## 06177000 MISSOURI RIVER NEAR WOLF POINT, MT

LOCATION.--Lat 48°04'00", long 105°31'55" (NAD 27), in SW¼NW¼ sec.28, T.27 N., R.48 E., McCone County, Hydrologic Unit 10060001, on right bank 500 ft downstream from bridge on State Highway 13, 5 mi southeast of Wolf Point, 7.8 mi downstream from Wolf Creek, and at river mile 1,701.4.

DRAINAGE AREA.--82,290 $mi^2$.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1928 to current year.

REVISED RECORDS.--WSP 1146: 1931. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,958.57 ft (NGVD 29). Prior to Apr. 13, 1930, nonrecording gages at Wolf Point ferry landing 5.5 mi upstream at different elevation.

REMARKS.-- Water-discharge records good except those for estimated daily discharges, which are fair. Flow partly regulated by Fort Peck Lake and many other reservoirs upstream from station. Diversion for irrigation of about 1,010,400 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 14, 1908, reached a stage of about 20 ft, (site and elevation then in use).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4,540 | 4,650 | 8,590 | e9,000 | e8,900 | e7,800 | 9,130 | 11,200 | 10,400 | 6,290 | 7,950 | 7,250 |
| 2 | 4,530 | 4,700 | 8,590 | e9,100 | e9,100 | e7,300 | 8,550 | 11,100 | 9,860 | 6,530 | 8,110 | 7,200 |
| 3 | 4,520 | 4,710 | 8,290 | e9,100 | e9,100 | e6,700 | 8,230 | 11,200 | 9,410 | 7,450 | 8,260 | 7,140 |
| 4 | 4,520 | 4,770 | 8,420 | e8,900 | e9,000 | e6,500 | 7,860 | 11,300 | 9,610 | 7,650 | 8,430 | 7,480 |
| 5 | 4,460 | 4,760 | 8,620 | e8,900 | e9,200 | e6,400 | 7,590 | 11,200 | 9,160 | 7,740 | 6,980 | 7,710 |
| 6 | 4,440 | 4,960 | 8,730 | e8,800 | e9,100 | e6,600 | 7,210 | 11,000 | 8,760 | 7,590 | 7,380 | 7,590 |
| 7 | 4,430 | 4,680 | 8,610 | e8,600 | e9,400 | e6,300 | 6,920 | 11,300 | 8,200 | 7,830 | 7,390 | 7,380 |
| 8 | 4,440 | 4,670 | 8,590 | e8,700 | e9,500 | e6,600 | 6,500 | 10,900 | 8,290 | 7,940 | 7,320 | 7,310 |
| 9 | 4,470 | 4,720 | 8,540 | e8,900 | e9,400 | e6,600 | 6,330 | 11,400 | 7,750 | 7,600 | 7,190 | 7,350 |
| 10 | 4,460 | 4,740 | 8,540 | e9,000 | e9,200 | e6,400 | 6,110 | 11,300 | 7,690 | 7,690 | 7,160 | 7,390 |
| 11 | 4,380 | 4,760 | 8,740 | e8,900 | e9,000 | e6,400 | 6,010 | 11,500 | 8,020 | 7,510 | 6,970 | 6,900 |
| 12 | 4,380 | 4,710 | 9,260 | e8,900 | e8,800 | e6,300 | 6,200 | 11,500 | 7,710 | 7,720 | 7,060 | 6,860 |
| 13 | 4,390 | 4,690 | 8,640 | e9,100 | e9,000 | e6,000 | 6,050 | 11,700 | 8,500 | 7,500 | 7,360 | 7,050 |
| 14 | 4,390 | 4,700 | 8,540 | e9,100 | e9,000 | e5,900 | 6,260 | 11,700 | 9,530 | 7,400 | 7,150 | 7,190 |
| 15 | 4,420 | 4,720 | 8,530 | e8,700 | e8,800 | e5,800 | 7,050 | 11,500 | 9,700 | 7,670 | 7,060 | 7,150 |
| 16 | 4,610 | 4,720 | 8,480 | e8,900 | e8,800 | 7,080 | 6,450 | 11,500 | 8,830 | 7,640 | 7,020 | 7,070 |
| 17 | 4,680 | 4,710 | 8,510 | e9,100 | e8,900 | 7,830 | 6,310 | 11,400 | 8,220 | 7,620 | 6,920 | 7,070 |
| 18 | 4,550 | 4,710 | 8,470 | e9,300 | e8,800 | 8,440 | 6,320 | 11,300 | 7,690 | 7,370 | 6,870 | 6,950 |
| 19 | 4,500 | 4,700 | 8,480 | e9,500 | e8,500 | 9,760 | 6,260 | 11,700 | 7,620 | 7,290 | 6,960 | 6,410 |
| 20 | 4,500 | 4,710 | 8,540 | e9,200 | e8,400 | 10,500 | 6,220 | 11,500 | 7,280 | 7,630 | 6,800 | 5,930 |
| 21 | 4,480 | 4,700 | 8,540 | e9,200 | e8,600 | 10,800 | 6,630 | 11,400 | 7,070 | 7,120 | 7,040 | 5,560 |
| 22 | 4,520 | e4,500 | 8,510 | e9,200 | e9,000 | 11,800 | 6,990 | 11,700 | 6,830 | 6,990 | 6,950 | 5,390 |
| 23 | 4,490 | e4,900 | 8,610 | e9,000 | e9,700 | 12,800 | 7,020 | 12,100 | 6,720 | 7,070 | 6,740 | 5,010 |
| 24 | 4,500 | e6,600 | 8,340 | e9,200 | e9,400 | 13,900 | 6,790 | 13,000 | 6,400 | 7,150 | 6,890 | 4,670 |
| 25 | 4,440 | e7,100 | 8,120 | e8,900 | e9,200 | 13,300 | 7,650 | 13,300 | 6,320 | 7,190 | 6,860 | 4,620 |
| 26 | 4,470 | e8,000 | 7,950 | e9,100 | e9,300 | 11,800 | 8,530 | 13,800 | 6,150 | 6,970 | 7,020 | 4,890 |
| 27 | 4,490 | e8,800 | 8,280 | e9,200 | e9,300 | 11,400 | 9,900 | 14,800 | 6,170 | 7,070 | 7,110 | 4,820 |
| 28 | 4,460 | e9,100 | 8,620 | e9,000 | e9,100 | 11,000 | 11,200 | 15,300 | 6,290 | 7,170 | 7,070 | 4,660 |
| 29 | 4,630 | e8,600 | e8,200 | e9,000 | e7,800 | 10,400 | 11,200 | 14,400 | 6,230 | 7,390 | 7,130 | 4,640 |
| 30 | 4,690 | 8,350 | e8,500 | e9,000 | --- | 10,100 | 10,700 | 12,000 | 6,230 | 7,700 | 7,110 | 4,590 |
| 31 | 4,600 | --- | e8,800 | e8,900 | --- | 9,480 | --- | 11,500 | --- | 7,820 | 7,210 | --- |
| TOTAL | 139,380 | 165,140 | 264,180 | 279,400 | 261,300 | 267,990 | 224,170 | 370,500 | 236,640 | 229,300 | 223,470 | 191,230 |
| MEAN | 4,496 | 5,505 | 8,522 | 9,013 | 9,010 | 8,645 | 7,472 | 11,950 | 7,888 | 7,397 | 7,209 | 6,374 |
| MAX | 4,690 | 9,100 | 9,260 | 9,500 | 9,700 | 13,900 | 11,200 | 15,300 | 10,400 | 7,940 | 8,430 | 7,710 |
| MIN | 4,380 | 4,500 | 7,950 | 8,600 | 7,800 | 5,800 | 6,010 | 10,900 | 6,150 | 6,290 | 6,740 | 4,590 |
| AC-FT | 276,500 | 327,600 | 524,000 | 554,200 | 518,300 | 531,600 | 444,600 | 734,900 | 469,400 | 454,800 | 443,300 | 379,300 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2004, BY WATER YEAR (WY)*

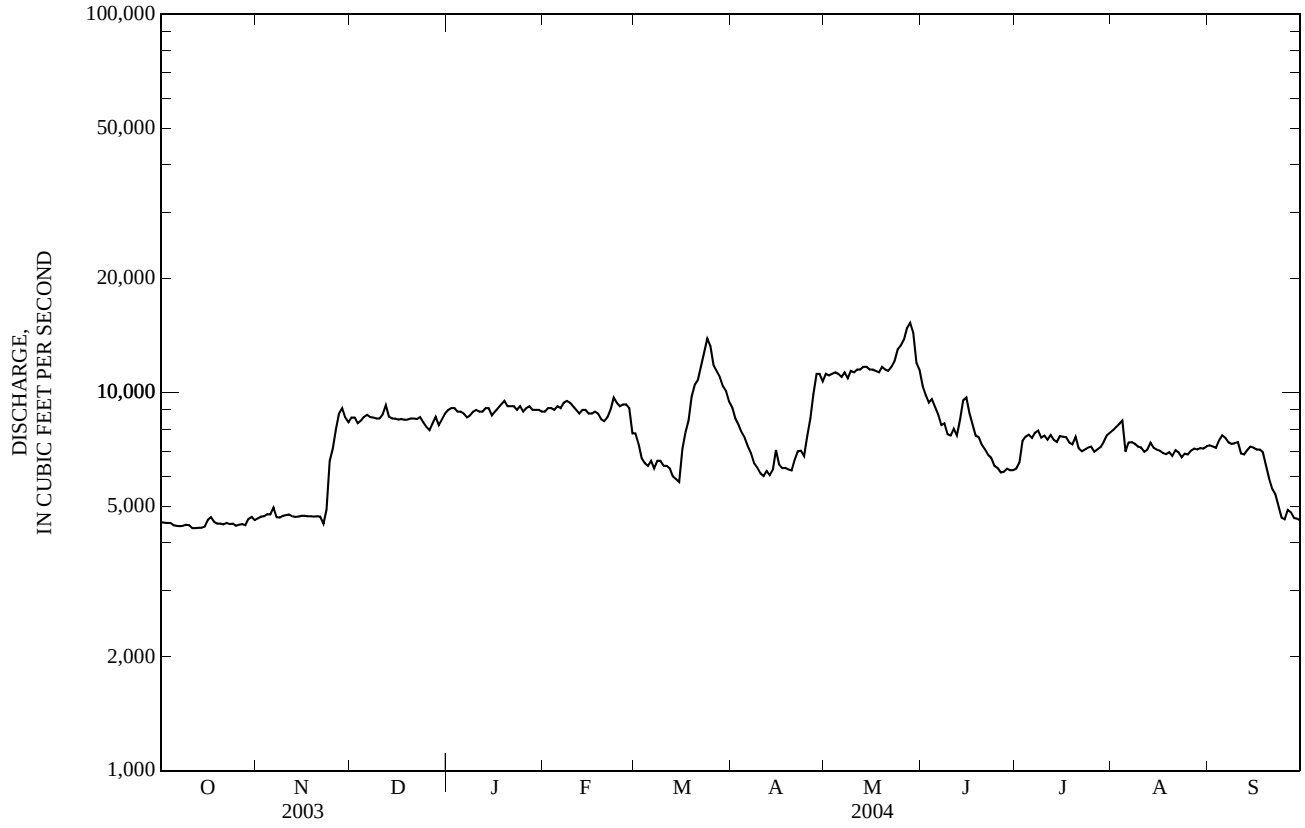
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 11,310 | 9,093 | 9,021 | 9,702 | 9,908 | 8,898 | 9,504 | 9,297 | 9,393 | 10,230 | 11,930 | 11,660 |
| MAX | 29,130 | 22,210 | 13,420 | 14,270 | 15,820 | 16,750 | 27,180 | 21,800 | 26,040 | 36,270 | 27,110 | 27,150 |
| (WY) | (1956) | (1998) | (1944) | (1971) | (1976) | (1976) | (1952) | (1979) | (1975) | (1975) | (1955) | (1955) |
| MIN | 3,151 | 2,328 | 1,338 | 995 | 1,195 | 2,301 | 1,470 | 1,182 | 1,268 | 1,171 | 3,515 | 3,274 |
| (WY) | (1993) | (1947) | (1943) | (1943) | (1943) | (1945) | (1945) | (1945) | (1945) | (1945) | (1963) | (1992) |

06177000 MISSOURI RIVER NEAR WOLF POINT, MT—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1943 - 2004* | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 2,834,510 | | 2,852,700 | | | |
| ANNUAL MEAN | 7,766 | | 7,794 | | 9,998 | |
| HIGHEST ANNUAL MEAN | | | | | 15,850 | 1955 |
| LOWEST ANNUAL MEAN | | | | | 5,607 | 1963 |
| HIGHEST DAILY MEAN | 11,400 | May 18 | 15,300 | May 28 | 45,100 | Apr 19, 1952 |
| LOWEST DAILY MEAN | 3,900 | Mar 15 | 4,380 | Oct 11, 12 | 680 | Dec 5, 1942 |
| ANNUAL SEVEN-DAY MINIMUM | 4,410 | Oct 9 | 4,410 | Oct 9 | 906 | Jan 12, 1943 |
| MAXIMUM PEAK FLOW | | | a15,600 | May 27 | c46,800 | Apr 19, 1952 |
| MAXIMUM PEAK STAGE | | | b8.31 | Jan 10 | 15.64 | Mar 27, 1960 |
| INSTANTANEOUS LOW FLOW | | | | | d320 | Dec 10, 1941 |
| ANNUAL RUNOFF (AC-FT) | 5,622,000 | | 5,658,000 | | 7,243,000 | |
| 10 PERCENT EXCEEDS | 10,200 | | 11,100 | | 15,600 | |
| 50 PERCENT EXCEEDS | 7,980 | | 7,660 | | 9,000 | |
| 90 PERCENT EXCEEDS | 4,660 | | 4,670 | | 4,580 | |

| SUMMARY STATISTICS | WATER YEARS 1929 - 1939** | |
|---|---|---|
| ANNUAL TOTAL | | |
| ANNUAL MEAN | 7,183 | |
| HIGHEST ANNUAL MEAN | 10,300 | 1939 |
| LOWEST ANNUAL MEAN | 4,891 | 1937 |
| HIGHEST DAILY MEAN | 56,700 | Mar 25 1939 |
| LOWEST DAILY MEAN | 840 | Nov 29 1937 |
| ANNUAL SEVEN-DAY MINIMUM | 910 | Feb 10 1938 |
| INSTANTANEOUS PEAK FLOW | f66,800 | Mar 25 1939 |
| INSTANTANEOUS PEAK STAGE | b14.40 | Mar 25 1939 |
| ANNUAL RUNOFF (AC-FT) | 520,400 | |
| 10 PERCENT EXCEEDS | 14,800 | |
| 50 PERCENT EXCEEDS | 5,060 | |
| 90 PERCENT EXCEEDS | 2,600 | |

*--After Fort Peck Lake reached operational level (1943 to current water year).
**--Prior to Fort Peck Lake reaching operational level (1929-1939).
a--Gage height, 5.77 ft.
b--Backwater from ice.
c--Gage height, 9.98 ft.
d--Occurred outside of period of record, during filling of Fort Peck Lake.
e--Estimated.
f--From rating curve extended above 39,000 $ft^3/s$.



06177000 MISSOURI RIVER NEAR WOLF POINT, MT—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949-51, 1961-62, 1965-68, 1970-73, May 2002 to current year.
PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: July 1979 to September 1985, seasonal records May 2002 to current year.
INSTRUMENTATION.--Temperature recorder installed May 16, 2002.
REMARKS.--Seasonal daily water temperature record rated excellent.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 22.0°C, July 17-19, 2004; minimum, 0.0°C, many days during winter periods.
EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: During period of seasonal operation, maximum, 22.0°C, July 17-19; minimum, 5.0°C, May 12.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

| Date | Time | Instantaneous discharge, cfs (00061) | Barometric pressure, mm Hg (00025) | Dissolved oxygen, mg/L (00300) | Dissolved oxygen, percent of saturation (00301) | pH, water, unfltrd field, std units (00400) | Specif. conductance, water unfltrd uS/cm 25 degC (00095) | Temperature, air, deg C (00020) | Temperature, water, deg C (00010) | Hardness, water, mg/L as CaCO3 (00900) | Calcium water, fltrd, mg/L (00915) | Magnesium, water, fltrd, mg/L (00925) | Potassium, water, fltrd, mg/L (00935) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAR | | | | | | | | | | | | | |
| 23... | 1100 | 12,800 | 712 | 11.6 | 90 | 8.0 | 463 | 6.0 | 2.0 | 140 | 32.9 | 13.0 | 4.16 |
| MAY | | | | | | | | | | | | | |
| 19... | 1100 | 11,500 | 712 | 9.0 | 91 | 8.4 | 558 | 12.0 | 12.5 | 220 | 53.0 | 20.5 | 3.99 |
| JUL | | | | | | | | | | | | | |
| 07... | 1015 | 7,330 | 713 | 12.2 | 133 | 8.3 | 568 | 24.0 | 16.5 | 210 | 52.4 | 20.0 | 4.00 |
| AUG | | | | | | | | | | | | | |
| 31... | 1015 | 7,090 | 723 | 8.9 | 99 | 8.5 | 573 | 22.0 | 18.0 | 200 | 49.5 | 19.6 | 3.75 |

| Date | Sodium adsorption ratio (00931) | Sodium, water, fltrd, mg/L (00930) | Sodium, percent (00932) | Alkalinity, water fltrd fxd end lab, mg/L as CaCO3 (29801) | Chloride, water, fltrd, mg/L (00940) | Fluoride, water, fltrd, mg/L (00950) | Silica, water, fltrd, mg/L (00955) | Sulfate water, fltrd, mg/L (00945) | Residue water, fltrd, sum of constituents mg/L (70301) | Residue water, fltrd, tons/ acre-ft (70303) | Residue water, fltrd, tons/d (70302) | Ammonia water, fltrd, mg/L as N (00608) | Nitrite + nitrate water fltrd, mg/L as N (00631) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAR | | | | | | | | | | | | | |
| 23... | 2 | 46.5 | 42 | 100 | 5.85 | .5 | 5.0 | 115 | 284 | .39 | 9,800 | .057 | .231 |
| MAY | | | | | | | | | | | | | |
| 19... | 1 | 41.3 | 29 | 157 | 9.55 | .9 | 5.8 | 117 | 346 | .47 | 10,700 | <.010 | <.016 |
| JUL | | | | | | | | | | | | | |
| 07... | 1 | 41.6 | 29 | 158 | 9.48 | .9 | 6.4 | 118 | 347 | .47 | 6,870 | E.005 | .023 |
| AUG | | | | | | | | | | | | | |
| 31... | 1 | 38.7 | 29 | 161 | 9.36 | .9 | 6.6 | 121 | 346 | .47 | 6,620 | <.010 | <.016 |

| Date | Nitrite water, fltrd, mg/L as N (00613) | Total nitrogen, wat unf mg/L (62855) | Orthophosphate, water, fltrd, mg/L as P (00671) | Phosphorus, water, unfltrd mg/L (00665) | Arsenic water, fltrd, ug/L (01000) | Arsenic water unfltrd ug/L (01002) | Barium, water, fltrd, ug/L (01005) | Barium, water, unfltrd recover-able, ug/L (01007) | Cadmium water, fltrd, ug/L (01025) | Cadmium water, unfltrd ug/L (01027) | Chromium, water, fltrd, ug/L (01030) | Chromium, water, unfltrd recover-able, ug/L (01034) | Copper, water, fltrd, ug/L (01040) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAR | | | | | | | | | | | | | |
| 23... | .003 | 1.61 | .008 | 1.25 | 1.1 | 13 | 24 | 270 | <.04 | .33 | <.8 | 18.4 | 1.6 |
| MAY | | | | | | | | | | | | | |
| 19... | E.001 | .20 | E.004 | .048 | 3.0 | 4 | 34 | 52 | <.04 | .04 | <.8 | 1.0 | 1.7 |
| JUL | | | | | | | | | | | | | |
| 07... | <.002 | .31 | E.005 | .117 | 2.8 | 4 | 34 | 66 | <.04 | .10 | <.8 | 6.1 | 2.1 |
| AUG | | | | | | | | | | | | | |
| 31... | E.001 | .17 | E.005 | .040 | 3.2 | 4 | 37 | 49 | <.04 | E.03 | <.8 | .9 | 1.8 |

E--Estimated.

06177000 MISSOURI RIVER NEAR WOLF POINT, MT—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

| Date | Copper, water, unfltrd recover-able, ug/L (01042) | Iron, water, fltrd, ug/L (01046) | Iron, water, unfltrd recover-able, ug/L (01045) | Lead, water, fltrd, ug/L (01049) | Lead, water, unfltrd recover-able, ug/L (01051) | Manganese, water, fltrd, ug/L (01056) | Manganese, water, unfltrd recover-able, ug/L (01055) | Mercury water, fltrd, ug/L (71890) | Mercury water, unfltrd recover-able, ug/L (71900) | Nickel, water, fltrd, ug/L (01065) | Nickel, water, unfltrd recover-able, ug/L (01067) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MAR | | | | | | | | | | | |
| 23... | 37.5 | 7 | 29,000 | <.08 | 24.9 | 1.6 | 628 | <.02 | .07 | 2.32 | 38.5 |
| MAY | | | | | | | | | | | |
| 19... | 3.6 | <6 | 1,240 | <.08 | .92 | .9 | 33 | <.02 | <.02 | 2.09 | 3.87 |
| JUL | | | | | | | | | | | |
| 07... | 11.7 | <6 | 5,560 | <.08 | 4.18 | .9 | 85 | <.02 | E.02 | 1.61 | 13.5 |
| AUG | | | | | | | | | | | |
| 31... | 3.2 | E4 | 900 | <.08 | .57 | 1.2 | 23 | <.02 | <.02 | 2.06 | 3.76 |

| Date | Selenium, water, fltrd, ug/L (01145) | Selenium, water, unfltrd ug/L (01147) | Zinc, water, fltrd, ug/L (01090) | Zinc, water, unfltrd recover-able, ug/L (01092) | Suspended sediment, percent <.063mm (70331) | Suspended sediment concentration mg/L (80154) | Suspended sediment discharge, tons/d (80155) |
|---|---|---|---|---|---|---|---|
| MAR | | | | | | | |
| 23... | .7 | 1.3 | E.5 | 124 | 89 | 1,770 | 61,000 |
| MAY | | | | | | | |
| 19... | .7 | .7 | E.5 | 5 | 58 | 76 | 2,360 |
| JUL | | | | | | | |
| 07... | .9 | .8 | .6 | 22 | 82 | 277 | 5,480 |
| AUG | | | | | | | |
| 31... | .7 | .8 | <.6 | 3 | 34 | 77 | 1,470 |

E--Estimated.

06177000 MISSOURI RIVER NEAR WOLF POINT, MT—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | APRIL | | | MAY | | | JUNE | | | JULY | |
| 1 | 7.5 | 6.5 | 7.0 | 9.0 | 7.0 | 8.0 | 14.5 | 12.5 | 13.5 | 19.5 | 17.5 | 18.5 |
| 2 | 7.0 | 6.0 | 6.5 | 9.5 | 7.5 | 8.5 | 16.0 | 13.5 | 14.5 | 19.5 | 17.0 | 18.5 |
| 3 | 7.0 | 6.0 | 6.5 | 11.0 | 9.0 | 10.0 | 17.0 | 15.0 | 16.0 | 20.0 | 18.0 | 19.0 |
| 4 | 8.5 | 6.5 | 7.5 | 11.5 | 9.5 | 10.5 | 18.0 | 16.0 | 17.0 | 19.5 | 17.0 | 18.0 |
| 5 | 9.5 | 8.0 | 8.5 | 12.0 | 10.5 | 11.0 | 18.0 | 16.5 | 17.5 | 17.0 | 15.0 | 16.0 |
| 6 | 9.0 | 8.0 | 8.5 | 11.0 | 10.0 | 10.5 | 18.5 | 17.0 | 18.0 | 16.5 | 14.0 | 15.5 |
| 7 | 9.0 | 7.5 | 8.0 | 11.5 | 9.5 | 10.5 | 18.0 | 16.0 | 17.0 | 18.0 | 16.0 | 17.0 |
| 8 | 9.0 | 7.5 | 8.0 | 12.5 | 11.0 | 11.5 | 16.0 | 13.5 | 14.5 | 18.5 | 17.0 | 18.0 |
| 9 | 8.0 | 7.0 | 7.5 | 12.0 | 11.0 | 11.5 | 14.5 | 12.5 | 13.5 | 19.5 | 17.0 | 18.5 |
| 10 | 7.5 | 6.5 | 7.0 | 11.5 | 10.0 | 10.5 | 14.0 | 13.0 | 13.5 | 19.0 | 17.5 | 18.5 |
| 11 | 7.5 | 5.5 | 6.5 | 10.0 | 6.0 | 7.5 | 13.5 | 13.5 | 13.5 | 20.0 | 18.0 | 19.0 |
| 12 | 8.0 | 5.5 | 7.0 | 6.0 | 5.0 | 5.5 | 14.5 | 12.5 | 13.5 | 20.0 | 18.5 | 19.5 |
| 13 | 9.5 | 7.0 | 8.0 | 8.5 | 6.0 | 7.0 | 15.5 | 13.5 | 14.5 | 20.5 | 18.5 | 19.5 |
| 14 | 8.5 | 7.5 | 8.0 | 10.5 | 8.0 | 9.0 | 16.5 | 14.5 | 15.5 | 21.5 | 19.5 | 20.5 |
| 15 | 8.5 | 7.0 | 8.0 | 11.5 | 10.0 | 10.5 | 16.5 | 15.5 | 16.0 | 21.5 | 20.0 | 21.0 |
| 16 | 8.5 | 7.5 | 8.0 | 11.0 | 10.0 | 10.5 | 16.5 | 14.5 | 15.5 | 21.0 | 19.5 | 20.5 |
| 17 | 8.0 | 6.0 | 7.0 | 11.5 | 9.5 | 10.5 | 16.5 | 15.5 | 16.0 | 22.0 | 19.5 | 21.0 |
| 18 | 6.5 | 5.5 | 6.0 | 12.5 | 10.5 | 11.5 | 16.5 | 14.5 | 15.5 | 22.0 | 20.5 | 21.5 |
| 19 | 8.5 | 6.0 | 7.0 | 12.5 | 11.5 | 12.0 | 17.5 | 15.0 | 16.0 | 22.0 | 20.5 | 21.0 |
| 20 | 9.5 | 7.5 | 8.5 | 12.5 | 11.0 | 12.0 | 17.5 | 16.0 | 17.0 | 21.0 | 19.5 | 20.5 |
| 21 | 10.0 | 8.5 | 9.5 | 13.0 | 12.0 | 12.5 | 17.5 | 16.0 | 17.0 | 20.5 | 19.0 | 19.5 |
| 22 | 10.0 | 8.5 | 9.0 | 12.5 | 10.5 | 11.5 | 17.5 | 16.5 | 17.0 | 19.0 | 18.5 | 19.0 |
| 23 | 10.0 | 8.0 | 9.0 | 10.5 | 9.5 | 10.0 | 17.0 | 16.0 | 16.5 | 19.0 | 17.5 | 18.0 |
| 24 | 10.5 | 9.0 | 9.5 | 9.5 | 9.0 | 9.5 | 17.0 | 15.0 | 16.0 | 19.5 | 17.0 | 18.0 |
| 25 | 10.0 | 9.0 | 9.5 | 10.5 | 8.5 | 9.5 | 17.5 | 15.0 | 16.5 | 20.0 | 18.0 | 19.0 |
| 26 | 10.0 | 8.5 | 9.0 | 11.5 | 10.5 | 11.0 | 17.5 | 15.5 | 16.5 | 20.5 | 19.0 | 20.0 |
| 27 | 11.0 | 9.0 | 10.0 | 13.0 | 11.0 | 12.0 | 18.0 | 15.0 | 16.5 | 19.5 | 18.5 | 19.0 |
| 28 | 10.5 | 8.0 | 9.5 | 14.0 | 12.5 | 13.0 | 19.5 | 16.5 | 18.0 | 18.5 | 17.0 | 17.5 |
| 29 | 8.0 | 7.0 | 7.5 | 14.5 | 13.0 | 13.5 | 20.5 | 18.0 | 19.5 | 17.0 | 15.5 | 16.0 |
| 30 | 9.0 | 7.5 | 8.0 | 14.0 | 13.5 | 13.5 | 20.5 | 19.5 | 20.0 | 17.5 | 15.5 | 16.5 |
| 31 | --- | --- | --- | 13.5 | 12.0 | 12.5 | --- | --- | --- | 20.0 | 17.5 | 19.0 |
| MONTH | 11.0 | 5.5 | 8.0 | 14.5 | 5.0 | 10.5 | 20.5 | 12.5 | 16.0 | 22.0 | 14.0 | 19.0 |

| | | AUGUST | | | SEPTEMBER | |
|---|---|---|---|---|---|---|
| 1 | 20.5 | 19.0 | 20.0 | 20.5 | 18.5 | 19.5 |
| 2 | 20.0 | 18.5 | 19.5 | 20.5 | 18.0 | 19.0 |
| 3 | 19.5 | 17.5 | 18.5 | 18.0 | 16.0 | 17.0 |
| 4 | 17.5 | 16.0 | 17.0 | 16.5 | 15.0 | 15.5 |
| 5 | 19.0 | 16.5 | 17.5 | 17.0 | 15.5 | 16.5 |
| 6 | 20.5 | 18.5 | 19.5 | 17.0 | 16.0 | 17.0 |
| 7 | 20.5 | 19.5 | 20.0 | 16.5 | 15.5 | 16.0 |
| 8 | 20.0 | 17.0 | 18.5 | 16.5 | 14.5 | 15.5 |
| 9 | 17.0 | 16.5 | 16.5 | 18.0 | 16.0 | 17.0 |
| 10 | 17.5 | 16.0 | 16.5 | 18.5 | 17.5 | 18.0 |
| 11 | 18.0 | 16.5 | 17.0 | 18.0 | 16.0 | 17.0 |
| 12 | 19.0 | 17.0 | 18.0 | 17.0 | 16.0 | 16.5 |
| 13 | 19.0 | 17.0 | 18.0 | 16.0 | 15.5 | 15.5 |
| 14 | 19.0 | 17.5 | 18.5 | 16.0 | 14.5 | 15.5 |
| 15 | 19.5 | 18.0 | 18.5 | 16.5 | 15.0 | 15.5 |
| 16 | 19.0 | 17.5 | 18.0 | 17.0 | 15.5 | 16.0 |
| 17 | 19.0 | 17.0 | 18.0 | 18.0 | 16.0 | 17.0 |
| 18 | 18.5 | 17.0 | 17.5 | 18.5 | 16.5 | 17.5 |
| 19 | 17.5 | 15.5 | 16.5 | 18.0 | 17.0 | 17.5 |
| 20 | 17.5 | 16.0 | 16.5 | 17.0 | 14.0 | 15.5 |
| 21 | 18.5 | 17.0 | 17.5 | 14.5 | 13.0 | 13.5 |
| 22 | 18.0 | 16.5 | 17.0 | 14.5 | 12.5 | 13.5 |
| 23 | 17.0 | 16.0 | 16.5 | 15.0 | 13.5 | 14.5 |
| 24 | 17.0 | 15.5 | 16.0 | 16.0 | 13.5 | 15.0 |
| 25 | 17.5 | 16.0 | 17.0 | 17.5 | 15.0 | 16.5 |
| 26 | 17.5 | 16.0 | 17.0 | 17.5 | 16.0 | 17.0 |
| 27 | 17.5 | 15.0 | 16.0 | 17.0 | 15.5 | 16.5 |
| 28 | 18.0 | 16.0 | 17.0 | 17.0 | 15.0 | 16.0 |
| 29 | 18.0 | 16.5 | 17.5 | 16.5 | 15.0 | 16.0 |
| 30 | 19.5 | 17.5 | 18.5 | 16.0 | 13.5 | 15.0 |
| 31 | 20.0 | 18.5 | 19.5 | --- | --- | --- |
| MONTH | 20.5 | 15.0 | 17.5 | 20.5 | 12.5 | 16.5 |

## 06177500 REDWATER RIVER AT CIRCLE, MT

LOCATION.--Lat 47°24'51", long 105°34'30" (NAD 27), in SW¼SW¼ sec.11, T.19 N., R.48 E., McCone County, Hydrologic Unit 10060002, on left bank at Circle, 1 mi upstream from Horse Creek, and at river mile 110.2.

