LOCATION.--Lat 41°46'50", long 90°15'07" referenced to North American Datum of 1927, in SW 1/4 SE 1/4 NW 1/4 sec.34, T.81 N., R.6 E., Clinton County, IA, Hydrologic Unit 07080101, on right bank near end of 8th Avenue in Camanche, 5.0 mi upstream from Wapsipinicon River, 6.4 mi downstream from Clinton, 10.6 mi downstream from Lock and Dam 13, and 511.8 mi upstream from Ohio River.

DRAINAGE AREA.--85,600 mi².

PERIOD OF RECORD.--Discharge records from June to August 1873 (fragmentary), October 1873 to current year. October 1932 to September 1939, published as "at Le Claire". June 1873 to December 1932, published in the Iowa State Planning Board report "Stream-flow records of Iowa, 1873-1932".

GAGE.--Water-stage recorder. Datum of gage is 562.68 ft above National Geodetic Vertical Datum of 1929. June 1873 to May 31, 1934, non-recording gage, and June 1, 1934, to September 30, 1939, water-stage recorder, both at site 14.8 mi downstream at Le Claire at datum 0.07 ft lower; October 1, 1939, to September 30, 1955, water-stage recorder at site 10.6 mi upstream at Lock and Dam 13 at datum 5.48 ft higher; October 1, 1955, to June 5, 1969, water-stage recorder at same site and datum; June 6, 1969, to September 16, 1988, water-stage recorder at site 400 ft upstream at same datum; since October 1, 1958, auxiliary water-stage recorder at site 10.6 mi upstream at Lock and Dam 13 at datum 5.48 ft higher.

REMARKS.--Minor flow regulation caused by navigation dams.

EXTREMES OUTSIDE PERIOD OF RECORD.--Since at least 1828, no flood outside the period of record exceeded the April 28, 1965, stage of 24.65 ft.

A summary of all available data for this streamgage is provided through the USGS National Water Information System web interface (NWISWeb). The following link provides access to current/historical observations, daily data, daily statistics, monthly statistics, annual statistics, peak streamflow, field measurements, field/lab water-quality samples, and the latest water-year summaries. Data can be filtered by parameter and/or dates, and can be output in various tabular and graphical formats.

<http://waterdata.usgs.gov/nwis/inventory/?site_no=05420500>

The USGS WaterWatch Toolkit is available at:

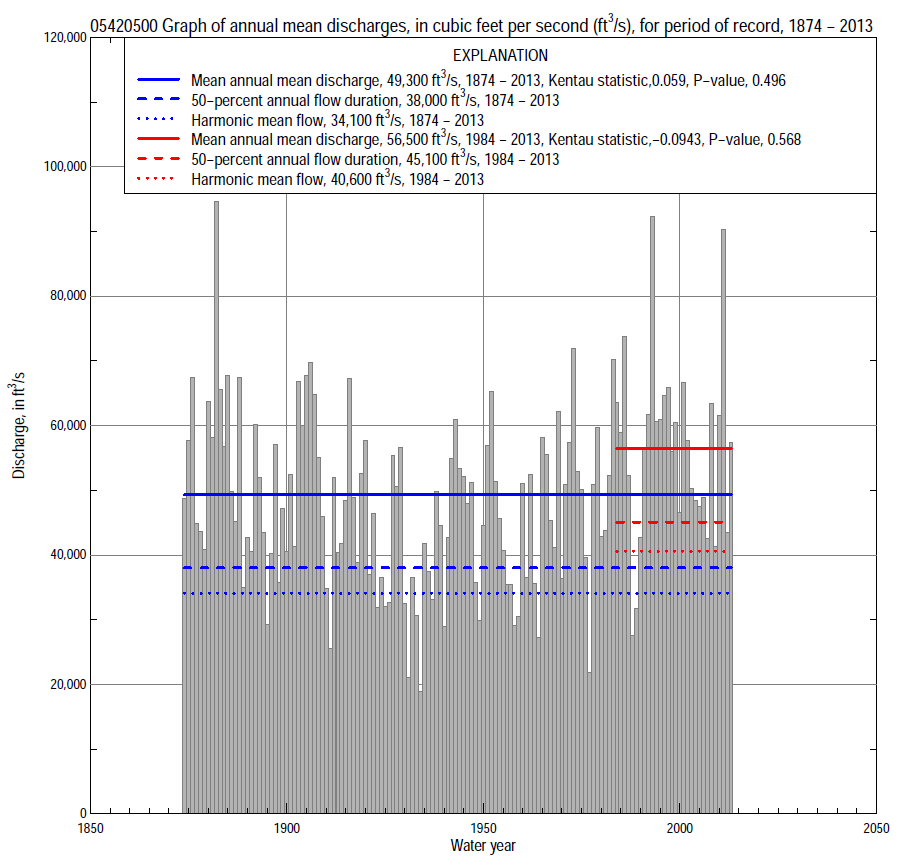
<http://waterwatch.usgs.gov/?id=ww_toolkit>

