

Figure 15. Location of surface-water and water-quality stations in the Deschutes River Basin.

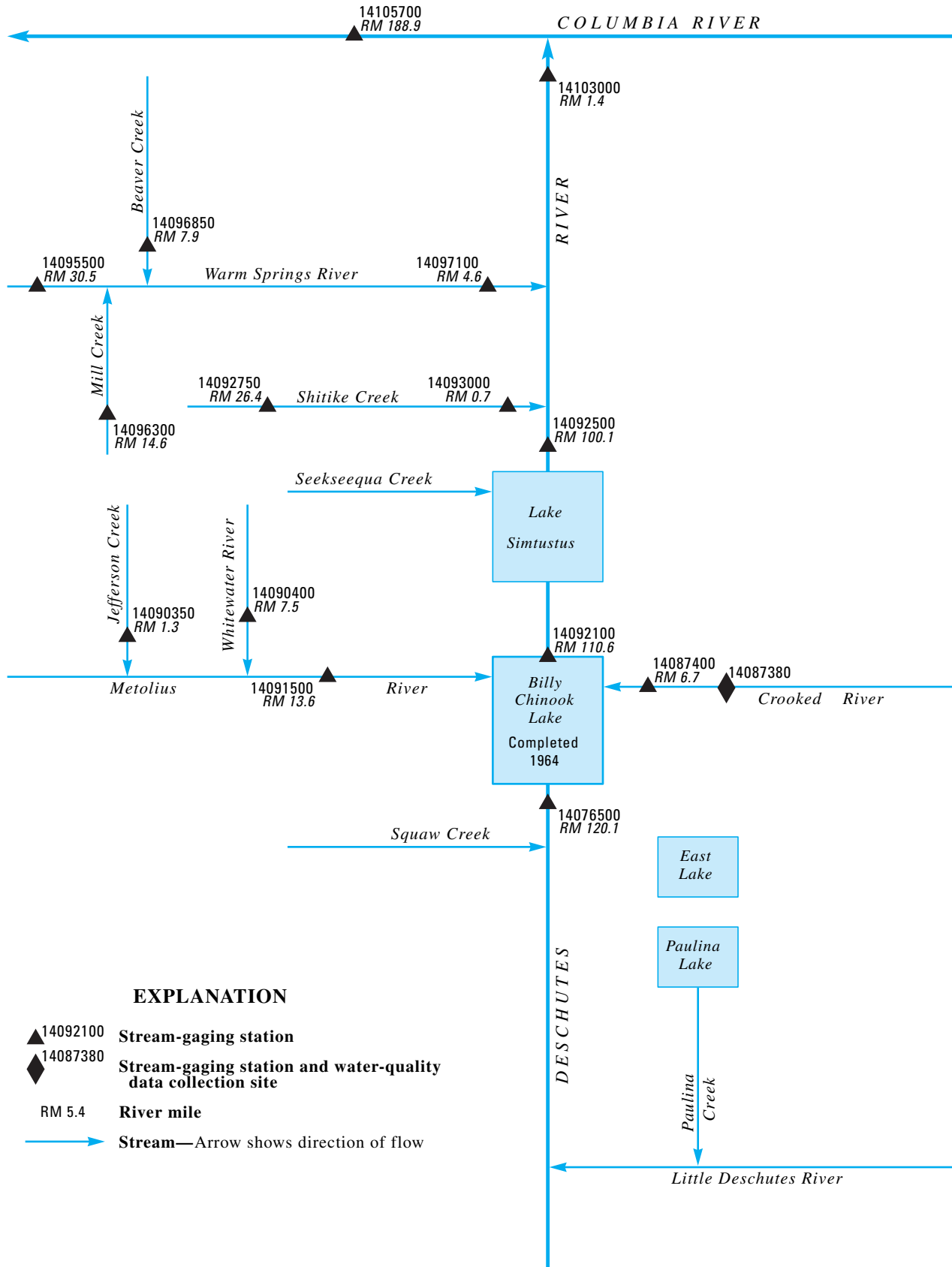


Figure 16. Schematic diagram showing gaging stations in the Deschutes River Basin.

14076500 DESCHUTES RIVER NEAR CULVER, OR

LOCATION.--Lat 44°29'56", long 121°19'12", in NW ¼ SE ¼ sec.29, T.12 S., R.12 E., Jefferson County, Hydrologic Unit 17070301, on right bank 2.5 mi downstream from Squaw Creek, 6.0 mi southwest of Culver, and at mile 120.1.

DRAINAGE AREA.--2,705 mi².

PERIOD OF RECORD.--July 1952 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,980 ft above NGVD of 1929 (river-profile survey). July 14, 1952, to Sept. 30, 1961, at site 4.1 mi downstream at different datum.

REMARKS.--Records good. Flow regulated by Crescent Lake and Crane Prairie and Wickiup Reservoirs. Many diversions for irrigation upstream from station. Continuous water-quality records for the period October 1954 to September 1957 and January 1959 to September 1974 have been collected at this location.

AVERAGE DISCHARGE.--52 years (water years 1953-2004), 917 ft³/s, 664,500 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,680 ft³/s Dec. 24, 1964, gage height, 10.00 ft, from rating curve extended above 3,000 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 418 ft³/s July 7, 8, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,170 ft³/s Nov. 30, gage height, 3.78 ft; minimum discharge, 484 ft³/s May 11.

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 | 526 | 896 | 1,020 | 992 | 1,060 | 991 | 907 | 500 | 535 | 683 | 509 | 542 |
| 2 | 526 | 916 | 853 | 980 | 1,070 | 945 | 1,020 | 513 | 524 | 585 | 519 | 540 |
| 3 | 519 | 930 | 780 | 945 | 1,070 | 937 | 1,010 | 534 | 541 | 567 | 522 | 534 |
| 4 | 522 | 914 | 771 | 951 | 1,050 | 928 | 1,010 | 548 | 600 | 577 | 514 | 534 |
| 5 | 522 | 916 | 786 | 905 | 1,030 | 961 | 1,010 | 551 | 634 | 542 | 524 | 529 |
| 6 | 526 | 916 | 997 | 858 | 1,030 | 970 | 1,030 | 542 | 688 | 523 | 533 | 524 |
| 7 | 521 | 918 | 1,030 | 872 | 1,020 | 963 | 1,020 | 523 | 661 | 532 | 528 | 524 |
| 8 | 524 | 921 | 1,020 | 1,040 | 999 | 971 | 1,030 | 514 | 592 | 543 | 528 | 523 |
| 9 | 526 | 923 | 982 | 965 | 996 | 936 | 1,030 | 516 | 557 | 523 | 524 | 522 |
| 10 | 528 | 922 | 976 | 860 | 983 | 937 | 1,040 | 502 | 541 | 521 | 520 | 522 |
| 11 | 531 | 925 | 963 | 818 | 979 | 946 | 1,050 | 489 | 549 | 519 | 525 | 523 |
| 12 | 688 | 925 | 986 | 798 | 974 | 940 | 1,040 | 572 | 567 | 515 | 527 | 527 |
| 13 | 710 | 923 | 1,030 | 784 | 970 | 946 | 633 | 563 | 606 | 513 | 526 | 534 |
| 14 | 666 | 924 | 1,130 | 794 | 976 | 952 | 541 | 581 | 559 | 514 | 527 | 536 |
| 15 | 769 | 925 | 1,070 | 801 | 956 | 953 | 530 | 559 | 545 | 514 | 534 | 542 |
| 16 | 792 | 930 | 1,050 | 798 | 986 | 997 | 520 | 508 | 533 | 523 | 533 | 540 |
| 17 | 925 | 939 | 1,030 | 964 | 870 | 1,020 | 509 | 506 | 535 | 534 | 527 | 516 |
| 18 | 923 | 726 | 1,050 | 978 | 813 | 1,030 | 502 | 515 | 535 | 532 | 530 | 509 |
| 19 | 897 | 617 | 1,030 | 970 | 792 | 1,040 | 498 | 551 | 551 | 536 | 522 | 525 |
| 20 | 895 | 610 | 1,010 | 885 | 787 | 1,030 | 497 | 535 | 564 | 544 | 518 | 519 |
| 21 | 898 | 635 | 1,020 | 855 | 991 | 1,040 | 496 | 516 | 560 | 550 | 518 | 516 |
| 22 | 885 | 820 | 1,020 | 838 | 1,020 | 1,080 | 499 | 528 | 567 | 538 | 531 | 515 |
| 23 | 880 | 931 | 1,010 | 889 | 986 | 888 | 496 | 553 | 589 | 526 | 574 | 512 |
| 24 | 869 | 937 | 1,000 | 969 | 796 | 849 | 493 | 519 | 619 | 524 | 560 | 509 |
| 25 | 866 | 935 | 998 | 993 | 779 | 800 | 496 | 501 | 630 | 530 | 547 | 506 |
| 26 | 866 | 937 | 982 | 991 | 787 | 814 | 499 | 505 | 626 | 529 | 577 | 506 |
| 27 | 868 | 919 | 974 | 994 | 794 | 1,030 | 496 | 584 | 612 | 518 | 591 | 505 |
| 28 | 870 | 931 | 983 | 1,000 | 964 | 1,060 | 506 | 719 | 583 | e515 | 559 | 506 |
| 29 | 881 | 1,040 | 991 | 1,010 | 996 | 882 | 506 | 671 | 580 | e515 | 550 | 508 |
| 30 | 877 | 1,130 | 940 | 1,080 | --- | 837 | 497 | 583 | 640 | 512 | 538 | 507 |
| 31 | 908 | --- | 897 | 1,070 | --- | 823 | --- | 551 | --- | 508 | 530 | --- |
| TOTAL | 22,704 | 26,831 | 30,379 | 28,647 | 27,524 | 29,496 | 21,411 | 16,852 | 17,423 | 16,605 | 16,565 | 15,655 |
| MEAN | 732 | 894 | 980 | 924 | 949 | 951 | 714 | 544 | 581 | 536 | 534 | 522 |
| MAX | 925 | 1,130 | 1,130 | 1,080 | 1,070 | 1,080 | 1,050 | 719 | 688 | 683 | 591 | 542 |
| MIN | 519 | 610 | 771 | 784 | 779 | 800 | 493 | 489 | 524 | 508 | 509 | 505 |
| AC-FT | 45,030 | 53,220 | 60,260 | 56,820 | 54,590 | 58,510 | 42,470 | 33,430 | 34,560 | 32,940 | 32,860 | 31,050 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MEAN | 749 | 1,158 | 1,268 | 1,334 | 1,395 | 1,356 | 880 | 604 | 640 | 556 | 534 | 561 |
| MAX | 1,598 | 1,894 | 2,130 | 2,760 | 2,679 | 2,360 | 1,799 | 1,228 | 1,053 | 960 | 852 | 997 |
| (WY) | (1998) | (1998) | (1985) | (1997) | (1997) | (1972) | (1984) | (1956) | (1999) | (1999) | (1999) | (1997) |
| MIN | 470 | 783 | 813 | 853 | 892 | 839 | 510 | 457 | 455 | 430 | 441 | 455 |
| (WY) | (1964) | (1995) | (1995) | (1995) | (1993) | (1964) | (1968) | (1964) | (1964) | (1964) | (1964) | (1963) |

SUMMARY STATISTICS

| | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1953 - 2004 | |
|--------------------------|------------------------|--------|---------------------|--------|-------------------------|--------------|
| ANNUAL TOTAL | 279,467 | | 270,092 | | | |
| ANNUAL MEAN | 766 | | 738 | | 917 | |
| HIGHEST ANNUAL MEAN | | | | | 1,461 | |
| LOWEST ANNUAL MEAN | | | | | 677 | |
| HIGHEST DAILY MEAN | 1,810 | Jan 31 | 1,130 | Nov 30 | 4,790 | Dec 24, 1964 |
| LOWEST DAILY MEAN | 483 | May 21 | 489 | May 11 | 425 | Jul 7, 1964 |
| ANNUAL SEVEN-DAY MINIMUM | 487 | May 16 | 496 | Apr 19 | 426 | Jul 7, 1964 |
| ANNUAL RUNOFF (AC-FT) | 554,300 | | 535,700 | | 664,500 | |
| 10 PERCENT EXCEEDS | 1,090 | | 1,020 | | 1,620 | |
| 50 PERCENT EXCEEDS | 769 | | 677 | | 778 | |
| 90 PERCENT EXCEEDS | 497 | | 514 | | 491 | |

e Estimated



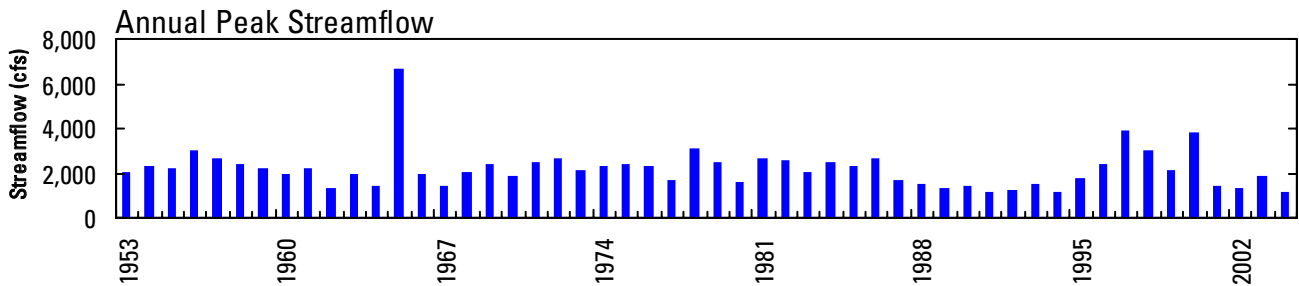
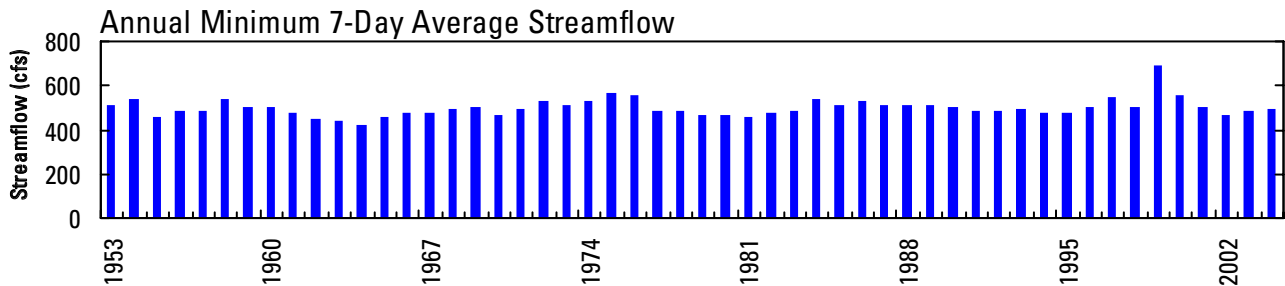
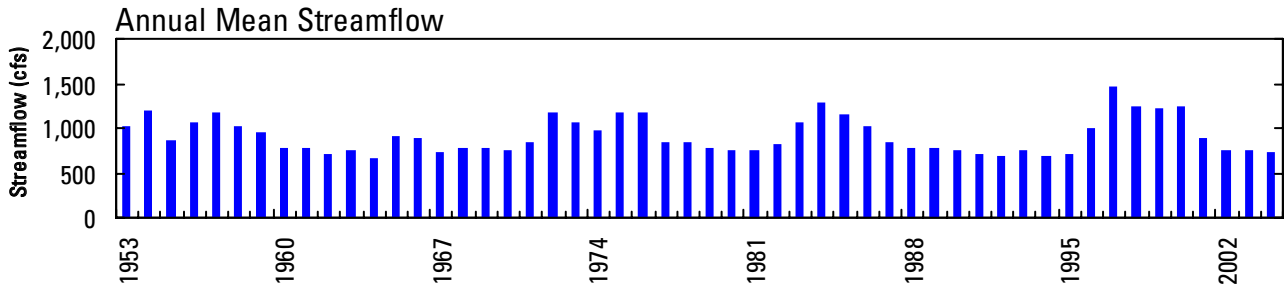
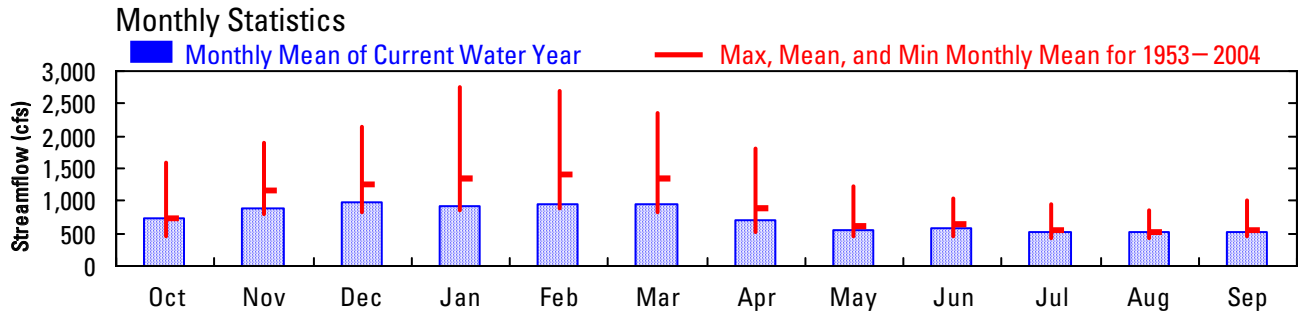
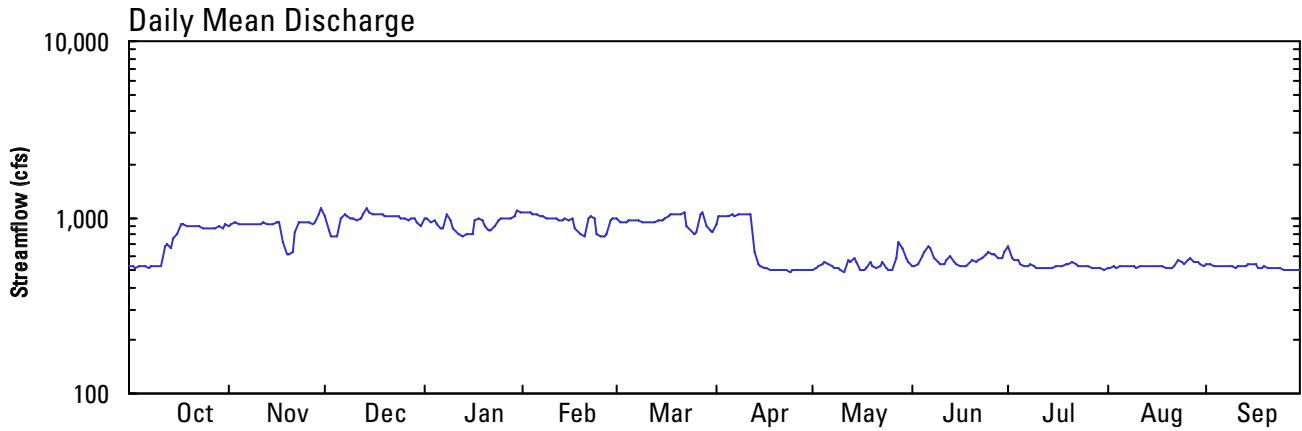
2004 Water Year
DESCHUTES RIVER BASIN

14076500 DESCHUTES RIVER NEAR CULVER, OR

Latitude: 44° 29 ' 56"
Jefferson County

Longitude: 121° 19 ' 12"
Datum: 1,980.00 feet

Hydrologic Unit Code: 17070301
Drainage Area: 2,705 square miles



14087380 CROOKED RIVER BELOW OSBORNE CANYON, NEAR OPAL CITY, OR

LOCATION.--Lat 44°25'37", long 121°13'54", Jefferson County, Hydrologic Unit 17070305, north of the Crooked River Ranch golf course and RV park.

DRAINAGE AREA.--4,520 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 2003 to September 2004.

GAGE.--Water-stage recorder. Datum of gage is 2,190 ft above NGVD of 1929.

REMARKS.--Records fair. Flow regulated by Prineville and Ochoco Reservoirs. Summer flow and storage above Prineville diverted for irrigation and municipal uses.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,320 ft³/s Mar. 21, gage height, 7.10 ft; minimum discharge, 94 ft³/s June 25, 26.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 | e140 | e210 | 211 | 215 | 324 | 379 | 1,300 | 612 | 778 | 211 | 176 | 265 |
| 2 | e150 | e210 | 213 | 213 | 304 | 390 | 1,110 | 613 | 573 | 180 | 196 | 251 |
| 3 | e150 | e210 | 208 | 184 | 304 | 398 | 1,060 | 625 | 442 | 157 | 201 | 250 |
| 4 | e160 | e210 | 212 | 220 | 294 | 397 | 1,040 | 506 | 358 | 167 | 173 | 245 |
| 5 | e160 | e210 | 213 | 196 | 284 | 390 | 1,030 | 363 | 310 | 179 | 164 | 240 |
| 6 | e160 | 214 | 206 | 187 | 278 | 388 | 1,160 | 302 | 302 | 191 | 173 | 244 |
| 7 | e160 | 209 | 203 | 189 | 281 | 388 | 1,210 | 269 | 317 | 192 | 188 | 243 |
| 8 | e220 | 210 | 199 | 227 | 290 | 399 | 1,210 | 233 | 352 | 183 | 187 | 252 |
| 9 | e220 | 210 | 199 | 237 | 284 | 483 | 1,220 | 244 | 367 | 177 | 187 | 250 |
| 10 | e240 | 208 | 201 | 249 | 278 | 521 | 1,050 | 264 | 386 | 165 | 184 | 259 |
| 11 | e260 | 207 | 199 | 268 | 274 | 719 | 948 | 264 | 390 | 170 | 189 | 262 |
| 12 | e280 | 205 | 198 | 269 | 271 | 744 | 829 | 246 | 373 | 207 | 179 | 262 |
| 13 | e300 | 205 | 204 | 269 | 268 | 790 | 717 | 238 | 367 | 218 | 164 | 262 |
| 14 | e320 | 204 | 216 | 281 | 267 | 1,080 | 702 | 233 | 360 | 176 | 163 | 272 |
| 15 | e300 | 204 | 210 | 328 | 267 | 1,380 | 704 | 211 | 312 | 162 | 185 | 257 |
| 16 | e260 | 205 | 202 | 356 | 276 | 1,920 | 711 | 219 | 294 | 151 | 199 | 261 |
| 17 | e230 | 203 | 210 | 314 | 451 | 2,180 | 747 | 231 | 284 | 138 | 228 | 257 |
| 18 | e210 | 203 | 210 | 289 | 678 | 2,200 | 791 | 258 | 266 | 155 | 210 | 271 |
| 19 | e210 | 202 | 211 | 276 | 623 | 2,220 | 812 | 420 | 230 | 179 | 206 | 280 |
| 20 | e200 | 216 | 212 | 268 | 513 | 2,240 | 784 | 623 | 227 | 202 | 203 | 294 |
| 21 | e200 | 236 | 212 | 263 | 459 | 2,300 | 779 | 656 | 236 | 207 | 199 | 289 |
| 22 | e210 | 253 | 210 | 257 | 393 | 2,280 | 801 | 679 | 212 | 222 | 207 | 281 |
| 23 | e210 | 216 | 210 | 252 | 366 | 1,910 | 812 | 709 | 180 | 208 | 241 | 273 |
| 24 | e200 | 203 | 210 | 260 | 360 | 1,870 | 820 | 725 | 137 | 191 | 253 | 271 |
| 25 | e210 | 201 | 209 | 305 | 384 | 1,900 | 800 | 688 | 105 | 192 | 282 | 253 |
| 26 | e210 | 201 | 209 | 290 | 376 | 1,920 | 761 | 724 | 108 | 191 | 290 | 234 |
| 27 | e210 | 200 | 208 | 280 | 368 | 1,760 | 681 | 836 | 102 | 178 | 299 | 235 |
| 28 | e210 | 198 | 211 | 282 | 367 | 1,690 | 655 | 938 | 112 | 160 | 295 | 220 |
| 29 | e210 | 212 | 220 | 280 | 373 | 1,620 | 644 | 974 | 129 | 157 | 290 | 201 |
| 30 | e210 | 221 | 215 | 319 | --- | 1,560 | 640 | 959 | 228 | 168 | 291 | 180 |
| 31 | e210 | --- | 209 | 364 | --- | 1,440 | --- | 931 | --- | 182 | 275 | --- |
| TOTAL | 6,620 | 6,296 | 6,460 | 8,187 | 10,255 | 39,856 | 26,528 | 15,793 | 8,837 | 5,616 | 6,677 | 7,614 |
| MEAN | 214 | 210 | 208 | 264 | 354 | 1,286 | 884 | 509 | 295 | 181 | 215 | 254 |
| MAX | 320 | 253 | 220 | 364 | 678 | 2,300 | 1,300 | 974 | 778 | 222 | 299 | 294 |
| MIN | 140 | 198 | 198 | 184 | 267 | 379 | 640 | 211 | 102 | 138 | 163 | 180 |
| AC-FT | 13,130 | 12,490 | 12,810 | 16,240 | 20,340 | 79,050 | 52,620 | 31,330 | 17,530 | 11,140 | 13,240 | 15,100 |
| CFSM | 0.05 | 0.05 | 0.05 | 0.06 | 0.08 | 0.28 | 0.19 | 0.11 | 0.06 | 0.04 | 0.05 | 0.06 |
| IN. | 0.05 | 0.05 | 0.05 | 0.07 | 0.08 | 0.33 | 0.22 | 0.13 | 0.07 | 0.05 | 0.05 | 0.06 |

WTR YR 2004 TOTAL 148739 MEAN 406 MAX 2300 MIN 102 AC-FT 295000 CFSM 0.09 IN. 1.22

e Estimated

14087380 CROOKED RIVER BELOW OSBORNE CANYON, NEAR OPAL CITY, OR—Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: November 2003 to September 2004.

INSTRUMENTATION.--Temperature probe and data logger.

REMARKS.--Records good.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE FOR PERIOD NOVEMBER 2003 TO SEPTEMBER 2004: Maximum 22.6°C July 25; minimum, 1.9°C Jan. 6.