DRAINAGE AREA.--547 $mi^2$.

PERIOD OF RECORD.--April to November 1929, March to November 1930, July 1931 to December 1932, March to June 1933, February to November 1934, April 1935 to December 1936, April 1937 to June 1972, October 1974 to September 2004, (discontinued). Monthly discharge only for some periods, published in WSP 1309. Prior to October 1967, published as Redwater Creek at Circle.

REVISED RECORDS.--WSP 1006: 1929-30, 1932-33, 1935-39. WSP 1509: 1929, 1934. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Sharp-crested weir since Sept. 24, 1938. Elevation of gage is 2,394.32 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Prior to June 1, 1941, and Mar. 23, 1943, to Feb. 16, 1948, nonrecording gage at site 0.3 mi upstream at same elevation. June 1, 1941, to Mar. 22, 1943, nonrecording gage at site 200 ft upstream at elevation 2.8 ft lower. Feb. 26, 1948, to May 7, 1950, nonrecording gage at site 200 ft upstream at present elevation.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Diversions for irrigation of about 1,200 acres upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.05 | 0.05 | 0.09 | 0.12 | e0.00 | e0.00 | 5.0 | 0.91 | 0.16 | 0.16 | 0.00 | 0.00 |
| 2 | 0.06 | 0.05 | 0.09 | 0.12 | e0.00 | e0.00 | 4.2 | 0.88 | 0.34 | 0.15 | 0.00 | 0.00 |
| 3 | 0.10 | 0.05 | 0.09 | 0.12 | e0.00 | e0.00 | 4.0 | 0.81 | 0.21 | 0.15 | 0.00 | 0.00 |
| 4 | 0.11 | 0.05 | 0.11 | 0.12 | e0.00 | e0.00 | 3.7 | 0.74 | 0.19 | 0.18 | 0.00 | 0.00 |
| 5 | 0.10 | 0.05 | 0.08 | 0.12 | e0.00 | e0.00 | 3.5 | 0.73 | 0.20 | 0.20 | 0.00 | 0.00 |
| 6 | 0.10 | 0.05 | 0.09 | 0.12 | e0.00 | e0.00 | 3.2 | 0.72 | 0.14 | 0.18 | 0.00 | 0.00 |
| 7 | 0.10 | 0.05 | 0.11 | 0.13 | e0.00 | e0.00 | 2.8 | 0.64 | 0.25 | 0.17 | 0.00 | 0.00 |
| 8 | 0.07 | 0.06 | 0.11 | 0.13 | e0.00 | e0.10 | 3.1 | 0.60 | 0.20 | 0.17 | 0.00 | 0.00 |
| 9 | 0.06 | 0.05 | 0.11 | 0.13 | e0.00 | e0.50 | 2.5 | 0.54 | 0.19 | 0.16 | 0.00 | 0.00 |
| 10 | 0.10 | 0.06 | 0.11 | 0.14 | e0.00 | 26 | 2.3 | 0.51 | 0.21 | 0.15 | 0.00 | 0.00 |
| 11 | 0.13 | 0.06 | 0.07 | 0.12 | e0.00 | 164 | 2.0 | 0.50 | 0.25 | 0.15 | 0.00 | 0.00 |
| 12 | 0.11 | 0.06 | 0.10 | 0.12 | e0.00 | 138 | 1.8 | 0.52 | 0.25 | 0.13 | 0.00 | 0.00 |
| 13 | 0.10 | 0.06 | 0.10 | 0.12 | e0.00 | 115 | 1.7 | 0.57 | 0.24 | 0.12 | 0.00 | 0.00 |
| 14 | 0.08 | 0.06 | 0.10 | 0.12 | e0.00 | 63 | 1.7 | 0.61 | 0.18 | 0.09 | 0.00 | 0.00 |
| 15 | 0.09 | 0.06 | 0.12 | 0.12 | e0.00 | 45 | 1.7 | 0.58 | 0.16 | 0.08 | 0.00 | 0.00 |
| 16 | 0.10 | 0.06 | 0.10 | 0.12 | e0.00 | 35 | 1.7 | 0.48 | 0.17 | 0.11 | 0.00 | 0.00 |
| 17 | 0.10 | 0.06 | 0.10 | 0.12 | e0.00 | 33 | 1.7 | 0.45 | 0.17 | 0.12 | 0.00 | 0.00 |
| 18 | 0.11 | 0.06 | 0.11 | 0.12 | e0.00 | 29 | 1.7 | 0.47 | 0.17 | 0.10 | 0.00 | 0.00 |
| 19 | 0.12 | 0.06 | 0.10 | e0.10 | e0.00 | 37 | 1.6 | 0.52 | 0.17 | 0.10 | 0.00 | 0.00 |
| 20 | 0.12 | 0.06 | 0.10 | e0.05 | e0.00 | 31 | 1.5 | 0.57 | 0.17 | 0.08 | 0.00 | 0.00 |
| 21 | 0.10 | 0.06 | 0.11 | e0.00 | e0.00 | 24 | 1.4 | 0.49 | 0.17 | 0.06 | 0.00 | 0.00 |
| 22 | 0.05 | 0.06 | 0.13 | e0.00 | e0.00 | 20 | 1.4 | 0.54 | 0.16 | 0.00 | 0.00 | 0.00 |
| 23 | 0.04 | 0.06 | 0.12 | e0.00 | e0.00 | 17 | 1.3 | 0.59 | 0.16 | 0.00 | 0.00 | 0.00 |
| 24 | 0.04 | 0.06 | 0.12 | e0.00 | e0.00 | 17 | 1.2 | 0.80 | 0.17 | 0.00 | 0.00 | 0.00 |
| 25 | 0.04 | 0.07 | 0.12 | e0.00 | e0.00 | 17 | 1.1 | 0.89 | 0.15 | 0.00 | 0.00 | 0.00 |
| 26 | 0.04 | 0.06 | 0.12 | e0.00 | e0.00 | 15 | 1.0 | 0.78 | 0.14 | 0.00 | 0.00 | 0.00 |
| 27 | 0.05 | 0.06 | 0.15 | e0.00 | e0.00 | 16 | 1.3 | 0.73 | 0.15 | 0.00 | 0.00 | 0.00 |
| 28 | 0.05 | 0.07 | 0.17 | e0.00 | e0.00 | 15 | 1.0 | 0.68 | 0.13 | 0.00 | 0.00 | 0.00 |
| 29 | 0.11 | 0.10 | 0.13 | e0.00 | e0.00 | 11 | 0.99 | 0.53 | 0.12 | 0.00 | 0.00 | 0.00 |
| 30 | 0.06 | 0.10 | 0.13 | e0.00 | --- | 8.3 | 0.91 | 0.49 | 0.15 | 0.00 | 0.00 | 0.00 |
| 31 | 0.05 | --- | 0.12 | e0.00 | --- | 6.3 | --- | 0.38 | --- | 0.00 | 0.00 | --- |
| TOTAL | 2.54 | 1.82 | 3.41 | 2.36 | 0.00 | 883.20 | 63.00 | 19.25 | 5.52 | 2.81 | 0.00 | 0.00 |
| MEAN | 0.08 | 0.06 | 0.11 | 0.08 | 0.00 | 28.5 | 2.10 | 0.62 | 0.18 | 0.09 | 0.00 | 0.00 |
| MAX | 0.13 | 0.10 | 0.17 | 0.14 | 0.00 | 164 | 5.0 | 0.91 | 0.34 | 0.20 | 0.00 | 0.00 |
| MIN | 0.04 | 0.05 | 0.07 | 0.00 | 0.00 | 0.00 | 0.91 | 0.38 | 0.12 | 0.00 | 0.00 | 0.00 |
| AC-FT | 5.0 | 3.6 | 6.8 | 4.7 | 0.00 | 1,750 | 125 | 38 | 11 | 5.6 | 0.00 | 0.00 |

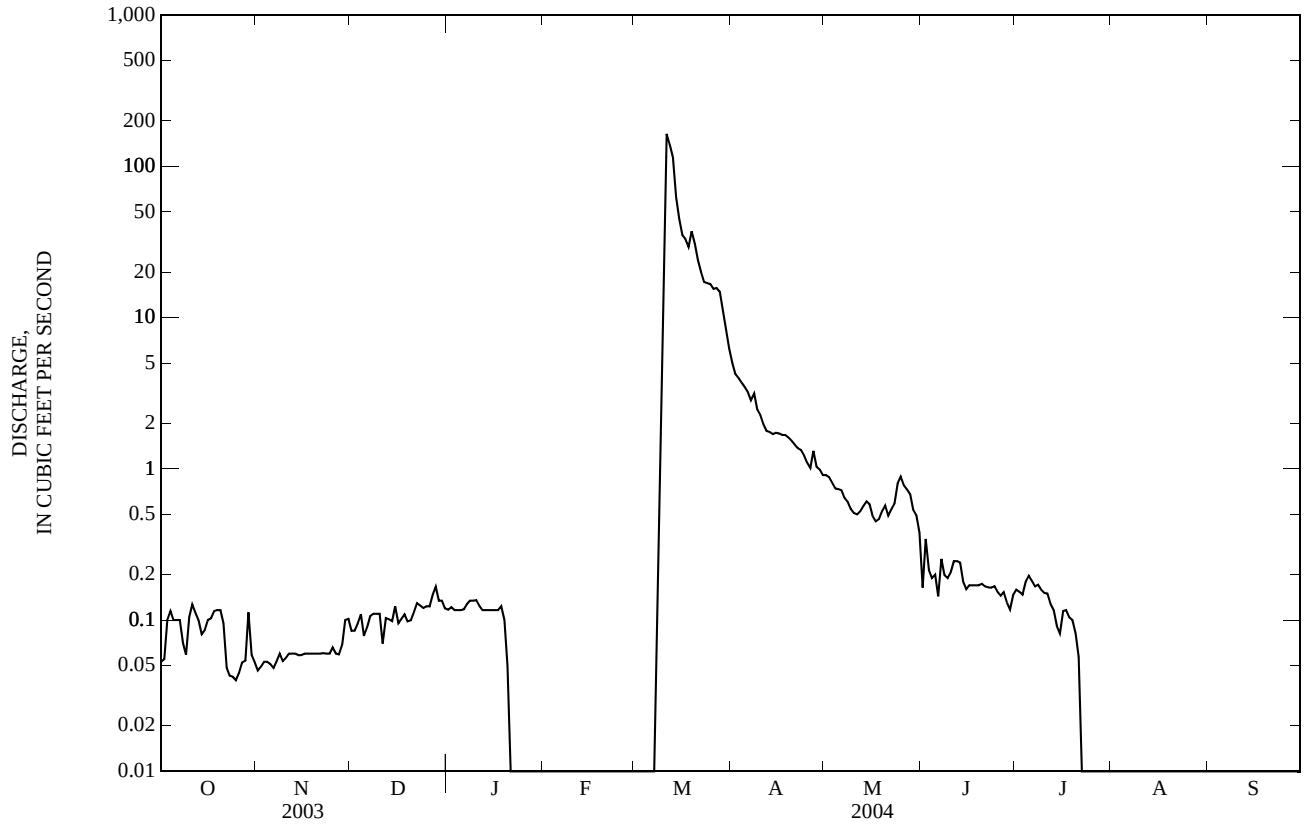
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2004, BY WATER YEAR (WY)*

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.51 | 0.36 | 0.43 | 0.35 | 14.7 | 71.5 | 16.8 | 3.61 | 14.3 | 11.0 | 1.95 | 2.34 |
| MAX | 19.2 | 7.11 | 8.58 | 6.13 | 141 | 476 | 418 | 32.1 | 167 | 116 | 37.4 | 139 |
| (WY) | (1987) | (1987) | (1952) | (1976) | (1943) | (1994) | (1952) | (1979) | (1944) | (1957) | (1932) | (1986) |
| MIN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.07 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| (WY) | (1941) | (1931) | (1936) | (1936) | (1939) | (1941) | (1961) | (1961) | (1961) | (1939) | (1939) | (1940) |

06177500 REDWATER RIVER AT CIRCLE, MT—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1929 - 2004* | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 568.93 | | 983.91 | | | |
| ANNUAL MEAN | 1.56 | | 2.69 | | 11.3** | |
| HIGHEST ANNUAL MEAN | | | | | 61.6 | 1952 |
| LOWEST ANNUAL MEAN | | | | | 0.04 | 1941 |
| HIGHEST DAILY MEAN | 200 | Mar 15 | 164 | Mar 11 | 4,510 | Mar 31, 1952 |
| LOWEST DAILY MEAN | 0.00 | Aug 27 | 0.00 | Jan 21 | a0.00 | Oct 8, 1929 |
| ANNUAL SEVEN-DAY MINIMUM | 0.00 | Aug 24 | 0.00 | Jan 21 | 0.00 | Nov 20, 1929 |
| MAXIMUM PEAK FLOW | | | 192 | Mar 11 | b6,960 | Jun 29, 1986 |
| MAXIMUM PEAK STAGE | | | 7.33 | Mar 11 | 12.93 | Mar 4, 1994 |
| ANNUAL RUNOFF (AC-FT) | 1,130 | | 1,950 | | 8,210 | |
| 10 PERCENT EXCEEDS | 1.1 | | 1.7 | | 7.0 | |
| 50 PERCENT EXCEEDS | 0.12 | | 0.10 | | 0.20 | |
| 90 PERCENT EXCEEDS | 0.03 | | 0.00 | | 0.00 | |

*--During period of operation (1932, 1936, 1938-71, 1975 to September 2004).
**--Median of yearly discharges, 5.71 $ft^3/s$.
a--No flow at times most years.
b--From rating curve extended above 3,500 $ft^3/s$, gage height, 12.85 ft, from floodmark.
e--Estimated.



## 06178000 POPLAR RIVER AT INTERNATIONAL BOUNDARY
(International gaging station)

LOCATION.--Lat 48°59'25", long 105°41'46" (NAD 27), in NE¼NE¼SE¼ sec.6, T.37 N., R.46 E., Daniels County, Hydrologic Unit 10060003, on left bank 0.7 mi south of international boundary, 1.5 mi upstream from Coal Creek, 18.5 mi northwest of Scobey, MT, and at river mile 135.7.

DRAINAGE AREA.--358 $mi^2$.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1931 to current season (seasonal records only for most years). Published as Middle Fork Poplar River at international boundary, March 1931 to November 1975.

REVISED RECORDS.--WSP 1389: 1931, 1935-37(M), 1939-40, 1942(M), 1943, 1948(M), 1950(M). WSP 1729: Drainage area. W 1984: Drainage area.

GAGE.--Water-stage recorder and concrete control since September 1977. Elevation of gage is 2,460 ft (NGVD 29).

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite telemeter at station. A few small diversions for irrigation upstream from station.

COOPERATION.--This is one of a number of stations which are maintained jointly by the United States and Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,700 $ft^3/s$, Apr. 6, 1954, gage height, 10.25 ft, from floodmark, from rating curve extended above 2,500 $ft^3/s$, on basis of slope-area measurement of peak flow; no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2004
DAILY MEAN VALUES

| DAY | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | e0.00 | e110 | 6.6 | 64 | 12 | 3.4 | 2.1 | 2.9 | | |
| 2 | | | e0.00 | 84 | 6.6 | 48 | 11 | 3.6 | 2.2 | 2.9 | | |
| 3 | | | e0.00 | 55 | 6.3 | 40 | 10 | 3.7 | 2.1 | 3.1 | | |
| 4 | | | e0.00 | 43 | 5.8 | 33 | 9.4 | 3.8 | 2.1 | 3.3 | | |
| 5 | | | e0.00 | 39 | 5.6 | 29 | 9.5 | 4.0 | 1.8 | 3.3 | | |
| 6 | | | e0.00 | 35 | 5.6 | 28 | 10 | 3.9 | 1.6 | 3.7 | | |
| 7 | | | e0.00 | 30 | 7.2 | 25 | 11 | 3.6 | 1.5 | 3.8 | | |
| 8 | | | e0.00 | 27 | 6.8 | 22 | 11 | 3.1 | 1.6 | 3.8 | | |
| 9 | | | e0.00 | 24 | 6.6 | 19 | 10 | 3.1 | 1.6 | 3.8 | | |
| 10 | | | e0.00 | 20 | 6.4 | 24 | 9.2 | 3.2 | 1.6 | 3.8 | | |
| 11 | | | e0.00 | 18 | 9.6 | 93 | 8.5 | 3.3 | 1.6 | 4.0 | | |
| 12 | | | e0.00 | 17 | 7.4 | 203 | 9.3 | 3.1 | 1.9 | 4.0 | | |
| 13 | | | e0.00 | 16 | 19 | 197 | 13 | 2.8 | 2.0 | 4.1 | | |
| 14 | | | e0.00 | 16 | 26 | 112 | 16 | 2.5 | 2.0 | 4.4 | | |
| 15 | | | e0.00 | 15 | 47 | 92 | 15 | 2.3 | 2.1 | 4.4 | | |
| 16 | | | e0.00 | 14 | 57 | 88 | 13 | 2.2 | 2.1 | 4.4 | | |
| 17 | | | e0.00 | 14 | 54 | 71 | 13 | 2.1 | 2.1 | 4.6 | | |
| 18 | | | e0.00 | 14 | 43 | 54 | 11 | 1.9 | 2.1 | 5.0 | | |
| 19 | | | e0.00 | 14 | 39 | 45 | 9.2 | 1.7 | 2.2 | 5.4 | | |
| 20 | | | e0.00 | 13 | 52 | 37 | 7.6 | 1.4 | 2.4 | 5.4 | | |
| 21 | | | e0.00 | 12 | 55 | 30 | 6.5 | 1.4 | 2.5 | 5.4 | | |
| 22 | | | e0.00 | 12 | 43 | 27 | 5.2 | 1.3 | 2.5 | 5.8 | | |
| 23 | | | e0.10 | 11 | 39 | 25 | 4.6 | 1.6 | 2.5 | 5.6 | | |
| 24 | | | e2.5 | 10 | 209 | 22 | 4.3 | 2.0 | 2.6 | 5.4 | | |
| 25 | | | e10 | 9.3 | 335 | 20 | 3.9 | 2.4 | 2.6 | 5.3 | | |
| 26 | | | e15 | 8.5 | 163 | 18 | 3.6 | 3.1 | 2.6 | 5.0 | | |
| 27 | | | e200 | 8.2 | 120 | 17 | 3.6 | 3.0 | 2.5 | 5.0 | | |
| 28 | | | e170 | 7.9 | 94 | 16 | 3.2 | 3.0 | 2.5 | 5.1 | | |
| 29 | | | e160 | 7.9 | 200 | 14 | 3.1 | 2.9 | 2.7 | 5.2 | | |
| 30 | | | e150 | 7.2 | 112 | 13 | 3.4 | 2.6 | 2.8 | 5.0 | | |
| 31 | | | e140 | --- | 89 | --- | 3.2 | 2.3 | --- | 5.0 | | |
| TOTAL | | | 847.60 | 712.0 | 1,876.5 | 1,526 | 263.3 | 84.3 | 64.5 | 137.9 | | |
| MEAN | | | 27.3 | 23.7 | 60.5 | 50.9 | 8.49 | 2.72 | 2.15 | 4.45 | | |
| MAX | | | 200 | 110 | 335 | 203 | 16 | 4.0 | 2.8 | 5.8 | | |
| MIN | | | 0.00 | 7.2 | 5.6 | 13 | 3.1 | 1.3 | 1.5 | 2.9 | | |
| MED | | | 0.00 | 14 | 39 | 30 | 9.3 | 2.9 | 2.1 | 4.4 | | |
| AC-FT | | | 1,680 | 1,410 | 3,720 | 3,030 | 522 | 167 | 128 | 274 | | |

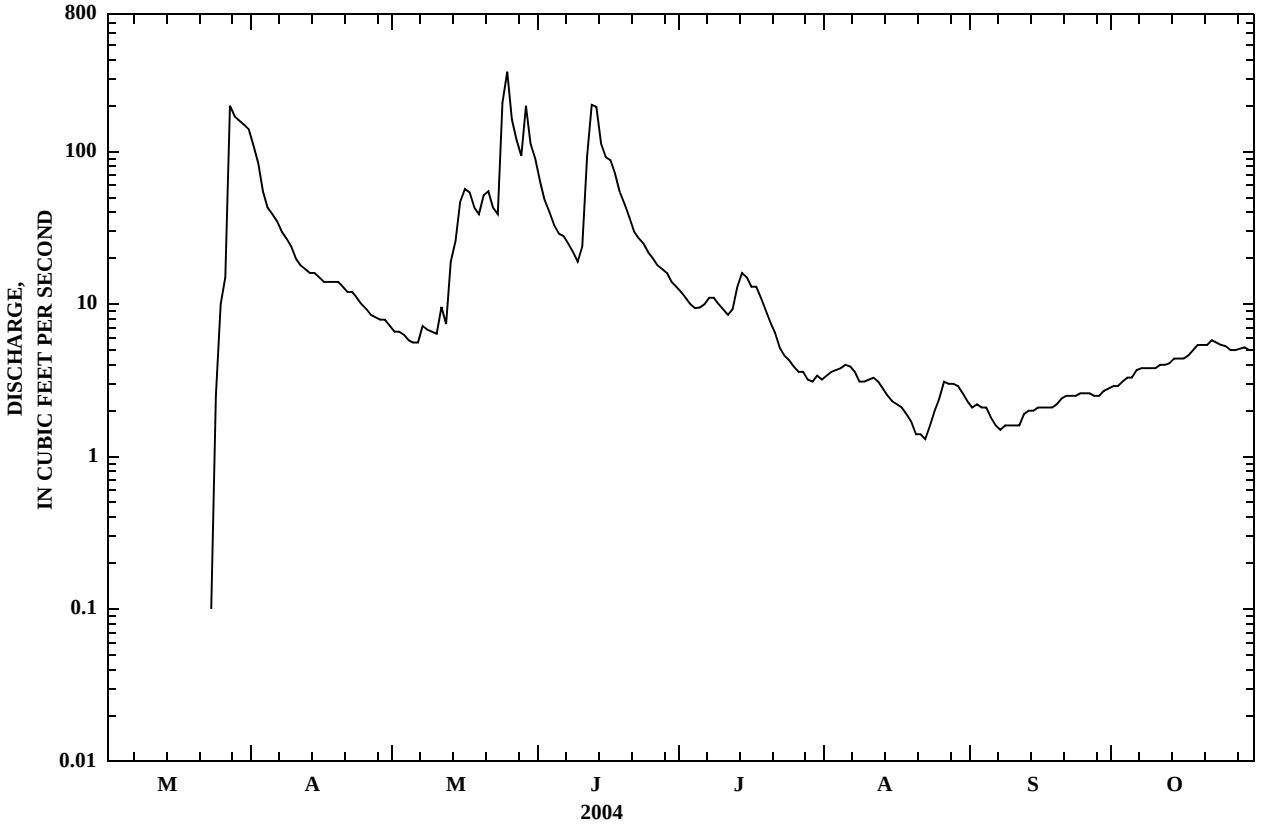
STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1931 - 2004*

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.00 | 20.2 | 68.8 | 80.8 | 17.8 | 14.9 | 8.62 | 1.55 | 1.46 | 2.72 | 4.90 | 0.00 |
| MAX | 0.00 | 61.3 | 418 | 699 | 86.2 | 191 | 120 | 19.4 | 15.3 | 11.8 | 9.35 | 0.00 |
| (WY) | (1936) | (1981) | (1999) | (1952) | (1982) | (1963) | (1993) | (1940) | (1954) | (1955) | (1955) | (1936) |
| MIN | 0.00 | 0.00 | 0.00 | 5.52 | 3.05 | 0.16 | 0.04 | 0.00 | 0.01 | 0.04 | 0.12 | 0.00 |
| (WY) | (1936) | (1936) | (1950) | (1950) | (1988) | (1992) | (1988) | (1967) | (1988) | (1989) | (1937) | (1936) |

06178000 POPLAR RIVER AT INTERNATIONAL BOUNDARY—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 SEASON | | SEASONS 1931 - 2004* | |
|---|---|---|---|---|---|---|
| HIGHEST DAILY MEAN | 600 | Mar 17 | 335 | May 25 | 5,000 | Apr 6, 1954 |
| LOWEST DAILY MEAN | 0.0 | Mar 4 | 0.0 | Mar 1 | 0.00 | Jun 30, 1932 |
| MAXIMUM PEAK FLOW | | | a413 | May 25 | c127,000 | Apr 6, 1954 |
| MAXIMUM PEAK STAGE | | | b5.32 | Mar 26 | 10.25 | Apr 6, 1954 |

*--Seasonal records most years.
a--Gage height, 4.82 ft.
b--Backwater from ice.
c--From rating curve extended above 2,500 ft3/s on basis of slope-area measurement of peak flow.
e--Estimated.



06178000 POPLAR RIVER AT INTERNATIONAL BOUNDARY—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-65, 1976 to current year.