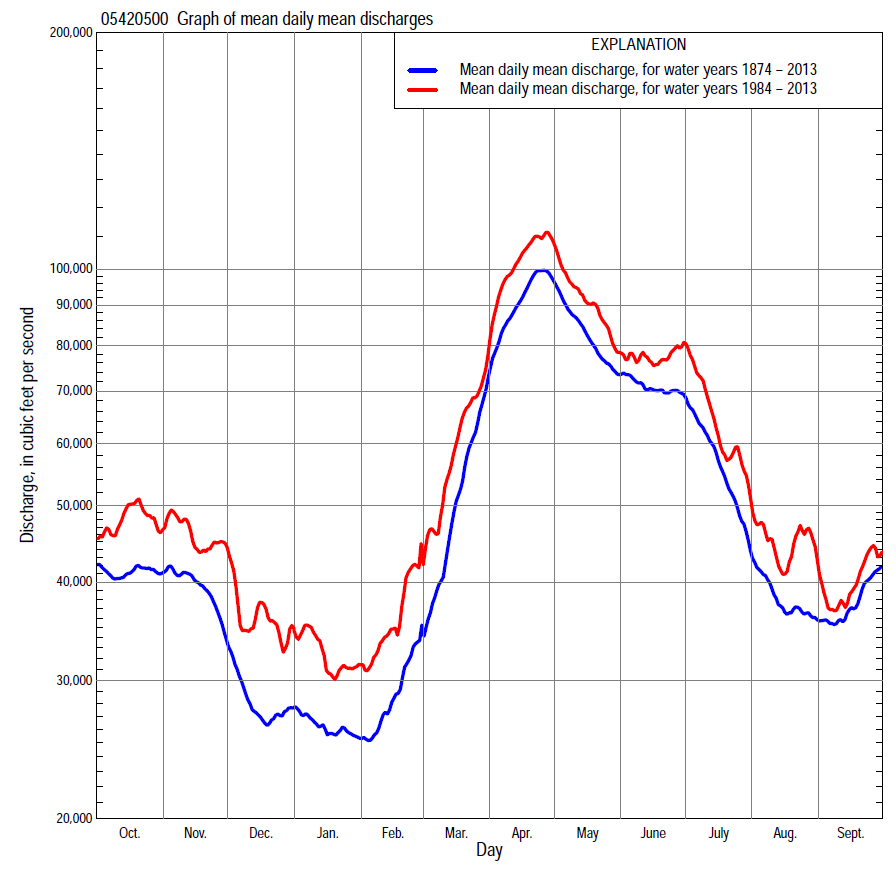
Tools for summarizing streamflow information include the duration hydrograph builder, the cumulative streamflow hydrograph builder, the streamgage statistics retrieval tool, the rating curve builder, the flood tracking chart builder, the National Weather Service Advanced Hydrologic Prediction Service (AHPS) river forecast hydrograph builder, and the raster-hydrograph builder. Entering the above number for this streamgage into these toolkit webpages will provide streamflow information specific to this streamgage.

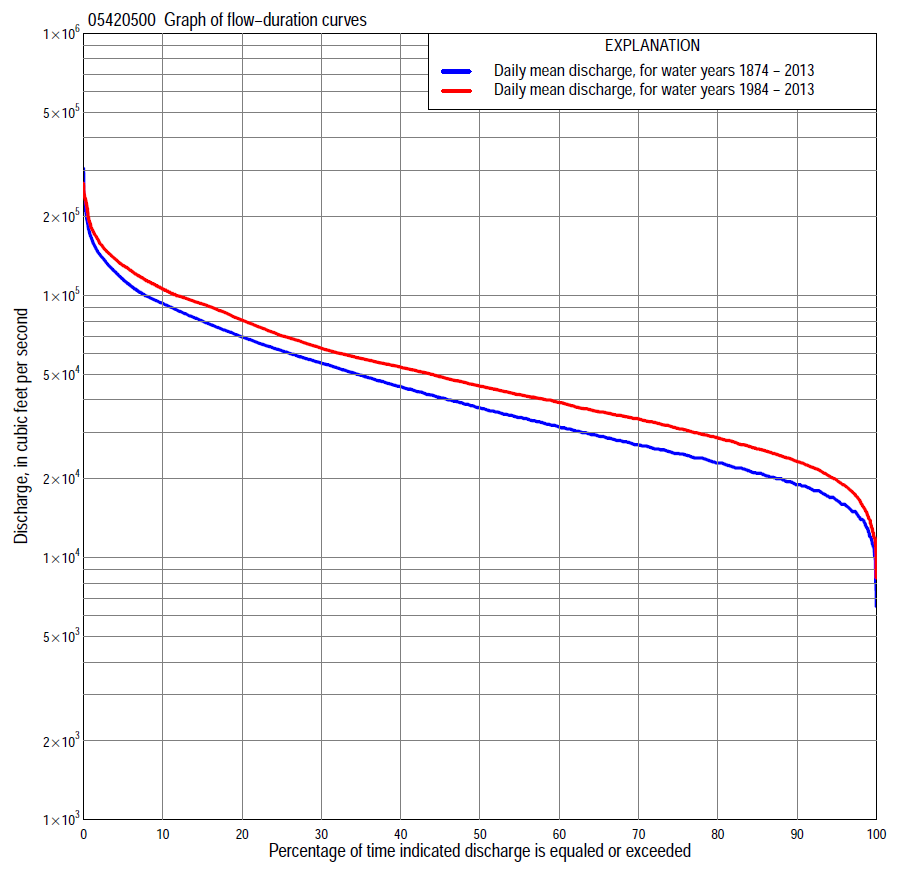
A description of the statistics presented for this streamgage is available in the main body of the report at:

<http://dx.doi.org/10.3133/ofr20151214>

A link to other streamgages included in this report, a map showing the location of the streamgages, information on the programs used to compute the statistical analyses, and references are included in the main body of the report.