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

| DAY | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | | |
|-------|---------|-----|------|----------|-----|------|----------|-----|------|---------|-----|------|
| | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
| 1 | --- | --- | --- | --- | --- | --- | 8.3 | 8.1 | 8.2 | 4.3 | 2.7 | 3.4 |
| 2 | --- | --- | --- | --- | --- | --- | 8.5 | 8.1 | 8.3 | 3.7 | 3.2 | 3.4 |
| 3 | --- | --- | --- | --- | --- | --- | 8.8 | 8.1 | 8.5 | 4.1 | 3.1 | 3.5 |
| 4 | --- | --- | --- | --- | --- | --- | 8.2 | 7.6 | 7.9 | 4.0 | 2.1 | 2.8 |
| 5 | --- | --- | --- | --- | --- | --- | 8.5 | 7.6 | 8.1 | 2.7 | 2.0 | 2.3 |
| 6 | --- | --- | --- | 6.7 | 6.1 | 6.4 | 8.5 | 7.9 | 8.2 | 2.8 | 1.9 | 2.4 |
| 7 | --- | --- | --- | 6.9 | 6.4 | 6.7 | 8.0 | 7.8 | 7.9 | 3.3 | 2.1 | 2.7 |
| 8 | --- | --- | --- | 7.2 | 6.9 | 7.0 | 7.8 | 6.9 | 7.4 | 3.4 | 2.8 | 3.1 |
| 9 | --- | --- | --- | 7.4 | 6.9 | 7.1 | 7.0 | 6.1 | 6.7 | 3.5 | 3.1 | 3.3 |
| 10 | --- | --- | --- | 8.3 | 7.4 | 7.8 | 6.8 | 6.1 | 6.5 | 3.7 | 3.3 | 3.5 |
| 11 | --- | --- | --- | 9.3 | 8.3 | 8.8 | 6.9 | 6.5 | 6.7 | 3.7 | 3.3 | 3.5 |
| 12 | --- | --- | --- | 8.8 | 8.0 | 8.5 | 7.4 | 6.6 | 7.1 | 4.2 | 3.6 | 3.9 |
| 13 | --- | --- | --- | 8.2 | 7.4 | 7.9 | 7.9 | 7.3 | 7.7 | 4.4 | 3.5 | 3.9 |
| 14 | --- | --- | --- | 7.7 | 7.4 | 7.5 | 7.6 | 6.8 | 7.3 | 5.1 | 4.2 | 4.6 |
| 15 | --- | --- | --- | 8.0 | 7.6 | 7.8 | 6.8 | 5.8 | 6.3 | 5.5 | 4.6 | 5.0 |
| 16 | --- | --- | --- | 8.0 | 7.7 | 7.8 | 5.9 | 5.7 | 5.8 | 5.7 | 4.9 | 5.4 |
| 17 | --- | --- | --- | 8.2 | 7.7 | 7.9 | 6.0 | 5.8 | 5.9 | 5.9 | 5.3 | 5.6 |
| 18 | --- | --- | --- | 8.6 | 8.0 | 8.3 | 6.1 | 5.8 | 6.0 | 6.0 | 5.4 | 5.8 |
| 19 | --- | --- | --- | 8.6 | 7.7 | 8.2 | 6.1 | 5.8 | 6.0 | 6.3 | 5.6 | 6.0 |
| 20 | --- | --- | --- | 7.8 | 6.9 | 7.4 | 6.4 | 5.9 | 6.1 | 6.3 | 5.9 | 6.1 |
| 21 | --- | --- | --- | 7.0 | 6.0 | 6.5 | 6.6 | 6.3 | 6.4 | 6.1 | 5.6 | 5.8 |
| 22 | --- | --- | --- | 6.0 | 4.8 | 5.3 | 6.6 | 6.3 | 6.4 | 5.6 | 4.9 | 5.3 |
| 23 | --- | --- | --- | 5.8 | 5.3 | 5.5 | 6.5 | 6.0 | 6.3 | 6.2 | 5.3 | 5.7 |
| 24 | --- | --- | --- | 6.1 | 5.5 | 5.8 | 6.8 | 6.3 | 6.6 | 6.2 | 5.7 | 5.9 |
| 25 | --- | --- | --- | 6.2 | 5.7 | 6.0 | 6.5 | 6.1 | 6.4 | 5.7 | 4.7 | 5.2 |
| 26 | --- | --- | --- | 6.6 | 5.9 | 6.3 | 6.1 | 5.1 | 5.5 | 5.2 | 4.7 | 5.0 |
| 27 | --- | --- | --- | 5.9 | 5.6 | 5.7 | 5.2 | 4.8 | 5.0 | 5.8 | 5.1 | 5.4 |
| 28 | --- | --- | --- | 7.0 | 5.8 | 6.5 | 5.4 | 5.0 | 5.3 | 6.4 | 5.6 | 5.9 |
| 29 | --- | --- | --- | 8.0 | 7.0 | 7.6 | 5.4 | 3.7 | 4.3 | 7.6 | 6.3 | 6.9 |
| 30 | --- | --- | --- | 8.3 | 8.0 | 8.1 | 3.8 | 3.5 | 3.6 | 7.4 | 6.3 | 6.8 |
| 31 | --- | --- | --- | --- | --- | --- | 4.3 | 3.6 | 3.9 | 6.3 | 5.4 | 5.6 |
| MONTH | --- | --- | --- | --- | --- | --- | 8.8 | 3.5 | 6.5 | 7.6 | 1.9 | 4.6 |

14087380 CROOKED RIVER BELOW OSBORNE CANYON, NEAR OPAL CITY, OR—Continued

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

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|-------|----------|------|------|-------|------|------|--------|------|------|-----------|------|------|
| | FEBRUARY | | | MARCH | | | APRIL | | | MAY | | |
| 1 | 5.8 | 5.0 | 5.5 | 7.7 | 7.1 | 7.3 | 8.1 | 6.9 | 7.4 | 14.8 | 12.7 | 13.7 |
| 2 | 5.8 | 5.3 | 5.6 | 7.5 | 6.6 | 7.2 | 8.7 | 6.7 | 7.6 | 15.5 | 13.4 | 14.4 |
| 3 | 5.3 | 4.7 | 5.1 | 7.4 | 6.4 | 6.8 | 10.4 | 7.7 | 9.1 | 16.1 | 14.0 | 15.0 |
| 4 | 5.2 | 4.4 | 4.9 | 6.9 | 5.8 | 6.3 | 11.5 | 9.4 | 10.4 | 15.8 | 14.0 | 14.9 |
| 5 | 5.3 | 4.1 | 4.8 | 7.4 | 5.9 | 6.6 | 10.9 | 10.0 | 10.4 | 15.4 | 13.0 | 14.4 |
| 6 | 5.6 | 4.9 | 5.3 | 7.4 | 5.9 | 6.7 | 10.3 | 8.7 | 9.5 | 14.9 | 12.8 | 13.8 |
| 7 | 5.9 | 5.0 | 5.5 | 8.6 | 6.4 | 7.4 | 10.7 | 9.2 | 9.8 | 14.5 | 12.9 | 13.7 |
| 8 | 5.9 | 4.7 | 5.5 | 10.4 | 7.6 | 8.9 | 10.6 | 8.7 | 9.5 | 15.2 | 13.3 | 14.1 |
| 9 | 5.8 | 4.4 | 5.2 | 10.4 | 9.5 | 10 | 10.8 | 8.9 | 9.6 | 14.4 | 13.5 | 14.0 |
| 10 | 5.7 | 4.5 | 5.2 | 9.9 | 7.9 | 8.7 | 11.2 | 8.9 | 9.9 | 14.6 | 13.4 | 14.0 |
| 11 | 5.7 | 4.9 | 5.4 | 8.7 | 7.0 | 7.9 | 11.8 | 9.4 | 10.6 | 13.4 | 12.4 | 12.9 |
| 12 | 5.6 | 4.6 | 5.1 | 8.7 | 7.2 | 8.0 | 12.3 | 10.2 | 11.3 | 13.7 | 11.9 | 12.8 |
| 13 | 5.2 | 4.0 | 4.7 | 8.8 | 7.6 | 8.2 | 11.7 | 10.6 | 11.2 | 14.5 | 12.4 | 13.5 |
| 14 | 5.8 | 4.8 | 5.3 | 8.8 | 7.4 | 8.1 | 10.6 | 8.9 | 9.9 | 16.0 | 13.8 | 14.9 |
| 15 | 6.8 | 5.5 | 6.0 | 8.1 | 6.5 | 7.5 | 9.5 | 8.3 | 8.9 | 16.0 | 15.1 | 15.6 |
| 16 | 7.3 | 6.5 | 6.9 | 7.1 | 6.4 | 6.7 | 9.3 | 8.2 | 8.8 | 16.0 | 14.6 | 15.2 |
| 17 | 7.2 | 6.2 | 6.5 | 7.6 | 6.5 | 7.0 | 10.2 | 8.5 | 9.3 | 15.7 | 14.8 | 15.3 |
| 18 | 6.4 | 5.8 | 6.1 | 7.5 | 6.9 | 7.2 | 9.9 | 8.8 | 9.3 | 15.5 | 14.8 | 15.1 |
| 19 | 6.1 | 5.1 | 5.6 | 7.3 | 6.2 | 6.8 | 9.7 | 8.8 | 9.3 | 15.3 | 13.9 | 14.7 |
| 20 | 6.4 | 4.9 | 5.5 | 6.8 | 6.3 | 6.6 | 9.7 | 8.7 | 9.2 | 15.1 | 13.1 | 14.2 |
| 21 | 6.8 | 5.3 | 6.0 | 7.5 | 6.8 | 7.2 | 9.8 | 8.7 | 9.3 | 15.9 | 13.3 | 14.6 |
| 22 | 7.3 | 6.2 | 6.8 | 8.3 | 7.5 | 8.0 | 11.4 | 9.0 | 10.2 | 15.2 | 13.7 | 14.4 |
| 23 | 7.5 | 6.7 | 7.2 | 9.0 | 7.7 | 8.4 | 11.4 | 10.1 | 10.7 | 14.2 | 12.7 | 13.4 |
| 24 | 7.8 | 7.0 | 7.4 | 8.3 | 6.8 | 7.7 | 11.4 | 9.3 | 10.4 | 14.4 | 11.7 | 13.0 |
| 25 | 7.3 | 6.7 | 7.0 | 7.3 | 6.2 | 6.9 | 12.7 | 10.1 | 11.4 | 15.9 | 12.6 | 14.2 |
| 26 | 7.1 | 6.4 | 6.8 | 6.3 | 5.9 | 6.1 | 14.1 | 11.3 | 12.8 | 16.4 | 14.6 | 15.2 |
| 27 | 6.9 | 6.3 | 6.7 | 7.5 | 6.0 | 6.8 | 14.0 | 12.7 | 13.3 | 14.8 | 12.3 | 13.7 |
| 28 | 7.4 | 6.2 | 6.8 | 8.1 | 7.2 | 7.7 | 12.7 | 11.3 | 12.0 | 13.0 | 11.2 | 12.1 |
| 29 | 7.7 | 6.5 | 7.2 | 9.7 | 7.5 | 8.6 | 12.3 | 10.4 | 11.3 | 12.9 | 11.6 | 12.2 |
| 30 | --- | --- | --- | 9.3 | 6.8 | 8.6 | 13.9 | 11.1 | 12.4 | 13.9 | 11.8 | 12.8 |
| 31 | --- | --- | --- | 7.4 | 6.5 | 6.9 | --- | --- | --- | 15.3 | 12.9 | 13.9 |
| MONTH | 7.8 | 4.0 | 5.9 | 10.4 | 5.8 | 7.5 | 14.1 | 6.7 | 10.2 | 16.4 | 11.2 | 14.1 |
| | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | | |
| 1 | 16.0 | 13.2 | 14.6 | 20.8 | 18.9 | 19.9 | 21.6 | 18.9 | 20.0 | 18.7 | 17.3 | 18.0 |
| 2 | 17.3 | 14.4 | 15.8 | 20.6 | 18.4 | 19.3 | 20.9 | 19.0 | 19.6 | 17.3 | 15.7 | 16.2 |
| 3 | 18.6 | 15.5 | 17.1 | 20.6 | 18.3 | 19.3 | 20.6 | 18.7 | 19.3 | 16.0 | 14.6 | 15.4 |
| 4 | 19.4 | 16.5 | 18.1 | 21.0 | 17.6 | 19.1 | 20.1 | 18.3 | 19.0 | 16.1 | 14.7 | 15.5 |
| 5 | 18.9 | 17.5 | 18.2 | 21.0 | 17.7 | 19.1 | 19.9 | 17.6 | 18.6 | 16.3 | 14.8 | 15.6 |
| 6 | 17.5 | 15.9 | 16.7 | 20.4 | 18.7 | 19.3 | 18.9 | 17.3 | 18.1 | 16.3 | 14.8 | 15.7 |
| 7 | 16.3 | 14.7 | 15.6 | 20.3 | 18.0 | 19.0 | 19.2 | 16.4 | 17.5 | 16.2 | 15.1 | 15.8 |
| 8 | 15.7 | 14.5 | 15.0 | 19.9 | 17.2 | 18.2 | 19.5 | 16.8 | 17.8 | 16.7 | 15.2 | 16.0 |
| 9 | 15.7 | 14.2 | 14.9 | 20.2 | 17.4 | 18.5 | 19.9 | 17.2 | 18.2 | 16.5 | 15.6 | 16.0 |
| 10 | 16.0 | 13.7 | 14.9 | 20.0 | 17.1 | 18.2 | 20.8 | 18.2 | 19.1 | 16.7 | 14.9 | 15.9 |
| 11 | 16.0 | 13.7 | 15.1 | 20.2 | 16.5 | 18.2 | 21.3 | 18.7 | 19.6 | 16.7 | 15.8 | 16.3 |
| 12 | 16.2 | 14.0 | 15.2 | 20.7 | 17.4 | 18.9 | 21.2 | 18.7 | 19.7 | 16.6 | 15.7 | 16.1 |
| 13 | 17.2 | 14.7 | 16.0 | 20.6 | 18.8 | 19.7 | 21.6 | 18.7 | 19.9 | 15.8 | 15.0 | 15.4 |
| 14 | 17.8 | 14.9 | 16.4 | 21.9 | 19.1 | 20.2 | 20.7 | 19.1 | 19.8 | 15.4 | 14.0 | 14.9 |
| 15 | 17.9 | 15.2 | 16.7 | 22.3 | 19.0 | 20.4 | 21.0 | 18.5 | 19.6 | 15.3 | 14.8 | 15.0 |
| 16 | 18.0 | 15.2 | 16.8 | 22.0 | 18.5 | 20.1 | 21.5 | 19.4 | 20.2 | 15.1 | 13.7 | 14.6 |
| 17 | 18.7 | 15.9 | 17.4 | 21.8 | 18.9 | 20.4 | 21.1 | 19.8 | 20.3 | 15.0 | 14.3 | 14.6 |
| 18 | 18.9 | 16.6 | 17.9 | 21.0 | 19.5 | 20.3 | 20.8 | 19.0 | 19.8 | 14.3 | 13.2 | 13.8 |
| 19 | 19.1 | 17.0 | 18.1 | 20.6 | 19.2 | 19.9 | 21.0 | 19.2 | 19.8 | 13.5 | 12.0 | 12.9 |
| 20 | 19.3 | 17.3 | 18.3 | 21.0 | 18.5 | 19.5 | 21.2 | 19.4 | 19.9 | 13.5 | 12.3 | 13.0 |
| 21 | 19.7 | 17.5 | 18.7 | 20.8 | 18.8 | 19.6 | 20.2 | 18.6 | 19.3 | 13.5 | 11.7 | 12.8 |
| 22 | 20.6 | 18.3 | 19.4 | 20.4 | 18.6 | 19.4 | 18.7 | 16.9 | 18.1 | 14.2 | 12.0 | 13.2 |
| 23 | 21.8 | 19.2 | 20.2 | 20.9 | 18.8 | 19.7 | 17.2 | 16.2 | 16.7 | 15.0 | 13.0 | 14.0 |
| 24 | 21.5 | 18.6 | 19.9 | 21.9 | 19.4 | 20.4 | 16.9 | 16.0 | 16.4 | 15.6 | 13.8 | 14.8 |
| 25 | 20.6 | 17.8 | 19.2 | 22.6 | 20.2 | 20.9 | 16.9 | 15.6 | 16.2 | 16.0 | 14.5 | 15.3 |
| 26 | 20.5 | 17.3 | 18.8 | 21.5 | 19.0 | 20.0 | 16.6 | 15.8 | 16.3 | 16.1 | 15.3 | 15.7 |
| 27 | 19.8 | 17.1 | 18.4 | 21.3 | 18.9 | 19.8 | 17.3 | 15.1 | 16.4 | 16.1 | 15.3 | 15.7 |
| 28 | 20.2 | 17.0 | 18.5 | 21.8 | 18.6 | 20.0 | 17.9 | 15.6 | 17.0 | 16.2 | 15.3 | 15.7 |
| 29 | 20.4 | 17.9 | 19.1 | 21.5 | 18.5 | 19.9 | 18.6 | 16.5 | 17.8 | 16.4 | 14.9 | 15.6 |
| 30 | 21.6 | 18.1 | 19.7 | 21.7 | 18.5 | 19.9 | 19.0 | 16.9 | 18.2 | 15.6 | 14.1 | 14.7 |
| 31 | --- | --- | --- | 21.9 | 18.9 | 20.1 | 18.9 | 17.4 | 18.4 | --- | --- | --- |
| MONTH | 21.8 | 13.2 | 17.4 | 22.6 | 16.5 | 19.6 | 21.6 | 15.1 | 18.6 | 18.7 | 11.7 | 15.1 |

14087400 CROOKED RIVER BELOW OPAL SPRINGS, NEAR CULVER, OR

LOCATION.--Lat 44°29'33", long 121°17'50", in NW ¼ NE ¼ sec.33, T.12 S., R.12 E., Jefferson County, Hydrologic Unit 17070305, on right bank 0.2 mi downstream from Opal Springs, 4.8 mi southwest of Culver, and at mile 6.7.

DRAINAGE AREA.--4,300 mi², approximately, of which 500 mi² is probably noncontributing.

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,953.60 ft above NGVD of 1929 (Portland General Electric Co. bench mark).

REMARKS.--No estimated daily discharges. Records good. Flow regulated since December 1960 by Prineville Reservoir, active capacity of 152,800 acre-ft and Ochoco Reservoir, active capacity, 46,500 acre-ft. Dam and powerplant 0.3 mi upstream, completed in 1985, causes brief fluctuations in flow. Many diversions for irrigation upstream from station. Practically all of the summer flow comes from Opal Springs and other springs within 15 mi upstream from station. Simultaneous records (1961-63) at former gaging station 5.6 mi downstream indicated over 15 percent increase to summer flow from springs downstream from this station. Continuous water-quality records for the period October 1963 to September 1974 have been collected at this location.

AVERAGE DISCHARGE.--43 years (water years 1962-2004), 1,548 ft³/s, 1,121,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,660 ft³/s Dec. 24, 1964, gage height, 9.36 ft; minimum daily discharge, 1,090 ft³/s May 11, 1981, minimum instantaneous discharge after October 1989, 656 ft³/s many days in the 1990 water year, prior to that date minimum instantaneous discharge was not determined.

EXTREMES FOR CURRENT YEAR.--Maximum recorded discharge, 3,550 ft³/s Mar. 19, gage height, 6.02 ft, due to powerplant operation; minimum discharge, 1,190 ft³/s Aug. 16, due to powerplant operation.

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 | 1,260 | 1,330 | 1,340 | 1,380 | 1,500 | 1,550 | 2,480 | 1,810 | 1,990 | 1,400 | 1,320 | 1,400 |
| 2 | 1,270 | 1,330 | 1,340 | 1,370 | 1,480 | 1,560 | 2,320 | 1,800 | 1,780 | 1,350 | 1,340 | 1,390 |
| 3 | 1,270 | 1,330 | 1,340 | 1,340 | 1,470 | 1,570 | 2,260 | 1,820 | 1,640 | 1,330 | 1,340 | 1,380 |
| 4 | 1,280 | 1,330 | 1,350 | 1,370 | 1,460 | 1,570 | 2,240 | 1,710 | 1,550 | 1,330 | 1,320 | 1,370 |
| 5 | 1,280 | 1,330 | 1,350 | 1,350 | 1,450 | 1,560 | 2,230 | 1,550 | 1,480 | 1,340 | 1,310 | 1,360 |
| 6 | 1,280 | 1,330 | 1,340 | 1,340 | 1,440 | 1,560 | 2,350 | 1,480 | 1,470 | 1,360 | 1,320 | 1,370 |
| 7 | 1,280 | 1,320 | 1,340 | 1,350 | 1,440 | 1,560 | 2,410 | 1,440 | 1,490 | 1,360 | 1,330 | 1,370 |
| 8 | 1,340 | 1,320 | 1,330 | 1,380 | 1,460 | 1,570 | 2,410 | 1,400 | 1,530 | 1,350 | 1,330 | 1,380 |
| 9 | 1,340 | 1,330 | 1,340 | 1,400 | 1,450 | 1,660 | 2,410 | 1,410 | 1,550 | 1,340 | 1,330 | 1,370 |
| 10 | 1,360 | 1,330 | 1,340 | 1,400 | 1,440 | 1,700 | 2,270 | 1,430 | 1,570 | 1,330 | 1,320 | 1,380 |
| 11 | 1,380 | 1,320 | 1,340 | 1,430 | 1,440 | 1,890 | 2,160 | 1,430 | 1,570 | 1,330 | 1,330 | 1,390 |
| 12 | 1,400 | 1,320 | 1,340 | 1,430 | 1,440 | 1,930 | 2,050 | 1,410 | 1,550 | 1,360 | 1,320 | 1,390 |
| 13 | 1,420 | 1,320 | 1,340 | 1,430 | 1,440 | 1,980 | 1,930 | 1,400 | 1,550 | 1,390 | 1,300 | 1,390 |
| 14 | 1,440 | 1,330 | 1,350 | 1,440 | 1,430 | 2,240 | 1,910 | 1,400 | 1,540 | 1,340 | 1,300 | 1,400 |
| 15 | 1,420 | 1,330 | 1,340 | 1,490 | 1,430 | 2,560 | 1,910 | 1,380 | 1,490 | 1,320 | 1,320 | 1,380 |
| 16 | 1,380 | 1,330 | 1,340 | 1,530 | 1,440 | 3,030 | 1,900 | 1,390 | 1,470 | 1,310 | 1,350 | 1,380 |
| 17 | 1,350 | 1,330 | 1,350 | 1,480 | 1,620 | 3,350 | 1,940 | 1,400 | 1,460 | 1,290 | 1,370 | 1,380 |
| 18 | 1,330 | 1,330 | 1,350 | 1,450 | 1,850 | 3,370 | 1,990 | 1,420 | 1,440 | 1,310 | 1,350 | 1,390 |
| 19 | 1,330 | 1,320 | 1,350 | 1,440 | 1,820 | 3,390 | 2,010 | 1,580 | 1,400 | 1,330 | 1,340 | 1,400 |
| 20 | 1,320 | 1,330 | 1,350 | 1,430 | 1,700 | 3,400 | 1,990 | 1,810 | 1,400 | 1,360 | 1,340 | 1,410 |
| 21 | 1,320 | 1,360 | 1,350 | 1,420 | 1,640 | 3,460 | 1,980 | 1,850 | 1,400 | 1,360 | 1,330 | 1,400 |
| 22 | 1,330 | 1,380 | 1,350 | 1,420 | 1,580 | 3,450 | 2,000 | 1,870 | 1,390 | 1,370 | 1,350 | 1,400 |
| 23 | 1,330 | 1,350 | 1,360 | 1,420 | 1,540 | 3,120 | 2,010 | 1,900 | 1,350 | 1,360 | 1,380 | 1,390 |
| 24 | 1,320 | 1,330 | 1,350 | 1,420 | 1,530 | 3,050 | 2,020 | 1,920 | 1,310 | 1,340 | 1,380 | 1,390 |
| 25 | 1,330 | 1,330 | 1,350 | 1,470 | 1,560 | 3,070 | 2,000 | 1,880 | 1,270 | 1,340 | 1,420 | 1,370 |
| 26 | 1,330 | 1,330 | 1,350 | 1,460 | 1,550 | 3,090 | 1,960 | 1,910 | 1,270 | 1,340 | 1,420 | 1,350 |
| 27 | 1,330 | 1,330 | 1,350 | 1,450 | 1,540 | 2,960 | 1,880 | 2,020 | 1,270 | 1,330 | 1,430 | 1,340 |
| 28 | 1,330 | 1,330 | 1,360 | 1,450 | 1,540 | 2,870 | 1,850 | 2,130 | 1,270 | 1,310 | 1,430 | 1,330 |
| 29 | 1,330 | 1,340 | 1,380 | 1,450 | 1,550 | 2,810 | 1,840 | 2,170 | 1,290 | 1,300 | 1,420 | 1,310 |
| 30 | 1,330 | 1,350 | 1,370 | 1,480 | --- | 2,750 | 1,830 | 2,160 | 1,380 | 1,310 | 1,420 | 1,290 |
| 31 | 1,330 | --- | 1,360 | 1,540 | --- | 2,650 | --- | 2,130 | --- | 1,330 | 1,410 | --- |
| TOTAL | 41,340 | 39,970 | 41,790 | 44,210 | 44,230 | 76,280 | 62,540 | 52,410 | 44,120 | 41,520 | 41,970 | 41,250 |
| MEAN | 1,334 | 1,332 | 1,348 | 1,426 | 1,525 | 2,461 | 2,085 | 1,691 | 1,471 | 1,339 | 1,354 | 1,375 |
| MAX | 1,440 | 1,380 | 1,380 | 1,540 | 1,850 | 3,460 | 2,480 | 2,170 | 1,990 | 1,400 | 1,430 | 1,410 |
| MIN | 1,260 | 1,320 | 1,330 | 1,340 | 1,430 | 1,550 | 1,830 | 1,380 | 1,270 | 1,290 | 1,300 | 1,290 |
| AC-FT | 82,000 | 79,280 | 82,890 | 87,690 | 87,730 | 151,300 | 124,000 | 104,000 | 87,510 | 82,350 | 83,250 | 81,820 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MEAN | 1,419 | 1,370 | 1,492 | 1,592 | 1,766 | 1,949 | 2,074 | 1,662 | 1,347 | 1,268 | 1,296 | 1,358 |
| MAX | 1,650 | 2,069 | 2,686 | 3,551 | 3,490 | 4,208 | 4,793 | 3,295 | 2,614 | 1,475 | 1,593 | 1,541 |
| (WY) | (1970) | (1985) | (1965) | (1965) | (1965) | (1972) | (1984) | (1984) | (1998) | (1983) | (1976) | (1965) |
| MIN | 1,239 | 1,232 | 1,179 | 1,182 | 1,245 | 1,232 | 1,192 | 1,173 | 1,195 | 1,122 | 1,133 | 1,187 |
| (WY) | (1969) | (1964) | (1964) | (1964) | (1989) | (1977) | (1977) | (1964) | (2002) | (1981) | (1980) | (1980) |

DESCHUTES RIVER BASIN

14087400 CROOKED RIVER BELOW OPAL SPRINGS, NEAR CULVER, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1962 - 2004 | |
|--------------------------|------------------------|--------|---------------------|--------|-------------------------|--------------|
| ANNUAL TOTAL | 466,510 | | 571,630 | | | |
| ANNUAL MEAN | 1,278 | | 1,562 | | 1,548 | |
| HIGHEST ANNUAL MEAN | | | | | 2,196 | 1984 |
| LOWEST ANNUAL MEAN | | | | | 1,250 | 1992 |
| HIGHEST DAILY MEAN | 1,440 | Oct 14 | 3,460 | Mar 21 | 6,130 | Dec 24, 1964 |
| LOWEST DAILY MEAN | 1,170 | Aug 20 | 1,260 | Oct 1 | 1,090 | May 11, 1981 |
| ANNUAL SEVEN-DAY MINIMUM | 1,180 | Jun 27 | 1,270 | Oct 1 | 1,100 | May 10, 1981 |
| ANNUAL RUNOFF (AC-FT) | 925,300 | | 1,134,000 | | 1,121,000 | |
| 10 PERCENT EXCEEDS | 1,350 | | 2,010 | | 2,160 | |
| 50 PERCENT EXCEEDS | 1,290 | | 1,390 | | 1,340 | |
| 90 PERCENT EXCEEDS | 1,190 | | 1,320 | | 1,200 | |



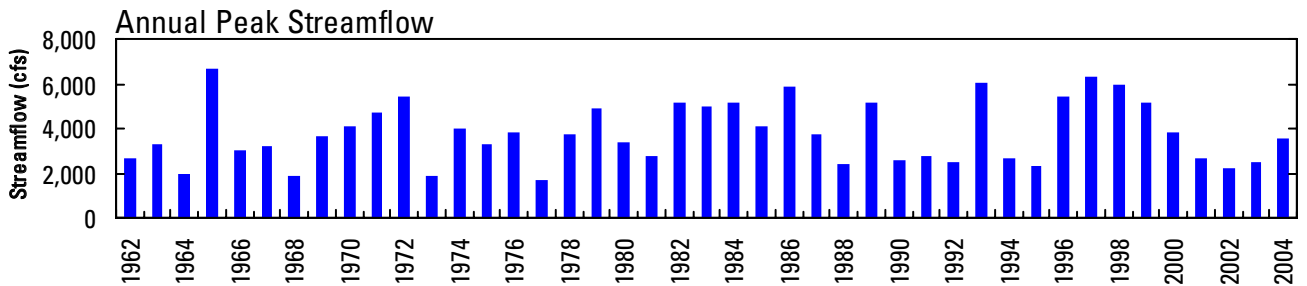
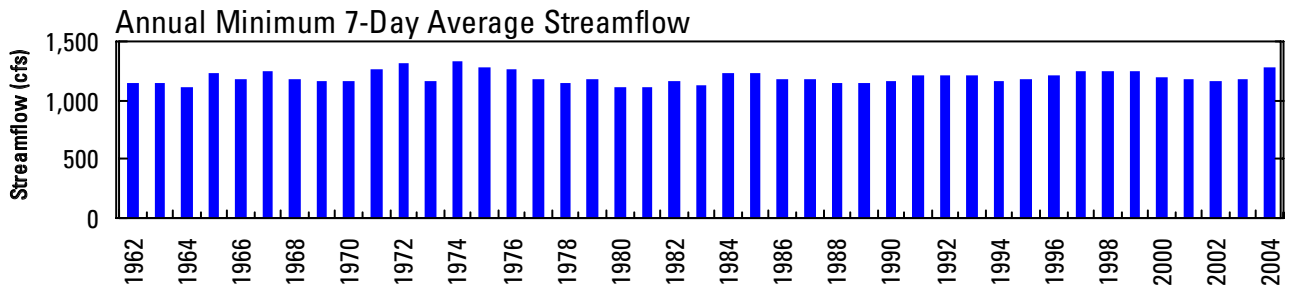
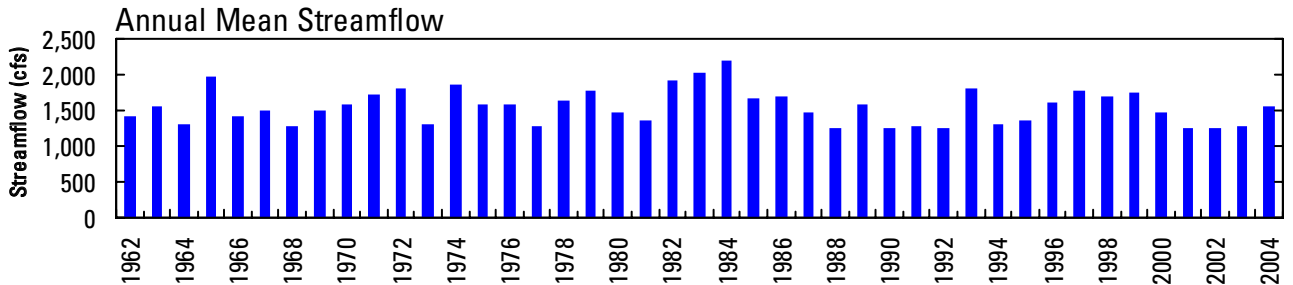
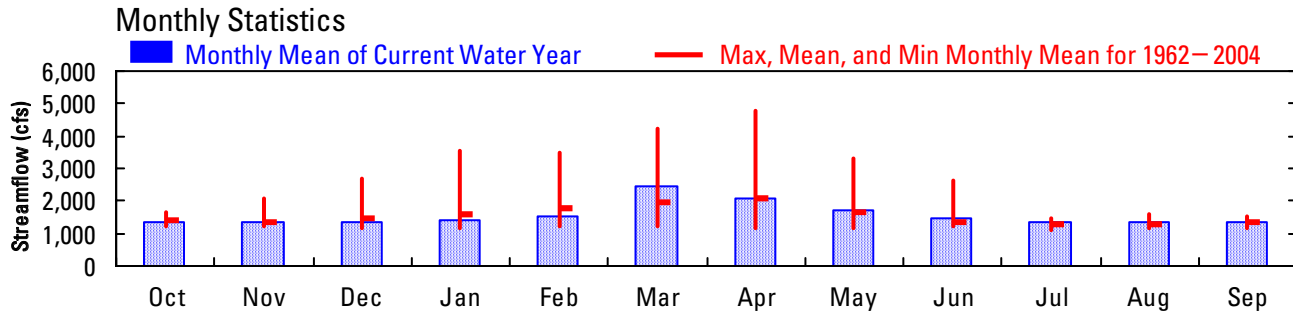
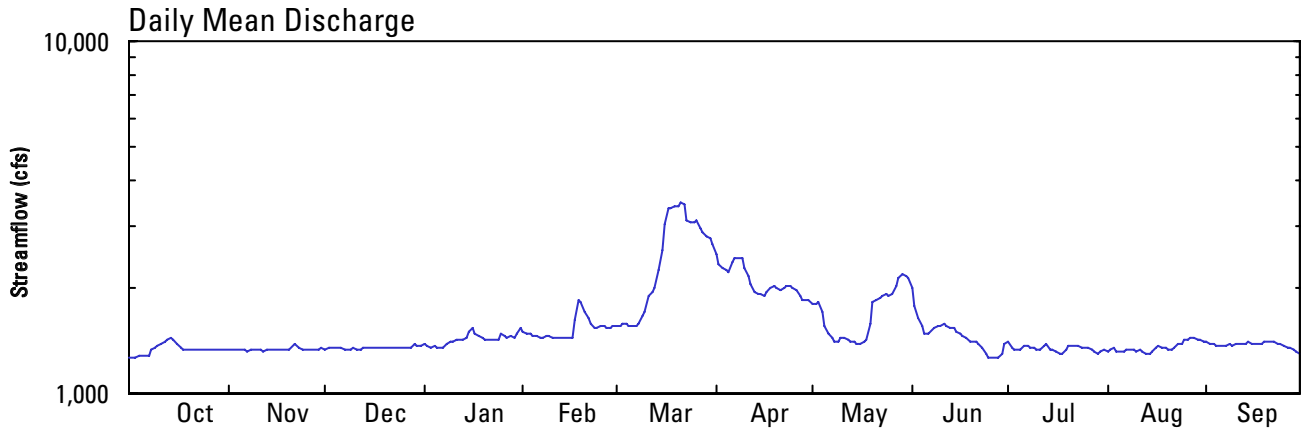
2004 Water Year
DESCHUTES RIVER BASIN

14087400 CROOKED RIVER BELOW OPAL SPRINGS, NEAR CULVER, OR

Latitude: 44° 29 ' 33"
Jefferson County

Longitude: 121° 17 ' 50"
Datum: 1,953.60 feet

Hydrologic Unit Code: 17070305
Drainage Area: 4,557 square miles



14090350 JEFFERSON CREEK NEAR CAMP SHERMAN, OR

LOCATION.--Lat 44°34'18", long 121°38'17", in SW ¼ SE ¼ sec.34, T.11 S., R.9 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, on left bank 100 ft upstream from bridge, 7.6 mi north of Camp Sherman, and at mile 1.3.

