STREAMFLOW CHARACTERISTICS OF THE YELLOWSTONE RIVER BASIN, MONTANA, THROUGH SEPTEMBER 1982

By R. J. Omang

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CONVERSION FACTORS

The following factors can be used to convert inch-pound units in this report to the International System of units (SI):

Multiply inch-pound unit	By	To obtain SI unit
acre	0.004047	square kilometer (km^2)
acre-foot per year (acre-ft/yr)	0.001233	cubic hectometer per year (hm^3/yr)
	0.000001233	cubic kilometer per year (km^3/yr)
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
cubic foot per second per square mile	0.01093	cubic meter per second per square kilometer
foot (ft)	0.3048	meter (m)
inch	25.40	millimeter
inch per year (in./yr)	25.40	millimeter per year (mm/yr)
mile (mi)	1.609	kilometer (km)
square mile (mi^2)	2.590	square kilometer (km^2)

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ABSTRACT

Statistical summaries of streamflow data for selected stream-gaging sites are presented in this report to aid in appraising the streamflow in the Yellowstone River basin. Streamflow records are presented for 71 gaging stations for their periods of record. Streamflow-record collection in the Yellowstone River basin began in 1889.

For each gaging station selected for this report, a brief description is given for station location, drainage area, period of record, revisions of previously published records, type and history of gages, regulation and diversions, average discharge, and extremes of discharge. This information is followed by tables of monthly and annual flow statistics, flood-frequency data, low-flow and high-flow frequency data, and flow-duration data.

INTRODUCTION

Information concerning streamflow characteristics is essential for the development and management of surface-water resources. Land-use managers and hydrologists need information on all aspects of streamflow to evaluate various land-use alternatives. The purpose of this report is to present statistical summaries of streamflow data for 71 selected stream-gaging sites in the Yellowstone River basin. Monthly and annual mean discharge, flood-frequency data, low-flow and high-flow frequency data, and flow-duration data were determined for the 71 stations. The data should be useful to individuals and agencies concerned with management of water in the basin.

A previous report by Moore and Shields (1980) presented statistical summaries of streamflow data for the Yellowstone River basin through September 1976. This report, which is an update of the 1980 report, includes data for more stations, and updates the data through September 1982. This report was prepared in cooperation with the U.S. Bureau of Land Management.

STREAMFLOW RECORDS

Streamflow statistics are presented in this report for the gaging stations shown in figure 1. Each station is assigned an index number in downstream order. The numbering system is the same as that used in all U.S. Geological Survey streamflow-data reports.

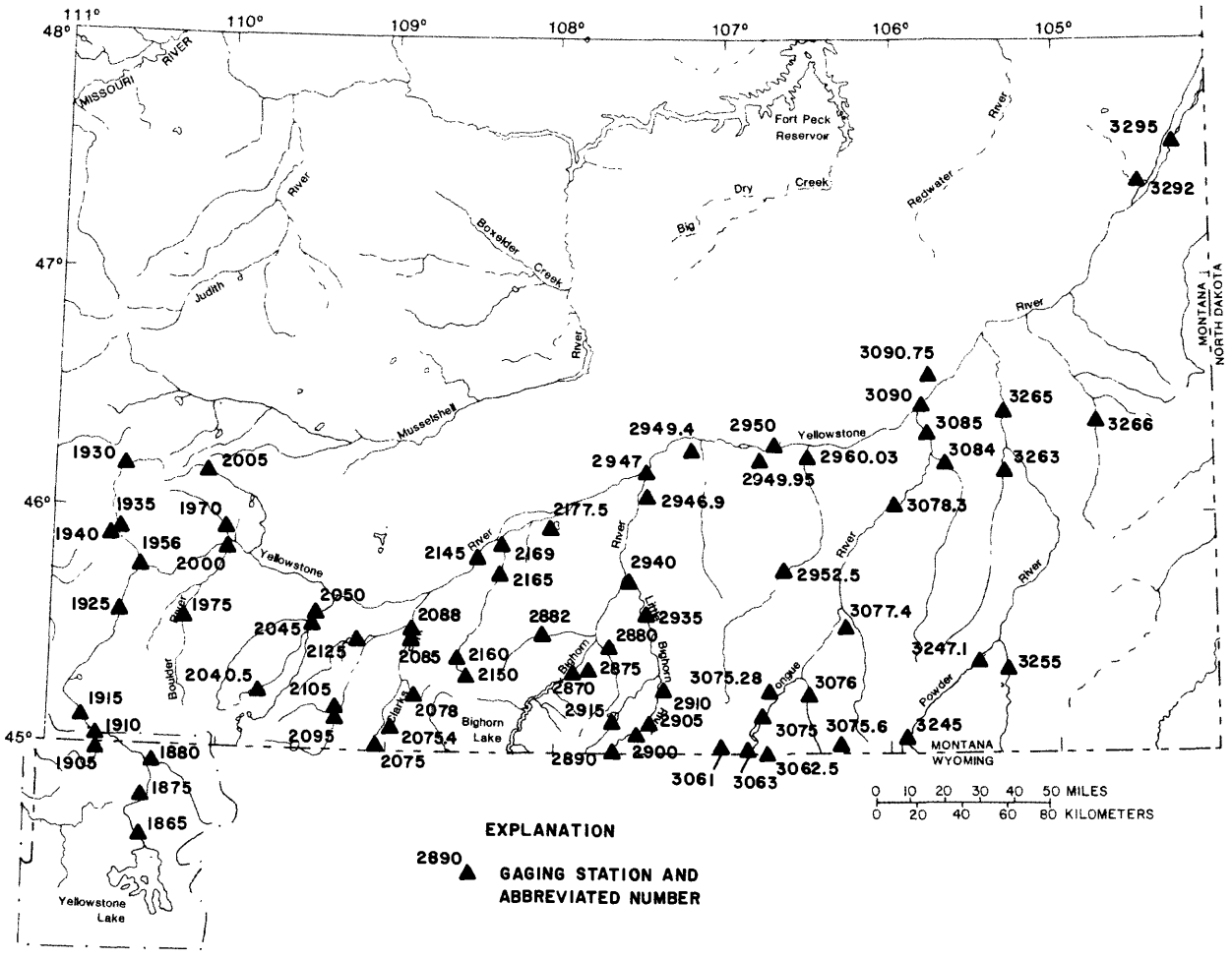

Figure 1.--Location of gaging stations.

Station description

The station description consists of location, drainage area, period of record, revisions of previously published records, type and history of gage, remarks on regulation and diversions, average discharge, and extremes of discharge. The location and the drainage area are obtained from the most accurate maps available. River mileage, given under "Location" for some stations, is that determined and used by the U.S. Army Corps of Engineers. Periods for which published records are available for the present station or for stations generally equivalent to the present one are given under "Period of Record."

Previously published streamflow records of some stations have been found to be in error on the basis of data or information subsequently obtained. Revisions of such records usually are published along with the current records in one of the annual or compilation reports. To make such revised records readily available, a section entitled "Revised Records" has been added to the appropriate station descriptions. Listed therein are all the reports in which revisions have been published, each followed by the year for which data are revised in that report. The year shown is a water year; for example, 1965 indicates the water year October 1,

1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is noted after the water year by (M), which indicates that only the instantaneous maximum discharge was revised. If the drainage area has been revised, the report in which the revised area was first published is identified. For all stations for which discharge, in cubic feet per second per square mile, and runoff, in inches, have been published in previous reports, a revision of the drainage area necessitates corresponding revision of all values based on the drainage area.

The type of gage currently in use, the datum of the present gage above sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "Gage." In references to datum of gage, the National Geodetic Vertical Datum of 1929 (NGVD) denotes a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada; this datum was formerly called "mean sea level datum of 1929."

Information pertaining to the accuracy of the discharge records and to conditions that affect the natural flow at the gaging station is given under "Remarks." The average discharge for the number of years indicated is given under "Average Discharge." It is computed only for stations having at least 5 water years of complete record, and only water years of complete record are included in the computation. The "Extremes for Period of Record" section gives the momentary maximum and minimum discharges and gage heights for the period of record.

Period of record

Records through September 30, 1982 (or September 30 of the last year of record, if discontinued prior to 1982), were used in computing monthly and annual mean discharge, high-flow frequency, and flow-duration data. Low-flow frequency data were computed on the basis of the climatic year, which ends March 31. Flood-frequency data were computed using records through the 1978 water year.

Effects of regulation

The natural flows of many streams in the upper Yellowstone River basin are altered by regulation by dams or diversions for irrigation. The reader needs to be aware that for many stations these conditions exist and the reported data can reflect the pattern of operation of regulation and diversion. The "Remarks" section of the station description indicates known regulations and diversions; periods of natural flow were segregated from periods of flow affected by regulation by dams or major diversion only at stations 06287000 and 06294700. If this information is needed for other sites, special requests can be directed to the District Office in Helena, Montana. Depending upon the number of sites involved, a cost for computer services may be charged.

TABULATIONS OF STREAMFLOW CHARACTERISTICS

Tables presented for the stations include monthly and annual mean discharge, magnitude and probability of instantaneous peak flow (flood frequency), magnitude and probability of annual low flow, magnitude and probability of annual high flow,

and duration of daily mean flow. The monthly and annual data were processed through the U.S. Geological Survey computer program Daily Values Monthly and Annual Statistics (Program W4422) by Price and Meeks (1977). Low-flow, high-flow, and flow-duration data were processed using the U.S. Geological Survey computer program Daily Value Statistics (Program A969) of Meeks (1977). Flood-frequency data were processed using the U.S. Geological Survey computer program J407 of Kirby (1981).

Monthly and annual mean discharge

The monthly and annual mean discharge tabulations show for the period of record: the maximum and minimum monthly and annual means, the mean (monthly and annual), the standard deviations of the means, the coefficient of variation (ratio of the standard deviation to the mean), and the percentage of average annual runoff for each mean monthly.

Flood frequency

The flood-flow tabulations show the data necessary to plot flood-frequency curves, which were defined by fitting the log-Pearson Type III frequency distribution to data for the period of record. The flood-frequency curve is a graph showing the relationship between recurrence interval as abscissa and flood magnitude as ordinate. For stations with less than 25 years of record, a generalized (regional) skew from the U.S. Water Resources Council (1977) was used. For stations with more than 25 years of record, the generalized skew was weighted with the station skew in accordance with procedures recommended by the U.S. Water Resources Council (1977). The skew used is listed at the bottom of the flood-frequency table. For some sites, skew coefficients were not applicable, because flood peaks resulted from two separate and independent causes (for example, snowmelt and rainfall). In these instances, a mixed-population flood frequency analysis was used (Parrett and Omang, 1981, p. 6), and a skew value is not listed in the flood-frequency table. The flood magnitudes determined from the log-Pearson Type III analysis were weighted with values determined from regional regression equations (Parrett and Omang, 1981) to produce the values listed. The table lists the magnitudes of annual instantaneous peak flows for recurrence intervals of 2 years, 5 years, 10 years, 25 years, 50 years, and 100 years; the associated annual exceedance probabilities are 50 percent, 20 percent, 10 percent, 4 percent, 2 percent, and 1 percent, respectively. Flood-frequency data were estimated for all stations, except those with less than 10 years of record, those affected by upstream reservoir regulation, and those where peak-discharge values were considered to be unreliable or unrepresentative of the long-term flow record.

Low-flow frequency

The low-flow tabulations show the data necessary to plot standard low-flow frequency curves, which are based on the log-Pearson Type III frequency distribution. The low-flow frequency curve is a graph showing the relationship between recurrence interval as abscissa and annual low flow as ordinate. The tabulations show smallest annual mean discharge for consecutive periods of 1, 3, 7, 14, 30, 60, 90, 120, and 183 days for recurrence intervals of 2 years, 5 years, 10 years, 20 years, 50 years, and 100 years; the associated non-exceedance probabilities are 50 percent, 20 percent, 10 percent, 5 percent, 2 percent, and 1 percent, respectively.

Recurrence intervals generally were reported only to twice the period of record. Curves based on records of more than 40 years were extended to the 100-year (1-percent) interval.

High-flow frequency

The high-flow tabulations show the data necessary to plot standard high-flow frequency curves, which are based on the log-Pearson Type III frequency distribution. This curve is a graph showing the relationship between recurrence interval as abscissa and annual high flow as ordinate. The tabulations show the largest annual mean discharges for consecutive periods of 1, 3, 7, 15, 30, 60, and 90 days for recurrence intervals of 2 years, 5 years, 10 years, 25 years, 50 years, and 100 years; the associated exceedance probabilities are 50 percent, 20 percent, 10 percent, 4 percent, 2 percent, and 1 percent, respectively. The criteria for extending frequency curves of high-flow volumes were the same as for the low-flow data.

Flow duration

The flow-duration tabulations show the data necessary to plot a standard flow-duration curve, which is a cumulative frequency curve that shows the percentage of time that specified daily discharges were equaled or exceeded during the period of record. The tabulations show the discharges, in cubic feet per second, that were equaled or exceeded for a given percentage of time.

REFERENCES CITED

Kirby, William, 1981, Annual flood frequency analysis using U.S. Water Resources Council guidelines (Program J407), chapter I, section C, *of* WATSTORE user's guide: U.S. Geological Survey Open-File Report 76-435, v. 4, p. C-1 to C-57.

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Moore, L. G., and Shields, R. R., 1980, Streamflow characteristics of the Yellowstone River basin, Montana, through 1976: U.S. Geological Survey Water-Resources Investigations 80-41, 67 p.

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U.S. Water Resources Council, 1977, Guidelines for determining flood flow frequency [revised]: Hydrology Committee Bulletin 17A, 162 p.

LIST OF GAGING STATIONS, IN DOWNSTREAM ORDER

LIST OF GAGING STATIONS, IN DOWNSTREAM ORDER--Continued

06186500 YELLOWSTONE RIVER AT YELLOWSTONE LAKE OUTLET, YELLOWSTONE NATIONAL PARK

LOCATION.--Lat 44°34'03", long 110°22'48", Yellowstone National Park, Hydrologic Unit 10070001, on left bank 450 ft (137 m) downstream from Fishing Bridge, 0.3 mi (0.5 km), downstream from outlet of Yellowstone Lake, and at mile 616.4 (991.8 km).

DRAINAGE AREA.--1,006 mi^2 (2,606 km^2).

PERIOD OF RECORD.--December 1922 to September 1982 (discontinued). Prior to October 1926, gage heights only. Monthly discharge only for winter periods in water years 1927-30, 1932-33, 1935-38, 1940, 1942-46, published in WSP 1309; figures of daily discharge for these months published in WSP 646, 666, 686, 701, 731, 746, 786, 806, 826, 856, 896, 956, 976, 1006, 1036, and 1056, have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 1309: See PERIOD OF RECORD. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 7,727.91 ft (2,355.467 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 2, 1928, nonrecording gage at site 450 ft (137 m) upstream at datum 1.07 ft (0.326 m) higher.

REMARKS.--No artificial regulation.

AVERAGE DISCHARGE.--56 years, (1927-82), 1,327 ft^3/s (37.58 m^3/s), 17.91 in./yr (455 mm/yr), 961,400 acre-ft/yr (1.19 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,170 ft^3/s (260 m^3/s) June 28, 1974, gage height, 8.20 ft (2.499 m); minimum daily, 130 ft^3/s (3.68 m^3/s) Mar. 1-31, 1934, but may have been less during periods of ice effect; minimum gage height, 1.45 ft (0.442 m) Dec. 17, 1936.

MONTHLY AND ANNUAL MEAN DISCHARGES 1927-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	1260	408	817	207	0.25	5.1
November	984	348	614	155	.25	3.9
December	775	246	476	125	.26	3.0
January	639	180	394	125	.32	2.5
February	628	150	380	122	.32	2.4
March	717	130	439	130	.30	2.8
April	801	175	539	129	.24	3.4
May	2190	605	1100	386	.35	6.9
June	6640	1710	3550	1040	.29	22.4
July	7160	1270	4080	1380	.34	25.7
August	4030	812	2250	730	.33	14.2
September	1950	538	1230	341	.28	7.7
Annual	1940	682	1330	302	.23	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1928-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	308	222	184	156	129	113
3	309	223	185	158	130	114
7	314	227	189	160	132	116
14	323	236	197	168	138	121
30	341	249	207	175	143	124
60	362	265	221	187	154	134
90	383	285	240	205	171	150
120	412	316	271	236	201	179
183	516	409	357	318	276	251

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 56 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
4780	6260	7150	8200	8940	9640

Weighted skew = -0.240

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1927-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	4800	6230	7030	7920	8510	9040
3	4790	6210	7020	7910	8490	9030
7	4760	6170	6970	7860	8440	8970
15	4680	6060	6840	7700	8270	8790
30	4470	5750	6460	7230	7740	8190
60	3910	4960	5520	6120	6500	6830
90	3330	4190	4640	5120	5430	5690

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1927-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time															
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
6420	4600	3490	2750	2100	1280	875	682	584	504	427	337	274	217	179	161	143

06187500 TOWER CREEK AT TOWER FALLS, YELLOWSTONE NATIONAL PARK

LOCATION.--Lat 44°54'00", long 110°23'00", Yellowstone National Park, Hydrologic Unit 1007001, just upstream from Tower Falls, 0.25 mi (0.40 km) upstream from mouth, and 2 mi (3 km) southeast of Camp Roosevelt.

DRAINAGE AREA.--50.4 mi^2 (130.5 km^2).

PERIOD OF RECORD.--May 1923 to September 1943 (discontinued).

GAGE.--Staff gage. Altitude of gage is 6,400 ft (1,950.7 m) from topographic map. Prior to Sept. 26, 1931, staff gage at site 25 ft (7.6 m) downstream at datum 2.22 ft (0.677 m) lower. Sept. 26, 1931, to July 11, 1933, staff gage at site 75 ft (22.9 m) downstream at different datum. July 12, 1933 to Oct. 13, 1934, staff gage at described site at datum 0.50 ft (0.152 m) higher.

REMARKS.--No diversions or regulation upstream from station.

AVERAGE DISCHARGE.--20 years (1924-43), 47.2 ft^3/s (1.337 m^3/s), 12.72 in./yr (323 mm/yr), 34,180 acre-ft/yr (42.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 642 ft^3/s (18.2 m^3/s) May 30, 1925, from rating curve extended above 400 ft^3/s (11.3 m^3/s); maximum gage height, 6.27 ft (1.911 m) May 28, 1928, site and datum then in use; minimum discharge observed, 5.6 ft^3/s (0.159 m^3/s) result of discharge measurement, Mar. 17, 1934.

MONTHLY AND ANNUAL MEAN DISCHARGES 1924-43

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	36	18	25	5.1	0.20	4.5
November	45	16	22	6.0	.27	3.9
December	25	14	19	3.4	.18	3.3
January	22	12	17	3.3	.20	2.9
February	20	10	16	3.3	.21	2.8
March	22	10	16	3.1	.19	2.9
April	39	12	26	7.8	.30	4.6
May	278	46	105	58	.56	18.6
June	397	46	185	99	.53	32.6
July	261	25	74	53	.72	13.1
August	61	21	34	9.6	.28	6.0
September	40	19	27	5.6	.20	4.8
Annual	85	26	47	16	.34	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1925-43

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	14	12	9.6	7.9	-----	-----
3	14	12	11	9.6	-----	-----
7	15	12	11	10	-----	-----
14	15	12	11	10	-----	-----
30	15	13	11	10	-----	-----
60	16	13	12	11	-----	-----
90	17	14	12	11	-----	-----
120	17	15	13	12	-----	-----
183	19	16	15	14	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 21 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
317	482	610	778	911	1050

Weighted skew = 0.030

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1924-43

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	324	474	566	672	-----	-----
3	300	438	524	624	-----	-----
7	263	394	483	597	-----	-----
15	231	351	438	555	-----	-----
30	194	292	362	457	-----	-----
60	142	209	260	331	-----	-----
90	110	159	196	248	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1924-43

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time															
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
368	181	106	70	51	34	28	24	22	20	18	15	13	11	11	10	10

06188000 LAMAR RIVER NEAR TOWER FALLS RANGER STATION, YELLOWSTONE NATIONAL PARK

LOCATION.--Lat 44°55'40", long 110°23'35", Yellowstone National Park, Hydrologic Unit 10070001, on left bank 0.5 mi (0.8 km) northeast of Cook City highway, 0.5 mi (0.8 km) upstream from mouth, and 1.5 mi (2.4 km) northwest of Tower Falls ranger station.

DRAINAGE AREA.--660 mi^2 (1,709 km^2).

PERIOD OF RECORD.--September 1922, Arpil 1923 to September 1969 (discontinued). Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1176: 1949. WSP 1309: 1926-35. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 5,910 ft (1,801 m) from topographic map. Prior to Sept. 16, 1925, nonrecording gages, and Sept. 16, 1925 to July 29, 1927, water-stage recorder, at same site at datum 1.00 ft (0.305 m) higher.

REMARKS.--No regulation or diversion.

AVERAGE DISCHARGE.--46 years (1924-69), 829 ft^3/s (23.48 m^3/s), 17.06 in./yr (433 mm/yr), 600,600 acre-ft/yr (741 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 13,600 ft^3/s (385 m^3/s) May 25, 1928, gage height, 9.75 ft (2.97 m); minimum observed, 40 ft^3/s (1.13 m^3/s) result of discharge measurement Mar. 16, 1945, but may have been less during periods of no gage height record in winter.

MONTHLY AND ANNUAL MEAN DISCHARGES 1924-69

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	485	110	217	93	0.43	2.2
November	330	88	157	53	.34	1.6
December	202	76	118	25	.21	1.2
January	200	75	105	21	.20	1.1
February	171	70	100	19	.18	1.0
March	146	68	104	17	.17	1.0
April	1110	106	381	268	.71	3.8
May	6890	969	2600	1090	.42	26.1
June	7830	1410	4200	1420	.34	42.2
July	3260	344	1390	737	.53	13.9
August	886	173	349	142	.41	3.5
September	518	138	230	85	.37	2.3
Annual	1290	525	829	191	.23	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1925-69

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	84	68	60	54	47	4
3	85	72	65	60	54	5
7	87	75	70	65	61	5
14	89	78	72	68	64	6
30	93	81	75	71	66	6
60	95	84	79	76	73	7
90	98	87	83	80	77	7
120	103	91	86	83	79	7
183	129	108	99	93	87	8

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 47 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
8190	10000	10800	11900	12700	13500

Weighted skew = -0.091

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1924-69

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	7370	9160	10200	11300	12100	12800
3	6900	8640	9680	10900	11700	12500
7	6270	7940	8960	10200	11000	11800
15	5470	7020	7990	9160	10000	10800
30	4660	5890	6660	7580	8240	8880
60	3580	4420	4920	5510	5920	6320
90	2730	3360	3740	4170	4480	4770

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1924-69

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
7400	4290	2820	1770	983	390	241	182	146	124	109	95	86	77	73	67	57

06190500 GARDINER RIVER AT MAMMOTH, YELLOWSTONE NATIONAL PARK

LOCATION.--Lat 44°59'00", long 110°41'00", Yellowstone National Park, Hydrologic Unit 10070001, 0.3 mi (0.5 km) downstream from foot bridge on Mount Everts trail, 0.5 mi (0.8 km) upstream from Hot River (formerly Boiling River), 0.9 mi (1.4 km) northeast of Mammoth, 3.8 mi (6.1 km) upstream from mouth.

DRAINAGE AREA.--200 mi^2 (518 km^2).

PERIOD OF RECORD.--March 1923 to October 1939 (discontinued). Prior to 1937 published as "at Mammoth Hotel."

GAGE.--Water-stage recorder. Altitude of gage is 5,680 ft (1,731 m) from topographic map. Prior to June 10, 1927, staff gage at site 0.3 mi (0.5 km) upstream at different datum. June 10 to July 29, 1927, staff gage at described site and datum.

REMARKS.--No diversions or regulation upstream from station. Records not equivalent to those for station near Mammoth, 1.3 mi (2.1 km) downstream.

AVERAGE DISCHARGE.--15 years (1924-38), 161 ft^3/s (4.560 m^3/s), 116,600 acre-ft/yr (144 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,790 ft^3/s (50.7 m^3/s) May 28, 1928, gage height, 3.59 ft (1.094 m); minimum recorded, 31 ft^3/s (0.88 m^3/s) Apr. 7, 1928; minimum gage height, 0.51 ft (0.155 m) Apr. 3, 1931.

MONTHLY AND ANNUAL MEAN DISCHARGES 1924-38

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	132	73	95	21	0.22	4.9
November	153	65	87	23	.26	4.5
December	103	59	78	14	.18	4.0
January	98	55	71	11	.16	3.7
February	90	50	69	13	.18	3.6
March	90	52	70	12	.17	3.6
April	180	69	115	41	.36	5.9
May	977	201	410	195	.47	21.2
June	1070	161	514	248	.48	26.6
July	409	89	211	94	.45	10.9
August	185	71	115	35	.30	5.9
September	145	70	98	23	.24	5.1
Annual	246	106	161	41	.26	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1924-38

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	58	51	48	45	-----	-----
3	61	54	51	48	-----	-----
7	63	56	52	50	-----	-----
14	64	57	53	50	-----	-----
30	66	58	53	50	-----	-----
60	67	59	55	52	-----	-----
90	69	60	56	54	-----	-----
120	71	62	58	55	-----	-----
183	76	66	62	59	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 50 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
1120	1520	1790	2130	2380	2620

Weighted skew = -0.150

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1924-38

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	827	1200	1460	1820	-----	-----
3	783	1110	1340	1650	-----	-----
7	713	1020	1250	1550	-----	-----
15	646	932	1130	1410	-----	-----
30	567	803	967	1180	-----	-----
60	459	627	736	872	-----	-----
90	368	496	578	681	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1924-38

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
997	542	368	266	192	126	104	91	82	75	69	62	58	55	53	51	49

06191000 GARDINER RIVER NEAR MAMMOTH, YELLOWSTONE NATIONAL PARK

LOCATION.--Lat 44°59'35", long 110°41'25", Yellowstone National Park, Hydrologic Unit 10070001, on left bank at Wyoming-Montana State line, 400 ft (122 m) upstream from highway bridge, 0.5 mi (0.8 km) downstream from Hot River (formerly Boiling River), 1.5 mi (2.4 km) north of Mammoth, and 3 mi (5 km) upstream from mouth.

DRAINAGE AREA.--202 mi^2 (523 km^2).

PERIOD OF RECORD.--October 1938 to September 1972 (discontinued). Prior to October 1959, published as Gardiner River near Mammoth.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 5,620 ft (1,713 m) from topographic map.

REMARKS.--No regulation or diversion.

AVERAGE DISCHARGE.--34 years, 220 ft^3/s (6.230 m^3/s), 14.79 in./yr (376 mm/yr), 159,400 acre-ft/yr (197 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,080 ft^3/s (58.9 m^3/s) June 4, 1956, gage height 4.46 ft (1.359 m); maximum gage height, 4.78 ft (1.457 m) June 16, 1962 (backwater from log and debris); minimum discharge 35 ft^3/s (0.99 m^3/s) Mar. 28, 1942, gage height, 1.08 ft (0.329 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1939-72

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	175	96	127	18	0.15	4.8
November	136	86	111	13	.12	4.2
December	119	79	101	9.5	.09	3.8
January	118	78	95	9.5	.10	3.6
February	116	75	91	8.1	.09	3.5
March	108	75	90	7.6	.08	3.4
April	248	84	128	40	.32	4.8
May	811	283	489	150	.31	18.6
June	1350	349	770	272	.35	29.2
July	662	149	327	132	.40	12.4
August	236	104	166	35	.21	6.3
September	190	96	139	22	.16	5.3
Annual	313	142	220	44	.20	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1940-72

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	71	64	61	59	56	-----
3	78	71	67	64	61	-----
7	83	76	72	69	66	-----
14	86	79	75	72	69	-----
30	88	82	78	76	73	-----
60	90	84	80	78	75	-----
90	92	85	82	79	75	-----
120	95	87	83	80	76	-----
183	103	94	89	86	82	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 50 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
1120	1520	1790	2130	2380	2620

Weighted skew = -0.113

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1939-72

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	1120	1420	1600	1820	1970	-----
3	1060	1350	1530	1750	1910	-----
7	997	1280	1450	1670	1820	-----
15	904	1170	1340	1550	1710	-----
30	801	1030	1180	1370	1510	-----
60	645	826	942	1080	1190	-----
90	518	658	745	850	926	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1939-72

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1250	784	551	371	259	165	136	121	109	101	95	87	81	76	74	69	62

06191500 YELLOWSTONE RIVER AT CORWIN SPRINGS, MONT.

LOCATION.--Lat 45°06'43", long 110°47'37", in NW¼SE¼NW¼ sec. 30, T. 8 S., R. 8 E., Park County, Hydrologic Unit 10070002, on left bank 20 ft (6 m) downstream from highway bridge at Corwin Springs, 1.3 mi (2.1 km) upstream from Mol Heron Creek, 7 mi (11 km) northwest of Gardiner, and at mile 549.7 (884.5 km).