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**Statistics Based on the Entire Streamflow Period of Record**

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| 05420500 Monthly and annual flow durations, based on 1874–2013 period of record (140 years) | | | | | | | | | | | | | |  |  |
| Percentage of days discharge equaled or exceeded |  |  |  |  | Discharge (cubic feet per second) | | | | |  |  |  |  | Annual flow durations | |
| Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Annual | Kentau statistic | P-value |
| 99 | 13,900 | 12,600 | 9,440 | 10,800 | 12,300 | 15,900 | 24,400 | 21,100 | 16,400 | 15,200 | 11,700 | 13,400 | 12,500 | 0.256 | 0.000 |
| 98 | 15,300 | 14,200 | 10,700 | 12,200 | 13,000 | 17,600 | 27,400 | 24,100 | 19,200 | 16,300 | 13,100 | 15,000 | 14,000 | 0.244 | 0.000 |
| 95 | 17,000 | 16,700 | 12,700 | 14,300 | 15,100 | 20,400 | 35,100 | 30,600 | 24,600 | 19,400 | 15,800 | 16,500 | 16,400 | 0.153 | 0.007 |
| 90 | 19,500 | 19,800 | 15,000 | 16,000 | 16,500 | 23,500 | 41,400 | 38,300 | 31,400 | 22,800 | 18,800 | 19,100 | 19,300 | 0.137 | 0.017 |
| 85 | 21,100 | 22,100 | 16,500 | 17,200 | 17,900 | 26,200 | 47,400 | 44,200 | 37,300 | 26,300 | 21,000 | 20,700 | 21,400 | 0.137 | 0.016 |
| 80 | 22,800 | 24,100 | 17,900 | 18,400 | 19,200 | 28,900 | 53,300 | 49,300 | 42,100 | 29,900 | 23,200 | 22,400 | 23,500 | 0.131 | 0.022 |
| 75 | 24,300 | 25,700 | 19,400 | 19,400 | 20,300 | 31,400 | 58,600 | 54,200 | 45,700 | 33,500 | 25,000 | 23,900 | 25,500 | 0.098 | 0.086 |
| 70 | 25,700 | 27,400 | 20,600 | 20,300 | 21,400 | 33,800 | 63,800 | 58,400 | 49,100 | 36,900 | 26,700 | 25,300 | 27,600 | 0.073 | 0.198 |
| 65 | 27,100 | 29,200 | 21,900 | 21,200 | 22,500 | 36,500 | 69,800 | 62,500 | 52,500 | 40,000 | 28,500 | 26,800 | 30,100 | 0.061 | 0.284 |
| 60 | 28,800 | 31,000 | 23,200 | 22,000 | 23,600 | 39,300 | 76,200 | 66,900 | 56,400 | 43,200 | 30,200 | 28,300 | 32,600 | 0.053 | 0.354 |
| 55 | 30,800 | 32,800 | 24,400 | 22,900 | 24,800 | 42,200 | 82,200 | 72,100 | 60,300 | 46,800 | 31,900 | 30,300 | 35,200 | 0.051 | 0.375 |
| 50 | 32,800 | 34,600 | 25,600 | 24,200 | 26,000 | 45,500 | 86,700 | 77,300 | 64,200 | 50,500 | 33,600 | 32,200 | 38,600 | 0.037 | 0.518 |
| 45 | 34,800 | 36,900 | 26,800 | 25,600 | 27,200 | 49,000 | 91,300 | 82,600 | 68,700 | 54,300 | 35,400 | 34,200 | 42,000 | 0.040 | 0.479 |
| 40 | 37,700 | 39,300 | 28,100 | 27,000 | 28,700 | 52,500 | 95,800 | 87,800 | 73,800 | 58,900 | 38,000 | 36,600 | 46,400 | 0.040 | 0.487 |
| 35 | 40,600 | 41,800 | 30,200 | 28,600 | 30,600 | 56,500 | 101,000 | 93,100 | 78,900 | 63,400 | 40,500 | 39,400 | 51,200 | 0.032 | 0.580 |
| 30 | 43,900 | 44,900 | 32,300 | 30,500 | 32,500 | 60,700 | 107,000 | 98,400 | 84,500 | 68,300 | 43,100 | 42,200 | 57,000 | 0.024 | 0.679 |
| 25 | 49,000 | 48,600 | 34,300 | 32,400 | 34,400 | 64,900 | 114,000 | 106,000 | 90,400 | 73,600 | 47,300 | 46,400 | 63,500 | 0.014 | 0.801 |
| 20 | 54,600 | 52,300 | 37,600 | 34,400 | 37,100 | 70,600 | 122,000 | 114,000 | 96,400 | 78,900 | 51,400 | 51,300 | 72,100 | 0.008 | 0.885 |
| 15 | 61,600 | 58,600 | 41,500 | 37,300 | 40,300 | 77,000 | 135,000 | 124,000 | 105,000 | 86,900 | 57,500 | 57,700 | 82,500 | 0.015 | 0.795 |
| 10 | 71,900 | 65,600 | 47,400 | 40,900 | 44,100 | 86,300 | 148,000 | 138,000 | 118,000 | 96,700 | 64,900 | 64,800 | 96,100 | 0.020 | 0.731 |
| 5 | 95,300 | 79,000 | 56,300 | 47,100 | 52,800 | 102,000 | 177,000 | 158,000 | 141,000 | 114,000 | 78,600 | 77,100 | 119,000 | 0.036 | 0.533 |
| 2 | 138,000 | 94,500 | 65,400 | 54,000 | 67,900 | 125,000 | 207,000 | 186,000 | 168,000 | 142,000 | 95,800 | 95,400 | 148,000 | 0.058 | 0.311 |
| 1 | 169,000 | 103,000 | 77,000 | 61,100 | 78,900 | 143,000 | 224,000 | 215,000 | 184,000 | 170,000 | 107,000 | 114,000 | 176,000 | 0.058 | 0.313 |
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| 05420500 Annual exceedance probability of instantaneous peak discharges, in cubic feet per second (ft3/s), based on U.S. Army Corps of Engineers flow frequency studya, analysis computed using a systematic record length of 101 years (1898–1998) | | | | | |
| **USACE Flow Frequency Analysis** | | | | | |
| [ND, not determined] | | | | |  |
| Annual exceed-ance probability | Recurrence interval (years) | Discharge (ft3/s) | 95-percent lower confi-dence interval (ft3/s) | 95-percent upper confi-dence interval (ft3/s) |  |
| 0.500 | 2 | 131,000 | 124,000 | 138,000 |  |
| 0.200 | 5 | 174,000 | 164,000 | 187,000 |  |
| 0.100 | 10 | 202,000 | 188,000 | 219,000 |  |
| 0.040 | 25 | 235,000 | ND | ND |  |
| 0.020 | 50 | 259,000 | 237,000 | 289,000 |  |
| 0.010 | 100 | 283,000 | 257,000 | 319,000 |  |
| 0.005 | 200 | 306,000 | 276,000 | 348,000 |  |
| 0.002 | 500 | 337,000 | 301,000 | 387,000 |  |
| aU.S. Army Corps of Engineers, 2004b, Upper Mississippi River System Flow Frequency Study, Hydrology and Hydraulics Appendix C Mississippi River, Rock Island District: U.S. Army Corps of Engineers, 50 p., accessed September 9, 2014, at http://www.mvr.usace.army.mil/Portals/48/docs/FRM/UpperMissFlowFreq/App.%20C%20Rock%20Island%20Dist.%20Mississippi%20River%20Hydrology\_Hydraulics.pdf. | | | | | |
| **USGS Kendall's Tau Trend Analysis** | | | | | |
| Kentau statistic | | 0.154 | 0.079 | -0.211 | 0.124 |
| P-value |  | 0.023 | 0.167 | 0.012 | 0.119 |
| Begin year |  | 1898 | b1874 | c1874 | d1940 |
| End year |  | 1998 | b2013 | c1939 | d2013 |
| Number of peaks | | 101 | 140 | 66 | 74 |
| bKendall's tau trend analysis computed using the entire period of record which is not the same period of record used to compute the above flow frequency analysis | | | | | |
| cKendall's tau trend analysis computed using the pre-regulated period of record which is not the same period of record used to compute the above flow frequency analysis | | | | | |
| dKendall's tau trend analysis computed using the regulated period of record which is not the same period of record used to compute the above flow frequency analysis. | | | | | |

