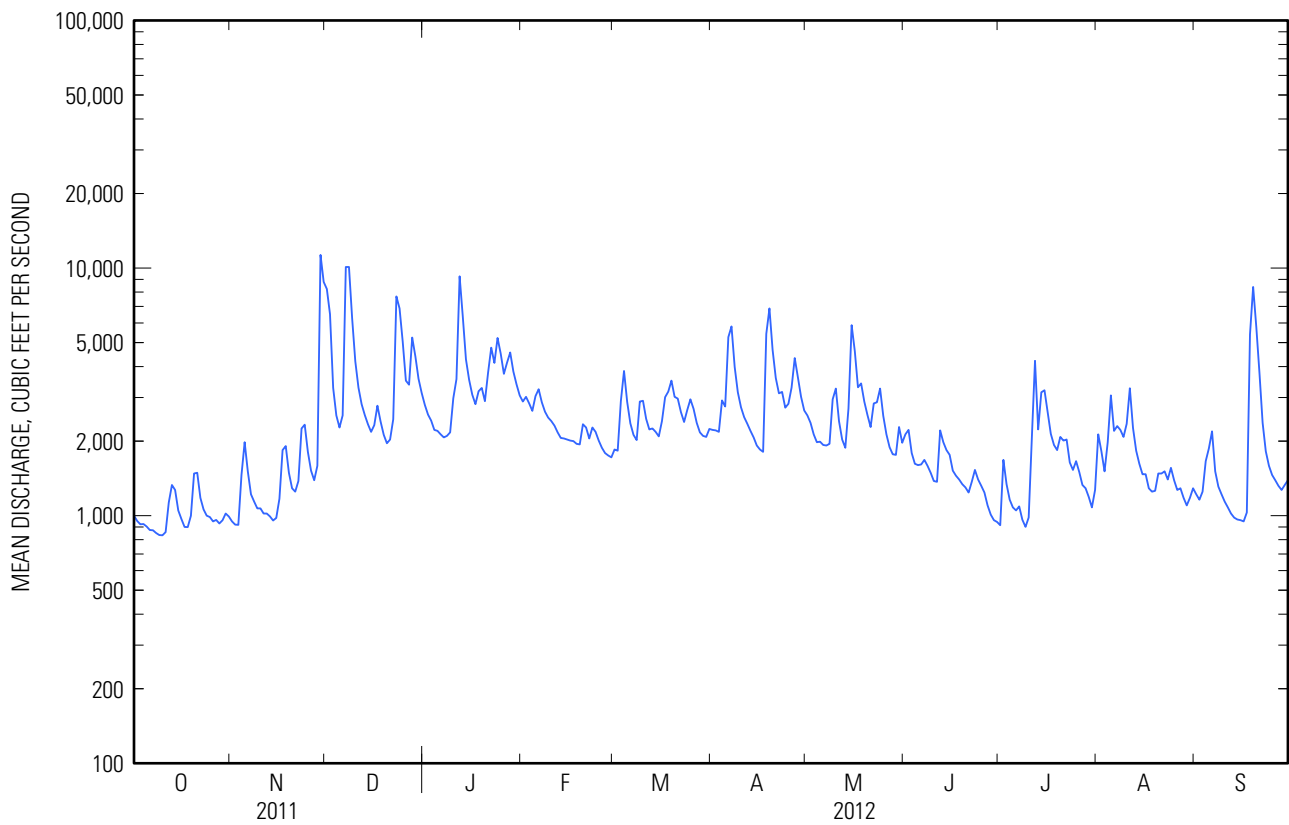
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 2012<sup>a</sup>, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	1,655	1,878	2,358	3,757	3,678	3,750	3,428	2,504	1,949	2,174	2,311	1,720
<b>Max</b>	4,852	4,427	4,333	9,014	6,572	5,799	7,843	4,505	3,740	5,812	6,608	3,501
<b>(WY)</b>	(1937)	(1949)	(1949)	(1937)	(1939)	(1936)	(1936)	(1949)	(1949)	(1949)	(1940)	(1949)
<b>Min</b>	575	705	789	981	1,277	2,020	1,801	1,095	894	1,235	1,061	746
<b>(WY)</b>	(1942)	(1940)	(1940)	(1940)	(1941)	(1941)	(1942)	(1941)	(1941)	(1944)	(1944)	(1941)