DRAINAGE AREA.--2,623 mi^2 (6,794 km^2).

PERIOD OF RECORD.--August 1889 to November 1893 (published as "at Horr"), September 1910 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1912. WSP 1509: 1889-94, 1911, 1913, 1916-18, 1920-21, 1925, 1927. WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5,079.09 ft (1,548.107 m) National Geodetic Vertical Datum of 1929. Aug. 12, 1889, to Nov. 4, 1893, nonrecording gages at site 2 mi (3 km) upstream at different datums. Sept. 2, 1910, to Apr. 19, 1935, nonrecording gages on bridge at present datum.

REMARKS.--Natural storage in Yellowstone Lake. Diversions for irrigation of about 960 acres (3.89 km^2) of which 40 acres (162,000 m^2) lies below station.

AVERAGE DISCHARGE.--76 years, 3,118 ft^3/s (88.30 m^3/s), 16.14 in./yr (410 mm/yr), 2,259,000 acre-ft/yr (2.82 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 32,000 ft^3/s (906 m^3/s) June 14, 15, 1918, gage height, 11.5 ft (3.51 m), from rating curve extended above 18,000 ft^3/s (510 m^3/s); minimum observed, 389 ft^3/s (11.0 m^3/s) Feb. 23, Mar. 5, 9, 1937, gage height, 0.05 ft (0.015 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1890-93, 1911-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	2430	934	1530	382	0.25	4.1
November	2060	710	1190	265	.22	3.2
December	1400	551	967	189	.20	2.6
January	1210	448	841	180	.21	2.3
February	1180	411	828	175	.21	2.2
March	1230	412	905	182	.20	2.4
April	2980	576	1460	500	.34	3.9
May	13600	2580	5780	1930	.33	15.5
June	21200	4250	11500	3490	.30	30.9
July	13300	2030	7020	2710	.39	18.8
August	5690	1320	3270	988	.30	8.7
September	3210	1020	2000	492	.25	5.4
Annual	4350	1900	3120	637	.20	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1891-93, 1912-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	671	534	471	424	375	345
3	689	552	490	442	393	363
7	718	580	516	467	416	384
14	748	610	544	492	438	403
30	781	642	574	521	464	428
60	813	669	597	541	481	442
90	843	698	626	568	506	467
120	884	740	667	609	546	506
183	1040	873	791	727	659	616

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 72 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
17300	21800	24300	27200	29000	30800

Weighted skew = -0.311

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1890-93, 1911-82

Period (consecutive days)	Discharge, in ft^3/s for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	16300	20700	23300	26300	28400	30300
3	15500	19800	22400	25500	27700	29800
7	14500	18800	21400	24600	26800	29000
15	13300	17300	19800	22800	25000	27200
30	12000	15400	17400	19800	21500	23100
60	9960	12400	13800	15400	16400	17400
90	8250	10200	11200	12400	13200	13900

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1890-93, 1911-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
17900	11600	8550	6370	4680	2710	1860	1420	1180	1030	899	763	662	575	523	474	407

06192500 YELLOWSTONE RIVER NEAR LIVINGSTON, MONT.

LOCATION.--Lat 45°35'50", long 110°33'55", in NE¼NW¼NW¼ sec. 12, T. 3 S., R. 9 E., Park County, Hydrologic Unit 10070002, on right bank 50 ft (15 m) downstream from bridge on former U.S. Highway 89, 2 mi (3 km) downstream from Suce Creek, 4 mi (6 km) south of Livingston, and at mile 501.4 (806.8 km).

DRAINAGE AREA.--3,551 mi^2 (9,197 km^2).

PERIOD OF RECORD.--May 1897 to December 1905, August 1928 to September 1932, October 1937 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1899. WSP 1509: 1902. WSP 1629: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,542.49 ft (1,384.551 m) National Geodetic Vertical Datum of 1929. May 2, 1897, to Dec. 31, 1905, nonrecording gage on highway bridge at different datum. Aug. 23, 1928, to Sept. 30, 1932, and Mar. 14, 1938, to Feb. 3, 1951, nonrecording gage on highway bridge at present datum.

REMARKS.--Diversions for irrigation of about 24,200 acres (97.9 km^2) of which about 2,000 acres (8.10 km^2) is below station.

AVERAGE DISCHARGE.--57 years, 3,769 ft^3/s (106.7 m^3/s), 2,731,000 acre-ft/yr (3.37 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 36,300 ft^3/s (1,030 m^3/s) June 17, 1974, gage height, 9.21 ft (2.807 m); maximum gage height, 9.34 ft (2.847 m) June 20, 1943; minimum daily discharge, 590 ft^3/s (16.7 m^3/s) Jan. 22, 1940.

MONTHLY AND ANNUAL MEAN DISCHARGES 1898-05, 1929-32, 1938-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
Ooctober	3120	1250	2050	412	0.20	4.5
November	2350	1100	1700	284	.17	3.8
December	1860	977	1400	197	.14	3.1
January	1620	768	1200	185	.15	2.7
February	1800	832	1210	207	.17	2.7
March	1900	899	1280	189	.15	2.8
April	3360	1170	1860	556	.30	4.1
May	12200	2750	6560	2070	.32	14.5
June	22500	7290	13600	3550	.26	30.0
July	15000	2750	8090	3040	.38	17.9
August	6000	1770	3750	1030	.28	8.3
September	3810	1370	2480	561	.23	5.5
Annual	5240	2440	3770	704	.19	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1899-05, 1930-32, 1939-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	894	761	695	644	589	554
3	941	807	739	685	626	588
7	1010	874	804	747	685	644
14	1060	928	860	805	746	708
30	1120	984	916	861	801	763
60	1170	1030	962	908	849	812
90	1200	1070	998	944	886	849
120	1260	1120	1050	998	939	902
183	1460	1290	1210	1140	1070	1030

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 54 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
20400	25400	28400	31900	34500	36900

Weighted skew = -0.013

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1898-05, 1929-32, 1938-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	19500	23900	26500	29400	31400	33300
3	18600	23000	25600	28600	30600	32500
7	17400	21500	24000	26900	28900	30700
15	15800	19700	22000	24700	26500	28300
30	14100	17600	19600	21900	23500	25000
60	11600	14300	15800	17500	18600	19700
90	9560	11600	12800	14100	14900	15700

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1898-05, 1929-32, 1938-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
20500	13600	9990	7350	5230	3210	2330	1910	1630	1440	1290	1140	1030	916	863	804	694

06193000 SHIELDS RIVER NEAR WILSALL, MONT.

LOCATION.--Lat 46°09'00", long 110°35'00", in SE¼NW¼ sec. 34, T. 5 N., R. 9 E., Park County, Hydrologic Unit 10070003 11 mi (18 km) northeast of Wilsall and 12 mi (19 km) upstream from Flathead Creek.

DRAINAGE AREA.--87.8 mi^2 (227 km^2).

PERIOD OF RECORD.--May 1935 to September 1957 (discontinued).

GAGE.--Wire-weight gage. Altitude of gage is 5,590 ft (1,676 m) by barometer. May 10, 1935, to Oct. 12, 1942, staff gage at site 800 ft (244 m) downstream at different datum. Oct. 13, 1942, to May 21, 1948, staff gage at present site and datum.

REMARKS.--Diversions for irrigation of 3,100 acres (12.5 km^2), of which 830 acres (3.36 km^2) lies below station.

AVERAGE DISCHARGE.--22 years (1936-57), 60.3 ft^3/s (1.708 m^3/s), 9.325 in./yr (237 mm/yr), 43,660 acre-ft/yr (53.8 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,770 ft^3/s (50.1 m^3/s) June 4 or 5, 1948 from rating curve extended above 730 ft^3/s (20.7 m^3/s); maximum gage height, 5.15 ft (1.570 m) June 3, 1953 from graph based on gage readings; minimum not determined.

MONTHLY AND ANNUAL MEAN DISCHARGES 1936-57

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	63	7.6	19	12	0.60	2.7
November	36	3.8	16	6.6	.40	2.3
December	26	4.5	13	4.7	.35	1.8
January	18	5.0	11	3.5	.32	1.5
February	18	4.4	10	3.7	.36	1.5
March	17	6.2	12	2.8	.24	1.6
April	184	14	61	42	.69	8.5
May	441	105	228	93	.41	31.6
June	656	104	250	140	.56	34.6
July	184	19	64	37	.58	8.9
August	48	7.3	21	9.2	.43	3.0
September	38	7.7	16	7.5	.46	2.3
Annual	105	33	60	20	.33	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1937-57

(Period consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	5.7	4.5	4.0	3.6	-----	-----
3	6.0	4.6	4.0	3.6	-----	-----
7	6.4	5.0	4.3	3.8	-----	-----
14	7.3	5.7	4.9	4.2	-----	-----
30	8.6	6.6	5.6	4.8	-----	-----
60	9.8	7.4	6.3	5.4	-----	-----
90	11	8.1	6.8	5.8	-----	-----
120	12	8.7	7.3	6.2	-----	-----
183	13	9.9	8.6	7.8	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 22 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
547	833	1040	1330	1550	1800

Weighted skew =0.200

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1936-57

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	503	761	965	1260	-----	-----
3	464	690	864	1110	-----	-----
7	410	597	734	922	-----	-----
15	354	520	639	799	-----	-----
30	296	433	530	656	-----	-----
60	236	325	383	457	-----	-----
90	183	250	293	348	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1936-57

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
543	293	178	123	72	31	22	18	15	13	10	8.0	6.4	5.2	4.4	3.8	2.6

06193500 SHIELDS RIVER AT CLYDE PARK, MONT.

LOCATION.--Lat 45°53'10", long 110°37'05", in NW¼NW¼ sec. 33, T. 2 N., R. 9 E., Park County, Hydrologic Unit 10070003 on right bank just downstream from highway bridge, 0.8 mi (1.3 km) west of Clyde Park, 2 mi (3 km) upstream from Brackett Creek, and at mile 14.2 (22.8 km).

DRAINAGE AREA.--543 mi^2 (1,406 km^2).

PERIOD OF RECORD.--March 1921 to September 1923, April 1929 to December 1932, February 1934 to September 1967 (discontinued). Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Altitude of gage is 4,780 ft (1,457 m) from topographic map. Mar. 31, 1921, to Sept. 30, 1923, wire-weight gage at present site at different datum. Apr. 27, 1929, to Jan. 5, 1951, wire-weight gage at present site and datum.

REMARKS.--Diversions for irrigation of about 19,500 acres (78.9 km^2), of which 500 acres (2.02 km^2) is below station.

AVERAGE DISCHARGE.--38 years, 159 ft^3/s (4.503 m^3/s), 3.976 in./yr (101 mm/yr), 115,100 acre-ft/yr (142 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,500 ft^3/s (127 m^3/s) June 5, 1948, gage height, 7.39 ft (2.252 m); minimum observed, 1.8 ft^3/s (0.051 m^3/s) Aug. 29, 1935, gage height 0.72 ft (0.219 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1922-23, 1930-32, 1935-67

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	199	16	70	38	0.55	3.7
November	135	22	67	23	.35	3.5
December	130	17	53	22	.42	2.8
January	99	16	45	17	.37	2.3
February	201	19	57	38	.67	3.0
March	348	33	104	65	.62	5.5
April	820	63	258	164	.64	13.5
May	1260	114	499	251	.50	26.1
June	1320	76	517	308	.60	27.1
July	318	9.6	135	89	.66	7.1
August	158	3.1	49	38	.76	2.6
September	187	4.3	55	40	.72	2.9
Annual	351	46	159	66	.42	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1922-23, 1931-32, 1935-67

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	16	7.8	4.9	3.2	1.9	-----
3	18	8.6	5.3	3.4	2.0	-----
7	20	9.6	5.9	3.8	2.2	-----
14	22	11	6.7	4.3	2.5	-----
30	27	13	7.9	5.1	2.9	-----
60	33	17	11	7.0	4.1	-----
90	38	21	14	10	6.4	-----
120	44	27	20	15	10	-----
183	50	33	26	20	16	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 41 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
1100	1920	2640	3680	4570	5500

Weighted skew = 0.112

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1922-23, 1930-32, 1935-67

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	1020	1590	2010	2580	3030	-----
3	934	1420	1750	2170	2480	-----
7	837	1220	1470	1770	1980	-----
15	724	1060	1270	1520	1700	-----
30	611	902	1090	1310	1470	-----
60	500	736	887	1070	1200	-----
90	411	603	726	875	982	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1922-23, 1930-32, 1935-67

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1200	655	442	308	213	118	83	66	54	45	36	28	19	11	6.9	4.4	2.5

06194000 BRACKETT CREEK NEAR CLYDE PARK, MONT.

LOCATION.--Lat 45°52'00", long 110°40'10", in SE¼NE¼ sec. 1, T. 1 N., R. 8 E., Park County, Hydrologic Unit 10070003, near right bank on upstream side of private bridge, 3.5 mi (5.6 km) southwest of Clyde Park, and 4 mi (6 km) upstream from mouth.

DRAINAGE AREA.--57.9 mi^2 (150 km^2).

PERIOD OF RECORD.--March 1921 to September 1923, April 1934 to September 1957 (discontinued). Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Wire-weight gage. Altitude of gage is 4,930 ft (1,503 m) from topographic map. Mar. 30, 1921 to Sept. 30, 1923, staff gage at site 0.8 mi (1.3 km) upstream at different datum. Apr. 5, 1934 to May 24, 1949, staff gage and May 25, 1949, to Dec. 14, 1953, wire-weight gage, at site 25 ft (7.6 m) upstream at present datum.

REMARKS.--Diversion for irrigation of 650 acres (2.6 km^2) above station.

AVERAGE DISCHARGE.--25 years (1922-23, 1935-57), 27.8 ft^3/s (0.787 m^3/s), 6.519 in./yr (166 mm/yr), 20,130 acre-ft/yr (24.8 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,400 ft^3/s (39.6 m^3/s) May 22, 1948, gage height, 4.9 ft (1.49 m), from floodmark, from rating curve extended above 330 ft^3/s (9.35 m^3/s); minimum daily, 0.5 ft^3/s (0.014 m^3/s) Dec. 23, 24, 1952.

MONTHLY AND ANNUAL MEAN DISCHARGES 1922-23, 1935-57

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	24	4.2	10	4.5	0.43	3.1
November	20	2.1	9.5	4.4	.46	2.8
December	18	2.4	7.8	4.1	.53	2.3
January	16	2.5	6.6	3.2	.48	2.0
February	17	2.6	6.7	3.3	.49	2.0
March	22	2.6	10	4.9	.47	3.1
April	105	14	46	27	.60	13.8
May	230	36	105	50	.47	31.7
June	214	25	80	42	.53	24.0
July	64	7.2	29	15	.52	8.6
August	31	2.5	11	6.6	.58	3.4
September	16	2.1	10	3.6	.36	3.0
Annual	55	9.3	28	10	.37	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1922-23, 1935-57

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	2.6	1.4	0.91	0.63	0.41	-----
3	3.2	1.9	1.4	1.0	.71	-----
7	3.6	2.3	1.8	1.4	1.1	-----
14	4.2	2.7	2.1	1.6	1.2	-----
30	4.9	3.1	2.4	1.9	1.4	-----
60	5.6	3.7	2.9	2.4	1.8	-----
90	6.0	4.1	3.3	2.8	2.3	-----
120	6.4	4.5	3.7	3.1	2.6	-----
183	7.4	5.2	4.3	3.7	3.1	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 27 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
211	389	538	764	960	1190

Weighted skew = 0.185

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1922-23, 1935-57

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	187	303	395	529	643	-----
3	169	269	348	463	559	-----
7	152	234	295	379	447	-----
15	132	196	242	302	348	-----
30	114	167	202	247	279	-----
60	95	133	157	185	205	-----
90	77	108	127	149	165	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1922-23, 1935-57

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
206	117	80	56	40	21	14	11	8.7	7.2	5.8	4.4	3.2	2.4	2.1	1.9	1.0

06195600 SHIELDS RIVER NEAR LIVINGSTON, MONT.

LOCATION.--Lat 45°44'18", long 110°28'45", in NE¼SE¼NW¼ sec. 22, T. 1 S., R. 10 E., Park County, Hydrologic Unit 10070003, on right bank 900 ft (274 m) northeast of U.S. Highway 89, 0.2 mi (0.3 km) downstream from private road bridge, 2.0 mi (3.2 km) upstream from mouth, and 6.5 mi (10.5 km) northeast of Livingston.

DRAINAGE AREA.--852 mi^2 (2,207 km^2).

PERIOD OF RECORD.--October 1978 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,420 ft (1,347 m), from topographic map. Oct. 1, 1978, to Aug. 12, 1980, water-stage recorder at site 0.2 mi (0.3 km) upstream at datum 7.89 ft (2.405 m) higher.

REMARKS.--Diversions for irrigation of about 32,000 acres (130 km^2) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,600 ft^3/s (159 m^3/s) June 20, 1979, gage height, 6.80 ft (2.073 m), previous datum; minimum daily, 45 ft^3/s (1.27 m^3/s) Jan. 28, 1980.

MONTHLY AND ANNUAL MEAN DISCHARGES 1979-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	275	136	185	63	0.34	3.8
November	187	138	158	21	.13	3.3
December	143	116	132	11	.09	2.7
January	123	86	106	16	.15	2.2
February	308	117	178	89	.50	3.7
March	268	126	194	75	.39	4.0
April	598	314	508	133	.26	10.5
May	1490	941	1240	225	.18	25.7
June	1760	1190	1370	260	.19	28.4
July	770	268	453	221	.49	9.4
August	183	112	150	35	.24	3.1
September	201	80	152	55	.36	3.1
Annual	479	343	402	60	.15	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1980-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	58	49	-----	-----	-----	-----
3	62	52	-----	-----	-----	-----
7	66	60	-----	-----	-----	-----
14	75	68	-----	-----	-----	-----
30	87	80	-----	-----	-----	-----
60	99	92	-----	-----	-----	-----
90	110	103	-----	-----	-----	-----
120	122	112	-----	-----	-----	-----
183	123	115	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 4 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1979-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	2960	4160	-----	-----	-----	-----
3	2700	3620	-----	-----	-----	-----
7	2400	2980	-----	-----	-----	-----
15	1910	2260	-----	-----	-----	-----
30	1560	1810	-----	-----	-----	-----
60	1330	1480	-----	-----	-----	-----
90	1090	1220	-----	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1979-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
2160	1520	1130	863	659	304	199	169	148	135	122	104	90	74	65	61	50

06197000 BIG TIMBER CREEK NEAR BIG TIMBER, MONT.

LOCATION.--Lat 45°57'15", long 110°01'45", in SW¼NE¼ sec. 6, T. 2 N., R. 14 E., Sweet Grass County, Hydrologic Unit 10070002, 3 mi (4.6 km) downstream from confluence of North and South Forks and 9 mi (14.5 km) northwest of Big Timber.

DRAINAGE AREA.--74.9 mi^2 (194 km^2).

PERIOD OF RECORD.--April 1912 to November 1916, August 1917 to September 1924 (discontinued).

GAGE.--Staff gage. Altitude of gage is 4,680 ft (1,426 m) from topographic map. Prior to Apr. 5, 1918, wire-weight gages at sites 1.5 mi (2.4 km) downstream at different datum. Apr. 5, 1918, to Apr. 15, 1921, wire-weight gages at sites 500 ft (152 m) downstream at different datum.

REMARKS.--Diversions for irrigation of about 5,000 acres (20.2 km^2) above station.

AVERAGE DISCHARGE.--11 years (1913-16, 1918-24), 76.9 ft^3/s (2.178 m^3/s), 13.94 in./yr (354 mm/yr), 55,690 acre-ft/yr (68.7 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,960 ft^3/s (55.5 m^3/s) July 15, 1918, gage height, 6.9 ft (2.103 m) from floodmarks; no flow Oct. 3-6, 1922.

MONTHLY AND ANNUAL MEAN DISCHARGES 1913-16, 1918-24

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	59	12	31	14	0.46	3.4
November	32	10	25	7.5	.30	2.7
December	43	10	20	9.3	.45	2.2
January	34	10	17	7.4	.43	1.8
February	25	9.0	17	5.8	.35	1.8
March	48	10	23	11	.48	2.5
April	69	19	49	15	.31	5.3
May	226	89	149	46	.30	16.2
June	529	56	317	122	.38	34.4
July	329	37	182	88	.49	19.7
August	97	25	56	25	.44	6.1
September	83	16	36	20	.54	3.9
Annual	108	40	77	21	.28	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1913-16, 1919-24

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	9.2	5.1	1.4	0.00	-----	-----
3	9.9	7.3	4.0	.00	-----	-----
7	12	8.6	7.1	6.0	-----	-----
14	13	10	8.8	8.0	-----	-----
30	13	10	9.1	8.2	-----	-----
60	14	11	9.3	8.2	-----	-----
90	15	11	9.7	8.5	-----	-----
120	16	12	10	8.8	-----	-----
183	21	15	13	11	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 13 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
643	1100	1450	1980	2440	3010

Weighted skew = 0.452

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1913-16, 1918-24

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	612	885	1060	1280	-----	-----
3	529	752	900	1090	-----	-----
7	456	637	763	927	-----	-----
15	397	544	638	752	-----	-----
30	355	461	507	546	-----	-----
60	287	357	380	396	-----	-----
90	229	288	308	323	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1913-16, 1918-24

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time															
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
559	327	222	153	103	58	41	30	25	21	18	12	11	10	9.3	8.9	3.0

06197500 BOULDER RIVER NEAR CONTACT, MONT.

LOCATION.--Lat 45°33'17, long 110°12'00", in NW¼SE¼SE¼ sec. 23, T. 3 S., R. 12 E., Sweet Grass County, Hydrologic Unit 10070002, on left bank 0.5 mi (0.8 km) downstream from Natural Bridge and Falls, 3.4 mi (5.5 km) north of Contact, 9.5 mi (15.3 km) southeast of MacLead, 9.7 mi (15.6 km) upstream from East Boulder River, and at mile 32.4 (52.1 km).

DRAINAGE AREA.--226 mi^2 (585 km^2).

PERIOD OF RECORD.--May 1910 to October 1912, April 1913 to September 1916 (no winter records), April to August 1929, October 1950 to September 1969, September 1970 to September 1974, August 1981 to September 1982. Monthly discharge only January to March 1912, published in WSP 1309, and February, March 1955, published in WSP 1729.

REVISED RECORDS.--WSP 1509: 1910-1911, 1915 (M). WSP 1916: 1955.

GAGE.--Water-stage recorder. Altitude of gage is 4,930 ft (1,503 m) from topographic map. Prior to July 15, 1951, nonrecording gages at site 2.7 mi (4.3 km) downstream at different datums.

REMARKS.--Diversions for irrigation of about 10 acres (40,470 km^2).

AVERAGE DISCHARGE.--26 years (1910-12, 1950-69, 1970-74, 1982), 385 ft^3/s (10.90 m^3/s), 23.13 in./yr (595 mm/yr), 278,900 acre-ft/yr (344 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,130 ft^3/s (174 m^3/s) June 18, 1974, gage height, 6.96 ft (2.121 m), maximum gage height, 8.8 ft (2.68 m) June 14, 1911, site and datum then in use; minimum discharge, 4.2 ft^3/s (0.12 m^3/s) Feb. 27, 1961, gage height, 0.86 ft (0.262 m), result of freezeup.

MONTHLY AND ANNUAL MEAN DISCHARGES 1911-12, 1951-69, 1971-74, 1982

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	222	83	126	42	0.33	2.7
November	137	67	93	22	.23	2.0
December	95	42	72	13	.18	1.6
January	80	30	61	10	.16	1.3
February	73	35	57	7.7	.14	1.2
March	70	42	56	7.3	.13	1.2
April	211	53	95	43	.45	2.1
May	1240	288	669	242	.36	14.5
June	3120	1250	1970	480	.24	42.6
July	1580	282	987	385	.39	21.4
August	536	133	272	96	.35	5.9
September	301	103	156	46	.29	3.4
Annual	484	258	385	65	.17	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1912, 1952-69, 1972-74

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent: 2 (50%)	5 (20%)	10 (10%)	20 (5%)	50 (2%)	100 (1%)
1	41	34	29	26	-----	-----
3	44	39	36	34	-----	-----
7	49	43	41	38	-----	-----
14	51	46	43	41	-----	-----
30	53	48	46	44	-----	-----
60	56	51	48	46	-----	-----
90	58	53	50	48	-----	-----
120	62	56	52	50	-----	-----
183	76	65	60	57	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 32 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent: 2 (50%)	5 (20%)	10 (10%)	25 (4%)	50 (2%)	100 (1%)
3670	4430	4880	5490	5940	6430

Weighted skew = 0.207

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1911-12, 1951-69, 1971-74, 1982

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent: 2 (50%)	5 (20%)	10 (10%)	25 (4%)	50 (2%)	100 (1%)
1	3240	3880	4300	4810	-----	----
3	3040	3660	4070	4600	-----	----
7	2820	3400	3770	4250	-----	----
15	2490	3020	3350	3760	-----	----
30	2100	2510	2760	3070	-----	----
60	1590	1870	2030	2210	-----	----
90	1230	1440	1550	1670	-----	----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1911-12, 1951-69, 1971-74, 1982

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time: 1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
3100	1960	1220	780	492	215	144	106	83	70	61	54	48	43	37	32	29

06200000 BOULDER RIVER AT BIG TIMBER, MONT.

LOCATION.--Lat 45°50'03", long 109°56'17", in SE¼NE¼SE¼ sec. 14, T. 1 N., R. 14 E., Sweet Grass County, Hydrologic Unit 10070002, on left bank 150 ft (46 m) upstream from Old Boulder Bridge, 1 mi (2 km) east of Big Timber, and 1.6 mi (2.6 km) upstream from mouth.

DRAINAGE AREA.--523 mi^2 (1,355 km^2).

PERIOD OF RECORD.--April 1947 to December 1953, March 1955 to current year. Monthly discharge only for April 1947, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 4,056.39 ft (1,236.388 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Diversions for irrigation of about 13,300 acres (53.8 km^2), of which about 250 acres (1.01 km^2) is below station.

AVERAGE DISCHARGE.--33 years, 614 ft^3/s (17.39 m^3/s), 444,800 acre-ft/yr (548 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,840 ft^3/s (279 m^3/s) May 28, 1956, gage height, 7.84 ft (2.390 m); maximum gage height, 8.25 ft (2.515 m) July 8, 1975; minimum discharge, 10 ft^3/s (0.28 m^3/s) about Aug. 26 or 27, 1961.

MONTHLY AND ANNUAL MEAN DISCHARGES 1948-53, 1956-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	417	106	236	82	0.35	3.2
November	279	113	202	41	.20	2.7
December	214	124	165	22	.13	2.2
January	178	85	140	21	.15	1.9
February	167	85	135	19	.14	1.8
March	179	107	133	18	.14	1.8
April	390	67	214	76	.35	2.9
May	2240	429	1200	462	.39	16.2
June	4500	1690	3040	758	.25	41.3
July	4310	206	1430	842	.59	19.4
August	709	22	261	160	.61	3.5
September	534	76	215	108	.50	2.9
Annual	905	372	614	133	.22	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1948-53, 1956-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	74	49	36	26	18	-----
3	82	55	40	28	18	-----
7	92	61	44	32	20	-----
14	100	68	50	37	24	-----
30	112	80	60	46	31	-----
60	126	99	83	69	55	-----
90	132	117	110	104	98	-----
120	141	128	121	115	109	-----
183	164	141	130	121	113	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 31 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent

2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
5800	7080	7810	8810	9520	10400

Weighted skew = 0.189

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1948-53, 1956-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	5220	6380	7100	7940	8540	-----
3	4850	5990	6730	7670	8360	-----
7	4430	5530	6240	7130	7790	-----
15	3880	4830	5430	6140	6660	-----
30	3280	4060	4530	5080	5470	-----
60	2480	3040	3380	3770	4040	-----
90	1890	2310	2560	2840	3030	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1948-53, 1956-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
5000	3130	1920	1200	668	318	234	192	167	148	131	111	92	73	60	42	22

06200500 SWEET GRASS CREEK ABOVE MELVILLE, MONT.

LOCATION.--Lat 46°09'00", long 110°05'00", in NW¼ sec. 27, T. 5 N., R. 13 E., Sweet Grass County, Hydrologic Unit 10070002, on right bank 7.5 mi (12.1 km) northwest of Melville.

DRAINAGE AREA.--63.8 mi^2 (165 km^2).

PERIOD OF RECORD.--August 1913 to December 1924, April 1937 to September 1969 (discontinued). May 1907 to September 1911, April to September 1912 at site 5.0 mi (8.1 km) upstream, published as Sweet Grass Creek above Melville, records not equivalent owing to diversion and tributary flow. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Altitude of gage is 5,490 ft (1,673 m) by barometer. Aug. 21, 1913, to Dec. 31, 1924, staff gage at site 1,500 ft (457 m) downstream at different datum. Apr. 17, 1937, to Sept. 25, 1951, water-stage recorder at site 1,000 ft (305 m) downstream at different datum.