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| 05420500 Annual exceedance probability of high discharges, based on 1874–2013 period of record (140 years) | | | | | | |
| [ND, not determined] | | | | | | |
| Annual exceed-ance probability | Recur-rence interval (years) | Maximum average discharge (cubic feet per second) for indicated number of consecutive days | | | | |
| 1 | 3 | 7 | 15 | 30 |
| 0.990 | 1.01 | ND | ND | 49,300 | 46,000 | 41,900 |
| 0.950 | 1.05 | ND | ND | 68,200 | 63,600 | 57,400 |
| 0.900 | 1.11 | ND | ND | 80,200 | 74,700 | 67,200 |
| 0.800 | 1.25 | ND | ND | 96,500 | 89,800 | 80,400 |
| 0.500 | 2 | ND | ND | 133,000 | 124,000 | 110,000 |
| 0.200 | 5 | ND | ND | 177,000 | 165,000 | 146,000 |
| 0.100 | 10 | ND | ND | 202,000 | 188,000 | 167,000 |
| 0.040 | 25 | ND | ND | 230,000 | 215,000 | 190,000 |
| 0.020 | 50 | ND | ND | 248,000 | 233,000 | 205,000 |
| 0.010 | 100 | ND | ND | 265,000 | 249,000 | 220,000 |
| 0.005 | 200 | ND | ND | 281,000 | 264,000 | 233,000 |
| 0.002 | 500 | ND | ND | a292000 | a276000 | a247000 |
| Kentau statistic | | 0.062 | 0.059 | 0.057 | 0.045 | 0.034 |
| P-value | | 0.277 | 0.302 | 0.315 | 0.433 | 0.556 |
| aBased on 1881–2013 period of record (133 years). | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 05420500 Annual nonexceedance probability of low discharges, based on April 1874 to March 2013 period of record (139 years) | | | | | | | | |  |
| Annual nonexceed-ance probability | Recur-rence interval (years) | Minimum average discharge (cubic feet per second) for indicated number of consecutive days | | | | | | | | |
| 1 | 3 | 7 | 14 | 30 | 60 | 90 | 120 | 183 |
| 0.01 | 100 | 6,400 | 6,580 | 7,130 | 8,590 | 10,200 | 11,300 | 12,100 | 13,000 | 14,000 |
| 0.02 | 50 | 7,160 | 7,350 | 7,900 | 9,360 | 11,100 | 12,200 | 13,100 | 14,100 | 15,200 |
| 0.05 | 20 | 8,440 | 8,640 | 9,210 | 10,600 | 12,500 | 13,700 | 14,700 | 15,900 | 17,200 |
| 0.10 | 10 | 9,700 | 9,920 | 10,500 | 11,900 | 13,900 | 15,300 | 16,400 | 17,700 | 19,300 |
| 0.20 | 5 | 11,400 | 11,700 | 12,300 | 13,700 | 15,800 | 17,400 | 18,700 | 20,200 | 22,300 |
| 0.50 | 2 | 15,300 | 15,700 | 16,400 | 17,900 | 20,400 | 22,500 | 24,200 | 26,300 | 29,700 |
| 0.80 | 1.25 | 19,900 | 20,500 | 21,600 | 23,400 | 26,300 | 29,200 | 31,500 | 34,400 | 40,400 |
| 0.90 | 1.11 | 22,600 | 23,400 | 24,900 | 26,900 | 30,100 | 33,600 | 36,300 | 39,800 | 47,800 |
| 0.96 | 1.04 | 25,700 | 26,800 | 28,700 | 31,200 | 34,800 | 39,100 | 42,400 | 46,600 | 57,500 |
| 0.98 | 1.02 | 27,800 | 29,200 | 31,400 | 34,400 | 38,200 | 43,200 | 46,900 | 51,600 | 65,000 |
| 0.99 | 1.01 | 29,800 | 31,400 | 34,000 | 37,500 | 41,600 | 47,200 | 51,400 | 56,700 | 72,800 |
| Kentau statistic | | 0.258 | 0.293 | 0.311 | 0.275 | 0.194 | 0.195 | 0.205 | 0.168 | 0.098 |