DRAINAGE AREA.--27.8 mi².

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,780 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--21 years (water years 1984-2004), 93.5 ft³/s, 45.72 in/yr, 67,770 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 908 ft³/s Nov. 25, 1999, gage height, 4.38 ft, from high-water mark, not including approximately 400 ft³/s which flowed out of the channel 150 ft upstream of gage and flowed into Candle Creek; minimum daily discharge, 36 ft³/s Dec. 22, 1990, but could have been lower during period of ice effect Dec. 19-25, 1990.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft³/s and maximum (*):

| Date | Time | Discharge (ft ³ /s) | Gage height (ft) | Date | Time | Discharge (ft ³ /s) | Gage height (ft) |
|--------|------|--------------------------------|------------------|--------|------|--------------------------------|------------------|
| Dec 13 | 1530 | 234 | 2.40 | May 27 | 2330 | *254 | *2.50 |

Minimum discharge, 52 ft³/s, Nov. 22, Jan. 6.

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 | e70 | e65 | 85 | 64 | 94 | 66 | 78 | 123 | 121 | 121 | 100 | 88 |
| 2 | e70 | e65 | 78 | 65 | 89 | 65 | 78 | 141 | 124 | 119 | 100 | 87 |
| 3 | e70 | e65 | 91 | 64 | 83 | 65 | 81 | 154 | 132 | 121 | 99 | 86 |
| 4 | e65 | e65 | 76 | 63 | 79 | 66 | 88 | 146 | 138 | 118 | 98 | 86 |
| 5 | e65 | e65 | 98 | 57 | 76 | 65 | 93 | 130 | 149 | 115 | 98 | 85 |
| 6 | e65 | e65 | 95 | 54 | 76 | 65 | 95 | 119 | 155 | 115 | 99 | 84 |
| 7 | e70 | 62 | 79 | 56 | 75 | 66 | 98 | 120 | 134 | 116 | 98 | 84 |
| 8 | e70 | 62 | 73 | 67 | 72 | 70 | 100 | 130 | 126 | 113 | 96 | 83 |
| 9 | e70 | 62 | 71 | 74 | 71 | 74 | 100 | 117 | 128 | 112 | 95 | 83 |
| 10 | e75 | 62 | 69 | 67 | 70 | 74 | 102 | 115 | 135 | 111 | 95 | 82 |
| 11 | e75 | 73 | 67 | 65 | 70 | 72 | 105 | 110 | 126 | 110 | 94 | 88 |
| 12 | e85 | 66 | 73 | 63 | 68 | 74 | 113 | 106 | 120 | 110 | 93 | 84 |
| 13 | e80 | 63 | 146 | 63 | 68 | 75 | 119 | 108 | 126 | 110 | 93 | 93 |
| 14 | e75 | 62 | 103 | 65 | 68 | 76 | 110 | 114 | 127 | 110 | 93 | 106 |
| 15 | e80 | 62 | 84 | 72 | 67 | 78 | 99 | 118 | 122 | 110 | 93 | 96 |
| 16 | e85 | 64 | 79 | 70 | 70 | 76 | 94 | 119 | 120 | 110 | 93 | 90 |
| 17 | e90 | 66 | 75 | 67 | 73 | 81 | 91 | 117 | 121 | 109 | 92 | 101 |
| 18 | e80 | 79 | 72 | 65 | 78 | 85 | 90 | 141 | 125 | 108 | 90 | 110 |
| 19 | e70 | 83 | 71 | 65 | 73 | 82 | 88 | 148 | 124 | 111 | 88 | 97 |
| 20 | e70 | 71 | 71 | 64 | 71 | 79 | 90 | 134 | 122 | 107 | 88 | 93 |
| 21 | e65 | 66 | 69 | 63 | 70 | 80 | 88 | 136 | 124 | 105 | 87 | 89 |
| 22 | e65 | 62 | 68 | 62 | 69 | 88 | 86 | 134 | 128 | 104 | 109 | 86 |
| 23 | e70 | 64 | 67 | 89 | 69 | 96 | 86 | 128 | 133 | 104 | 98 | 84 |
| 24 | e70 | 64 | 69 | 110 | 68 | 93 | 85 | 116 | 131 | 104 | 94 | 83 |
| 25 | e65 | 63 | 66 | 84 | 68 | 87 | 88 | 115 | 130 | 103 | 122 | 82 |
| 26 | e65 | 63 | 65 | 76 | 68 | 84 | 98 | 148 | 129 | 102 | 120 | 81 |
| 27 | e65 | 62 | 65 | 75 | 67 | 83 | 115 | 178 | 124 | 102 | 99 | 80 |
| 28 | e65 | 63 | 65 | 79 | 66 | 80 | 119 | 185 | 122 | 101 | 93 | 79 |
| 29 | e65 | 152 | 63 | 149 | 66 | 81 | 109 | 130 | 122 | 100 | 91 | 79 |
| 30 | e70 | 99 | 60 | 151 | --- | 83 | 113 | 122 | 123 | 100 | 89 | 78 |
| 31 | e65 | --- | 68 | 107 | --- | 80 | --- | 120 | --- | 100 | 88 | --- |
| TOTAL | 2,210 | 2,085 | 2,381 | 2,335 | 2,102 | 2,389 | 2,899 | 4,022 | 3,841 | 3,381 | 2,985 | 2,627 |
| MEAN | 71.3 | 69.5 | 76.8 | 75.3 | 72.5 | 77.1 | 96.6 | 130 | 128 | 109 | 96.3 | 87.6 |
| MAX | 90 | 152 | 146 | 151 | 94 | 96 | 119 | 185 | 155 | 121 | 122 | 110 |
| MIN | 65 | 62 | 60 | 54 | 66 | 65 | 78 | 106 | 120 | 100 | 87 | 78 |
| AC-FT | 4,380 | 4,140 | 4,720 | 4,630 | 4,170 | 4,740 | 5,750 | 7,980 | 7,620 | 6,710 | 5,920 | 5,210 |
| CFSM | 2.56 | 2.50 | 2.76 | 2.71 | 2.61 | 2.77 | 3.48 | 4.67 | 4.61 | 3.92 | 3.46 | 3.15 |
| IN. | 2.96 | 2.79 | 3.19 | 3.12 | 2.81 | 3.20 | 3.88 | 5.38 | 5.14 | 4.52 | 3.99 | 3.52 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MEAN | 77.0 | 83.2 | 79.7 | 83.5 | 87.1 | 83.2 | 93.6 | 118 | 129 | 112 | 94.4 | 81.6 |
| MAX | 124 | 131 | 155 | 160 | 244 | 148 | 135 | 179 | 191 | 189 | 169 | 124 |
| (WY) | (1998) | (1996) | (1996) | (1997) | (1996) | (1996) | (1996) | (1997) | (1999) | (1999) | (1999) | (1999) |
| MIN | 55.5 | 59.3 | 58.6 | 55.5 | 50.6 | 55.5 | 59.8 | 83.3 | 80.0 | 70.5 | 62.0 | 56.8 |
| (WY) | (1993) | (1988) | (1993) | (2001) | (1989) | (2001) | (2001) | (1991) | (1992) | (1992) | (1994) | (1994) |

14090350 JEFFERSON CREEK NEAR CAMP SHERMAN, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1984 - 2004 | |
|--------------------------|------------------------|--------|---------------------|--------|-------------------------|--------------|
| ANNUAL TOTAL | 31,290 | | 33,257 | | | |
| ANNUAL MEAN | 85.7 | | 90.9 | | 93.5 | |
| HIGHEST ANNUAL MEAN | | | | | 137 | 1996 |
| LOWEST ANNUAL MEAN | | | | | 66.8 | 1994 |
| HIGHEST DAILY MEAN | 369 | Jan 30 | 185 | May 28 | 634 | Feb 7, 1996 |
| LOWEST DAILY MEAN | 60 | Dec 30 | 54 | Jan 6 | 36 | Dec 22, 1990 |
| ANNUAL SEVEN-DAY MINIMUM | 63 | Nov 22 | 60 | Jan 1 | 38 | Feb 4, 1989 |
| ANNUAL RUNOFF (AC-FT) | 62,060 | | 65,970 | | 67,770 | |
| ANNUAL RUNOFF (CFSM) | 3.08 | | 3.27 | | 3.37 | |
| ANNUAL RUNOFF (INCHES) | 41.87 | | 44.50 | | 45.72 | |
| 10 PERCENT EXCEEDS | 105 | | 124 | | 138 | |
| 50 PERCENT EXCEEDS | 82 | | 86 | | 85 | |
| 90 PERCENT EXCEEDS | 65 | | 65 | | 60 | |

e Estimated



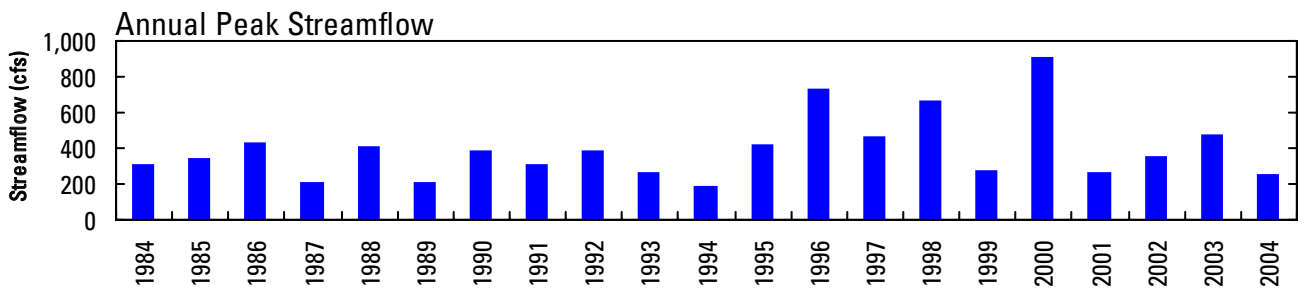
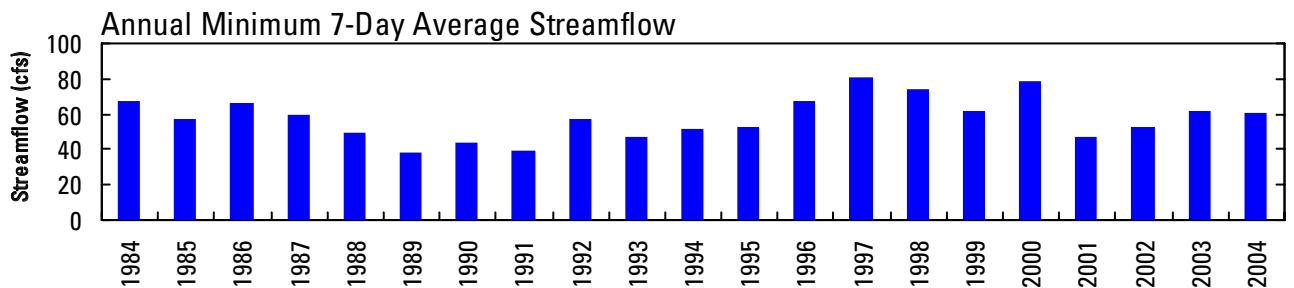
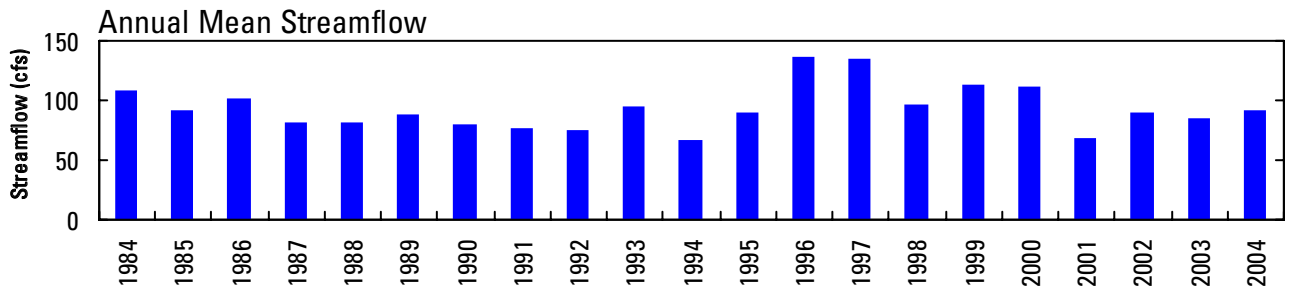
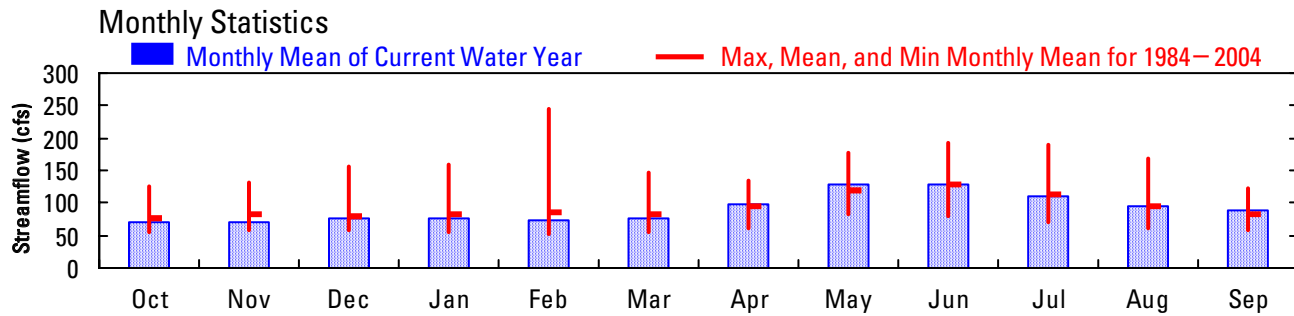
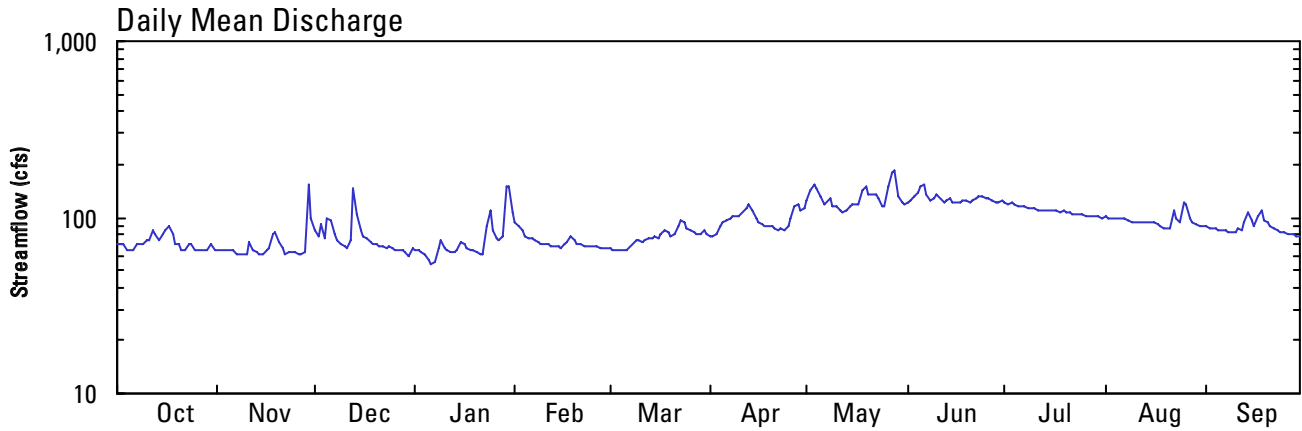
2004 Water Year
DESCHUTES RIVER BASIN

14090350 JEFFERSON CREEK NEAR CAMP SHERMAN, OR

Latitude: 44° 34' 18"
Jefferson County

Longitude: 121° 38' 17"
Datum: 2,780 feet

Hydrologic Unit Code: 17070301
Drainage Area: 27.8 square miles



14090400 WHITEWATER RIVER NEAR CAMP SHERMAN, OR

LOCATION.--Lat 44°43'09", long 121°38'21", in SW 1/4 NW 1/4 sec.11, T.10 S., R.9 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, on left bank 300 ft upstream from road J-100 bridge, 18 mi north of Camp Sherman, and at mile 7.5.

DRAINAGE AREA.--22.8 mi².

PERIOD OF RECORD.--July 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 3,240 ft above NGVD of 1929, from topographic map. July 1982 to Feb. 7, 1996, at comparable site 1/4 mi downstream, at different datum. Feb. 8, 1996 to Sept. 30, 2001, at comparable site 300 ft downstream, at different datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--22 years (water years 1983-2004), 84.5 ft³/s, 50.38 in/yr, 61,250 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,320 ft³/s Feb. 7, 1996, from slope-area measurement of peak flow, gage height, unknown; maximum gage height, 8.30 ft Feb. 9, 1996, from outside highwater mark caused by debris, channel fill, and channel reconfiguration, datum then in use; minimum daily discharge, 28 ft³/s Dec. 22, 1990, but could be less because of ice effect.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft³/s and maximum (*):

| Date | Time | Discharge (ft ³ /s) | Gage height (ft) | Date | Time | Discharge (ft ³ /s) | Gage height (ft) |
|--------|------|--------------------------------|------------------|--|------|--------------------------------|------------------|
| Dec 13 | 1300 | *238 | *5.86 | | | | |
| | | | | No other peak greater than base discharge. | | | |

Minimum discharge, 38 ft³/s, Nov. 1.

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 | 50 | 40 | 67 | 52 | 94 | 55 | 75 | 88 | 103 | 113 | 86 | 76 |
| 2 | 52 | 42 | 63 | 50 | 90 | 54 | 74 | 96 | 102 | 109 | 85 | 64 |
| 3 | 51 | 42 | 68 | 50 | 86 | 54 | 74 | 106 | 107 | 110 | 78 | 60 |
| 4 | 52 | 41 | 65 | 49 | 82 | 54 | 76 | 109 | 113 | 108 | 78 | 68 |
| 5 | 53 | 41 | 81 | 48 | 78 | 54 | 78 | 104 | 123 | 102 | 77 | 62 |
| 6 | 53 | 40 | 82 | e49 | 78 | 54 | 78 | 98 | 126 | 106 | 77 | 62 |
| 7 | 63 | 40 | 71 | e51 | 75 | 57 | 80 | 98 | 114 | 112 | 77 | 66 |
| 8 | 54 | 41 | 66 | 52 | 72 | 61 | 81 | 102 | 110 | 101 | 72 | 71 |
| 9 | 48 | 40 | 64 | 56 | 70 | 68 | 81 | 97 | 108 | 96 | 75 | 68 |
| 10 | 44 | 41 | 62 | 52 | 67 | 70 | 82 | 95 | 114 | 91 | 80 | 69 |
| 11 | 52 | 48 | 60 | 50 | 66 | 70 | 84 | 91 | 107 | 88 | 79 | 106 |
| 12 | 55 | 44 | 68 | 49 | 64 | 73 | 88 | 87 | 100 | 90 | 80 | 64 |
| 13 | 48 | 43 | 136 | 48 | 63 | 75 | 92 | 86 | 104 | 93 | 83 | 73 |
| 14 | 46 | 41 | 102 | 51 | 62 | 78 | 94 | 88 | 109 | 96 | 83 | 74 |
| 15 | 58 | 41 | 86 | 55 | 61 | 79 | 89 | 90 | 104 | 101 | 85 | 81 |
| 16 | 56 | 47 | 81 | 53 | 66 | 79 | 85 | 92 | 103 | 104 | 86 | 67 |
| 17 | 58 | 51 | 77 | 51 | 68 | 82 | 82 | 91 | 106 | 101 | 87 | 84 |
| 18 | 49 | 52 | 74 | 51 | 72 | 88 | 79 | 95 | 111 | 102 | 80 | 76 |
| 19 | 52 | 58 | 71 | 50 | 66 | 85 | 79 | 104 | 110 | 111 | 81 | 66 |
| 20 | 74 | 51 | 70 | 49 | 63 | 81 | 80 | 104 | 107 | 100 | 84 | 63 |
| 21 | 73 | 48 | 67 | 49 | 62 | 81 | 78 | 106 | 108 | 89 | 74 | 58 |
| 22 | 56 | 45 | 64 | 48 | 60 | 84 | 74 | 113 | 115 | 86 | 123 | 57 |
| 23 | 58 | 45 | 63 | 64 | 59 | 88 | 74 | 109 | 121 | 88 | 81 | 56 |
| 24 | 48 | 46 | 66 | 76 | 59 | 88 | 72 | 99 | 124 | 91 | 85 | 54 |
| 25 | 47 | 45 | 62 | 67 | 60 | 90 | 72 | 96 | 124 | 92 | 130 | 56 |
| 26 | 47 | 43 | 58 | 63 | 59 | 87 | 76 | 114 | 122 | 86 | 108 | 55 |
| 27 | 48 | 41 | 57 | 62 | 57 | 88 | 84 | 141 | 117 | 85 | 77 | 54 |
| 28 | 81 | 46 | 55 | 67 | 56 | 82 | 88 | 145 | 112 | 86 | 69 | 56 |
| 29 | 59 | 110 | 54 | 111 | 56 | 80 | 82 | 116 | 112 | 85 | 67 | 57 |
| 30 | 47 | 79 | 52 | 117 | --- | 81 | 83 | 108 | 115 | 83 | 67 | 53 |
| 31 | 43 | --- | 51 | 100 | --- | 79 | --- | 104 | --- | 84 | 71 | --- |
| TOTAL | 1,675 | 1,432 | 2,163 | 1,840 | 1,971 | 2,299 | 2,414 | 3,172 | 3,351 | 2,989 | 2,565 | 1,976 |
| MEAN | 54.0 | 47.7 | 69.8 | 59.4 | 68.0 | 74.2 | 80.5 | 102 | 112 | 96.4 | 82.7 | 65.9 |
| MAX | 81 | 110 | 136 | 117 | 94 | 90 | 94 | 145 | 126 | 113 | 130 | 106 |
| MIN | 43 | 40 | 51 | 48 | 56 | 54 | 72 | 86 | 100 | 83 | 67 | 53 |
| AC-FT | 3,320 | 2,840 | 4,290 | 3,650 | 3,910 | 4,560 | 4,790 | 6,290 | 6,650 | 5,930 | 5,090 | 3,920 |
| CFSM | 2.37 | 2.09 | 3.06 | 2.60 | 2.98 | 3.25 | 3.53 | 4.49 | 4.90 | 4.23 | 3.63 | 2.89 |
| IN. | 2.73 | 2.34 | 3.53 | 3.00 | 3.22 | 3.75 | 3.94 | 5.18 | 5.47 | 4.88 | 4.18 | 3.22 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MEAN | 52.9 | 66.4 | 72.7 | 79.4 | 87.9 | 79.5 | 93.1 | 111 | 123 | 104 | 83.1 | 62.5 |
| MAX | 93.4 | 124 | 174 | 220 | 329 | 147 | 148 | 188 | 206 | 155 | 163 | 96.6 |
| (WY) | (1998) | (2000) | (1996) | (1997) | (1996) | (1997) | (1997) | (1997) | (1999) | (1999) | (1999) | (1997) |
| MIN | 36.0 | 34.7 | 45.5 | 38.4 | 37.1 | 48.7 | 50.3 | 64.5 | 60.7 | 54.0 | 54.8 | 42.2 |
| (WY) | (1993) | (1994) | (1994) | (1993) | (1994) | (2001) | (1991) | (1991) | (1992) | (1992) | (1994) | (1994) |