REMARKS.--Diversions for irrigation of 200 acres (0.81 km^2) above station. Diversions in T. 5 N., R. 12 E., from headwaters of American Fork in Musselshell River basin to irrigate an additional 300 acres (1.2 km^2) above station.

AVERAGE DISCHARGE.--43 years, 86.4 ft^3/s (2.447 m^3/s), 18.39 in./yr (467 mm/yr), 62,600 acre-ft/yr (77.2 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,270 ft^3/s (64.3 m^3/s) June 17, 1965, gage height, 4.08 ft (1.244 m), from rating curve extended above 1,100 ft^3/s (31.2 m^3/s); minimum, 0.7 ft^3/s (0.02 m^3/s) Mar. 22, 1957, gage height, 0.53 (0.162 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1914-24, 1938-69

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	97	16	41	22	0.53	4.0
November	51	14	29	10	.35	2.8
December	33	7.2	19	6.2	.34	1.8
January	26	5.2	14	4.6	.33	1.3
February	22	6.0	12	3.8	.32	1.2
March	20	5.7	11	3.2	.28	1.1
April	71	6.5	17	10	.61	1.6
May	318	79	178	66	.37	17.2
June	585	131	387	106	.27	37.4
July	360	64	206	75	.37	19.9
August	147	31	75	26	.35	7.3
September	110	20	46	20	.44	4.5
Annual	117	51	86	17	.19	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1915-24, 1938-69

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	7.0	4.4	3.2	2.4	1.6	1.2
3	7.4	5.0	3.7	2.9	2.0	1.6
7	7.8	5.5	4.4	3.6	2.8	2.3
14	8.3	6.3	5.4	4.7	4.0	3.5
30	9.5	7.4	6.4	5.7	4.9	4.4
60	11	8.4	7.4	6.6	5.9	5.4
90	12	9.3	8.2	7.4	6.6	6.1
120	13	10	9.1	8.2	7.3	6.8
183	20	15	13	12	10	9.3

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 44 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
932	1340	1630	2040	2360	2730

Weighted skew = 0.351

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1914-24, 1938-69

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	782	1020	1180	1360	1500	1630
3	678	863	976	1110	1200	1290
7	584	731	817	915	983	1050
15	498	615	680	751	798	840
30	426	524	577	633	670	703
60	339	406	441	477	499	519
90	269	318	341	364	378	389

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1914-24, 1938-69

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
672	397	263	180	126	62	40	28	20	16	13	9.9	8.0	6.5	5.9	5.0	3.2

06204050 WEST ROSEBUD CREEK NEAR ROSCOE, MONT.

LOCATION.--Lat 45°14'35", long 109°43'50", in NE¼ sec. 10, T. 7 S., R. 16 E., Stillwater County, Hydrologic Unit 10070005, on left bank at Mystic Lake powerplant, 2.0 mi (3.2 km) downstream from Mystic Lake, 13.5 mi (21.5 km) southwest of Roscoe, and at mile 26.8 (43.1 km).

DRAINAGE AREA.--52.1 mi^2 (134.9 km^2).

PERIOD OF RECORD.--September 1965 to current year.

GAGE.--Water-stage recorder and rectangular weir. Datum of gage is 6,535.60 ft (1,992.051 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by Mystic Lake (station number 06204000).

AVERAGE DISCHARGE.--17 years, 129 ft^3/s (3.653 m^3/s), 33.62 in./yr (854 mm/yr), 93,460 acre-ft/yr (115 hm^3/yr), adjusted for change in contents in Mystic Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,630 ft^3/s (46.2 m^3/s) July 6, 1975, gage height, 4.71 ft (1.436 m); minimum daily, 2.5 ft^3/s (0.071 m^3/s) Apr. 3, 4, 6, 7, 1967.

MONTHLY AND ANNUAL MEAN DISCHARGES 1966-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	167	40	81	30	0.37	5.3
November	118	31	64	24	.38	4.1
December	118	28	75	22	.30	4.9
January	148	26	72	26	.36	4.7
February	92	50	70	12	.17	4.6
March	124	25	68	27	.39	4.4
April	108	3.6	50	26	.51	3.3
May	134	16	78	37	.47	5.1
June	558	115	232	109	.47	15.1
July	712	196	416	135	.33	27.0
August	268	164	205	31	.15	13.3
September	183	85	130	30	.23	8.4
Annual	164	94	129	17	.13	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1967-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	11	5.6	3.8	2.7	-----	-----
3	17	8.3	5.2	3.5	-----	-----
7	23	12	7.2	4.5	-----	-----
14	29	15	9.4	5.9	-----	-----
30	37	20	13	7.7	-----	-----
60	52	33	24	17	-----	-----
90	61	49	41	35	-----	-----
120	66	53	45	38	-----	-----
183	72	66	62	59	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 13 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
749	1270	1620	2100	2450	2850

Weighted skew = 0.145

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1966-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	706	1040	1250	1500	-----	-----
3	649	962	1160	1410	-----	-----
7	577	832	994	1190	-----	-----
15	517	732	870	1040	-----	-----
30	443	610	716	845	-----	-----
60	340	445	512	594	-----	-----
90	285	354	397	448	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1966-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time															
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
731	403	247	202	185	139	100	80	72	65	49	34	25	17	7.9	4.2	3.1

06204500 ROSEBUD CREEK NEAR ABSAROKEE, MONT.

LOCATION.--Lat 45°29'10", long 109°27'20", in SW¼NW¼ sec. 13, T. 4 S., R. 18 E., Stillwater County, Hydrologic Unit 10070005, on right bank 80 ft (24.4 m) downstream from Smith Bridge, 0.2 mi (0.3 km) downstream from confluence of East and West Rosebud Creeks, and 2.5 mi (4.0 km) south of Absarokee.

DRAINAGE AREA.--394 mi^2 (1,020 km^2).

PERIOD OF RECORD.--April 1935 to September 1969 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 4,160 ft (1,268 m) by barometer. Prior to July 14, 1942, staff gage at same site and datum.

REMARKS.--Flow partly regulated by Mystic Lake. Diversions for irrigation of about 16,000 acres (64.6 km^2) above station.

AVERAGE DISCHARGE.--34 years, 407 ft^3/s (11.53 m^3/s), 14.03 in./yr (356 mm/yr), 294,900 acre-ft/yr (364 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,790 ft^3/s (164 m^3/s) June 15, 1967 [including 300 ft^3/s (8.5 m^3/s) bypass flow from Butcher Creek], gage height, 5.28 ft (1.609 m); maximum gage height, 6.36 ft (1.939 m) June 22, 1937; minimum discharge observed, 31 ft^3/s (0.88 m^3/s) May 25, Dec. 29, 1936.

MONTHLY AND ANNUAL MEAN DISCHARGES 1936-69

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	449	149	246	61	0.25	5.0
November	274	130	200	33	.17	4.1
December	215	113	166	26	.16	3.4
January	201	47	148	34	.23	3.0
February	226	51	144	37	.26	3.0
March	278	91	165	43	.26	3.4
April	545	66	214	86	.40	4.4
May	892	223	530	196	.37	10.9
June	2250	598	1210	411	.34	24.8
July	1910	383	1070	410	.38	21.9
August	741	225	470	146	.31	9.6
September	605	125	312	97	.31	6.4
Annual	634	241	407	97	.24	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1936-69

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	88	65	53	44	35	----
3	96	72	60	50	40	----
7	106	80	66	55	43	----
14	115	87	72	59	46	----
30	127	97	79	64	49	----
60	143	114	96	80	64	----
90	148	120	105	92	78	----
120	154	128	114	102	89	----
183	176	151	139	129	119	----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 35 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
2340	3330	4070	5050	5830	6600

Weighted skew = 0.164

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1936-69

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	2110	2880	3410	4090	4610	-----
3	1950	2590	3010	3510	3880	-----
7	1760	2320	2650	3040	3310	-----
15	1530	2010	2310	2660	2910	-----
30	1360	1790	2050	2360	2590	-----
60	1140	1480	1690	1940	2110	-----
90	958	1230	1390	1580	1710	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1936-69

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
2160	1370	985	756	579	366	278	229	198	172	150	126	110	85	67	49	42

06205000 STILLWATER RIVER NEAR ABSAROKEE, MONT.

LOCATION.--Lat 45°33'04", long 109°23'12", in NE¼NE¼NW¼ sec. 28, T. 3 S., R. 19 E., Stillwater County, Hydrologic Unit 10070005, on right bank 3 mi (5 km) downstream from Rosebud Creek, 3.5 mi (5.6 km) northeast of Absarokee, 9 mi (4 km) southwest of Columbus, and at mile 9.4 (15.1 km).

DRAINAGE AREA.--975 mi^2 (2,525 km^2).

PERIOD OF RECORD.--July 1910 to September 1914 (no winter records), March 1935 to current year.

REVISED RECORDS.--WSP 1309: 1911(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,873.8 ft (1,180.73 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 1, 1914, nonrecording gage, and Mar. 26, 1935, to Sept. 30, 1942, nonrecording gage, at bridge 2 mi (3 km) upstream at different datums.

REMARKS.--Flow partly regulated by Mystic Lake (station number 06204000). Diversions for irrigation of about 24,300 acres (98.3 km^2), of which 400 acres (1.62 km^2) lies below station.

AVERAGE DISCHARGE.--47 years (1935-82), 968 ft^3/s (27.41 m^3/s), 701,300 acre-ft/yr (865 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft^3/s (340 m^3/s) June 15, 1967, gage height, 7.17 ft (2.185 m); minimum observed, 58 ft^3/s (1.64 m^3/s) Apr. 2, 1936.

MONTHLY AND ANNUAL MEAN DISCHARGES 1912, 1936-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	852	270	506	136	0.27	4.4
November	541	227	399	75	.19	3.4
December	430	184	321	55	.17	2.8
January	413	116	275	70	.26	2.4
February	449	103	270	74	.27	2.3
March	565	162	290	92	.32	2.5
April	1190	144	416	166	.40	3.6
May	2880	661	1500	523	.35	12.9
June	5780	1570	3590	1020	.29	30.9
July	6370	626	2480	1100	.44	21.4
August	1450	432	921	299	.32	7.9
September	1100	275	641	216	.34	5.5
Annual	1470	507	970	218	.23	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1936-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	171	125	102	84	66	55
3	184	141	117	98	79	67
7	199	159	139	122	105	94
14	216	173	150	131	111	98
30	240	194	166	143	118	102
60	264	218	192	171	147	131
90	279	234	207	185	160	144
120	294	248	221	199	175	159
183	352	294	263	238	210	192

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 48 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
6550	8410	9640	11300	12500	13800

Weighted skew = 0.128

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1912, 1936-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	6030	7690	8730	10000	11000	11900
3	5550	7090	8070	9260	10100	11000
7	5060	6530	7460	8590	9400	10200
15	4420	5720	6520	7500	8200	8880
30	3900	4990	5650	6400	6920	7420
60	3180	4020	4490	4990	5320	5610
90	2580	3230	3590	3960	4200	4410

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1912, 1936-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
6050	3770	2670	1860	1330	787	571	453	381	326	282	237	201	157	119	58	58

06207500 CLARKS FORK YELLOWSTONE RIVER NEAR BELFRY, MONT.

LOCATION.--Lat 45°00'37", long 109°03'53", in NW¼SW¼NW¼ sec. 32, T. 9 S., R. 22 E., Carbon County, Hydrologic Unit 10070006, on left bank 0.2 mi (0.3 km) upstream from county road bridge and Big Sand Coulee, 0.8 mi (1.3 km) north of Wyoming-Montana State line, 9.5 mi (15.3 km) southwest of Belfry, and at mile 71.2 (114.6 km).

DRAINAGE AREA.--1,154 mi^2 (2,989 km^2).

PERIOD OF RECORD.--July 1921 to current year. Monthly discharge only for some periods, published in WSP 1309. Published as Clarks Fork at Chance prior to October 1956 and as Clarks Fork Yellowstone River at Chance October 1956 to September 1968.

REVISED RECORDS.--WSP 1309: 1922 (M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,986.24 ft (1,215.006 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Nov. 15, 1934, nonrecording gage, and Nov. 15, 1934, to July 26, 1951, water-stage recorder at bridge 0.4 mi (0.6 km) downstream of different datum. July 27, 1951, to Sept. 30, 1953, water-stage recorder at present site at datum 0.98 ft (0.299 m) higher.

REMARKS.--Diversions for irrigation of about 11,100 acres (44.9 km^2) above station.

AVERAGE DISCHARGE.--61 years, 955 ft^3/s (27.05 m^3/s), 691,900 acre-ft/yr (853 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,800 ft^3/s (419 m^3/s) June 9, 1981, gage height, 9.97 ft (3.039 m); minimum observed, 32 ft^3/s (0.91 m^3/s) Apr. 26, 1961, result of discharge measurement.

MONTHLY AND ANNUAL MEAN DISCHARGES 1922-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	725	62	293	151	0.51	2.6
November	648	149	298	90	.30	2.6
December	379	110	262	55	.21	2.3
January	345	110	229	46	.20	2.0
February	329	100	223	46	.20	2.0
March	364	96	217	43	.20	1.9
April	1170	111	411	210	.51	3.6
May	5700	839	2020	858	.42	17.7
June	6630	2460	4170	1060	.25	36.5
July	5740	469	2320	1120	.48	20.2
August	1450	142	649	317	.49	5.7
September	834	104	349	163	.47	3.0
Annual	1460	547	955	206	.22	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1923-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	130	93	74	61	47	39
3	138	98	79	64	49	40
7	151	109	87	70	53	43
14	159	116	95	78	61	51
30	174	130	108	91	74	63
60	197	153	130	112	93	81
90	209	172	153	138	122	112
120	222	188	171	158	144	135
183	247	208	190	176	162	154

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 57 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
7560	9010	9880	10900	11700	12400

Weighted skew = 0.014

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1922-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	7160	8690	9620	10700	11500	12300
3	6720	8120	8970	9980	10700	11400
7	6080	7480	8340	9360	10100	10800
15	5280	6610	7430	8430	9140	9840
30	4550	5590	6210	6940	7440	7920
60	3610	4380	4820	5330	5670	5990
90	2850	3470	3820	4230	4510	4770

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1922-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
7050	4370	2950	2060	1310	585	383	312	266	236	206	171	147	116	99	84	53

06207540 SILVER TIP CREEK NEAR BELFRY, MONT.

LOCATION.--Lat 45°09'32", long 108°58'31", in NE¼NW¼ sec. 12, T. 8 S., R. 22 E., Carbon County, Hydrologic Unit 10070006, on right bank 0.1 mi (0.2 km) upstream from county bridge, 1.5 mi (2.4 km) upstream from mouth, and 2.0 mi (3.2 km) northeast of Belfry.

DRAINAGE AREA.--88.0 mi^2 (228 km^2). Area at site used prior to May 12, 1972, 87.6 mi^2 (227 km^2).

PERIOD OF RECORD.--October 1967 to September 1975 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 3,830 ft (1,170 m), from topographic map. Prior to May 12, 1972, at site 0.4 mi (0.6 km) upstream at different datums.

REMARKS.--Flow affected by oil recovery operations in Elk Basin oil field. No diversions above station.

AVERAGE DISCHARGE.--8 years, 2.14 ft^3/s (0.061 m^3/s), 1,550 acre-ft/yr (1.91 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,100 ft^3/s (31.2 m^3/s) June 9, 1972, gage height, 10.5 ft (3,200 m), from floodmark, from rating curve extended above 20 ft^3/s (0.57 m^3/s) on basis of slope-area measurement of peak flow (includes 100 ft^3/s or 2.83 m^3/s, bypass flow in Clarks Fork and Silver Tip Ditch); no flow at times each year.

MONTHLY AND ANNUAL MEAN DISCHARGES 1968-75

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	2.9	0.30	1.4	0.92	0.68	5.3
November	1.4	.25	.85	.38	.45	3.3
December	.46	.02	.16	.14	.91	.6
January	1.7	.00	.38	.67	1.8	1.5
February	27	.00	4.2	9.3	2.2	16.2
March	5.6	.18	3.0	1.7	.55	11.7
April	12	.96	2.9	3.8	1.3	11.4
May	5.1	.50	2.1	1.9	.89	8.1
June	27	.10	6.0	9.0	1.5	23.3
July	2.6	.08	1.0	.96	.93	4.0
August	17	.00	2.6	5.9	2.3	10.0
September	4.1	.00	1.2	1.4	1.2	4.5
Annual	4.8	.48	2.1	1.5	.68	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1969-75

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1				-----	-----	-----
3				-----	-----	-----
7				-----	-----	-----
14				-----	-----	-----
30				-----	-----	-----
60	0.02	0.00	0.00	-----	-----	-----
90	.11	.06	.05	-----	-----	-----
120	.26	.16	.13	-----	-----	-----
183	.45	.31	.26	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 8 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1968-75

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	67	174	287	-----	-----	-----
3	40	99	166	-----	-----	-----
7	23	55	90	-----	-----	-----
15	14	36	60	-----	-----	-----
30	8.6	21	33	-----	-----	-----
60	5.7	12	18	-----	-----	-----
90	4.6	9.2	13	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1968-75

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
30	6.1	3.3	2.3	1.8	1.2	.77	.36	.12	.01	.01	.01	.01	.01	.01	.01	.01

06207800 BLUEWATER CREEK NEAR BRIDGER, MONT.

LOCATION.--Lat 45°19'54", long 108°48'04", in NW¼NW¼ sec. 9, T. 6 S., R. 24 E., Carbon County, Hydrologic Unit 10070006, on right bank 200 ft (61 m) downstream from outflow of State fish hatchery, 6 mi (10 km) northeast of Bridger, and 8 mi (13 km) upstream from mouth.

DRAINAGE AREA.--28.1 mi^2 (72.8 km^2).

PERIOD OF RECORD.--March 1960 to September 1970 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 3,910 ft (1,192 m) from topographic map.

REMARKS.--Some small diversions for irrigation.

AVERAGE DISCHARGE.--10 years, 28.2 ft^3/s (0.799 m^3/s), 20,430 acre-ft/yr (25.2 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,650 ft^3/s (75.0 m^3/s) June 19, 1964, gage height, 9.92 ft (3.024 m) from floodmark, from rating curve extended above 40 ft^3/s (1.1 m^3/s) on basis of slope-area measurement of peak flow; minimum, 19 ft^3/s (0.54 m^3/s) July 14, 1960.

MONTHLY AND ANNUAL MEAN DISCHARGES 1961-70

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	30	27	28	1.3	0.05	8.3
November	32	26	29	2.1	.07	8.4
December	32	27	29	1.7	.06	8.4
January	31	26	29	1.8	.06	8.5
February	31	27	29	1.7	.06	8.5
March	31	27	29	1.4	.05	8.5
April	32	28	29	1.3	.04	8.7
May	33	27	29	1.8	.06	8.5
June	32	26	28	2.4	.08	8.3
July	32	24	26	2.5	.10	7.8
August	28	25	26	1.2	.05	7.7
September	31	26	28	1.8	.06	8.3
Annual	31	27	28	1.4	.05	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1961-70

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	23	22	21	20	-----	-----
3	24	22	21	20	-----	-----
7	24	23	22	21	-----	-----
14	24	23	23	22	-----	-----
30	25	24	24	24	-----	-----
60	25	24	24	24	-----	-----
90	26	25	24	24	-----	-----
120	26	25	25	25	-----	-----
183	27	26	26	25	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 11 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
121	358	653	1220	1830	2630

Weighted skew = 0.149

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1961-70

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	40	55	68	-----	-----	-----
3	35	42	47	-----	-----	-----
7	33	36	39	-----	-----	-----
15	32	34	35	-----	-----	-----
30	31	33	33	-----	-----	-----
60	30	32	32	-----	-----	-----
90	30	31	32	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1961-70

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
34	33	32	31	31	30	29	28	28	27	27	26	25	24	24	24	23

06208500 CLARKS FORK YELLOWSTONE RIVER AT EDGAR, MONT.

LOCATION.--Lat 45°28'00", long 108°50'30", in SE¼SE¼ sec. 23, T. 4 S., R. 23 E., Carbon County, Hydrologic Unit 10070006, on right bank just downstream from highway bridge, 0.5 mi (0.8 km) east of Edgar, 6 mi (10 km) upstream from Rock Creek, and at mile 27.0 (43.4 km).

DRAINAGE AREA.--2.032 mi^2 (5,263 km^2).

PERIOD OR RECORD.--July 1921 to September 1969 (discontinued). Prior to October 1956, published as Clarks Fork at Edgar. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Digital water-stage recorder. Altitude of gage is 3,440 ft (1,049 m) by barometer. Prior to Sept. 18, 1940, chain gage, Sept. 18, 1940, to Aug. 31, 1953, wire-weight gage, and Sept. 1, 1953, to June 13, 1966, graphic water-stage recorder, all at present site and datum.

REMARKS.--Diversions for irrigation of about 41,500 acres (168 km^2) of which about 840 acres (3.4 km^2) lies below station. In addition, about 6,300 acres (25.5 km^2) of land above station is irrigated by diversions from the adjoining Rock Creek basin.

AVERAGE DISCHARGE.--48 years, 1,044 ft^3/s (29.57 m^3/s), 756,400 acre-ft/yr (933 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed 10,900 ft^3/s (309 m^3/s) June 2, 1936, gage height, 8.62 ft (2.627 m); minimum, 36 ft^3/s (1.02 m^3/s) Apr. 22, 1961.

MONTHLY AND ANNUAL MEAN DISCHARGES 1922-69

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	1010	298	531	179	0.34	4.2
November	777	311	499	106	.21	4.0
December	583	217	404	77	.19	3.2
January	471	200	347	69	.20	2.8
February	584	180	347	80	.23	2.8
March	554	220	364	79	.22	2.9
April	1400	123	544	222	.41	4.3
May	5580	757	2070	876	.42	16.5
June	6840	2620	4150	1070	.26	33.1
July	4770	323	2120	1040	.49	16.9
August	1540	102	647	342	.53	5.2
September	1400	192	506	218	.43	4.0
Annual	1560	698	1040	209	.20	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1923-69

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	204	140	103	76	50	36
3	222	154	115	85	57	42
7	243	170	128	95	64	47
14	262	187	144	111	78	60
30	293	214	168	132	95	74
60	312	254	226	203	179	164
90	332	285	262	244	224	212
120	358	313	290	271	252	239
183	408	352	325	304	282	268

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 56 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
7680	9370	10400	11700	12700	13700

Weighted skew = -0.100

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1922-69

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	7050	8460	9250	10100	10700	11200
3	6510	7870	8660	9570	10200	10800
7	5880	7270	8100	9080	9770	10400
15	5100	6420	7250	8260	9000	9720
30	4430	5510	6190	7030	7650	8260
60	3490	4240	4710	5280	5690	6090
90	2770	3370	3740	4180	4490	4790

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1922-69

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
6950	4220	2900	2050	1300	720	551	471	421	373	328	275	239	200	165	134	58

06208800 CLARKS FORK YELLOWSTONE RIVER NEAR SILESIA, MONT.

LOCATION.--Lat 45°30'48", long 108°49'42", in NW¼SE¼ sec. 1, T. 4 S., R. 23 E., Carbon County, Hydrologic Unit 10070006, on left bank 0.5 mi (0.8 km) downstream from Whitehorse Canal intake, 1 mi (2 km) upstream from Rock Creek, 3 mi (5 km) south of Silesia, and at mile 16.3 (26.2 km).

DRAINAGE AREA.--2,093 mi^2 (5,421 km^2).

PERIOD OF RECORD.--October 1969 to current year. Records for July 1921 to September 1969 (published as Clarks Fork Yellowstone River at Edgar) at site 5.8 mi (9.3 km) upstream not equivalent because of diversion into Whitehorse Canal during irrigation season.

GAGE.--Water-stage recorder. Datum of gage is 3,405.79 ft (1,038.085 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Corps of Army Engineers).

REMARKS.-Diversion for irrigation of about 45,900 acres (186 km^2), revised, of which about 2,180 acres (8.82 km^2), revised, lies below station. In addition, about 56,200 acres (227 km^2), revised, of land above station is irrigated by diversions from the adjoining Rock Creek basin.

AVERAGE DISCHARGE.--13 years, 1,197 ft^3/s (33.90 m^3/s), 867,200 acre-ft/yr (1.07 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,500 ft^3/s (382 m^3/s) June 10, 1981, gage height, 8.36 ft (2.548 m), from rating curve extended above 7.40 ft (2.256 m); minimum, 56 ft^3/s (1.59 m^3/s) Apr. 25, 1981, gage height, 0.53 ft (0.162 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1970-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	950	484	629	147	0.23	4.4
November	669	489	568	69	.12	4.0
December	680	401	494	75	.15	3.4
January	508	291	407	60	.15	2.8
February	499	350	427	49	.12	3.0
March	596	334	437	85	.19	3.0
April	761	337	527	133	.25	3.7
May	3230	1030	2030	617	.30	14.1
June	6660	2330	4680	1250	.27	32.6
July	5600	423	2650	1370	.52	18.4
August	1250	333	804	329	.41	5.6
September	1020	263	697	248	.36	4.9
Annual	1510	661	1200	229	.19	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1971-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	176	121	95	76	-----	-----
3	198	149	126	108	-----	-----
7	248	189	159	136	-----	-----
14	276	220	195	176	-----	-----
30	340	288	262	241	-----	-----
60	391	334	302	275	-----	-----
90	406	371	355	342	-----	-----
120	429	402	391	384	-----	-----
183	491	440	416	396	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 56 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent

2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
7680	9370	10400	11700	12700	13700

Weighted skew = -0.100

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1970-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	8330	9980	10800	-----	-----	-----
3	7890	9530	10400	-----	-----	-----
7	6950	8690	9680	-----	-----	-----
15	6070	7690	8560	-----	-----	-----
30	5200	6330	6800	-----	-----	-----
60	4290	5010	5220	-----	-----	-----
90	3360	3950	4140	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1970-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
7660	4770	3270	2200	1410	864	659	557	508	458	406	344	285	227	199	181	114

06209500 ROCK CREEK NEAR RED LODGE, MONT.

LOCATION.--Lat 45°07'15", long 109°17'45", in NW¼NW¼ sec. 20, T. 8 S., R. 20 E., Carbon County, Hydrologic Unit 10070006, on left bank 10 ft (3.0 m) downstream from bridge, 3.2 mi (5.1 km) upstream from West Fork, 4.5 mi (7.2 km) southwest of Red Lodge, and at mile 46.0 (74.0 km).

DRAINAGE AREA.--124 mi^2 (321 km^2).

PERIOD OF RECORD.--April to December 1932, May 1934 to September 30, 1982 (discontinued). Monthly discharge only for May 1934, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6,099.42 ft (1,859.103 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 1, 1937, nonrecording gage at same site and datum.

REMARKS.--Flow partly regulated by Glacier Lake. No diversions above station.

AVERAGE DISCHARGE.--48 years, 174 ft^3/s (4.928 m^3/s), 126,100 acre-ft/yr (155 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,110 ft^3/s (88.1 m^3/s) June 4, 1957, gage height, 4.78 ft (1.457 m), from rating curve extended above 1,300 ft^3/s (36.8 m^3/s); maximum gage height observed, 4.80 ft (1.463 m) June 1937; minimum discharge observed, 14 ft^3/s (0.40 m^3/s) Nov. 29, 1954, result of discharge measurement.

MONTHLY AND ANNUAL MEAN DISCHARGES 1935-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	124	50	84	18	0.21	4.0
November	78	40	56	10	.18	2.7
December	56	27	42	6.1	.14	2.0
January	45	26	35	4.8	.14	1.7
February	42	23	32	4.0	.13	1.5
March	40	24	30	3.4	.11	1.4
April	99	24	41	12	.30	1.9
May	460	88	220	90	.41	10.6
June	1130	273	615	182	.30	29.5
July	1090	224	517	181	.35	24.8
August	427	158	266	63	.24	12.8
September	219	89	144	31	.21	6.9
Annual	251	105	174	34	.20	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1936-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	23	20	18	16	15	14
3	24	21	19	18	16	16
7	25	23	21	20	19	19
14	27	25	23	22	21	21
30	28	26	25	23	22	22
60	30	28	26	25	24	23
90	32	29	27	26	25	23
120	35	31	30	28	26	25
183	47	41	39	37	35	33

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 46 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
1210	1710	2060	2500	2830	3170

Weighted skew = 0.064

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1935-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	1090	1450	1670	1930	2110	2280
3	999	1310	1490	1710	1860	2000
7	901	1180	1350	1540	1680	1800
15	785	1010	1140	1290	1380	1480
30	692	878	981	1090	1170	1230
60	582	729	812	904	965	1020
90	489	600	662	730	775	816

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1935-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1060	677	497	375	285	172	100	65	47	39	34	30	27	24	23	22	19

06210500 WEST FORK ROCK CREEK NEAR RED LODGE, MONT.

LOCATION.--Lat 45°09'00", long 109°19'00", in SE¼ sec. 6, T. 8 S., R. 20 E., Carbon County, Hydrologic Unit 10070006, at U.S. Ranger Station, 2 mi (3 km) upstream from mouth, and 3 mi (5 km) southwest of Red Lodge.