| P-value | | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 | 0.000 | 0.003 | 0.088 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 05420500 Annual nonexceedance probability of seasonal low discharges, based on October 1873 to September 2013 period of record (140 years) | | | | | | | | | | |
| Annual nonexceed-ance probability | Recur-rence interval (years) | Minimum average discharge (cubic feet per second) for indicated number of consecutive days | | | | | | | | |
| 1 | 7 | 14 | 30 |  | 1 | 7 | 14 | 30 |
|  |  | January-February-March | | | |  | April-May-June | | | |
| 0.01 | 100 | 7,790 | 8,650 | 10,000 | 11,100 |  | 13,200 | 14,700 | 15,900 | 17,800 |
| 0.02 | 50 | 8,770 | 9,620 | 11,000 | 12,100 |  | 15,200 | 16,900 | 18,200 | 20,500 |
| 0.05 | 20 | 10,400 | 11,200 | 12,500 | 13,700 |  | 18,600 | 20,700 | 22,200 | 25,300 |
| 0.10 | 10 | 12,000 | 12,800 | 14,000 | 15,300 |  | 22,200 | 24,500 | 26,400 | 30,300 |
| 0.20 | 5 | 14,200 | 15,000 | 16,100 | 17,600 |  | 27,200 | 30,000 | 32,300 | 37,400 |
| 0.50 | 2 | 19,000 | 19,800 | 20,800 | 22,700 |  | 39,400 | 43,000 | 46,700 | 54,600 |
| 0.80 | 1.25 | 24,500 | 25,700 | 26,900 | 29,300 |  | 55,400 | 60,000 | 65,700 | 77,400 |
| 0.90 | 1.11 | 27,600 | 29,100 | 30,600 | 33,400 |  | 65,500 | 70,700 | 77,800 | 91,800 |
| 0.96 | 1.04 | 31,000 | 33,000 | 35,100 | 38,400 |  | 77,700 | 83,400 | 92,500 | 109,000 |
| 0.98 | 1.02 | 33,300 | 35,700 | 38,300 | 42,000 |  | 86,300 | 92,400 | 103,000 | 121,000 |
| 0.99 | 1.01 | 35,400 | 38,300 | 41,400 | 45,600 |  | 94,600 | 101,000 | 113,000 | 133,000 |
| Kentau statistic | | 0.222 | 0.239 | 0.234 | 0.211 |  | -0.079 | -0.043 | -0.040 | -0.023 |
| P-value | | 0.000 | 0.000 | 0.000 | 0.000 |  | 0.164 | 0.449 | 0.486 | 0.691 |
|  |  | July-August-September | | | |  | October-November-December | | | |
| 0.01 | 100 | 9,590 | 10,900 | 11,500 | 12,400 |  | 7,000 | 7,700 | 9,110 | 11,500 |
| 0.02 | 50 | 10,600 | 12,000 | 12,600 | 13,600 |  | 7,760 | 8,490 | 9,960 | 12,500 |
| 0.05 | 20 | 12,400 | 13,700 | 14,500 | 15,600 |  | 9,050 | 9,840 | 11,400 | 14,200 |
| 0.10 | 10 | 14,200 | 15,600 | 16,400 | 17,700 |  | 10,400 | 11,200 | 12,900 | 15,900 |
| 0.20 | 5 | 16,700 | 18,100 | 19,000 | 20,700 |  | 12,200 | 13,200 | 15,000 | 18,300 |
| 0.50 | 2 | 22,900 | 24,500 | 25,700 | 28,200 |  | 16,500 | 18,100 | 20,300 | 24,300 |
| 0.80 | 1.25 | 31,300 | 33,300 | 35,200 | 39,000 |  | 22,300 | 24,900 | 27,900 | 32,900 |
| 0.90 | 1.11 | 36,900 | 39,300 | 41,700 | 46,400 |  | 26,000 | 29,500 | 33,100 | 38,800 |
| 0.96 | 1.04 | 43,900 | 46,900 | 50,100 | 56,100 |  | 30,600 | 35,300 | 39,800 | 46,500 |
| 0.98 | 1.02 | 49,100 | 52,700 | 56,600 | 63,600 |  | 34,000 | 39,800 | 45,000 | 52,500 |
| 0.99 | 1.01 | 54,300 | 58,600 | 63,200 | 71,300 |  | 37,300 | 44,300 | 50,400 | 58,600 |
| Kentau statistic | | -0.201 | -0.114 | -0.092 | -0.051 |  | 0.283 | 0.325 | 0.325 | 0.243 |
| P-value | | 0.000 | 0.046 | 0.108 | 0.373 |  | 0.000 | 0.000 | 0.000 | 0.000 |