REMARKS.--Missing sediment data for May 25 due to access and equipment problems.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

| Date | Time | Instantaneous discharge, cfs (00061) | Barometric pressure, mm Hg (00025) | Dissolved oxygen, mg/L (00300) | Dissolved oxygen, percent of saturation (00301) | pH, water, unfltrd field, std units (00400) | Specif. conductance, water unfltrd uS/cm 25 degC (00095) | Temperature, air, deg C (00020) | Temperature, water, deg C (00010) | Hardness, water, mg/L as CaCO3 (00900) | Calcium water, fltrd, mg/L (00915) | Magnesium, water, fltrd, mg/L (00925) | Potassium, water, fltrd, mg/L (00935) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 05... | 1020 | 40 | 704 | 9.0 | 81 | 8.0 | 977 | 12.0 | 7.0 | 300 | 44.8 | 45.9 | 8.56 |
| MAY | | | | | | | | | | | | | |
| 25... | 1150 | 341 | 703 | 10.3 | 95 | 8.4 | 926 | 15.0 | 8.0 | 220 | 27.6 | 37.1 | 10.8 |
| JUN | | | | | | | | | | | | | |
| 17... | 1015 | 74 | 714 | 8.1 | 85 | 8.4 | 1,190 | 12.0 | 14.5 | 420 | 54.2 | 69.7 | 11.9 |
| SEP | | | | | | | | | | | | | |
| 01... | 1300 | 2.0 | 704 | 10.4 | 122 | 8.7 | 1,270 | 27.0 | 19.0 | 310 | 33.3 | 56.0 | 8.41 |

| Date | Sodium adsorption ratio (00931) | Sodium, water, fltrd, mg/L (00930) | Sodium, percent (00932) | Alkalinity, water, flrdt fxd end lab, mg/L as CaCO3 (29801) | Chloride, water, fltrd, mg/L (00940) | Fluoride, water, fltrd, mg/L (00950) | Silica, water, fltrd, mg/L (00955) | Sulfate water, fltrd, mg/L (00945) | Residue water, fltrd, sum of constituents mg/L (70301) | Residue water, fltrd, tons/ acre-ft (70303) | Residue water, fltrd, tons/d (70302) | Ammonia water, fltrd, mg/L as N (00608) | Nitrite + nitrate water fltrd, mg/L as N (00631) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 05... | 3 | 124 | 46 | 327 | 5.31 | .3 | 15.2 | 206 | 648 | .88 | 70.0 | .016 | .041 |
| MAY | | | | | | | | | | | | | |
| 25... | 4 | 133 | 55 | 321 | 4.49 | .2 | 17.2 | 178 | 602 | .82 | 554 | E.008 | <.016 |
| JUN | | | | | | | | | | | | | |
| 17... | 3 | 130 | 39 | 403 | 6.38 | .3 | 14.7 | 260 | 791 | 1.08 | 158 | <.010 | <.016 |
| SEP | | | | | | | | | | | | | |
| 01... | 4 | 176 | 54 | 414 | 7.45 | .4 | 3.8 | 275 | 810 | 1.10 | 4.37 | E.005 | <.016 |

| Date | Nitrite water, fltrd, mg/L as N (00613) | Total nitrogen, wat unf mg/L (62855) | Orthophosphate, water, fltrd, mg/L as P (00671) | Phosphorus, water, unfltrd mg/L (00665) | Arsenic water, fltrd, ug/L (01000) | Arsenic water unfltrd ug/L (01002) | Barium, water, fltrd, ug/L (01005) | Barium, water, unfltrd recoverable, ug/L (01007) | Boron, water, fltrd, ug/L (01020) | Cadmium water, fltrd, ug/L (01025) | Cadmium water, unfltrd ug/L (01027) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | |
| 05... | .003 | 1.03 | .031 | .083 | 2.5 | 3 | 53 | 55 | 675 | <.04 | E.02 |
| MAY | | | | | | | | | | | |
| 25... | .002 | 1.51 | .049 | .137 | 3.4 | 4 | 41 | 47 | 873 | E.03 | E.04 |
| JUN | | | | | | | | | | | |
| 17... | <.002 | 1.25 | .015 | .054 | 4.5 | 4 | 77 | 74 | 1,020 | E.02 | E.02 |
| SEP | | | | | | | | | | | |
| 01... | E.001 | .65 | <.006 | .024 | 2.9 | 3 | 40 | 36 | 1,380 | <.04 | <.04 |

E--Estimated.

06178000 POPLAR RIVER AT INTERNATIONAL BOUNDARY—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

| Date | Chrom-ium, water, fltrd, ug/L (01030) | Chrom-ium, water, unfltrd recover-able, ug/L (01034) | Copper, water, fltrd, ug/L (01040) | Copper, water, unfltrd recover-able, ug/L (01042) | Iron, water, fltrd, ug/L (01046) | Iron, water, unfltrd recover-able, ug/L (01045) | Lead, water, fltrd, ug/L (01049) | Lead, water, unfltrd recover-able, ug/L (01051) | Manganese, water, fltrd, ug/L (01056) | Manganese, water, unfltrd recover-able, ug/L (01055) | Mercury water, fltrd, ug/L (71890) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | |
| 05... | <.8 | <.8 | 2.2 | 3.1 | 70 | 350 | <.08 | .21 | 17.6 | 23 | <.02 |
| MAY | | | | | | | | | | | |
| 25... | <.8 | 1.3 | 2.7 | 4.0 | 106 | 520 | E.07 | .38 | 6.5 | 20 | <.02 |
| JUN | | | | | | | | | | | |
| 17... | <.8 | <.8 | 2.8 | 3.2 | 82 | 160 | <.08 | .08 | 7.3 | 12 | <.02 |
| SEP | | | | | | | | | | | |
| 01... | <.8 | <.8 | 1.5 | 3.6 | 20 | 150 | <.08 | .10 | 5.9 | 8 | <.02 |

| Date | Mercury water, unfltrd recover-able, ug/L (71900) | Nickel, water, fltrd, ug/L (01065) | Nickel, water, unfltrd recover-able, ug/L (01067) | Selen-ium, water, fltrd, ug/L (01145) | Selen-ium, water, unfltrd ug/L (01147) | Zinc, water, fltrd, ug/L (01090) | Zinc, water, unfltrd recover-able, ug/L (01092) | Sus-pended sedi-ment, percent <.063mm (70331) | Sus-pended sedi-ment concen-tration mg/L (80154) | Sus-pended sedi-ment dis-charge, tons/d (80155) |
|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | |
| 05... | <.02 | 2.66 | 2.29 | .8 | .9 | .9 | E2 | 81 | 12 | 1.3 |
| MAY | | | | | | | | | | |
| 25... | <.02 | 1.89 | 2.42 | .6 | .7 | 1.9 | 3 | -- | -- | -- |
| JUN | | | | | | | | | | |
| 17... | <.02 | 1.92 | 2.91 | .7 | .5 | 1.5 | E1 | 88 | 5 | 1.0 |
| SEP | | | | | | | | | | |
| 01... | <.02 | 1.45 | 2.82 | E.4 | .6 | .7 | E2 | 64 | 30 | .16 |

E--Estimated.

## 06178500 EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY
(International gaging station)

LOCATION.--Lat 49°00'00", long 105°24'32" (NAD 27), in SW¼SW¼ sec.3, T.1 N., R.26 W., second meridian, in Saskatchewan, Hydrologic Unit 10060003, on left bank 10 ft north of international boundary, 400 ft southwest of Canadian East Poplar Port of Entry, 14 mi north of Scobey, MT, and at river mile 21.9.

DRAINAGE AREA.--541 $mi^2$.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1931 to current year (seasonal records only in most seasons prior to October 1974). Prior to March 1962, published as East Fork Poplar River at international boundary.

REVISED RECORDS.--WSP 1389: 1932, 1939, 1942-43, 1947. W 1983: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 2,410.92 ft (International Boundary Commission Survey Datum). Prior to Oct. 5, 1953, water-stage recorder at site 80 ft upstream at same elevation.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite telemeter at station. Since September 1975 flow regulated by Morrison Dam at Cookson Reservoir 3.1 mi upstream.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.9 | 2.4 | 2.2 | 2.3 | 1.5 | e0.00 | 6.7 | 2.6 | 3.8 | 2.6 | 2.5 | 3.1 |
| 2 | 2.0 | 2.3 | 2.2 | 2.4 | 1.2 | e0.00 | 4.3 | 14 | 3.6 | 2.7 | 2.4 | 2.9 |
| 3 | 2.0 | 2.3 | 2.2 | 2.3 | e1.0 | e0.00 | 3.6 | 14 | 3.3 | 2.7 | 2.4 | e2.5 |
| 4 | 2.1 | 2.3 | 2.2 | 2.1 | e0.50 | e0.00 | 3.6 | 13 | 3.1 | 2.6 | e2.0 | 2.7 |
| 5 | 2.0 | 2.3 | 2.2 | 2.1 | e0.00 | e0.00 | 3.5 | 12 | 2.8 | 2.7 | e2.5 | e2.5 |
| 6 | 2.0 | 2.3 | 2.2 | 2.1 | e0.00 | e0.00 | 3.2 | 11 | 2.8 | 2.7 | e2.5 | e3.0 |
| 7 | 2.0 | 2.3 | 2.2 | 2.1 | e0.00 | e0.00 | 3.1 | 11 | 2.9 | 2.8 | e2.5 | 2.9 |
| 8 | 2.0 | 2.3 | 2.2 | 2.3 | e0.00 | e0.00 | 2.9 | 9.6 | 2.7 | 3.0 | e2.0 | e2.5 |
| 9 | 2.0 | 2.3 | 2.2 | e2.3 | e0.00 | e0.00 | 2.8 | 10 | 2.6 | 2.8 | e2.5 | e2.5 |
| 10 | 2.0 | 2.3 | 2.2 | 2.3 | e0.00 | e0.00 | 2.7 | 8.8 | 9.5 | 2.7 | e2.5 | e3.0 |
| 11 | 2.1 | 2.3 | 2.2 | 2.3 | e0.00 | e0.00 | 2.6 | 13 | 21 | 2.7 | e2.5 | 3.0 |
| 12 | 2.1 | 2.3 | 2.2 | 2.2 | e0.00 | e0.00 | 2.6 | 11 | 14 | 2.7 | e2.5 | e2.0 |
| 13 | 2.2 | 2.3 | 2.2 | 2.2 | e0.00 | e0.00 | 2.6 | 11 | 7.5 | 2.5 | e4.0 | e2.5 |
| 14 | 2.2 | 2.3 | 2.2 | 2.3 | e0.00 | e0.00 | 2.4 | 11 | 5.3 | 2.4 | 3.7 | e2.5 |
| 15 | 2.2 | 2.3 | 2.2 | 2.3 | e0.00 | e0.00 | 2.5 | 11 | 4.7 | 2.5 | 3.4 | e2.5 |
| 16 | 2.2 | 2.3 | 2.2 | 2.3 | e0.00 | e0.00 | 2.5 | 9.9 | 4.1 | 2.5 | e3.5 | e2.5 |
| 17 | 2.2 | 2.3 | 2.2 | 2.2 | e0.00 | e0.00 | 2.4 | 9.8 | 5.1 | 2.5 | 3.1 | e4.5 |
| 18 | 2.1 | 2.3 | 2.2 | 2.2 | e0.00 | e0.00 | 2.6 | 9.5 | 4.1 | 2.5 | 2.9 | 3.9 |
| 19 | 2.1 | 2.3 | 2.2 | 2.2 | e0.00 | e0.00 | 2.5 | 12 | 3.4 | 2.5 | e2.5 | 3.0 |
| 20 | 2.1 | 2.3 | 2.2 | 2.2 | e0.00 | e0.00 | 2.4 | 9.8 | 3.4 | 2.6 | e3.0 | 2.6 |
| 21 | 2.1 | 2.2 | 2.2 | 2.2 | e0.00 | e0.00 | 2.4 | 9.5 | 4.1 | 2.6 | e3.5 | 2.6 |
| 22 | 2.0 | 2.2 | 2.2 | 2.2 | e0.00 | e0.00 | 2.4 | 9.0 | 3.7 | 2.6 | 2.7 | 2.8 |
| 23 | 2.0 | 2.2 | 2.2 | 2.2 | e0.00 | e0.00 | 2.2 | 11 | 3.5 | 2.6 | 2.6 | e2.0 |
| 24 | e2.3 | 2.2 | 2.1 | 2.0 | e0.00 | e0.00 | 2.4 | 18 | 3.3 | 2.6 | e2.5 | e3.0 |
| 25 | e2.0 | 2.2 | 2.1 | 1.8 | e0.00 | e0.00 | 2.4 | 10 | 3.1 | 2.5 | e2.5 | 2.8 |
| 26 | e2.1 | 2.3 | 2.1 | 1.8 | e0.00 | e5.0 | 2.1 | 9.3 | 2.9 | 2.5 | e3.0 | 2.5 |
| 27 | e2.4 | 2.3 | 2.2 | 1.6 | e0.00 | e25 | 2.2 | 8.7 | 2.9 | 2.6 | 3.2 | 2.0 |
| 28 | e2.0 | 2.2 | e1.6 | 1.7 | e0.00 | e50 | 2.3 | 7.3 | 2.5 | 2.6 | 2.7 | 2.8 |
| 29 | e2.2 | 2.2 | e1.5 | 1.6 | e0.00 | e15 | 2.1 | 47 | 2.5 | 2.5 | 2.7 | 2.7 |
| 30 | 2.4 | 2.3 | e1.9 | 1.4 | --- | 11 | 2.1 | 10 | 2.5 | 2.4 | e2.5 | 2.7 |
| 31 | 2.4 | --- | e2.2 | 1.6 | --- | 8.9 | --- | 6.3 | --- | 2.4 | 2.9 | --- |
| TOTAL | 65.4 | 68.4 | 66.3 | 64.8 | 4.20 | 114.90 | 84.1 | 360.1 | 140.7 | 80.6 | 85.7 | 82.5 |
| MEAN | 2.11 | 2.28 | 2.14 | 2.09 | 0.14 | 3.71 | 2.80 | 11.6 | 4.69 | 2.60 | 2.76 | 2.75 |
| MAX | 2.4 | 2.4 | 2.2 | 2.4 | 1.5 | 50 | 6.7 | 47 | 21 | 3.0 | 4.0 | 4.5 |
| MIN | 1.9 | 2.2 | 1.5 | 1.4 | 0.00 | 0.00 | 2.1 | 2.6 | 2.5 | 2.4 | 2.0 | 2.0 |
| AC-FT | 130 | 136 | 132 | 129 | 8.3 | 228 | 167 | 714 | 279 | 160 | 170 | 164 |

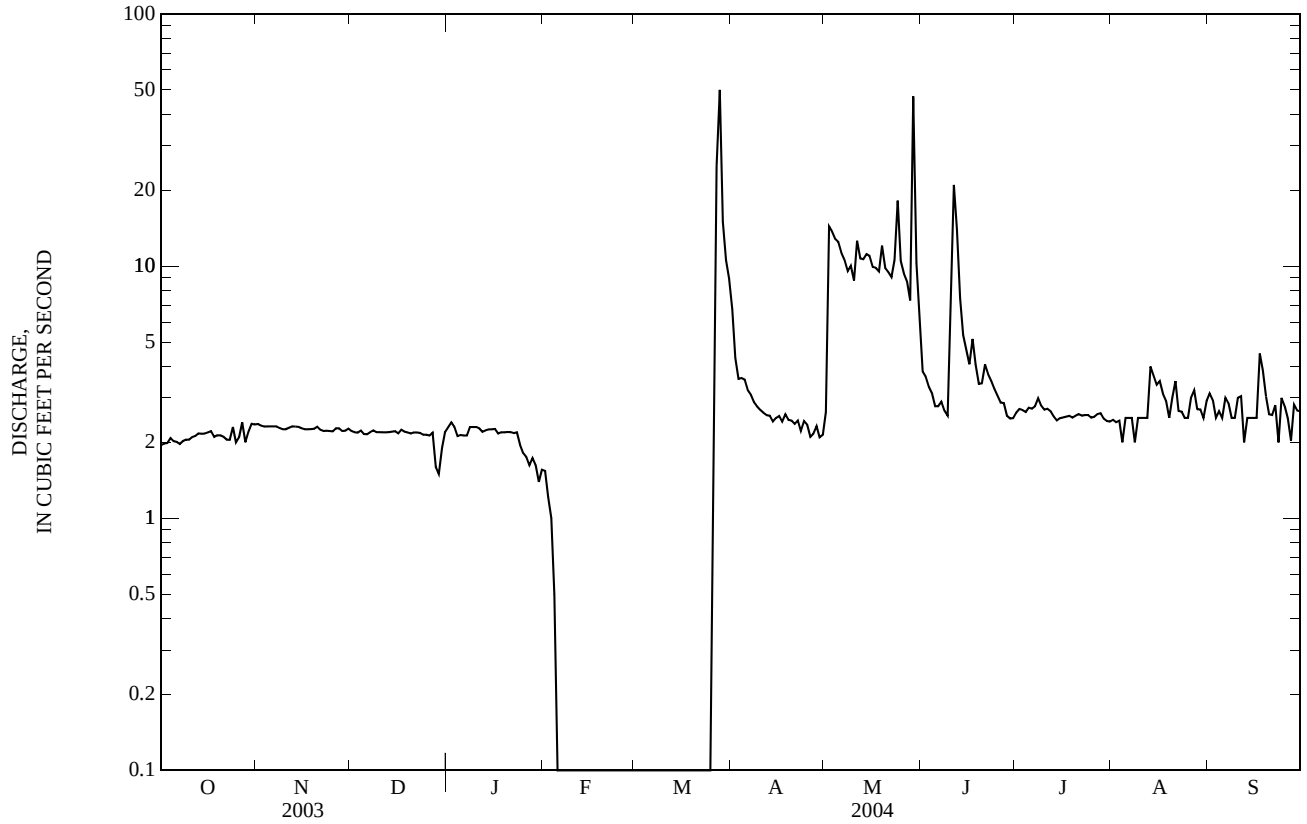
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 2004, BY WATER YEAR (WY)*

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 2.59 | 2.45 | 2.26 | 2.19 | 2.56 | 20.9 | 22.1 | 11.3 | 5.26 | 2.82 | 2.39 | 2.51 |
| MAX | 4.65 | 4.42 | 4.37 | 4.40 | 7.95 | 280 | 306 | 40.7 | 23.2 | 6.84 | 3.31 | 4.10 |
| (WY) | (1980) | (1980) | (1980) | (1980) | (1997) | (1999) | (1982) | (1979) | (1979) | (1999) | (1997) | (1979) |
| MIN | 1.59 | 1.64 | 1.27 | 1.26 | 0.14 | 1.91 | 1.80 | 2.98 | 1.72 | 1.79 | 1.58 | 1.53 |
| (WY) | (1993) | (1993) | (1993) | (1982) | (2004) | (1992) | (1992) | (1978) | (1992) | (1977) | (1992) | (1992) |

06178500 EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1977 - 2004* | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 940.5 | | 1,217.70 | | | |
| ANNUAL MEAN | 2.58 | | 3.33 | | 6.63 | |
| HIGHEST ANNUAL MEAN | | | | | 32.3 | 1982 |
| LOWEST ANNUAL MEAN | | | | | 2.13 | 1992 |
| HIGHEST DAILY MEAN | 8.5 | Mar 17 | 50 | Mar 28 | 2,930 | Apr 15, 1982 |
| LOWEST DAILY MEAN | 1.4 | Mar 4 | 0.00 | Feb 5 | 0.00 | Feb 5, 2004 |
| ANNUAL SEVEN-DAY MINIMUM | 1.6 | Mar 4 | 0.00 | Feb 5 | 0.00 | Feb 5, 2004 |
| MAXIMUM PEAK FLOW | | | a120 | May 29 | c4,020 | Apr 23, 1975 |
| MAXIMUM PEAK STAGE | | | b7.14 | Mar 26 | 12.80 | Mar 25, 1943 |
| INSTANTANEOUS LOW FLOW | | | | | d0.70 | Feb 28, 1998 |
| ANNUAL RUNOFF (AC-FT) | 1,870 | | 2,420 | | 4,800 | |
| 10 PERCENT EXCEEDS | 3.6 | | 7.9 | | 6.7 | |
| 50 PERCENT EXCEEDS | 2.2 | | 2.3 | | 2.5 | |
| 90 PERCENT EXCEEDS | 1.9 | | 0.00 | | 1.7 | |

*--Since initial filling of Cookson Reservoir.
a--Gage height, 6.81 ft.
b--Backwater from ice.
c--Gage height, 12.01 ft.
d--Backwater from beavers.
e--Estimated.




WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-65, 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: February 1982 to current year.
WATER TEMPERATURE: June 1975 to September 1983.

INSTRUMENTATION.--Specific conductance monitor installed April 1995.

REMARKS.--Daily specific conductance records rated poor. Specific conductance data not available Feb. 5 through Mar. 25 due to no flow and Jan. 9 and May 24 through June 2 due to equipment problems.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily mean, 2,040 microsiemens per centimeter (μS/cm) at 25.0°C, Feb. 10-12, 1997; minimum daily mean, 363 μS/cm at 25.0°C, July 2, 1991.
WATER TEMPERATURE: Maximum, 29.5°C, July 6, 1975, July 25, 26, 1978; minimum, 0.0°C on many days during winters most years.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily mean, 1,850 microsiemens per centimeter (μS/cm) at 25.0°C, Dec. 27; minimum daily mean, 989 μS/cm at 25.0°C, Mar. 27.

06178500 EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

| Date | Time | Instantaneous discharge, cfs (00061) | Barometric pressure, mm Hg (00025) | Dissolved oxygen, mg/L (00300) | Dissolved oxygen, percent of saturation (00301) | pH, water, unfltrd field, std units (00400) | Specif. conductance, water, unfltrd uS/cm 25 degC (00095) | Temperature, air, deg C (00020) | Temperature, water, deg C (00010) | Hardness, water, mg/L as CaCO3 (00900) | Calcium water, fltrd, mg/L (00915) | Magnesium, water, fltrd, mg/L (00925) | Potassium, water, fltrd, mg/L (00935) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | | | | |
| 25... | 1345 | 10 | 703 | 10.0 | 99 | 8.1 | 1,570 | 18.0 | 11.0 | 390 | 45.0 | 67.2 | 15.9 |
| JUN | | | | | | | | | | | | | |
| 17... | 1330 | 5.9 | 714 | 9.4 | 98 | 8.6 | 1,520 | 12.5 | 14.0 | 410 | 69.1 | 58.4 | 10.6 |
| JUL | | | | | | | | | | | | | |
| 08... | 0915 | 3.1 | 703 | 6.4 | 74 | 8.4 | 1,570 | 15.0 | 18.0 | 420 | 74.8 | 55.8 | 8.66 |
| SEP | | | | | | | | | | | | | |
| 01... | 0945 | 3.9 | 704 | 9.9 | 113 | 8.3 | 1,510 | 20.0 | 17.5 | 360 | 58.2 | 52.2 | 8.74 |

| Date | Sodium adsorption ratio (00931) | Sodium, water, fltrd, mg/L (00930) | Sodium, percent (00932) | Alkalinity, water, fltrd fxd end lab, mg/L as CaCO3 (29801) | Chloride, water, fltrd, mg/L (00940) | Fluoride, water, fltrd, mg/L (00950) | Silica, water, fltrd, mg/L (00955) | Sulfate water, fltrd, mg/L (00945) | Residue water, fltrd, sum of constituents mg/L (70301) | Residue water, fltrd, tons/ acre-ft (70303) | Residue water, fltrd, tons/d (70302) | Ammonia water, fltrd, mg/L as N (00608) | Nitrite + nitrate water fltrd, mg/L as N (00631) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | | | | |
| 25... | 5 | 235 | 56 | 481 | 7.56 | .3 | 8.9 | 388 | 1,060 | 1.44 | 28.6 | .124 | .091 |
| JUN | | | | | | | | | | | | | |
| 17... | 5 | 223 | 53 | 479 | 7.11 | .3 | 10.4 | 353 | 1,020 | 1.39 | 16.3 | <.010 | .067 |
| JUL | | | | | | | | | | | | | |
| 08... | 5 | 228 | 54 | 470 | 7.61 | .4 | 14.3 | 314 | 987 | 1.34 | 8.26 | .262 | .072 |
| SEP | | | | | | | | | | | | | |
| 01... | 5 | 211 | 55 | 487 | 6.82 | .4 | 11.0 | 302 | 945 | 1.28 | 9.95 | <.010 | <.016 |

| Date | Nitrite water, fltrd, mg/L as N (00613) | Total nitrogen, water unfltrd mg/L (62855) | Orthophosphate, water, fltrd, mg/L as P (00671) | Phosphorus, water, unfltrd mg/L (00665) | Arsenic water, fltrd, ug/L (01000) | Arsenic water unfltrd ug/L (01002) | Barium, water, fltrd, ug/L (01005) | Barium, water, unfltrd recoverable, ug/L (01007) | Boron, water, fltrd, ug/L (01020) | Cadmium water, fltrd, ug/L (01025) | Cadmium water, unfltrd ug/L (01027) | Chromium, water, fltrd, ug/L (01030) | Chromium, water, unfltrd recoverable, ug/L (01034) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | | | | |
| 25... | .007 | 1.24 | E.004 | .076 | 4.8 | 6 | 52 | 60 | 1,910 | <.04 | .04 | .9 | E.6 |
| JUN | | | | | | | | | | | | | |
| 17... | .005 | .99 | <.006 | .055 | 4.2 | 5 | 67 | 69 | 1,700 | <.04 | <.04 | <.8 | <.8 |
| JUL | | | | | | | | | | | | | |
| 08... | .011 | 1.43 | <.006 | .089 | 5.7 | 7 | 75 | 85 | 1,920 | <.04 | E.02 | <.8 | .8 |
| SEP | | | | | | | | | | | | | |
| 01... | E.001 | .57 | <.006 | .040 | 3.8 | 5 | 46 | 47 | 1,980 | <.04 | <.04 | <.8 | <.8 |

| Date | Copper, water, fltrd, ug/L (01040) | Copper, water, unfltrd recoverable, ug/L (01042) | Iron, water, fltrd, ug/L (01046) | Iron, water, unfltrd recoverable, ug/L (01045) | Lead, water, fltrd, ug/L (01049) | Lead, water, unfltrd recoverable, ug/L (01051) | Manganese, water, fltrd, ug/L (01056) | Manganese, water, unfltrd recoverable, ug/L (01055) | Mercury water, fltrd, ug/L (71890) | Mercury water, unfltrd recoverable, ug/L (71900) | Nickel, water, fltrd, ug/L (01065) | Nickel, water, unfltrd recoverable, ug/L (01067) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | | | |
| 25... | 2.7 | 4.9 | 59 | 940 | <.08 | .41 | 31.5 | 58 | <.02 | <.02 | 2.61 | 4.04 |
| JUN | | | | | | | | | | | | |
| 17... | 2.4 | 3.7 | 26 | 820 | <.08 | .39 | 21.0 | 92 | <.02 | <.02 | 2.15 | 3.96 |
| JUL | | | | | | | | | | | | |
| 08... | 2.0 | 3.5 | 10 | 1,020 | <.08 | .64 | 25.1 | 139 | <.02 | <.02 | 1.93 | 3.82 |
| SEP | | | | | | | | | | | | |
| 01... | 1.3 | 3.8 | 17 | 410 | .13 | .23 | 5.0 | 53 | <.02 | <.02 | 1.97 | 4.17 |

E--Estimated.