DRAINAGE AREA.--66.9 mi^2 (173 km^2).

PERIOD OF RECORD.--May 1932 to December 1932, May 1934 to September 1944 (discontinued).

GAGE.--Staff gage. Altitude of gage is 6,060 ft (1,847 m) from topographic map.

REMARKS.--Diversion above station for irrigation of about 3,000 acres (12.1 km^2), all of which is below station.

AVERAGE DISCHARGE.--10 years (1935-44), 66.5 ft^3/s (1.883 m^3/s), 13.50 in./yr (343 mm/yr), 48,160 acre-ft/yr (59.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,850 ft^3/s (52.4 m^3/s) June 22, 1937, gage height, 6.10 ft (1.859 m) from floodmark, from rating curve extended above 675 ft^3/s (19.1 m^3/s); minimum observed, 2.5 ft^3/s (0.071 m^3/s) Nov. 18, 1939, gage height, 0.58 ft (0.177 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1935-44

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	72	10	27	20	0.72	3.5
November	43	10	23	11	.48	2.9
December	34	13	19	6.9	.37	2.4
January	26	9.9	15	4.8	.32	1.9
February	23	9.4	13	3.9	.30	1.7
March	21	8.6	13	3.5	.28	1.6
April	64	8.1	23	16	.72	2.9
May	190	43	105	50	.48	13.2
June	458	148	275	108	.39	34.5
July	338	57	178	101	.57	22.4
August	119	29	63	33	.53	7.9
September	94	14	42	26	.62	5.3
Annual	111	34	67	28	.43	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1936-44

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	6.3	4.1	3.2	-----	-----	-----
3	8.0	5.4	4.2	-----	-----	-----
7	8.7	6.0	4.8	-----	-----	-----
14	9.0	6.8	5.9	-----	-----	-----
30	10	8.5	7.8	-----	-----	-----
60	12	9.8	9.2	-----	-----	-----
90	13	10	9.5	-----	-----	-----
120	14	11	10	-----	-----	-----
183	17	13	11	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 12 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
532	802	995	1250	1450	1650

Weighted skew = 0.100

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1935-44

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	538	775	950	-----	-----	-----
3	476	672	801	-----	-----	-----
7	398	563	666	-----	-----	-----
15	331	464	546	-----	-----	-----
30	274	385	459	-----	-----	-----
60	218	315	385	-----	-----	-----
90	174	252	309	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1935-44

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
501	279	178	127	96	53	35	24	18	15	13	11	9.1	7.9	7.0	5.9	3.3

06212500 RED LODGE CREEK BELOW COONEY RESERVOIR, NEAR BOYD, MONT.

LOCATION.--Lat 45°26'59", revised, long 109°11'06", in NE¼NW¼NW¼ sec. 31, T. 4 S., R. 21 E., Carbon County, Hydrologic Unit 10070006, on right bank 400 ft (122 m) upstream from Cottonwood Creek, 1.5 mi (2.4 km) downstream from Cooney Dam, 6 mi (10 km) west of Boyd, and at mile 10.5 (16.9 km).

DRAINAGE AREA.--210 mi^2 (544 km^2).

PERIOD OF RECORD.--September 1937 to current year.

REVISED RECORDS.--WSP 1309: 1942(M), 1944(M). WSP 2116: 1957(M).

GAGE.--Water-stage recorder. Datum of gage is 4,139.12 ft (1,261.604 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Some return flow from lands irrigated by water diverted from Rock Creek and East Rosebud Creek basins. Flow completely regulated by Cooney Reservoir (station number 06212000). Diversions for irrigation of about 6,900 acres (27.9 km^2) above station.

AVERAGE DISCHARGE.--45 years, 102 ft^3/s (2.889 m^3/s), 73,900 acre-ft/yr (91.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,470 ft^3/s (98.3 m^3/s) June 15, 1967, gage height, 10.17 ft (3.100 m), no flow Oct. 6, 7, 1948, Oct. 7, 8, 12, 16, 17, 1975.

MONTHLY AND ANNUAL MEAN DISCHARGES 1938-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	234	2.4	85	52	0.61	7.0
November	212	3.5	73	57	.78	6.0
December	121	3.5	39	30	.76	3.2
January	95	2.0	30	22	.74	2.4
February	139	2.2	32	28	.89	2.6
March	231	2.4	47	50	1.1	3.8
April	253	3.2	84	68	.81	6.9
May	801	5.1	180	159	.88	14.8
June	685	49	231	156	.68	19.0
July	383	57	173	76	.44	14.2
August	199	60	133	39	.30	10.9
September	197	20	111	44	.39	9.1
Annual	226	24	102	40	.39	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1939-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	5.9	2.4	1.3	0.66	0.20	0.04
3	6.1	2.7	1.7	1.2	.74	.54
7	6.9	3.4	2.4	1.8	1.3	1.0
14	9.0	4.4	3.0	2.2	1.5	1.2
30	12	5.7	3.8	2.7	1.8	1.4
60	15	7.1	4.7	3.3	2.2	1.6
90	21	9.8	6.4	4.4	2.8	2.0
120	27	13	8.3	5.6	3.4	2.4
183	46	25	17	12	8.2	6.1

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 41 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1938-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	381	712	1050	1690	2360	3250
3	374	660	923	1360	1780	2280
7	356	593	785	1070	1310	1580
15	318	516	667	881	1060	1240
30	265	422	543	717	861	1020
60	217	332	419	540	640	747
90	192	286	353	443	514	588

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1938-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
570	309	231	190	163	125	94	68	49	34	20	7.9	5.2	3.6	2.6	2.2	1.6

06214500 YELLOWSTONE RIVER AT BILLINGS, MONT.

LOCATION.--Lat 45°47'48", long 108°28'12", in NE¼NE¼ sec. 34, T. 1 N., R. 26 E., Yellowstone County, Hydrologic Unit 10070007, on left bank 30 ft (9.1 m) downstream from bridge on U.S. Highway 87, 1 mi (2 km) northeast of Billings, 10 mi (16 km) upstream from Pryor Creek, and at mile 360.6 (580.2 km).

DRAINAGE AREA.--11,795 mi^2 (30,549 km^2). Area at site used Jan. 10, 1963, to Dec. 2, 1967, 11,783 mi^2 (30,518 km^2).

PERIOD OF RECORD.--May 1904 to December 1905 (gage heights only January to March, December 1905), August 1928 to current year. Monthly discharge only for some periods, published in WSP 1309. Published as "near Billings" 1904-5.

REVISED RECORDS.--WDR MT. 1968: 1967 (M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,081.36 ft (939.199 m) National Geodetic Vertical Datum of 1929. May 1904 to December 1905, nonrecording gage at bridge 30 ft (9.1 m) upstream at different datum. Aug. 24, 1928, to June 30, 1932, nonrecording gage at bridge 30 ft (9.1 m) upstream at datum 2.0 ft (0.61 m) higher. July 1, 1932, to Oct. 12, 1937, water-stage recorder at old diversion dam 3 mi (5 km) upstream at different datum. Oct. 13, 1937, to Jan. 9, 1963, water-stage recorder at present site at datum 2.0 ft (0.61 m) higher. Jan. 10, 1963, to Dec. 2, 1967, water-stage recorder at city of Billings Water Department intake, 1.8 mi (2.9 km) upstream at datum 3,096.09 ft (943.688 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Diversions for irrigation of about 350,000 acres (1,420 km^2) above station.

AVERAGE DISCHARGE.--54 years (1928-82), 7,072 ft^3/s (200.3 m^3/s), 5,124,000 acre-ft/yr (6.32 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 69,500 ft^3/s (1,970 m^3/s), June 19, 1974, gage height, 14.60 ft (4.450 m); maximum gage height, 14.76 ft (4.499 m) June 16, 1967, present datum, from floodmark; minimum discharge, 430 ft^3/s (12.2 m^3/s) Dec. 12, 1932.

MONTHLY AND ANNUAL MEAN DISCHARGES 1929-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	6800	2480	4010	1060	0.26	4.7
November	4850	2280	3570	673	.19	4.2
December	4450	1580	2800	548	.20	3.3
January	3550	1360	2470	489	.20	2.9
February	4100	1560	2690	632	.23	3.2
March	5480	2020	3100	751	.24	3.7
April	8800	1440	4120	1350	.33	4.9
May	23400	5640	12400	3990	.32	14.6
June	41200	9850	25900	7450	.29	30.6
July	37200	3410	14200	6940	.49	16.7
August	9670	1710	5340	2090	.39	6.3
September	7300	1880	4190	1400	.33	4.9
Annual	10300	4030	7070	1640	.23	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1930-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	1270	944	783	660	535	459
3	1370	1040	881	755	624	545
7	1560	1240	1090	968	844	767
14	1850	1510	1340	1210	1070	976
30	2170	1770	1570	1410	1240	1130
60	2410	2030	1830	1680	1510	1400
90	2530	2170	1980	1840	1680	1580
120	2670	2310	2140	2000	1850	1760
183	3020	2590	2380	2230	2060	1960

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 53 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
40600	53000	58500	66200	72000	80000

Weighted skew = -0.250

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1929-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	39900	49900	55200	60800	64300	67400
3	37800	47700	53000	58700	62400	65600
7	34800	44400	49900	55800	59700	63300
15	30900	39600	44600	50300	54100	57700
30	27100	34700	39100	44000	47200	50200
60	21800	27600	30900	34700	37100	39400
90	17500	22200	24800	27600	29500	31200

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1929-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
41100	26100	18200	12900	8910	5630	4370	3760	3330	2960	2590	2180	1860	1520	1340	1170	874

06215000 PRYOR CREEK ABOVE PRYOR, MONT.

LOCATION.--Lat 45°20'26", long 108°34'07", in SW¼NE¼ sec. 6, T. 6 S., R. 26 E., Big Horn County, on right bank 1.2 mi (1.9 km) upstream from headworks of Pryor Ditch No. 1 and 6.7 mi (10.8 km) south of Pryor.

DRAINAGE AREA.--39.6 mi^2 (103 km^2).

PERIOD OF RECORD.--April 1921 to October 1924 (no winter records), October 1966 to September 1974 (discontinued). Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1590: 1923.

GAGE.--Water-stage recorder. Altitude of gage is 4,440 ft (1,350 m), from topographic map. Prior to Oct. 1, 1966, water-stage recorder 1 mi (1.6 km) downstream at different datum.

AVERAGE DISCHARGE.--8 years (1966-74), 8.18 ft^3/s (0.232 m^3/s), 5,930 acre-ft/yr (7.31 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 575 ft^3/s (16.3 m^3/s) June 26, 1969, gage height, 4.23 ft (1.289 m); no flow at times in water years 1969-73.

MONTHLY AND ANNUAL MEAN DISCHARGES 1967-74

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	5.3	0.00	2.2	2.2	0.97	2.3
November	5.5	.00	2.1	2.4	1.1	2.1
December	4.4	.00	1.7	2.0	1.2	1.7
January	4.3	.00	1.5	2.0	1.3	1.6
February	6.2	.00	2.0	2.5	1.2	2.1
March	5.3	.00	1.9	2.2	1.2	1.9
April	18	.00	4.6	5.8	1.3	4.7
May	95	14	35	29	.81	36.2
June	62	7.8	32	18	.56	32.6
July	14	2.2	8.1	4.5	.56	8.3
August	7.9	.47	3.7	2.9	.78	3.8
September	5.6	.11	2.7	2.3	.84	2.8
Annual	15	2.8	8.2	3.7	.45	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1968-74

Period (consecutive days)	Discharge, in ft^3/s for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1			-----	-----	-----	-----
3			-----	-----	-----	-----
7			-----	-----	-----	-----
14			-----	-----	-----	-----
30	0.00	0.00	-----	-----	-----	-----
60	.14	.00	-----	-----	-----	-----
90	.23	.00	-----	-----	-----	-----
120	.27	.00	-----	-----	-----	-----
183	.53	.06	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 12 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
143	285	403	580	731	902

Weighted skew = -0.150

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1967-74

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	131	279	-----	-----	-----	-----
3	104	194	-----	-----	-----	-----
7	78	135	-----	-----	-----	-----
15	54	93	-----	-----	-----	-----
30	39	68	-----	-----	-----	-----
60	29	49	-----	-----	-----	-----
90	22	37	-----	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1967-74

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time															
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
109	34	19	12	8.1	5.7	4.5	3.3	1.5	.49	.06	.02	.02	.02	.02	.02	.02

06216000 PRYOR CREEK AT PRYOR, MONT.

LOCATION.--Lat 45°26'06", long 108°32'01", in NE¼NW¼NE¼ sec. 5, T. 5 S., R. 26 E., Big Horn County, Hydrologic Unit 10070008, on left bank 60 ft (18 km) upstream from county bridge, 0.5 mi (0.8 km) north of Pryor, 1.4 mi (2.3 km) downstream from Lost Creek, and at mile 82.7 (133.1 km).

DRAINAGE AREA.--117 mi^2 (303 km^2).

PERIOD OF RECORD.--June 1921 to September 1924 (no winter records), October 1966 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,007.35 ft (1,221.440 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 14, 1966, nonrecording gage at approximately same site at different datum.

REMARKS.--Diversions for irrigation of about 1,100 acres (4.45 km^2) above station.

AVERAGE DISCHARGE.--16 years (water years 1967-82), 40.2 ft^3/s (1.138 m^3/s), 29,120 acre-ft/yr (35.9 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,280 ft^3/s (64.6 m^3/s) May 19, 1978, gage height, 8.88 ft (2.707 m), from floodmark, from rating curve extended above 410 ft^3/s (11.6 m^3/s) on basis of contracted-opening measurement of peak flow; minimum observed, 3.4 ft^3/s (0.10 m^3/s) June 24, 1921, gage height, 0.86 ft (0.262 m), site and datum then in use.

MONTHLY AND ANNUAL MEAN DISCHARGES 1968-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	63	21	39	11	0.28	7.9
November	62	22	38	11	.29	7.7
December	70	22	38	12	.32	7.6
January	54	21	35	9.2	.26	7.1
February	56	23	37	9.9	.27	7.5
March	71	24	40	12	.31	8.0
April	59	18	40	13	.33	8.0
May	251	23	76	60	.79	15.3
June	158	24	61	37	.61	12.4
July	69	15	32	15	.47	6.5
August	50	10	26	10	.41	5.2
September	61	21	34	12	.34	6.8
Annual	66	24	41	13	.31	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1968-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	16	11	8.6	7.2	-----	-----
3	17	11	8.9	7.3	-----	-----
7	18	12	9.3	7.7	-----	-----
14	19	12	9.8	8.1	-----	-----
30	20	13	11	8.7	-----	-----
60	24	16	13	11	-----	-----
90	26	19	16	14	-----	-----
120	29	21	19	16	-----	-----
183	31	24	21	19	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 14 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
186	359	524	781	1010	1270

Weighted skew = 0.246

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1968-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	146	318	533	1010	-----	-----
3	125	265	430	779	-----	-----
7	106	208	315	514	-----	-----
15	91	163	233	352	-----	-----
30	76	126	172	246	-----	-----
60	63	98	129	178	-----	-----
90	56	83	105	137	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1968-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
171	80	62	55	49	44	39	35	32	29	26	21	18	14	12	10	7.9

06216500 PRYOR CREEK NEAR BILLINGS, MONT.

LOCATION.--Lat 45°42'54", long 108°18'47", in sec. 30, T. 1 S., R. 28 E., Yellowstone County, Hydrologic Unit 10070008, at bridge on Interstate Highway 90, and U.S. Highway 87, 11 mi (17.7 km) southeast of Billings.

DRAINAGE AREA.--440 mi^2 (1,140 km^2).

PERIOD OF RECORD.--September 1911 to September 1924 (no winter record) and March 1938 to December 1953 (continuous record), May 1955 to September 1973 (crest-stage gage), discontinued.

GAGE.--Crest-stage gage installed May 26, 1955. Wire-weight gage September 1911 to September 1924 and March 1938 to December 1953. Altitude of gage is 3,310 ft (1,010 m), by barometer.

REMARKS.--Diversions for irrigation of about 1,500 acres (6.1 km^2) above station.

AVERAGE DISCHARGE.--15 years (1939-53), 50.4 ft^3/s (1.458 m^3/s), 36,490 acre-ft/yr (45.0 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,720 ft^3/s (105 m^3/s) April 26, 1964, gage height, 15.04 ft (4.584 m); no flow June 30, July 6-21, 25-31, 1919, Sept. 7-11, 1940.

MONTHLY AND ANNUAL MEAN DISCHARGES 1939-53

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	80	9.3	37	19	0.50	5.9
November	80	15	39	18	.46	6.2
December	66	18	35	15	.44	5.5
Janaury	77	.00	32	18	.58	5.1
February	145	.00	51	40	.78	8.1
March	233	.00	100	63	.63	15.9
April	266	25	79	55	.70	12.6
May	324	16	80	77	.96	12.8
June	297	14	87	74	.85	13.8
July	152	.38	37	44	1.2	5.9
August	49	.76	16	16	1.0	2.6
September	119	1.7	35	36	1.0	5.6
Annual	92	22	52	24	.46	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1939-53

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	2.2	0.11	0.00	0.00	-----	-----
3	2.5	.13	.00	.00	-----	-----
7	2.8	.33	.09	.03	-----	-----
14	4.0	.66	.23	.09	-----	-----
30	6.6	1.8	.81	.41	-----	-----
60	9.6	3.1	1.6	.90	-----	-----
90	14	6.2	3.9	2.7	-----	-----
120	19	9.5	6.6	4.7	-----	-----
183	26	15	12	9.1	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 49 YEARS OF RECORD

Discharge, in ft^3/s for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
659	1330	2010	3180	4340	5740

Weighted skew = 0.468

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1912, 1939-53

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	485	837	1080	1400	-----	-----
3	380	673	891	1190	-----	-----
7	267	469	626	848	-----	-----
15	193	323	421	558	-----	-----
30	144	239	308	404	-----	-----
60	108	176	227	296	-----	-----
90	92	145	184	235	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1912, 1939-53

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
395	159	103	80	66	53	44	36	28	22	15	6.3	1.0	.11	.10	.10	.10

06216900 PRYOR CREEK NEAR HUNTLEY, MONT.

LOCATION.--Lat 45°49'19", long 108°17'23", in NE¼SE¼NW¼ sec. 19, T. 1 N., R. 28 E., Yellowstone County, Hydrologic Unit 10070008, on left bank 250 ft (76 m) upstream from county bridge on Indian Creek road, 1.9 mi (3.1 km) downstream from Indian Creek, 4.9 mi (7.9 km) south of Huntley, and at mile 11.2 (18.0 km).

DRAINAGE AREA.--582 mi^2 (1,507 km^2).

PERIOD OF RECORD.--October 1978 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,140 ft (957 m), from topographic map.

REMARKS.--Diversions for irrigation of about 3,200 acres (13.0 km^2) above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,410 ft^3/s (39.9 m^3/s) May 17, 1981, gage height, 3.46 ft (1.055 m); maximum gage height, 7.54 ft (2.298 m) Mar. 12, 1979 (ice jam); minimum discharge, 2.1 ft^3/s (0.059 m^3/s) Aug. 1, 1980, gage height, 0.25 ft (0.076 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 19, 1978, reached a discharge of 18,200 ft^3/s (515 m^3/s) from slope-area measurement of peak flow at site 10.5 mi (16.9 km) downstream. Floodmarks at this site not recovered.

MONTHLY AND ANNUAL MEAN DISCHARGES 1979-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	117	48	70	31	0.45	6.9
November	112	51	72	28	.39	7.1
December	95	46	68	23	.34	6.7
January	87	47	61	18	.29	6.0
February	116	44	96	35	.36	9.5
March	453	54	179	186	1.0	17.7
April	218	42	111	79	.72	10.9
May	321	60	156	118	.76	15.3
June	137	57	102	34	.33	10.1
July	60	14	39	20	.52	3.9
August	52	12	25	19	.74	2.5
September	49	25	37	11	.31	3.6
Annual	136	63	85	34	.41	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1980-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	11	4.0	-----	-----	-----	-----
3	12	5.4	-----	-----	-----	-----
7	16	7.6	-----	-----	-----	-----
14	19	8.5	-----	-----	-----	-----
30	21	10	-----	-----	-----	-----
60	23	14	-----	-----	-----	-----
90	26	18	-----	-----	-----	-----
120	32	24	-----	-----	-----	-----
183	40	34	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 4 YEARS OF RECORD

Discharge, in ft^3/s for indicated recurrence interval, in years, and exceedance probability, in percent

2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1979-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	864	1510	-----	-----	-----	-----
3	645	1120	-----	-----	-----	-----
7	475	850	-----	-----	-----	-----
15	340	606	-----	-----	-----	-----
30	253	414	-----	-----	-----	-----
60	184	287	-----	-----	-----	-----
90	145	224	-----	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1979-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
569	220	146	118	107	84	69	59	54	47	37	24	17	8.8	7.1	6.1	4.3

06217750 FLY CREEK AT POMPEYS PILLAR, MONT.

LOCATION.--Lat 45°59'33", long 107°57'07", in SW¼NW¼SE¼ sec. 23, T. 3 N., R. 30 E., Yellowstone County, Hydrologic Unit 10070007, on downstream side of county bridge near right bank at Pompeys Pillar, 300 ft (98 m) downstream of Lost Boy Creek, and 0.5 mi (0.8 km) upstream from mouth.

DRAINAGE AREA.--285 mi^2 (738 km^2).

PERIOD OF RECORD.--October 1968 to September 1981 (discontinued).

GAGE.--Nonrecording gage and crest-stage gage. Datum of gage is 2,852.84 ft (869.546 m) National Geodetic Vertical Datum of 1929 (Montana State Highway Commission bridge reference mark). Oct. 1, 1968, to May 1974, nonrecording gage at present site but different datum. May 1974 to July 16, 1978, nonrecording gage at bridge 3 mi (5 km) upstream at different datum.

REMARKS.--Flow affected by waste water from irrigation ditches and by return flow from irrigated areas upstream. Discharge for the period May 1974 to July 16, 1978, was computed by combining the flow of Fly Creek, as determined at gage site then is use, and the flow of Lost Boy Creek.

AVERAGE DISCHARGE.--13 years, 38.1 ft^3/s (1.079 m^3/s), 27,600 acre-ft/yr (34.0 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft^3/s (292 m^3/s) May 19, 1978, gage height, 15.94 ft (4.859 m), previous site and datum, from floodmark, from rating curve extended above 1,800 ft^3/s (50.9 m^3/s) on basis of slope-area measurement of peak flow; minimum daily, 1.5 ft^3/s (0.042 m^3/s) Jan. 23, 1981.

MONTHLY AND ANNUAL MEAN DISCHARGES 1969-81

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	54	7.9	19	12	0.65	4.1
November	11	5.9	8.8	1.4	.16	1.9
December	9.8	3.7	6.6	1.6	.24	1.4
January	32	3.6	9.3	8.0	.86	2.0
February	238	4.8	38	69	1.8	8.4
March	437	4.3	76	122	1.6	16.5
April	53	6.9	18	14	.75	4.0
May	515	23	76	132	1.7	16.7
June	115	35	60	21	.34	13.2
July	74	18	39	14	.36	8.6
August	77	25	44	15	.35	9.7
September	97	45	61	14	.23	13.3
Annual	69	21	38	16	.43	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1970-81

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	3.4	2.4	2.0	1.7	-----	-----
3	3.9	3.1	2.7	2.4	-----	-----
7	4.3	3.5	3.1	2.8	-----	-----
14	4.8	3.9	3.4	3.1	-----	-----
30	5.2	4.3	3.8	3.5	-----	-----
60	5.8	4.9	4.4	4.1	-----	-----
90	6.5	5.4	4.8	4.4	-----	-----
120	7.7	6.1	5.3	4.7	-----	-----
183	13	8.9	7.3	6.2	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 10 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
430	1350	2400	4450	6760	9760

Weighted skew = 0.341

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1969-81

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	368	1420	3120	-----	-----	-----
3	317	1080	2180	-----	-----	-----
7	233	669	1230	-----	-----	-----
15	165	396	661	-----	-----	-----
30	118	244	373	-----	-----	-----
60	80	141	200	-----	-----	-----
90	65	108	147	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1969-81

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
286	88	71	61	53	39	26	15	11	8.1	6.7	5.3	4.5	3.7	3.0	2.6	2.0

06287000 BIGHORN RIVER NEAR ST. XAVIER, MONT.

LOCATION.--Lat 45°19'00", long 107°55'05", in NW¼NE¼ sec. 16, T. 6 S., R. 31 E., Big Horn County, Hydrologic Unit 10080015, on right bank 800 ft (244 m) downstream from Yellowtail afterbay dam, 1,500 ft (460 m) downstream from Lime Kiln Creek, 14 mi (23 km) southwest of St. Xavier, and at mile 83.9 (135.0 km).

DRAINAGE AREA.--19,667 mi^2 (50,938 km^2). Area at site used prior to Apr. 16, 1963, 19,626 mi^2 (50,831 km^2).

PERIOD OF RECORD.--October 1934 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,158.38 ft (962.558 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Apr. 16, 1963, and June 13, 1964, to Mar. 31, 1965, water-stage recorder at site 1.2 mi (1.9 km) upstream at different datum. Apr. 1, 1965, to July 31, 1966, water-stage recorder at site 1,300 ft (400 m) downstream at present datum.

REMARKS.--Figures of discharge given herein are sum of river flow and flow of Bighorn Canal. Some regulation by 14 reservoirs in Wyoming with combined capacity of 1,400,000 acre-ft (1,726 hm^2) and complete regulation by Bighorn Lake since Nov. 3, 1965. Diversions for irrigation of about 375,000 acres (1,520 km^2) above station.

AVERAGE DISCHARGE.--48 years, 3,573 ft^3/s (101.2 m^3/s), 2,589,000 acre-ft/yr (3.19 km^3/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,400 ft^3/s (1,060 m^3/s) June 16, 1935; minimum observed, 49 ft^3/s (1.39 m^3/s) Mar. 29, 1966, result of discharge measurement (dam closure); minimum daily, 112 ft^3/s (3.17 m^3/s) Apr. 2, 1967.

MONTHLY AND ANNUAL MEAN DISCHARGES 1935-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	5140	1220	2950	856	0.29	6.9
November	5070	857	2860	992	.35	6.7
December	5000	1100	2630	931	.35	6.1
January	5270	1090	2480	980	.39	5.8
February	4380	888	2580	939	.36	6.0
March	4810	327	2910	996	.34	6.8
April	6680	678	2880	1220	.42	6.7
May	8740	900	4110	1790	.44	9.6
June	17900	1080	8070	4280	.53	18.8
July	18900	1140	5900	3900	.66	13.8
August	6490	1260	2780	1200	.43	6.5
September	4540	1070	2710	788	.29	6.3
Annual	5060	1570	3570	846	.24	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1936-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	887	494	337	236	151	109
3	1050	605	423	303	200	148
7	1290	784	564	414	281	211
14	1480	912	654	476	318	236
30	1750	1200	932	731	536	426
60	1880	1390	1170	1010	848	752
90	2100	1570	1330	1160	987	883
120	2280	1730	1480	1300	1110	998
183	2500	1910	1630	1430	1210	1090

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1935-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	12200	18900	23700	30200	35400	40700
3	11300	17700	22500	29100	34500	40200
7	10400	16400	21000	27400	32800	38500
15	9470	14800	18700	24300	28800	33700
30	8430	13000	16300	20700	24300	28000
60	6940	10300	12600	15600	17800	20000
90	5960	8470	10100	12100	13600	15000

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1935-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
17200	8870	6140	4980	4420	3750	3260	2850	2510	2190	1860	1470	1220	942	711	488	266

06287500 SOAP CREEK NEAR ST. XAVIER, MONT.

LOCATION.--Lat 45°19'38", long 107°46'10", in NE¼ sec. 10, T. 6 S., R. 32 E., Big Horn County, Hydrologic Unit 10080015, on left bank 6 mi (10 km) upstream from mouth, and 9.5 mi (15.3 km) southwest of St. Xavier.

DRAINAGE AREA.--98.3 mi^2 (255 km^2).

PERIOD OF RECORD.--September 1911 to June 1912 (fragmentary daily discharge only), May to November 1913. March 1939 to September 1953, October 1967 to September 1972 (discontinued). April 1914 to September 1924 at sites about 5 mi (8 km) downstream; records not equivalent owing to diversions.