DESCHUTES RIVER BASIN

14090400 WHITEWATER RIVER NEAR CAMP SHERMAN, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1983 - 2004 | |
|--------------------------|------------------------|--------|---------------------|--------|-------------------------|--------------|
| ANNUAL TOTAL | 27,785 | | 27,847 | | | |
| ANNUAL MEAN | 76.1 | | 76.1 | | 84.5 | |
| HIGHEST ANNUAL MEAN | | | | | 142 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 54.0 | 1994 |
| HIGHEST DAILY MEAN | 383 | Jan 31 | 145 | May 28 | 1,400 | Feb 7, 1996 |
| LOWEST DAILY MEAN | 40 | Nov 1 | 40 | Nov 1 | 28 | Dec 22, 1990 |
| ANNUAL SEVEN-DAY MINIMUM | 41 | Nov 4 | 41 | Nov 4 | 31 | Oct 19, 1994 |
| ANNUAL RUNOFF (AC-FT) | 55,110 | | 55,230 | | 61,250 | |
| ANNUAL RUNOFF (CFSM) | 3.34 | | 3.34 | | 3.71 | |
| ANNUAL RUNOFF (INCHES) | 45.33 | | 45.43 | | 50.38 | |
| 10 PERCENT EXCEEDS | 105 | | 108 | | 136 | |
| 50 PERCENT EXCEEDS | 70 | | 75 | | 74 | |
| 90 PERCENT EXCEEDS | 48 | | 48 | | 44 | |

e Estimated



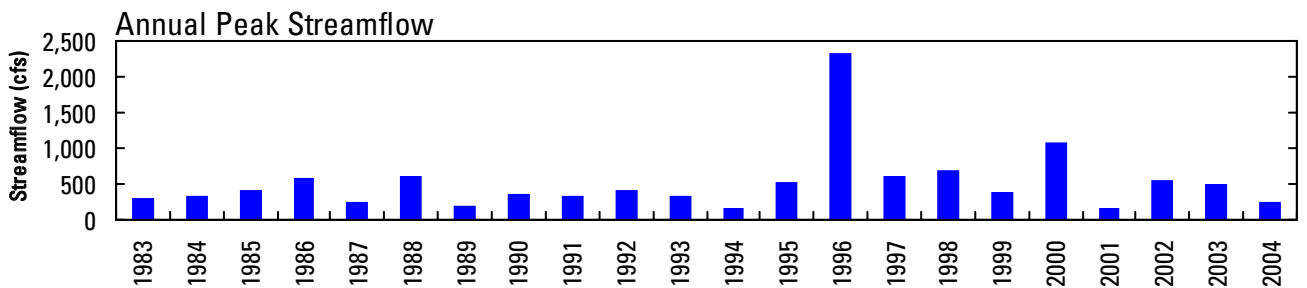
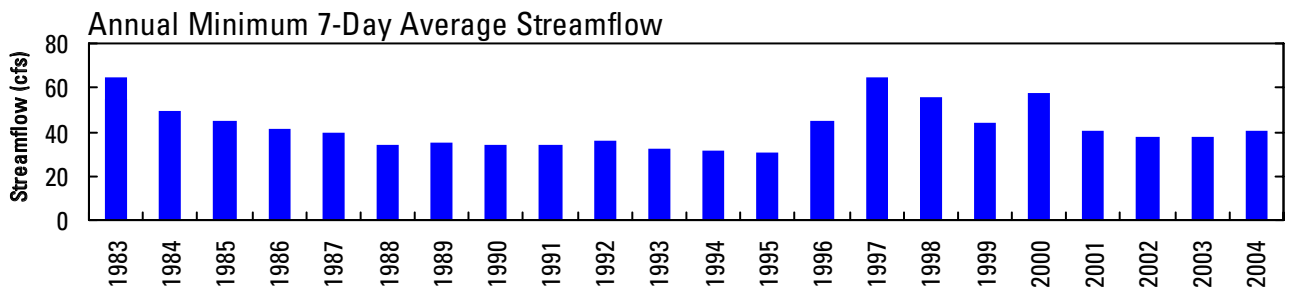
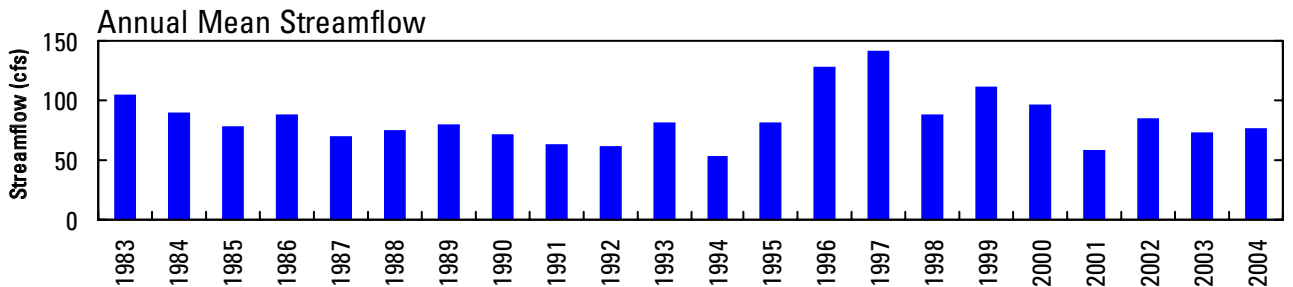
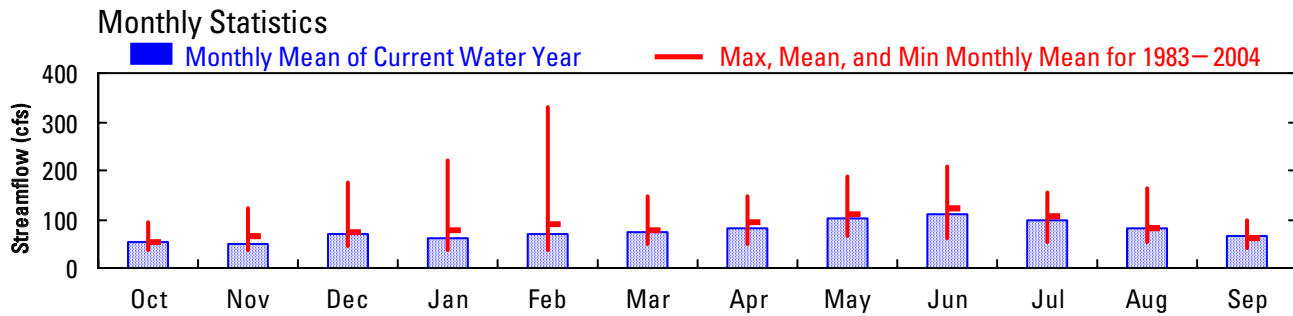
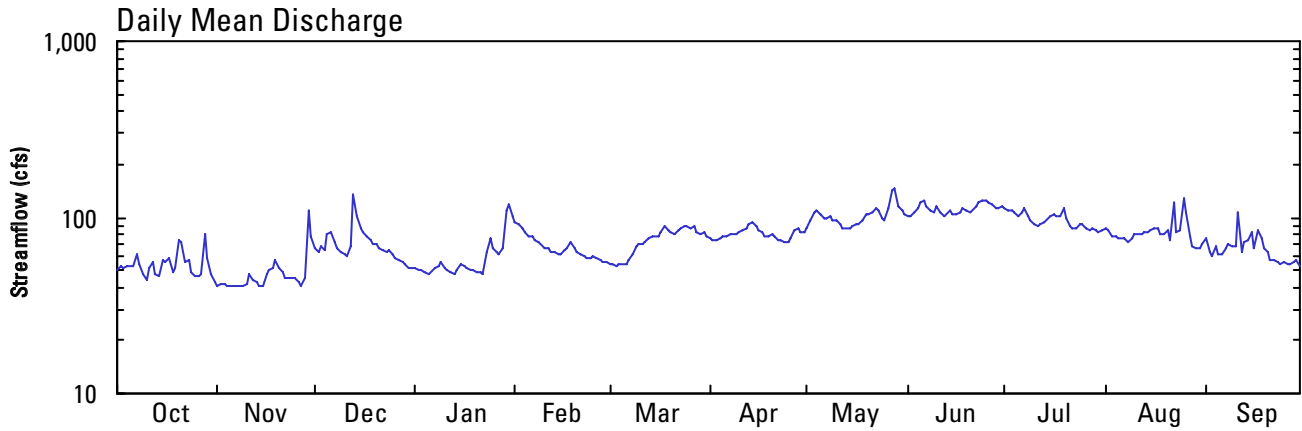
2004 Water Year
DESCHUTES RIVER BASIN

14090400 WHITEWATER RIVER NEAR CAMP SHERMAN, OR

Latitude: 44° 43 ' 09"
Jefferson County

Longitude: 121° 38 ' 21"
Datum: 3,240 feet

Hydrologic Unit Code: 17070301
Drainage Area: 22.8 square miles



14091500 METOLIUS RIVER NEAR GRANDVIEW, OR

LOCATION.--Lat 44°37'35", long 121°28'58", in SE ¼ SW ¼ sec.12, T.11 S., R.10 E., Jefferson County, Hydrologic Unit 17070301, Deschutes National Forest, on right bank 1.0 mi upstream from maximum controlled pool of Lake Billy Chinook, 9 mi northwest of Grandview, and at mile 13.6.

DRAINAGE AREA.--316 mi², at cableway 1.0 mi downstream, where all discharge measurements are made. Hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--April 1910 to February 1912 (gage heights and discharge measurements only), March 1912 to December 1913, October 1921 to current year. Published as "at Hubbard's ranch, near Sisters" 1910, and as "at Hubbard's ranch, near Grandview" 1910-13.

REVISED RECORDS.--WSP 1448: 1913.

GAGE.--Water-stage recorder. Datum of gage is 1,974.36 ft above NGVD of 1929 (levels by Portland General Electric Co.). Prior to Dec. 31, 1913, nonrecording gage at site 2.3 mi upstream at different datum. Oct. 1, 1921 to May 3, 1949, nonrecording gage and May 4, 1949 to June 18, 1963, water-stage recorder at site 2.7 mi downstream at datum 64 ft lower.

REMARKS.--Records good. No regulation. Many small diversions for irrigation upstream from station. Stream is spring fed. Records herein are for measuring site. Continuous water-quality records for the period October 1954 to September 1974 have been collected at this location.

AVERAGE DISCHARGE.--84 years (water years 1913, 1922-2004), 1,497 ft³/s, 1,084,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,430 ft³/s Feb. 7, 1996, gage height, 7.38 ft; minimum discharge, 1,080 ft³/s Feb. 17, 1932, Oct. 2-31, Nov. 6, 7, 10-14, 1942.

EXTREMES FOR CURRENT YEAR.--Maximum recorded discharge, 1,960 ft³/s Jan. 30, gage height, 1.76 ft, but may have been higher Dec. 13 during period of missing record; minimum discharge, 1,220 ft³/s Nov. 1.

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 | 1,270 | 1,240 | 1,330 | 1,380 | 1,680 | 1,520 | 1,620 | 1,630 | 1,600 | 1,540 | 1,420 | 1,370 |
| 2 | 1,270 | 1,250 | 1,300 | 1,360 | 1,650 | 1,510 | 1,600 | 1,680 | 1,590 | 1,520 | 1,420 | 1,350 |
| 3 | 1,270 | 1,250 | 1,320 | 1,350 | 1,620 | 1,520 | 1,590 | 1,750 | 1,600 | 1,520 | 1,410 | 1,350 |
| 4 | 1,270 | 1,240 | 1,300 | 1,350 | 1,580 | 1,520 | 1,620 | 1,770 | 1,620 | 1,520 | 1,410 | 1,340 |
| 5 | 1,270 | 1,240 | 1,350 | 1,320 | 1,550 | 1,510 | 1,650 | 1,720 | 1,650 | 1,500 | 1,410 | 1,340 |
| 6 | 1,270 | 1,240 | 1,390 | 1,300 | 1,550 | 1,510 | 1,660 | 1,670 | 1,690 | 1,490 | 1,400 | 1,330 |
| 7 | 1,280 | 1,240 | 1,350 | 1,310 | 1,540 | 1,510 | 1,680 | 1,640 | 1,660 | 1,510 | 1,410 | 1,330 |
| 8 | 1,270 | 1,240 | 1,320 | 1,360 | 1,510 | 1,560 | 1,690 | 1,660 | 1,630 | 1,490 | 1,390 | 1,330 |
| 9 | 1,270 | 1,240 | 1,310 | 1,400 | 1,490 | 1,600 | 1,680 | 1,630 | 1,620 | 1,480 | 1,380 | 1,330 |
| 10 | 1,260 | 1,240 | 1,310 | 1,370 | 1,480 | 1,620 | 1,680 | 1,620 | 1,630 | 1,470 | 1,390 | 1,330 |
| 11 | 1,270 | 1,260 | 1,300 | 1,360 | 1,460 | 1,610 | 1,700 | 1,610 | 1,610 | 1,460 | 1,390 | 1,370 |
| 12 | 1,300 | 1,250 | 1,330 | 1,360 | 1,450 | 1,610 | 1,730 | 1,590 | 1,580 | 1,460 | 1,390 | 1,340 |
| 13 | 1,270 | 1,250 | e1,700 | 1,350 | 1,440 | 1,620 | 1,770 | 1,570 | 1,570 | 1,460 | 1,390 | 1,350 |
| 14 | 1,260 | 1,240 | e1,700 | 1,360 | 1,440 | 1,620 | 1,770 | 1,570 | 1,580 | 1,460 | 1,390 | 1,380 |
| 15 | 1,280 | 1,240 | 1,540 | 1,380 | 1,440 | 1,650 | 1,730 | 1,590 | 1,570 | 1,470 | 1,390 | 1,360 |
| 16 | 1,280 | 1,260 | 1,490 | 1,380 | 1,500 | 1,660 | 1,670 | 1,580 | 1,560 | 1,470 | 1,390 | 1,350 |
| 17 | 1,270 | 1,290 | 1,470 | 1,370 | 1,570 | 1,670 | 1,640 | 1,590 | 1,550 | 1,460 | 1,380 | 1,360 |
| 18 | 1,260 | 1,280 | 1,450 | 1,370 | 1,630 | 1,700 | 1,620 | 1,620 | 1,560 | 1,460 | 1,380 | 1,380 |
| 19 | 1,260 | 1,290 | 1,440 | 1,370 | 1,600 | 1,720 | 1,610 | 1,670 | 1,560 | 1,480 | 1,380 | 1,350 |
| 20 | 1,280 | 1,280 | 1,430 | 1,370 | 1,560 | 1,670 | 1,640 | 1,610 | 1,550 | 1,460 | 1,380 | 1,340 |
| 21 | 1,290 | 1,260 | 1,420 | 1,360 | 1,540 | 1,670 | 1,630 | 1,600 | 1,550 | 1,450 | 1,370 | 1,330 |
| 22 | 1,270 | 1,250 | 1,410 | 1,360 | 1,520 | 1,710 | 1,590 | 1,630 | 1,560 | 1,440 | 1,450 | 1,320 |
| 23 | 1,270 | 1,250 | 1,400 | 1,400 | 1,510 | 1,750 | 1,570 | 1,640 | 1,580 | 1,440 | 1,410 | 1,320 |
| 24 | 1,260 | 1,250 | 1,420 | 1,510 | 1,520 | 1,770 | 1,550 | 1,580 | 1,580 | 1,440 | 1,390 | 1,310 |
| 25 | 1,250 | 1,260 | 1,400 | 1,450 | 1,530 | 1,750 | 1,540 | 1,560 | 1,590 | 1,440 | 1,470 | 1,310 |
| 26 | 1,250 | 1,260 | 1,380 | 1,430 | 1,530 | 1,730 | 1,560 | 1,610 | 1,580 | 1,430 | 1,460 | 1,310 |
| 27 | 1,250 | 1,250 | 1,380 | 1,430 | 1,520 | 1,720 | 1,600 | 1,730 | 1,560 | 1,420 | 1,400 | 1,310 |
| 28 | 1,270 | 1,250 | 1,390 | 1,460 | 1,500 | 1,670 | 1,640 | 1,840 | 1,550 | 1,420 | 1,370 | 1,310 |
| 29 | 1,270 | 1,440 | 1,390 | 1,720 | 1,500 | 1,660 | 1,610 | 1,690 | 1,550 | 1,420 | 1,370 | 1,310 |
| 30 | 1,260 | 1,370 | 1,360 | 1,910 | --- | 1,680 | 1,610 | 1,630 | 1,540 | 1,420 | 1,360 | 1,300 |
| 31 | 1,250 | --- | 1,370 | 1,760 | --- | 1,650 | --- | 1,610 | --- | 1,410 | 1,360 | --- |
| TOTAL | 39,320 | 37,900 | 43,450 | 43,960 | 44,410 | 50,670 | 49,250 | 50,890 | 47,620 | 45,410 | 43,310 | 40,110 |
| MEAN | 1,268 | 1,263 | 1,402 | 1,418 | 1,531 | 1,635 | 1,642 | 1,642 | 1,587 | 1,465 | 1,397 | 1,337 |
| MAX | 1,300 | 1,440 | 1,700 | 1,910 | 1,680 | 1,770 | 1,770 | 1,840 | 1,690 | 1,540 | 1,470 | 1,380 |
| MIN | 1,250 | 1,240 | 1,300 | 1,300 | 1,440 | 1,510 | 1,540 | 1,560 | 1,540 | 1,410 | 1,360 | 1,300 |
| AC-FT | 77,990 | 75,170 | 86,180 | 87,190 | 88,090 | 100,500 | 97,690 | 100,900 | 94,450 | 90,070 | 85,910 | 79,560 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MEAN | 1,350 | 1,398 | 1,486 | 1,522 | 1,570 | 1,544 | 1,559 | 1,610 | 1,630 | 1,516 | 1,419 | 1,368 |
| MAX | 1,690 | 1,816 | 2,454 | 2,512 | 2,997 | 2,504 | 2,040 | 2,099 | 2,163 | 1,995 | 1,854 | 1,678 |
| (WY) | (1998) | (1922) | (1965) | (1997) | (1996) | (1972) | (1997) | (1997) | (1999) | (1999) | (1999) | (1999) |
| MIN | 1,081 | 1,140 | 1,110 | 1,154 | 1,148 | 1,157 | 1,162 | 1,244 | 1,196 | 1,173 | 1,136 | 1,103 |
| (WY) | (1943) | (1940) | (1945) | (1979) | (1941) | (1941) | (1941) | (1941) | (1941) | (1941) | (1931) | (1942) |

14091500 METOLIUS RIVER NEAR GRANDVIEW, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1913 - 2004 | |
|--------------------------|------------------------|--------|---------------------|--------|-------------------------|--------------|
| ANNUAL TOTAL | 512,590 | | 536,300 | | | |
| ANNUAL MEAN | 1,404 | | 1,465 | | 1,497 | |
| HIGHEST ANNUAL MEAN | | | | | 1,949 | |
| LOWEST ANNUAL MEAN | | | | | 1,167 | |
| HIGHEST DAILY MEAN | 2,540 | Jan 31 | 1,910 | Jan 30 | 7,100 | Dec 24, 1964 |
| LOWEST DAILY MEAN | 1,240 | Nov 1 | 1,240 | Nov 1 | 1,080 | Feb 17, 1932 |
| ANNUAL SEVEN-DAY MINIMUM | 1,240 | Nov 4 | 1,240 | Nov 4 | 1,080 | Oct 2, 1942 |
| ANNUAL RUNOFF (AC-FT) | 1,017,000 | | 1,064,000 | | 1,084,000 | |
| 10 PERCENT EXCEEDS | 1,550 | | 1,670 | | 1,800 | |
| 50 PERCENT EXCEEDS | 1,380 | | 1,450 | | 1,450 | |
| 90 PERCENT EXCEEDS | 1,270 | | 1,270 | | 1,230 | |

e Estimated



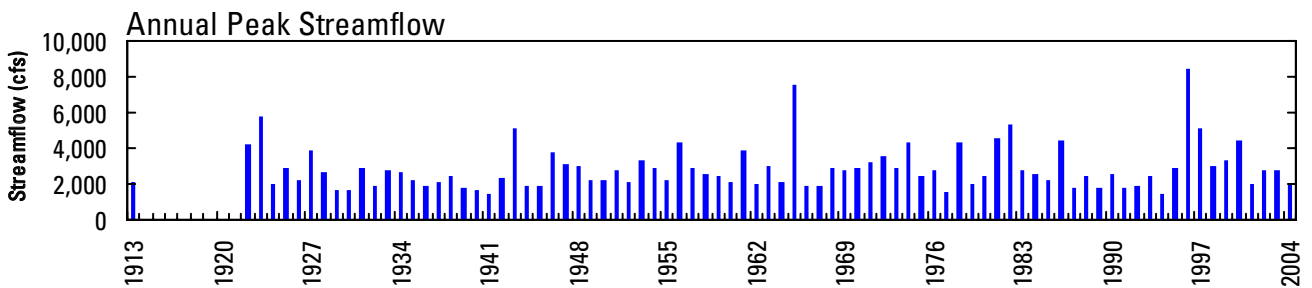
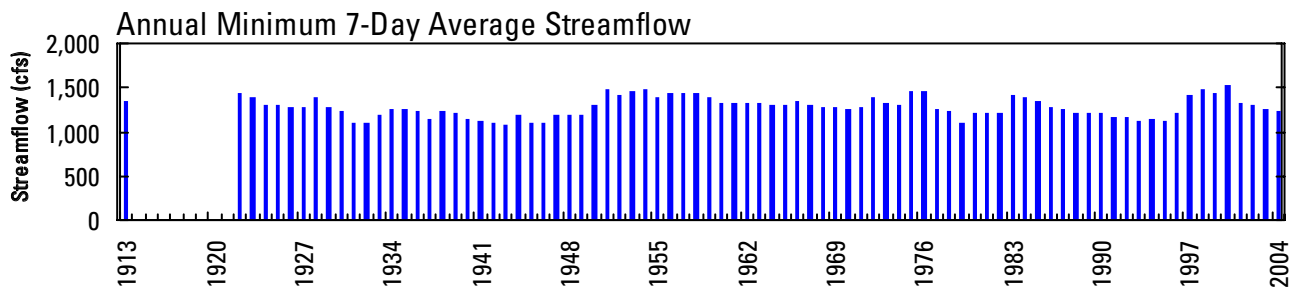
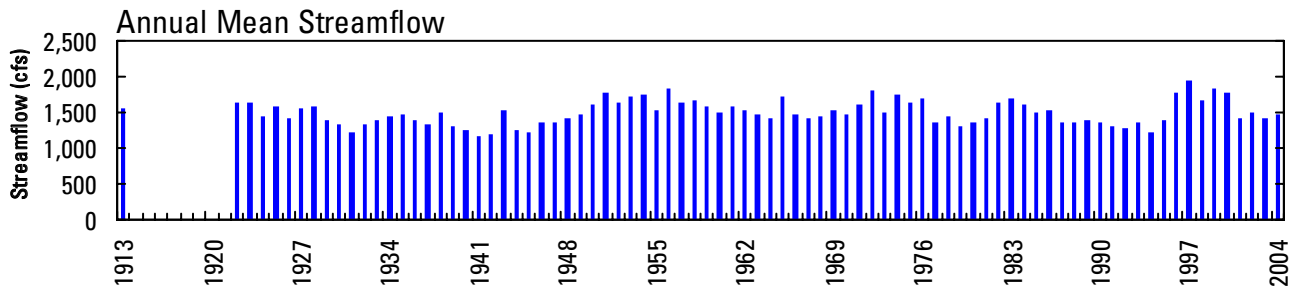
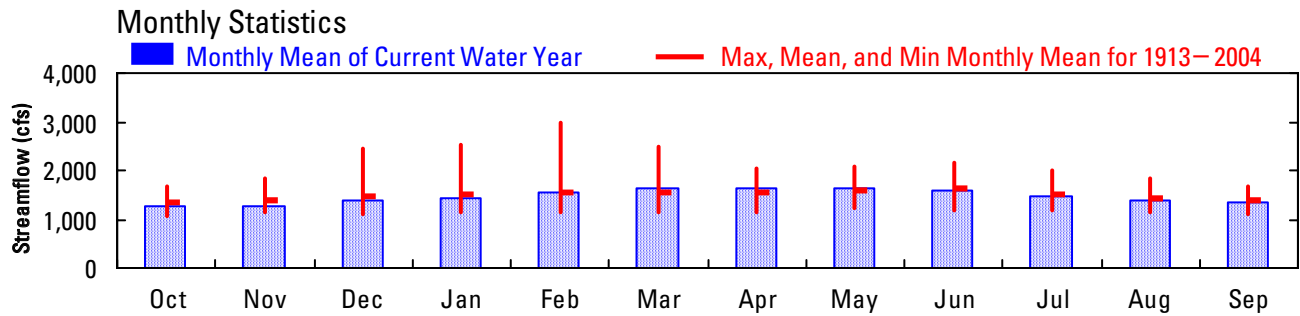
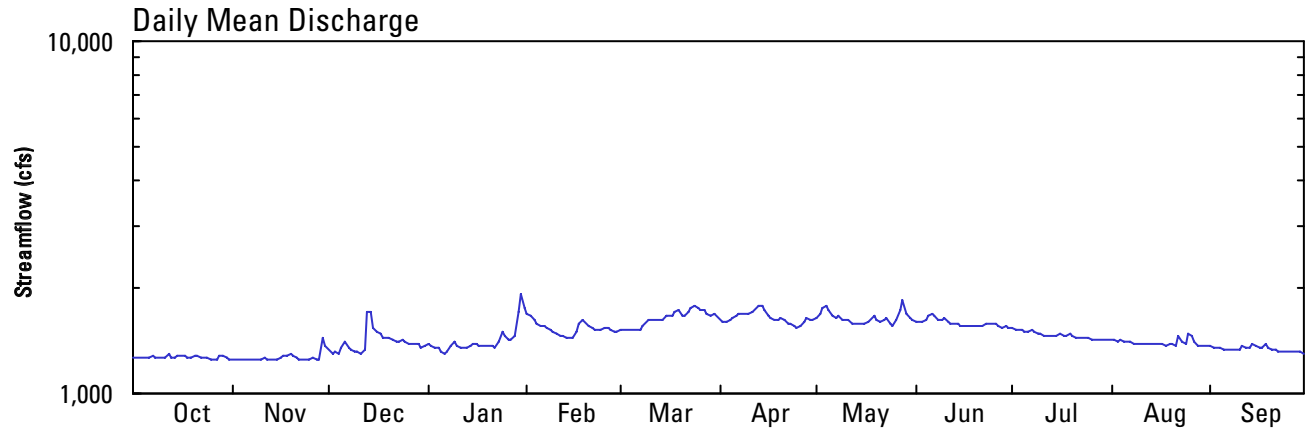
2004 Water Year
DESCHUTES RIVER BASIN

14091500 METOLIUS RIVER NEAR GRANDVIEW, OR

Latitude: 44° 37' 35"
Jefferson County

Longitude: 121° 28' 58"
Datum: 1,974.36 feet

Hydrologic Unit Code: 17070301
Drainage Area: 316 square miles



14092100 LAKE BILLY CHINOOK NEAR METOLIUS, OR

LOCATION.--Lat 44°36'14", long 121°16'40", in SW ¼ NE ¼ sec.22, T.11 S., R.12 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, near left end of Round Butte Dam on Deschutes River, 5.0 mi west of Metolius, and at mile 110.6.

DRAINAGE AREA.--7,490 mi², approximately.

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Nonrecording gage. Datum of gage is NGVD of 1929 (levels by Portland General Electric Co.).

REMARKS.--Reservoir is formed by rock fill dam completed in June 1964 by Portland General Electric Co.; storage began Jan. 2, 1964. Total capacity is 534,700 acre-ft at elevation 1,945.0 ft proposed upper limit of operation, and usable capacity is 273,900 acre-ft between elevations 1,860.0 ft, proposed lower limit of operation, and 1,945.0 ft. Reservoir used for power generation under FERC license 2030. Figures given herein represent total contents.

COOPERATION.--Gage readings and capacity tables furnished by Portland General Electric Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 538,700 acre-ft July 15, 16, 1972, elevation, 1,946.00 ft; minimum contents observed since first filling, 431,100 acre-ft Feb. 13, 1972, elevation, 1,917.13 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 535,000 acre-ft Oct. 13, elevation, 1,945.06 ft; minimum contents observed, 502,400 acre-ft Jan. 12, elevation, 1,936.61 ft.

MONTH END ELEVATION AND CONTENTS AT 2400
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

| Date | Elevation (feet) | Contents (acre-feet) | Change in contents (acre-feet) |
|-------------|---------------------|-------------------------|-----------------------------------|
| Sept.30 | 1,944.25 | 531,800 | - |
| Oct. 31 | 1,943.96 | 530,600 | -1,200 |
| Nov. 30 | 1,944.36 | 532,200 | +1,600 |
| Dec. 31 | 1,941.48 | 520,900 | -11,300 |
| CAL YR 2003 | - | - | -3,800 |
| Jan. 31 | 1,937.67 | 506,400 | -14,500 |
| Feb. 29 | 1,938.31 | 508,800 | +2,400 |
| Mar. 31 | 1,941.82 | 522,300 | +13,500 |
| Apr. 30 | 1,944.03 | 530,900 | +8,600 |
| May 31 | 1,944.24 | 531,700 | +800 |
| June 30 | 1,944.18 | 531,500 | -200 |
| July 31 | 1,944.17 | 531,400 | -100 |
| Aug. 31 | 1,944.27 | 531,800 | +400 |
| Sept.30 | 1,944.12 | 531,200 | -600 |
| WTR YR 2004 | - | - | -600 |

14092500 DESCHUTES RIVER NEAR MADRAS, OR

LOCATION.--Lat 44°43'34", long 121°14'45", in SE ¼ SW ¼ sec.1, T.10 S., R.12 E., Jefferson County, Hydrologic Unit 17070306, on right bank 400 ft downstream from reregulating dam, 2.7 mi downstream from Pelton Dam, 8.5 mi northwest of Madras, and at mile 100.1.

DRAINAGE AREA.--7,820 mi², approximately.

PERIOD OF RECORD.--December 1923 to current year.