06178500 EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

| Date | Selenium, water, fltrd, ug/L (01145) | Selenium, water, unfltrd ug/L (01147) | Zinc, water, fltrd, ug/L (01090) | Zinc, water, unfltrd recoverable, ug/L (01092) | Suspended sediment, percent <.063mm (70331) | Suspended sediment concentration mg/L (80154) | Suspended sediment discharge, tons/d (80155) |
|---|---|---|---|---|---|---|---|
| MAY | | | | | | | |
| 25... | .8 | .9 | 1.4 | 3 | 90 | 40 | 1.1 |
| JUN | | | | | | | |
| 17... | .7 | .5 | 1.4 | 2 | 86 | 74 | 1.2 |
| JUL | | | | | | | |
| 08... | .6 | .5 | 1.0 | 3 | 77 | 160 | 1.3 |
| SEP | | | | | | | |
| 01... | .4 | .6 | 2.0 | 3 | 82 | 105 | 1.1 |

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,490 | 1,380 | 1,470 | 1,490 | 1,480 | --- | 1,190 | 1,550 | --- | 1,430 | 1,660 | 1,520 |
| 2 | 1,490 | 1,540 | 1,450 | 1,490 | 1,470 | --- | 1,180 | 1,560 | --- | 1,520 | 1,660 | 1,520 |
| 3 | 1,520 | 1,620 | 1,470 | 1,490 | 1,480 | --- | 1,160 | 1,610 | 1,637 | 1,530 | 1,630 | 1,490 |
| 4 | 1,530 | 1,620 | 1,480 | 1,480 | 1,475 | --- | 1,180 | 1,640 | 1,650 | 1,460 | 1,580 | 1,470 |
| 5 | 1,520 | 1,530 | 1,510 | 1,520 | --- | --- | 1,120 | 1,620 | 1,650 | 1,490 | 1,540 | 1,480 |
| 6 | 1,550 | 1,370 | 1,470 | 1,530 | --- | --- | 1,210 | 1,570 | 1,690 | 1,420 | 1,620 | 1,430 |
| 7 | 1,550 | 1,360 | 1,490 | 1,520 | --- | --- | 1,230 | 1,600 | 1,680 | 1,490 | 1,640 | 1,410 |
| 8 | 1,570 | 1,360 | 1,500 | 1,516 | --- | --- | 1,200 | 1,640 | 1,600 | 1,600 | 1,580 | 1,420 |
| 9 | 1,560 | 1,370 | 1,480 | --- | --- | --- | 1,220 | 1,620 | 1,590 | 1,570 | 1,530 | 1,460 |
| 10 | 1,530 | 1,370 | 1,460 | 1,479 | --- | --- | 1,280 | 1,550 | 1,540 | 1,560 | 1,520 | 1,480 |
| 11 | 1,500 | 1,360 | 1,480 | 1,480 | --- | --- | 1,350 | 1,350 | 1,400 | 1,580 | 1,530 | 1,470 |
| 12 | 1,480 | 1,360 | 1,500 | 1,470 | --- | --- | 1,400 | 1,260 | 1,300 | 1,640 | 1,540 | 1,490 |
| 13 | 1,460 | 1,350 | 1,510 | 1,460 | --- | --- | 1,370 | 1,350 | 1,290 | 1,590 | 1,590 | 1,490 |
| 14 | 1,460 | 1,350 | 1,520 | 1,470 | --- | --- | 1,280 | 1,480 | 1,310 | 1,600 | 1,620 | 1,460 |
| 15 | 1,470 | 1,350 | 1,520 | 1,460 | --- | --- | 1,340 | 1,540 | 1,320 | 1,650 | 1,590 | 1,480 |
| 16 | 1,500 | 1,360 | 1,510 | 1,460 | --- | --- | 1,410 | 1,580 | 1,290 | 1,660 | 1,550 | 1,480 |
| 17 | 1,430 | 1,370 | 1,510 | 1,460 | --- | --- | 1,450 | 1,640 | 1,450 | 1,650 | 1,560 | 1,480 |
| 18 | 1,470 | 1,390 | 1,520 | 1,460 | --- | --- | 1,450 | 1,670 | 1,340 | 1,680 | 1,540 | 1,510 |
| 19 | 1,520 | 1,380 | 1,510 | 1,460 | --- | --- | 1,490 | 1,650 | 1,300 | 1,680 | 1,530 | 1,520 |
| 20 | 1,470 | 1,440 | 1,510 | 1,480 | --- | --- | 1,520 | 1,660 | 1,400 | 1,710 | 1,510 | 1,460 |
| 21 | 1,510 | 1,410 | 1,520 | 1,480 | --- | --- | 1,540 | 1,680 | 1,580 | 1,720 | 1,540 | 1,420 |
| 22 | 1,510 | 1,410 | 1,520 | 1,480 | --- | --- | 1,550 | 1,610 | 1,530 | 1,740 | 1,490 | 1,430 |
| 23 | 1,460 | 1,440 | 1,500 | 1,480 | --- | --- | 1,550 | 1,540 | 1,420 | 1,710 | 1,440 | 1,390 |
| 24 | 1,370 | 1,490 | 1,500 | 1,490 | --- | --- | 1,560 | 1,521 | 1,310 | 1,690 | 1,450 | 1,410 |
| 25 | 1,330 | 1,490 | 1,707 | 1,490 | --- | 1,135 | 1,550 | --- | 1,280 | 1,650 | 1,470 | 1,430 |
| 26 | 1,350 | 1,480 | 1,820 | 1,490 | --- | 1,080 | 1,570 | --- | 1,310 | 1,650 | 1,460 | 1,460 |
| 27 | 1,360 | 1,450 | 1,850 | 1,490 | --- | 989 | 1,600 | --- | 1,330 | 1,710 | 1,470 | 1,440 |
| 28 | 1,320 | 1,450 | 1,820 | 1,490 | --- | 995 | 1,550 | --- | 1,310 | 1,660 | 1,480 | 1,480 |
| 29 | 1,220 | 1,460 | 1,840 | 1,480 | --- | 1,130 | 1,530 | --- | 1,330 | 1,580 | 1,470 | 1,490 |
| 30 | 1,220 | 1,460 | 1,800 | 1,490 | --- | 1,230 | 1,530 | --- | 1,360 | 1,650 | 1,490 | 1,480 |
| 31 | 1,269 | --- | 1,520 | 1,480 | --- | 1,230 | --- | --- | --- | 1,660 | 1,510 | --- |
| MEAN | 1,450 | 1,430 | 1,560 | --- | --- | --- | 1,390 | --- | --- | 1,610 | 1,540 | 1,460 |
| MAX | 1,570 | 1,620 | 1,850 | -- | -- | -- | 1,600 | -- | -- | 1,740 | 1,660 | 1,520 |
| MIN | 1,220 | 1,350 | 1,450 | -- | -- | -- | 1,120 | -- | -- | 1,420 | 1,440 | 1,390 |

## 06181000 POPLAR RIVER NEAR POPLAR, MT

LOCATION.--Lat 48°10'15", long 105°10'42" (NAD 27), in NE¼NE¼ sec.19, T.28 N., R.51 E., Roosevelt County, Hydrologic Unit 10060003, on right bank 4 mi north of Poplar, and at river mile 11.

DRAINAGE AREA.---3,174 $mi^2$.

PERIOD OF RECORD.--August 1908 to October 1924, August 1947 to September 1969, June 1975 to September 1979, October 1981 to current year. Monthly discharge only for some periods, published in WSP 1309.

### WATER-DISCHARGE RECORDS

REVISED RECORDS.--WSP 1176. 1948. WSP 1389: 1911. WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,953.16 ft (NGVD 29). Prior to May 1, 1911, nonrecording gage at site 4.2 mi upstream at different elevation. May 1, 1911, to Oct. 4, 1913, nonrecording gage at site 14 mi upstream at different elevation. Oct. 5, 1913, to Oct. 31, 1924, nonrecording gage at site 2.2 mi upstream at different elevation. Aug. 10, 1947, to Sept. 30, 1969, water-stage recorder at present site and elevation.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Diversions for irrigation of about 5,500 acres upstream from station. Flow partially regulated by Coronach Dam, on the East Fork Poplar River, 2 mi north of international boundary. U. S. Geological Survey satellite telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 10, 1946, reached a stage of 18.1 ft, from floodmark, discharge, 40,000 $ft^3/s$, from slope-area measurement of peak flow made at site 20 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.5 | 22 | e15 | e10 | e6.0 | e8.0 | 794 | 82 | 767 | 106 | 41 | 22 |
| 2 | 6.6 | 23 | e15 | e10 | e5.0 | e8.0 | 892 | 78 | 502 | 103 | 40 | 22 |
| 3 | 6.8 | 24 | e15 | e7.0 | e5.0 | e8.0 | 804 | 76 | 403 | 97 | 42 | 23 |
| 4 | 7.2 | e15 | e15 | e5.0 | e5.0 | e9.0 | 668 | 74 | 327 | 96 | 47 | 23 |
| 5 | 7.2 | e15 | e15 | e5.0 | e6.0 | e9.0 | 536 | 72 | 271 | 102 | 43 | 22 |
| 6 | 7.1 | e15 | e15 | e5.0 | e6.0 | e9.0 | 467 | 69 | 231 | 101 | 40 | 21 |
| 7 | 7.1 | e10 | e15 | e7.0 | e6.0 | e9.0 | 401 | 67 | 203 | 102 | 38 | 21 |
| 8 | 7.3 | e10 | e15 | e7.0 | e7.0 | e9.0 | 335 | 67 | 185 | 126 | 35 | 21 |
| 9 | 7.0 | e10 | e15 | e9.0 | e7.0 | e9.0 | 285 | 67 | 169 | 103 | 35 | 21 |
| 10 | 7.2 | e15 | e10 | e9.0 | e7.0 | e8.0 | 251 | 68 | 175 | 91 | 34 | 21 |
| 11 | 7.1 | e15 | e10 | e9.0 | e7.0 | e8.0 | 221 | 74 | 218 | 85 | 33 | 21 |
| 12 | 7.4 | e15 | e10 | e9.0 | e7.0 | e8.0 | 201 | 85 | 292 | 78 | 33 | 21 |
| 13 | 7.6 | e10 | e15 | e9.0 | e7.0 | e9.0 | 186 | 94 | 461 | 74 | 30 | 21 |
| 14 | 8.4 | e10 | e15 | e9.0 | e7.0 | e9.0 | 169 | 96 | 577 | 71 | 29 | 21 |
| 15 | 9.0 | e10 | e15 | e9.0 | e8.0 | e10 | 158 | 96 | 705 | 70 | 28 | 21 |
| 16 | 9.7 | e10 | e15 | e9.0 | e8.0 | e10 | 154 | 109 | 592 | 69 | 27 | 21 |
| 17 | 10 | e15 | e15 | e9.0 | e9.0 | e10 | 154 | 137 | 466 | 68 | 26 | 21 |
| 18 | 10 | e20 | e15 | e7.0 | e9.0 | e10 | 159 | 154 | 371 | 65 | 24 | 21 |
| 19 | 10 | e20 | e15 | e7.0 | e9.0 | e10 | 158 | 175 | 310 | 62 | 23 | 21 |
| 20 | 10 | e15 | e15 | e8.0 | e9.0 | e9.0 | 154 | 175 | 270 | 59 | 22 | 20 |
| 21 | 10 | e15 | e15 | e8.0 | e9.0 | e9.0 | 145 | 167 | 234 | 56 | 22 | 21 |
| 22 | 10 | e10 | e15 | e8.0 | e8.0 | e9.0 | 137 | 159 | 209 | 56 | 22 | 21 |
| 23 | 9.7 | e10 | e15 | e8.0 | e8.0 | e10 | 129 | 159 | 188 | 55 | 21 | 21 |
| 24 | 9.1 | e10 | e15 | e7.0 | e8.0 | e15 | 120 | 174 | 170 | 53 | 21 | 21 |
| 25 | 11 | e15 | e15 | e6.0 | e8.0 | e25 | 111 | 200 | 155 | 50 | 24 | 21 |
| 26 | 12 | e15 | e15 | e5.0 | e8.0 | e40 | 104 | 395 | 143 | 46 | 24 | 21 |
| 27 | 12 | e15 | e15 | e5.0 | e9.0 | e80 | 99 | 625 | 135 | 43 | 25 | 20 |
| 28 | 14 | e15 | e15 | e4.0 | e9.0 | e100 | 95 | 644 | 125 | 40 | 25 | 20 |
| 29 | 23 | e15 | e10 | e4.0 | e9.0 | e200 | 89 | 504 | 117 | 39 | 25 | 21 |
| 30 | 17 | e15 | e10 | e5.0 | --- | e300 | 85 | 483 | 109 | 38 | 24 | 21 |
| 31 | 16 | --- | e10 | e6.0 | --- | e500 | --- | 1,250 | --- | 38 | 23 | --- |
| TOTAL | 303.0 | 434 | 435 | 225.0 | 216.0 | 1,467.0 | 8,261 | 6,675 | 9,080 | 2,242 | 926 | 634 |
| MEAN | 9.77 | 14.5 | 14.0 | 7.26 | 7.45 | 47.3 | 275 | 215 | 303 | 72.3 | 29.9 | 21.1 |
| MAX | 23 | 24 | 15 | 10 | 9.0 | 500 | 892 | 1,250 | 767 | 126 | 47 | 23 |
| MIN | 6.5 | 10 | 10 | 4.0 | 5.0 | 8.0 | 85 | 67 | 109 | 38 | 21 | 20 |
| AC-FT | 601 | 861 | 863 | 446 | 428 | 2,910 | 16,390 | 13,240 | 18,010 | 4,450 | 1,840 | 1,260 |

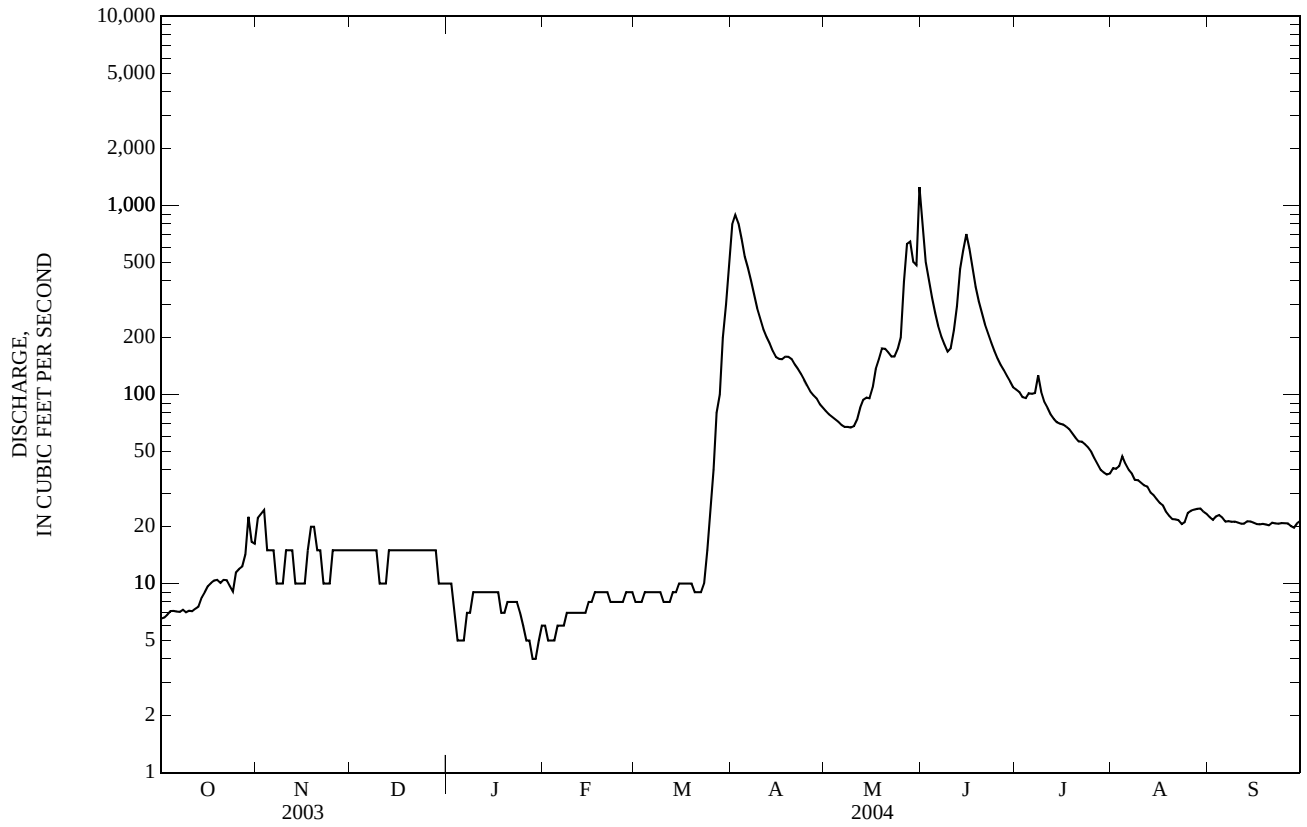
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 2004, BY WATER YEAR (WY)*

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 27.8 | 26.5 | 16.6 | 8.48 | 26.7 | 330 | 658 | 124 | 89.0 | 76.9 | 27.2 | 23.8 |
| MAX | 81.5 | 93.5 | 50.0 | 30.0 | 743 | 2,445 | 4,918 | 421 | 336 | 800 | 220 | 206 |
| (WY) | (1925) | (1919) | (1915) | (1915) | (1996) | (1960) | (1952) | (1955) | (1953) | (1993) | (1993) | (1911) |
| MIN | 2.19 | 4.25 | 1.28 | 0.01 | 0.10 | 0.18 | 37.3 | 17.4 | 2.77 | 0.68 | 0.04 | 0.15 |
| (WY) | (1959) | (1959) | (1986) | (1950) | (1959) | (1965) | (1992) | (1992) | (1988) | (1984) | (1988) | (1988) |

06181000 POPLAR RIVER NEAR POPLAR, MT—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1908 - 2004* | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 26,543.1 | | 30,898.0 | | | |
| ANNUAL MEAN | 72.7 | | 84.4 | | 119** | |
| HIGHEST ANNUAL MEAN | | | | | 435 | 1952 |
| LOWEST ANNUAL MEAN | | | | | 13.7 | 1988 |
| HIGHEST DAILY MEAN | 4,000 | Mar 18 | 1,250 | May 31 | 34,200 | Apr 7, 1954 |
| LOWEST DAILY MEAN | 2.8 | Aug 28 | 4.0 | Jan 28, 29 | a0.00 | Dec 16, 1917 |
| ANNUAL SEVEN-DAY MINIMUM | 3.0 | Aug 24 | 5.0 | Jan 25 | 0.00 | Jan 4, 1950 |
| MAXIMUM PEAK FLOW | | | 1,380 | May 31 | 37,400 | Apr 6, 1954 |
| MAXIMUM PEAK STAGE | | | 6.85 | May 31 | b17.86 | Apr 6, 1954 |
| ANNUAL RUNOFF (AC-FT) | 52,650 | | 61,290 | | 86,290 | |
| 10 PERCENT EXCEEDS | 122 | | 212 | | 176 | |
| 50 PERCENT EXCEEDS | 14 | | 21 | | 23 | |
| 90 PERCENT EXCEEDS | 5.0 | | 7.1 | | 3.0 | |

*--During period of operation (1908-24, 1947-69, 1975-79, 1982 to current year).
**--Median of yearly mean discharge, 83.0 $ft^3/s$.
a--No flow at times.
b--From floodmark, from slope-area measurement of peak flow.
e--Estimated.



06181000 POPLAR RIVER NEAR POPLAR, MT—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975-81, 1987-94, May 1999 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Seasonal records from April 2000 to September 2003.

REMARKS.--No dissolved oxygen data for June 16 due to equipment problems.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: During period of seasonal operation, maximum 33.0°C, Aug. 12, 18, 19, 2003; minimum 0.0°C on many days during winter periods.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

| Date | Time | Instantaneous discharge, cfs (00061) | Barometric pressure, mm Hg (00025) | Dissolved oxygen, mg/L (00300) | Dissolved oxygen, percent of saturation (00301) | pH, water, unfltrd field, std units (00400) | Specif. conductance, wat unfltrd uS/cm 25 degC (00095) | Temperature, air, deg C (00020) | Temperature, water, deg C (00010) | Hardness, water, mg/L as CaCO3 (00900) | Calcium water, fltrd, mg/L (00915) | Magnesium, water, fltrd, mg/L (00925) | Potassium, water, fltrd, mg/L (00935) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 21... | 0950 | 144 | 717 | 10.4 | 100 | 8.0 | 1,250 | 20.0 | 10.5 | 230 | 36.5 | 34.4 | 5.61 |
| JUN | | | | | | | | | | | | | |
| 03... | 1045 | 407 | 720 | 8.4 | 94 | 8.5 | 908 | 16.0 | 18.0 | 210 | 34.0 | 30.6 | 8.46 |
| 16... | 1115 | 594 | 724 | -- | -- | 8.3 | 954 | 18.5 | 16.5 | 210 | 34.1 | 29.9 | 7.42 |
| AUG | | | | | | | | | | | | | |
| 24... | 0930 | 20 | 714 | 9.8 | 105 | 8.9 | 1,760 | 14.5 | 15.0 | 250 | 27.6 | 43.6 | 7.74 |

| Date | Sodium adsorption ratio (00931) | Sodium, water, fltrd, mg/L (00930) | Sodium, percent (00932) | Alkalinity, water, fltrd fxd end lab, mg/L as CaCO3 (29801) | Chloride, water, fltrd, mg/L (00940) | Fluoride, water, fltrd, mg/L (00950) | Silica, water, fltrd, mg/L (00955) | Sulfate water, fltrd, mg/L (00945) | Residue water, fltrd, sum of constituents mg/L (70301) | Residue water, fltrd, tons/ acre-ft (70303) | Residue water, fltrd, tons/d (70302) | Ammonia water, fltrd, mg/L as N (00608) | Nitrite + nitrate water fltrd, mg/L as N (00631) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 21... | 6 | 205 | 65 | 413 | 20.9 | .4 | 7.0 | 241 | 799 | 1.09 | 311 | E.005 | <.016 |
| JUN | | | | | | | | | | | | | |
| 03... | 4 | 136 | 57 | 307 | 7.15 | .3 | 13.9 | 167 | 583 | .79 | 640 | E.005 | E.009 |
| 16... | 5 | 156 | 61 | 332 | 6.56 | .3 | 12.7 | 172 | 618 | .84 | 992 | E.005 | <.016 |
| AUG | | | | | | | | | | | | | |
| 24... | 9 | 319 | 73 | 499 | 95.7 | .5 | 4.3 | 297 | 1,100 | 1.49 | 59.2 | E.005 | <.016 |

| Date | Nitrite water, fltrd, mg/L as N (00613) | Total nitrogen, water unfltrd mg/L (62855) | Orthophosphate, water, fltrd, mg/L as P (00671) | Phosphorus, water, unfltrd mg/L (00665) | Arsenic water, fltrd, ug/L (01000) | Arsenic water unfltrd ug/L (01002) | Barium, water, fltrd, ug/L (01005) | Barium, water, unfltrd recoverable, ug/L (01007) | Boron, water, fltrd, ug/L (01020) | Cadmium water, fltrd, ug/L (01025) | Cadmium water, unfltrd ug/L (01027) | Chromium, water, fltrd, ug/L (01030) | Chromium, water, unfltrd recoverable, ug/L (01034) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | | | | |
| 21... | <.002 | .66 | <.006 | .048 | 1.8 | 2 | 51 | 61 | -- | <.04 | <.04 | <.8 | <.8 |
| JUN | | | | | | | | | | | | | |
| 03... | E.001 | 1.32 | .011 | .155 | 2.9 | 4 | 64 | 100 | 590 | <.04 | .08 | <.8 | 3.6 |
| 16... | .003 | 1.62 | .014 | .200 | 3.3 | 4 | 66 | 101 | 668 | <.04 | .09 | <.8 | <.8 |
| AUG | | | | | | | | | | | | | |
| 24... | <.002 | .60 | <.006 | .037 | 3.3 | 3 | 49 | 56 | 1,240 | <.04 | E.02 | <.8 | E.6 |

E--Estimated.

06181000 POPLAR RIVER NEAR POPLAR, MT—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

| Date | Copper, water, fltrd, ug/L (01040) | Copper, water, unfltrd recover -able, ug/L (01042) | Iron, water, fltrd, ug/L (01046) | Iron, water, unfltrd recover -able, ug/L (01045) | Lead, water, fltrd, ug/L (01049) | Lead, water, unfltrd recover -able, ug/L (01051) | Manganese, water, fltrd, ug/L (01056) | Manganese, water, unfltrd recover -able, ug/L (01055) | Mercury water, fltrd, ug/L (71890) | Mercury water, unfltrd recover -able, ug/L (71900) |
|---|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | | |
| 21... | 2.2 | 3.3 | 11 | 730 | <.08 | .55 | 2.9 | 60 | <.02 | <.02 |
| JUN | | | | | | | | | | |
| 03... | 3.3 | 6.7 | 38 | 3,430 | <.08 | 2.76 | 1.8 | 122 | <.02 | E.01 |
| 16... | 2.9 | 8.3 | 53 | 3,710 | E.04 | 2.92 | 3.1 | 146 | <.02 | E.01 |
| AUG | | | | | | | | | | |
| 24... | 3.2 | 4.8 | <6 | 670 | <.08 | .55 | 3.7 | 46 | <.02 | <.02 |

| Date | Nickel, water, fltrd, ug/L (01065) | Nickel, water, unfltrd recover -able, ug/L (01067) | Selenium, water, fltrd, ug/L (01145) | Selenium, water, unfltrd ug/L (01147) | Zinc, water, fltrd, ug/L (01090) | Zinc, water, unfltrd recover -able, ug/L (01092) | Suspended sediment, percent <.063mm (70331) | Suspended sediment concentration mg/L (80154) | Suspended sediment discharge, tons/d (80155) |
|---|---|---|---|---|---|---|---|---|---|
| APR | | | | | | | | | |
| 21... | 2.21 | 3.60 | .5 | .5 | .7 | 2 | 94 | 44 | 17 |
| JUN | | | | | | | | | |
| 03... | 3.44 | 7.46 | .5 | .5 | 1.4 | 13 | 96 | 165 | 181 |
| 16... | 2.44 | 8.39 | .6 | .5 | .9 | 15 | 90 | 128 | 205 |
| AUG | | | | | | | | | |
| 24... | 2.28 | 4.49 | .5 | .7 | 1.1 | 4 | 99 | 74 | 4.0 |

E--Estimated.

## 06183450 BIG MUDDY CREEK NEAR ANTELOPE, MT

LOCATION.--Lat 48°40'22", long 104°30'42" (NAD 27), in SW¼SW¼NW¼ sec. 27, T.34 N., R.55 E., Sheridan County, Hydrologic Unit 10060006, on right bank, 3 mi southwest of Antelope, and 7 mi south of Plentywood, MT.

DRAINAGE AREA.--967 mi$^2$. Prior to 1981, drainage area published as 1,171 mi$^2$.

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

REVISED RECORDS.--WDR MT-81-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,000 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Several known diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station. Several observations of instantaneous water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.8 | e4.5 | e3.5 | e2.5 | e1.5 | e1.5 | e160 | 12 | 246 | 9.1 | 3.6 | 3.6 |
| 2 | 3.6 | e4.5 | e3.5 | e2.5 | e1.5 | e1.5 | e140 | 9.9 | 274 | 8.7 | 3.5 | 3.3 |
| 3 | 3.5 | e4.0 | e3.5 | e2.0 | e1.5 | e1.5 | e160 | 9.6 | 146 | 8.2 | 4.0 | 3.3 |
| 4 | 2.9 | e4.0 | e3.0 | e2.0 | e1.5 | e2.0 | 174 | 8.9 | 85 | 7.9 | 4.0 | 3.4 |
| 5 | 2.0 | e4.0 | e3.0 | e2.0 | e1.5 | e1.5 | 140 | 8.2 | 61 | 7.9 | 4.4 | 3.4 |
| 6 | 2.0 | e4.0 | e4.0 | e2.0 | e1.5 | e1.5 | 120 | 7.8 | 48 | 7.7 | 5.1 | 3.4 |
| 7 | 2.0 | e4.0 | e4.0 | e2.5 | e2.0 | e2.0 | 111 | 7.1 | 37 | 7.7 | 6.1 | 5.2 |
| 8 | 1.9 | e4.0 | e3.5 | e2.5 | e2.0 | e2.0 | 98 | 6.9 | 29 | 8.2 | 11 | 6.1 |
| 9 | 2.0 | e4.5 | e3.5 | e2.5 | e2.0 | e2.0 | 81 | 6.8 | 24 | 7.9 | 10 | 5.1 |
| 10 | 2.4 | e4.5 | e3.0 | e3.0 | e2.0 | e1.5 | 69 | 6.4 | 25 | 7.8 | 7.8 | 4.3 |
| 11 | 2.5 | e4.5 | e3.0 | e3.0 | e1.5 | e1.5 | 59 | 7.7 | 34 | 8.2 | 6.7 | 3.9 |
| 12 | 2.4 | e4.0 | e3.0 | e2.5 | e1.5 | e1.5 | 49 | 9.5 | 45 | 8.1 | 5.9 | 3.5 |
| 13 | 2.2 | e4.0 | e3.0 | e2.5 | e2.0 | e1.5 | 50 | 14 | 62 | 8.1 | 5.5 | 3.2 |
| 14 | 2.3 | e4.0 | e3.0 | e3.0 | e2.0 | e1.5 | 89 | 19 | 155 | 7.5 | 5.2 | 2.6 |
| 15 | 2.7 | e4.0 | e3.0 | e3.0 | e2.5 | e1.5 | 55 | 29 | 243 | 7.1 | 5.3 | 2.1 |
| 16 | 3.6 | e4.5 | e3.0 | e3.0 | e2.5 | e1.5 | 37 | 40 | 204 | 7.0 | 5.2 | 2.1 |
| 17 | 3.6 | e4.5 | e3.0 | e2.5 | e2.0 | e1.5 | 35 | 45 | 125 | 6.7 | 4.7 | 3.2 |
| 18 | 3.7 | e4.5 | e3.0 | e2.5 | e2.0 | e1.5 | 36 | 48 | 85 | 6.5 | 4.6 | 3.5 |
| 19 | 3.6 | e4.5 | e3.5 | e3.0 | e2.0 | e1.5 | 35 | 54 | 66 | 6.3 | 4.5 | 3.4 |
| 20 | 3.8 | e4.5 | e3.5 | e3.0 | e2.5 | e1.5 | 36 | 59 | 55 | 6.2 | 4.3 | 3.4 |
| 21 | 4.0 | e3.5 | e3.5 | e2.5 | e2.5 | e1.5 | 36 | 54 | 44 | 5.7 | 4.5 | 3.5 |
| 22 | 4.2 | e3.5 | e3.5 | e3.0 | e2.5 | e1.5 | 36 | 57 | 37 | 5.4 | 4.6 | 3.3 |
| 23 | 4.3 | e3.5 | e3.0 | e2.5 | e2.5 | e2.0 | 29 | 61 | 31 | 4.9 | 4.7 | 3.5 |
| 24 | 4.2 | e3.5 | e3.0 | e2.0 | e2.5 | e2.0 | 25 | 60 | 27 | 4.6 | 4.5 | 3.5 |
| 25 | 4.4 | e3.5 | e3.5 | e2.0 | e2.5 | e10 | 21 | 61 | 23 | 4.3 | 4.8 | 3.3 |
| 26 | 4.4 | e3.5 | e3.5 | e1.5 | e2.5 | e30 | 15 | 58 | 19 | 4.1 | 5.0 | 3.5 |
| 27 | 4.4 | e4.0 | e3.0 | e1.5 | e2.0 | e100 | 13 | 88 | 17 | 4.0 | 4.3 | 3.3 |
| 28 | 4.4 | e4.0 | e3.0 | e1.5 | e2.0 | e120 | 18 | 137 | 15 | 3.8 | 4.1 | 4.0 |
| 29 | 5.0 | e3.5 | e2.5 | e1.5 | e2.0 | e140 | 15 | 144 | 13 | 3.6 | 4.2 | 4.0 |
| 30 | 5.1 | e3.5 | e2.5 | e1.5 | --- | e180 | 14 | 131 | 10 | 3.3 | 4.1 | 4.0 |
| 31 | e4.0 | --- | e2.5 | e1.5 | --- | e210 | --- | 125 | --- | 3.3 | 3.9 | --- |
| TOTAL | 102.9 | 121.0 | 99.0 | 72.5 | 58.5 | 829.0 | 1,956 | 1,384.8 | 2,285 | 199.8 | 160.1 | 107.9 |
| MEAN | 3.32 | 4.03 | 3.19 | 2.34 | 2.02 | 26.7 | 65.2 | 44.7 | 76.2 | 6.45 | 5.16 | 3.60 |
| MAX | 5.1 | 4.5 | 4.0 | 3.0 | 2.5 | 210 | 174 | 144 | 274 | 9.1 | 11 | 6.1 |
| MIN | 1.8 | 3.5 | 2.5 | 1.5 | 1.5 | 1.5 | 13 | 6.4 | 10 | 3.3 | 3.5 | 2.1 |
| AC-FT | 204 | 240 | 196 | 144 | 116 | 1,640 | 3,880 | 2,750 | 4,530 | 396 | 318 | 214 |