REVISED RECORDS.--WSP 1309; 1940(M). WSP 1729: Drainage area.

GAGE.--Water stage recorder. Altitude of gage is 3,250 ft (991 m) from topographic map. Prior to Mar. 26, 1939, nonrecording gage at site 0.5 mi (0.8 km) downstream at different datum.

REMARKS.--Diversions for irrigation of about 1,100 acres (4.45 km^2) above station.

AVERAGE DISCHARGE.--19 years (1940-53, 1968-72), 30.6 ft^3/s (0.867 m^3/s), 22,170 acre-ft/yr (27.3 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,980 ft^3/s (84.4 m^3/s) July 18, 1969, gage height, 14.55 ft (4.435 m) from floodmark, from rating curve extended above 610 ft^3/s (17.3 m^3/s) on basis of slope-area measurement at gage height 14.96 ft (4.560 m); minimum daily, 1.0 ft^3/s (0.028 m^3/s) Jan. 24, 25, 1952. Flood of Apr. 28, 1963 reached a stage of 14.96 ft (4.560 m) from floodmark (discharge, 4,170 ft^3/s (118 m^3/s) from slope-area measurement of peak flow.)

MONTHLY AND ANNUAL MEAN DISCHARGES 1940-53, 1968-72

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	38	13	23	7.0	0.30	6.3
November	32	11	22	6.2	.28	6.0
December	26	12	19	4.3	.23	5.2
January	54	8.0	21	9.8	.48	5.6
February	96	6.0	31	24	.76	8.4
March	104	13	45	25	.55	12.3
April	82	17	42	16	.39	11.5
May	187	18	50	44	.88	13.5
June	162	15	49	35	.73	13.3
July	52	9.3	26	12	.46	7.1
August	32	9.3	19	6.9	.35	5.3
September	31	9.9	21	6.7	.32	5.6
Annual	52	14	31	11	.35	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1940-53, 1969-72

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	12	6.3	3.9	2.3	-----	-----
3	12	6.5	4.2	2.7	-----	-----
7	12	7.6	5.7	4.3	-----	-----
14	13	8.6	6.8	5.5	-----	-----
30	15	10	8.3	6.9	-----	-----
60	16	12	9.5	8.0	-----	-----
90	17	13	11	9.2	-----	-----
120	18	14	12	10	-----	-----
183	19	15	13	11	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 22 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
403	898	1480	2530	3620	5090

Weighted skew = 0.517

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1940-53, 1968-72

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	263	480	642	859	-----	-----
3	184	312	393	488	-----	-----
7	133	218	271	335	-----	-----
15	99	160	201	252	-----	-----
30	74	121	154	197	-----	-----
60	57	88	108	134	-----	-----
90	51	76	91	109	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1940-53, 1968-72

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
161	76	52	42	37	30	26	24	22	19	16	13	11	9.1	7.4	6.1	3.2

06288000 ROTTEN GRASS CREEK NEAR ST. XAVIER, MONT.

LOCATION.--Lat 45°24'44", long 107°40'57", in NE¼ sec. 7, T. 5 S., R. 33 E., Big Horn County, Hydrologic Unit 10080015, on right bank 25 ft (7.62 m) downstream from county bridge, 3.8 mi (6.1 km) south east of St. Xavier, and 11 mi (18 km) upstream from mouth.

DRAINAGE AREA.--147 mi^2 (381 km^2). Area at site used prior to Oct. 1, 1967, 160 mi^2 (401 km^2).

PERIOD OF RECORD.--September 1911 to September 1912 (fragmentary discharge records only), June 1913 to September 1919 (no winter records), October 1919 to November 1922, fragmentary discharge records only (published as Rottengrass Creek). October 1967 to September 1972 (discontinued). Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 3,150 ft (960.1 m) from topographic map. Prior to Oct. 1, 1967, nonrecording gage at site 4 mi (6 km) downstream at different datum.

REMARKS.--Records good except those for winter period, which are poor. Several small diversions for irrigation above station during period of adequate flow.

AVERAGE DISCHARGE.--5 years (1967-72), 31.2 ft^3/s (0.884 m^3/s), 22,600 acre-ft/yr (27.9 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 688 ft^3/s (19.5 m^3/s) June 9, 1968 [gage height, 7.31 ft (2.228 m)]; no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1968-72

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	16	8.6	12	2.8	0.24	3.2
November	15	8.7	12	2.3	.19	3.2
December	12	7.7	10	1.9	.19	2.7
January	18	7.7	12	3.6	.30	3.2
February	108	7.0	49	40	.82	13.0
March	96	30	57	24	.43	15.1
April	65	22	41	18	.43	10.8
May	184	40	74	62	.83	19.7
June	90	26	57	29	.51	15.2
July	50	16	28	14	.50	7.3
August	17	9.6	13	2.9	.22	3.5
September	16	8.7	12	2.7	.23	3.1
Annual	43	25	31	7.4	.24	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1969-72

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	6.1	4.4	-----	-----	-----	-----
3	6.8	5.2	-----	-----	-----	-----
7	7.6	5.8	-----	-----	-----	-----
14	7.9	6.2	-----	-----	-----	-----
30	8.9	7.1	-----	-----	-----	-----
60	9.7	7.6	-----	-----	-----	-----
90	11	8.6	-----	-----	-----	-----
120	11	9.3	-----	-----	-----	-----
183	12	10	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 5 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1968-72

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	377	463	-----	-----	-----	-----
3	321	385	-----	-----	-----	-----
7	221	272	-----	-----	-----	-----
15	146	205	-----	-----	-----	-----
30	109	161	-----	-----	-----	-----
60	77	110	-----	-----	-----	-----
90	66	91	-----	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1968-72

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time															
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
254	115	62	48	39	27	20	16	14	12	10	8.7	7.3	6.1	5.3	4.7	4.1

06288200 BEAUVAIS CREEK NEAR ST. XAVIER, MONT.

LOCATION.--Lat 45°28'40", long 108°00'33", on west line of sec. 15, T. 4 S., R. 30 E., Big Horn County, Hydrologic Unit 10080015, 1 mi (2 km) downstream from Point Creek, 3 mi (5 km) upstream from Muddy Creek, and 14 mi (23 km) west of St. Xavier.

DRAINAGE AREA.--100 mi^2 (259 km^2).

PERIOD OF RECORD.--July 1967 to September 1977 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 3,350 ft (1,020 m), from topographic map.

REMARKS.--No regulation. Diversions for irrigation of about 200 acres (809,000 m^2) above station. Records for 1978 have been found to be unreliable and should not be used.

AVERAGE DISCHARGE.--10 years, 23.6 ft^3/s (0.668 m^3/s), 17,100 acre-ft/yr (21.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,600 ft^3/s (45.3 m^3/s) June 9, 1968, gage height, 8.0 ft (2.44 m), from floodmark, from rating curve extended above 250 ft^3/s (7.08 m^3/s) on basis of slope-area measurement of peak flow; minimum daily, 0.50 ft^3/s (0.014 m^3/s) Jan. 18, 1970.

MONTHLY AND ANNUAL MEAN DISCHARGES 1968-77

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	43	4.0	15	14	0.92	5.2
November	39	5.9	12	9.9	.81	4.3
December	13	3.3	6.4	2.8	.43	2.3
January	17	4.0	9.8	4.6	.46	3.5
February	47	3.2	16	13	.83	5.7
March	61	8.6	23	16	.71	8.1
April	113	9.7	47	32	.67	16.7
May	188	14	72	67	.93	25.4
June	96	17	45	28	.62	15.8
July	43	6.2	18	13	.70	6.3
August	21	4.7	10	5.3	.52	3.6
September	17	4.0	8.9	4.7	.53	3.1
Annual	51	12	24	12	.51	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1969-77

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	2.4	1.2	0.77	-----	-----	----
3	3.0	1.6	1.1	-----	-----	----
7	3.5	2.2	1.7	-----	-----	----
14	4.0	2.7	2.2	-----	-----	----
30	4.9	3.3	2.6	-----	-----	----
60	6.0	4.2	3.4	-----	-----	----
90	7.1	5.0	4.2	-----	-----	----
120	7.8	5.4	4.5	-----	-----	----
183	8.9	5.9	4.8	-----	-----	----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 11 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
531	1060	1550	2450	3350	4520

Weighted skew = 0.197

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1968-77

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	319	535	704	-----	-----	----
3	228	354	437	-----	-----	----
7	153	229	278	-----	-----	----
15	102	168	221	-----	-----	----
30	82	139	189	-----	-----	----
60	58	100	138	-----	-----	----
90	49	82	110	-----	-----	----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1968-77

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
218	99	48	33	25	17	13	11	8.6	7.4	5.9	4.3	3.4	2.8	2.1	1.9	1.0

06289000 LITTLE BIGHORN RIVER AT STATE LINE, NEAR WYOLA, MONT.

LOCATION.--Lat 45°00'25", long 107°36'52", in SW¼NW¼ sec. 36, T. 9 S., R. 33 E., Big Horn County, Hydrologic Unit 10080016, on right bank 20 ft (6 m) downstream from county bridge, 0.5 mi (0.8 km) north of Wyoming-Montana State line, 1 mi (2 km) downstream from West Fork, 13 mi (21 km) southwest of Wyola, and at mile 115.2 (185.4 km).

DRAINAGE AREA.--193 mi^2 (500 km^2).

PERIOD OF RECORD.--March 1939 to current year. Prior to October 1940, published as Little Horn River at State line, near Wyola.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 4,350 ft (1,326 m), from topographic map.

REMARKS.-Diversions for irrigation of 163 acres (660,000 m^2) above station.

AVERAGE DISCHARGE.--43 years, 155 ft^3/s (4.390 m^3/s), 112,300 acre-ft/yr (138 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,730 ft^3/s (77.3 m^3/s) June 3, 1944, gage height, 4.87 ft (1.484 m), from rating curve extended above 1,400 ft^3/s (39.6 m^3/s); maximum gage height recorded, 5.93 ft (1.807 m) June 9, 1944 (log jam); minimum discharge, 21 ft^3/s (0.59 m^3/s) Dec. 27, 1954, result of freezeup.

MONTHLY AND ANNUAL MEAN DISCHARGES 1940-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	120	64	89	16	0.18	4.8
November	104	57	78	13	.17	4.2
December	91	52	70	10	.15	3.8
January	85	44	64	9.3	.15	3.4
February	88	50	63	8.4	.13	3.4
March	86	49	63	8.5	.14	3.4
April	172	51	86	27	.31	4.6
May	533	127	324	97	.30	17.5
June	1130	211	554	251	.45	29.9
July	689	101	234	105	.45	12.6
August	228	70	127	32	.25	6.9
September	151	68	102	21	.20	5.5
Annual	253	90	155	38	.25	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1940-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	41	33	29	26	23	21
3	44	37	33	30	27	25
7	50	43	39	36	33	31
14	55	48	44	41	38	35
30	59	52	49	46	43	41
60	61	54	52	49	47	46
90	62	56	53	51	48	47
120	64	57	54	52	49	47
183	71	63	59	56	52	50

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 40 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
1070	1500	1770	2110	2370	2630

Weighted skew = -0.100

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1940-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	852	1210	1460	1800	2060	2340
3	792	1100	1310	1570	1770	1980
7	729	1010	1190	1430	1610	1790
15	646	894	1070	1290	1460	1640
30	567	780	929	1130	1280	1440
60	442	596	703	841	948	1060
90	355	473	551	651	726	802

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1940-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
976	536	358	247	181	124	99	86	77	70	64	58	53	47	42	38	31

06290000 PASS CREEK NEAR WYOLA, MONT.

LOCATION.--Lat 45°03'00", long 107°21'00", in NE¼ sec. 13. T. 9 S., R. 35 E., Big Horn County, Hydrologic Unit 10080016, at highway bridge, 1 mi (2 km) downstream from Twin Creek, 5 mi (8 km) south of Wyola, and 6 mi (10 km) upstream from mouth.

DRAINAGE AREA.--111 mi^2 (287 km^2).

PERIOD OF RECORD.--June 1935 to September 1956 (discontinued), winter records incomplete prior to 1939.

GAGE.--Water-stage recorder. Altitude of gage is 3,860 ft (1,177 m), from topographic map. Prior to Dec. 21, 1950, wire-weight gage on highway bridge 100 ft (30.5 m) downstream at same datum.

REMARKS.--Diversions for irrigation of about 2,500 acres (10.1 km^2).

AVERAGE DISCHARGE.--18 years (1939-56), 36.1 ft^3/s (1.022 m^3/s), 4.416 in./yr (112 mm/yr), 26,140 acre-ft/yr (32.2 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 1,150 ft^3/s (32.6 m^3/s) June 4, 1944, gage height, 4.82 ft (1.469 m), from rating curve extended above 500 ft^3/s (14.2 m^3/s); maximum gage height observed, 6.22 ft (1.896 m) Mar. 25, 1943 (ice jam); no flow Aug. 3, 9, 10, 1935.

MONTHLY AND ANNUAL MEAN DISCHARGES 1939-56

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	28	5.7	17	6.9	0.41	3.8
November	28	11	20	5.3	.27	4.5
December	34	11	18	5.4	.30	4.1
January	32	7.0	17	6.6	.38	4.0
February	58	9.9	24	13	.55	5.5
March	115	18	42	24	.58	9.6
April	84	21	51	19	.38	11.7
May	198	37	87	44	.51	19.9
June	375	31	104	87	.84	23.8
July	93	6.6	31	24	.78	7.1
August	39	1.9	12	11	.87	2.8
September	29	2.2	14	8.1	.60	3.1
Annual	77	17	36	17	.46	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1939-56

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	3.5	1.4	0.87	0.57	-----	-----
3	4.0	1.6	.98	.64	-----	-----
7	4.7	1.9	1.2	.76	-----	-----
14	5.6	2.5	1.6	1.1	-----	-----
30	7.1	3.7	2.5	1.9	-----	-----
60	8.9	4.8	3.4	2.5	-----	-----
90	11	6.4	4.9	3.8	-----	-----
120	13	8.4	6.7	5.5	-----	-----
183	14	11	9.1	8.0	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 22 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
336	697	1090	1770	2440	3240

Weighted skew = 0.566

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1939-56

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	228	451	677	1080	-----	-----
3	178	339	511	841	-----	-----
7	142	259	385	625	-----	-----
15	120	206	289	434	-----	-----
30	101	166	225	326	-----	-----
60	83	131	172	237	-----	-----
90	72	109	140	187	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1939-56

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time															
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
226	114	80	62	50	35	26	21	18	15	12	7.7	5.2	2.4	1.7	1.1	.43

06290500 LITTLE BIGHORN RIVER BELOW PASS CREEK, NEAR WYOLA, MONT.

LOCATION.--Lat 45°10'38", long 107°23'36", in W½SW¼ sec. 35, T. 7 S., R. 35 E., Big Horn County, Hydrologic Unit 10080016, on right bank 3.5 mi (5.6 km) north of Wyola, 6 mi (10 km) downstream from Pass Creek, and at mile 92.3 (148.5 km).

DRAINAGE AREA.--428 mi^2 (1,109 km^2).

PERIOD OF RECORD.--March 1939 to December 1958, August 1959 to September 1975, October 1976 to current year. Prior to October 1940, published as Little Horn River below Pass Creek, near Wyola.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 3,600 ft (1,100 m), from topographic map.

REMARKS.-Diversions for irrigation of about 8,300 acres (33.6 km^2) above station.

AVERAGE DISCHARGE.--41 years, 214 ft^3/s (6.060 m^3/s), 155,000 acre-ft/yr (191 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,010 ft^3/s (277 m^3/s) May 19, 1978, gage height, 10.02 ft (3.054 m), from rating curve extended above 2,800 ft^3/s (79.3 m^3/s) on basis of slope-area measurement of peak flow; minimum, 12 ft^3/s (0.34 m^3/s) Aug. 5, 7, 8, 1961, gage height, 0.89 ft (0.271 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1940-58, 1960-75, 1977-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	163	79	126	25	0.20	4.9
November	153	89	123	18	.15	4.8
December	162	68	110	19	.18	4.3
January	165	55	105	25	.24	4.1
February	232	77	122	36	.29	4.8
March	281	77	146	46	.32	5.7
April	327	63	193	66	.34	7.5
May	1320	146	470	220	.47	18.3
June	1400	199	691	372	.54	26.9
July	758	57	251	146	.58	9.7
August	237	24	117	48	.41	4.6
September	186	55	115	38	.33	4.5
Annual	381	93	214	70	.33	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1940-58, 1961-75, 1978-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	59	40	31	24	18	-----
3	64	43	33	26	19	-----
7	71	49	37	29	21	-----
14	78	55	44	35	27	-----
30	88	63	50	41	31	-----
60	94	71	59	50	41	-----
90	100	78	68	60	51	-----
120	105	85	76	69	62	-----
183	110	91	82	76	69	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 38 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
1320	2170	2910	4010	4960	6030

Weighted skew = 0.476

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1940-58, 1960-75, 1977-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	1080	1760	2380	3400	4360	-----
3	996	1560	2040	2760	3410	-----
7	912	1380	1730	2230	2650	-----
15	810	1210	1500	1880	2190	-----
30	705	1050	1290	1600	1840	-----
60	550	816	997	1230	1400	-----
90	449	655	793	967	1100	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1940-58, 1960-75, 1977-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1360	706	460	329	243	169	147	132	120	108	97	81	68	54	46	37	22

06291000 OWL CREEK NEAR LODGE GRASS, MONT.

LOCATION.--Lat 45°16'05", long 107°18'03", in NW¼NE¼SE¼, sec. 33, T. 6 S., R. 35 E., Big Horn County, Hydrologic Unit 10080016, on right bank 1.4 mi (2.2 km) downstream from Sioux Pass Creek, 5.0 mi (8.0 km) southwest of Lodge Grass, and at mile 7.0 (11.3 km).

DRAINAGE AREA.--163 mi^2 (422 km^2).

PERIOD OF RECORD.--April 1939 to September 1945, October 1979 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,460 ft (1,054 m), from topographic map. April 1939 to September 1945, recording gage at same site and datum.

REMARKS.--Numerous diversions for irrigation above station.

AVERAGE DISCHARGE.--9 years (water years 1940-45, 1980-82), 10.5 ft^3/s (0.297 m^3/s), 7,610 acre-ft/yr (9.38 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,020 ft^3/s (28.9 m^3/s) June 18, 1944, gage height, 14.18 ft (4.322 m); maximum gage height, 14.50 ft (4.420 m) Mar. 18, 1944 (ice jam); no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1940-45, 1980-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	12	1.2	3.9	3.5	0.89	3.1
November	14	.38	4.8	4.1	.86	3.8
December	18	.45	5.0	5.6	1.1	4.0
January	12	.28	4.2	4.3	1.0	3.3
February	48	.29	11	15	1.4	8.8
March	81	7.4	27	24	.87	21.5
April	33	6.2	17	9.2	.56	13.1
May	46	1.4	19	15	.77	15.3
June	95	1.2	23	29	1.3	17.9
July	19	.13	6.2	5.9	.95	4.9
August	7.5	.00	2.7	2.6	.94	2.2
September	5.0	.00	2.8	1.8	.64	2.2
Annual	23	2.5	11	6.8	.64	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1940-45, 1981-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	0.28	0.00	0.00	-----	-----	-----
3	.29	.00	.00	-----	-----	-----
7	.30	.00	.00	-----	-----	-----
14	.33	.00	.00	-----	-----	-----
30	.52	.00	.00	-----	-----	-----
60	.83	.09	.00	-----	-----	-----
90	1.2	.20	.07	-----	-----	-----
120	1.6	.66	.40	-----	-----	-----
183	2.0	.82	.50	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 6 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1940-45, 1980-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	153	338	506	-----	-----	-----
3	112	222	311	-----	-----	-----
7	82	150	196	-----	-----	-----
15	54	96	123	-----	-----	-----
30	36	64	83	-----	-----	-----
60	25	43	55	-----	-----	-----
90	22	38	49	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1940-45, 1980-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
111	36	21	17	13	8.7	6.4	4.8	3.4	1.9	1.0	.36	.11	.10	.10	.10	.10

06291500 LODGEGRASS CREEK ABOVE WILLOW CREEK DIVERSION, NEAR WYOLA, MONT.

LOCATION.--Lat 45°07'30", long 107°36'00", in W½NW¼ sec. 19, T. 8 S., R. 34 E., Big Horn County, Hydrologic Unit 10080016, on left bank 0.5 mi (0.8 km) upstream from Willow Creek diversion canal, 1.5 mi (2.4 km) downstream from Spring Creek, and 10 mi (16 km) west of Wyola.

DRAINAGE AREA.--80.7 mi^2 (209 km^2).

PERIOD OF RECORD.--March 1939 to September 1974 (discontinued).

REVISED RECORDS.--WSP 1559: 1944-47. WSP 1629: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 4,360 ft (1,330 m), from topographic map.

REMARKS.--Diversions for irrigation of about 400 acres (1.62 km^2) above station.

AVERAGE DISCHARGE.--35 years, 49.9 ft^3/s (1.41 m^3/s), 8.396 in./yr (213 mm/yr), 36,150 acre-ft/yr (44.6 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,130 ft^3/s (32.0 m^3/s) June 9, 1964, gage height, 6.14 ft (1.871 m), from rating curve extended above 600 ft^3/s (17.0 m^3/s); minimum daily, 3.0 ft^3/s (0.085 m^3/s) Jan. 17, 18, 25, 30, 31, 1950, Jan. 15, 16, 1954.

MONTHLY AND ANNUAL MEAN DISCHARGES 1940-74

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	36	12	21	6.0	0.29	3.5
November	28	11	19	4.9	.26	3.2
December	25	8.6	17	4.6	.27	2.8
January	30	4.9	17	5.8	.35	2.8
February	32	9.0	17	5.6	.33	2.8
March	37	10	21	6.9	.33	3.5
April	60	13	34	13	.40	5.6
May	216	36	119	46	.38	19.9
June	445	79	217	108	.50	36.2
July	176	20	66	32	.49	11.0
August	51	10	28	9.9	.35	4.7
September	40	8.1	23	8.0	.35	3.9
Annual	86	22	50	16	.32	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1940-74

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	9.5	6.3	4.9	3.9	3.0	-----
3	10	6.9	5.4	4.4	3.4	-----
7	11	7.7	6.2	5.1	4.0	-----
14	12	8.6	7.0	5.9	4.8	-----
30	14	9.9	8.2	6.9	5.5	-----
60	15	11	9.6	8.2	6.8	-----
90	16	12	11	9.3	8.0	-----
120	16	13	11	9.9	8.6	-----
183	18	14	12	11	9.3	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 37 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
436	633	781	997	1180	1370

Weighted skew = 0.190

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1940-74

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	374	541	656	806	922	-----
3	341	485	578	691	772	-----
7	309	441	526	628	702	-----
15	269	385	459	549	614	-----
30	225	321	385	466	525	-----
60	166	230	272	324	361	-----
90	129	179	210	247	274	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1940-74

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
419	201	121	82	56	35	27	23	20	18	16	13	11	8.5	6.8	6.2	3.8

06293500 LITTLE BIGHORN RIVER NEAR CROW AGENCY, MONT.

LOCATION.--Lat 45°34'00", long 107°27'00", in E½SE¼ sec. 13, T. 3 S., R. 34 E., Big Horn County, Hydrologic Unit 10080016, on right bank at Chicago, Burlington and Quincy Railroad bridge, 2 mi (3 km) south of Crow Agency, and 17 mi (27 km) upstream from mouth.

DRAINAGE AREA.--1,181 mi^2 (3,059 km^2).

PERIOD OF RECORD.--April 1912 to September 1924, (no winter record) August 1928 to December 1932 (no winter records except 1929, 1931-32), April 1938 to September 1960 (discontinued). Published as Little Horn River near Crow Agency October 1914 to September 1940.

GAGE.--Water-stage recorder. Datum of gage is 3,045.00 ft (928.12 m) National Geodetic Vertical Datum of 1929. Apr. 11, 1912 to Sept. 30, 1918, staff or chain gage; Oct. 1, 1918, to Sept. 30, 1924, and Aug. 26, 1928 to Sept. 30, 1930, water-stage recorder; Oct. 1, 1930 to Dec. 5, 1932, and Apr. 1, 1938, to May 6, 1947, wire-weight or chain gage; all at same site and datum.

REMARKS.--Diversions for irrigation of about 13,700 acres (55.4 km^2) above station. Flow partly regulated since about 1940 by Willow Creek Reservoir, capacity 23,000 acre-ft (28.4 km^3).

AVERAGE DISCHARGE.--25 years (1929, 1931-33, 1939-60), 248 ft^3/s (7.023 m^3/s), 179,500 acre-ft/yr (221 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, observed, 6,200 ft^3/s (176 m^3/s) July 23, 1923, gage height, 14.0 ft (4.267 m); no flow July 28 to Aug. 6, 1921.

MONTHLY AND ANNUAL MEAN DISCHARGES 1929, 1931-32, 1939-60

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	229	69	139	45	0.33	4.7
November	203	96	144	29	.20	4.8
December	202	74	132	30	.23	4.4
January	337	66	123	54	.44	4.1
February	363	83	159	70	.44	5.4
March	946	115	326	195	.60	11.0
April	783	114	288	152	.53	9.7
May	1060	155	500	231	.46	16.8
June	2030	202	734	430	.59	24.7
July	649	51	232	156	.67	7.8
August	191	24	94	47	.50	3.2
September	210	21	104	57	.54	3.5
Annual	436	144	248	93	.38	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1931-32, 1939-60

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	44	17	8.6	4.5	-----	-----
3	48	18	9.2	4.7	-----	-----
7	53	23	13	7.4	-----	-----
14	58	31	21	15	-----	-----
30	69	41	30	22	-----	-----
60	81	52	39	31	-----	-----
90	94	64	51	41	-----	-----
120	105	78	65	56	-----	-----
183	113	90	80	72	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 39 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
1840	3240	4310	5810	7010	8290

Weighted skew = 0.030

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1929, 1931-32, 1939-60

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	1480	2500	3280	4380	-----	-----
3	1280	2080	2690	3540	-----	-----
7	1080	1660	2080	2640	-----	-----
15	887	1330	1660	2100	-----	-----
30	733	1100	1380	1780	-----	-----
60	571	853	1070	1370	-----	-----
90	492	717	879	1100	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1929, 1931-32, 1939-60

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1520	820	557	416	313	213	175	150	131	115	98	71	50	34	23	13	4.6

06294000 LITTLE BIGHORN RIVER NEAR HARDIN, MONT.

LOCATION.--Lat 45°44'09", long 107°33'24", in SE¼NE¼NE¼ sec. 19, T. 1 S., R. 34 E., Big Horn County, Hydrologic Unit 10080016, on left bank 50 ft (15 m) downstream from bridge on Sarpy Road, 0.2 mi (0.3 km) upstream from terminal wasteway of Agency Canal, 0.6 mi (1.0 km) upstream from mouth, and 2.3 mi (3.7 km) east of Hardin.

DRAINAGE AREA.--1,294 mi^2 (3,351 km^2).

PERIOD OF RECORD.--June 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,882.29 ft (878.522 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 7, 1953, nonrecording gage at site 0.4 mi (0.6 km) downstream. Oct. 7, 1953, to May 6, 1963, water-stage recorder at site 0.3 mi (0.5 km) downstream. May 6, 1963, to Nov. 6, 1963, nonrecording gage at site 0.4 mi (0.6 km) downstream. All at different datums. Nov. 7, 1963, to Aug. 15, 1976, water-stage recorder at site 35 ft (11 m) downstream at present datum. Aug. 15, 1976, to Sept. 30, 1979, water-stage recorders were located on each bank downstream from Sarpy Road bridge and were used depending on control conditions.

REMARKS.--Flow partly regulated by Willow Creek Reservoir (capacity 23,000 acre-ft, 28.4 hm^3). Diversions for irrigation of 20,980 acres (84.9 km^2), revised, above station. Figures of discharge given herein include flow of terminal wasteway of Agency Canal.

AVERAGE DISCHARGE.--29 years, 316 ft^3/s (8.949 m^3/s), 228,900 acre-ft/yr (282 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,600 ft^3/s (640 m^3/s) May 19, 1978, gage height, 11.20 ft (3.414 m), used gage height as obtained at bridge on Sarpy Road; maximum gage height, 11.78 ft (3.591 m) Mar. 20, 1960, site and datum then in use (backwater from ice); minimum discharge observed, 0.20 ft^3/s (0.006 m^3/s) Aug. 7, 1961, result of discharge measurement.