REVISED RECORDS.--WSP 1398: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,390.25 ft above NGVD of 1929 (levels by Portland General Electric Co.). See WSP 1738 for history of changes prior to Nov. 23, 1957.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuation caused by Lake Simtustus and reregulating reservoir since 1957, combined capacity for normal operation, 6,500 acre-ft. Some winter and spring runoff stored in Ochoco Reservoir, capacity, 47,500 acre-ft, in Crescent Lake, Crane Prairie and Wickiup Reservoirs, combined capacity, 354,600 acre-ft, and since 1960, in Prineville Reservoir, capacity, 152,800 acre-ft, and since 1964, in Lake Billy Chinook, capacity, 534,700 acre-ft. Large diversions in upper basin for irrigation. Continuous water-quality records for the period October 1978 to September 1988 have been collected at this location.

AVERAGE DISCHARGE.--19 years (water years 1924-1942), 4,112 ft³/s, 2,979,000 acre-ft/yr. 62 years (water years 1943-2004), 4,685 ft³/s, 3,394,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft³/s July 16, 1983, accidental release from Pelton Dam, gage height, 7.70 ft, from floodmarks; minimum discharge, 916 ft³/s July 4, 1982, caused by power company testing control gates on dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,680 ft³/s Mar. 21, gage height, 3.85 ft; minimum discharge, 3,640 ft³/s Oct. 1, 4, 5, 7, 8.

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 | 3,700 | 4,400 | 4,690 | 4,840 | 5,240 | 4,700 | 5,680 | 4,440 | 4,970 | 4,060 | 3,820 | 4,080 |
| 2 | 3,700 | 4,050 | 4,690 | 4,830 | 5,110 | 4,830 | 5,680 | 4,570 | 4,580 | 4,070 | 3,820 | 3,960 |
| 3 | 3,700 | 4,050 | 4,570 | 4,890 | 5,110 | 4,830 | 5,390 | 4,570 | 4,440 | 4,070 | 3,830 | 3,950 |
| 4 | 3,700 | 4,060 | 4,570 | 5,680 | 5,100 | 4,710 | 5,390 | 4,580 | 4,320 | 4,060 | 3,830 | 3,950 |
| 5 | 3,690 | 4,060 | 4,560 | 5,700 | 4,970 | 4,710 | 5,260 | 4,580 | 4,190 | 4,070 | 3,830 | 3,950 |
| 6 | 3,700 | 4,060 | 4,570 | 5,690 | 4,700 | 4,710 | 5,250 | 4,320 | 4,200 | 3,940 | 3,830 | 3,950 |
| 7 | 3,700 | 4,050 | 4,690 | 5,680 | 4,700 | 4,710 | 5,390 | 4,320 | 4,200 | 3,950 | 3,830 | 3,950 |
| 8 | 3,700 | 4,050 | 4,700 | 5,380 | 4,710 | 4,710 | 5,380 | 4,190 | 4,320 | 3,820 | 3,820 | 3,820 |
| 9 | 3,820 | 4,050 | 4,690 | 5,100 | 4,680 | 4,710 | 5,390 | 4,190 | 4,320 | 3,830 | 3,830 | 3,830 |
| 10 | 3,820 | 4,060 | 4,690 | 4,850 | 4,360 | 4,710 | 5,390 | 4,070 | 4,330 | 3,830 | 3,830 | 3,820 |
| 11 | 3,820 | 4,060 | 4,690 | 4,580 | 4,320 | 4,830 | 5,390 | 3,950 | 4,320 | 3,820 | 3,820 | 3,830 |
| 12 | 3,940 | 4,180 | 4,700 | 4,180 | 4,310 | 4,840 | 5,370 | 3,940 | 4,320 | 3,820 | 3,820 | 3,830 |
| 13 | 4,150 | 4,190 | 4,580 | 4,060 | 4,190 | 4,840 | 4,860 | 3,930 | 4,320 | 3,820 | 3,820 | 3,830 |
| 14 | 4,190 | 4,170 | 4,950 | 4,070 | 4,190 | 4,840 | 4,590 | 3,940 | 4,320 | 3,940 | 3,830 | 3,830 |
| 15 | 4,190 | 4,190 | 4,960 | 4,180 | 4,190 | 4,830 | 4,570 | 4,060 | 4,200 | 3,940 | 3,820 | 3,830 |
| 16 | 4,430 | 4,190 | 4,960 | 4,310 | 4,060 | 5,100 | 4,570 | 4,060 | 4,200 | 3,940 | 3,820 | 3,950 |
| 17 | 4,430 | 4,190 | 4,830 | 4,310 | 4,910 | 5,340 | 4,570 | 4,070 | 4,070 | 3,930 | 3,820 | 3,950 |
| 18 | 4,310 | 4,280 | 4,830 | 4,430 | 5,110 | 6,200 | 4,580 | 4,070 | 4,070 | 3,940 | 3,820 | 3,950 |
| 19 | 4,320 | 4,200 | 4,830 | 4,440 | 5,250 | 6,420 | 4,580 | 4,190 | 4,070 | 3,820 | 3,940 | 3,950 |
| 20 | 4,190 | 3,940 | 4,700 | 4,430 | 5,110 | 6,420 | 4,570 | 4,440 | 4,070 | 3,820 | 3,940 | 3,950 |
| 21 | 4,060 | 3,940 | 4,700 | 4,440 | 5,100 | 6,570 | 4,570 | 4,520 | 4,070 | 3,940 | 3,950 | 3,950 |
| 22 | 4,070 | 3,940 | 4,560 | 4,310 | 4,840 | 6,570 | 4,570 | 4,710 | 4,070 | 4,060 | 3,940 | 3,950 |
| 23 | 4,070 | 3,930 | 4,430 | 4,310 | 4,580 | 6,590 | 4,570 | 4,720 | 4,060 | 4,060 | 3,960 | 3,940 |
| 24 | 4,060 | 4,050 | 4,430 | 4,310 | 4,570 | 6,430 | 4,570 | 4,710 | 4,060 | 4,060 | 3,960 | 3,950 |
| 25 | 4,060 | 4,300 | 4,560 | 4,430 | 4,570 | 6,280 | 4,440 | 4,710 | 4,070 | 3,940 | 3,950 | 3,950 |
| 26 | 4,060 | 4,300 | 4,570 | 4,570 | 4,570 | 6,120 | 4,440 | 4,580 | 4,070 | 3,940 | 4,070 | 3,950 |
| 27 | 4,060 | 4,300 | 4,570 | 4,570 | 4,570 | 6,120 | 4,440 | 4,590 | 4,060 | 3,830 | 4,070 | 3,950 |
| 28 | 4,100 | 4,310 | 4,570 | 4,580 | 4,570 | 6,120 | 4,440 | 4,930 | 4,070 | 3,830 | 4,070 | 3,830 |
| 29 | 4,500 | 4,310 | 4,620 | 4,630 | 4,580 | 6,120 | 4,440 | 5,260 | 3,950 | 3,820 | 4,070 | 3,820 |
| 30 | 4,910 | 4,420 | 4,850 | 5,160 | --- | 6,120 | 4,430 | 5,260 | 3,940 | 3,820 | 4,070 | 3,820 |
| 31 | 4,900 | --- | 4,840 | 5,250 | --- | 5,870 | --- | 5,120 | --- | 3,820 | 4,060 | --- |
| TOTAL | 126,050 | 124,280 | 145,150 | 146,190 | 136,270 | 169,900 | 146,760 | 137,590 | 126,250 | 121,610 | 120,890 | 117,270 |
| MEAN | 4,066 | 4,143 | 4,682 | 4,716 | 4,699 | 5,481 | 4,892 | 4,438 | 4,208 | 3,923 | 3,900 | 3,909 |
| MAX | 4,910 | 4,420 | 4,960 | 5,700 | 5,250 | 6,590 | 5,680 | 5,260 | 4,970 | 4,070 | 4,070 | 4,080 |
| MIN | 3,690 | 3,930 | 4,430 | 4,060 | 4,060 | 4,700 | 4,430 | 3,930 | 3,940 | 3,820 | 3,820 | 3,820 |
| AC-FT | 250,000 | 246,500 | 287,900 | 290,000 | 270,300 | 337,000 | 291,100 | 272,900 | 250,400 | 241,200 | 239,800 | 232,600 |

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

| | | | | | | | | | | | | |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MEAN | 4,155 | 4,618 | 5,024 | 5,241 | 5,476 | 5,587 | 5,362 | 4,567 | 4,355 | 4,014 | 3,923 | 3,956 |
| MAX | 5,410 | 6,124 | 7,253 | 9,600 | 8,974 | 9,590 | 8,988 | 6,949 | 5,899 | 4,863 | 4,718 | 4,911 |
| (WY) | (1998) | (1985) | (1997) | (1997) | (1996) | (1972) | (1984) | (1956) | (1998) | (1999) | (1976) | (1997) |
| MIN | 3,085 | 3,521 | 3,818 | 3,305 | 3,094 | 3,455 | 3,602 | 3,503 | 3,492 | 3,059 | 3,064 | 3,081 |
| (WY) | (1965) | (1965) | (1945) | (1964) | (1964) | (1964) | (1968) | (1944) | (1964) | (1964) | (1964) | (1964) |

14092500 DESCHUTES RIVER NEAR MADRAS, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1943 - 2004 | |
|--------------------------|------------------------|--------|---------------------|--------|-------------------------|--------------|
| ANNUAL TOTAL | 1,509,980 | | 1,618,210 | | 4,685 | |
| ANNUAL MEAN | 4,137 | | 4,421 | | 5,980 | |
| HIGHEST ANNUAL MEAN | | | | | 1997 | |
| LOWEST ANNUAL MEAN | | | | | 1964 | |
| HIGHEST DAILY MEAN | 6,260 | Feb 1 | 6,590 | Mar 23 | 17,800 | Feb 8, 1996 |
| LOWEST DAILY MEAN | 3,570 | Jul 11 | 3,690 | Oct 5 | 2,440 | Dec 3, 1957 |
| ANNUAL SEVEN-DAY MINIMUM | 3,580 | Sep 1 | 3,700 | Oct 1 | 2,590 | Nov 30, 1957 |
| ANNUAL RUNOFF (AC-FT) | 2,995,000 | | 3,210,000 | | 3,394,000 | |
| 10 PERCENT EXCEEDS | 4,690 | | 5,240 | | 6,120 | |
| 50 PERCENT EXCEEDS | 4,060 | | 4,310 | | 4,350 | |
| 90 PERCENT EXCEEDS | 3,690 | | 3,830 | | 3,670 | |



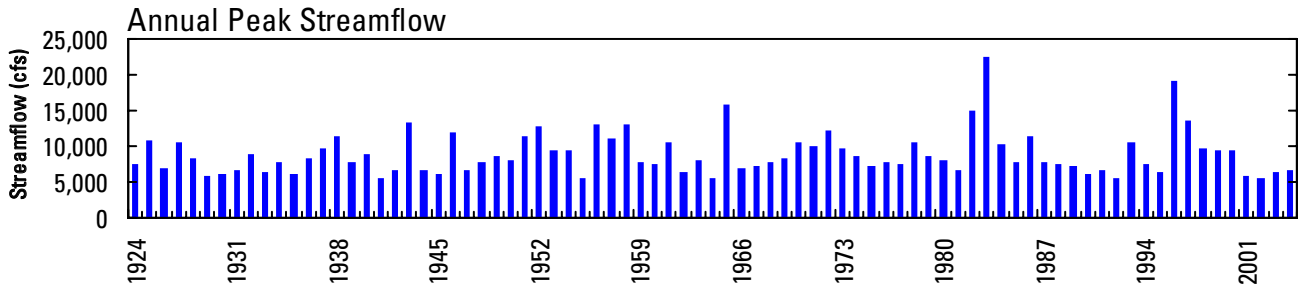
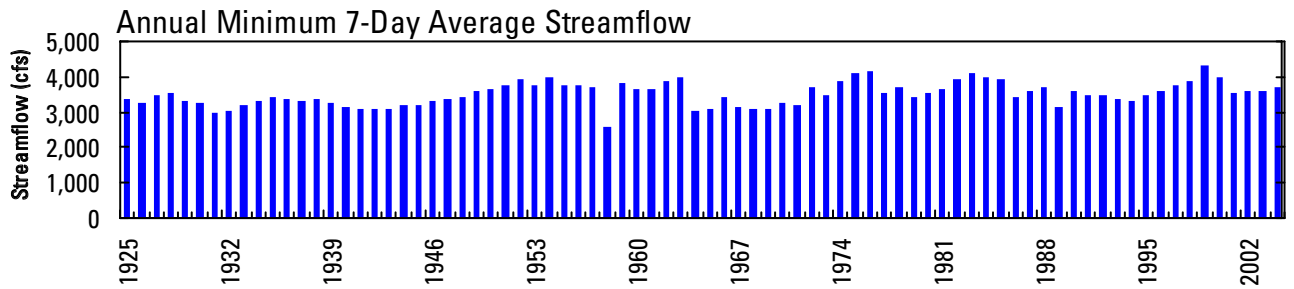
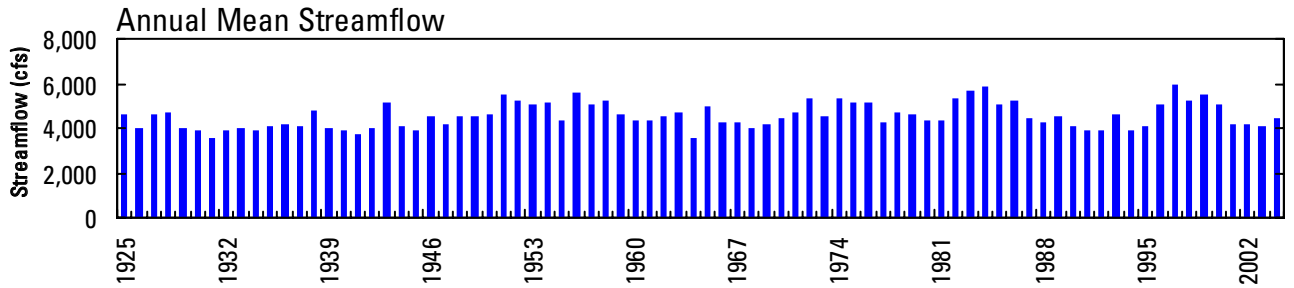
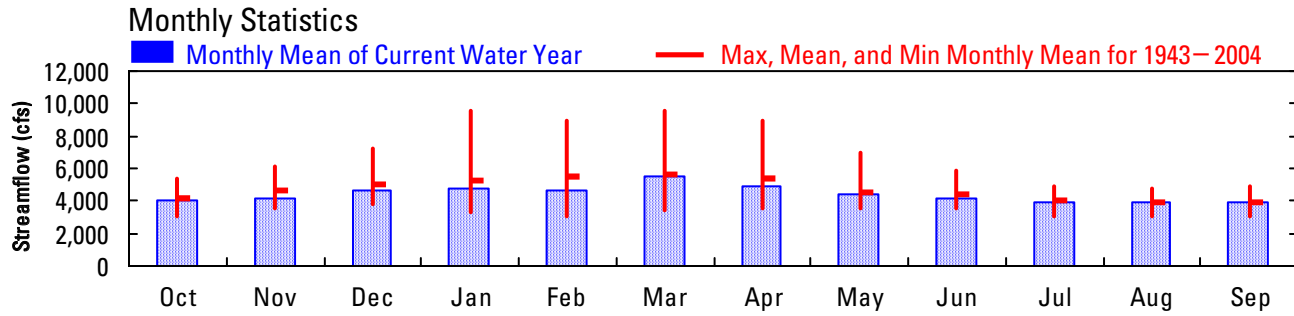
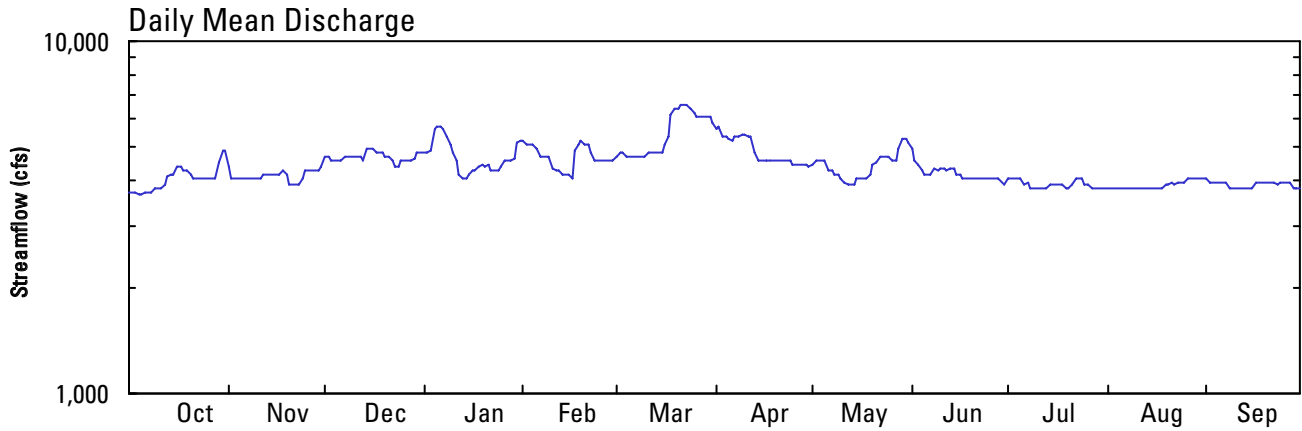
2004 Water Year
DESCHUTES RIVER BASIN

14092500 DESCHUTES RIVER NEAR MADRAS, OR

Latitude: 44° 43 ' 34"
Jefferson County

Longitude: 121° 14 ' 45"
Datum: 1,390.25 feet

Hydrologic Unit Code: 17070306
Drainage Area: 7,820 square miles



14092750 SHITIKE CREEK AT PETERS PASTURE, NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°45'02", long 121°37'56", in NW ¼ NE ¼ sec.35, T.9 S., R.9 E., Jefferson County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on left bank 0.5 mi downstream from Peters Pasture, and 18 mi west of town of Warm Springs, and at mile 26.4.

DRAINAGE AREA.--22.9 mi².

PERIOD OF RECORD.--July 1982 to current year.

REVISED RECORDS.--WDR OR-96-1: 1983, 1985, 1986, 1988, 1990, 1995.

GAGE.--Water-stage recorder. Elevation of gage is 3,580 ft, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--22 years (water years 1983-2004), 77.7 ft³/s, 46.12 in/yr, 56,310 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,430 ft³/s Feb. 7, 1996, gage height, 6.66 ft, from rating curve extended above 800 ft³/s on basis of slope area measurement of peak flow; minimum discharge, 17 ft³/s Dec. 22, 1990.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft³/s and maximum (*):

| Date | Time | Discharge (ft ³ /s) | Gage height (ft) | Date | Time | Discharge (ft ³ /s) | Gage height (ft) |
|---------|------|--------------------------------|------------------|------|------|--------------------------------|------------------|
| Dec. 13 | 1830 | *288 | *2.04 | | | | |

Minimum discharge, 21 ft³/s, Oct. 5, 6.

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 | 24 | 28 | 72 | e42 | 135 | 46 | 77 | 107 | 107 | 84 | 44 | 37 |
| 2 | 24 | 28 | 63 | e40 | 112 | 44 | 74 | 132 | 107 | 78 | 44 | 37 |
| 3 | 23 | 27 | 70 | 41 | 96 | 44 | 73 | 162 | 114 | 82 | 43 | 36 |
| 4 | 23 | 27 | 64 | e40 | 85 | 43 | 75 | 167 | 125 | 77 | 43 | 35 |
| 5 | 23 | 27 | 86 | e38 | 76 | 44 | 80 | 149 | 145 | 71 | 43 | 34 |
| 6 | 22 | 26 | 106 | e38 | 72 | 43 | 86 | 124 | 158 | 71 | 43 | 33 |
| 7 | 24 | 26 | 84 | e38 | 67 | 45 | 90 | 112 | 133 | 74 | 44 | 32 |
| 8 | 24 | 26 | 71 | e52 | 63 | 50 | 94 | 125 | 117 | 67 | 42 | 32 |
| 9 | 26 | 26 | 63 | 48 | 59 | 58 | 94 | 112 | 116 | 64 | 41 | 32 |
| 10 | 28 | 26 | 57 | 45 | 56 | 67 | 95 | 103 | 131 | 64 | 40 | 31 |
| 11 | 30 | 30 | 53 | 44 | 54 | 70 | 98 | 96 | 113 | 62 | 39 | 33 |
| 12 | 42 | 30 | 56 | 43 | 52 | 73 | 105 | 88 | 96 | 60 | 39 | 34 |
| 13 | 41 | 29 | 159 | 42 | 50 | 77 | 126 | 85 | 100 | 63 | 38 | 50 |
| 14 | 35 | 29 | 184 | 43 | 49 | 81 | 127 | 87 | 105 | 62 | 38 | 73 |
| 15 | 40 | 28 | 124 | 45 | 48 | 87 | 112 | 94 | 94 | 62 | 38 | 51 |
| 16 | 46 | 33 | 98 | 51 | 52 | 87 | 100 | 101 | 89 | 60 | 37 | 46 |
| 17 | 48 | 40 | 83 | 52 | 55 | 91 | 91 | 102 | 90 | 58 | 36 | 61 |
| 18 | 43 | 38 | 72 | 51 | 63 | 99 | 82 | 96 | 96 | 58 | 36 | 76 |
| 19 | 37 | 50 | 66 | 50 | 60 | 102 | 77 | 110 | 92 | 61 | 35 | 58 |
| 20 | 35 | 52 | 61 | 49 | 57 | 94 | 77 | 114 | 86 | 57 | 35 | 52 |
| 21 | 33 | 45 | 57 | 47 | 55 | 89 | 75 | 122 | 87 | 54 | 34 | 47 |
| 22 | 31 | 40 | 54 | 46 | 54 | 90 | 71 | 132 | 96 | 52 | 54 | 44 |
| 23 | 34 | 38 | 52 | 51 | 52 | 98 | 69 | 141 | 101 | 52 | 52 | 41 |
| 24 | 34 | 36 | 53 | 87 | 51 | 105 | 67 | 114 | 103 | 51 | 45 | 38 |
| 25 | 31 | 35 | 50 | 88 | 51 | 106 | 67 | 101 | 101 | 50 | 80 | 36 |
| 26 | 30 | 34 | 47 | 79 | 51 | 102 | 71 | 127 | 100 | 49 | 84 | 35 |
| 27 | 27 | 33 | 46 | 73 | 49 | 99 | 89 | 189 | 89 | 48 | 59 | 33 |
| 28 | 27 | 34 | 46 | 73 | 48 | 90 | 117 | 220 | 81 | 48 | 48 | 33 |
| 29 | 32 | 121 | e46 | 137 | 47 | 87 | 102 | 158 | 84 | 47 | 42 | 32 |
| 30 | 33 | 100 | e42 | 226 | --- | 87 | 98 | 126 | 88 | e46 | 40 | 31 |
| 31 | 30 | --- | 42 | 170 | --- | 83 | --- | 113 | --- | 45 | 38 | --- |
| TOTAL | 980 | 1,142 | 2,227 | 1,969 | 1,819 | 2,381 | 2,659 | 3,809 | 3,144 | 1,877 | 1,374 | 1,243 |
| MEAN | 31.6 | 38.1 | 71.8 | 63.5 | 62.7 | 76.8 | 88.6 | 123 | 105 | 60.5 | 44.3 | 41.4 |
| MAX | 48 | 121 | 184 | 226 | 135 | 106 | 127 | 220 | 158 | 84 | 84 | 76 |
| MIN | 22 | 26 | 42 | 38 | 47 | 43 | 67 | 85 | 81 | 45 | 34 | 31 |
| AC-FT | 1,940 | 2,270 | 4,420 | 3,910 | 3,610 | 4,720 | 5,270 | 7,560 | 6,240 | 3,720 | 2,730 | 2,470 |
| CFSM | 1.38 | 1.66 | 3.14 | 2.77 | 2.74 | 3.35 | 3.87 | 5.37 | 4.58 | 2.64 | 1.94 | 1.81 |
| IN. | 1.59 | 1.86 | 3.62 | 3.20 | 2.95 | 3.87 | 4.32 | 6.19 | 5.11 | 3.05 | 2.23 | 2.02 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2004, BY WATER YEAR (WY)

| | 38.8 | 67.7 | 75.9 | 83.6 | 93.7 | 85.2 | 101 | 122 | 113 | 71.4 | 45.8 | 35.2 |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MEAN | | | | | | | | | | | | |
| MAX | 98.8 | 175 | 205 | 218 | 363 | 166 | 154 | 207 | 217 | 142 | 96.3 | 59.7 |
| (WY) | (1988) | (1996) | (1996) | (1997) | (1996) | (1986) | (2002) | (1997) | (1999) | (1999) | (1999) | (1999) |
| MIN | 20.3 | 23.4 | 34.0 | 33.5 | 28.2 | 41.4 | 50.4 | 69.4 | 41.7 | 33.4 | 24.5 | 20.1 |
| (WY) | (1988) | (1994) | (2001) | (2001) | (1994) | (1985) | (1991) | (1991) | (1992) | (1992) | (1992) | (1994) |