**Statistics Based on the 1984–2013 Streamflow Period of Record**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 05420500 Monthly and annual flow durations, based on 1984–2013 period of record (30 years) | | | | | | | | | | | | | |  |  |
| Percentage of days discharge equaled or exceeded |  |  |  |  | Discharge (cubic feet per second) | | | | |  |  |  |  | Annual flow durations | |
| Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Annual | Kentau statistic | P-value |
| 99 | 14,900 | 18,800 | 12,200 | 15,000 | 17,200 | 20,300 | 30,400 | 31,000 | 12,700 | 11,800 | 12,600 | 12,500 | 14,200 | -0.133 | 0.309 |
| 98 | 16,000 | 20,000 | 13,900 | 15,500 | 18,300 | 21,400 | 35,800 | 34,400 | 14,600 | 14,000 | 13,700 | 14,100 | 16,300 | -0.156 | 0.232 |
| 95 | 17,700 | 21,800 | 17,400 | 17,800 | 19,500 | 26,000 | 40,300 | 39,100 | 28,300 | 20,000 | 17,900 | 16,500 | 19,800 | -0.200 | 0.125 |
| 90 | 19,800 | 24,000 | 20,000 | 20,000 | 23,300 | 30,900 | 48,700 | 44,500 | 39,100 | 24,400 | 21,300 | 20,700 | 23,300 | -0.189 | 0.148 |
| 85 | 22,700 | 26,300 | 22,500 | 21,900 | 24,400 | 34,500 | 54,300 | 49,900 | 43,400 | 28,700 | 23,300 | 22,600 | 26,000 | -0.179 | 0.169 |
| 80 | 24,800 | 28,800 | 24,000 | 23,500 | 25,500 | 37,300 | 59,200 | 54,100 | 46,400 | 35,500 | 26,800 | 24,500 | 28,700 | -0.168 | 0.199 |
| 75 | 27,200 | 31,400 | 25,600 | 25,400 | 26,600 | 40,400 | 64,200 | 58,500 | 49,600 | 41,200 | 29,000 | 26,000 | 31,100 | -0.163 | 0.212 |
| 70 | 29,500 | 33,400 | 26,900 | 27,000 | 27,800 | 43,000 | 72,900 | 62,800 | 53,100 | 44,900 | 30,900 | 27,200 | 33,800 | -0.154 | 0.239 |
| 65 | 31,500 | 35,800 | 28,000 | 28,400 | 29,000 | 45,200 | 80,800 | 68,000 | 56,500 | 48,800 | 32,500 | 28,400 | 36,100 | -0.152 | 0.246 |
| 60 | 33,100 | 38,500 | 29,700 | 29,600 | 30,000 | 47,300 | 86,400 | 73,300 | 60,400 | 52,100 | 34,000 | 29,800 | 39,100 | -0.182 | 0.164 |
| 55 | 34,600 | 40,900 | 32,500 | 31,000 | 31,000 | 50,600 | 91,200 | 82,100 | 64,200 | 56,700 | 35,900 | 31,500 | 41,900 | -0.159 | 0.225 |
| 50 | 36,000 | 43,000 | 34,300 | 32,500 | 32,500 | 52,900 | 95,500 | 91,400 | 69,200 | 59,900 | 37,700 | 33,400 | 45,100 | -0.228 | 0.080 |
| 45 | 39,200 | 45,700 | 35,600 | 34,000 | 34,000 | 55,500 | 99,300 | 94,900 | 75,900 | 62,500 | 40,600 | 36,300 | 49,100 | -0.232 | 0.074 |
| 40 | 43,200 | 47,700 | 37,400 | 35,000 | 36,000 | 59,000 | 104,000 | 100,000 | 81,600 | 65,900 | 44,500 | 38,900 | 53,300 | -0.221 | 0.090 |
| 35 | 49,100 | 49,600 | 40,000 | 36,000 | 37,000 | 62,400 | 111,000 | 106,000 | 88,700 | 69,400 | 48,300 | 41,900 | 57,600 | -0.184 | 0.159 |
| 30 | 53,900 | 52,700 | 41,500 | 37,100 | 39,000 | 67,600 | 117,000 | 113,000 | 94,500 | 73,600 | 52,500 | 45,500 | 63,000 | -0.101 | 0.443 |
| 25 | 57,500 | 57,000 | 44,000 | 39,000 | 40,500 | 71,100 | 124,000 | 119,000 | 101,000 | 78,400 | 55,400 | 51,300 | 70,300 | -0.085 | 0.521 |
| 20 | 64,000 | 60,200 | 46,500 | 40,700 | 41,900 | 75,600 | 133,000 | 128,000 | 109,000 | 88,000 | 59,500 | 55,700 | 80,700 | -0.046 | 0.735 |
| 15 | 72,300 | 67,000 | 50,600 | 42,000 | 45,100 | 82,600 | 146,000 | 136,000 | 119,000 | 96,400 | 69,000 | 60,300 | 92,900 | 0.030 | 0.830 |
| 10 | 84,500 | 74,800 | 54,800 | 44,500 | 50,700 | 92,800 | 166,000 | 146,000 | 129,000 | 105,000 | 82,800 | 68,200 | 106,000 | 0.087 | 0.509 |
| 5 | 113,000 | 85,300 | 59,800 | 48,900 | 61,700 | 103,000 | 188,000 | 157,000 | 145,000 | 136,000 | 96,700 | 82,200 | 130,000 | 0.039 | 0.775 |
| 2 | 162,000 | 91,900 | 81,300 | 56,700 | 74,600 | 118,000 | 223,000 | 186,000 | 169,000 | 189,000 | 112,000 | 99,000 | 160,000 | 0.005 | 0.986 |
| 1 | 180,000 | 94,700 | 86,000 | 57,900 | 87,500 | 127,000 | 237,000 | 236,000 | 178,000 | 225,000 | 121,000 | 106,000 | 181,000 | 0.044 | 0.748 |