MONTHLY AND ANNUAL MEAN DISCHARGES 1954-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	276	68	162	59	0.36	4.2
November	248	95	163	41	.25	4.3
December	223	69	140	40	.28	3.7
January	460	81	159	88	.55	4.2
February	610	86	239	134	.56	6.3
March	987	93	375	246	.66	9.8
April	748	55	368	198	.54	9.6
May	2850	72	668	539	.81	17.5
June	1980	117	955	593	.62	25.0
July	1330	8.5	313	278	.89	8.2
August	382	2.5	132	86	.65	3.5
September	267	19	141	73	.52	3.7
Annual	676	70	318	143	.45	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1955-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	57	19	7.6	3.0	0.84	-----
3	65	22	8.9	3.4	.91	-----
7	78	28	12	4.5	1.2	-----
14	83	33	16	7.4	2.7	-----
30	99	41	21	10	4.1	-----
60	112	52	29	16	7.3	-----
90	121	61	37	23	12	-----
120	128	78	57	43	30	-----
183	138	93	74	60	47	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 26 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
2050	3760	5200	7360	9250	11300

Weighted skew = 0.027

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1954-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	1840	3460	4920	7300	9520	-----
3	1650	2980	4110	5840	7360	-----
7	1410	2390	3130	4140	4940	-----
15	1200	1980	2510	3170	3650	-----
30	983	1610	2040	2550	2930	-----
60	785	1280	1590	1940	2180	-----
90	664	1050	1280	1540	1710	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1954-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
2130	1150	740	530	399	273	217	181	155	133	108	78	52	20	12	7.2	1.7

06294690 TULLOCK CREEK NEAR BIGHORN, MONT.

LOCATION.--Lat 46°05'08", long 107°24'20", in NE¼NE¼NE¼ sec. 19, T. 4 N., R. 35 E., Treasure County, Hydrologic Unit 10080015, on right bank at old diversion dam, 0.3 mi (0.5 km) upstream from Thunder Creek, 5.6 mi (9.0 km) south of Bighorn, and at mile 8.7 (14.0 km).

DRAINAGE AREA.--446 mi^2 (1,155 km^2).

PERIOD OF RECORD.--October 1974 to September 1982 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 2,770 ft (844 m), from topographic map.

REMARKS.--Diversions for irrigation of about 215 acres (87 km^2) above station.

AVERAGE DISCHARGE.--8 years, 10.5 ft^3/s (0.297 m^3/s), 7,610 acre-ft/yr (9.38 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,960 ft^3/s (55.5 m^3/s) Mar. 2, 1975, gage height, 7.4 ft (2.26 m), from floodmark; no flow on many days each year.

MONTHLY AND ANNUAL MEAN DISCHARGES 1975-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	2.1	0.00	0.36	0.72	2.0	0.3
November	4.8	.00	.83	1.6	1.9	.7
December	5.4	.00	1.2	1.8	1.6	.9
January	76	.00	11	27	2.5	8.5
February	60	.00	12	20	1.7	9.3
March	173	2.0	49	59	1.2	38.8
April	37	4.2	16	12	.73	12.6
May	100	3.0	22	33	1.5	17.9
June	18	.64	8.6	5.4	.63	6.8
July	5.8	.17	1.9	2.2	1.1	1.5
August	.86	.00	.25	.36	1.5	.2
September	23	.00	3.0	8.2	2.8	2.4
Annual	29	2.3	10	9.5	.91	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1976-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	-----	-----	-----	-----	-----	-----
3	-----	-----	-----	-----	-----	-----
7	-----	-----	-----	-----	-----	-----
14	-----	-----	-----	-----	-----	-----
30	-----	-----	-----	-----	-----	-----
60	-----	-----	-----	-----	-----	-----
90	-----	-----	-----	-----	-----	-----
120	-----	-----	-----	-----	-----	-----
183	-----	-----	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 4 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1975-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	159	475	-----	-----	-----	-----
3	129	392	-----	-----	-----	-----
7	96	276	-----	-----	-----	-----
15	64	164	-----	-----	-----	-----
30	41	99	-----	-----	-----	-----
60	28	65	-----	-----	-----	-----
90	22	51	-----	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1975-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
195	37	18	12	8.9	4.9	2.5	.99	.40	.07	.01	.01	.01	.01	.01	.01	.01

06294700 BIGHORN RIVER AT BIGHORN, MONT.

LOCATION.--Lat 46°08'50", long 107°28'00", in NE¼NE¼NE¼ sec. 33, T. 5 N., R. 34 E., Treasure County, Hydrologic Unit 10080015, on right bank 150 ft (46 m) downstream from bridge on old U.S. Highway 10, 0.3 mi (0.5 km) downstream from bridge on Interstate Highway 94, 0.7 mi (1.1 km) upstream from mouth, 1.3 mi (2.1 km) southwest of Bighorn, and 4.4 mi (7.1 km) east of Custer.

DRAINAGE AREA.--22,885 mi^2 (59,727 km^2). Area at site used prior to Oct. 7, 1955, 22,410 mi^2 (58,042 km^2).

PERIOD OF RECORD.--May 1945 to September 1981. Prior to Oct. 7, 1955, published as "near Custer."

GAGE.--Water-stage recorder. Altitude of gage is 2,690 ft (820 m), by barometer. May 11 to Dec. 6, 1945, non-recording gage, and Dec. 7, 1945, to Oct. 6, 1955, water-stage recorder, at site 4 mi (6 km) upstream at different datum.

REMARKS.-Major regulation by 14 reservoirs in Wyoming and 1 in Montana with combined usable storage of about 1,400,000 acre-ft (1.73 km^3), and Bighorn Lake (station 06286400). Diversions for irrigation of about 465,000 acres (1,880 km^2) above station.

AVERAGE DISCHARGE.--36 years, 3,921 ft^3/s (111.0 m^3/s), 2,841,000 acre-ft/yr (3.50 km^3/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,200 ft^3/s (1,680 m^3/s) May 20, 1978, gage height, 14.15 ft (4,313 m); maximum gage height recorded, 14.21 ft (4.331 m) Apr. 2, 1965 (ice jam); minimum discharge, about 275 ft^3/s (7.79 m^3/s) Nov. 15, 1959, result of freezeup; minimum daily, 400 ft^3/s (11.3 m^3/s) Apr. 4, 1967.

MONTHLY AND ANNUAL MEAN DISCHARGES 1946-81

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	5550	1460	3310	893	0.27	7.0
November	5600	1220	3300	1100	.33	7.0
December	4910	1280	3100	877	.28	6.6
January	5480	1380	2980	971	.33	6.3
February	5310	1840	3240	972	.30	6.9
March	6580	908	3880	1410	.36	8.2
April	7200	1060	3580	1420	.40	7.6
May	9100	1300	4680	1990	.43	9.9
June	15200	1050	7880	3840	.49	16.7
July	19100	707	5590	4110	.74	11.9
August	6570	868	2710	1310	.48	5.8
September	4950	1010	2820	814	.29	6.0
Annual	5500	1620	3920	1020	.26	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1947-81

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	1010	692	565	476	392	-----
3	1160	798	654	554	459	-----
7	1380	944	767	644	526	-----
14	1610	1080	861	702	550	-----
30	1870	1290	1040	852	672	-----
60	2190	1580	1290	1070	854	-----
90	2440	1770	1460	1220	990	-----
120	2650	1960	1630	1380	1120	-----
183	2910	2160	1790	1500	1210	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 34 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1946-81

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	12200	19200	24900	33100	40000	-----
3	11400	17600	22300	28800	34100	-----
7	10300	15600	19600	25000	29400	-----
15	9290	14000	17500	22200	26000	-----
30	8310	12400	15400	19300	22300	-----
60	7030	10200	12200	14600	16300	-----
90	6210	8720	10200	11900	13000	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1946-81

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
15700	9010	6730	5600	4960	4210	3670	3250	2910	2570	2200	1700	1280	931	799	685	536

06294940 SARPY CREEK NEAR HYSHAM, MONT.

LOCATION.--Lat 46°14'19", long 107°08'12", in NW¼SE¼SE¼ sec. 30, T. 6 N., R. 37 E., Treasure County, Hydrologic Unit 10100001, on left bank 100 ft (30 m) upstream from bridge on FAS Route 415, 1.3 mi (2.1 km) upstream from Hysham Canal, 5.5 mi (8.8 km) southeast of Hysham, and at mile 11.0 (17.7 km).

DRAINAGE AREA.--453 mi^2 (1,173 km^2).

PERIOD OF RECORD.--September 1973 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,677.5 ft (816.10 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Diversions for irrigation of about 970 acres (3.93 km^2) above station.

AVERAGE DISCHARGE.--9 years, 7.54 ft^3/s (0.214 m^3/s), 5,460 acre-ft/yr (6.73 m^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 428 ft^3/s (12.1 m^3/s) Mar. 4, 1975, gage height, 12.43 ft (3.789 m); no flow at times most years.

MONTHLY AND ANNUAL MEAN DISCHARGES 1974-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	2.4	0.00	0.53	0.81	1.5	0.6
November	2.5	.00	.79	1.0	1.3	.9
December	3.4	.00	1.1	1.2	1.1	1.2
January	46	.00	6.9	15	2.1	7.6
February	49	1.5	11	15	1.4	12.5
March	111	1.1	35	47	1.4	38.4
April	38	1.5	11	12	1.1	12.0
May	59	1.2	15	19	1.3	16.2
June	14	1.5	6.3	4.1	.65	6.9
July	2.9	.00	.95	1.1	1.2	1.0
August	1.2	.00	.26	.44	1.7	.3
September	19	.00	2.2	6.2	2.9	2.4
Annual	20	1.5	7.5	7.3	.97	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1975-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1			-----	-----	-----	-----
3			-----	-----	-----	-----
7			-----	-----	-----	-----
14			-----	-----	-----	-----
30			-----	-----	-----	-----
60	0.00	0.00	-----	-----	-----	-----
90	.00	.00	-----	-----	-----	-----
120	.07	.00	-----	-----	-----	-----
183	.26	.05	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 5 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1974-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	78	276	-----	-----	-----	-----
3	63	241	-----	-----	-----	-----
7	46	174	-----	-----	-----	-----
15	32	109	-----	-----	-----	-----
30	21	67	-----	-----	-----	-----
60	15	43	-----	-----	-----	-----
90	13	36	-----	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1974-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time															
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
145	28	13	7.4	5.5	3.1	2.3	1.3	.61	.10	.01	.01	.01	.01	.01	.01	.01

06294995 ARMELLS CREEK NEAR FORSYTH, MONT.

LOCATION.--Lat 46°14'59", long 106°48'22", in SE¼NW¼NE¼ sec. 26 T. 6 N., R. 39 E., Rosebud County, Hydrologic Unit 10100001, on right bank 300 ft (90 m) upstream from bridge on Interstate Highway I-94, 2.2 mi (3.5 km) upstream from mouth, and 6 mi (10 km) southwest of Forsyth.

DRAINAGE AREA.--370 mi^2 (958 km^2).

PERIOD OF RECORD.--July 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,560 ft (780 m), from topographic map.

REMARKS.--Diversions for irrigation of about 200 acres (809,000 m^2) above station.

AVERAGE DISCHARGE.--8 years, 7.08 ft^3/s (0.201 m^3/s) 5,130 acre-ft/yr (6.33 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 960 ft^3/s (27.2 m^3/s) Mar. 13, 1979; maximum gage height observed, 6.62 ft (2.018 m) Mar. 12, 1978 (backwater from ice); no flow at times most years.

MONTHLY AND ANNUAL MEAN DISCHARGES 1975-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	2.2	0.02	0.57	0.77	1.4	0.7
November	1.9	.00	.76	.78	1.0	.9
December	2.6	.01	.65	.89	1.4	.8
January	48	.00	6.5	17	2.6	7.7
February	52	.00	14	21	1.5	16.1
March	116	.51	30	45	1.5	34.6
April	25	.29	8.6	9.2	1.1	10.1
May	58	.27	15	23	1.5	17.5
June	17	.11	5.7	6.0	1.0	6.7
July	2.5	.01	.70	.98	1.4	.8
August	1.0	.03	.30	.42	1.4	.4
September	26	.01	3.3	9.2	2.8	3.9
Annual	17	.38	7.1	7.0	.99	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1976-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1			-----	-----	-----	-----
3			-----	-----	-----	-----
7			-----	-----	-----	-----
14	0.01	0.00	-----	-----	-----	-----
30	.01	.00	-----	-----	-----	-----
60	.06	.01	-----	-----	-----	-----
90	.09	.01	-----	-----	-----	-----
120	.12	.01	-----	-----	-----	-----
183	.19	.03	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 4 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
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Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1975-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	94	535	-----	-----	-----	-----
3	68	378	-----	-----	-----	-----
7	48	244	-----	-----	-----	-----
15	31	141	-----	-----	-----	-----
30	20	79	-----	-----	-----	-----
60	14	50	-----	-----	-----	-----
90	11	40	-----	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1975-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time															
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
168	22	10	5.3	3.5	1.7	.77	.39	.24	.09	.03	.01	.01	.01	.01	.01	.01

06295000 YELLOWSTONE RIVER AT FORSYTH, MONT.

LOCATION.--Lat 46°15'58", long 106°41'24", in NE¼NW¼NW¼ sec. 23, T. 6 N., R. 40 E., Rosebud County, Hydrologic Unit 10100001, on right bank 0.3 mi (0.5 km) downstream from U.S. Highway 12 bridge, at intake for Forsyth water supply, at Forsyth, and at mile 238.2 (383.3 km).

DRAINAGE AREA.--40,339 mi^2 (104,478 km^2).

PERIOD OF RECORD.--July 16, 1921, to September 30, 1923 (no winter records). October 1977 to current year. Miscellaneous discharge measurements were made in 1974 to 1976 and are available in files of Helena district office.

GAGE.--Water-stage recorder. Datum of gage is 2,504.62 ft (763.408 m) National Geodetic Vertical Datum of 1929, from nearby elevation determined by City of Forsyth. July 1921 to March 1922, nonrecording gage on discontinued highway bridge 10 ft (0.3 m) downstream from gage at different datum. March 1922 to September 1923, nonrecording gage on discontinued highway bridge 10 ft (3.0 m) downstream from gage at datum 2 ft (0.6 m) higher.

REMARKS.--Diversions for irrigation of about 838,000 acres (3,390 km^2) above station. Flow regulated to some extent by Bighorn Lake, usable capacity, 1,356,000 acre-ft (1.67 km^3), on Bighorn River. Small diversion dam about 4,200 ft (1,280 m) below station.

AVERAGE DISCHARGE.--5 years (1978-82), 11,760 ft^3/s (333.0 m^3/s), 8,520,000 acre-ft/yr (10.5 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 106,000 ft^3/s (3,000 m^3/s) May 21, 1978, gage height, 14.53 ft (4.429 m); minimum daily, 1,400 ft^3/s (39.6 m^3/s) Nov. 23, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1918 reached a stage of about 20 ft (6.1 m), datum used in 1921, information from local residents.

MONTHLY AND ANNUAL MEAN DISCHARGES 1978-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	10300	5340	7450	2210	0.30	5.3
November	8470	4660	6560	1590	.24	4.7
December	7800	4720	6390	1110	.17	4.5
January	6370	4920	5540	631	.11	3.9
February	8380	6210	7010	860	.12	5.0
March	15100	4880	9220	3940	.43	6.5
April	11000	4220	8400	2630	.31	6.0
May	25700	13100	18800	4740	.25	13.3
June	38000	24300	31400	6220	.20	22.3
July	34400	14500	22600	10500	.47	16.0
August	14000	5620	9490	3820	.40	6.7
September	11300	4550	8080	2880	.36	5.7
Annual	14200	9880	11800	1730	.15	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1979-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	3550	2800	-----	-----	-----	-----
3	3760	3110	-----	-----	-----	-----
7	4040	3450	-----	-----	-----	-----
14	4460	3910	-----	-----	-----	-----
30	4970	4410	-----	-----	-----	-----
60	5350	4920	-----	-----	-----	-----
90	5720	5360	-----	-----	-----	-----
120	6000	5530	-----	-----	-----	-----
183	6400	5690	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 4 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1978-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	49900	73600	-----	-----	-----	-----
3	46800	62600	-----	-----	-----	-----
7	41500	51700	-----	-----	-----	-----
15	37700	46300	-----	-----	-----	-----
30	34700	42600	-----	-----	-----	-----
60	29300	35900	-----	-----	-----	-----
90	24000	29500	-----	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1978-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
46900	34900	27300	19200	14800	11100	9360	7920	7040	6380	5750	4780	4320	3920	3480	3110	158

06295250 ROSEBUD CREEK NEAR COLSTRIP, MONT.

LOCATION.--Lat 45°46'03", long 106°34'10", in SE¼SW¼NE¼ sec. 8, T. 1 S., R. 42 E., Rosebud County, Hydrologic Unit 10100003, on left bank 10 ft (3 m) downstream from bridge on FAS Route 315, 1.5 mi (2.4 km) downstream from Lee Coulee, 8.4 mi (13.5 km) southeast of Colstrip, and at mile 85.6 (137.7 km).

DRAINAGE AREA.--799 mi^2 (2,069 km^2).

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,000 ft (914 m), from topographic map.

REMARKS.--Diversions for irrigation of about 800 acres (3.24 km^2) above station.

AVERAGE DISCHARGE.--8 years, 48.8 ft^3/s (1.382 m^3/s), 35,360 acre-ft/yr (43.6 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 605 ft^3/s (17.1 m^3/s) May 21, 1978, gage height, 9.03 ft (2.752 m); no flow most days Aug. 31 to Sept. 30, 1981.

MONTHLY AND ANNUAL MEAN DISCHARGES 1975-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	48	2.4	23	15	0.65	3.9
November	46	7.4	26	13	.51	4.4
December	46	9.1	25	13	.53	4.3
January	70	11	28	19	.68	4.8
February	79	23	45	20	.46	7.5
March	158	19	62	42	.68	10.6
April	185	23	81	51	.64	13.7
May	306	25	121	108	.89	20.5
June	212	20	90	76	.84	15.2
July	104	8.3	46	38	.83	7.7
August	57	4.8	25	21	.84	4.2
September	56	.01	19	20	1.0	3.3
Annual	96	17	49	28	.58	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1976-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent: 2 (50%)	5 (20%)	10 (10%)	20 (5%)	50 (2%)	100 (1%)
1	11	2.2	0.00	-----	-----	-----
3	11	2.2	.00	-----	-----	-----
7	12	2.2	.00	-----	-----	-----
14	13	2.2	.00	-----	-----	-----
30	13	2.2	.13	-----	-----	-----
60	15	3.7	1.4	-----	-----	-----
90	17	5.9	3.0	-----	-----	-----
120	18	7.8	4.6	-----	-----	-----
183	20	10	6.7	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 4 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent

2 (50%)	5 (20%)	10 (10%)	25 (4%)	50 (2%)	100 (1%)
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1975-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent: 2 (50%)	5 (20%)	10 (10%)	25 (4%)	50 (2%)	100 (1%)
1	208	363	484	-----	-----	-----
3	201	352	470	-----	-----	-----
7	182	322	435	-----	-----	-----
15	152	274	380	-----	-----	-----
30	121	224	319	-----	-----	-----
60	98	180	252	-----	-----	-----
90	85	153	211	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1975-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time

1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
319	173	108	83	67	48	38	31	26	20	15	8.8	4.8	1.7	.10	.10	.10

06296003 ROSEBUD CREEK AT MOUTH, NEAR ROSEBUD, MONT.

LOCATION.--Lat 46°15'53", long 106°28'30", in SW¼NW¼NE¼ sec. 21, T. 6 N., R. 42 E., Rosebud County, Hydrologic Unit 10100003, on left bank 0.4 mi (0.6 km) upstream from bridge on Interstate Highway 94, 0.8 mi (1.3 km) upstream from mouth, and 1.6 mi (2.6 km) southwest of Rosebud.

DRAINAGE AREA.--1,302 mi^2 (3,372 km^2).

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,480 ft (756 m), from topographic map.

REMARKS.--Diversions for irrigation of about 2,000 acres (8.09 km^2).

AVERAGE DISCHARGE.--8 years, 55.3 ft^3/s (1.566 m^3/s), 40,100 acre-ft/yr (49.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,620 ft^3/s (74.2 m^3/s) May 19, 1978, gage height, 6.78 ft (2.067 m), from rating curve extended above 1,500 ft^3/s (42.5 m^3/s); minimum discharge, 0.02 ft^3/s (0.001 m^3/s) Aug. 28 to Sept. 7, 1981, gage height, 0.30 ft (0.091 m).

MONTHLY AND ANNUAL MEAN DISCHARGES 1975-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	46	0.82	20	15	0.75	3.0
November	48	1.5	23	15	.65	3.4
December	48	5.5	24	14	.58	3.5
January	68	2.8	26	20	.77	4.0
February	185	22	65	58	.90	9.8
March	246	17	105	91	.87	15.8
April	180	12	83	58	.70	12.5
May	478	19	149	167	1.1	22.4
June	286	25	99	93	.94	14.9
July	96	1.7	35	38	1.1	5.3
August	48	2.9	18	18	.96	2.8
September	77	.06	18	26	1.5	2.7
Annual	113	13	55	39	.70	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1976-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	2.4	0.29	0.07	-----	-----	-----
3	3.0	.33	.08	-----	-----	-----
7	4.2	.40	.08	-----	-----	-----
14	5.0	.51	.11	-----	-----	-----
30	6.3	.69	.15	-----	-----	-----
60	9.7	1.4	.35	-----	-----	-----
90	11	2.4	.87	-----	-----	-----
120	14	3.9	1.7	-----	-----	-----
183	17	5.9	3.1	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 19 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
325	724	1130	1890	2640	3600

Weighted skew = 0.320

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1975-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	378	996	1680	-----	-----	-----
3	298	825	1400	-----	-----	-----
7	230	619	1030	-----	-----	-----
15	179	444	719	-----	-----	-----
30	143	328	507	-----	-----	-----
60	114	244	358	-----	-----	-----
90	98	206	301	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1975-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time															
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
597	198	128	87	66	47	35	28	21	16	9.5	2.7	.60	.15	.08	.05	.02

06306100 SQUIRREL CREEK NEAR DECKER, MONT.

LOCATION.--Lat 45°03'05", long 106°55'36", in NE¼NW¼NW¼, sec. 14, T. 9 S., R. 39 E., Big Horn County, Hydrologic Unit 10090101, on left bank 0.4 mi (0.6 km) upstream from Powers Cormack ditch, 0.5 mi (0.8 km) northwest of C X Ranch, 4 mi (6 km) northwest of Decker, and at mile 7 (11 km).

DRAINAGE AREA.--33.6 mi^2 (87.0 km^2).

PERIOD OF RECORD.--September 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,660 ft (1,116 m), from topographic map.

REMARKS.--Two small diversions above station.

AVERAGE DISCHARGE.--7 years, 3.77 ft^3/s (0.107 m^3/s), 2,730 acre-ft/yr (3.37 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 584 ft^3/s (16.5 m^3/s) May 18, 1978, gage height, 7.27 ft (2.216 m); no flow may occur many days each year due to instream storage from beaver dams.

MONTHLY AND ANNUAL MEAN DISCHARGES 1976-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	2.0	0.00	0.92	0.78	0.84	2.0
November	2.3	.01	1.0	.86	.84	2.3
December	3.1	.02	1.1	1.1	.99	2.4
January	2.4	.01	.94	.95	1.0	2.1
February	3.2	.50	1.5	1.0	.67	3.4
March	8.8	.23	3.7	3.0	.83	8.1
April	27	.65	12	11	.86	27.4
May	54	1.7	15	18	1.3	32.4
June	15	1.7	6.0	4.3	.71	13.4
July	4.4	.10	1.7	1.6	.91	3.8
August	2.1	.01	.69	.79	1.1	1.5
September	2.2	.00	.51	.80	1.6	1.1
Annual	8.7	.85	3.8	2.9	.77	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1977-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	0.03	0.00	-----	-----	-----	-----
3	.13	.00	-----	-----	-----	-----
7	.15	.00	-----	-----	-----	-----
14	.21	.00	-----	-----	-----	-----
30	.27	.00	-----	-----	-----	-----
60	.32	.00	-----	-----	-----	-----
90	.44	.01	-----	-----	-----	-----
120	.50	.01	-----	-----	-----	-----
183	.36	.06	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 3 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1976-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	33	88	-----	-----	-----	-----
3	27	70	-----	-----	-----	-----
7	21	51	-----	-----	-----	-----
15	18	39	-----	-----	-----	-----
30	14	31	-----	-----	-----	-----
60	10	21	-----	-----	-----	-----
90	8.3	17	-----	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1976-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
37	17	9.4	5.9	4.1	2.6	1.8	1.3	.89	.50	.09	.02	.01	.01	.01	.01	.01

06306250 PRAIRIE DOG CREEK NEAR ACME, WYO.

LOCATION.--Lat 44°59'02", long 106°50'21", in NE¼SW¼SW¼ sec. 23, T. 58 N., R. 83 W., Sheridan County, Hydrologic Unit 10090101, on right bank, 600 ft (183 m) upstream from county bridge, 0.9 mi (1.5 km) upstream from mouth, 2.8 mi (4.5 km) downstream from Coutant Creek, and 7.6 mi (12.2 km) northeast of Acme.

DRAINAGE AREA.--358 mi^2 (927 km^2).

PERIOD OF RECORD.--October 1970 to September 1979 (discontinued). Records for May 1965 to September 1970 in files of Office of Wyoming State Engineer.

GAGE.--Water-stage recorder. Altitude of gage is 3,450 ft (1,052 m), from topographic map.

REMARKS.--Diversions for irrigation of about 13,600 acres (55.0 km^2) above station, of which about 60 acres (243 m^2) lies below station. Flow supplemented by three transbasin diversions from North Piney Creek and South Piney Creek via Priairie Dog Creek ditch, Piney and Cruse ditch, and Mead-Coffeen ditch.

AVERAGE DISCHARGE.--9 years, 46.2 ft^3/s (1.308 m^3/s), 33,470 acre-ft/yr (41.3 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,940 ft^3/s (112 m^3/s) May 19, 1978, gage height, 12.60 ft (3.840 m), from floodmark, from rating curve extended above 670 ft^3/s (19.0 m^3/s) on basis of slope-area determination of peak flow; minimum daily, 6.3 ft^3/s (0.18 m^3/s) June 4, 5, 1976.

MONTHLY AND ANNUAL MEAN DISCHARGES 1971-79

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	60	22	42	11	0.27	7.5
November	44	25	33	6.1	.19	6.0
December	32	22	27	3.4	.13	4.8
January	27	14	20	4.6	.23	3.6
February	83	18	41	22	.53	7.3
March	167	37	86	43	.50	15.6
April	101	44	69	22	.31	12.4
May	384	27	102	117	1.2	18.3
June	86	22	41	20	.50	7.4
July	45	10	23	11	.47	4.2
August	46	10	30	10	.34	5.4
September	79	19	41	17	.41	7.5
Annual	73	35	46	12	.26	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1972-79

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	8.5	6.7	6.0	-----	-----	-----
3	8.9	6.9	6.2	-----	-----	-----
7	9.7	7.5	6.7	-----	-----	-----
14	11	8.4	7.5	-----	-----	-----
30	14	11	9.3	-----	-----	-----
60	18	14	12	-----	-----	-----
90	20	17	15	-----	-----	-----
120	23	19	18	-----	-----	-----
183	28	25	23	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 8 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1971-79

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	315	760	1360	-----	-----	-----
3	264	553	905	-----	-----	-----
7	226	419	619	-----	-----	-----
15	174	301	419	-----	-----	-----
30	125	209	286	-----	-----	-----
60	93	141	183	-----	-----	-----
90	81	117	148	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1971-79

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
306	110	76	62	54	45	39	34	29	25	20	16	12	9.2	8.0	7.2	6.5

06306300 TONGUE RIVER AT STATE LINE, NEAR DECKER, MONT.

LOCATION.--Lat 45°00'32", long 106°50'08", in NW¼NW¼NE¼ sec. 33, T. 9 S., R. 40 E., Big Horn County, Hydrologic Unit 10090101, on left bank 1 mi (2 km) north of Wyoming-Montana State line, 1.4 mi (2.3 km) southeast of Decker, 1.6 mi (2.6 km) upstream from Badger Creek, and at mile 200.9 (323.2 km).

DRAINAGE AREA.--1,477 mi^2 (3,825 km^2).

PERIOD OF RECORD.--August 1960 to current year. Records published as "near Decker" May 1928 to September 1938, not equivalent owing to intervening drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,429.14 ft (1,045.202 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Flow regulated by many small reservoirs in Wyoming, combined capacity, about 15,000 acre-ft (18.5 hm^3). Diversions for irrigation of about 64,300 acres (260 km^2) above station.

AVERAGE DISCHARGE.--22 years, 496 ft^3/s (14.05 m^3/s), 359,400 acre-ft/yr (443 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft^3/s (496 m^3/s) May 19, 1978, gage height, 14.25 ft (4.343 m); minimum, 3.0 ft^3/s (0.11 m^3/s) Aug. 23, 1961.