14092750 SHITIKE CREEK AT PETERS PASTURE, NEAR WARM SPRINGS, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1983 - 2004 | |
|--------------------------|------------------------|--------|---------------------|--------|-------------------------|--------------|
| ANNUAL TOTAL | 25,465 | | 24,624 | | | |
| ANNUAL MEAN | 69.8 | | 67.3 | | 77.7 | |
| HIGHEST ANNUAL MEAN | | | | | 136 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 43.2 | 1994 |
| HIGHEST DAILY MEAN | 685 | Jan 31 | 226 | Jan 30 | 2,020 | Feb 7, 1996 |
| LOWEST DAILY MEAN | 22 | Oct 6 | 22 | Oct 6 | 17 | Dec 22, 1990 |
| ANNUAL SEVEN-DAY MINIMUM | 23 | Sep 30 | 23 | Oct 1 | 18 | Oct 2, 1994 |
| ANNUAL RUNOFF (AC-FT) | 50,510 | | 48,840 | | 56,310 | |
| ANNUAL RUNOFF (CFSM) | 3.05 | | 2.94 | | 3.39 | |
| ANNUAL RUNOFF (INCHES) | 41.37 | | 40.00 | | 46.12 | |
| 10 PERCENT EXCEEDS | 121 | | 113 | | 140 | |
| 50 PERCENT EXCEEDS | 56 | | 56 | | 60 | |
| 90 PERCENT EXCEEDS | 29 | | 32 | | 29 | |

e Estimated



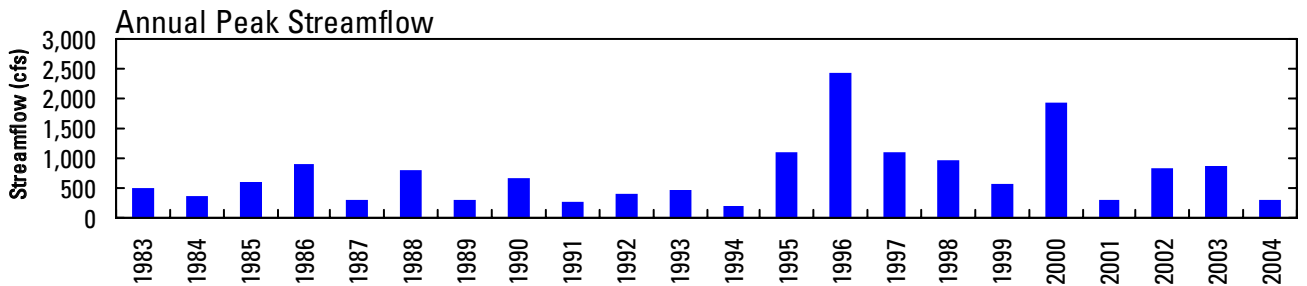
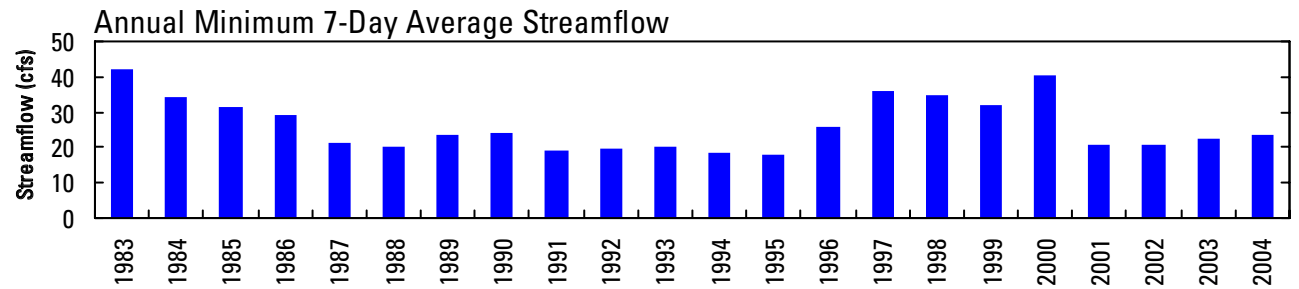
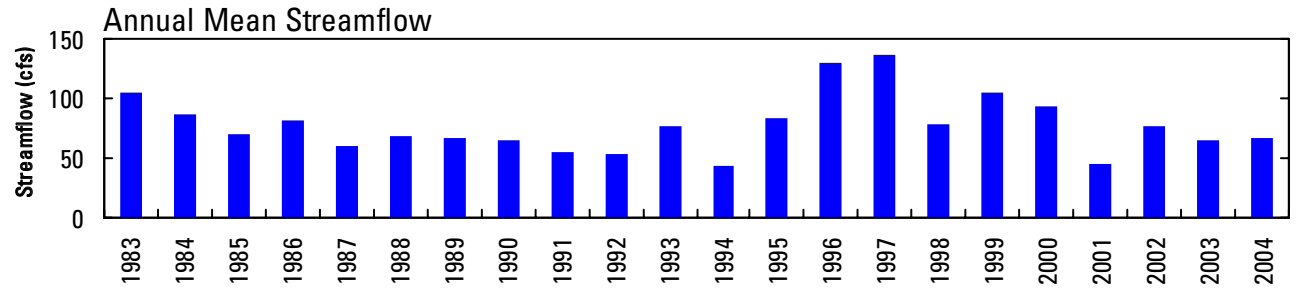
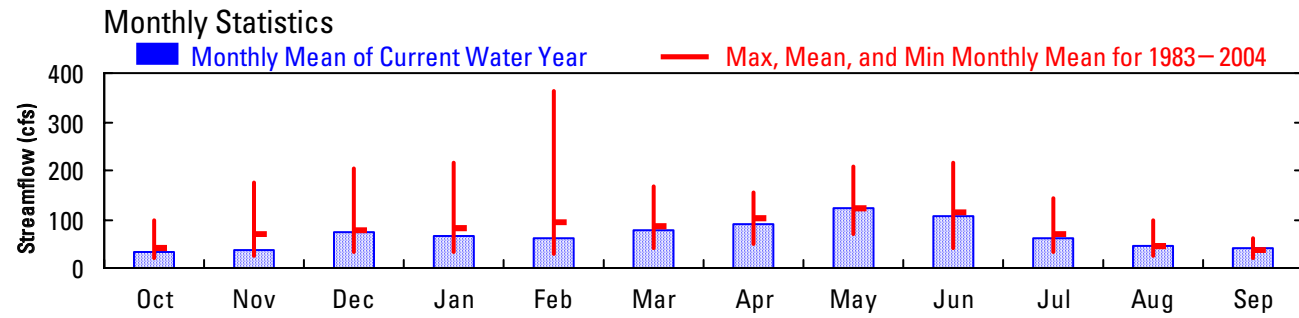
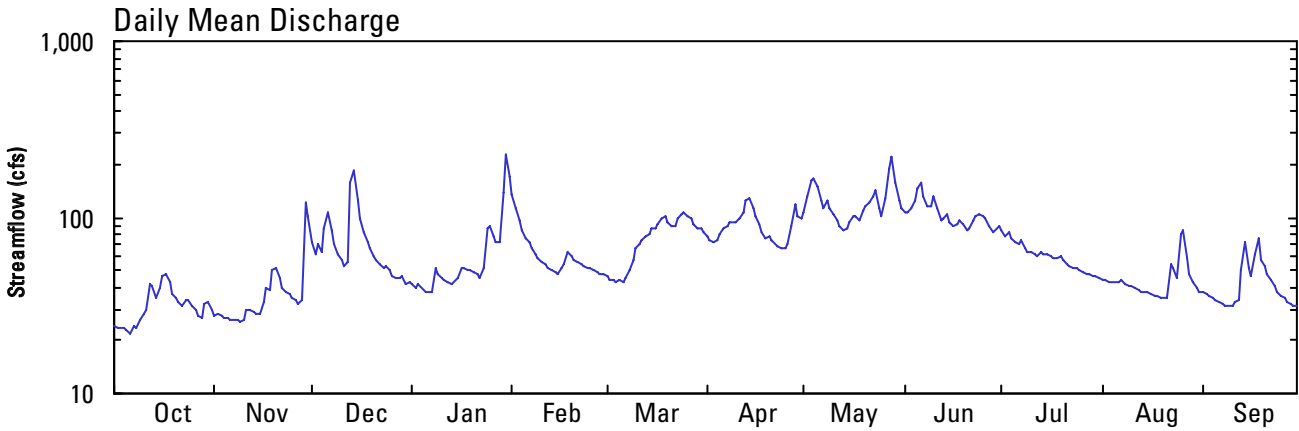
2004 Water Year
DESCHUTES RIVER BASIN

14092750 SHITIKE CR AT PETERS PASTURE, NR WARM SPRINGS, OR

Latitude: 44° 45 ' 02"
Jefferson County

Longitude: 121° 37 ' 56"
Datum: 3,580 feet

Hydrologic Unit Code: 17070306
Drainage Area: 22.9 square miles



14093000 SHITIKE CREEK NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°45'51", long 121°14'08", in NE ¼ NE ¼, sec.25, T.9 S., R.12 E., Jefferson County, Hydrologic Unit 17070306, Warm Springs Indian Reservation on left bank 1.5 mi east of Warm Springs, and at mile 0.7.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--July 1911 to October 1916, April 1923 to September 1928, October 1972 to September 1974, October 1996 to current year. Records for October 1974 to September 1996 (see station 14092885) at site upstream not equivalent owing to difference in drainage area.

REVISED RECORDS.--WSP 1318: 1911-12, 1916, 1927.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,380 ft above NGVD of 1929, from topographic map. Prior to September 1928 non-recording gage 1.3 mi upstream, October 1972 to September 1974 water-stage recorder 0.4 mi downstream.

REMARKS.--Records fair. No regulation. Some diversions for irrigation and municipal use.

AVERAGE DISCHARGE.--20 years (water years 1912-16, 1924-28, 1973-74, 1997-2004), 111 ft³/s, 14.47 in/yr, 80,250 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,000 ft³/s Jan. 15, 1974, gage height, 4.36 ft; minimum daily discharge, 20 ft³/s Dec. 8-15, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 7, 1996 reached a stage of 12.4 ft, information supplied by local resident, discharge about 4,400 ft³/s, from rating curve extended above 900 ft³/s on basis of runoff comparisons with nearby stations.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft³/s and maximum (*):

| Date | Time | Discharge (ft ³ /s) | Gage height (ft) | Date | Time | Discharge (ft ³ /s) | Gage height (ft) |
|--------|------|-----------------------------------|---------------------|---------|------|-----------------------------------|---------------------|
| Jan. 8 | --- | (a) | *4.37 | Jan. 30 | 0800 | *236 | 4.31 |

Minimum discharge, 33 ft³/s, Oct. 3, 5-7.

a Backwater from ice.

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 | 35 | e44 | 98 | e56 | 156 | 93 | 115 | 123 | 125 | 105 | 56 | 48 |
| 2 | 35 | 43 | 82 | e54 | 139 | 89 | 109 | 137 | 121 | 96 | 56 | 48 |
| 3 | 35 | 42 | 82 | e56 | 123 | 88 | 106 | 159 | 124 | 98 | 56 | 48 |
| 4 | 35 | 41 | 83 | e54 | 110 | 86 | 107 | 168 | 131 | 98 | 56 | 46 |
| 5 | 34 | 41 | 90 | e52 | 99 | 86 | 110 | 162 | 140 | 89 | 59 | 45 |
| 6 | 34 | 40 | 122 | e52 | 93 | 92 | 115 | 146 | 161 | 85 | 56 | 44 |
| 7 | 35 | 40 | 109 | e56 | 89 | 89 | 118 | 134 | 150 | 90 | 58 | 43 |
| 8 | 36 | 40 | 91 | e64 | 84 | 103 | 120 | 137 | 138 | 85 | 56 | 42 |
| 9 | 37 | 40 | 82 | e60 | 79 | 117 | 121 | 134 | 132 | 79 | 54 | 42 |
| 10 | 39 | 40 | 74 | e56 | 76 | 131 | 120 | 125 | 138 | 79 | 52 | 42 |
| 11 | 40 | 42 | 68 | e56 | 74 | 132 | 122 | 118 | 135 | 77 | 51 | 42 |
| 12 | 46 | 44 | 67 | e54 | 71 | 133 | 126 | 111 | 116 | 73 | 50 | 46 |
| 13 | 52 | 43 | 102 | 55 | 69 | 138 | 140 | 106 | 111 | 75 | 49 | 46 |
| 14 | 48 | 42 | 192 | 55 | 67 | 138 | 145 | 105 | 122 | 75 | 50 | 91 |
| 15 | 46 | 42 | 147 | 59 | 67 | 146 | 143 | 111 | 112 | 75 | 50 | 68 |
| 16 | 56 | 43 | 120 | 61 | 87 | 143 | 129 | 116 | 103 | 74 | 49 | 61 |
| 17 | 55 | 56 | 105 | 64 | 128 | 147 | 119 | 122 | 101 | 72 | 47 | 56 |
| 18 | 56 | 52 | 91 | 64 | 131 | 151 | 112 | 115 | 106 | 71 | 46 | 98 |
| 19 | 49 | 57 | 83 | 63 | 117 | 155 | 105 | 123 | 108 | 76 | 46 | 76 |
| 20 | 46 | 69 | 77 | 63 | 106 | 144 | 107 | 129 | 99 | 73 | 45 | 67 |
| 21 | 45 | 63 | 72 | 62 | 101 | 136 | 103 | 132 | 99 | 70 | 46 | 61 |
| 22 | 43 | 57 | 69 | 60 | 97 | 133 | 98 | 140 | 104 | 66 | 58 | 56 |
| 23 | 43 | 53 | 66 | 60 | 93 | 137 | 93 | 151 | 115 | 65 | 76 | 52 |
| 24 | 46 | 51 | 68 | 86 | 92 | 144 | 92 | 136 | 116 | 64 | 60 | 50 |
| 25 | 44 | 50 | 65 | 105 | 93 | 144 | 89 | 121 | 118 | 62 | 76 | 47 |
| 26 | 42 | 50 | 61 | 96 | 99 | 146 | 91 | 124 | 115 | 62 | 108 | 46 |
| 27 | 41 | 47 | 59 | 92 | 95 | 142 | 102 | 169 | 111 | 60 | 86 | 44 |
| 28 | 40 | 47 | 62 | 92 | 91 | 133 | 131 | 194 | 98 | 60 | 64 | 43 |
| 29 | 41 | 85 | e64 | 125 | 89 | 126 | 128 | 172 | 98 | 59 | 56 | 42 |
| 30 | 47 | 137 | e58 | 217 | --- | 125 | 119 | 145 | 100 | 58 | 52 | 42 |
| 31 | 45 | --- | e56 | 184 | --- | 121 | --- | 133 | --- | 57 | 50 | --- |
| TOTAL | 1,326 | 1,541 | 2,665 | 2,333 | 2,815 | 3,888 | 3,435 | 4,198 | 3,547 | 2,328 | 1,774 | 1,582 |
| MEAN | 42.8 | 51.4 | 86.0 | 75.3 | 97.1 | 125 | 114 | 135 | 118 | 75.1 | 57.2 | 52.7 |
| MAX | 56 | 137 | 192 | 217 | 156 | 155 | 145 | 194 | 161 | 105 | 108 | 98 |
| MIN | 34 | 40 | 56 | 52 | 67 | 86 | 89 | 105 | 98 | 57 | 45 | 42 |
| AC-FT | 2,630 | 3,060 | 5,290 | 4,630 | 5,580 | 7,710 | 6,810 | 8,330 | 7,040 | 4,620 | 3,520 | 3,140 |
| CFSM | 0.41 | 0.49 | 0.83 | 0.72 | 0.93 | 1.21 | 1.10 | 1.30 | 1.14 | 0.72 | 0.55 | 0.51 |
| IN. | 0.47 | 0.55 | 0.95 | 0.83 | 1.01 | 1.39 | 1.23 | 1.50 | 1.27 | 0.83 | 0.63 | 0.57 |

14093000 SHITIKE CREEK NEAR WARM SPRINGS, OR—Continued

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

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 2004, BY WATER YEAR (WY) | | | | | | | | | | | | |
| MEAN | 62.8 | 92.4 | 111 | 137 | 129 | 124 | 137 | 159 | 151 | 101 | 67.1 | 58.3 |
| MAX | 109 | 167 | 283 | 432 | 261 | 222 | 206 | 238 | 315 | 213 | 127 | 87.7 |
| (WY) | (1998) | (1928) | (1997) | (1974) | (1916) | (1997) | (2002) | (1974) | (1974) | (1916) | (1999) | (1997) |
| MIN | 40.8 | 45.6 | 49.8 | 48.8 | 51.6 | 64.7 | 66.4 | 86.2 | 68.9 | 46.7 | 36.2 | 35.3 |
| (WY) | (2003) | (2003) | (2001) | (2001) | (2001) | (1973) | (1973) | (1973) | (1924) | (1924) | (1924) | (2001) |

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1912 - 2004 | |
|--------------------------|------------------------|--------|---------------------|--------|-------------------------|--------------|
| ANNUAL TOTAL | 29,856 | | 31,432 | | 111 | |
| ANNUAL MEAN | 81.8 | | 85.9 | | 187 | |
| HIGHEST ANNUAL MEAN | | | | | 1997 | |
| LOWEST ANNUAL MEAN | | | | | 62.0 | |
| HIGHEST DAILY MEAN | 465 | Jan 31 | 217 | Jan 30 | 2,300 | Jan 15, 1974 |
| LOWEST DAILY MEAN | 34 | Oct 5 | 34 | Oct 5 | 20 | Dec 8, 1972 |
| ANNUAL SEVEN-DAY MINIMUM | 35 | Sep 30 | 35 | Oct 1 | 20 | Dec 8, 1972 |
| ANNUAL RUNOFF (AC-FT) | 59,220 | | 62,350 | | 80,250 | |
| ANNUAL RUNOFF (CFSM) | 0.787 | | 0.826 | | 1.07 | |
| ANNUAL RUNOFF (INCHES) | 10.68 | | 11.24 | | 14.47 | |
| 10 PERCENT EXCEEDS | 140 | | 137 | | 190 | |
| 50 PERCENT EXCEEDS | 72 | | 79 | | 90 | |
| 90 PERCENT EXCEEDS | 39 | | 43 | | 47 | |

e Estimated



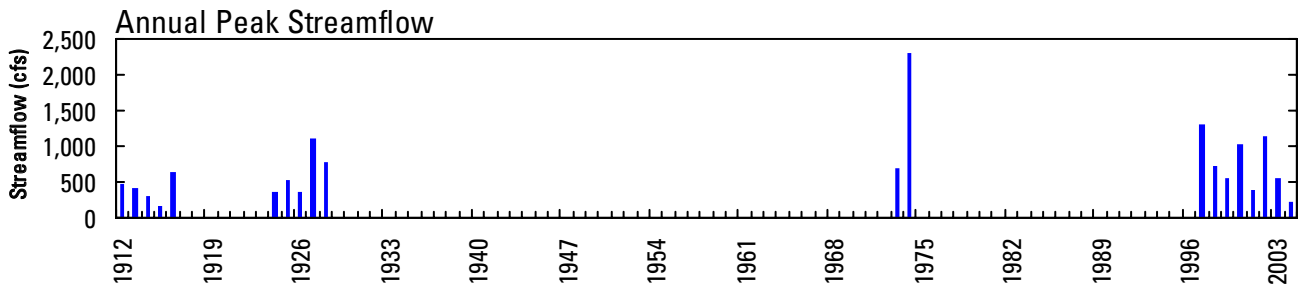
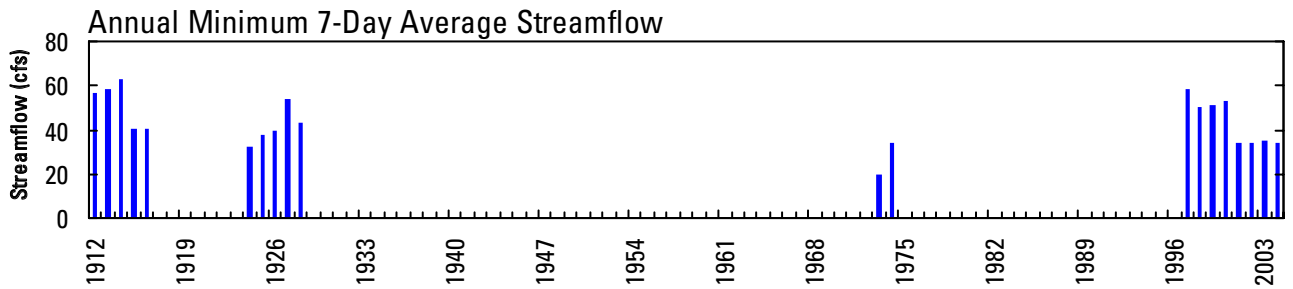
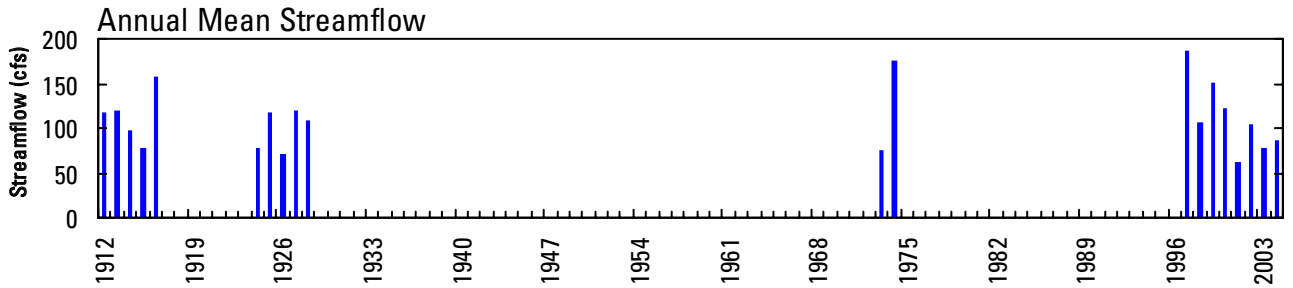
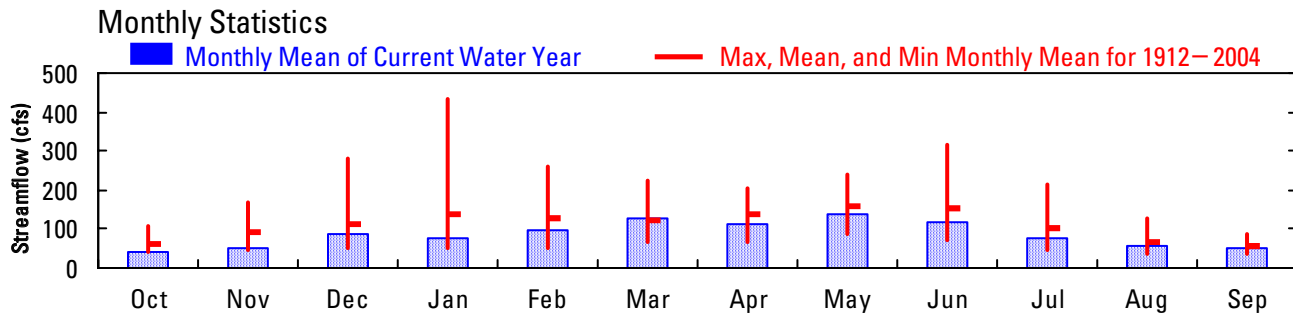
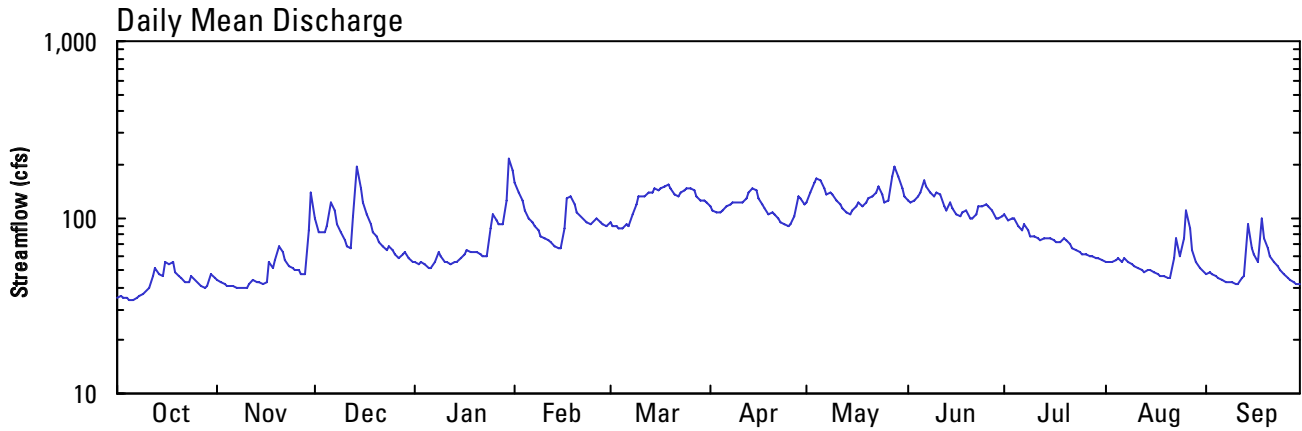
2004 Water Year
DESCHUTES RIVER BASIN

14093000 SHITIKE CREEK NEAR WARM SPRINGS, OR

Latitude: 44° 45 ' 51"
Jefferson County

Longitude: 121° 14 ' 08"
Datum: 1,380.00 feet

Hydrologic Unit Code: 17070306
Drainage Area: 104 square miles



14095500 WARM SPRINGS RIVER NEAR SIMNASHO, OR

LOCATION.--Lat 44°58'10", long 121°28'34", in SE 1/4 SW 1/4 sec.7, T.7 S., R.11 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank abutment of log bridge at Hehe Butte rodeo grounds, 3.3 mi upstream from Badger Creek, and 6.2 mi west of Simnasho, and at mile 30.5.

DRAINAGE AREA.--107 mi².

PERIOD OF RECORD.--June to September 1915, August 1949 to September 1954, October 1983 to current year. Prior to October 1983, published as "at Hehe Mill near Warm Springs."

GAGE.--Water-stage recorder. Datum of gage is 2,533.78 ft above NGVD of 1929. June to September 1915 1.0 mi downstream at different datum. August 1949 to September 1954 0.5 mi downstream at datum 7.12 ft lower.

REMARKS.--Records good. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--26 years (water years 1950-54, 1984-2004), 162 ft³/s, 20.61 in/yr, 117,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,670 ft³/s Feb. 7, 1996, gage height, 6.98 ft, from rating curve extended above 1,300 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 78 ft³/s Jan. 14, 2004, due to extreme cold weather.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 350 ft³/s and maximum (*):

| Date | Time | Discharge (ft ³ /s) | Gage height (ft) | Date | Time | Discharge (ft ³ /s) | Gage height (ft) |
|---------|------|--------------------------------|------------------|------|------|--------------------------------|------------------|
| Jan. 30 | 1230 | *241 | *3.15 | | | | |

Minimum daily discharge, 80 ft³/s, Jan. 14.

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 | 97 | 99 | 106 | e100 | 165 | 157 | 193 | 155 | 120 | 108 | 102 | 98 |
| 2 | 97 | 100 | 104 | e95 | 156 | 152 | 187 | 154 | 119 | 108 | 101 | 98 |
| 3 | 97 | 100 | 103 | e95 | 146 | 151 | 186 | 155 | 117 | 110 | 101 | 99 |
| 4 | 97 | 99 | 103 | e95 | 138 | 159 | 188 | 154 | 116 | 110 | 103 | 98 |
| 5 | 97 | 98 | 105 | e90 | 132 | 165 | 191 | 153 | 116 | 110 | 104 | 98 |
| 6 | 97 | 98 | 114 | e90 | 129 | 167 | 192 | 150 | 117 | 110 | 102 | 98 |
| 7 | 97 | 98 | 110 | e90 | 127 | 166 | 194 | 147 | 118 | 109 | 101 | 98 |
| 8 | 97 | 99 | 105 | e90 | 122 | 180 | 195 | 147 | 128 | 109 | 102 | 98 |
| 9 | 98 | 99 | 102 | e90 | 119 | 192 | 194 | 145 | 126 | 109 | 101 | 98 |
| 10 | 98 | 99 | 102 | e90 | 117 | 205 | 193 | 142 | 122 | 109 | 101 | 98 |
| 11 | 99 | 101 | 101 | e85 | 116 | 204 | 194 | 142 | 119 | 108 | 101 | 98 |
| 12 | 102 | 100 | 102 | e85 | 115 | 202 | 196 | 140 | 118 | 108 | 101 | 98 |
| 13 | 99 | 99 | 137 | e85 | 113 | 203 | 202 | 136 | 118 | 108 | 101 | 100 |
| 14 | 98 | 99 | 148 | e80 | 113 | 202 | 205 | 134 | 116 | 107 | 102 | 102 |
| 15 | 101 | 100 | 120 | e90 | 119 | 207 | 209 | 134 | 114 | 107 | 101 | 100 |
| 16 | 102 | 101 | 113 | 101 | 132 | 207 | 199 | 133 | 113 | 105 | 100 | 100 |
| 17 | 99 | 114 | 109 | 100 | 154 | 210 | 192 | 133 | 113 | 106 | 98 | 101 |
| 18 | 98 | 105 | 107 | 100 | 166 | 217 | 187 | 131 | 112 | 106 | 98 | 100 |
| 19 | 98 | 107 | 105 | 100 | 159 | 221 | 182 | 130 | 112 | 108 | 98 | 99 |
| 20 | 98 | 106 | 104 | 100 | 150 | 208 | 188 | 130 | 112 | 106 | 98 | 98 |
| 21 | 98 | 102 | 103 | 100 | 147 | 201 | 186 | 128 | 111 | 106 | 98 | 98 |
| 22 | 98 | 100 | 102 | 99 | 144 | 199 | 179 | 127 | 111 | 106 | 114 | 98 |
| 23 | 99 | 99 | 102 | 102 | 142 | 202 | 171 | 129 | 111 | 105 | 106 | 98 |
| 24 | 98 | 100 | 104 | 113 | 143 | 209 | 167 | 125 | 110 | 104 | 102 | 97 |
| 25 | 98 | 100 | 104 | 110 | 150 | 214 | 162 | 122 | 110 | 103 | 102 | 97 |
| 26 | 98 | 100 | 103 | 106 | 156 | 217 | 160 | 122 | 109 | 103 | 101 | 97 |
| 27 | 98 | 100 | 101 | 107 | 150 | 216 | 162 | 124 | 109 | 103 | 100 | 97 |
| 28 | 99 | 100 | e100 | 114 | 150 | 205 | 165 | 131 | 109 | 103 | 100 | 97 |
| 29 | 101 | 112 | e100 | 162 | 149 | 200 | 160 | 133 | 108 | 103 | 100 | 97 |
| 30 | 102 | 110 | e100 | 215 | --- | 203 | 157 | 126 | 108 | 103 | 100 | 97 |
| 31 | 100 | --- | e100 | 186 | --- | 200 | --- | 123 | --- | 103 | 99 | --- |
| TOTAL | 3,055 | 3,044 | 3,319 | 3,265 | 4,019 | 6,041 | 5,536 | 4,235 | 3,442 | 3,303 | 3,138 | 2,950 |
| MEAN | 98.5 | 101 | 107 | 105 | 139 | 195 | 185 | 137 | 115 | 107 | 101 | 98.3 |
| MAX | 102 | 114 | 148 | 215 | 166 | 221 | 209 | 155 | 128 | 110 | 114 | 102 |
| MIN | 97 | 98 | 100 | 80 | 113 | 151 | 157 | 122 | 108 | 103 | 98 | 97 |
| AC-FT | 6,060 | 6,040 | 6,580 | 6,480 | 7,970 | 11,980 | 10,980 | 8,400 | 6,830 | 6,550 | 6,220 | 5,850 |
| CFSM | 0.92 | 0.95 | 1.00 | 0.98 | 1.30 | 1.82 | 1.72 | 1.28 | 1.07 | 1.00 | 0.95 | 0.92 |
| IN. | 1.06 | 1.06 | 1.15 | 1.14 | 1.40 | 2.10 | 1.92 | 1.47 | 1.20 | 1.15 | 1.09 | 1.03 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MEAN | 118 | 128 | 148 | 166 | 227 | 210 | 225 | 206 | 159 | 128 | 120 | 117 |
| MAX | 144 | 197 | 286 | 351 | 784 | 374 | 351 | 325 | 310 | 169 | 154 | 144 |
| (WY) | (1998) | (1951) | (1997) | (1997) | (1996) | (1986) | (1997) | (1997) | (1950) | (1999) | (1999) | (1999) |
| MIN | 98.5 | 101 | 104 | 105 | 106 | 112 | 120 | 106 | 102 | 97.9 | 95.6 | 96.9 |
| (WY) | (2004) | (2004) | (1953) | (2004) | (1993) | (1994) | (1994) | (1994) | (1994) | (1994) | (1994) | (1994) |