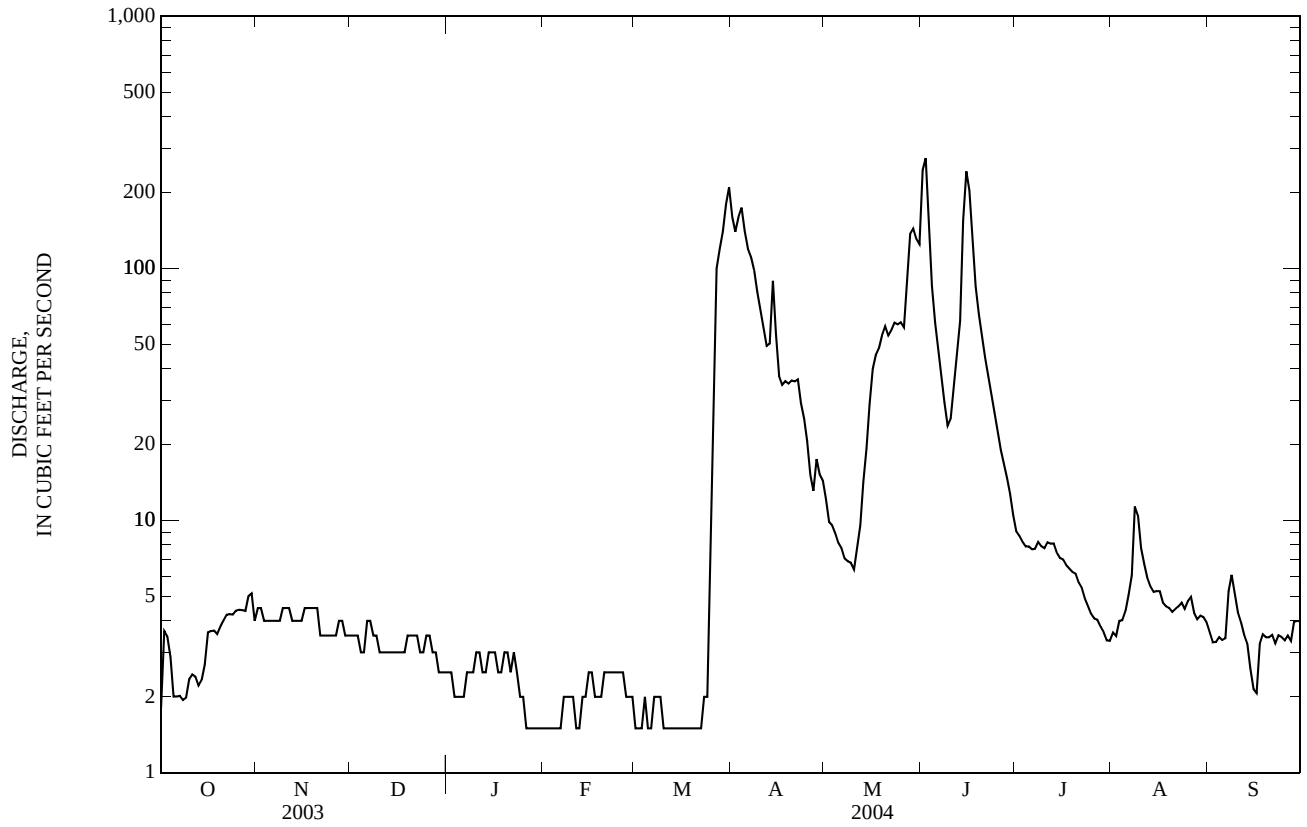
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 5.25 | 5.81 | 3.55 | 1.88 | 23.2 | 136 | 111 | 26.7 | 18.1 | 24.5 | 8.63 | 4.29 |
| MAX | 25.0 | 11.8 | 6.86 | 6.38 | 290 | 851 | 826 | 120 | 76.2 | 226 | 92.5 | 35.7 |
| (WY) | (1987) | (1999) | (1982) | (1983) | (1996) | (1999) | (1982) | (1979) | (2004) | (1993) | (1987) | (1997) |
| MIN | 0.14 | 0.88 | 0.45 | 0.00 | 0.00 | 2.65 | 5.04 | 5.29 | 0.23 | 0.03 | 0.00 | 0.00 |
| (WY) | (1989) | (1989) | (1986) | (1989) | (1989) | (2002) | (1988) | (1992) | (1988) | (1985) | (1984) | (1984) |

06183450 BIG MUDDY CREEK NEAR ANTELOPE, MT—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1979 - 2004 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 13,762.47 | | 7,376.5 | | | |
| ANNUAL MEAN | 37.7 | | 20.2 | | 30.8* | |
| HIGHEST ANNUAL MEAN | | | | | 93.2 | 1979 |
| LOWEST ANNUAL MEAN | | | | | 4.73 | 1992 |
| HIGHEST DAILY MEAN | 2,300 | Mar 18 | 274 | Jun 2 | 3,160 | Mar 23, 1999 |
| LOWEST DAILY MEAN | 0.26 | Sep 18 | 1.5 | Jan 26 | c0.00 | Aug 2, 1981 |
| ANNUAL SEVEN-DAY MINIMUM | 0.32 | Sep 3 | 1.5 | Jan 26 | 0.00 | Jul 23, 1984 |
| MAXIMUM PEAK FLOW | | | a322 | Jun 1 | 3,190 | Mar 22, 1999 |
| MAXIMUM PEAK STAGE | | | b7.05 | Mar 27 | 17.37 | Apr 14, 1982 |
| ANNUAL RUNOFF (AC-FT) | 27,300 | | 14,630 | | 22,320 | |
| 10 PERCENT EXCEEDS | 49 | | 59 | | 39 | |
| 50 PERCENT EXCEEDS | 3.5 | | 4.0 | | 4.5 | |
| 90 PERCENT EXCEEDS | 0.75 | | 2.0 | | 0.23 | |

*--Median of yearly mean discharge, 22.6 $ft^3/s$.
a--Gage height, 6.03 ft.
b--Backwater from ice.
c--No flow many days most years.
e--Estimated.



## 06183700 BIG MUDDY CREEK DIVERSION CANAL NEAR MEDICINE LAKE, MT

LOCATION.--Lat 48°30'34", long 104°32'55" (NAD 27), in SE¼NW¼SE¼ sec. 22, T.32 N., R.55 E., Sheridan County, Hydrologic Unit 10060006, on right bank, on dike road about 2 ft upstream from canal headgate and 2.2 miles northwest of Medicine Lake.

PERIOD OF RECORD.--August 1985 to September 1991, October 1991 to current year (seasonal records).

GAGE.--Water-stage recorder. Elevation of gage is 1,940 ft (NGVD 29).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Canal diverts water into Medicine Lake at the Medicine Lake National Wildlife Refuge. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2004
DAILY MEAN VALUES

| DAY | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | e0.00 | e170 | e9.0 | 123 | 6.5 | 2.4 | 2.6 | 3.3 | | |
| 2 | | | e0.00 | e190 | e8.0 | 223 | 5.5 | 2.4 | 2.4 | 3.6 | | |
| 3 | | | e0.00 | e170 | e7.0 | 247 | 5.0 | 2.4 | 2.5 | 3.5 | | |
| 4 | | | e0.00 | e140 | e6.0 | 143 | 5.2 | 2.4 | 2.5 | 3.5 | | |
| 5 | | | e0.00 | e120 | e5.0 | 95 | 5.3 | 2.4 | 2.4 | 3.5 | | |
| 6 | | | e0.00 | e130 | e4.0 | 76 | 4.6 | 2.4 | 2.3 | 3.5 | | |
| 7 | | | e0.00 | e120 | 3.6 | 59 | 4.5 | 2.4 | 2.5 | 3.5 | | |
| 8 | | | e0.00 | 108 | 3.5 | 44 | 5.4 | 2.5 | 2.5 | 3.6 | | |
| 9 | | | e0.00 | 95 | 3.3 | 29 | 5.0 | 2.5 | 2.4 | 3.7 | | |
| 10 | | | e0.00 | 81 | 3.5 | 25 | 5.0 | 2.7 | 2.6 | 3.8 | | |
| 11 | | | e0.00 | 71 | 4.3 | 36 | 4.9 | 3.2 | 3.0 | 3.9 | | |
| 12 | | | e0.00 | 62 | 4.8 | 61 | 4.5 | 3.1 | 3.0 | 3.9 | | |
| 13 | | | e0.00 | 56 | 4.9 | 70 | 4.5 | 3.0 | 3.0 | 3.9 | | |
| 14 | | | e0.00 | 56 | 5.9 | 78 | 4.5 | 2.9 | 3.0 | 4.0 | | |
| 15 | | | e0.00 | 91 | 7.9 | 144 | 4.5 | 2.8 | 2.9 | 4.1 | | |
| 16 | | | e0.00 | e60 | 13 | 182 | 4.3 | 2.8 | 2.9 | 4.1 | | |
| 17 | | | e0.00 | e35 | 22 | 158 | 4.1 | 2.8 | 2.8 | 4.1 | | |
| 18 | | | e0.00 | e35 | 34 | 115 | 3.8 | 2.6 | 2.8 | 4.3 | | |
| 19 | | | e0.00 | e35 | 44 | 92 | 3.8 | 2.6 | 2.8 | 4.4 | | |
| 20 | | | e0.00 | e35 | 48 | 75 | 3.9 | 2.5 | 2.8 | 4.6 | | |
| 21 | | | e2.0 | e35 | 57 | 62 | 3.8 | 2.5 | 3.0 | 4.7 | | |
| 22 | | | e10 | e35 | 53 | 46 | 4.0 | 2.4 | 3.0 | 4.8 | | |
| 23 | | | e50 | e35 | 52 | 36 | 4.0 | 2.4 | 3.0 | 4.8 | | |
| 24 | | | e130 | e30 | 71 | 28 | 4.0 | 2.4 | 3.1 | 4.8 | | |
| 25 | | | e120 | e25 | 71 | 22 | 3.9 | 2.4 | 3.2 | 4.9 | | |
| 26 | | | e100 | e20 | 70 | 18 | 3.8 | 2.5 | 3.2 | 4.9 | | |
| 27 | | | e120 | e15 | 69 | 14 | 3.8 | 2.6 | 3.2 | 5.1 | | |
| 28 | | | e110 | e15 | 87 | 11 | 3.5 | 2.6 | 3.3 | 5.2 | | |
| 29 | | | e190 | e15 | 123 | 8.7 | 3.2 | 2.6 | 3.3 | 5.3 | | |
| 30 | | | e230 | e10 | 135 | 7.4 | 2.5 | 2.6 | 3.3 | 5.3 | | |
| 31 | | | e200 | --- | 126 | --- | 2.4 | 2.6 | --- | 5.2 | | |
| TOTAL | | | 1,262.00 | 2,095 | 1,155.7 | 2,328.1 | 133.7 | 80.4 | 85.3 | 131.8 | | |
| MEAN | | | 40.7 | 69.8 | 37.3 | 77.6 | 4.31 | 2.59 | 2.84 | 4.25 | | |
| MAX | | | 230 | 190 | 135 | 247 | 6.5 | 3.2 | 3.3 | 5.3 | | |
| MIN | | | 0.00 | 10 | 3.3 | 7.4 | 2.4 | 2.4 | 2.3 | 3.3 | | |
| AC-FT | | | 2,500 | 4,160 | 2,290 | 4,620 | 265 | 159 | 169 | 261 | | |

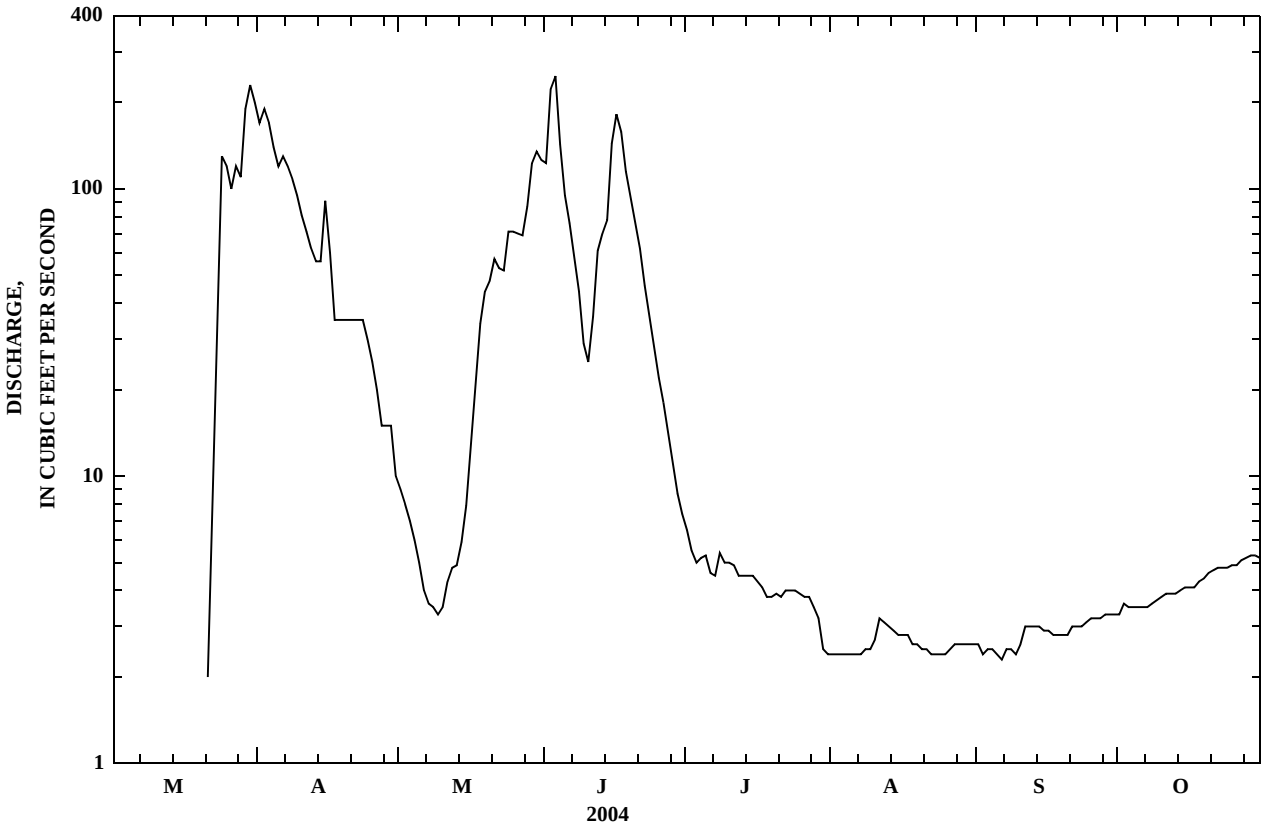
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1991 AND SEASONS 1992 - 2004*

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.28 | 5.11 | 97.3 | 51.7 | 16.2 | 12.6 | 22.8 | 5.88 | 3.68 | 3.34 | 1.66 | 0.580 |
| MAX | 1.10 | 23.4 | 434 | 260 | 46.5 | 77.6 | 144 | 31.3 | 37.3 | 10.5 | 4.97 | 2.80 |
| (WY) | (1990) | (1986) | (1999) | (1997) | (1999) | (2004) | (1993) | (1987) | (1997) | (2004) | (1990) | (1990) |
| MIN | 0.000 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000 | 0.000 |
| (WY) | (1988) | (1988) | (2002) | (1988) | (1987) | (1987) | (1987) | (1988) | (1987) | (1988) | (1988) | (1988) |

| SUMMARY STATISTICS | FOR 2004 SEASON | | WATER YEARS 1985 - 1991* | | WATER YEARS 1992 - 2004* | |
|---|---|---|---|---|---|---|
| ANNUAL MEAN | | | 14.5 | | | |
| HIGHEST ANNUAL MEAN | | | 31.6 | 1989 | | |
| LOWEST ANNUAL MEAN | | | 0.17 | 1988 | | |
| HIGHEST DAILY MEAN | 247 | Jun 3 | 1,300 | Mar 2, 1986 | 1,340 | Mar 23, 1999 |
| LOWEST DAILY MEAN | 0.00 | Mar 1 | c0.00 | Feb 11, 1986 | 0.00 | Sep 22, 1992 |
| ANNUAL SEVEN-DAY MINIMUM | | | 0.00 | Feb 11, 1986 | | |
| MAXIMUM PEAK FLOW | a300 | Jun 3 | 1,300 | Mar 2, 1986 | d1,360 | Mar 23, 1999 |
| MAXIMUM PEAK STAGE | b8.23 | Mar 29 | | | f12.18 | Jul 24, 1993 |
| ANNUAL RUNOFF (AC-FT) | | | 10,540 | | | |
| 10 PERCENT EXCEEDS | | | 29 | | | |
| 50 PERCENT EXCEEDS | | | 2.6 | | | |
| 90 PERCENT EXCEEDS | | | 0.00 | | | |

*--During periods of operation 1985-91, 1992 to October 2004. Seasonal records beginning water year 1992.
a--Gage height, 7.19 ft.
b--Backwater from ice.
c--No flow at times most years.
d--Gage height, 10.99 ft.
f--Site and datum then in use.
e--Estimated.

06183700 BIG MUDDY CREEK DIVERSION CANAL NEAR MEDICINE LAKE, MT—Continued



## 06183750 LAKE CREEK NEAR DAGMAR, MT

LOCATION.--Lat 48°33'51", long 104°10'38" (NAD 27), in SE¼SE¼SW¼ sec. 31, T.33 N., R.58 E., Sheridan County, Hydrologic Unit 10060006, on left bank, at downstream end of dike, just north of Medicine Lake National Wildlife Refuge and 1.7 mi southeast of Dagmar.

DRAINAGE AREA.--101 $mi^2$.

PERIOD OF RECORD.--September 1985 to October 1989, March 1995 to current year (seasonal records only since 1986).

GAGE.--Water-stage recorder. Elevation of gage is 1,979 ft (NGVD 29).

REMARKS.--Records fair. Numerous diversions upstream for irrigation. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2004
DAILY MEAN VALUES

| DAY | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | e0.00 | 2.3 | 0.10 | 2.4 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 2 | | | e0.00 | 2.9 | 0.03 | 2.1 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 3 | | | e0.00 | 2.6 | 0.03 | 2.4 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 4 | | | e0.00 | 2.4 | 0.00 | 2.4 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 5 | | | e0.00 | 2.4 | 0.00 | 1.7 | 0.11 | 0.00 | 0.00 | e0.00 | | |
| 6 | | | e0.00 | 1.3 | 0.00 | 1.2 | 0.20 | 0.00 | 0.00 | e0.00 | | |
| 7 | | | e0.00 | 0.23 | 0.00 | 1.1 | 0.34 | 0.00 | 0.00 | e0.00 | | |
| 8 | | | e0.00 | 0.40 | 0.00 | 1.1 | 0.68 | 0.00 | 0.00 | e0.00 | | |
| 9 | | | e0.00 | 0.49 | 0.00 | 0.91 | 2.2 | 0.00 | 0.00 | e0.00 | | |
| 10 | | | e0.00 | 0.58 | 0.00 | 1.7 | 2.5 | 0.00 | 0.00 | e0.00 | | |
| 11 | | | e0.00 | 1.1 | 0.22 | 3.5 | 2.5 | 0.00 | 0.00 | e0.00 | | |
| 12 | | | e0.00 | 1.1 | 0.36 | 4.1 | 2.5 | 0.00 | 0.00 | e0.00 | | |
| 13 | | | e0.00 | 1.4 | 0.41 | 3.9 | 2.5 | 0.00 | 0.00 | e0.00 | | |
| 14 | | | e0.00 | 1.3 | 0.56 | 3.7 | 2.0 | 0.00 | 0.00 | e0.00 | | |
| 15 | | | e0.00 | 1.2 | 0.71 | 3.0 | 1.2 | 0.00 | 0.00 | e0.00 | | |
| 16 | | | e0.00 | 1.2 | 0.63 | 2.5 | 0.92 | 0.00 | 0.00 | e0.00 | | |
| 17 | | | e0.00 | 1.3 | 0.61 | 2.4 | 0.67 | 0.00 | 0.00 | e0.00 | | |
| 18 | | | e0.00 | 1.5 | 0.46 | 1.9 | 0.52 | 0.00 | 0.00 | e0.00 | | |
| 19 | | | e0.00 | 1.2 | 0.82 | 1.5 | 0.50 | 0.00 | 0.00 | e0.00 | | |
| 20 | | | e0.00 | 1.1 | 1.1 | 1.2 | 0.49 | 0.00 | 0.00 | e0.00 | | |
| 21 | | | e0.00 | 0.97 | 1.4 | 0.93 | 0.47 | 0.00 | 0.00 | e0.00 | | |
| 22 | | | e0.00 | 0.61 | 1.4 | 0.72 | 0.45 | 0.00 | 0.00 | e0.00 | | |
| 23 | | | 2.6 | 0.50 | 1.2 | 0.69 | 0.39 | 0.00 | 0.00 | e0.00 | | |
| 24 | | | 3.9 | 0.44 | 2.1 | 0.51 | 0.29 | 0.00 | 0.00 | e0.00 | | |
| 25 | | | 12 | 0.40 | 2.3 | 0.50 | 0.15 | 0.00 | 0.00 | e0.00 | | |
| 26 | | | 14 | 0.30 | 1.7 | 0.29 | 0.04 | 0.00 | 0.00 | e0.00 | | |
| 27 | | | 13 | 0.25 | 2.4 | 0.03 | 0.01 | 0.00 | 0.00 | e0.00 | | |
| 28 | | | 12 | 0.27 | 2.5 | 0.00 | 0.00 | 0.00 | 0.00 | e0.00 | | |
| 29 | | | 9.5 | 0.16 | 2.5 | 0.01 | 0.01 | 0.00 | 0.00 | e0.00 | | |
| 30 | | | 6.9 | 0.16 | 2.8 | 0.02 | 0.00 | 0.00 | 0.00 | e0.00 | | |
| 31 | | | 2.7 | --- | 2.8 | --- | 0.00 | 0.00 | --- | e0.00 | | |
| TOTAL | | | 76.60 | 32.06 | 29.14 | 48.41 | 21.64 | 0.00 | 0.00 | 0.00 | | |
| MEAN | | | 2.47 | 1.07 | 0.94 | 1.61 | 0.70 | 0.00 | 0.00 | 0.00 | | |
| MAX | | | 14 | 2.9 | 2.8 | 4.1 | 2.5 | 0.00 | 0.00 | 0.00 | | |
| MIN | | | 0.00 | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| AC-FT | | | 152 | 64 | 58 | 96 | 43 | 0.00 | 0.00 | 0.00 | | |

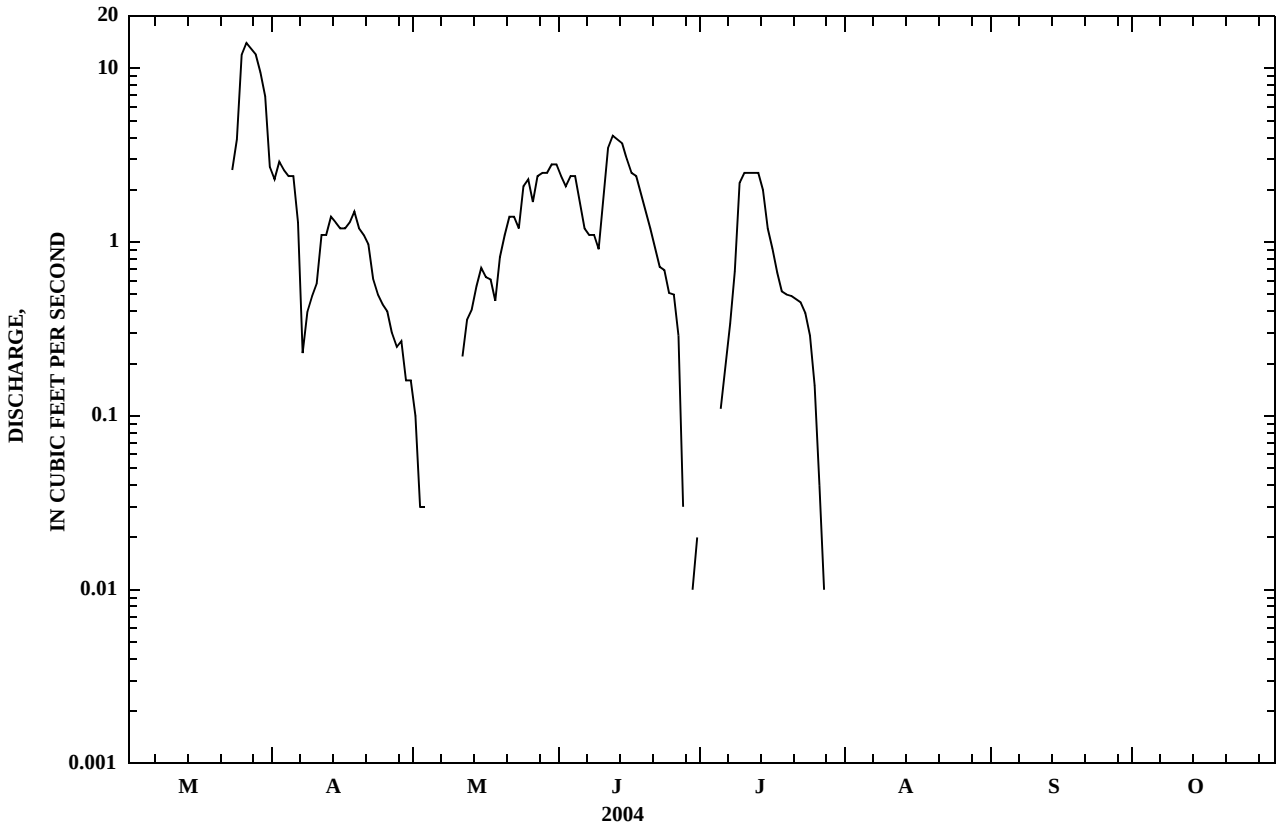
STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1986 - 2004*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| MEAN | 11.6 | 10.0 | 0.93 | 0.42 | 0.37 | 0.04 | 0.00 | 0.00 |
| MAX | 83.4 | 45.1 | 3.35 | 2.81 | 1.40 | 0.26 | 0.00 | 0.00 |
| (WY) | (2003) | (1997) | (1986) | (2000) | (1999) | (1999) | (1986) | (1986) |
| MIN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| (WY) | (1988) | (1988) | (1998) | (1997) | (1986) | (1986) | (1986) | (1986) |

| SUMMARY STATISTICS | FOR 2004 SEASON | | SEASONS 1986 - 2004* | |
|---|---|---|---|---|
| HIGHEST DAILY MEAN | 14 | Mar 26 | 950 | Mar 20, 2003 |
| LOWEST DAILY MEAN | a0.00 | Oct 1 | a0.00 | Oct 1, 1985 |
| MAXIMUM PEAK FLOW | 15 | Mar 25 | 950 | Mar 20, 2003 |
| MAXIMUM PEAK STAGE | 6.16 | Mar 25 | 10.05 | Mar 20, 2003 |

*--During periods of operation (September 1985 to October 1989, March 1995 to current year).
a--No flow many days most years.
e--Estimated.

06183750 LAKE CREEK NEAR DAGMAR, MT—Continued



## 06183800 COTTONWOOD CREEK NEAR DAGMAR, MT

LOCATION.--Lat 48°30'35", long 104°10'23" (NAD 27), in SE¼NE¼SE¼ sec. 21, T.32 N., R.58 E., Sheridan County, Hydrologic Unit 10060006, on right bank, at bridge on county road 1.2 mi southeast of Medicine Lake National Wildlife Refuge, and 5.3 mi south of Dagmar.

DRAINAGE AREA.--126 $mi^2$.

PERIOD OF RECORD.--August 1985 to September 1989, March 1995 to current year, seasonal records only.

GAGE.--Water-stage recorder. Elevation of gage is 1,975 ft (NGVD 29).