## 03454500 FRENCH BROAD RIVER AT HOT SPRINGS, NC—Continued

## SUMMARY STATISTICS

	Water Year 2012		Water Years 1934 - 2012 <sup>a</sup>	
<b>Annual total</b>	863,504			
<b>Annual mean</b>	2,359		2,597	
<b>Highest annual mean</b>			3,968	1949
<b>Lowest annual mean</b>			1,585	1941
<b>Highest daily mean</b>	11,300	Nov 29	49,900	Aug 30, 1940
<b>Lowest daily mean</b>	833	Oct 10	454	Oct 14, 1941
<b>Annual seven-day minimum</b>	861	Oct 5	484	Oct 13, 1941
<b>Maximum peak flow</b>	16,200	Dec 7	<sup>b</sup> 75,900	Aug 30, 1940
<b>Maximum peak stage</b>	5.62	Dec 7	16.10	Aug 30, 1940
<b>Instantaneous low flow</b>	<sup>b</sup> 691	Oct 6	<sup>b</sup> 170	Oct 6, 1935
<b>Annual runoff (cfsm)</b>	1.51		1.66	
<b>Annual runoff (inches)</b>	20.50		22.51	
<b>10 percent exceeds</b>	3,830		4,630	
<b>50 percent exceeds</b>	2,050		1,940	
<b>90 percent exceeds</b>	1,000		962	

<sup>a</sup> See Period of Record.<sup>b</sup> See Remarks.

## 03454500 FRENCH BROAD RIVER AT HOT SPRINGS, NC—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1,280	1,350	998	2,350	12,200	5,330	5,450	7,650	3,060	4,910	4,610	3,050
2	3,830	1,330	996	2,860	9,710	4,280	4,510	5,690	3,270	7,580	4,490	3,220
3	6,530	1,400	992	2,860	7,680	3,890	3,860	5,040	5,030	14,200	4,010	3,340
4	4,460	1,500	1,020	2,450	5,130	3,570	4,000	4,820	4,100	28,600	3,650	2,880
5	2,680	1,470	1,080	2,140	4,440	3,600	4,940	11,700	3,560	25,500	3,410	2,550
6	2,190	1,350	1,070	1,900	4,070	6,730	4,310	31,500	4,880	23,600	3,310	2,370
7	2,070	1,350	991	1,770	3,830	4,850	3,710	24,300	5,090	23,300	3,260	2,270
8	1,990	1,450	975	1,780	4,330	4,040	3,330	19,600	8,690	21,000	5,780	2,210
9	1,770	1,370	983	1,760	4,030	3,730	3,290	13,700	5,240	14,200	6,550	2,180
10	1,660	1,220	1,010	1,640	3,610	3,570	3,130	9,650	13,300	12,400	5,480	2,100
11	1,570	1,180	1,090	1,520	3,960	3,490	2,930	7,220	12,300	16,000	6,410	2,090
12	1,480	1,160	1,090	1,820	4,300	6,890	10,800	6,500	9,140	10,300	6,130	2,200
13	1,430	1,290	1,040	2,030	4,140	7,060	9,260	5,720	6,690	9,130	7,240	2,550
14	1,380	1,360	966	5,490	3,780	5,360	6,780	5,040	5,450	9,080	4,850	2,240
15	1,800	1,250	974	16,500	3,430	4,540	5,100	4,690	4,530	11,700	3,910	2,040
16	2,270	1,230	1,080	19,100	3,190	4,070	4,710	4,430	3,970	8,950	3,550	1,960
17	1,970	1,230	1,750	20,000	2,980	3,710	4,420	4,230	3,740	7,450	3,210	1,940
18	1,610	1,160	1,650	24,800	2,790	3,520	4,740	4,840	4,100	6,900	3,230	1,870
19	1,450	1,130	1,500	15,900	2,790	4,200	4,890	6,190	4,170	5,990	4,870	1,880
20	1,400	1,110	1,340	11,200	2,790	3,790	6,310	5,490	3,710	5,660	6,400	1,860
21	1,350	1,090	2,050	7,720	2,680	3,430	5,880	4,710	3,380	5,750	5,020	1,960
22	1,320	1,070	2,410	5,040	3,200	3,190	4,780	4,740	3,110	6,540	4,090	3,570
23	1,280	1,050	1,710	4,240	3,730	3,090	4,380	6,250	2,900	7,540	3,770	2,940
24	1,270	1,020	1,880	3,910	3,610	4,000	4,140	5,490	2,910	6,360	3,490	2,160
25	1,230	1,030	2,230	3,600	3,270	6,200	3,930	4,520	4,750	5,410	3,450	2,310
26	1,220	1,030	5,360	3,270	4,300	5,000	3,560	4,050	3,790	4,910	3,100	3,800
27	1,200	1,010	8,560	2,980	8,060	4,060	3,420	3,860	4,010	5,980	2,920	2,870
28	1,210	1,040	6,110	2,780	7,080	3,630	5,900	3,710	4,210	7,120	2,800	2,280
29	1,280	1,030	3,850	2,770	---	3,450	13,400	3,530	4,040	5,460	2,690	2,060
30	1,430	1,010	3,080	4,940	---	3,610	10,700	3,320	3,300	4,320	2,720	1,960
31	1,420	---	2,520	20,900	---	4,080	---	3,180	---	4,260	2,730	---
<b>Total</b>	59,030	36,270	62,355	202,020	129,110	133,960	160,560	235,360	150,420	330,100	131,130	72,710
<b>Mean</b>	1,904	1,209	2,011	6,517	4,611	4,321	5,352	7,592	5,014	10,650	4,230	2,424
<b>Max</b>	6,530	1,500	8,560	24,800	12,200	7,060	13,400	31,500	13,300	28,600	7,240	3,800
<b>Min</b>	1,200	1,010	966	1,520	2,680	3,090	2,930	3,180	2,900	4,260	2,690	1,860
<b>Cfsm</b>	1.22	0.77	1.28	4.16	2.94	2.76	3.42	4.85	3.20	6.80	2.70	1.55
<b>In.</b>	1.40	0.86	1.48	4.80	3.07	3.18	3.81	5.59	3.57	7.84	3.11	1.73