DESCHUTES RIVER BASIN

14095500 WARM SPRINGS RIVER NEAR SIMNASHO, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1950 - 2004 | |
|--------------------------|------------------------|--------|---------------------|--------|-------------------------|--------------|
| ANNUAL TOTAL | 45,088 | | 45,347 | | 162 | |
| ANNUAL MEAN | 124 | | 124 | | 242 | |
| HIGHEST ANNUAL MEAN | | | | | 1997 | |
| LOWEST ANNUAL MEAN | | | | | 1994 | |
| HIGHEST DAILY MEAN | 305 | Feb 1 | 221 | Mar 19 | 3,000 | Feb 8, 1996 |
| LOWEST DAILY MEAN | 96 | Sep 27 | 80 | Jan 14 | 80 | Jan 14, 2004 |
| ANNUAL SEVEN-DAY MINIMUM | 97 | Sep 21 | 86 | Jan 8 | 86 | Jan 8, 2004 |
| ANNUAL RUNOFF (AC-FT) | 89,430 | | 89,950 | | 117,600 | |
| ANNUAL RUNOFF (CFSM) | 1.15 | | 1.16 | | 1.52 | |
| ANNUAL RUNOFF (INCHES) | 15.68 | | 15.77 | | 20.61 | |
| 10 PERCENT EXCEEDS | 174 | | 192 | | 253 | |
| 50 PERCENT EXCEEDS | 110 | | 107 | | 134 | |
| 90 PERCENT EXCEEDS | 98 | | 98 | | 106 | |

e Estimated



2004 Water Year
DESCHUTES RIVER BASIN

14095500 WARM SPRINGS RIVER NEAR SIMNASHO, OR

Latitude: 44° 58' 10"

Longitude: 121° 28' 34"

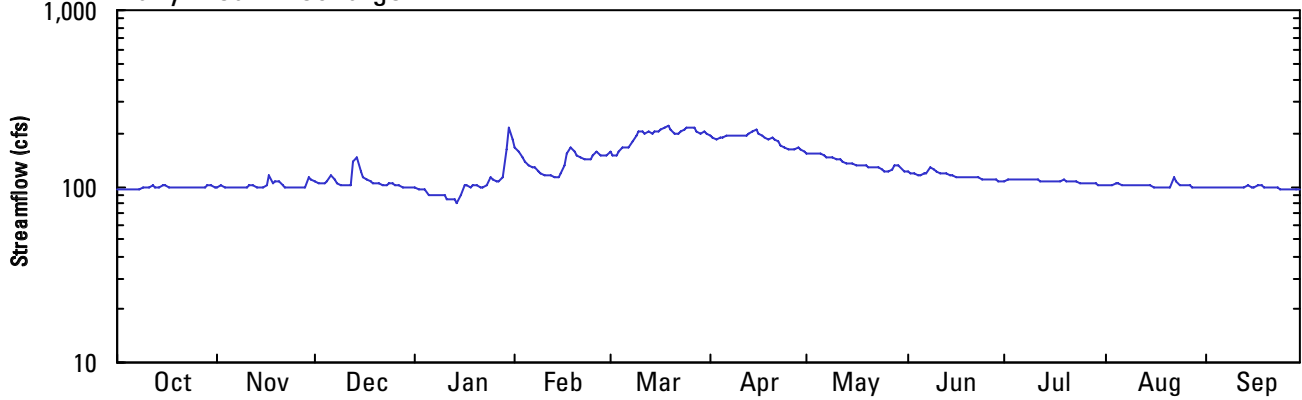
Hydrologic Unit Code: 17070306

Wasco County

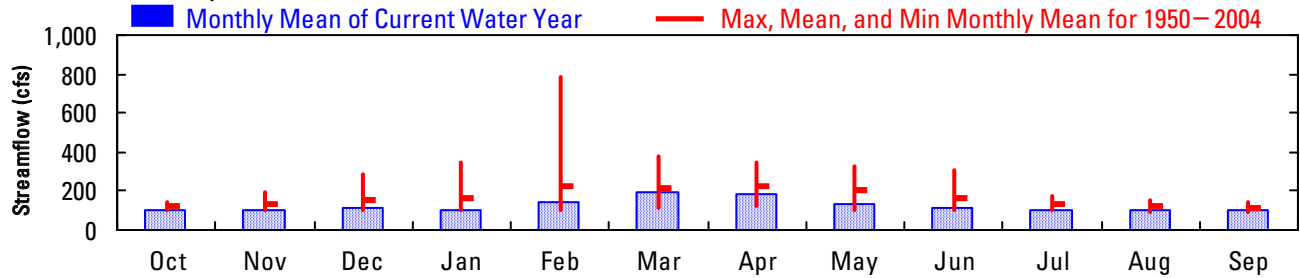
Datum: 2,533.78 feet

Drainage Area: 107 square miles

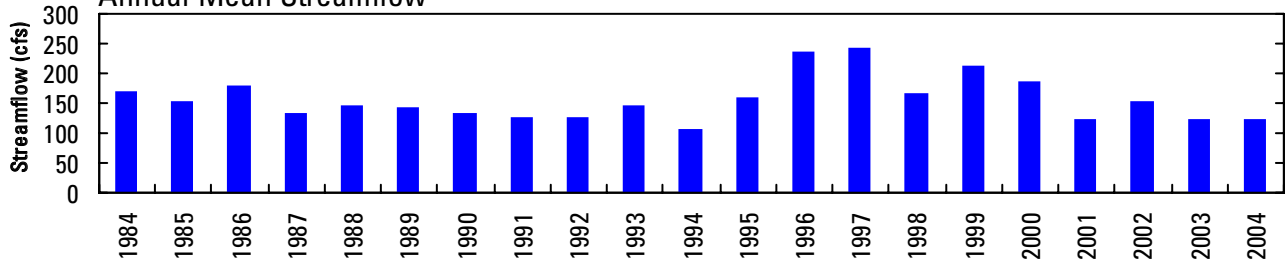
Daily Mean Discharge



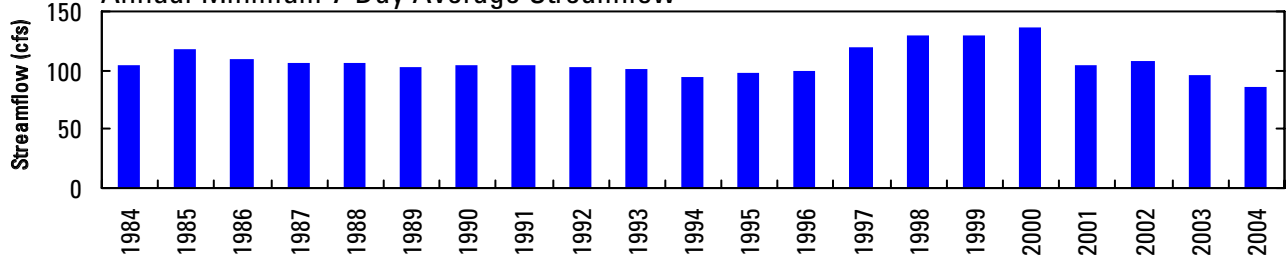
Monthly Statistics



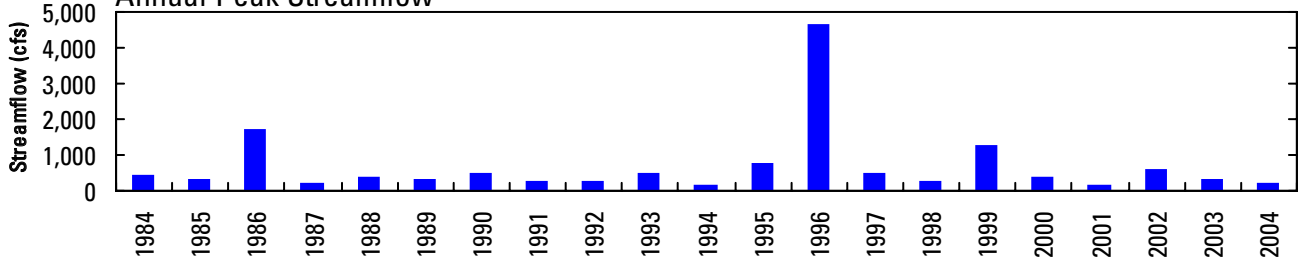
Annual Mean Streamflow



Annual Minimum 7-Day Average Streamflow



Annual Peak Streamflow



14096300 MILL CREEK NEAR BADGER BUTTE, NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°51'42", long 121°37'35", in SW ¼ sec.23, T.8 S., R.9 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 200 ft upstream from bridge on road B241, 3.4 mi upstream from headworks of Mill Creek Canal, 19.3 mi northwest of Warm Springs, and at mile 14.6.

DRAINAGE AREA.--26.8 mi².

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 3,380 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--21 years (water years 1984-2004), 69.1 ft³/s, 35.03 in/yr, 50,060 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,300 ft³/s Feb. 7, 1996, from rating curve extended above 800 ft³/s on basis of slope-area measurement of peak flow, gage height, 8.42; maximum gage height, 9.49 ft, Feb. 7, 1996, from high-water mark on crest-stage gage; minimum discharge recorded, 23 ft³/s Feb. 15, 25, 1993, but may have been lower during period of estimated record.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

| Date | Time | Discharge (ft ³ /s) | Gage height (ft) | Date | Time | Discharge (ft ³ /s) | Gage height (ft) |
|--------|------|-----------------------------------|---------------------|--------|------|-----------------------------------|---------------------|
| Dec 13 | 1730 | *364 | *6.17 | Jan 30 | 0730 | 225 | 5.92 |

Minimum discharge, 33 ft³/s, Aug. 13, 18, 20, Sept. 6-8, 10.

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 | 35 | 39 | 86 | e50 | 123 | 51 | 73 | 101 | 88 | 41 | 36 | 36 |
| 2 | 35 | 39 | 70 | e48 | 105 | 50 | 69 | 108 | 79 | 41 | 36 | 36 |
| 3 | 35 | 39 | 75 | e48 | 92 | 49 | 68 | 120 | 72 | 41 | 36 | 36 |
| 4 | 35 | 39 | 68 | e48 | 80 | 50 | 74 | 124 | 68 | 40 | 37 | 35 |
| 5 | 35 | 38 | 80 | e48 | 71 | 50 | 84 | 118 | 65 | 40 | 37 | 35 |
| 6 | 35 | 38 | 120 | e48 | 67 | 50 | 91 | 107 | 70 | 39 | 37 | 35 |
| 7 | 38 | 38 | 103 | e48 | 65 | 58 | 95 | 98 | 76 | 40 | 38 | 35 |
| 8 | 37 | 39 | 86 | e48 | 60 | 67 | 100 | 98 | 90 | 39 | 37 | 35 |
| 9 | 40 | 39 | 77 | e46 | 57 | 72 | 99 | 98 | 92 | 39 | 36 | 35 |
| 10 | 40 | 41 | 71 | e46 | 55 | 75 | 99 | 95 | 89 | 39 | 36 | 35 |
| 11 | 42 | 49 | 66 | e46 | 52 | 71 | 103 | 94 | 83 | 39 | 36 | 36 |
| 12 | 53 | 44 | 77 | e44 | 50 | 73 | 110 | 85 | 74 | 39 | 36 | 37 |
| 13 | 42 | 41 | 218 | e44 | 49 | 77 | 120 | 79 | 68 | 39 | 35 | 41 |
| 14 | 39 | 40 | 245 | e44 | 49 | 80 | 128 | 75 | 66 | 38 | 36 | 50 |
| 15 | 47 | 40 | 167 | e48 | 50 | 85 | 115 | 74 | 62 | 38 | 36 | 41 |
| 16 | 46 | 49 | 129 | 55 | 57 | 84 | 101 | 76 | 59 | 38 | 35 | 40 |
| 17 | 40 | 69 | 109 | 55 | 64 | 90 | 90 | 78 | 56 | 38 | 35 | 39 |
| 18 | 38 | 55 | 91 | 53 | 72 | 96 | 83 | 80 | 53 | 38 | 35 | 43 |
| 19 | 38 | 56 | 79 | 53 | 67 | 96 | 78 | 81 | 51 | 40 | 35 | 44 |
| 20 | 38 | 58 | 71 | 52 | 61 | 84 | 85 | 84 | 50 | 38 | 35 | 44 |
| 21 | 38 | 55 | 67 | 50 | 58 | 79 | 84 | 82 | 48 | 38 | 35 | 42 |
| 22 | 38 | 51 | 62 | 48 | 55 | 81 | 77 | 82 | 47 | 37 | 55 | 41 |
| 23 | 39 | 47 | 59 | 54 | 53 | 91 | 72 | 92 | 47 | 37 | 48 | 39 |
| 24 | 38 | 48 | 62 | 76 | 53 | 98 | 71 | 93 | 45 | 37 | 42 | 38 |
| 25 | 38 | 48 | 59 | 82 | 54 | 102 | 70 | 85 | 44 | 37 | 45 | 38 |
| 26 | 37 | 49 | 56 | 77 | 55 | 97 | 75 | 81 | 43 | 36 | 46 | 37 |
| 27 | 37 | 48 | 55 | 72 | 54 | 95 | 93 | 91 | 43 | 36 | 40 | 37 |
| 28 | 38 | 48 | e52 | 78 | 52 | 83 | 108 | 128 | 42 | 36 | 38 | 36 |
| 29 | 39 | 94 | e52 | 137 | 51 | 79 | 102 | 141 | 42 | 36 | 37 | 36 |
| 30 | 41 | 99 | e50 | 194 | --- | 81 | 96 | 119 | 42 | 36 | 36 | 35 |
| 31 | 39 | --- | e50 | 153 | --- | 79 | --- | 101 | --- | 36 | 36 | --- |
| TOTAL | 1,210 | 1,477 | 2,712 | 1,993 | 1,831 | 2,373 | 2,713 | 2,968 | 1,854 | 1,186 | 1,178 | 1,147 |
| MEAN | 39.0 | 49.2 | 87.5 | 64.3 | 63.1 | 76.5 | 90.4 | 95.7 | 61.8 | 38.3 | 38.0 | 38.2 |
| MAX | 53 | 99 | 245 | 194 | 123 | 102 | 128 | 141 | 92 | 41 | 55 | 50 |
| MIN | 35 | 38 | 50 | 44 | 49 | 49 | 68 | 74 | 42 | 36 | 35 | 35 |
| AC-FT | 2,400 | 2,930 | 5,380 | 3,950 | 3,630 | 4,710 | 5,380 | 5,890 | 3,680 | 2,350 | 2,340 | 2,280 |
| CFSM | 1.46 | 1.84 | 3.26 | 2.40 | 2.36 | 2.86 | 3.37 | 3.57 | 2.31 | 1.43 | 1.42 | 1.43 |
| IN. | 1.68 | 2.05 | 3.76 | 2.77 | 2.54 | 3.29 | 3.77 | 4.12 | 2.57 | 1.65 | 1.64 | 1.59 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2004, BY WATER YEAR (WY)

| | 45.1 | 68.7 | 78.4 | 81.8 | 87.0 | 79.9 | 90.4 | 94.8 | 73.8 | 48.1 | 41.8 | 40.9 |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MEAN | | | | | | | | | | | | |
| MAX | 84.6 | 136 | 203 | 162 | 275 | 123 | 132 | 141 | 151 | 87.9 | 63.3 | 64.9 |
| (WY) | (1998) | (1996) | (1996) | (1996) | (1996) | (1997) | (2002) | (1997) | (1999) | (1999) | (1997) | (1997) |
| MIN | 30.0 | 38.2 | 44.1 | 43.8 | 40.0 | 58.1 | 62.4 | 43.7 | 33.3 | 34.2 | 31.1 | 28.2 |
| (WY) | (1993) | (1988) | (1994) | (1992) | (1993) | (1994) | (1991) | (1992) | (1992) | (1994) | (1992) | (1995) |

14096300 MILL CREEK NEAR BADGER BUTTE, NEAR WARM SPRINGS, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1984 - 2004 | |
|--------------------------|------------------------|--------|---------------------|--------|-------------------------|--------------|
| ANNUAL TOTAL | 26,174 | | 22,642 | | | |
| ANNUAL MEAN | 71.7 | | 61.9 | | 69.1 | |
| HIGHEST ANNUAL MEAN | | | | | 114 | 1996 |
| LOWEST ANNUAL MEAN | | | | | 46.5 | 1994 |
| HIGHEST DAILY MEAN | 536 | Jan 31 | 245 | Dec 14 | 1,060 | Feb 7, 1996 |
| LOWEST DAILY MEAN | 35 | Jul 24 | 35 | Oct 1 | 25 | Sep 21, 1995 |
| ANNUAL SEVEN-DAY MINIMUM | 35 | Sep 23 | 35 | Sep 4 | 25 | Sep 20, 1995 |
| ANNUAL RUNOFF (AC-FT) | 51,920 | | 44,910 | | 50,060 | |
| ANNUAL RUNOFF (CFSM) | 2.68 | | 2.31 | | 2.58 | |
| ANNUAL RUNOFF (INCHES) | 36.33 | | 31.43 | | 35.03 | |
| 10 PERCENT EXCEEDS | 120 | | 98 | | 110 | |
| 50 PERCENT EXCEEDS | 56 | | 51 | | 58 | |
| 90 PERCENT EXCEEDS | 36 | | 36 | | 36 | |

e Estimated



2004 Water Year
DESCHUTES RIVER BASIN

14096300 MILL CREEK NR BADGER BUTTE, NR WARM SPRINGS, OR

Latitude: 44° 51 ' 42"

Longitude: 121° 37 ' 35"

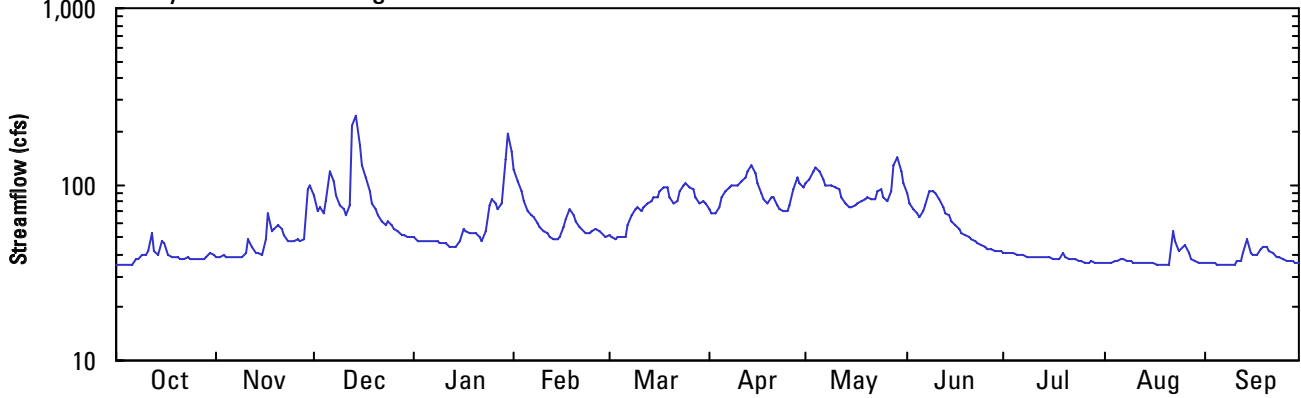
Hydrologic Unit Code: 17070306

Wasco County

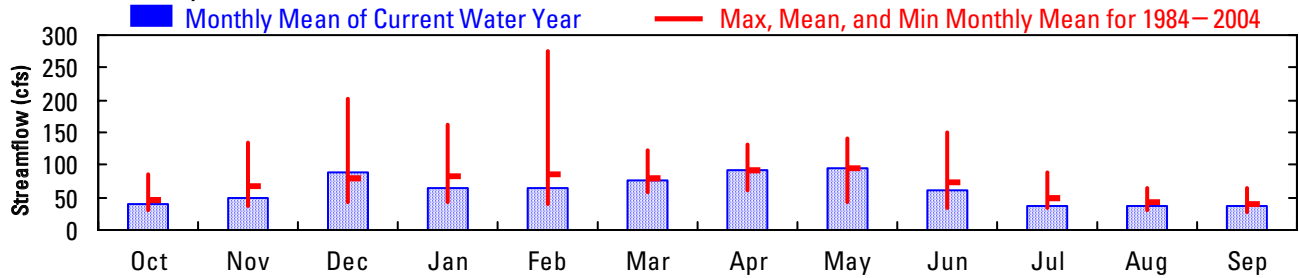
Datum: 3,380.00 feet

Drainage Area: 26.8 square miles

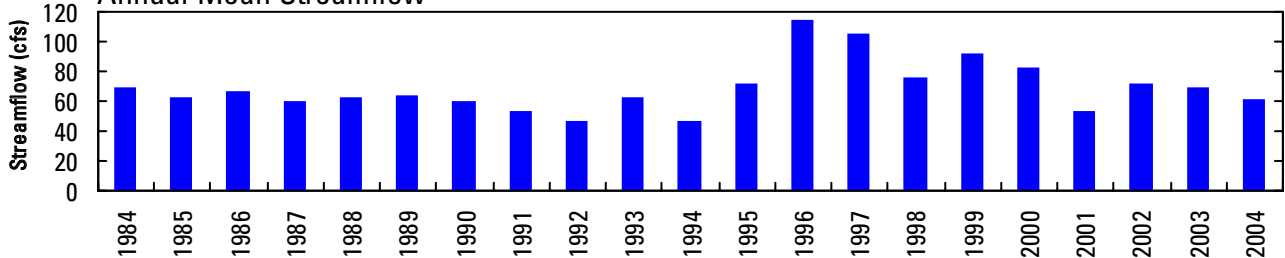
Daily Mean Discharge



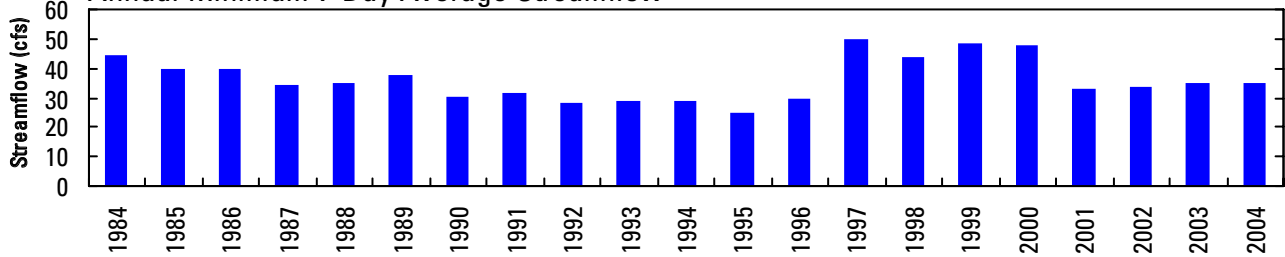
Monthly Statistics



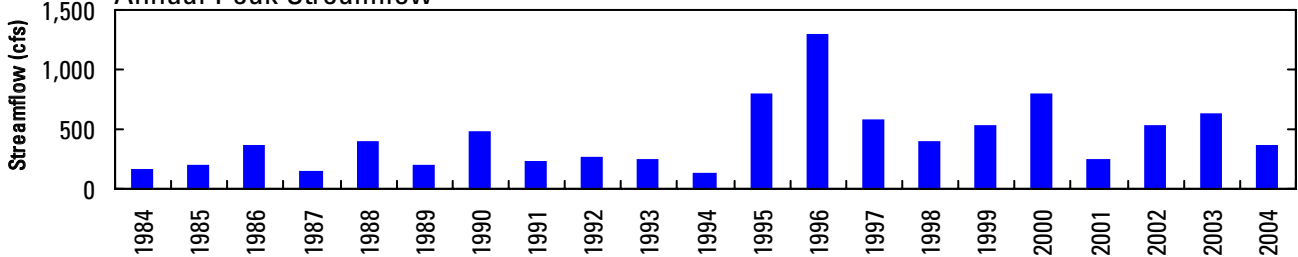
Annual Mean Streamflow



Annual Minimum 7-Day Average Streamflow



Annual Peak Streamflow



14096850 BEAVER CREEK BELOW QUARTZ CREEK, NEAR SIMNASHO, OR

LOCATION.--Lat 44°57'32", long 121°23'35", in NE ¼ SW ¼ sec.14, T.7 S., R.11 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 600 ft downstream from culvert on Warm Springs Reservation Highway 9, 200 ft downstream from Quartz Creek, 2.4 mi west of Simnasho, and at mile 7.92.

DRAINAGE AREA.--145 mi².

PERIOD OF RECORD.--October 1983 to current year.

REVISED RECORDS.--WDR OR-96-1: 1986.

GAGE.--Water-stage recorder. Elevation of gage is 2,260 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversions upstream from station.

AVERAGE DISCHARGE.--21 years (water years 1984-2004), 84.1 ft³/s, 7.88 in/yr, 60,960 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,760 ft³/s, Feb. 7, 1996, gage height, 10.57 ft; minimum discharge, 4.5 ft³/s Jan. 7, 1991.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

| Date | Time | Discharge (ft ³ /s) | Gage height (ft) | Date | Time | Discharge (ft ³ /s) | Gage height (ft) |
|--------|------|--------------------------------|------------------|--------|------|--------------------------------|------------------|
| Jan 29 | 2130 | *1,160 | *5.30 | Feb 17 | 1900 | 650 | 4.32 |

Minimum discharge, 20 ft³/s, Jan. 12-14.