REMARKS.--Records fair except those for estimated daily discharges, which are poor. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2004
DAILY MEAN VALUES

| DAY | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | e0.00 | 13 | 0.26 | 2.7 | 0.12 | 0.32 | 0.04 | 0.03 | | |
| 2 | | | e0.00 | 11 | 0.24 | 2.5 | 0.14 | 0.28 | 0.03 | 0.05 | | |
| 3 | | | e0.00 | 12 | 0.24 | 2.6 | 0.14 | 0.31 | 0.06 | 0.07 | | |
| 4 | | | e0.00 | 10 | 0.23 | 2.1 | 0.17 | 0.31 | 0.08 | 0.05 | | |
| 5 | | | e0.00 | 8.0 | 0.20 | 1.8 | 0.16 | 0.35 | 0.08 | 0.05 | | |
| 6 | | | e0.00 | 6.4 | 0.16 | 1.5 | 0.14 | 0.24 | 0.08 | 0.03 | | |
| 7 | | | e0.00 | 5.2 | 0.18 | 0.92 | 0.17 | 0.19 | 0.10 | 0.01 | | |
| 8 | | | e0.00 | 4.5 | 0.20 | 0.53 | 1.2 | 0.16 | 0.09 | 0.03 | | |
| 9 | | | e0.00 | 3.8 | 0.19 | 0.40 | 5.1 | 0.15 | 0.09 | 0.01 | | |
| 10 | | | e0.00 | 3.2 | 0.16 | 0.81 | 2.3 | 0.19 | 0.10 | 0.02 | | |
| 11 | | | e0.00 | 2.7 | 0.77 | 1.6 | 1.5 | 0.17 | 0.12 | 0.05 | | |
| 12 | | | e0.00 | 2.4 | 1.7 | 2.1 | 5.7 | 0.19 | 0.14 | 0.05 | | |
| 13 | | | e0.00 | 2.2 | 3.0 | 1.9 | 17 | 0.25 | 0.14 | 0.06 | | |
| 14 | | | e0.00 | 2.1 | 4.5 | 1.4 | 13 | 0.22 | 0.16 | 0.05 | | |
| 15 | | | e0.00 | 1.9 | 3.2 | 0.83 | 8.1 | 0.22 | 0.16 | 0.09 | | |
| 16 | | | e0.00 | 1.9 | 2.3 | 0.71 | 4.2 | 0.24 | 0.16 | 0.10 | | |
| 17 | | | e0.00 | 1.7 | 1.9 | 0.48 | 2.8 | 0.23 | 0.16 | 0.09 | | |
| 18 | | | e0.00 | 1.9 | 1.3 | 0.45 | 1.9 | 0.20 | 0.16 | 0.09 | | |
| 19 | | | e0.00 | 2.0 | 1.8 | 0.39 | 1.2 | 0.20 | 0.17 | 0.09 | | |
| 20 | | | e0.00 | 1.9 | 3.0 | 0.36 | 1.1 | 0.19 | 0.19 | 0.10 | | |
| 21 | | | e0.00 | 1.6 | 2.3 | 0.34 | 1.2 | 0.20 | 0.20 | 0.09 | | |
| 22 | | | e0.00 | 1.6 | 1.9 | 0.29 | 1.0 | 0.20 | 0.22 | 0.09 | | |
| 23 | | | e0.00 | 1.7 | 1.8 | 0.26 | 0.57 | 0.20 | 0.21 | 0.07 | | |
| 24 | | | e1.0 | 1.0 | 2.4 | 0.23 | 0.34 | 0.19 | 0.21 | 0.09 | | |
| 25 | | | e10 | 0.63 | 3.6 | 0.20 | 0.31 | 0.21 | 0.20 | 0.08 | | |
| 26 | | | e50 | 0.44 | 2.8 | 0.18 | 0.30 | 0.21 | 0.17 | 0.09 | | |
| 27 | | | e40 | 0.39 | 2.3 | 0.20 | 0.29 | 0.20 | 0.16 | 0.06 | | |
| 28 | | | e30 | 0.35 | 2.4 | 0.21 | 0.29 | 0.19 | 0.13 | 0.05 | | |
| 29 | | | e20 | 0.30 | 2.6 | 0.20 | 0.26 | 0.14 | 0.11 | 0.07 | | |
| 30 | | | e18 | 0.30 | 3.2 | 0.17 | 0.25 | 0.09 | 0.06 | 0.07 | | |
| 31 | | | 16 | --- | 3.1 | --- | 0.28 | 0.06 | --- | 0.08 | | |
| TOTAL | | | 185.00 | 106.11 | 53.93 | 28.36 | 71.23 | 6.50 | 3.98 | 1.96 | | |
| MEAN | | | 5.97 | 3.54 | 1.74 | 0.95 | 2.30 | 0.21 | 0.13 | 0.06 | | |
| MAX | | | 50 | 13 | 4.5 | 2.7 | 17 | 0.35 | 0.22 | 0.10 | | |
| MIN | | | 0.00 | 0.30 | 0.16 | 0.17 | 0.12 | 0.06 | 0.03 | 0.01 | | |
| AC-FT | | | 367 | 210 | 107 | 56 | 141 | 13 | 7.9 | 3.9 | | |

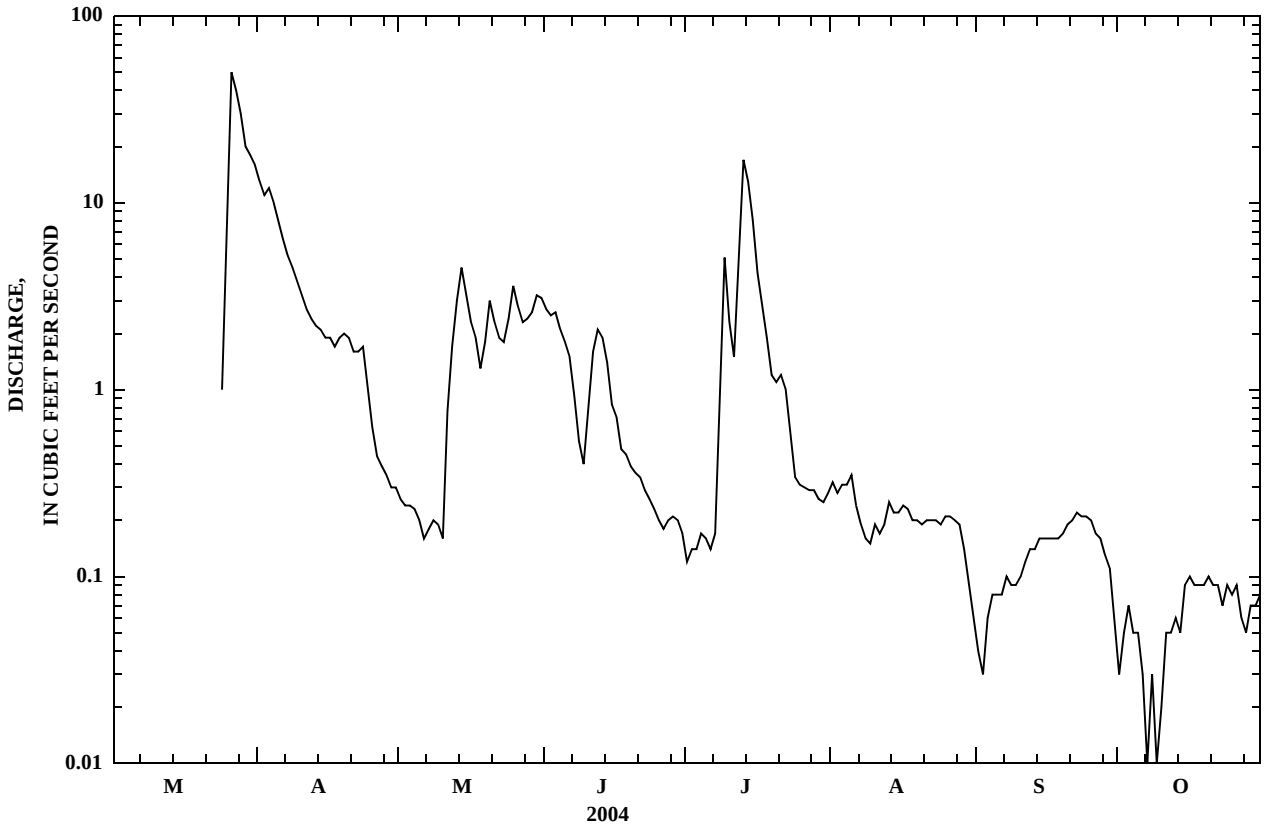
STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1986 - 2004*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| MEAN | 33.3 | 8.63 | 1.54 | 1.59 | 5.40 | 0.14 | 0.04 | 0.01 |
| MAX | 140 | 32.6 | 6.95 | 13.7 | 27.4 | 0.71 | 0.33 | 0.10 |
| (WY) | (2003) | (1987) | (1999) | (2000) | (1997) | (1999) | (1997) | (2001) |
| MIN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| (WY) | (1988) | (1988) | (1988) | (1987) | (1986) | (1986) | (1986) | (1986) |

| SUMMARY STATISTICS | FOR 2004 SEASON | | SEASONS 1986 - 2004* | |
|---|---|---|---|---|
| HIGHEST DAILY MEAN | 50 | Mar 26 | 1,810 | Mar 18, 2003 |
| LOWEST DAILY MEAN | 0.00 | Oct 1 | b0.00 | Oct 1, 1985 |
| MAXIMUM PEAK FLOW | unknown | | c3,380 | Mar 18, 2003 |
| MAXIMUM PEAK STAGE | a4.59 | Mar 25 | 8.76 | Mar 22, 1997 |

*--During periods of operation (1985-89, 1995 to current year; seasonal records only).
a--Backwater from ice.
b--No flow most years.
c--Gage height, 8.43 ft, from floodmark.
e--Estimated.

06183800 COTTONWOOD CREEK NEAR DAGMAR, MT—Continued



## 06183850 SAND CREEK NEAR DAGMAR, MT

LOCATION.--Lat 48°29'38", long 104°16'23" (NAD 27), in SE¼NW¼NW¼ sec. 26, T.32 N., R.57 E., Sheridan County, Hydrologic Unit 10060006, at Medicine Lake National Wildlife Refuge boundary, on right bank at downstream end of culvert on county road, 1.0 mi upstream from mouth, and 7 mi southwest of Dagmar.

DRAINAGE AREA.--122 $mi^2$.

PERIOD OF RECORD.--August 1985 to September 1989, March 1995 to current year (seasonal records).

GAGE.--Water-stage recorder. Elevation of gage is 1,945 ft (NGVD 29).

REMARKS.--Records good except those for estimated daily discharges, which are poor. No known diversions for irrigation upstream from station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 2004
DAILY MEAN VALUES

| DAY | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | e0.00 | 16 | 0.00 | e3.0 | e0.15 | 0.44 | 0.00 | 0.00 | | |
| 2 | | | e0.00 | 14 | 0.00 | e2.5 | e0.15 | 0.38 | 0.00 | 0.00 | | |
| 3 | | | e0.00 | 11 | 0.00 | e2.5 | e0.15 | 0.66 | 0.00 | 0.00 | | |
| 4 | | | e0.00 | 11 | 0.00 | e2.0 | e0.20 | 0.99 | 0.00 | 0.00 | | |
| 5 | | | e0.00 | 8.6 | 0.00 | e2.0 | e0.15 | 1.3 | 0.00 | 0.00 | | |
| 6 | | | e0.00 | 5.8 | 0.00 | e1.5 | e0.15 | 1.5 | 0.00 | 0.00 | | |
| 7 | | | e0.00 | 4.6 | 0.00 | e1.0 | e0.20 | 1.3 | 0.00 | 0.00 | | |
| 8 | | | e0.00 | 4.0 | 0.00 | e0.55 | e1.5 | 0.90 | 0.00 | 0.00 | | |
| 9 | | | e0.00 | 3.2 | 0.00 | e0.40 | e5.0 | 0.78 | 0.00 | 0.00 | | |
| 10 | | | e0.00 | 2.4 | 0.00 | e0.80 | e2.5 | 0.64 | 0.00 | 0.00 | | |
| 11 | | | e0.00 | 2.1 | 0.45 | e1.5 | e1.5 | 0.66 | 0.00 | 0.00 | | |
| 12 | | | e0.00 | 1.9 | 1.3 | e2.0 | e6.0 | 0.69 | 0.00 | 0.00 | | |
| 13 | | | e0.00 | 1.7 | 5.1 | e2.0 | e15 | 0.63 | 0.00 | 0.00 | | |
| 14 | | | e0.00 | 1.3 | 6.3 | e1.5 | e15 | 0.45 | 0.00 | 0.00 | | |
| 15 | | | e0.00 | 1.2 | 4.9 | e0.85 | e8.0 | 0.31 | 0.00 | 0.00 | | |
| 16 | | | e0.00 | 1.3 | 2.8 | e0.70 | e4.0 | 0.17 | 0.00 | 0.00 | | |
| 17 | | | e0.00 | 2.0 | 1.6 | e0.50 | e3.0 | 0.08 | 0.00 | 0.00 | | |
| 18 | | | e0.00 | 2.0 | 0.94 | e0.45 | e2.0 | 0.06 | 0.00 | 0.00 | | |
| 19 | | | e0.00 | 1.7 | 1.6 | e0.40 | e1.5 | 0.03 | 0.00 | 0.00 | | |
| 20 | | | e0.00 | 1.9 | 3.8 | e0.35 | e1.0 | 0.00 | 0.00 | 0.00 | | |
| 21 | | | e0.00 | 1.6 | 4.7 | e0.35 | e1.0 | 0.00 | 0.00 | 0.00 | | |
| 22 | | | e0.00 | 1.1 | 3.7 | e0.30 | e1.0 | 0.00 | 0.00 | 0.29 | | |
| 23 | | | e0.00 | 0.85 | 3.1 | e0.25 | e0.60 | 0.00 | 0.00 | 0.31 | | |
| 24 | | | e1.0 | 0.72 | 4.0 | e0.25 | e0.35 | 0.00 | 0.00 | 0.42 | | |
| 25 | | | e6.0 | 0.70 | 5.0 | e0.20 | e0.30 | 0.00 | 0.00 | 0.26 | | |
| 26 | | | e40 | 0.40 | 6.6 | e0.20 | 0.87 | 0.00 | 0.00 | 0.23 | | |
| 27 | | | e35 | 0.28 | e3.0 | e0.20 | 0.71 | 0.00 | 0.00 | 0.25 | | |
| 28 | | | e30 | 0.19 | e2.5 | e0.20 | 0.55 | 0.00 | 0.00 | 0.56 | | |
| 29 | | | e25 | 0.13 | e2.5 | e0.20 | 0.47 | 0.00 | 0.00 | 0.67 | | |
| 30 | | | e20 | 0.09 | e3.0 | e0.15 | 0.37 | 0.00 | 0.00 | 0.65 | | |
| 31 | | | 18 | --- | e3.0 | --- | 0.32 | 0.00 | --- | 0.67 | | |
| TOTAL | | | 175.00 | 103.76 | 69.89 | 28.80 | 73.69 | 11.97 | 0.00 | 4.31 | | |
| MEAN | | | 5.65 | 3.46 | 2.25 | 0.96 | 2.38 | 0.39 | 0.00 | 0.14 | | |
| MAX | | | 40 | 16 | 6.6 | 3.0 | 15 | 1.5 | 0.00 | 0.67 | | |
| MIN | | | 0.00 | 0.09 | 0.00 | 0.15 | 0.15 | 0.00 | 0.00 | 0.00 | | |
| AC-FT | | | 347 | 206 | 139 | 57 | 146 | 24 | 0.00 | 8.5 | | |

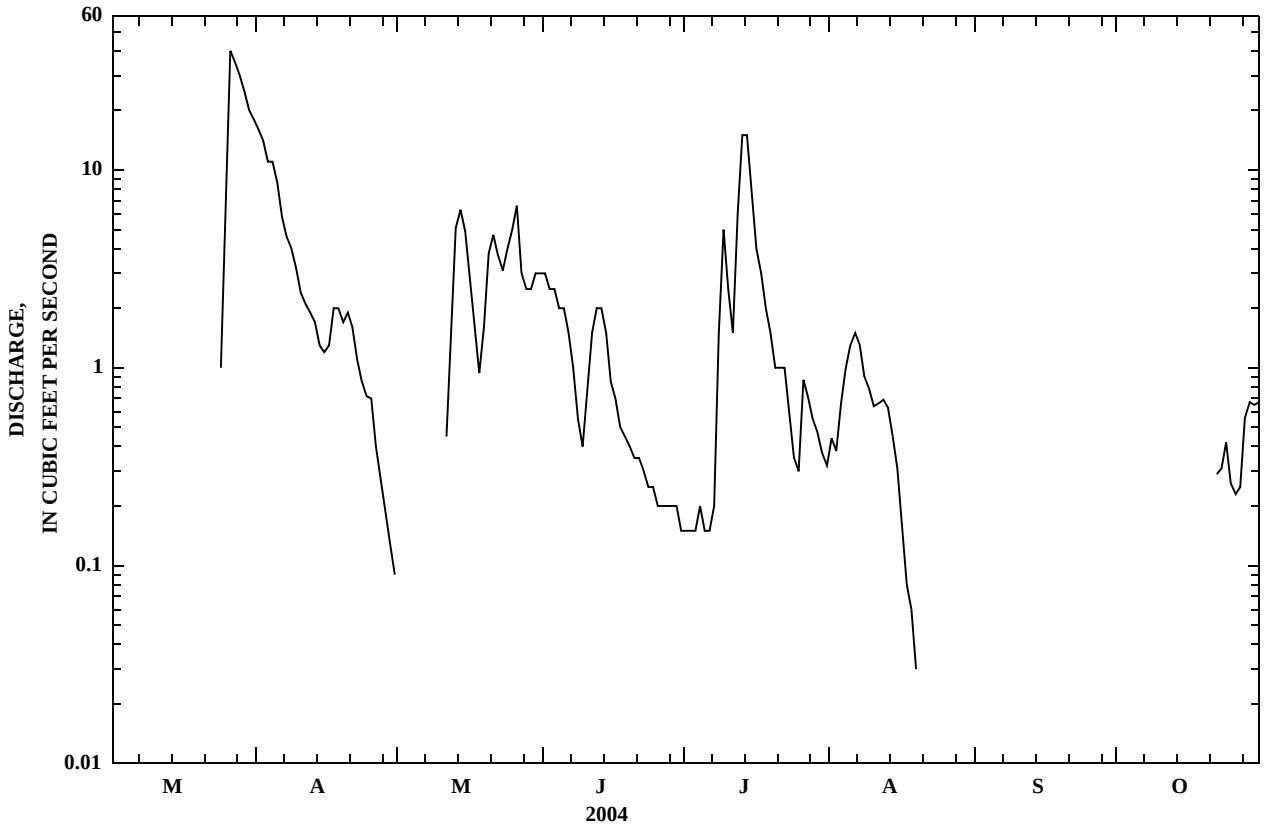
STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1986 - 2004*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| MEAN | 10.4 | 6.29 | 1.87 | 2.11 | 3.49 | 0.34 | 0.06 | 0.01 |
| MAX | 33.1 | 16.7 | 6.80 | 9.06 | 21.6 | 3.34 | 0.80 | 0.14 |
| (WY) | (1999) | (1987) | (1999) | (2000) | (1997) | (1997) | (1997) | (2005) |
| MIN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| (WY) | (1988) | (1988) | (1988) | (1988) | (1986) | (1986) | (1986) | (1986) |

| SUMMARY STATISTICS | FOR 2004 SEASON | | SEASONS 1986 - 2004* | |
|---|---|---|---|---|
| HIGHEST DAILY MEAN | 40 | Mar 26 | 200 | Mar 18, 2003 |
| LOWEST DAILY MEAN | 0.00 | Mar 1 | b0.00 | Oct 1, 1985 |
| MAXIMUM PEAK FLOW | Unknown | | c284 | Mar 18, 2003 |
| MAXIMUM PEAK STAGE | a3.40 | Mar 26 | d5.80 | Mar 26, 1997 |

*--During periods of operation (1985-89, 1995 to current year; seasonal records only).
a--Backwater from ice.
b--No flow most years.
c--Result of culvert computation of peak flow.
d--From floodmark, probable date, backwater from ice.
e--Estimated.

06183850 SAND CREEK NEAR DAGMAR, MT—Continued



06185500 MISSOURI RIVER NEAR CULBERTSON, MT
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 48°07'30", long 104°28'20" (NAD 27), in SE¼NW¼ sec.3, T.27 N., R.56 E., Richland County, Hydrologic Unit 10060005, on right bank at upstream side of bridge on State Highway 16, 2.5 mi southeast of Culbertson, 10 mi downstream from Big Muddy Creek, and at river mile 1,620.76.

DRAINAGE AREA.--91,557 mi$^2$.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1941 to December 1951, April 1958 to current year.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,883.4 ft (NGVD 29) (U.S. Army Corps of Engineers bench mark). July 1 to Nov. 6, 1941, water-stage recorder at site 400 ft upstream at elevation 0.11 ft higher. Nov. 7, 1941, to Aug. 17, 1950, water-stage recorder at site 580 ft downstream at present elevation. Aug. 18, 1950, to Dec. 31, 1951, nonrecording gage on bridge at present elevation. Apr. 1, 1958, to Nov. 1, 1967, water-stage recorder at site 580 ft downstream at present elevation.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow partly regulated by Fort Peck Lake (station number 06131500) and many other reservoirs upstream from station. Diversions for irrigation of about 1,030,400 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4,720 | 4,910 | e8,700 | e8,600 | e9,000 | e9,200 | 11,200 | 11,200 | 12,700 | 6,110 | 7,680 | 6,860 |
| 2 | 4,630 | 4,830 | e8,400 | e8,900 | e9,000 | e8,000 | 10,500 | 11,100 | 11,400 | 6,220 | 7,770 | 6,980 |
| 3 | 4,600 | 4,840 | e8,600 | e9,100 | e9,000 | e7,900 | 10,200 | 11,200 | 10,300 | 6,220 | 8,010 | 7,000 |
| 4 | 4,600 | 4,830 | e8,600 | e9,200 | e9,100 | e7,400 | 9,590 | 11,100 | 9,450 | 6,890 | 8,210 | 7,000 |
| 5 | 4,580 | e4,200 | e8,300 | e9,200 | e9,100 | e6,800 | 9,120 | 11,000 | 9,590 | 7,570 | 8,570 | 7,110 |
| 6 | 4,540 | e3,500 | e8,500 | e8,900 | e9,000 | e6,600 | 8,570 | 11,100 | 9,280 | 7,780 | 7,730 | 7,340 |
| 7 | 4,500 | e3,700 | e8,700 | e8,900 | e9,300 | e6,500 | 8,120 | 10,900 | 8,700 | 7,890 | 7,240 | 7,520 |
| 8 | 4,490 | e4,300 | e8,800 | e8,800 | e9,200 | e6,700 | 7,690 | 11,000 | 8,210 | 8,070 | 7,350 | 7,320 |
| 9 | 4,460 | e4,900 | e8,700 | e8,700 | e9,500 | e6,400 | 7,210 | 10,900 | 8,080 | 8,210 | 7,310 | 7,170 |
| 10 | 4,510 | e4,900 | e8,600 | e8,800 | e9,600 | e6,700 | 6,860 | 10,800 | 7,940 | 7,980 | 7,220 | 7,150 |
| 11 | 4,550 | e4,800 | e8,600 | e9,000 | e9,500 | e6,700 | 6,650 | 11,300 | 8,000 | 7,790 | 7,130 | 7,140 |
| 12 | 4,500 | e4,900 | e8,600 | e9,100 | e9,300 | e6,500 | 6,390 | 11,400 | 7,950 | 7,830 | 7,010 | 7,120 |
| 13 | 4,470 | e4,900 | e8,800 | e9,000 | e9,100 | e6,500 | 6,450 | 11,600 | 8,000 | 7,710 | 6,850 | 6,740 |
| 14 | 4,500 | e4,900 | e9,300 | e9,000 | e8,900 | e6,400 | 6,430 | 11,700 | 8,200 | 7,720 | 7,050 | 6,890 |
| 15 | 4,520 | e4,800 | e8,700 | e9,200 | e9,100 | e6,000 | 6,270 | 11,600 | 9,300 | 7,500 | 7,160 | 7,000 |
| 16 | 4,520 | e4,800 | e8,600 | e9,200 | e9,100 | e6,000 | 7,020 | 11,400 | 10,200 | 7,530 | 6,950 | 7,120 |
| 17 | 4,610 | e4,800 | e8,600 | e8,800 | e8,900 | e5,900 | 7,190 | 11,400 | 9,970 | 7,660 | 6,960 | 7,010 |
| 18 | 4,820 | e4,800 | e8,500 | e9,000 | e8,900 | e7,100 | 6,790 | 11,300 | 8,820 | 7,540 | 6,870 | 6,980 |
| 19 | 4,760 | e4,800 | e8,600 | e9,200 | e9,000 | e7,900 | 6,680 | 11,500 | 8,160 | 7,430 | 6,740 | 6,900 |
| 20 | 4,620 | e4,800 | e8,500 | e9,400 | e8,900 | e8,500 | 6,600 | 11,700 | 7,800 | 7,290 | 6,840 | e6,800 |
| 21 | 4,590 | e5,000 | e8,500 | e9,600 | e8,600 | e9,800 | 6,460 | 11,800 | 7,570 | 7,380 | e7,000 | e6,500 |
| 22 | 4,580 | e4,800 | e8,600 | e9,300 | e8,500 | e11,000 | 6,560 | 11,400 | 7,190 | 7,290 | e6,900 | e6,100 |
| 23 | 4,600 | e4,800 | e8,600 | e9,300 | e8,700 | e11,000 | 7,020 | 11,700 | 7,010 | 6,930 | e7,000 | e5,600 |
| 24 | 4,580 | e4,600 | e8,600 | e9,300 | e9,100 | e12,000 | 7,250 | 12,100 | 6,800 | 6,870 | 6,690 | 5,390 |
| 25 | 4,610 | e5,000 | e8,700 | e9,100 | e9,800 | e13,000 | 7,220 | 12,900 | 6,520 | 7,020 | 6,620 | 5,010 |
| 26 | 4,610 | e6,700 | e8,400 | e9,300 | e9,500 | e14,000 | 7,110 | 13,500 | 6,380 | 7,070 | 6,650 | 4,800 |
| 27 | 4,630 | e7,200 | e8,200 | e9,000 | e9,300 | e14,000 | 8,230 | 14,000 | 6,230 | 6,930 | 6,680 | 4,950 |
| 28 | 4,660 | e8,100 | e8,000 | e9,100 | e9,400 | e13,000 | 9,120 | 14,700 | 6,170 | 6,850 | 6,850 | 5,070 |
| 29 | 4,760 | e8,900 | e8,300 | e9,200 | e9,400 | 12,200 | 10,800 | 15,700 | 6,200 | 6,930 | 6,860 | 4,970 |
| 30 | 4,850 | e9,200 | e8,700 | e9,000 | --- | 12,100 | 11,600 | 15,500 | 6,170 | 7,180 | 6,890 | 4,880 |
| 31 | 4,960 | --- | e8,300 | e9,000 | --- | 11,700 | --- | 13,100 | --- | 7,450 | 6,870 | --- |
| TOTAL | 142,930 | 157,510 | 265,600 | 281,200 | 264,800 | 273,500 | 236,900 | 371,600 | 248,290 | 226,840 | 221,660 | 194,420 |
| MEAN | 4,611 | 5,250 | 8,568 | 9,071 | 9,131 | 8,823 | 7,897 | 11,990 | 8,276 | 7,317 | 7,150 | 6,481 |
| MAX | 4,960 | 9,200 | 9,300 | 9,600 | 9,800 | 14,000 | 11,600 | 15,700 | 12,700 | 8,210 | 8,570 | 7,520 |
| MIN | 4,460 | 3,500 | 8,000 | 8,600 | 8,500 | 5,900 | 6,270 | 10,800 | 6,170 | 6,110 | 6,620 | 4,800 |
| AC-FT | 283,500 | 312,400 | 526,800 | 557,800 | 525,200 | 542,500 | 469,900 | 737,100 | 492,500 | 449,900 | 439,700 | 385,600 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941- 2004, BY WATER YEAR (WY)*