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| 05420500 Annual exceedance probability of high discharges, based on 1984–2013 period of record (30 years) | | | | | | |
| [ND, not determined] | | | | | | |
| Annual exceed-ance probability | Recur-rence interval (years) | Maximum average discharge (cubic feet per second) for indicated number of consecutive days | | | | |
| 1 | 3 | 7 | 15 | 30 |
| 0.990 | 1.01 | ND | 68,900 | 68,300 | 65,500 | 60,000 |
| 0.950 | 1.05 | ND | 88,800 | 86,900 | 81,900 | 73,900 |
| 0.900 | 1.11 | ND | 101,000 | 98,200 | 92,100 | 82,600 |
| 0.800 | 1.25 | ND | 117,000 | 113,000 | 106,000 | 94,400 |
| 0.500 | 2 | ND | 152,000 | 147,000 | 137,000 | 122,000 |
| 0.200 | 5 | ND | 193,000 | 187,000 | 175,000 | 156,000 |
| 0.100 | 10 | ND | 217,000 | 211,000 | 198,000 | 178,000 |
| 0.040 | 25 | ND | 244,000 | 238,000 | 225,000 | 204,000 |
| 0.020 | 50 | ND | 262,000 | 257,000 | 245,000 | 223,000 |
| 0.010 | 100 | ND | 278,000 | 275,000 | 263,000 | 242,000 |
| 0.005 | 200 | ND | 294,000 | 291,000 | 281,000 | 260,000 |
| 0.002 | 500 | ND | 313,000 | 312,000 | 304,000 | 283,000 |
| Kentau statistic | | 0.041 | 0.051 | 0.037 | 0.016 | 0.053 |
| P-value | | 0.762 | 0.708 | 0.789 | 0.915 | 0.695 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 05420500 Annual nonexceedance probability of low discharges, based on April 1983 to March 2013 period of record (30 years) | | | | | | | | |  |
| Annual nonexceed-ance probability | Recur-rence interval (years) | Minimum average discharge (cubic feet per second) for indicated number of consecutive days | | | | | | | | |
| 1 | 3 | 7 | 14 | 30 | 60 | 90 | 120 | 183 |
| 0.01 | 100 | 8,380 | 9,670 | 10,500 | 10,600 | 10,900 | 12,900 | 13,300 | 13,800 | 15,000 |
| 0.02 | 50 | 9,390 | 10,600 | 11,500 | 11,700 | 12,400 | 14,500 | 15,100 | 15,700 | 16,800 |
| 0.05 | 20 | 11,000 | 12,100 | 13,200 | 13,800 | 14,900 | 17,000 | 18,100 | 18,800 | 20,000 |
| 0.10 | 10 | 12,600 | 13,600 | 14,900 | 15,800 | 17,300 | 19,400 | 20,900 | 21,800 | 23,100 |
| 0.20 | 5 | 14,700 | 15,600 | 17,000 | 18,400 | 20,400 | 22,600 | 24,600 | 25,800 | 27,300 |
| 0.50 | 2 | 19,100 | 19,900 | 21,800 | 23,900 | 26,700 | 29,200 | 32,000 | 34,100 | 37,100 |
| 0.80 | 1.25 | 23,900 | 25,100 | 27,300 | 30,000 | 33,100 | 36,200 | 39,400 | 42,800 | 49,100 |
| 0.90 | 1.11 | 26,500 | 28,200 | 30,400 | 33,300 | 36,300 | 39,900 | 43,100 | 47,300 | 56,300 |
| 0.96 | 1.04 | 29,200 | 31,600 | 33,900 | 36,800 | 39,500 | 43,700 | 46,600 | 51,900 | 64,700 |
| 0.98 | 1.02 | 31,000 | 34,000 | 36,300 | 39,100 | 41,300 | 46,100 | 48,800 | 54,700 | 70,500 |
| 0.99 | 1.01 | 32,500 | 36,300 | 38,500 | 41,100 | 42,900 | 48,200 | 50,500 | 57,100 | 76,000 |
| Kentau statistic | | -0.110 | -0.076 | -0.113 | -0.182 | -0.195 | -0.182 | -0.223 | -0.255 | -0.223 |