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 | 34 | 34 | 41 | 36 | 247 | 213 | 133 | 81 | 53 | 39 | 35 | 34 |
| 2 | 34 | 35 | 39 | 35 | 191 | 202 | 124 | 81 | 51 | 39 | 35 | 33 |
| 3 | 34 | 35 | 39 | 34 | 152 | 177 | 120 | 81 | 51 | 39 | 34 | 33 |
| 4 | 34 | 35 | 39 | 34 | 146 | 176 | 118 | 81 | 50 | 39 | 34 | 33 |
| 5 | 34 | 35 | 39 | 33 | 124 | 191 | 118 | 79 | 48 | 39 | 36 | 33 |
| 6 | 34 | 35 | 45 | 33 | 116 | 191 | 119 | 78 | 48 | 39 | 36 | 33 |
| 7 | 34 | 35 | 44 | 33 | 116 | 175 | 118 | 75 | 49 | 39 | 36 | 33 |
| 8 | 34 | 35 | 40 | 33 | 110 | 189 | 118 | 75 | 53 | 39 | 35 | 33 |
| 9 | 34 | 35 | 40 | 29 | 100 | 204 | 118 | 72 | 56 | 39 | 35 | 33 |
| 10 | 34 | 35 | 39 | 24 | 92 | 222 | 116 | 69 | 52 | 39 | 35 | 33 |
| 11 | 34 | 35 | 38 | 22 | 89 | 211 | 114 | 69 | 49 | 39 | 35 | 33 |
| 12 | 35 | 35 | 38 | 21 | 84 | 196 | 114 | 68 | 48 | 38 | 35 | 33 |
| 13 | 36 | 35 | 64 | 20 | 83 | 189 | 116 | 66 | 48 | 37 | 35 | 33 |
| 14 | 35 | 35 | 88 | 21 | 83 | 181 | 118 | 64 | 47 | 37 | 35 | 33 |
| 15 | 35 | 35 | 61 | 27 | 123 | 181 | 119 | 62 | 46 | 37 | 35 | 34 |
| 16 | 36 | 35 | 52 | 31 | 277 | 177 | 113 | 60 | 46 | 37 | 35 | 34 |
| 17 | 35 | 40 | 48 | 37 | 458 | 177 | 108 | 59 | 45 | 37 | 35 | 34 |
| 18 | 35 | 39 | 46 | 45 | 485 | 180 | 104 | 59 | 44 | 37 | 34 | 34 |
| 19 | 35 | 38 | 44 | 48 | 326 | 180 | 100 | 58 | 43 | 37 | 33 | 34 |
| 20 | 35 | 38 | 43 | 56 | 245 | 165 | 101 | 59 | 43 | 37 | 33 | 34 |
| 21 | 35 | 37 | 43 | 57 | 213 | 152 | 101 | 58 | 43 | 37 | 33 | 33 |
| 22 | 35 | 35 | 42 | 56 | 189 | 147 | 97 | 56 | 43 | 37 | 39 | 33 |
| 23 | 35 | 35 | 42 | 57 | 173 | 149 | 91 | 58 | 42 | 36 | 40 | 32 |
| 24 | 34 | 35 | 42 | 85 | 173 | 152 | 89 | 57 | 41 | 36 | 37 | 32 |
| 25 | 34 | 35 | 42 | 91 | 196 | 154 | 86 | 55 | 40 | 36 | 36 | 32 |
| 26 | 34 | 35 | 41 | 87 | 238 | 167 | 85 | 53 | 40 | 36 | 36 | 32 |
| 27 | 34 | 35 | 41 | 89 | 195 | 163 | 85 | 53 | 40 | 36 | 36 | 32 |
| 28 | 34 | 35 | 41 | 119 | 175 | 157 | 85 | 55 | 40 | 36 | 35 | 32 |
| 29 | 34 | 40 | 38 | 607 | 166 | 147 | 85 | 59 | 40 | 35 | 35 | 32 |
| 30 | 35 | 43 | 34 | 727 | --- | 145 | 83 | 57 | 39 | 35 | 35 | 32 |
| 31 | 35 | --- | 36 | 352 | --- | 142 | --- | 55 | --- | 35 | 34 | --- |
| TOTAL | 1,070 | 1,079 | 1,369 | 2,979 | 5,365 | 5,452 | 3,196 | 2,012 | 1,378 | 1,158 | 1,092 | 989 |
| MEAN | 34.5 | 36.0 | 44.2 | 96.1 | 185 | 176 | 107 | 64.9 | 45.9 | 37.4 | 35.2 | 33.0 |
| MAX | 36 | 43 | 88 | 727 | 485 | 222 | 133 | 81 | 56 | 39 | 40 | 34 |
| MIN | 34 | 34 | 34 | 20 | 83 | 142 | 83 | 53 | 39 | 35 | 33 | 32 |
| AC-FT | 2,120 | 2,140 | 2,720 | 5,910 | 10,640 | 10,810 | 6,340 | 3,990 | 2,730 | 2,300 | 2,170 | 1,960 |
| CFSM | 0.24 | 0.25 | 0.30 | 0.66 | 1.28 | 1.21 | 0.73 | 0.45 | 0.32 | 0.26 | 0.24 | 0.23 |
| IN. | 0.27 | 0.28 | 0.35 | 0.76 | 1.38 | 1.40 | 0.82 | 0.52 | 0.35 | 0.30 | 0.28 | 0.25 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MEAN | 38.6 | 49.0 | 76.5 | 122 | 196 | 157 | 120 | 84.7 | 56.8 | 41.8 | 38.0 | 37.0 |
| MAX | 47.7 | 104 | 315 | 479 | 646 | 305 | 188 | 132 | 95.5 | 54.1 | 47.4 | 44.4 |
| (WY) | (1998) | (1985) | (1997) | (1997) | (1996) | (1986) | (2000) | (1999) | (1993) | (1999) | (1999) | (1999) |
| MIN | 33.1 | 35.6 | 40.0 | 42.3 | 42.7 | 53.0 | 60.8 | 44.6 | 36.6 | 32.3 | 30.5 | 30.4 |
| (WY) | (1995) | (1988) | (1986) | (2001) | (1994) | (2001) | (1994) | (1994) | (1994) | (1994) | (1994) | (1994) |

DESCHUTES RIVER BASIN

14096850 BEAVER CREEK BELOW QUARTZ CREEK, NEAR SIMNASHO, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1984 - 2004 | |
|--------------------------|------------------------|--------|---------------------|--------|-------------------------|-------------|
| ANNUAL TOTAL | 21,389 | | 27,139 | | | |
| ANNUAL MEAN | 58.6 | | 74.2 | | 84.1 | |
| HIGHEST ANNUAL MEAN | | | | | 166 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 41.6 | 1994 |
| HIGHEST DAILY MEAN | 330 | Jan 31 | 727 | Jan 30 | 3,600 | Feb 7, 1996 |
| LOWEST DAILY MEAN | 34 | Jul 24 | 20 | Jan 13 | 5.8 | Jan 7, 1991 |
| ANNUAL SEVEN-DAY MINIMUM | 34 | Jul 24 | 23 | Jan 9 | 8.3 | Jan 2, 1991 |
| ANNUAL RUNOFF (AC-FT) | 42,430 | | 53,830 | | 60,960 | |
| ANNUAL RUNOFF (CFSM) | 0.404 | | 0.511 | | 0.580 | |
| ANNUAL RUNOFF (INCHES) | 5.49 | | 6.96 | | 7.88 | |
| 10 PERCENT EXCEEDS | 105 | | 173 | | 163 | |
| 50 PERCENT EXCEEDS | 41 | | 40 | | 48 | |
| 90 PERCENT EXCEEDS | 34 | | 33 | | 36 | |



2004 Water Year
DESCHUTES RIVER BASIN

14096850 BEAVER CREEK BLW QUARTZ CR, NR SIMNASHO, OR

Latitude: 44° 57 ' 32"

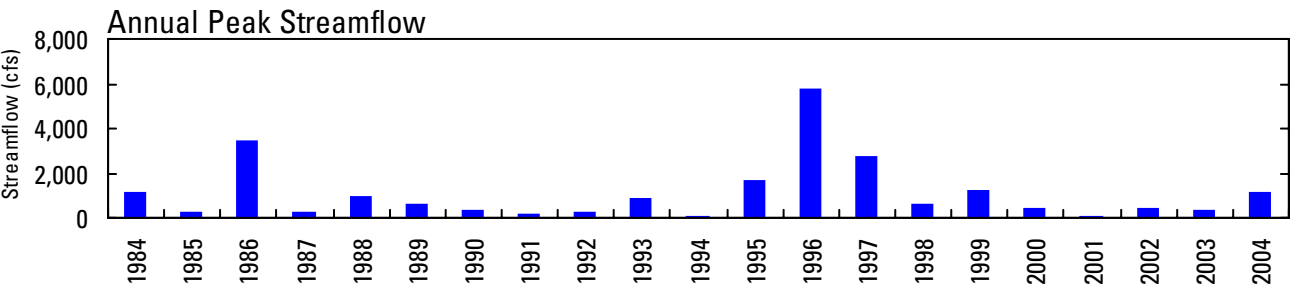
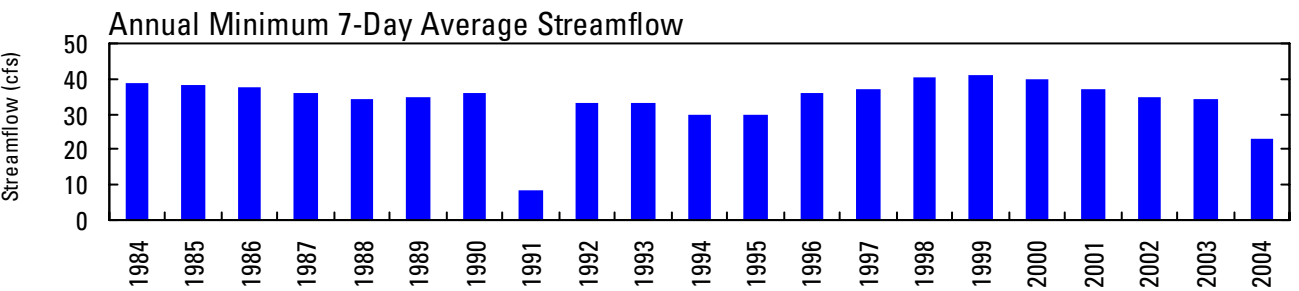
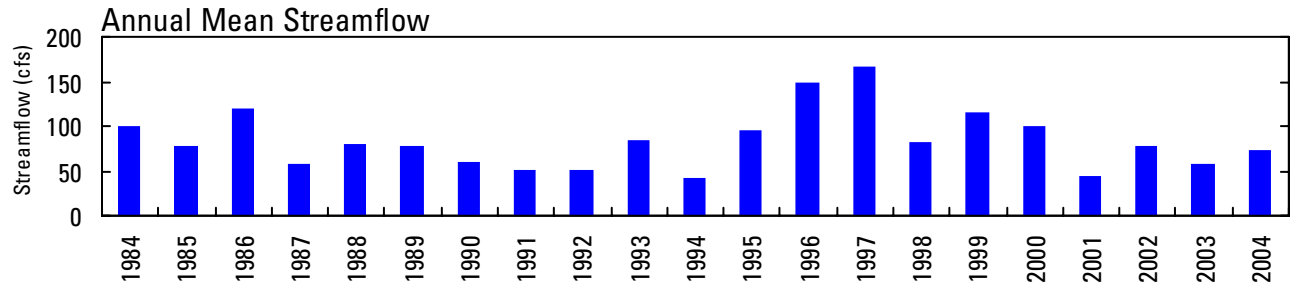
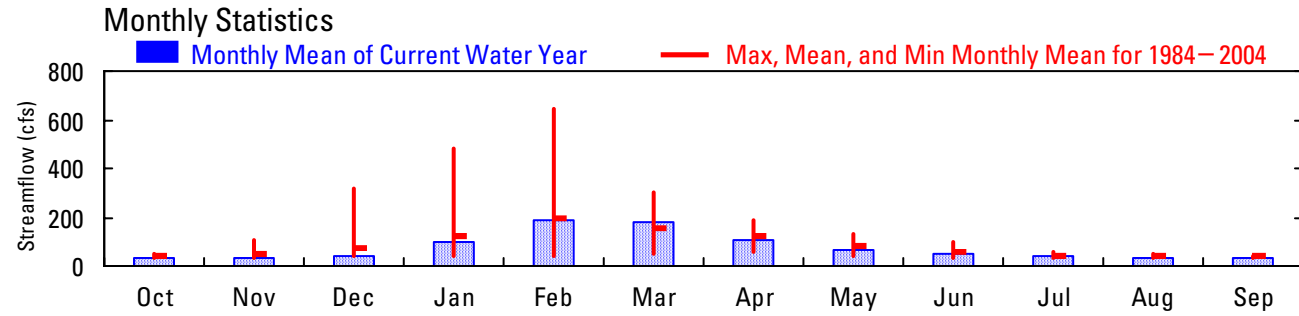
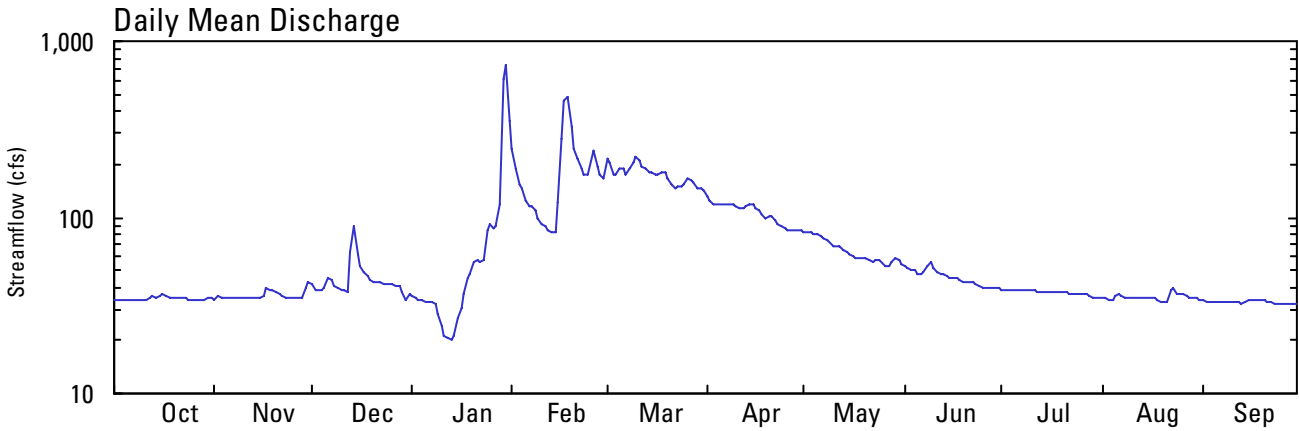
Longitude: 121° 23 ' 35"

Hydrologic Unit Code: 17070306

Wasco County

Datum: 2,260 feet

Drainage Area: 145 square miles



14097100 WARM SPRINGS RIVER NEAR KAHNEETA HOT SPRINGS, OR

LOCATION.--Lat 44°51'24", long 121°08'55", in SE ¼ SW ¼ sec.23, T.8 S., R.13 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 25 ft upstream from bridge, 2.5 mi east of Kahneeta Hot Springs, and at mile 4.6.

DRAINAGE AREA.--526 mi².

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,394.96 ft above NGVD 1929.

REMARKS.--Records good. No regulation. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--32 years (water years 1973-2004), 441 ft³/s, 11.38 in/yr, 319,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,600 ft³/s Feb. 7, 1996, gage height, 14.32 ft, from inside highwater mark and slope-area computation; minimum discharge, 149 ft³/s Dec. 20, 1990, but may have been less during period of ice effect Dec. 20, 1990 to Jan. 10, 1991.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft³/s and maximum (*):

| Date | Time | Discharge (ft ³ /s) | Gage height (ft) | Date | Time | Discharge (ft ³ /s) | Gage height (ft) |
|--------|------|-----------------------------------|---------------------|--|------|-----------------------------------|---------------------|
| Jan 29 | 2300 | *2,740 | *5.58 | No other peak greater than base discharge. | | | |

Minimum discharge, 185 ft³/s, Nov. 1.

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 | 215 | 218 | 308 | e240 | 799 | 614 | 585 | 478 | 350 | 250 | 224 | 223 |
| 2 | 217 | 229 | 281 | e240 | 692 | 616 | 557 | 481 | 335 | 248 | 223 | 225 |
| 3 | 216 | 226 | 273 | e230 | 597 | 566 | 544 | 490 | 323 | 248 | 225 | 226 |
| 4 | 216 | 222 | 276 | e230 | 560 | 560 | 546 | 492 | 313 | 246 | 226 | 224 |
| 5 | 217 | 222 | 281 | e230 | 510 | 586 | 555 | 488 | 305 | 244 | 240 | 223 |
| 6 | 216 | 222 | 321 | e230 | 481 | 599 | 569 | 474 | 308 | 244 | 232 | 222 |
| 7 | 217 | 223 | 331 | e230 | 475 | 571 | 568 | 457 | 321 | 242 | 232 | 222 |
| 8 | 222 | 228 | 289 | e230 | 464 | 626 | 587 | 455 | 355 | 244 | 229 | 221 |
| 9 | 222 | 229 | 276 | e220 | 436 | 670 | 586 | 441 | 380 | 244 | 226 | 222 |
| 10 | 225 | 227 | 272 | e220 | 404 | 719 | 579 | 427 | 351 | 242 | 225 | 223 |
| 11 | 228 | 235 | 263 | e220 | 392 | 713 | 580 | 423 | 332 | 242 | 223 | 223 |
| 12 | 241 | 243 | 262 | e220 | 381 | 693 | 588 | 414 | 321 | 240 | 222 | 226 |
| 13 | 240 | 235 | 330 | e210 | 373 | 693 | 608 | 397 | 312 | 240 | 223 | 227 |
| 14 | 229 | 230 | 635 | 273 | 371 | 680 | 628 | 385 | 304 | 238 | 224 | 241 |
| 15 | 229 | 229 | 491 | 299 | 445 | 697 | 642 | 376 | 297 | 236 | 228 | 240 |
| 16 | 248 | 231 | 397 | 303 | 724 | 691 | 599 | 372 | 290 | 235 | 224 | 234 |
| 17 | 235 | 273 | 357 | 304 | 1,120 | 701 | 570 | 372 | 284 | 234 | 221 | 237 |
| 18 | 226 | 265 | 331 | 302 | 1,280 | 715 | 547 | 372 | 279 | 232 | 219 | 240 |
| 19 | 224 | 256 | 310 | 304 | 943 | 730 | 525 | 367 | 276 | 241 | 219 | 240 |
| 20 | 224 | 269 | 299 | 324 | 750 | 690 | 530 | 364 | 273 | 238 | 218 | 239 |
| 21 | 223 | 253 | 289 | 328 | 684 | 652 | 539 | 369 | 271 | 232 | 219 | 236 |
| 22 | 223 | 240 | 283 | 319 | 631 | 635 | 515 | 354 | 267 | 230 | 255 | 232 |
| 23 | 224 | 240 | 277 | 321 | 591 | 645 | 487 | 369 | 263 | 230 | 282 | 229 |
| 24 | 226 | 243 | 285 | 387 | 584 | 662 | 475 | 368 | 261 | 229 | 252 | 228 |
| 25 | 224 | 240 | 287 | 419 | 594 | 674 | 462 | 355 | 258 | 227 | 240 | 226 |
| 26 | 223 | 244 | 274 | 405 | 727 | 705 | 458 | 342 | 255 | 224 | 245 | 225 |
| 27 | 218 | 239 | 266 | 412 | 630 | 685 | 469 | 346 | 254 | 225 | 239 | 223 |
| 28 | 218 | 237 | e260 | 433 | 579 | 654 | 493 | 375 | 253 | 227 | 233 | 223 |
| 29 | 222 | 274 | e240 | 1,110 | 561 | 622 | 499 | 424 | 254 | 226 | 229 | 221 |
| 30 | 230 | 317 | e240 | 2,040 | --- | 617 | 481 | 404 | 253 | 225 | 226 | 221 |
| 31 | 225 | --- | e240 | 1,050 | --- | 611 | --- | 373 | --- | 226 | 225 | --- |
| TOTAL | 6,963 | 7,239 | 9,524 | 12,283 | 17,778 | 20,292 | 16,371 | 12,604 | 8,898 | 7,329 | 7,148 | 6,842 |
| MEAN | 225 | 241 | 307 | 396 | 613 | 655 | 546 | 407 | 297 | 236 | 231 | 228 |
| MAX | 248 | 317 | 635 | 2,040 | 1,280 | 730 | 642 | 492 | 380 | 250 | 282 | 241 |
| MIN | 215 | 218 | 240 | 210 | 371 | 560 | 458 | 342 | 253 | 224 | 218 | 221 |
| AC-FT | 13,810 | 14,360 | 18,890 | 24,360 | 35,260 | 40,250 | 32,470 | 25,000 | 17,650 | 14,540 | 14,180 | 13,570 |
| CFSM | 0.43 | 0.46 | 0.58 | 0.75 | 1.17 | 1.24 | 1.04 | 0.77 | 0.56 | 0.45 | 0.44 | 0.43 |
| IN. | 0.49 | 0.51 | 0.67 | 0.87 | 1.26 | 1.44 | 1.16 | 0.89 | 0.63 | 0.52 | 0.51 | 0.48 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 2004, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MEAN | 261 | 320 | 480 | 578 | 746 | 645 | 585 | 518 | 384 | 282 | 258 | 252 |
| MAX | 358 | 570 | 1,216 | 1,773 | 2,894 | 1,285 | 956 | 848 | 803 | 407 | 344 | 334 |
| (WY) | (1998) | (1985) | (1997) | (1997) | (1996) | (1986) | (1997) | (1997) | (1974) | (1999) | (1999) | (1997) |
| MIN | 211 | 229 | 242 | 201 | 239 | 274 | 278 | 278 | 235 | 198 | 196 | 197 |
| (WY) | (1993) | (1994) | (1994) | (1979) | (1994) | (1977) | (1977) | (1977) | (1994) | (1994) | (1994) | (1994) |

14097100 WARM SPRINGS RIVER NEAR KAHNEETA HOT SPRINGS, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1973 - 2004 | |
|--------------------------|------------------------|--------|---------------------|--------|-------------------------|--------------|
| ANNUAL TOTAL | 122,131 | | 133,271 | | | |
| ANNUAL MEAN | 335 | | 364 | | 441 | |
| HIGHEST ANNUAL MEAN | | | | | 786 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 246 | 1994 |
| HIGHEST DAILY MEAN | 1,350 | Feb 1 | 2,040 | Jan 30 | 15,800 | Feb 7, 1996 |
| LOWEST DAILY MEAN | 214 | Sep 28 | 210 | Jan 13 | 160 | Jan 1, 1979 |
| ANNUAL SEVEN-DAY MINIMUM | 215 | Sep 25 | 216 | Oct 1 | 174 | Dec 31, 1978 |
| ANNUAL RUNOFF (AC-FT) | 242,200 | | 264,300 | | 319,200 | |
| ANNUAL RUNOFF (CFSM) | 0.636 | | 0.692 | | 0.838 | |
| ANNUAL RUNOFF (INCHES) | 8.64 | | 9.43 | | 11.38 | |
| 10 PERCENT EXCEEDS | 533 | | 629 | | 737 | |
| 50 PERCENT EXCEEDS | 276 | | 273 | | 320 | |
| 90 PERCENT EXCEEDS | 218 | | 223 | | 228 | |

e Estimated



2004 Water Year
DESCHUTES RIVER BASIN

14097100 WARM SPRINGS RIVER NEAR KAHNEETA HOT SPRINGS, OR

Latitude: 44° 51 ' 24"

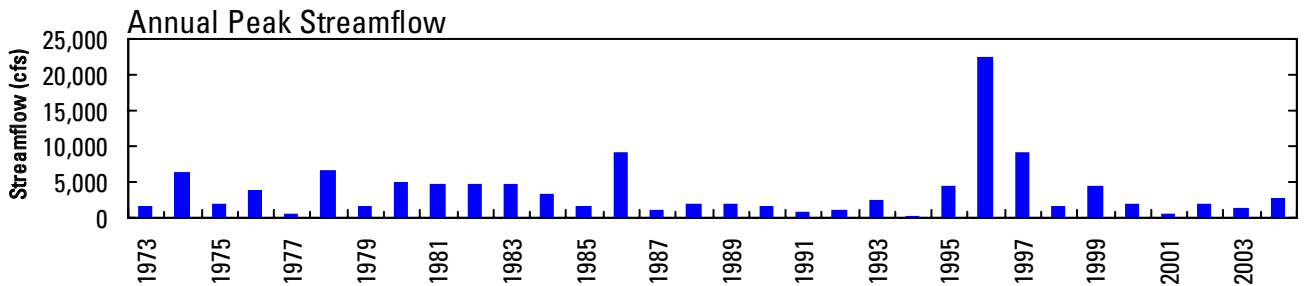
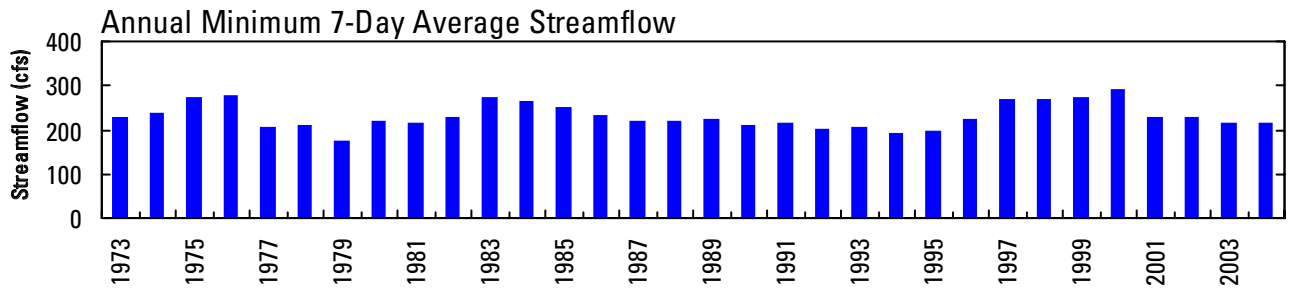
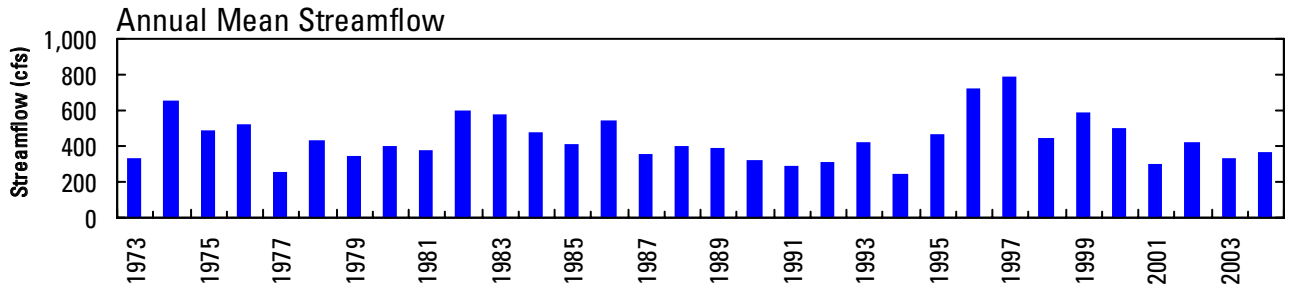
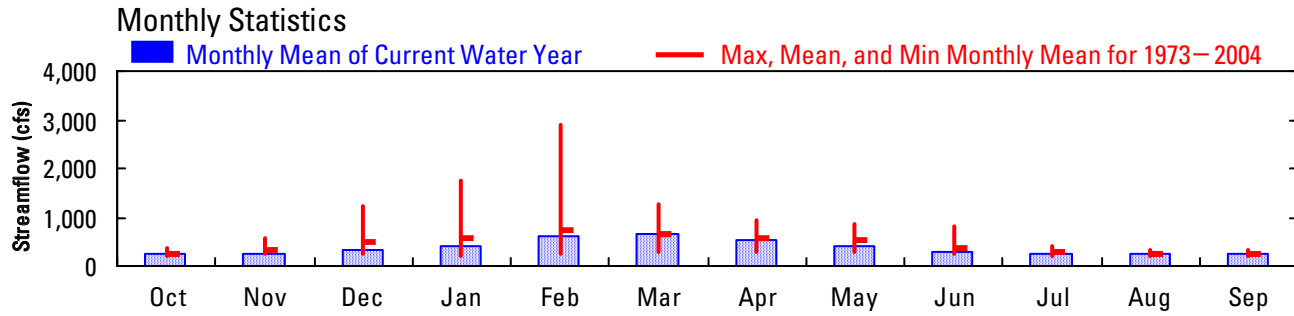
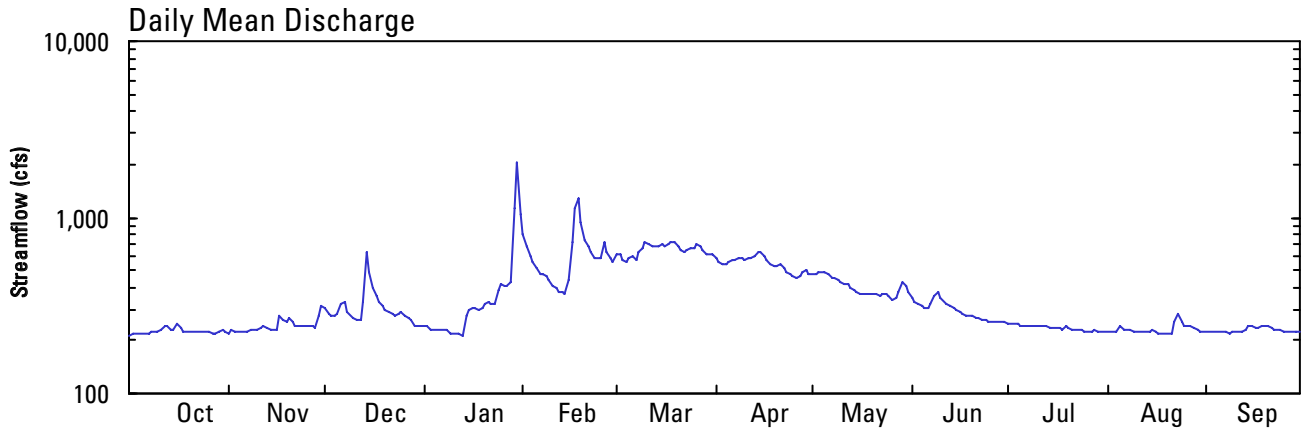
Longitude: 121° 08 ' 55"

Hydrologic Unit Code: 17070306

Wasco County

Datum: 1,394.96 feet

Drainage Area: 526 square miles



DESCHUTES RIVER BASIN

14103000 DESCHUTES RIVER AT MOODY, NEAR BIGGS, OR—Continued

| SUMMARY STATISTICS | FOR 2003 CALENDAR YEAR | | FOR 2004 WATER YEAR | | WATER YEARS 1957 - 2004 | |
|--------------------------|------------------------|-------|---------------------|--------|-------------------------|-------------|
| ANNUAL TOTAL | 1,805,110 | | 1,981,900 | | | |
| ANNUAL MEAN | 4,946 | | 5,415 | | 5,789 | |
| HIGHEST ANNUAL MEAN | | | | | 7,969 | |
| LOWEST ANNUAL MEAN | | | | | 4,290 | |
| HIGHEST DAILY MEAN | 11,400 | Feb 1 | 12,000 | Jan 30 | 63,400 | Feb 8, 1996 |
| LOWEST DAILY MEAN | 3,930 | Sep 6 | 4,050 | Oct 1 | 2,880 | Dec 4, 1957 |
| ANNUAL SEVEN-DAY MINIMUM | 3,950 | Sep 2 | 4,060 | Oct 1 | 3,180 | Dec 1, 1957 |
| ANNUAL RUNOFF (AC-FT) | 3,580,000 | | 3,931,000 | | 4,194,000 | |
| 10 PERCENT EXCEEDS | 6,020 | | 6,900 | | 8,050 | |
| 50 PERCENT EXCEEDS | 4,700 | | 5,090 | | 5,170 | |
| 90 PERCENT EXCEEDS | 4,110 | | 4,410 | | 4,210 | |

e Estimated



2004 Water Year
DESCHUTES RIVER BASIN

14103000 DESCHUTES RIVER AT MOODY, NEAR BIGGS, OR

Latitude: 45° 37 ' 20"
Sherman County

Longitude: 120° 54 ' 05"
Datum: 167.54 feet

Hydrologic Unit Code: 17070306
Drainage Area: 10,500 square miles