MONTHLY AND ANNUAL MEAN DISCHARGES 1961-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	403	116	259	72	0.28	4.3
November	324	150	235	46	.20	3.9
December	271	134	196	42	.21	3.3
January	330	108	189	56	.29	3.2
February	672	156	254	117	.46	4.3
March	855	129	343	182	.53	5.8
April	676	124	392	143	.36	6.6
May	3280	481	1250	588	.47	20.9
June	3570	342	1900	962	.51	31.9
July	1670	88	527	358	.68	8.8
August	475	17	183	102	.56	3.1
September	615	74	234	126	.54	3.9
Annual	862	187	496	158	.32	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1962-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	95	51	30	17	-----	-----
3	100	54	32	18	-----	-----
7	107	58	34	20	-----	-----
14	118	64	39	23	-----	-----
30	133	77	50	32	-----	-----
60	159	96	66	45	-----	-----
90	172	121	96	77	-----	-----
120	190	148	127	111	-----	-----
183	205	164	145	130	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 29 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
3840	5510	6670	8270	9710	11400

Weighted skew = -0.039

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1961-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	3140	5150	6950	9900	-----	-----
3	2920	4500	5760	7590	-----	-----
7	2610	3850	4720	5880	-----	-----
15	2290	3350	4070	4980	-----	-----
30	2010	2940	3550	4320	-----	-----
60	1540	2240	2680	3200	-----	-----
90	1210	1720	2030	2380	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1961-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
3700	1970	1230	829	549	364	289	254	222	196	166	130	103	74	48	22	9.1

06307500 TONGUE RIVER AT TONGUE RIVER DAM, NEAR DECKER, MT

LOCATION.--Lat 45°08'29", long 106°46'15", in SW¼SE¼SE¼ sec. 12, T. 8 S., R. 40 E., Big Horn County, Hydrologic Unit 10090101, on left bank 0.5 mi (0.8 km) downstream from Tongue River Dam, 4 mi (6 km) upstream from Post Creek, 8 mi (13 km) northeast of Decker, 16 mi (26 km) southeast of Kirby, and at mile 188.4 (303.1 km).

DRAINAGE AREA.--1,770 mi^2 (4,580 km^2).

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

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,344.40 ft (1,019.373 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Reclamation).

REMARKS.--Flow regulated by Tongue River Reservoir (station number 06307000) and many small reservoirs, combined capacity, about 15,000 acre-ft (18.5 hm^3). Diversions for irrigation of about 64,800 acres (262 hm^2) above station.

AVERAGE DISCHARGE.--43 years, 459 ft^3/s (13.00 m^3/s), 332,500 acre-ft/yr (410 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft^3/s (306 m^3/s) May 20, 1978, gage height, 10.00 ft (3.048 m), from floodmark in gage well; no flow part of each day Nov. 12, 13, 1969, when gates at dam were closed.

MONTHLY AND ANNUAL MEAN DISCHARGES 1940-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	665	77	292	138	0.47	5.3
November	554	41	275	147	.53	5.0
December	369	87	196	58	.30	3.6
January	252	80	171	41	.24	3.1
February	592	57	182	84	.46	3.3
March	676	23	232	143	.62	4.2
April	958	15	398	228	.57	7.2
May	2710	195	979	507	.52	17.8
June	3820	235	1570	932	.59	28.5
July	2080	169	578	354	.61	10.5
August	767	103	334	150	.45	6.1
September	687	130	302	116	.38	5.5
Annual	853	154	459	155	.34	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1941-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	61	20	9.2	4.2	1.5	0.68
3	70	24	11	4.7	1.6	.70
7	102	40	18	7.3	2.2	.84
14	117	50	22	9.3	2.8	1.1
30	129	73	47	30	16	11
60	145	103	82	66	51	42
90	161	119	98	81	65	55
120	176	133	110	93	75	64
183	218	163	135	114	92	79

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1940-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	2370	3940	4970	6210	7080	7900
3	2310	3670	4490	5410	6010	6540
7	2140	3350	4060	4850	5370	5830
15	1900	2960	3620	4370	4880	5340
30	1590	2500	3100	3810	4320	4800
60	1220	1900	2340	2880	3280	3650
90	1000	1500	1810	2190	2450	2700

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1940-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
3340	1610	1020	686	573	432	337	267	214	185	157	121	86	60	33	14	.62

06307528 PRAIRIE DOG CREEK NEAR BIRNEY, MONT.

LOCATION.--Lat 45°17'28", long 106°40'56", in SE¼NW¼NW¼ sec. 26, T. 6 S., R. 41 E., Rosebud County, Hydrologic Unit 10090101, on right bank, about 3.3 mi (5.3 km) above confluence with Tongue River, and 8.6 mi (13.8 km) west of Birney.

DRAINAGE AREA.--19.6 mi^2 (50.8 km^2).

PERIOD OF RECORD.--November 1978 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,390 ft (1,033 m), from topographic map.

REMARKS.--Several diversions for stock ponds above station (combined capacity about 105 acre-ft or 0.13 hm^3).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,210 ft^3/s (34.3 m^3/s) July 24, 1982, gage height, 7.75 ft (2.362 m), from rating curve extended above 3.0 ft^3/s (0.08 m^3/s) on basis of step-backwater computation and slope-area determinations of peak flow; no flow on many days.

MONTHLY AND ANNUAL MEAN DISCHARGES 1980-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	0.04	0.00	0.02	0.02	1.3	1.0
November	.05	.00	.02	.03	1.7	1.0
December	.00	.00	.00	.00		.0
January	.00	.00	.00	.00		.0
February	1.2	.07	.53	.58	1.1	33.5
March	.04	.00	.02	.02	1.3	1.0
April	.00	.00	.00	.00		.0
May	.10	.00	.03	.06	1.7	2.1
June	.50	.00	.18	.28	1.5	11.3
July	2.2	.00	.74	1.2	1.7	46.3
August	.00	.00	.00	.00		.0
September	.17	.00	.06	.10	1.7	3.6
Annual	.29	.02	.13	.14	1.1	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1980-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	0.0	0.0	-----	-----	-----	-----
3	.0	.0	-----	-----	-----	-----
7	.0	.0	-----	-----	-----	-----
14	.0	.0	-----	-----	-----	-----
30	.0	.0	-----	-----	-----	-----
60	.0	.0	-----	-----	-----	-----
90	.0	.0	-----	-----	-----	-----
120	.0	.0	-----	-----	-----	-----
183	.0	.0	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1980-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	13	48	-----	-----	-----	-----
3	4.7	17	-----	-----	-----	-----
7	2.0	7.3	-----	-----	-----	-----
15	1.0	3.6	-----	-----	-----	-----
30	.51	1.7	-----	-----	-----	-----
60	.26	.82	-----	-----	-----	-----
90	.18	.57	-----	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1980-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1.6	.08	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01

06307560 EAST TRAIL CREEK NEAR OTTER, MONT.

LOCATION.--Lat 45°04'25", long 106°24'11", in NW¼SE¼NE¼ sec. 12, T. 9 S., R. 43 E., Big Horn County, Hydrologic Unit 10090101, 1.1 mi (1.8 km) upstream from mouth, and 14 mi (23 km) southwest of Otter.

DRAINAGE AREA.--31.3 mi^2 (81.1 km^2).

PERIOD OF RECORD.--October 1976 to September 1981 (discontinued).

GAGE.--Water-stage recorder, crest-stage gages, and Parshall flume. Altitude of gage is 3,570 ft (1,088 m), from topographic map.

REMARKS.--Water-discharge records excellent except those for periods of flow, which are poor. No known regulation or diversions above station.

AVERAGE DISCHARGE.--5 years, 0.185 ft^3/s (0.005 m^3/s), 134 acre-ft/yr (165,000 m^3/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 216 ft^3/s (6.12 m^3/s) May 18, 1978, gage height, 4.54 ft (1.384 m), from rating curve extended above 35 ft^3/s (0.99 m^3/s); no flow on many days each year.

MONTHLY AND ANNUAL MEAN DISCHARGES 1977-81

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	0.00	0.00	0.00	0.00		0.0
November	.00	.00	.00	.00		.0
December	.00	.00	.00	.00		.0
January	.00	.00	.00	.00		.0
February	.07	.00	.02	.03	1.9	.7
March	1.7	.00	.47	.68	1.5	21.3
April	.26	.00	.10	.11	1.0	4.7
May	6.1	.00	1.2	2.7	2.2	56.6
June	.89	.00	.32	.35	1.1	14.7
July	.12	.00	.02	.05	2.2	1.1
August	.09	.00	.02	.04	2.2	.8
September	.00	.00	.00	.00		.0
Annual	.71	.02	.18	.30	1.6	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1978-81

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	0.0	0.0	0.0	-----	-----	-----
3	.0	.0	.0	-----	-----	-----
7	.0	.0	.0	-----	-----	-----
14	.0	.0	.0	-----	-----	-----
30	.0	.0	.0	-----	-----	-----
60	.0	.0	.0	-----	-----	-----
90	.0	.0	.0	-----	-----	-----
120	.0	.0	.0	-----	-----	-----
183	.0	.0	.0	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 2 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1977-81

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	4.3	21	64	-----	-----	-----
3	2.6	12	33	-----	-----	-----
7	1.4	6.2	17	-----	-----	-----
15	.71	3.1	8.2	-----	-----	-----
30	.42	1.7	4.3	-----	-----	-----
60	.24	.92	2.4	-----	-----	-----
90	.18	.70	1.8	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1977-81

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
2.8	.42	.14	.03	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01

06307600 HANGING WOMAN CREEK NEAR BIRNEY, MONT.

LOCATION.--Lat 45°17'57", long 106°30'28", in N½NW¼SE¼ sec. 19, T. 6 S., R. 43 E., Rosebud County, Hydrologic Unit 10090101, on right bank 0.5 mi (0.8 km) downstream from bridge on Birney-Otter road, 1.2 mi (1.9 km) south of Birney, 1.2 mi (1.9 km), downstream from East Fork, and at mile 3.3 (5.3 km).

DRAINAGE AREA.--470 mi^2 (1,217 km^2).

PERIOD OF RECORD.--September 1973 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,150 ft (960 m), from topographic map.

REMARKS.--Diversions for irrigation of about 1,240 acres (5.02 km^2) above station.

AVERAGE DISCHARGE.--9 years, 4.78 ft^3s (0.135 m^3/s), 3,460 acre-ft/yr (4.27 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,060 ft^3/s (58.3 m^3/s) May 19, 1978, gage height, 11.56 ft (3.523 m), from rating curve extended above 360 ft^3/s (10.2 m^3/s) on basis of slope-area measurement of peak flow; no flow most days August, September 1981.

MONTHLY AND ANNUAL MEAN DISCHARGES 1974-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	3.0	0.17	1.2	0.80	0.70	2.0
November	3.1	.46	1.4	.80	.56	2.5
December	3.1	.39	1.5	.84	.54	2.7
January	21	.47	5.6	7.2	1.3	9.7
February	22	1.0	5.8	6.7	1.1	10.1
March	93	.66	14	30	2.2	23.6
April	17	.62	4.5	5.1	1.1	7.8
May	99	.52	13	32	2.4	23.1
June	13	.62	5.5	5.1	.93	9.6
July	11	.10	3.5	3.3	.94	6.0
August	2.1	.02	.99	.78	.78	1.7
September	2.3	.00	.78	.71	.92	1.3
Annual	14	.62	4.8	4.5	.94	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1975-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	0.19	0.09	0.00	-----	-----	-----
3	.33	.13	.00	-----	-----	-----
7	.44	.15	.00	-----	-----	-----
14	.47	.17	.00	-----	-----	-----
30	.61	.20	.00	-----	-----	-----
60	.69	.25	.00	-----	-----	-----
90	.81	.25	.11	-----	-----	-----
120	.95	.33	.16	-----	-----	-----
183	1.1	.50	.31	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 5 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1974-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	87	462	1080	-----	-----	-----
3	55	258	556	-----	-----	-----
7	35	142	282	-----	-----	-----
15	24	78	140	-----	-----	-----
30	17	51	88	-----	-----	-----
60	10	29	50	-----	-----	-----
90	8.0	22	36	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1974-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
49	14	7.4	4.8	3.5	2.6	2.0	1.5	1.1	.87	.65	.38	.16	.05	.01	.01	.01

06307740 OTTER CREEK AT ASHLAND, MONT.

LOCATION.--Lat 45°35'18", long 106°15'17", in NE¼NE¼SE¼ sec. 11, T. 3 S., R. 44 E., Rosebud County, Hydrologic Unit 10090102, on left bank 200 ft (60 m) downstream from bridge on U.S. Highway 212, 0.3 mi (0.5 km) southeast of Ashland, and at mile 2.7 (4.3 km).

DRAINAGE AREA.--707 mi^2 (1,831 km^2).

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,920 ft (890 m), from topographic map.

REMARKS.--Diversions for irrigation of about 4,200 acres (17.0 km^2) above station.

AVERAGE DISCHARGE.--10 years, 7.26 ft^3/s (0.206 m^3/s), 5,260 acre-ft/yr (6.49 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 425 ft^3/s (12.0 m^3/s) Mar. 21, 1978, gage height, 8.65 ft (2.637 m), backwater from beaver dam; no flow on many days in 1977 and 1982.

MONTHLY AND ANNUAL MEAN DISCHARGES 1973-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	4.4	0.40	2.2	1.3	0.61	2.5
November	6.1	1.6	3.6	1.5	.42	4.1
December	7.0	2.2	3.9	1.5	.39	4.5
January	30	1.7	8.6	10	1.2	9.9
February	35	2.8	11	9.1	.80	13.1
March	107	3.0	23	32	1.4	26.4
April	28	1.6	9.8	8.1	.82	11.3
May	53	2.6	12	15	1.3	13.6
June	16	2.1	6.4	4.5	.70	7.4
July	8.9	.28	3.2	2.7	.84	3.7
August	5.5	.08	1.9	1.9	.99	2.2
September	4.1	.14	1.3	1.2	.95	1.4
Annual	19	2.6	7.3	4.9	.68	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1974-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent: 2 (50%)	5 (20%)	10 (10%)	20 (5%)	50 (2%)	100 (1%)
1	0.28	0.00	0.00	-----	-----	-----
3	.31	.06	.00	-----	-----	-----
7	.36	.09	.00	-----	-----	-----
14	.39	.10	.00	-----	-----	-----
30	.54	.16	.02	-----	-----	-----
60	.75	.30	.18	-----	-----	-----
90	.91	.36	.22	-----	-----	-----
120	1.3	.65	.47	-----	-----	-----
183	2.0	1.3	1.1	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 6 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent: 2 (50%)	5 (20%)	10 (10%)	25 (4%)	50 (2%)	100 (1%)
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Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1973-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent: 2 (50%)	5 (20%)	10 (10%)	25 (4%)	50 (2%)	100 (1%)
1	64	174	291	-----	-----	-----
3	52	148	254	-----	-----	-----
7	39	106	182	-----	-----	-----
15	28	70	115	-----	-----	-----
30	21	49	79	-----	-----	-----
60	15	32	49	-----	-----	-----
90	13	26	39	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1973-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time: 1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
88	21	12	8.9	7.5	5.8	4.6	3.7	3.1	2.4	1.5	.57	.24	.06	.06	.06	.06

06307830 TONGUE RIVER BELOW BRANDENBERG BRIDGE, NEAR ASHLAND, MONT.

LOCATION.--Lat 45°52'18", long 106°11'13", in NE¼SW¼NW¼ sec. 6, T. 1 N., R. 45 E., Custer County, Hydrologic Unit 10090102, on left bank 3.1 mi (5.0 km) downstream from Goodale Creek, 6.5 mi (10.5 km) downstream from Brandenberg Bridge, 21 mi (34 km) north of Ashland, and at mile 77.6 (124.9 km).

DRAINAGE AREA.--4,062 mi^2 (10,521 km^2).

PERIOD OF RECORD.--October 1973 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,710 ft (826 m), from topographic map.

REMARKS.--Flow regulated by Tongue River Reservoir (station number 06307000), and many small reservoirs in Wyoming (combined capacity, about 15,000 acre-ft or 18.5 hm^3). Diversions for irrigation of about 73,000 acres (295 km^2) above station.

AVERAGE DISCHARGE.--9 years, 501 ft^3/s (14.19 m^3/s), 363,000 acre-ft/yr (448 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,340 ft^3/s (236 m^3/s) May 22, 1978, gage height, 9.96 ft (3.036 m); minimum daily, 45 ft^3/s (1.27 m^3/s) Nov. 30, 1975.

MONTHLY AND ANNUAL MEAN DISCHARGES 1974-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	511	216	283	89	0.31	4.7
November	388	84	223	91	.41	3.7
December	389	146	220	76	.34	3.7
January	334	140	226	83	.37	3.8
February	315	154	229	59	.26	3.8
March	705	143	327	169	.52	5.4
April	594	99	381	152	.40	6.4
May	2500	361	943	721	.76	15.7
June	3450	587	1530	992	.65	25.4
July	2260	405	804	605	.75	13.4
August	915	375	498	187	.38	8.3
September	436	242	339	61	.18	5.6
Annual	885	337	501	210	.42	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1975-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	81	62	53	-----	-----	-----
3	90	70	60	-----	-----	-----
7	109	84	69	-----	-----	-----
14	124	92	75	-----	-----	-----
30	140	106	89	-----	-----	-----
60	163	140	131	-----	-----	-----
90	180	154	143	-----	-----	-----
120	195	165	153	-----	-----	-----
183	223	193	179	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 5 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1974-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	1980	3500	5070	-----	-----	-----
3	1950	3320	4660	-----	-----	-----
7	1840	3010	4090	-----	-----	-----
15	1660	2720	3710	-----	-----	-----
30	1380	2340	3240	-----	-----	-----
60	1060	1790	2490	-----	-----	-----
90	878	1450	2000	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1974-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
3690	1510	1020	731	556	440	380	327	282	238	200	159	127	93	83	65	53

06308400 PUMPKIN CREEK NEAR MILES CITY, MONT.

LOCATION.--Lat 46°13'42", long 105°41'24", in SW¼NE¼SW¼ sec. 35, T. 6 N., R. 48 E., Custer County, Hydrologic Unit 10090102, on right bank 12 ft (4 m) upstream from bridge on U.S. Highway 312, 7.5 mi (12.1 km) upstream from mouth, and 16 mi (26 km) southeast of Miles City.

DRAINAGE AREA.--697 mi^2 (1,805 km^2).

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,475.86 ft (754.642 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Diversions for irrigation of about 3,600 acres (14.5 km^2) above station.

AVERAGE DISCHARGE.--10 years, 16.1 ft^3/s (0.456 m^3/s), 11,660 acre-ft/yr (14.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,890 ft^3/s (81.8 m^3/s) May 6, 1975, gage height, 12.27 ft (3.740 m); no flow at times each year.

MONTHLY AND ANNUAL MEAN DISCHARGES 1973-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	3.9	0.00	0.87	1.2	1.4	0.4
November	2.7	.00	.45	.81	1.8	.2
December	.74	.00	.22	.26	1.2	.1
January	18	.00	2.4	5.7	2.3	1.2
February	118	.00	25	40	1.6	13.0
March	299	.01	65	108	1.7	33.5
April	84	.00	21	27	1.3	11.0
May	205	.00	45	77	1.7	23.3
June	64	.00	20	23	1.1	10.6
July	18	.00	4.2	6.7	1.6	2.2
August	5.6	.00	.99	1.7	1.8	.5
September	60	.00	7.6	19	2.5	3.9
Annual	50	.22	16	16	1.0	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1974-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1			-----	-----	-----	-----
3			-----	-----	-----	-----
7			-----	-----	-----	-----
14			-----	-----	-----	-----
30			-----	-----	-----	-----
60			-----	-----	-----	-----
90	0.00	0.00	-----	-----	-----	-----
120	.08	.01	-----	-----	-----	-----
183	.38	.10	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 6 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1973-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	328	1150	-----	-----	-----	-----
3	247	914	-----	-----	-----	-----
7	165	568	-----	-----	-----	-----
15	100	356	-----	-----	-----	-----
30	60	213	-----	-----	-----	-----
60	36	127	-----	-----	-----	-----
90	27	103	-----	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1973-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
306	69	21	9.1	3.8	.86	.49	.14	.01	.01	.01	.01	.01	.01	.01	.01	.01

06308500 TONGUE RIVER AT MILES CITY, MONT.

LOCATION.--Lat 46°20'44", long 105°48'10", in NE¼NE¼SE¼ sec. 23, T. 7 N., R. 47 E., Custer County, Hydrologic Unit 10090102, on right bank 4 mi (6 km) south of Miles City and at mile 8.1 (13.0 km).

DRAINAGE AREA.--5,379 mi^2 (13,932 km^2).

PERIOD OF RECORD.--April 1938 to April 1942, April 1946 to current year. Published as "near Miles City" April 1938 to April 1942. Not equivalent to records published as "near Miles City" May 1929 to October 1932. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,375.76 ft (724.132 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). April 1938 to April 1942, nonrecording gage at site 8 mi (13 km) upstream at different datum. April 1946 to Sept. 30, 1963, at datum 1.00 ft (0.305 m) higher.

REMARKS.--Flow regulation by Tongue River Reservoir (station 06307000), and many small reservoirs in Wyoming (combined capacity about 15,000 acre-ft, 18.5 hm^2). Diversions for irrigation of about 100,800 acres (408 km^2), revised, above station.

AVERAGE DISCHARGE.--39 years (1938-41, 1946-82), 440 ft^3/s (12.46 m^3/s), 318,800 acre-ft/yr (393 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,300 ft^3/s (377 m^3/s) June 15, 1962, gage height, 12.33 ft (3.758 m), present datum, from rating curve extended above 8,220 ft^3/s (233 m^3/s) on basis of float measurement; maximum gage height, 13.27 ft (4.045 m) Mar. 19, 1960, Feb. 15, 1971 (ice jam), present datum; no flow July 9-19, Aug. 13, 14, Sept. 28, 1940.

MONTHLY AND ANNUAL MEAN DISCHARGES 1939-41, 1947-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	694	10	254	162	0.64	4.8
November	567	77	260	136	.52	4.9
December	423	70	200	77	.39	3.8
January	502	79	199	88	.44	3.7
February	1790	102	283	276	.97	5.3
March	1780	80	592	472	.80	11.2
April	1690	13	498	371	.75	9.4
May	2980	29	764	576	.75	14.4
June	3830	49	1390	937	.67	26.2
July	2210	13	480	439	.91	9.0
August	700	6.1	181	153	.85	3.4
September	599	5.3	201	134	.67	3.8
Annual	986	57	442	203	.46	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1939-42, 1947-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	29	7.0	2.6	0.84	0.00	-----
3	31	7.4	2.8	.88	.00	-----
7	37	8.9	3.3	1.1	.00	-----
14	45	12	4.9	2.2	.81	-----
30	67	21	10	5.3	2.3	-----
60	110	41	20	10	4.2	-----
90	140	69	43	28	16	-----
120	178	96	61	39	22	-----
183	210	126	86	60	37	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 37 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
4240	7320	9620	12700	15200	17800

Weighted skew = -0.180

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1939-41, 1947-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	3470	5690	7040	8570	9570	-----
3	3000	4770	5720	6660	7200	-----
7	2490	3860	4510	5090	5390	-----
15	2010	3130	3700	4240	4540	-----
30	1590	2500	2950	3380	3610	-----
60	1160	1840	2210	2580	2790	-----
90	955	1490	1780	2060	2220	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1939-41, 1947-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
3480	1650	1050	727	575	383	295	238	201	165	129	70	26	7.1	4.8	1.9	.10

06309000 YELLOWSTONE RIVER AT MILES CITY, MONT.

LOCATION.--Lat 46°25'18", long 105°51'38", in NE¼SW¼NW¼ sec. 28, T. 8 N., R. 47 E., Custer County, Hydrologic Unit 10100001, on left bank at upstream side of bridge on State Highway 22 at Miles City, 0.8 mi (1.3 km) downstream from Tongue River, and at mile 184.2 (296.4 km).

DRAINAGE AREA.--48,253 mi^2 (124,975 km^2).

PERIOD OF RECORD.--September 1922 to September 1923, August 1928 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,333.3 ft (711.19 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to May 6, 1929, nonrecording gages at pumping plant 1.2 mi (1.9 km) downstream at different datums. May 6, 1929, to Sept. 30, 1931, nonrecording gage, and Oct. 1, 1931, to Nov. 10, 1937, water-stage recorder 300 ft (91 m) upstream from present site at same datum. Nov. 11, 1937, to Sept. 30, 1946, water-stage recorder at pumping plant 1.2 mi (1.9 km) downstream at different datum. Oct. 1, 1946, to Mar. 15, 1979, water-stage recorder at site 300 ft (91 m) upstream at present datum. Mar. 16, 1979, to Sept. 21, 1979, nonrecording gage at present site and datum. Sept. 22, 1979, recording gage established at same site and datum.

REMARKS.--Some regulation by reservoirs on tributary streams. Diversions for irrigation of about 1,100,000 acres (4,450 km^2) above station (does not include flood irrigation).

AVERAGE DISCHARGE.--55 years (1922-23, 1928-82), 11,600 ft^3/s (328.5 m^3/s), 8,404,000 acre-ft/yr (10.4 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 102,000 ft^3/s (2,889 m^3/s) May 22, 1978, gage height, 16.50 ft (5.029 m); maximum gage height, 21.7 ft (6.61 m) Mar. 20, 1944 [ice jam, from floodmark, at site 300 ft (91 m) upstream at present datum]; minimum discharge, 996 ft^3/s (28.2 m^3/s) Dec. 14, 1932.

MONTHLY AND ANNUAL MEAN DISCHARGES 1923, 1929-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	13000	4120	7680	2080	0.27	5.5
November	10900	3980	7020	1660	.24	5.0
December	9120	2920	5560	1470	.26	4.0
January	8900	2030	5050	1530	.30	3.6
February	16200	2340	6080	2450	.40	4.4
March	18600	4100	8570	3240	.38	6.2
April	15200	2730	8270	2690	.33	5.9
May	29100	7330	17400	5110	.29	12.5
June	58600	13000	36700	10400	.28	26.4
July	46300	3990	21200	10400	.49	15.3
August	16200	2620	8230	3500	.42	5.9
September	13700	2960	7230	2530	.35	5.2
Annual	16700	6140	11600	2680	.23	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1930-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	2180	1600	1370	1200	1040	953
3	2340	1720	1470	1300	1120	1020
7	2680	2000	1720	1530	1330	1220
14	3260	2440	2080	1830	1570	1420
30	4030	3010	2550	2220	1880	1680
60	4670	3570	3080	2710	2330	2110
90	5060	3950	3440	3060	2660	2420
120	5450	4370	3870	3490	3100	2850
183	6060	4850	4280	3850	3400	3120

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 51 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
54300	60200	68000	85000	101000	117000

Weighted skew = -0.400

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1923, 1929-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	53700	68300	75900	83900	88900	93100
3	51800	65200	72000	78800	82900	86400
7	48300	60800	67000	73300	77100	80300
15	44000	55400	61100	66800	70300	73200
30	39000	49500	54800	60200	63400	66100
60	31300	39800	44200	48900	51800	54300
90	25500	32200	35700	39200	41400	43200

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1923, 1929-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
56900	38200	26700	19300	14600	10500	8710	7540	6650	5800	4980	3960	3180	2390	2070	1810	148

06309075 SUNDAY CREEK NEAR MILES CITY, MONT.

LOCATION.--Lat 46°28'23", long 105°50'34", in NW¼SW¼SW¼ sec. 3, T. 8 N., R. 47 E., Custer County, Hydrologic Uni 10100001, on left bank 15 ft (5 m) downstream from bridge on FAS Route 489, 5.5 mi (8.8 km) downstream from confluence of North and South Sunday Creeks, 5.5 mi (8.8 km) north of Miles City, and at mile 9.5 (15.3 km)

DRAINAGE AREA.--714 mi^2 (1,849 km^2).

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,380 ft (725 m), from topographic map.

REMARKS.--Diversions for irrigation of about 400 acres (1.62 km^2) above station.

AVERAGE DISCHARGE.--8 years, 42.7 ft^3/s (1.209 m^3/s), 30,940 acre-ft/yr (38.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,760 ft^3/s (191 m^3/s) May 7, 1975, gage height, 13.30 ft (4.054 m); no flow at times each year.