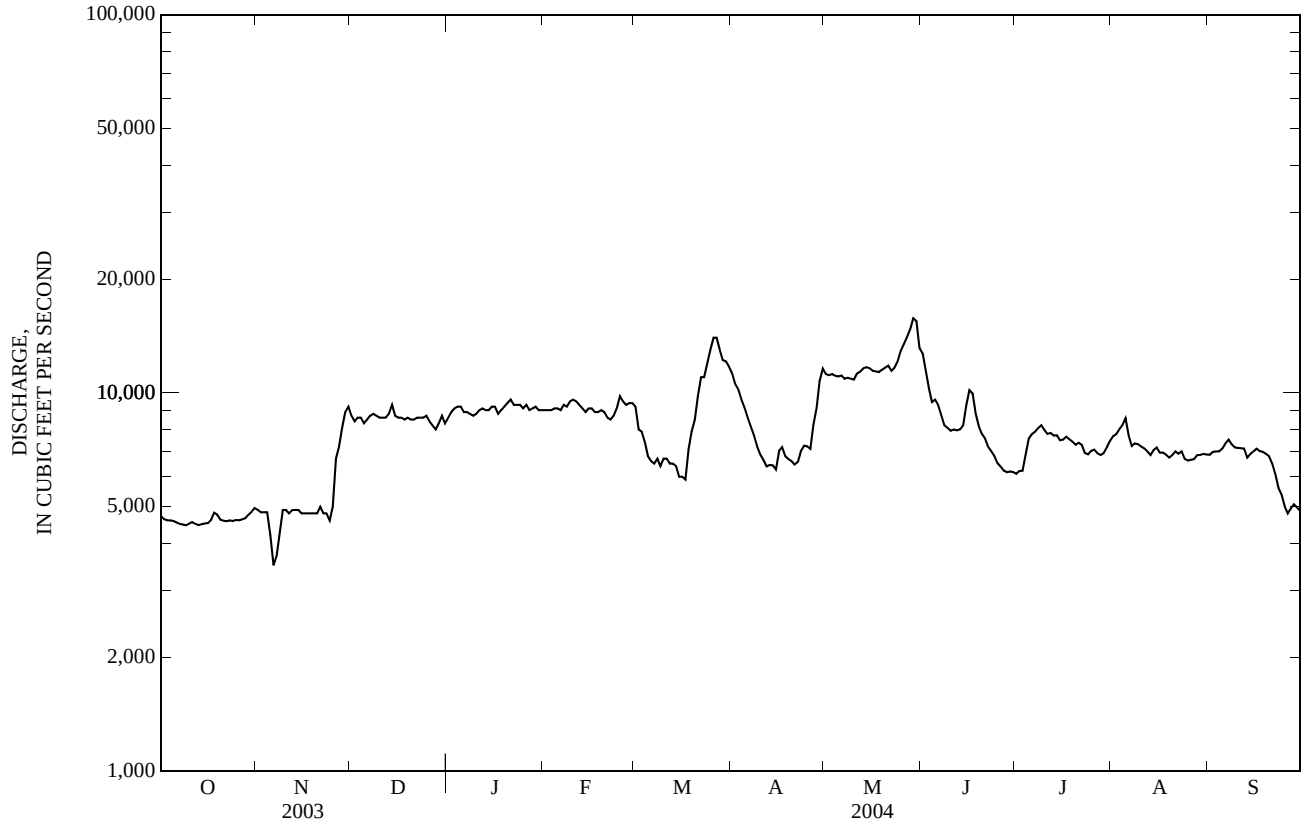
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 10,490 | 9,127 | 9,149 | 9,902 | 10,490 | 10,290 | 10,450 | 9,599 | 9,698 | 10,150 | 11,220 | 10,950 |
| MAX | 28,570 | 22,440 | 13,280 | 14,400 | 17,450 | 20,690 | 32,840 | 26,650 | 26,650 | 37,050 | 25,300 | 20,590 |
| (WY) | (1949) | (1952) | (1944) | (1986) | (1976) | (1976) | (1979) | (1975) | (1975) | (1975) | (1948) | (1948) |
| MIN | 1,237 | 1,126 | 1,061 | 1,010 | 1,167 | 2,674 | 1,965 | 1,366 | 1,366 | 1,273 | 3,823 | 3,771 |
| (WY) | (1942) | (1942) | (1942) | (1943) | (1942) | (1950) | (1945) | (1945) | (1945) | (1945 | (1963) | (1992) |

06185500 MISSOURI RIVER NEAR CULBERTSON, MT—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1941 - 2004* | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 2,896,580 | | 2,885,250 | | | |
| ANNUAL MEAN | 7,936 | | 7,883 | | 10,130 | |
| HIGHEST ANNUAL MEAN | | | | | 19,910 | 1952 |
| LOWEST ANNUAL MEAN | | | | | 4,083 | 1942 |
| HIGHEST DAILY MEAN | 12,000 | May 15 | 15,700 | May 29 | 69,200 | Mar 27, 1943 |
| LOWEST DAILY MEAN | 3,500 | Nov 6 | 3,500 | Nov 6 | 575 | Nov 22, 1941 |
| ANNUAL SEVEN-DAY MINIMUM | 4,310 | Nov 2 | 4,310 | Nov 2 | 709 | Nov 19, 1941 |
| MAXIMUM PEAK FLOW | | | 16,000 | May 29 | a78,200 | Mar 26, 1943 |
| MAXIMUM PEAK STAGE | | | 7.65 | May 29 | b19.66 | Apr 14, 1979 |
| INSTANTANEOUS LOW FLOW | | | 3,500 | Nov 6 | 575 | Nov 22, 1941 |
| ANNUAL RUNOFF (AC-FT) | 5,745,000 | | 5,723,000 | | 7,337,000 | |
| 10 PERCENT EXCEEDS | 10,300 | | 11,100 | | 15,800 | |
| 50 PERCENT EXCEEDS | 8,200 | | 7,750 | | 9,330 | |
| 90 PERCENT EXCEEDS | 4,740 | | 4,800 | | 4,500 | |

| SUMMARY STATISTICS | WATER YEARS 1941 - 1951** | | WATER YEARS 1958 - 2004*** | |
|---|---|---|---|---|
| ANNUAL MEAN | 9,245 | | 10,280 | |
| HIGHEST ANNUAL MEAN | 14,520 | 1948 | 16,580 | 1975 |
| LOWEST ANNUAL MEAN | 4,083 | 1942 | 6,121 | 1963 |
| HIGHEST DAILY MEAN | 69,200 | Mar 27, 1943 | 52,000 | Apr 18, 1979 |
| LOWEST DAILY MEAN | 575 | Nov 22, 1941 | 2,000 | Nov 20, 1964 |
| ANNUAL SEVEN-DAY MINIMUM | 709 | Nov 19, 1941 | 2,130 | Nov 19, 1964 |
| MAXIMUM PEAK FLOW | a78,200 | Mar 26, 1943 | c55,000 | Mar 23, 1960 |
| MAXIMUM PEAK STAGE | b15.12 | Mar 26, 1943 | b19.66 | Apr 14, 1979 |
| ANNUAL RUNOFF (AC-FT) | 6,698,000 | | 7,444,000 | |
| 10 PERCENT EXCEEDS | 21,000 | | 15,000 | |
| 50 PERCENT EXCEEDS | 6,190 | | 9,510 | |
| 90 PERCENT EXCEEDS | 1,400 | | 5,700 | |

*--During period of operation (1941-52, 1958 to current year).
**--Before operational level at Fort Peck Lake was reached.
***--After operational level at Fort Peck Lake was reached.
a--Gage height, 14.80 ft, from rating curve extended above 30,000 $ft^3/s$.
b--Backwater from ice.
c--Gage height, 19.14 ft.
e--Estimated.



06185500 MISSOURI RIVER NEAR CULBERTSON, MT—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946, 1965 to 1986, 1991 to 1994, October 1996 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1965 to September 1981.
WATER TEMPERATURE: July 1965 to September 1979, seasonal records starting July 18, 2002 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976.

INSTRUMENTATION.--Temperature probe installed July 17, 2002.

REMARKS.--Daily water temperature records are rated excellent.

EXTREMES FOR PERIOD OF DAILY RECORD:
SPECIFIC CONDUCTANCE: Maximum daily, 941 microsiemens per centimeter (μS/cm) at 25°C, Jan. 19, 1980; minimum daily, 338 μS/cm at 25°C, Mar. 30, 1967.
WATER TEMPERATURE: Maximum 26.0°C, Aug. 14, 2003; minimum, 0.0°C, on many days during winter period.
SEDIMENT CONCENTRATION: Maximum daily mean, 2,940 mg/L, Aug. 15, 1974; minimum daily mean, 30 mg/L, Jan. 13, 1975.
SEDIMENT LOAD: Maximum daily, 147,000 tons, June 5, 1975; minimum daily, 421 tons, Jan. 13, 1975.

EXTREMES FOR CURRENT YEAR:
WATER TEMPERATURE: During period of seasonal operation, maximum 25.5°C, July 18; minimum, 5.5°C, Apr. 19 and May 13, 14.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

| Date | Time | Instantaneous discharge, cfs (00061) | Turbidity, water, unfltrd lab, Hach 2100AN NTU (99872) | UV absorbance, 254 nm, wat flt units /cm (50624) | UV absorbance, 280 nm, wat flt units /cm (61726) | Barometric pressure, mm Hg (00025) | Dissolved oxygen, mg/L (00300) | Dissolved oxygen, percent of saturation (00301) | pH, water, unfltrd field, std units (00400) | Specif. conductance, water unfltrd uS/cm 25 degC (00095) | Temperature, air, deg C (00020) | Temperature, water, deg C (00010) | Hardness, water, mg/L as CaCO3 (00900) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 20... | 1200 | 4,630 | 19 | .048 | .032 | 722 | 12.4 | 124 | 8.6 | 609 | 24.0 | 13.0 | 220 |
| MAR | | | | | | | | | | | | | |
| 29... | 1345 | 12,200 | E880 | .103 | .077 | 728 | 12.8 | 102 | 8.3 | 516 | 12.0 | 4.0 | 150 |
| APR | | | | | | | | | | | | | |
| 12... | 1100 | 6,410 | 150 | .093 | .067 | 720 | 11.0 | 96 | 8.5 | 608 | 10.0 | 7.0 | 200 |
| MAY | | | | | | | | | | | | | |
| 17... | 1130 | 11,400 | 46 | .048 | .032 | 720 | 10.0 | 101 | 8.4 | 591 | 22.0 | 13.0 | 210 |
| JUN | | | | | | | | | | | | | |
| 08... | 1145 | 8,230 | 81 | .090 | .064 | 725 | 10.0 | 109 | 8.1 | 645 | 20.0 | 17.0 | 210 |
| 22... | 1115 | 7,290 | 96 | .097 | .071 | 719 | 7.4 | 84 | 8.5 | 637 | 20.5 | 18.5 | 210 |
| JUL | | | | | | | | | | | | | |
| 26... | 1115 | 7,080 | 34 | .051 | .035 | 716 | 8.9 | 109 | 8.5 | 594 | 38.0 | 22.0 | 220 |
| AUG | | | | | | | | | | | | | |
| 23... | 1200 | 7,040 | 29 | .046 | .032 | 709 | 6.2 | 69 | 8.5 | 569 | 20.0 | 17.0 | 210 |

| Date | Calcium water, fltrd, mg/L (00915) | Magnesium, water, fltrd, mg/L (00925) | Potassium, water, fltrd, mg/L (00935) | Sodium adsorption ratio (00931) | Sodium, water, fltrd, mg/L (00930) | Alkalinity, water, fltrd fxd end lab, mg/L as CaCO3 (29801) | Alkalinity, wate,r fltrd inc tit field, mg/L as CaCO3 (39086) | Bicarbonate, wate,r fltrd incrm. titr., field, mg/L (00453) | Carbonate, water, fltrd incrm. titr., field, mg/L (00452) | Chloride, water, fltrd, mg/L (00940) | Fluoride, water, fltrd, mg/L (00950) | Silica, water, fltrd, mg/L (00955) | Sulfate water, fltrd, mg/L (00945) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 20... | 54.2 | 21.2 | 4.33 | 1 | 49.1 | 166 | 154 | 179 | 4 | 10.6 | .9 | 7.20 | 132 |
| MAR | | | | | | | | | | | | | |
| 29... | 35.2 | 14.8 | 4.54 | 2 | 53.5 | 114 | 113 | 137 | .0 | 6.72 | .5 | 5.47 | 136 |
| APR | | | | | | | | | | | | | |
| 12... | 45.2 | 20.1 | 4.41 | 2 | 58.2 | 153 | 150 | 183 | .0 | 8.69 | .7 | 6.67 | 144 |
| MAY | | | | | | | | | | | | | |
| 17... | 51.9 | 19.3 | 3.84 | 1 | 38.2 | 163 | 175 | 213 | .0 | 10.0 | .9 | 6.16 | 125 |
| JUN | | | | | | | | | | | | | |
| 08... | 48.7 | 20.7 | 4.64 | 2 | 58.2 | 167 | 168 | 204 | .0 | 10.2 | .8 | 6.39 | 148 |
| 22... | 48.4 | 20.4 | 4.59 | 2 | 57.0 | 164 | 157 | 191 | .0 | 9.29 | .8 | 7.32 | 146 |
| JUL | | | | | | | | | | | | | |
| 26... | 53.1 | 20.2 | 4.01 | 1 | 39.0 | 165 | 163 | 199 | .0 | 9.93 | .9 | 6.93 | 124 |
| AUG | | | | | | | | | | | | | |
| 23... | 49.7 | 19.6 | 3.59 | 1 | 37.8 | 162 | 162 | 185 | 6 | 9.44 | .9 | 6.60 | 121 |

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

| Date | Residue water, fltrd, sum of consti-tuents mg/L (70301) | Residue water, fltrd, tons/ acre-ft (70303) | Residue water, fltrd, tons/d (70302) | Residue on evap. at 180degC wat flt mg/L (70300) | Ammonia + org-N, water, fltrd, mg/L as N (00623) | Ammonia + org-N, water, unfltrd mg/L as N (00625) | Ammonia water, fltrd, mg/L as N (00608) | Nitrite + nitrate water fltrd, mg/L as N (00631) | Nitrite water, fltrd, mg/L as N (00613) | Ortho-phos-phate, water, fltrd, mg/L as P (00671) | Phos-phorus, water, fltrd, mg/L (00666) | Phos-phorus, water, unfltrd mg/L (00665) | Total carbon, suspnd sedimnt total, mg/L (00694) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 20... | 373 | .53 | 4,840 | 387 | .14 | .30 | <.010 | <.016 | <.002 | E.005 | .010 | .140 | 1.2 |
| MAR | | | | | | | | | | | | | |
| 29... | 325 | .45 | 10,900 | 330 | .32 | 1.9 | .051 | .213 | .006 | .006 | .025 | 1.01 | 10.8 |
| APR | | | | | | | | | | | | | |
| 12... | 378 | .54 | 6,840 | 395 | .23 | .58 | <.010 | .034 | E.001 | .006 | .015 | .28 | 3.6 |
| MAY | | | | | | | | | | | | | |
| 17... | 361 | .50 | 11,400 | 371 | .17 | .31 | <.010 | <.016 | <.002 | .006 | .008 | .185 | .6 |
| JUN | | | | | | | | | | | | | |
| 08... | 398 | .57 | 9,280 | 418 | .20 | .54 | <.010 | E.009 | <.002 | .007 | .013 | .30 | 5.2 |
| 22... | 389 | .56 | 8,080 | 410 | .20 | .48 | <.010 | E.012 | <.002 | .009 | .015 | .200 | 3.2 |
| JUL | | | | | | | | | | | | | |
| 26... | 357 | .50 | 7,060 | 369 | .17 | .25 | <.010 | <.016 | <.002 | .008 | .014 | .122 | 3.2 |
| AUG | | | | | | | | | | | | | |
| 23... | 346 | .49 | 6,830 | 359 | .14 | .35 | <.010 | E.009 | <.002 | .006 | .013 | .142 | 2.2 |

| Date | Inor-ganic carbon, suspnd sedimnt total, mg/L (00688) | Organic carbon, suspnd sedimnt total, mg/L (00689) | Organic carbon, water, fltrd, mg/L (00681) | Pheo-phytin a, phyto-plank-ton, ug/L (62360) | Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953) | Arsenic water, fltrd, ug/L (01000) | Arsenic water unfltrd ug/L (01002) | Barium, water, fltrd, ug/L (01005) | Barium, water, unfltrd recover-able, ug/L (01007) | Boron, water, fltrd, ug/L (01020) | Cadmium water, fltrd, ug/L (01025) | Cadmium water, unfltrd ug/L (01027) | Chrom-ium, water, fltrd, ug/L (01030) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 20... | .2 | 1.0 | 2.4 | .8 | 3.1 | 2.5 | -- | -- | -- | 111 | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 29... | .2 | 10.5 | 4.6 | 5.5 | 3.4 | 1.4 | -- | -- | -- | 98 | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | <.1 | 3.6 | 3.8 | 1.6 | 4.4 | 2.1 | -- | -- | -- | 120 | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 17... | <.1 | 1.3 | 2.4 | .6 | 2.1 | 2.3 | 5 | 35 | 91 | 101 | <.04 | .07 | <.8 |
| JUN | | | | | | | | | | | | | |
| 08... | .2 | 5.0 | 5.4 | 1.8 | 8.1 | 2.5 | -- | -- | -- | 121 | -- | -- | -- |
| 22... | .4 | 2.9 | 4.1 | 2.1 | 9.4 | 2.5 | 6 | 41 | 90 | 126 | <.04 | .07 | <.8 |
| JUL | | | | | | | | | | | | | |
| 26... | .2 | 3.0 | 2.2 | .7 | 1.4 | 2.6 | 6 | 38 | 75 | 114 | <.04 | .05 | <.8 |
| AUG | | | | | | | | | | | | | |
| 23... | <.1 | 2.1 | 2.2 | 1.2 | 2.9 | 2.3 | 5 | 36 | 80 | 113 | <.04 | .06 | <.8 |

| Date | Chrom-ium, water, unfltrd recover-able, ug/L (01034) | Copper, water, fltrd, ug/L (01040) | Copper, water, unfltrd recover-able, ug/L (01042) | Iron, water, fltrd, ug/L (01046) | Iron, water, unfltrd recover-able, ug/L (01045) | Lead, water, fltrd, ug/L (01049) | Lead, water, unfltrd recover-able, ug/L (01051) | Lithium water, fltrd, ug/L (01130) | Mangan-ese, water, fltrd, ug/L (01056) | Mangan-ese, water, unfltrd recover-able, ug/L (01055) | Mercury water, fltrd, ug/L (71890) | Mercury water, unfltrd recover-able, ug/L (71900) | Nickel, water, fltrd, ug/L (01065) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 20... | -- | -- | -- | E4 | -- | -- | -- | 68.5 | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | | |
| 29... | -- | -- | -- | E5 | -- | -- | -- | 43.0 | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | | |
| 12... | -- | -- | -- | <6 | -- | -- | -- | 61.3 | -- | -- | -- | -- | -- |
| MAY | | | | | | | | | | | | | |
| 17... | 2.6 | 1.9 | 6.1 | <6 | 4,280 | <.08 | 2.99 | 54.9 | .7 | 90 | <.02 | <.02 | 2.17 |
| JUN | | | | | | | | | | | | | |
| 08... | -- | -- | -- | <6 | -- | -- | -- | 63.8 | -- | -- | -- | -- | -- |
| 22... | 3.3 | 2.7 | 7.9 | 6 | 4,460 | <.08 | 3.38 | 58.3 | .6 | 97 | <.02 | E.01 | 2.43 |
| JUL | | | | | | | | | | | | | |
| 26... | 2.3 | 2.3 | 6.2 | <6 | 2,850 | <.08 | 2.18 | 60.0 | .6 | 62 | <.02 | <.02 | 2.01 |
| AUG | | | | | | | | | | | | | |
| 23... | 2.5 | 1.7 | 5.5 | <6 | 3,380 | <.08 | 2.36 | 63.4 | .6 | 66 | <.02 | <.02 | 2.63 |

E--Estimated.

06185500 MISSOURI RIVER NEAR CULBERTSON, MT—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

| Date | Nickel, water, unfltrd recover-able, ug/L (01067) | Selen-ium, water, fltrd, ug/L (01145) | Selen-ium, water, unfltrd ug/L (01147) | Stront-ium, water, fltrd, ug/L (01080) | Vanad-ium, water, fltrd, ug/L (01085) | Zinc, water, fltrd, ug/L (01090) | Zinc, water, unfltrd recover-able, ug/L (01092) | 2,6-Di-ethyl-aniline water fltrd 0.7u GF ug/L (82660) | CIAT, water, fltrd, ug/L (04040) | Aceto-chlor, water, fltrd, ug/L (49260) | Ala-chlor, water, fltrd, ug/L (46342) | alpha-HCH, water, fltrd, ug/L (34253) | alpha-HCH-d6, surrog, wat flt 0.7u GF percent recovry (91065) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 20... | -- | .8 | -- | 530 | 1.0 | -- | -- | <.006 | <.006 | <.006 | <.004 | <.005 | 83.9 |
| MAR | | | | | | | | | | | | | |
| 29... | -- | .8 | -- | 329 | 1.4 | -- | -- | <.006 | <.006 | <.006 | <.005 | <.005 | 90.0 |
| APR | | | | | | | | | | | | | |
| 12... | -- | .7 | -- | 416 | 1.4 | -- | -- | <.006 | <.006 | <.006 | <.005 | <.005 | 92.0 |
| MAY | | | | | | | | | | | | | |
| 17... | 7.23 | .5 | .5 | 490 | 1.2 | E.6 | 15 | <.006 | <.006 | <.006 | <.005 | <.005 | 98.7 |
| JUN | | | | | | | | | | | | | |
| 08... | -- | .7 | -- | 448 | 2.4 | -- | -- | <.006 | <.006 | <.006 | <.005 | <.005 | 97.7 |
| 22... | 7.82 | .6 | .8 | 435 | 1.5 | 1.0 | 19 | <.006 | <.006 | <.006 | <.005 | <.005 | 99.5 |
| JUL | | | | | | | | | | | | | |
| 26... | 5.92 | .7 | .7 | 461 | 1.2 | E.5 | 12 | <.006 | <.006 | <.006 | <.005 | <.005 | 101 |
| AUG | | | | | | | | | | | | | |
| 23... | 7.70 | .7 | 1.2 | 468 | 1.1 | .6 | 14 | <.006 | <.006 | <.006 | <.005 | <.005 | 98.2 |

| Date | Atra-zine, water, fltrd, ug/L (39632) | Azin-phos-methyl, water, fltrd 0.7u GF ug/L (82686) | Ben-flur-alin, water, fltrd 0.7u GF ug/L (82673) | Butyl-ate, water, fltrd, ug/L (04028) | Car-baryl, water, fltrd 0.7u GF ug/L (82680) | Carbo-furan, water, fltrd 0.7u GF ug/L (82674) | Chlor-pyrifos water, fltrd, ug/L (38933) | cis-Per-methrin water fltrd 0.7u GF ug/L (82687) | Cyana-zine, water, fltrd, ug/L (04041) | DCPA, water fltrd 0.7u GF ug/L (82682) | Desulf-inyl fipro-nil, water, fltrd, ug/L (62170) | Diazi-non, water, fltrd, ug/L (39572) | Diazi-non-d10 surrog. wat flt 0.7u GF percent recovry (91063) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 20... | <.007 | <.050 | <.010 | <.002 | <.041 | <.020 | <.005 | <.006 | <.018 | <.003 | <.004 | <.005 | 104 |
| MAR | | | | | | | | | | | | | |
| 29... | <.007 | <.050 | <.010 | <.004 | <.041 | <.020 | <.005 | <.006 | <.018 | <.003 | <.012 | <.005 | 116 |
| APR | | | | | | | | | | | | | |
| 12... | <.007 | <.050 | <.010 | <.004 | <.041 | <.020 | <.005 | <.006 | <.018 | <.003 | <.012 | <.005 | 113 |
| MAY | | | | | | | | | | | | | |
| 17... | <.007 | <.050 | <.010 | <.004 | <.041 | <.020 | <.005 | <.006 | <.018 | <.003 | <.012 | <.005 | 116 |
| JUN | | | | | | | | | | | | | |
| 08... | <.007 | <.050 | <.010 | <.004 | <.041 | <.020 | <.005 | <.006 | <.018 | <.003 | <.012 | <.005 | 115 |
| 22... | E.003 | <.050 | <.010 | <.004 | <.041 | <.020 | <.005 | <.006 | <.018 | <.003 | <.012 | <.005 | 109 |
| JUL | | | | | | | | | | | | | |
| 26... | <.010 | <.050 | <.010 | <.004 | <.041 | <.020 | <.005 | <.006 | <.018 | <.003 | <.012 | <.005 | 111 |
| AUG | | | | | | | | | | | | | |
| 23... | <.007 | <.050 | <.010 | <.004 | <.041 | <.020 | <.005 | <.006 | <.018 | <.003 | <.012 | <.005 | 118 |

| Date | Diel-drin, water, fltrd, ug/L (39381) | Disul-foton, water, fltrd 0.7u GF ug/L (82677) | EPTC, water, fltrd 0.7u GF ug/L (82668) | Ethal-flur-alin, water, fltrd 0.7u GF ug/L (82663) | Etho-prop, water, fltrd 0.7u GF ug/L (82672) | Desulf-inyl-fipro-nil amide, wat flt ug/L (62169) | Fipro-nil sulfide water, fltrd, ug/L (62167) | Fipro-nil sulfone water, fltrd, ug/L (62168) | Fipro-nil, water, fltrd, ug/L (62166) | Fonofos water, fltrd, ug/L (04095) | Lindane water, fltrd, ug/L (39341) | Linuron water fltrd 0.7u GF ug/L (82666) | Mala-thion, water, fltrd, ug/L (39532) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 20... | <.005 | <.02 | <.002 | <.009 | <.005 | <.009 | <.005 | <.005 | <.007 | <.003 | <.004 | <.035 | <.027 |
| MAR | | | | | | | | | | | | | |
| 29... | <.009 | <.02 | <.004 | <.009 | <.005 | <.029 | <.013 | <.024 | <.016 | <.003 | <.004 | <.035 | <.027 |
| APR | | | | | | | | | | | | | |
| 12... | <.009 | <.02 | <.007 | <.009 | <.005 | <.029 | <.013 | <.024 | <.016 | <.003 | <.004 | <.035 | <.027 |
| MAY | | | | | | | | | | | | | |
| 17... | <.009 | <.02 | <.007 | <.009 | <.005 | <.029 | <.013 | <.024 | <.016 | <.003 | <.004 | <.035 | <.027 |
| JUN | | | | | | | | | | | | | |
| 08... | <.009 | <.02 | <.004 | <.009 | <.005 | <.029 | <.013 | <.024 | <.016 | <.003 | <.004 | <.035 | <.027 |
| 22... | <.009 | <.02 | <.004 | <.009 | <.005 | <.029 | <.013 | <.024 | <.016 | <.003 | <.004 | <.035 | <.027 |
| JUL | | | | | | | | | | | | | |
| 26... | <.009 | <.02 | <.004 | <.009 | <.005 | <.029 | <.013 | <.024 | <.016 | <.003 | <.004 | <.035 | <.027 |
| AUG | | | | | | | | | | | | | |
| 23... | <.009 | <.02 | <.004 | <.009 | <.005 | <.029 | <.013 | <.024 | <.016 | <.003 | <.004 | <.035 | <.027 |

E--Estimated.

06185500 MISSOURI RIVER NEAR CULBERTSON, MT—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

| Date | Methyl para-thion, water, fltrd 0.7u GF ug/L (82667) | Metola-chlor, water, fltrd, ug/L (39415) | Metri-buzin, water, fltrd, ug/L (82630) | Moli-nate, water, fltrd 0.7u GF ug/L (82671) | Naprop-amide, water, fltrd 0.7u GF ug/L (82684) | p,p'-DDE, water, fltrd, ug/L (34653) | Para-thion, water, fltrd, ug/L (39542) | Peb-ulate, water, fltrd 0.7u GF ug/L (82669) | Pendi-meth-alin, water, fltrd 0.7u GF ug/L (82683) | Phorate water fltrd 0.7u GF ug/L (82664) | Prome-ton, water, fltrd, ug/L (04037) | Propy-zamide, water, fltrd 0.7u GF ug/L (82676) | Propa-chlor, water, fltrd, ug/L (04024) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | | |
| 20... | <.006 | <.013 | <.006 | <.002 | <.007 | <.003 | <.010 | <.004 | <.022 | <.011 | <.01 | <.004 | <.010 |
| MAR | | | | | | | | | | | | | |
| 29... | <.015 | <.013 | <.006 | <.003 | <.007 | <.003 | <.010 | <.004 | <.022 | <.011 | <.01 | <.004 | <.025 |
| APR | | | | | | | | | | | | | |
| 12... | <.015 | <.013 | <.006 | <.003 | <.007 | <.003 | <.010 | <.004 | <.022 | <.011 | <.01 | <.004 | <.025 |
| MAY | | | | | | | | | | | | | |
| 17... | <.015 | <.013 | <.006 | <.003 | <.007 | <.003 | <.010 | <.004 | <.022 | <.011 | <.01 | <.004 | <.025 |
| JUN | | | | | | | | | | | | | |
| 08... | <.015 | <.013 | <.006 | <.003 | <.007 | <.003 | <.010 | <.004 | <.022 | <.011 | <.01 | <.004 | <.025 |
| 22... | <.015 | <.013 | <.006 | <.003 | <.007 | <.003 | <.010 | <.004 | <.022 | <.011 | .01 | <.007 | <.025 |
| JUL | | | | | | | | | | | | | |
| 26... | <.015 | <.013 | <.006 | <.003 | <.007 | <.003 | <.010 | <.004 | <.022 | <.011 | <.01 | <.004 | <.025 |
| AUG | | | | | | | | | | | | | |
| 23... | <.015 | <.013 | <.006 | <.003 | <.007 | <.003 | <.010 | <.004 | <.022 | <.011 | <.01 | <.004 | <.025 |

| Date | Pro-panil, water, fltrd 0.7u GF ug/L (82679) | Propar-gite, water, fltrd 0.7u GF ug/L (82685) | Sima-zine, water, fltrd, ug/L (04035) | Tebu-thiuron water fltrd 0.7u GF ug/L (82670) | Terba-cil, water, fltrd 0.7u GF ug/L (82665) | Terbu-fos, water, fltrd 0.7u GF ug/L (82675) | Thio-bencarb water fltrd 0.7u GF ug/L (82681) | Tri-allate, water, fltrd 0.7u GF ug/L (82678) | Tri-flur-alin, water, fltrd 0.7u GF ug/L (82661) | Sus-pended sedi-ment, percent <.063mm (70331) | Sus-pended sedi-ment concen-tration mg/L (80154) | Sus-pended sedi-ment dis-charge, tons/d (80155) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | |
| 20... | <.011 | <.02 | <.005 | <.02 | <.034 | <.02 | <.005 | <.002 | <.009 | 33 | 129 | 1,610 |
| MAR | | | | | | | | | | | | |
| 29... | <.011 | <.02 | <.005 | <.02 | <.034 | <.02 | <.010 | <.002 | <.009 | 80 | 1,540 | 50,700 |
| APR | | | | | | | | | | | | |
| 12... | <.011 | <.02 | <.005 | <.02 | <.034 | <.02 | <.010 | <.002 | <.009 | 76 | 1,150 | 19,900 |
| MAY | | | | | | | | | | | | |
| 17... | <.011 | <.02 | <.005 | <.02 | <.034 | <.02 | <.010 | <.002 | <.009 | 40 | 283 | 8,710 |
| JUN | | | | | | | | | | | | |
| 08... | <.011 | <.02 | <.005 | <.02 | <.034 | <.02 | <.010 | <.002 | <.009 | 52 | 408 | 9,070 |
| 22... | <.011 | <.02 | <.005 | <.02 | E.037 | <.02 | <.010 | <.002 | <.009 | 48 | 374 | 7,360 |
| JUL | | | | | | | | | | | | |
| 26... | <.011 | <.20 | <.005 | <.02 | <.034 | <.02 | <.010 | <.002 | <.009 | 35 | 230 | 4,400 |
| AUG | | | | | | | | | | | | |
| 23... | <.011 | <.02 | <.005 | <.02 | <.034 | <.02 | <.010 | <.002 | <.009 | 39 | 223 | 4,240 |

E--Estimated.