| P-value | | 0.402 | 0.568 | 0.392 | 0.164 | 0.134 | 0.164 | 0.087 | 0.050 | 0.087 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 05420500 Annual nonexceedance probability of seasonal low discharges, based on October 1983 to September 2013 period of record (30 years) | | | | | | | | | | |
| Annual nonexceed-ance probability | Recur-rence interval (years) | Minimum average discharge (cubic feet per second) for indicated number of consecutive days | | | | | | | | |
| 1 | 7 | 14 | 30 |  | 1 | 7 | 14 | 30 |
|  |  | January-February-March | | | |  | April-May-June | | | |
| 0.01 | 100 | 11,500 | 13,000 | 13,900 | 14,900 |  | 11,800 | 13,300 | 14,400 | 17,700 |
| 0.02 | 50 | 12,700 | 14,200 | 15,200 | 16,400 |  | 14,300 | 16,200 | 17,400 | 21,100 |
| 0.05 | 20 | 14,700 | 16,200 | 17,300 | 18,800 |  | 18,600 | 21,100 | 22,700 | 27,200 |
| 0.10 | 10 | 16,700 | 18,200 | 19,300 | 21,000 |  | 23,100 | 26,300 | 28,200 | 33,500 |
| 0.20 | 5 | 19,200 | 20,700 | 21,900 | 23,900 |  | 29,500 | 33,600 | 35,900 | 42,500 |
| 0.50 | 2 | 24,300 | 26,100 | 27,500 | 29,700 |  | 44,100 | 49,800 | 53,800 | 63,500 |
| 0.80 | 1.25 | 29,900 | 32,100 | 33,700 | 35,800 |  | 61,100 | 67,800 | 74,600 | 89,100 |
| 0.90 | 1.11 | 33,000 | 35,300 | 37,200 | 38,900 |  | 70,500 | 77,300 | 86,100 | 104,000 |
| 0.96 | 1.04 | 36,200 | 38,900 | 41,000 | 42,300 |  | 80,400 | 87,100 | 98,300 | 120,000 |
| 0.98 | 1.02 | 38,200 | 41,300 | 43,500 | 44,400 |  | 86,700 | 93,000 | 106,000 | 131,000 |
| 0.99 | 1.01 | 40,100 | 43,400 | 45,700 | 46,200 |  | 92,100 | 98,000 | 113,000 | 141,000 |
| Kentau statistic | | -0.037 | -0.076 | -0.090 | -0.140 |  | 0.018 | 0.039 | 0.062 | 0.113 |
| P-value | | 0.789 | 0.568 | 0.498 | 0.284 |  | 0.901 | 0.775 | 0.643 | 0.392 |
|  |  | July-August-September | | | |  | October-November-December | | | |
| 0.01 | 100 | 8,300 | 10,700 | 11,700 | 12,900 |  | 10,300 | 10,800 | 11,300 | 13,700 |
| 0.02 | 50 | 9,280 | 11,800 | 12,800 | 14,200 |  | 11,200 | 12,000 | 12,800 | 15,400 |
| 0.05 | 20 | 11,000 | 13,700 | 14,800 | 16,500 |  | 12,800 | 14,000 | 15,300 | 18,100 |
| 0.10 | 10 | 12,900 | 15,700 | 17,000 | 18,900 |  | 14,300 | 16,000 | 17,800 | 20,800 |
| 0.20 | 5 | 15,600 | 18,700 | 20,100 | 22,500 |  | 16,300 | 18,600 | 21,100 | 24,400 |
| 0.50 | 2 | 23,000 | 26,500 | 28,400 | 31,700 |  | 20,800 | 24,200 | 28,200 | 32,200 |
| 0.80 | 1.25 | 34,700 | 38,600 | 41,100 | 46,000 |  | 26,200 | 30,700 | 36,100 | 41,200 |
| 0.90 | 1.11 | 43,300 | 47,500 | 50,500 | 56,400 |  | 29,500 | 34,400 | 40,400 | 46,300 |
| 0.96 | 1.04 | 55,300 | 59,700 | 63,300 | 70,600 |  | 33,300 | 38,600 | 45,100 | 52,000 |
| 0.98 | 1.02 | 65,000 | 69,600 | 73,600 | 82,100 |  | 36,000 | 41,300 | 48,100 | 55,800 |
| 0.99 | 1.01 | 75,300 | 80,100 | 84,500 | 94,200 |  | 38,600 | 43,800 | 50,800 | 59,300 |
| Kentau statistic | | -0.062 | -0.103 | -0.131 | -0.149 |  | -0.092 | -0.099 | -0.131 | -0.182 |
| P-value | | 0.643 | 0.432 | 0.318 | 0.254 |  | 0.486 | 0.454 | 0.318 | 0.164 |