MONTHLY AND ANNUAL MEAN DISCHARGES 1975-82

Month	Maximim (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	94	0.00	17	32	1.9	3.3
November	12	.00	2.0	4.2	2.1	.4
December	4.0	.00	.93	1.6	1.7	.2
January	6.7	.00	.90	2.4	2.6	.2
February	244	.00	64	109	1.7	12.4
March	610	.29	156	263	1.7	30.3
April	130	.00	39	56	1.4	7.5
May	450	.00	104	170	1.6	20.2
June	199	2.7	84	67	.80	16.3
July	55	.01	13	18	1.4	2.5
August	42	.04	13	13	1.0	2.5
September	132	.00	21	45	2.1	4.2
Annual	103	5.4	43	32	.74	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1976-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1			-----	-----	-----	-----
3			-----	-----	-----	-----
7			-----	-----	-----	-----
14			-----	-----	-----	-----
30			-----	-----	-----	-----
60	0.00	0.00	-----	-----	-----	-----
90	.09	.00	-----	-----	-----	-----
120	.35	.00	-----	-----	-----	-----
183	3.3	.08	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 4 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1975-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	1570	3340	-----	-----	-----	-----
3	1180	2530	-----	-----	-----	-----
7	787	1670	-----	-----	-----	-----
15	469	1010	-----	-----	-----	-----
30	265	570	-----	-----	-----	-----
60	142	302	-----	-----	-----	-----
90	102	228	-----	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1975-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
1140	160	57	28	15	3.5	1.2	.30	.11	.01	.01	.01	.01	.01	.01	.01	.01

06324500 POWDER RIVER AT MOORHEAD, MONT.

LOCATION.--Lat 45°04'04", long 105°52'10", in NW¼SE¼NW¼ sec. 8, T. 9 S., R. 48 E., Powder River County, Hydrologic Unit 10090207, on left bank 500 ft (152 m) downstream from discontinued post office at Moorhead, 6.2 mi (10.0 km) upstream from Buffalo Creek, and at mile 184.8 (297.3 km).

DRAINAGE AREA.--8,088 mi^2 (20,948 km^2).

PERIOD OF RECORD.--May 1929 to September 1972, October 1974 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1309: 1932(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,334.6 ft (1,016.39 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Aug. 28, 1931, nonrecording gage at site 0.3 mi (0.5 km) upstream at different datum. Aug. 28, 1931, to Mar. 21, 1956, water-stage recorder at site 1.2 mi (1.9 km) upstream at different datum. Mar. 22 to July 24, 1956, nonrecording gage at site 0.3 mi (0.5 km) downstream at different datum. July 25 to Sept. 12, 1956, nonrecording gage at present site and datum.

REMARKS.--Some regulation by three reservoirs in Wyoming with combined usable capacity of 36,800 acre-ft (45.4 hm^3). Diversions for irrigation of about 66,300 acres (268 km^2) above station.

AVERAGE DISCHARGE.--51 years, 459 ft^3/s (13.00 m^3/s), 332,500 acre-ft/yr (410 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD (REVISED).--Maximum discharge, 33,000 ft^3/s (935 m^3/s) May 20, 1978, gage height, 15.24 ft (4.645 m); maximum gage height, 17.7 ft (5.39 m) Mar. 21, 1956, site and datum then in use (ice jam); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 30, 1923, reached a stage of 19 ft (5.8 m), site and datum used 1931-56, from information by local residents.

MONTHLY AND ANNUAL MEAN DISCHARGES 1930-72, 1975-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	700	16	194	131	0.67	3.5
November	491	80	210	86	.41	3.8
December	326	56	161	60	.37	2.9
January	445	27	145	67	.46	2.6
February	1200	21	270	216	.80	4.9
March	2290	210	655	432	.66	11.9
April	1310	117	525	262	.50	9.5
May	5550	83	1090	910	.84	19.7
June	4130	40	1440	1070	.74	26.2
July	2500	34	503	472	.94	9.1
August	1220	.60	172	204	1.2	3.1
September	686	1.3	141	152	1.1	2.6
Annual	1090	109	459	197	.43	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1931-72, 1976-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	12	2.0	0.00	0.00	0.00	0.00
3	13	2.3	.00	.00	.00	.00
7	17	2.8	.52	.00	.00	.00
14	19	6.1	2.4	.23	.00	.00
30	34	11	4.8	2.3	.94	.48
60	58	25	15	10	6.0	4.2
90	89	46	30	21	14	10
120	117	68	49	36	25	19
183	134	91	74	63	52	45

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 49 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
7380	13500	18900	27200	34800	43500

Weighted skew = -0.020

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1930-72, 1975-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	4860	8720	11800	16400	20200	24400
3	3790	6640	8910	12200	15000	18000
7	2810	4780	6290	8430	10200	12000
15	2130	3560	4600	5980	7060	8160
30	1640	2750	3530	4550	5330	6110
60	1240	2030	2590	3310	3860	4400
90	1030	1610	2010	2530	2910	3290

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1930-72, 1975-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
4150	1880	1130	726	565	366	274	212	163	124	87	40	17	6.2	2.8	.13	.10

06324710 POWDER RIVER AT BROADUS, MONT.

LOCATION.--Lat 45°25'37", long 105°24'05", in NE¼NE¼SE¼ sec. 3, T. 5 S., R. 51 E., Powder River County, Hydrologic Unit 10090207, on right bank 100 ft (30.5 m) upstream from bridge on U.S. Highway 212, 0.4 mi (0.6 km) downstream from Doyle Creek, 1.0 mi (1.6 km) south of Broadus, 7.0 mi (11.3 km) upstream from Little Powder River, and at mile 162.0 (260.7 km).

DRAINAGE AREA.--8,748 mi^2 (22,657 km^2).

PERIOD OF RECORD.--October 1975 to current year. Station operated seasonally Mar. 1, 1982, to Sept. 30, 1982.

REVISED RECORDS.--WDR MT-78-1: 1976(M), 1977(M).

GAGE.--Water-stage recorder. Datum of gage is 3,016.30 ft (919.368 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Some regulation by three reservoirs in Wyoming with combined usable capacity of 36,800 acre-feet (45.4 hm^3). Diversions for irrigation of about 70,000 acres (283 km^2) above station.

AVERAGE DISCHARGE.--6 years (1976-1981), 488 ft^3/s (13.82 m^3/s), 353,600 acre-ft/yr (436 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,000 ft^3/s (850 m^3/s) May 21, 1978, gage height, 12.96 ft (3.95 m^3/s); minimum daily, 6.6 ft^3/s (0.19 m^3/s) July 19, 1977.

MONTHLY AND ANNUAL MEAN DISCHARGES 1976-81

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	352	186	263	70	0.27	4.5
November	412	159	243	94	.39	4.2
December	328	126	198	81	.41	3.4
January	451	118	203	127	.63	3.5
February	461	124	259	129	.50	4.4
March	1800	332	704	553	.79	12.1
April	600	175	441	157	.36	7.6
May	5520	459	1620	1950	1.2	27.8
June	3060	477	1140	1000	.88	19.6
July	1090	94	378	360	.95	6.5
August	372	126	245	96	.39	4.2
September	265	36	136	101	.74	2.3
Annual	1130	277	488	319	.65	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1977-81

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	28	12	7.5	-----	-----	-----
3	33	14	8.1	-----	-----	-----
7	39	15	8.8	-----	-----	-----
14	53	21	13	-----	-----	-----
30	86	48	35	-----	-----	-----
60	126	109	105	-----	-----	-----
90	136	116	111	-----	-----	-----
120	159	133	125	-----	-----	-----
183	172	149	143	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 3 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1976-81

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	2800	7260	14300	-----	-----	-----
3	2180	5690	11400	-----	-----	-----
7	1810	4360	8040	-----	-----	-----
15	1470	3350	5860	-----	-----	-----
30	1220	2620	4330	-----	-----	-----
60	895	1840	3030	-----	-----	-----
90	755	1460	2290	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1976-81

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
4280	1580	858	637	532	427	331	266	205	168	133	95	55	29	22	14	7.9

06325500 LITTLE POWDER RIVER NEAR BROADUS, MONT.

LOCATION.--Lat 45°23'25", long 105°18'15", in NW¼NE¼ sec. 21, T. 5 S., R. 52 E., Powder River County, on left bank 1.5 mi (2.4 km) downstream from East Fork, 5.5 mi (8.8 km) southeast of Broadus, and 8 mi (13 km) upstream from mouth.

DRAINAGE ARE.--1,974 mi^2 (5,115 km^2).

PERIOD OF RECORD.--May 1947 to September 1953, water year 1956 (annual maximum), March 1957 to September 1972 (fragmentary record March to September 1962), discontinued. Monthly discharge only for May 1947, published in WSP 1309.

REVISED RECORDS.--WSP 1116: 1947. WSP 1729: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Altitude of gage is 3,020 ft (920.50 m), by barometer. Prior to Dec. 10, 1962, water-stage recorder at site 0.8 mi (1.3 km) upstream at different datum.

REMARKS.--Small diversions for irrigation of hay meadows above station.

AVERAGE DISCHARGE.--20 years (1947-53, 1957-61, 1962-72), 39.6 ft^3/s (28,690 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 2,700 ft^3/s (76.464 m^3/s) Mar. 3, 1972 [gage height, 9.3 ft, (2.8 m) backwater from ice]; maximum gage height, 9.36 ft (2.85 m) Mar. 19 or 20, 1960 (from high-water mark in gage well, backwater from ice, site and datum then in use); no flow at times.

MONTHLY AND ANNUAL MEAN DISCHARGES 1948-53, 1958-61, 1963-72

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	70	1.5	6.8	15	2.2	1.4
November	16	1.8	4.5	3.2	.70	.9
December	8.7	.86	3.9	2.1	.55	.8
January	8.2	.35	3.8	2.0	.53	.8
February	340	3.2	44	82	1.9	9.2
March	559	5.3	164	194	1.2	34.3
April	238	2.3	65	76	1.2	13.7
May	190	3.1	52	51	.99	10.9
June	305	2.0	81	76	.93	17.1
July	110	1.5	29	28	.96	6.2
August	69	.00	14	20	1.4	3.0
September	54	.39	7.6	12	1.6	1.6
Annual	110	3.0	40	27	.67	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1949-53, 1958-62, 1964-72

Period (consecutive days)	Discharge, in ft^3/s for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	0.30	0.00	0.00	0.00	-----	-----
3	.31	.00	.00	.00	-----	-----
7	.58	.03	.00	.00	-----	-----
14	.86	.11	.00	.00	-----	-----
30	1.3	.51	.23	.05	-----	-----
60	2.1	1.0	.65	.43	-----	-----
90	2.7	1.5	1.1	.89	-----	-----
120	2.9	1.8	1.5	1.2	-----	-----
183	3.5	2.3	1.9	1.6	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 25 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
1140	1960	2640	3820	4870	6070

Weighted skew = -0.059

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1948-53, 1958-61, 1963-72

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	943	1530	1920	2390	-----	-----
3	737	1340	1740	2240	-----	-----
7	519	975	1270	1610	-----	-----
15	349	641	806	970	-----	-----
30	231	421	520	610	-----	-----
60	147	269	333	392	-----	-----
90	108	196	241	284	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1948-53, 1958-61, 1963-72

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
713	149	72	47	33	16	8.7	5.8	4.2	3.3	2.5	1.6	.59	.09	.09	.09	.09

06326300 MIZPAH CREEK NEAR MIZPAH, MONT.

LOCATION.--Lat 46°15'39", long 105°17'34", in NW¼NE¼SW¼ sec. 24, T. 6 N., R. 51 E., Custer County, Hydrologic Unit 10090210, on left bank 20 ft (6 m) downstream from county bridge, revised, 1.0 mi (1.6 km) upstream from mouth, and 1.6 mi (2.6 km) northwest of Mizpah.

DRAINAGE AREA.--797 mi^2 (2,064 km^2).

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Altitude of gage is 2,490 ft (759 m), from topographic map.

REMARKS.--Minor irrigation or diversions above station.

AVERAGE DISCHARGE.--8 years, 17.1 ft^3/s (0.484 m^3/s), 12,390 acre-ft/yr (15.3 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,010 ft^3/s (56.9 m^3/s) Mar. 23, 1978, gage height, 9.75 ft (2.972 m), from rating curve extended above 1,690 ft^3/s (45.3 m^3/s); maximum gage height, 10.64 ft (3.243 m) Mar. 20, 1978 (backwater from ice); no flow at times each year.

MONTHLY AND ANNUAL MEAN DISCHARGES 1975-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	20	.00	4.1	7.4	1.8	2.0
November	1.6	.00	.37	.52	1.4	.2
December	2.1	.01	.37	.70	1.9	.2
January	2.0	.00	.32	.68	2.1	.2
February	82	.00	18	28	1.5	9.0
March	319	.13	77	115	1.5	37.9
April	126	.07	25	42	1.7	12.3
May	196	.06	45	71	1.6	22.2
June	71	.13	23	24	1.1	11.1
July	28	.00	7.4	9.4	1.3	3.6
August	2.3	.00	1.0	.87	.85	.5
September	11	.00	1.9	3.8	2.0	1.0
Annual	46	1.1	17	17	.99	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1976-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1			-----	-----	-----	-----
3			-----	-----	-----	-----
7			-----	-----	-----	-----
14			-----	-----	-----	-----
30			-----	-----	-----	-----
60	0.00	0.00	-----	-----	-----	-----
90	.06	.00	-----	-----	-----	-----
120	.09	.00	-----	-----	-----	-----
183	.34	.03	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 4 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
--	--	--	--	--	--

Weighted skew = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1975-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	280	932	-----	-----	-----	-----
3	223	807	-----	-----	-----	-----
7	160	541	-----	-----	-----	-----
15	96	330	-----	-----	-----	-----
30	56	194	-----	-----	-----	-----
60	36	123	-----	-----	-----	-----
90	27	95	-----	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1975-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time															
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
328	74	27	16	6.9	1.8	.55	.24	.11	.04	.01	.01	.01	.01	.01	.01	.01

06326500 POWDER RIVER NEAR LOCATE, MONT.

LOCATION.--Lat 46°26'56", long 105°18'44", in NW¼SW¼ sec. 14, T. 8 N., R. 51 E., Custer County, Hydrologic Unit 10090209, on left bank 1.5 mi (2.4 km) downstream from bridge on old U.S. Highway 12 at present site of Locate, 1.5 mi (2.4 km) upstream from Locate Creek, 5 mi (8 km) west of former site of Locate, 25 mi (40 km) east of Miles City, and at mile 27.9 (44.9 km).

DRAINAGE AREA.--13,194 mi^2 (34,172 km^2). Drainage area of site 1.5 mi (2.4 km) upstream, 13,189 mi^2 (34,160 km^2).

PERIOD OF RECORD.--March 1938 to current year.

REVISED RECORDS.--WSP 926: 1939. WSP 1309: 1938-39 (M). WSP 1729: Drainage area.

GAGE (REVISED).--Water-stage recorder. Datum of gage is 2,384.79 ft (726.884 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to July 11, 1947, nonrecording gage at bridge 1.5 mi (2.4 km) upstream, and July 11, 1947, to Sept. 30, 1965, water-stage recorder at site near upstream bridge at different datum. Oct. 1, 1965, to Oct. 4, 1966, nonrecording gage, and Oct. 5, 1966, to Mar. 21, 1978, water-stage recorder at present site and datum. Mar. 22, 1978, to Apr. 23, 1981, water-stage recorder 1.5 mi (2.4 km) upstream at different datum, Apr. 24 to Aug. 20, 1981, water-stage recorder at present site and datum, and Aug. 21, 1981, to Sept. 30, 1981, water-stage recorder 1.5 mi (2.4 km) upstream at different datum. Effective Oct. 1, 1981, recording and nonrecording gages will be maintained at both the upstream and present gage locations and each site will be employed depending on the water-stage control conditions and/or the capability of recording useful gage-height data.

REMARKS.--Some regulation by three reservoirs in Wyoming with combined usable capacity of 36,800 acre-ft (45.5 hm^3). Diversions for irrigation of about 101,800 acres (412 km^2), revised, above station.

AVERAGE DISCHARGE.--44 years, 614 ft^3/s (17.39 m^3/s), 444,800 acre-ft/yr (548 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 31,000 ft^3/s (878 m^3/s) Feb. 19, 1943; maximum gage height, 12.27 ft (3.740 m) Mar. 16, 1978 (backwater from ice); no flow Jan. 16 to Feb. 12, Feb. 22-24, 1950, July 27, Sept. 21-27, Oct. 1, 1960, Sept. 4-8, 1961.

MONTHLY AND ANNUAL MEAN DISCHARGES 1939-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	921	1.8	221	217	0.98	3.0
November	415	13	193	104	.54	2.6
December	417	13	147	83	.56	2.0
January	476	4.5	134	91	.68	1.8
February	3850	2.8	458	701	1.5	6.2
March	4630	80	1370	1200	.88	18.6
April	3060	109	807	558	.69	11.0
May	5970	142	1210	991	.82	16.4
June	8050	123	1820	1530	.84	24.7
July	2000	36	615	503	.82	8.4
August	1100	2.3	225	203	.90	3.0
September	898	.19	170	207	1.2	2.3
Annual	1620	79	614	322	.52	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1939-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	13	3.3	0.91	0.00	0.00	0.00
3	15	4.3	1.3	.00	.00	.00
7	19	4.8	1.6	.19	.00	.00
14	30	6.4	1.9	.43	.00	.00
30	47	8.8	2.3	.59	.10	.02
60	72	23	10	4.6	1.7	.77
90	106	45	23	12	4.9	2.5
120	133	62	35	19	8.9	5.0
183	151	78	49	32	18	12

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 40 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
9480	18000	24500	33500	40700	48100

Weighted skew = -0.362

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1939-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	7060	13400	18200	24400	29100	33900
3	5760	11100	15200	20700	25100	29500
7	4250	8070	11000	14900	17900	21000
15	3110	5520	7210	9350	10900	12400
30	2370	4020	5090	6350	7230	8040
60	1740	2870	3560	4360	4880	5360
90	1420	2280	2800	3410	3820	4200

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1939-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
6320	2390	1470	1050	775	491	330	229	164	120	81	39	16	5.8	2.1	.45	.10

06326600 O'FALLON CREEK NEAR ISMAY, MONT.

LOCATION.--Lat 46°25'17", long 104°45'40", in NE¼SE¼ sec. 30, T. 8 N., R. 56 E., Fallon County, Hydrologic Unit 10100005, on left bank, about 350 ft (107 m) upstream from U.S. Highway 12, 1 mi (2 km) east of road to Ismay, 6.5 mi (10.5 km) southeast of Ismay, and 11.5 mi (18.5 km) west of Plevna, and at mile 58.3 (93.8).

DRAINAGE AREA.--669 mi^2 (1,733 km^2).

PERIOD OF RECORD.--October 1977 to current year. Crest-stage partial-record data collected July 1962 to September 1977.

GAGE.--Water-stage recorder and crest-stage gages. Altitude of gage is 2,590 ft (789 m), from topographic map.

AVERAGE DISCHARGE.--5 years, 24.7 ft^3/s (0.700 m^3/s), 17,900 acre-ft/yr (22.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,100 ft^3/s (87.8 m^3/s) Mar. 22, 1978, gage height, 9.35 ft (2.850 m); no flow on many days most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge 1963-77, 4,700 ft^3/s (133 m^3/s) July 3, 1976, extension of crest-stage gage rating above 3,860 ft^3/s (109 m^3/s).

MONTHLY AND ANNUAL MEAN DISCHARGES 1978-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	13	0.00	2.9	5.6	1.9	1.0
November	1.7	.00	.58	.67	1.1	.2
December	1.6	.01	.75	.68	.91	.3
January	.89	.00	.33	.38	1.2	.1
February	130	.04	27	58	2.2	9.0
March	568	.43	136	243	1.8	46.0
April	120	.14	38	50	1.3	13.0
May	81	.03	31	38	1.2	10.6
June	160	1.5	39	68	1.7	13.2
July	21	.00	6.6	8.9	1.4	2.2
August	58	.37	13	25	2.0	4.3
September	1.2	.00	.30	.51	1.7	.1
Annual	64	1.2	25	25	1.0	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1979-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1			-----	-----	-----	-----
3			-----	-----	-----	-----
7			-----	-----	-----	-----
14			-----	-----	-----	-----
30			-----	-----	-----	-----
60	0.04	0.00	-----	-----	-----	-----
90	.08	.02	-----	-----	-----	-----
120	.16	.06	-----	-----	-----	-----
183	.24	.06	-----	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON 17 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
1230	2920	4410	6820	8960	11400

Weighted skew = -0.229

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1978-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	645	2130	-----	-----	-----	-----
3	480	1650	-----	-----	-----	-----
7	315	1160	-----	-----	-----	-----
15	191	673	-----	-----	-----	-----
30	128	417	-----	-----	-----	-----
60	72	228	-----	-----	-----	-----
90	51	163	-----	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1978-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time															
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
592	84	29	15	8.9	2.6	1.2	.73	.30	.09	.02	.01	.01	.01	.01	.01	.01

06329200 BURNS CREEK NEAR SAVAGE, MONT.

LOCATION.--Lat 47°22'20", long 104°25'46", in NE¼SE¼SE¼ sec. 27, T. 19 N., R. 57 E., Richland County, Hydrologic Unit 10100004, on right bank 1,000 ft (305 m) upstream from bridge on State Highway 16, 7 mi (11 km) southwest of Savage, and at mile 2.1 (3.4 km).

DRAINAGE AREA.--233 mi^2 (603 km^2).

PERIOD OF RECORD.--October 1957 to September 1967, September 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,000 ft (610 m), from topographic map.

REMARKS.--Minor diversions for irrigation upstream.

AVERAGE DISCHARGE.--17 years (1958-67, 1976-82), 6.82 ft^3/s (0.193 m^3/s), 4,940 acre-ft/yr (6.09 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,100 ft^3/s (59.5 m^3/s) Mar. 20, 1960, gage height, 5.31 ft (1.619 m), from floodmarks, from rating curve extended above 500 ft^3/s (14.2 m^3/s) on basis of slope-area measurement of peak flow; maximum gage height, 6.47 ft (1.972 m) Feb. 20, 1982 (backwater from ice); no flow at times most years.

MONTHLY AND ANNUAL MEAN DISCHARGES 1958-67, 1976-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	2.4	0.00	0.94	0.74	0.79	1.2
November	2.1	.00	.98	.50	.51	1.2
December	2.1	.00	.75	.51	.68	.9
January	1.7	.00	.50	.50	1.0	.6
February	49	.00	7.5	14	1.9	9.1
March	183	.00	42	54	1.3	51.9
April	118	1.8	14	28	2.0	16.8
May	15	.68	4.2	3.9	.94	5.1
June	15	.22	5.5	4.4	.80	6.7
July	25	.00	4.1	6.6	1.6	5.0
August	1.5	.00	.54	.57	1.0	.7
September	5.0	.00	.70	1.2	1.8	.9
Annual	21	.53	6.8	6.5	.95	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1959-67, 1977-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent: 2 (50%)	5 (20%)	10 (10%)	20 (5%)	50 (2%)	100 (1%)
1				-----	-----	-----
3				-----	-----	-----
7				-----	-----	-----
14				-----	-----	-----
30	0.00	0.00	0.00	-----	-----	-----
60	.06	.00	.00	-----	-----	-----
90	.20	.02	.00	-----	-----	-----
120	.35	.16	.07	-----	-----	-----
183	.46	.25	.15	-----	-----	-----

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 14 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent: 2 (50%)	5 (20%)	10 (10%)	25 (4%)	50 (2%)	100 (1%)
335	1190	2120	3770	5390	7070

Weighted skew = -0.150

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1958-67, 1976-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent: 2 (50%)	5 (20%)	10 (10%)	25 (4%)	50 (2%)	100 (1%)
1	132	552	1120	-----	-----	-----
3	85	363	760	-----	-----	-----
7	53	209	421	-----	-----	-----
15	33	124	240	-----	-----	-----
30	22	81	156	-----	-----	-----
60	14	48	91	-----	-----	-----
90	11	36	64	-----	-----	-----

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1958-67, 1976-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time: 1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
107	21	8.3	5.1	3.3	1.9	1.3	.93	.68	.38	.11	.01	.01	.01	.01	.01	.01

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MONT.

LOCATION.--Lat 47°40'42", long 104°09'22", in SW¼NE¼SW¼ sec. 9, T. 22 N., R. 59 E., Richland County, Hydrologic Unit 10100004, on left bank at Montana-Dakota Utilities Company powerplant, 0.2 mi (0.3 km) downstream from bridge on State Highway 23, 2.5 mi (4.0 km) south of Sidney, 3.0 mi (4.8 km) downstream from Fox Creek, and at mile 29.2 (47.0 km).

DRAINAGE AREA.--69,103 mi^2 (178,977 km^2). Area at site 4.5 mi (7.2 km) upstream, 68,812 mi^2 (178,223 km^2).

PERIOD OF RECORD.--October 1910 to September 1931 (published as "at Intake"), October 1933 to current year. If monthly figures of diversions to Lower Yellowstone Canal at Intake are added to records at this site, records equivalent to those published as Yellowstone River at Glendive (1898-1910, 1931-34) can be obtained. Monthly discharge only for some periods, published in WSP 1309. Monthly figures of diversions into Lower Yellowstone Canal prior to 1951 published in WSP 1309, 1951-60 published in WSP 1729, 1961-65 published in WSP 1916, 1966-70 published in WSP 2116, and 1971 to current year are published in annual reports.

GAGE.--Water-stage recorder. Datum of gage is 1,881.3 ft (573.42 m) National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Jan. 1, 1911, to Sept. 30, 1931, nonrecording gage at site 32 miles (51 km) upstream at different datum. Apr. 9, 1934, water-stage recorder at two sites within 500 ft (150 m) of highway bridge 0.2 mi (0.3 km) upstream and May 17, 1945, to Apr. 3, 1952, nonrecording gage on same bridge at datum 1.36 ft (0.415 m) higher. Apr. 4, 1952, to Nov. 19, 1967, water-stage recorder at site 4.5 mi (7.2 km) upstream at different datum.

REMARKS.--Some regulation on tributary streams. Diversion for irrigation of about 1,250,000 acres (5,060 km^2) above station. Lower Yellowstone Project Main Canal diverts from left bank in NW¼ sec. 36, T. 18 N., R. 56 E., at Lower Yellowstone diversion dam at Intake about 36.6 mi (58.9 km) upstream for irrigation of about 52,000 acres (210 km^2) of which about one-third lies above station.

AVERAGE DISCHARGE.--70 years, 13,080 ft^3/s (370.4 m^3/s), 9,476,000 acre-ft/yr (11.7 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 159,000 ft^3/s (4,500 m^3/s) June 2, 1921, gage height, 12.6 ft (3.84 m), site and datum then in use; maximum gage height observed, 21.85 ft (6.660 m) Mar. 22, 1947, site and datum then in use (backwater from ice); minimum discharge, 470 ft^3/s (13.3 m^3/s) May 17, 1961, gage height, 2.73 ft (0.832 m), site and datum then in use.

MONTHLY AND ANNUAL MEAN DISCHARGES 1924-31, 1934-82

Month	Maximum (ft^3/s)	Minimum (ft^3/s)	Mean (ft^3/s)	Standard deviation (ft^3/s)	Coefficient of variation	Percent of annual runoff
October	29100	4210	8560	3620	0.42	5.6
November	12200	3970	7530	1830	.24	4.9
December	9590	3020	5940	1650	.28	3.9
January	13100	2090	5650	2090	.37	3.7
February	17800	2700	7170	3210	.45	4.7
March	26000	5190	11600	5060	.44	7.6
April	39200	2820	10600	5490	.52	6.9
May	38100	5410	18600	6830	.37	12.2
June	67700	12200	38700	12500	.32	25.3
July	49700	3680	23100	12000	.52	15.1
August	19500	1600	8280	3870	.47	5.4
September	16000	2390	7100	2990	.42	4.7
Annual	21300	5810	12700	3480	.27	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1925-31, 1935-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and non-exceedance probability, in percent					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	2160	1380	1080	868	674	566
3	2280	1490	1190	981	786	676
7	2610	1760	1410	1180	952	824
14	3240	2220	1790	1480	1190	1020
30	4200	2960	2400	1990	1590	1360
60	4890	3640	3080	2660	2240	1990
90	5420	4220	3670	3250	2820	2560
120	5870	4700	4150	3730	3300	3030
183	6450	5060	4400	3900	3380	3060

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON 66 YEARS OF RECORD

Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
2	5	10	25	50	100
50%	20%	10%	4%	2%	1%
69000	96600	113000	132000	144000	156000

Weighted skew = -0.380

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1924-31, 1934-82

Period (consecutive days)	Discharge, in ft^3/s, for indicated recurrence interval, in years, and exceedance probability, in percent					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	61000	82200	94200	107000	116000	124000
3	58300	76700	86500	96700	103000	109000
7	53100	69000	77200	85600	90600	94900
15	47100	61500	69000	76800	81500	85600
30	41100	54300	61300	68600	73200	77100
60	32900	43500	49300	55500	59500	63000
90	26900	35400	39900	44700	47700	50300

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1924-31, 1934-82

Discharge, in ft^3/s, which was equaled or exceeded for indicated percent of time																
1%	5%	10%	15%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	99%	99.5%	99.9%
64500	41600	28700	21500	16700	11800	9590	8300	7250	6260	5270	4070	3090	2100	1690	1460	104