06185500 MISSOURI RIVER NEAR CULBERTSON, MT—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | APRIL | | | MAY | | | JUNE | | | JULY | |
| 1 | 8.0 | 6.5 | 7.0 | 10.0 | 8.5 | 9.0 | 13.5 | 13.0 | 13.5 | 21.0 | 20.0 | 20.5 |
| 2 | 7.0 | 6.0 | 6.5 | 10.5 | 8.5 | 9.5 | 15.5 | 13.0 | 14.0 | 23.0 | 19.5 | 21.0 |
| 3 | 7.5 | 6.0 | 6.5 | 12.0 | 10.0 | 11.0 | 17.5 | 15.0 | 16.0 | 23.5 | 21.0 | 22.0 |
| 4 | 8.5 | 6.5 | 7.5 | 13.0 | 10.5 | 12.0 | 19.5 | 17.0 | 18.0 | 21.5 | 18.5 | 20.0 |
| 5 | 9.5 | 8.0 | 8.5 | 14.0 | 12.5 | 13.0 | 20.5 | 18.5 | 19.5 | 18.5 | 17.5 | 18.0 |
| 6 | 9.5 | 9.0 | 9.0 | 13.5 | 12.0 | 12.5 | 21.0 | 19.0 | 20.0 | 19.0 | 16.5 | 18.0 |
| 7 | 10.5 | 8.5 | 9.5 | 14.0 | 11.5 | 12.5 | 19.5 | 18.0 | 19.0 | 19.0 | 17.5 | 18.0 |
| 8 | 10.0 | 8.5 | 9.0 | 14.0 | 12.5 | 13.5 | 18.0 | 16.0 | 17.0 | 19.0 | 18.0 | 18.5 |
| 9 | 9.0 | 7.5 | 8.5 | 13.5 | 13.0 | 13.5 | 16.5 | 15.0 | 15.5 | 21.0 | 18.0 | 19.5 |
| 10 | 8.0 | 6.5 | 7.5 | 13.0 | 11.5 | 12.5 | 15.0 | 14.0 | 14.5 | 21.5 | 19.5 | 20.5 |
| 11 | 8.5 | 6.5 | 7.0 | 11.5 | 7.5 | 9.0 | 14.5 | 14.0 | 14.0 | 21.5 | 20.0 | 20.5 |
| 12 | 8.0 | 6.0 | 7.0 | 7.5 | 6.0 | 6.5 | 15.0 | 13.5 | 14.0 | 22.0 | 20.5 | 21.0 |
| 13 | 10.0 | 7.0 | 8.0 | 6.0 | 5.5 | 5.5 | 15.5 | 14.0 | 14.5 | 23.0 | 20.5 | 21.5 |
| 14 | 8.5 | 7.5 | 8.0 | 8.0 | 5.5 | 6.5 | 17.5 | 14.5 | 16.0 | 24.0 | 21.5 | 22.5 |
| 15 | 9.5 | 7.5 | 8.5 | 11.0 | 8.0 | 9.5 | 16.5 | 16.0 | 16.5 | 24.5 | 22.5 | 23.5 |
| 16 | 9.0 | 8.0 | 8.5 | 12.0 | 10.0 | 11.0 | 17.5 | 15.5 | 16.5 | 24.5 | 23.0 | 23.5 |
| 17 | 8.0 | 7.0 | 7.5 | 13.0 | 10.5 | 11.5 | 17.0 | 15.5 | 16.0 | 25.0 | 22.5 | 24.0 |
| 18 | 7.5 | 6.5 | 7.0 | 13.5 | 11.5 | 12.5 | 17.0 | 14.5 | 15.5 | 25.5 | 23.5 | 24.5 |
| 19 | 8.5 | 5.5 | 7.0 | 14.0 | 13.0 | 13.5 | 18.0 | 15.5 | 16.5 | 24.5 | 23.5 | 24.0 |
| 20 | 9.5 | 7.0 | 8.0 | 14.5 | 13.0 | 13.5 | 18.0 | 17.0 | 17.5 | 25.0 | 23.0 | 24.0 |
| 21 | 11.0 | 8.5 | 9.5 | 14.5 | 13.0 | 14.0 | 18.0 | 16.5 | 17.5 | 24.0 | 22.5 | 23.5 |
| 22 | 11.5 | 9.0 | 10.0 | 13.5 | 11.5 | 12.5 | 18.5 | 17.0 | 17.5 | 22.5 | 21.0 | 22.0 |
| 23 | 12.0 | 9.5 | 10.5 | 11.5 | 10.5 | 11.0 | 18.5 | 17.0 | 17.5 | 22.0 | 20.0 | 21.0 |
| 24 | 11.5 | 9.5 | 10.5 | 11.0 | 10.0 | 10.5 | 18.5 | 16.0 | 17.0 | 22.0 | 19.5 | 20.5 |
| 25 | 11.5 | 9.5 | 10.5 | 11.0 | 9.5 | 10.5 | 19.5 | 16.5 | 18.0 | 22.0 | 19.5 | 20.5 |
| 26 | 12.0 | 9.5 | 11.0 | 11.0 | 10.0 | 10.5 | 18.0 | 16.0 | 17.0 | 22.5 | 20.0 | 21.0 |
| 27 | 13.0 | 11.0 | 12.0 | 13.0 | 10.5 | 11.5 | 18.5 | 15.5 | 17.0 | 22.0 | 20.0 | 21.0 |
| 28 | 12.5 | 10.0 | 11.0 | 14.5 | 12.5 | 13.5 | 20.5 | 16.5 | 18.5 | 20.5 | 19.0 | 20.0 |
| 29 | 10.5 | 9.5 | 10.0 | 15.0 | 14.0 | 14.5 | 22.0 | 18.0 | 20.0 | 20.0 | 18.0 | 19.0 |
| 30 | 10.0 | 9.0 | 9.5 | 15.0 | 14.0 | 14.5 | 22.5 | 20.0 | 21.0 | 20.0 | 17.5 | 18.5 |
| 31 | --- | --- | --- | 14.0 | 13.0 | 13.0 | --- | --- | --- | 21.0 | 18.5 | 19.5 |
| MONTH | 13.0 | 5.5 | 8.5 | 15.0 | 5.5 | 11.5 | 22.5 | 13.0 | 17.0 | 25.5 | 16.5 | 21.0 |

| | | AUGUST | | | SEPTEMBER | |
|---|---|---|---|---|---|---|
| 1 | 21.5 | 19.0 | 20.0 | 21.5 | 18.0 | 19.5 |
| 2 | 22.5 | 20.0 | 21.0 | 20.5 | 19.5 | 20.0 |
| 3 | 21.0 | 19.5 | 20.5 | 19.5 | 17.5 | 18.5 |
| 4 | 19.5 | 18.0 | 19.0 | 18.5 | 16.5 | 17.5 |
| 5 | 19.5 | 17.5 | 18.5 | 18.0 | 16.0 | 16.5 |
| 6 | 21.5 | 18.5 | 20.0 | 16.0 | 15.0 | 15.5 |
| 7 | 22.5 | 20.5 | 21.5 | 16.0 | 14.5 | 15.0 |
| 8 | 21.5 | 19.0 | 20.5 | 17.0 | 14.5 | 16.0 |
| 9 | 19.5 | 18.0 | 19.0 | 18.0 | 15.5 | 16.5 |
| 10 | 18.0 | 16.5 | 17.5 | 18.0 | 16.5 | 17.0 |
| 11 | 17.5 | 16.0 | 17.0 | 17.5 | 16.0 | 16.5 |
| 12 | 18.5 | 16.0 | 17.0 | 17.5 | 17.0 | 17.0 |
| 13 | 20.0 | 17.0 | 18.5 | 17.0 | 15.5 | 16.0 |
| 14 | 21.0 | 18.0 | 19.0 | 16.5 | 15.0 | 15.5 |
| 15 | 21.5 | 18.5 | 20.0 | 16.0 | 14.5 | 15.5 |
| 16 | 21.0 | 19.0 | 19.5 | 17.0 | 15.0 | 16.0 |
| 17 | 21.0 | 18.5 | 20.0 | 17.5 | 15.0 | 16.0 |
| 18 | 20.0 | 17.5 | 19.0 | 18.5 | 16.0 | 17.0 |
| 19 | 19.5 | 16.5 | 18.0 | 18.5 | 17.0 | 17.5 |
| 20 | 19.0 | 16.5 | 17.5 | 17.5 | 15.0 | 16.5 |
| 21 | 19.5 | 17.0 | 18.0 | 16.0 | 13.5 | 14.5 |
| 22 | 18.5 | 16.5 | 17.5 | 15.5 | 13.0 | 14.0 |
| 23 | 17.5 | 16.0 | 16.5 | 15.5 | 13.0 | 14.0 |
| 24 | 17.5 | 15.5 | 16.5 | 16.0 | 12.5 | 14.0 |
| 25 | 18.0 | 16.0 | 16.5 | 16.5 | 13.0 | 14.5 |
| 26 | 18.0 | 16.5 | 17.0 | 17.0 | 13.5 | 15.0 |
| 27 | 19.0 | 16.0 | 17.5 | 17.0 | 14.0 | 15.0 |
| 28 | 18.5 | 16.5 | 17.5 | 16.5 | 13.5 | 15.0 |
| 29 | 18.5 | 16.5 | 17.5 | 16.0 | 14.0 | 14.5 |
| 30 | 19.5 | 17.0 | 18.0 | 15.5 | 12.5 | 14.0 |
| 31 | 20.0 | 18.0 | 19.0 | --- | --- | --- |
| MONTH | 22.5 | 15.5 | 18.5 | 21.5 | 12.5 | 16.0 |

## SMALLER RESERVOIRS IN MISSOURI RIVER BASIN IN MONTANA

All elevations listed for the following reservoirs are referenced to the National Geodetic Vertical Datum of 1929.

### 06012000 LIMA RESERVOIR

LOCATION--Lat 44°39'16", long 112°21'54" (NAD 27), in $SW^1/_4$ sec.32, T.13 S., R.6 W., Beaverhead County, Hydrologic Unit 10020001, at Lima Dam on Red Rock River, 7 mi northwest of Monida, and at river mile 2,542.2.

DRAINAGE AREA--570 $mi^2$.

PERIOD OF RECORD.--April 1940 to current year. Records prior to October 1950, published only in WSP 1309, and those for April 1955, published only in WSP 1729. Records of daily elevations available in files of Helena district office.

REMARKS.--Elevation of gage is at sea level (levels by Montana Department of Natural Resources and Conservation)Reservoir is formed by earthfill dam with concrete spillway completed in 1902. Usable capacity, 84,050 acre-ft between elevation 6,537.30 ft, bottom of tunnel, and 6,582.7 ft, spillway crest. No dead storage. Figures given herein represent usable contents. Water is used for irrigation, flood control, and recreation. Records furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 85,870 acre-ft, May 27, 28, June 14, 15, 1984, elevation, 6,582.98 ft; no usable storage Sept. 20-26, 1979, Sept. 13-30, 1987, Oct. 1987, July 18 to Sept. 30, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 29,010 acre-ft, June 20, elevation 6,569.67 ft; minimum contents, 4,300 acre-ft, Oct. 1 to Nov. 11, elevation, 6,553.00 ft.

### 06038000 HEBGEN LAKE

LOCATION.--Lat 44°51'51", long 111°20'09" (NAD 27), in $SW^1/_4NW^1/_4$ sec.23, T.11 S., R.3 E., Gallatin County, Hydrologic Unit 10020007, at Hebgen Dam on Madison River, 18 mi northwest of West Yellowstone, and at river mile 103.

DRAINAGE AREA.--904 $mi^2$.

PERIOD OF RECORD.--January 1936 to current year. Records prior to October 1939, published only in WSP 1309. Figures of contents published in WSP 1629, 1709, and 1729 have been found to be in error and should not be used. Prior to Oct. 1, 1949, published as Hebgen Reservoir near West Yellowstone. Records of daily elevations since October 1955 on file in Helena district office.

REMARKS.--Elevation of gage is at sea level (levels by The Montana Power Co.). Prior to earthquake of Aug. 17, 1959, elevation of gage was 9.74 ft higher, also at sea level. Reservoir is formed by earthfill dam with concrete core and spillway completed in 1915, repaired in 1960 following severe earthquake of Aug. 17, 1959, which lowered dam 9.74 ft and deformed reservoir area. Subsequent usable capacity, 378,800 acre-ft, between elevation 6,473.00 ft, bottom of outlet tower, and 6,534.87 ft, spillway crest. Dead storage, 7,340 acre-ft below elevation 6,473.00 ft. Prior to Aug. 17, 1959, usable capacity, 344,700 acre-ft between 6,483.11 ft, bottom of outlet tower, and 6,544.61 ft, spillway crest. Observations of reservoir level prior and subsequent to earthquake indicate smaller increases in capacity than indicated by new capacity table. Figures given herein represent usable contents. Water is used for power and recreation. Records furnished by The Montana Power Co. REVISED RECORDS, WSP 1916: 1959-60.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 380,500 acre-ft, July 21, 1987, elevation, 6,535.0 ft; minimum monthend, 670 acre-ft, Dec. 31, 1936, by capacity table used prior to August 1959.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 378,100 acre-ft, July 6, elevation, 6,534.81 ft; minimum observed, 258,400 acre-ft, Mar. 24, 25, elevation, 6,524.53 ft.

### 06040500 ENNIS LAKE

LOCATION.--Lat 45°28'12", long 111°38'15" (NAD 27), in $NW^1/_4SW^1/_4$ sec.20, T.4 S., R.1 E., Madison County, Hydrologic Unit 10020007, at Madison Dam on Madison River, 5 mi northeast of McAllister, and at river mile 40.3.

DRAINAGE AREA.--2,181 $mi^2$.

PERIOD OF RECORD.--January 1936 to September 1975 (total contents), October 1975 to current year (usable contents). Records prior to October l939, published only in WSP 1309. Prior to 1949, published as Madison Reservoir near McAllister. Records of daily elevations since October 1955 on file in Helena district office.

REMARKS.--Elevation of gage is at sea level (levels by The Montana Power Co.). Reservoir is formed by timber crib dam completed in 1900. Usable capacity, 41,020 acre-ft between elevation 4,826.5 ft, bottom of penstock, and 4,841.5 ft, top of flashboard. Dead storage, 1,040 acre-ft below elevation 4,826.5 ft. Not normally drawn below 4,831.0 ft, 6,810 acre-ft. Figures given herein represent usable contents. Water is used for power and recreation. Records furnished by PPL EnergyPlus, LLC.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 40,830 acre-ft, June 20, 1968, elevation, 4,841.45 ft; minimum observed, 2,600 acre-ft, Mar. 31, 1937, elevation, 4,828.8 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 38,080 acre-ft, Oct. 22, elevation, 4,841.00 ft; minimum observed, 26,400 acre-ft, Jan. 8, 9, elevation, 4,837.80 ft.

### 06064500 LAKE HELENA

LOCATION.--Lat 46°45'58", long 111°53'10" (NAD 27), in $SE^1/_4SW^1/_4$ sec. 29, T.12 N., R.2 W., Lewis and Clark County, Hydrologic Unit 10030101, at Hauser Dam on Missouri River, 13 mi northeast of Helena, and at river mile 2,239.1.

DRAINAGE AREA.--610 $mi^2$ above dam and control works on Prickly Pear Creek. PERIOD OF RECORD, May 1945 to current year. April to July 1953 scattered daily elevation and contents, published in WSP 1320-B. May to June 1964 daily elevations and contents, published in WSP 1840-B. Records of daily elevations since October 1955 on file in Helena district office. Nonrecording gage at Hauser Dam read hourly.

REMARKS.--Elevation of gage is at sea level (levels by The Montana Power Co.). Gage heights collected at Hauser Dam are effective on Lake Helena at control dam. Prior to April 1945, contents of Lake Helena included with records of Hauser Lake. Since that date, a dam and control works has separated the two lakes to allow independent regulation of Lake Helena, if needed. Usable capacity, 12,710 acre-ft, between elevation 3,624.00 ft, bottom of control works, and 3,635.00 ft, top of flashboards. No dead storage. Figures given herein represent usable contents. Water is used for recreation, wildlife, and power production through Hauser Dam. Records furnished by PPL EnergyPlus, LLC.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 12,040 acre-ft, Mar. 14, 2003, elevation, 3,635.70 ft; no storage Mar. 29 to Apr. 7, 1958, Feb. 12, 20, 1962, May 4-10, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 11,360 acre-ft, many days throughout year, elevation, 3,635.40 ft; minimum observed, 9,050 acre-ft, Sept. 18, 27, elevation, 3,634.30 ft.

SMALLER RESERVOIRS IN MISSOURI RIVER BASIN IN MONTANA—Continued

06065000 HAUSER LAKE

LOCATION.--Lat 46°45'58", long 111°53'10" (NAD 27), in $SE^1/_4SW^1/_4$ sec.29, T.12 N., R.2 W., Lewis and Clark County, Hydrologic Unit 10030101, at Hauser Dam on Missouri River, 1.6 mi downstream from Prickly Pear Creek, 13 mi northeast of Helena, and at river mile 2,226.4.

DRAINAGE AREA.--16,876 $mi^2$.

PERIOD OF RECORD.--January 1936 to current year. Records prior to October 1939, published only in WSP 1309. April to July 1953 scattered daily elevations and contents, published in WSP 1320-B. May to June 1964 daily elevations and contents, published in WSP 1840-B. Monthend contents prior to May 1945 include contents of Lake Helena, excluded thereafter. Records of daily elevations since October 1955 on file in Helena district office. Nonrecording gage read hourly.

REMARKS.--Elevation of gage is at sea level (levels by The Montana Power Co.). Reservoir is formed by concrete dam completed in 1907; separated from Lake Helena in April 1945. Usable contents, 61,870 acre-ft, between elevation 3,617.00 ft, bottom of tunnel, and 3,635.00 ft top of flashboards. Dead storage, 46,810 acre-ft below elevation 3,617.00 ft. Prior to Nov. 28, 1949, usable capacity, 52,090 acre-ft at elevation 3,635.00 ft, decrease caused by construction of Canyon Ferry Dam in backwater of Hauser Dam. Not normally drawn below 3,621.00 ft, 8,870 acre-ft. Capacity above elevation 3625.0 updated in 1990. Figures given herein represent usable contents. Water is used for power and recreation. Records furnished by PPL EnergyPlus, LLC. REVISED RECORDS, WSP 1729: 1949-57.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 66,040 acre-ft, Mar. 14, 2003, elevation, 3,635.70 ft; no storage Jan. 31, Feb. 29, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 64,250 acre-ft, several days throughout year, elevation, 3,635.40 ft; minimum observed, 57,910 acre-ft, Sept. 18, 27, elevation, 3,634.30 ft.

06066000 HOLTER LAKE

LOCATION.--Lat 46°59'28", long 112°00'17" (NAD 27), on line between $SE^1/_4$ sec.5 and $NE^1/_4$ sec.8, T.14 N., R.3 W., Lewis and Clark County, Hydrologic Unit 10030101, at Holter Dam on Missouri River, 3.3 mi east of Wolf Creek, and at river mile 2,211.1.

DRAINAGE AREA.--17,149 $mi^2$.

PERIOD OF RECORD, January 1936 to current year. Records prior to October 1939, published only in WSP 1309. April to July 1953 scattered daily elevations and contents, published in WSP 1320-B. May to June 1964 daily elevations and contents, published in WSP 1840-B. Records of daily elevations since October 1955 on file in Helena district office. Prior to 1950, published as Holter Reservoir near Wolf Creek. Nonrecording gage read three times daily.

REMARKS.--Elevation of gage is at sea level (levels by The Montana Power Co.). Reservoir is formed by concrete dam completed in 1918. Usable capacity, 81,920 acre-ft between elevation 3,543.00 ft, bottom of tunnel, and 3,564.00 ft, top of flashboards. Dead storage, 158,500 acre-ft below elevation 3,543.00 ft. Not normally drawn below 3,548.00 ft, 16,660 acre-ft. Figures given herein represent usable contents. Water is used for power and recreation. Records furnished by PPL EnergyPlus, LLC.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 85,250 acre-ft, June 19, 1970, elevation, 3,564.70 ft; no storage Feb. 29, Dec. 31, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 82,160 acre-ft, Dec. 11, elevation, 3,564.05 ft; minimum observed, 77,400 acre-ft, July 13, elevation, 3,563.04 ft.

06079500 GIBSON RESERVOIR

LOCATION.--Lat 47°36'09", long 112°45'39" (NAD 27), in $NE^1/_4NW^1/_4$ $SE^1/_4$ sec.4, T.21 N., R.9 W., Teton County, Hydrologic Unit 10030104, at Gibson Dam on Sun River, 19 mi northwest of Augusta, and at river mile 100.8.

DRAINAGE AREA.--575 $mi^2$.

PERIOD OF RECORD.--January 1930 to current year. Records prior to October 1940, published only in WSP 1309. April to July 1953 scattered daily elevations and contents, published in WSP 1320-B. May to June 1964 daily elevations and contents, published in WSP 1840-B. Nonrecording gage read daily. Records of daily elevations on file in Helena district office.

REMARKS.--Elevation of gage is at sea level (levels by Bureau of Reclamation). Reservoir is formed by concrete dam with glory-hole spillway completed in 1929. usable capacity, 96,480 acre-ft, between elevation 4,557.5 ft, bottom of outlet, and 4,724.0 ft, top of glory-hole, by capacity table effective Oct. 1, 1997; see previous reports for superseded figures. Water is used for irrigation and recreation. Records furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 116,300 acre-ft, June 8, 1964, elevation 4,732.23 ft, from floodmark, of which 11,600 acre-ft was uncontrolled storage, by capacity table used Oct. 1, 1965 to July 30, 1975; minimum observed, 11 acre-ft, Oct. 13, 1936, elevation, 4,560.9 ft by capacity table used prior to 1939.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 96,390 acre-ft, June 6, elevation, 4,723.93 ft; minimum, 5,600 acre-ft, Oct. 21, elevation, 4,610.89 ft.

06136500 FRESNO RESERVOIR

LOCATION.--Lat 48°36'304", long 109°56'45" (NAD 27), in $SE^1/_4$ sec, 19, T. 33 N., R.14E, Hill County, Hydrologic Unit 10050002, at dam on Milk River, 13. mi west of Havre and at river mile 437.3.

DRAINAGE AREA.--3,766 $mi^2$ of which 670 $mi^2$ is probably noncontributing.

PERIOD OF RECORD.--January 1, 1940 to current year. Records prior to September 1940, published only in WSP 1309. March to May 1952 daily elevations and contents published in WSP 1260-B. April to July 1953 scattered daily elevations and contents published in WSP 1320-B. Records of daily contents in files of Helena district office. Nonrecording gage read daily.

REMARKS.--Elevation of gage is at sea level (levels by Bureau of Reclamation). Reservoir is formed by earthfill dam with concrete spillway completed in 1939. Usable capacity, 103,000 acre-ft, between elevation 2,530.00 ft, invert of tunnel inlet, and 2,575.00 ft, spillway crest, from capacity table effective Feb. 1, 1983. Elevation of maximum water surface is 2,592.93 ft, 224,700 acre-ft. Crest of dam is 2,596.10 ft. There are no gates in the spillway. Dead storage, 448 acre-ft, below elevation 2,530.00 ft. Figures given herein represent usable contents. Water is used for irrigation and recreation. Records furnished by Bureau of Reclamation. REVISED RECORDS, WSP 1729: Drainage area.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 154,000 acre-ft, Apr. 3, 1952, elevation, 2,579.3 ft, of which 26,800 acre-ft was uncontrolled storage, capacity table then in use; no storage Feb. 18 to Mar. 6, 1950.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 68,520 acre-ft, July 14, elevation, 2,569.46 ft; minimum observed, 14,830 acre-ft, Feb. 29, elevation, 2,546.31 ft.

SMALLER RESERVOIRS IN MISSOURI RIVER BASIN IN MONTANA—Continued

06204000 MYSTIC LAKE

LOCATION.--Lat 45°13'30", long 109°45'36" (NAD 27), in sec.9, T.7 S., R.16 E., (unsurveyed), Stillwater County, Hydrologic Unit 10070005, at dam on West Rosebud Creek, 15 mi southwest of Roscoe, 25 mi southwest of Absarokee and at river mile 28.8.

DRAINAGE AREA.--46.9 $mi^2$.

PERIOD OF RECORD.--January 1936 to current year. Records prior to September 1939, published only in WSP 1309. Record of daily elevations since October 1965 available in files of Helena district office. Water-stage recorder. Prior to October 1965, only monthend figures furnished.

REMARKS.--Elevation of gage is at sea level (levels by The Montana Power Co.). Reservoir is formed by thin-section reinforced concrete arch dam completed in 1925. Usable capacity, 21,000 acre-ft between elevation 7,612.00 ft, minimum operating level, and 7,673.50 ft, top of 3.5 ft stop logs. No dead storage. Figures given herein represent usable contents. Water is used for power development and recreation. Records furnished by PPL EnergyPlus, LLC. REVISED RECORDS, WSP 1916: Drainage area.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 21,130 acre-ft, July 10, 1983, elevation, 7,673.8 ft; no storage most days Mar. 23 to May 5, 1981, Apr. 10 to May 19, 1982, May 4,5, 1983, May 14, 1984, Mar. 23,26,27, 1986, Apr. 8-11, 1988, Apr. 18-20, 1999, Apr. 12 to May 1, 2000, and several days in April 2003.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 21,010 acre-ft, Aug. 16, elevation, 7,673.53 ft; minimum observed, 169 ac-ft, May 3, elevation 7,612.60.

MONTHEND CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

| Date | Lima Reservoir | Hebgen Lake | Ennis Lake | Lake Helena | Hauser Lake |
|---|---|---|---|---|---|
| Oct. 31 | 4,300 | 293,700 | 34,690 | 10,680 | 62,460 |
| Nov. 30 | 4,680 | 287,200 | 30,660 | 10,680 | 62,460 |
| Dec. 30 | 5,820 | 283,800 | 29,230 | 10,680 | 62,460 |
| Jan. 31 | 7,040 | 273,700 | 29,590 | 11,130 | 63,660 |
| Feb. 29 | 8,150 | 264,600 | 29,940 | 10,900 | 63,060 |
| Mar. 31 | 10,760 | 259,000 | 28,160 | 10,900 | 63,060 |
| Apr 30 | 24,750 | 266,600 | 31,750 | 10,680 | 62,460 |
| May 31 | 28,260 | 327,100 | 34,690 | 11,130 | 63,660 |
| June 30 | 28,190 | 372,900 | 37,320 | 11,130 | 63,660 |
| July 31 | 26,660 | 371,600 | 36,950 | 11,130 | 63,660 |
| Aug. 31 | 26,070 | 355,900 | 36,950 | 11,130 | 63,660 |
| Sept. 30 | 27,370 | 343,400 | 36,570 | 9,250 | 58,480 |

| Date | Holter Lake | Gibson Reservoir | Fresno Reservoir | Mystic Lake |
|---|---|---|---|---|
| Oct. 31 | 79,690 | 7,910 | 25,420 | 14,070 |
| Nov. 30 | 80,400 | 13,430 | 22,770 | 11,800 |
| Dec. 30 | 81,100 | 17,300 | 20,660 | 8,870 |
| Jan. 31 | 81,060 | 20,840 | 17,500 | 6,030 |
| Feb. 28 | 81,290 | 23,760 | 14,830 | 3,570 |
| Mar. 31 | 80,960 | 34,640 | 28,960 | 1,320 |
| Apr 30 | 81,200 | 68,610 | 45,570 | 209 |
| May 31 | 81,010 | 94,770 | 45,700 | 3,030 |
| June 30 | 80,870 | 91,880 | 65,580 | 16,850 |
| July 31 | 81,250 | 48,780 | 53,650 | 20,640 |
| Aug. 31 | 80,780 | 19,400 | 38,050 | 19,340 |
| Sept. 30 | 80,260 | 22,500 | 41,920 | 18,140 |

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