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 2013<sup>a</sup>, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	1,670	1,838	2,338	3,919	3,732	3,783	3,535	2,787	2,119	2,645	2,417	1,757
<b>Max</b>	4,852	4,427	4,333	9,014	6,572	5,799	7,843	7,592	5,014	10,650	6,608	3,501
<b>(WY)</b>	(1937)	(1949)	(1949)	(1937)	(1939)	(1936)	(1936)	(2013)	(2013)	(2013)	(1940)	(1949)
<b>Min</b>	575	705	789	981	1,277	2,020	1,801	1,095	894	1,235	1,061	746
<b>(WY)</b>	(1942)	(1940)	(1940)	(1940)	(1941)	(1941)	(1942)	(1941)	(1941)	(1944)	(1944)	(1941)

## 03454500 FRENCH BROAD RIVER AT HOT SPRINGS, NC—Continued

## SUMMARY STATISTICS

	Water Year 2013		Water Years 1934 - 2013 <sup>a</sup>	
<b>Annual total</b>	1,703,025			
<b>Annual mean</b>	4,666		2,718	
<b>Highest annual mean</b>			4,666	2013
<b>Lowest annual mean</b>			1,585	1941
<b>Highest daily mean</b>	31,500	May 6	49,900	Aug 30, 1940
<b>Lowest daily mean</b>	966	Dec 14	454	Oct 14, 1941
<b>Annual seven-day minimum</b>	1,010	Nov 27	484	Oct 13, 1941
<b>Maximum peak flow</b>	38,400	Jul 4	<sup>b</sup> 75,900	Aug 30, 1940
<b>Maximum peak stage</b>	9.42	Jul 4	16.10	Aug 30, 1940
<b>Instantaneous low flow</b>	729	Dec 14	<sup>b</sup> 170	Oct 6, 1935
<b>Annual runoff (cfsm)</b>	2.98		1.73	
<b>Annual runoff (inches)</b>	40.43		23.57	
<b>10 percent exceeds</b>	8,790		4,910	
<b>50 percent exceeds</b>	3,610		1,990	
<b>90 percent exceeds</b>	1,230		982	

<sup>a</sup> See Period of Record.<sup>b</sup> See Remarks.