

JAMES RIVER BASIN

02016000 COWPASTURE RIVER NEAR CLIFTON FORGE, VA

LOCATION.--Lat 37°47'30", long 79°45'35", Alleghany County, Hydrologic Unit 02080201, on left bank 100 ft downstream from bridge on State Highway 633, 2.5 mi upstream from confluence with Jackson River, and 4.0 mi southeast of Clifton Forge.

DRAINAGE AREA.--461 mi².

PERIOD OF RECORD.--March 1925 to current year. Records for May 1907 to August 1908, published in WSP 242, are unreliable and should not be used.

REVISED RECORDS.--WSP 952: 1925-41. WSP 2104: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 1,006.93 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to October 1934, nonrecording gage at site 100 ft upstream at present datum.

REMARKS.--Records good, except for period of doubtful gage-height record, Aug. 14-17, which is fair. Low flow affected by springs and by occasional regulation from unknown source. Maximum discharge, 40,900 ft³/s, from rating curve extended above 13,000 ft³/s on basis of slope-area measurements at gage heights 15.70 ft and 19.15 ft. Minimum gage height, 1.43 ft, Jan. 31, 1981, result of freezeup. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 20.8 ft, from floodmarks, discharge, about 45,000 ft³/s, from rating curve extended above 13,000 ft³/s on basis of records for other stations in James River Basin.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,000 ft³/s and maximum (*):

| Date | Time | Discharge (ft ³ /s) | Gage height (ft) | Date | Time | Discharge (ft ³ /s) | Gage height (ft) |
|--------|------|--------------------------------|------------------|--|------|--------------------------------|------------------|
| Jan 24 | 1745 | *5,210 | *7.55 | No other peak greater than base discharge. | | | |

Minimum daily discharge, 61 ft³/s, Aug 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-------|------|------|------|-------|-------|-------|------|-------|------|------|------|------|
| 1 | 74 | 80 | 82 | 95 | 303 | 273 | 385 | 266 | 150 | 88 | 81 | 77 |
| 2 | 73 | 80 | 81 | 86 | 517 | 279 | 408 | 248 | 143 | 88 | 73 | 74 |
| 3 | 72 | 89 | 81 | 196 | 888 | 272 | 394 | 234 | 142 | 83 | 69 | 71 |
| 4 | 74 | 92 | 81 | 391 | 743 | 445 | 363 | 222 | 136 | 80 | 67 | 70 |
| 5 | 77 | 93 | 82 | 262 | 602 | 648 | 343 | 213 | 131 | 78 | 67 | 476 |
| 6 | 79 | 88 | 82 | 161 | 490 | 565 | 320 | 205 | 126 | 75 | 67 | 752 |
| 7 | 82 | 85 | 82 | 190 | 437 | 546 | 297 | 203 | 119 | 73 | 66 | 720 |
| 8 | 177 | 84 | 92 | 144 | 472 | 512 | 284 | 1070 | 115 | 75 | 66 | 422 |
| 9 | 204 | 82 | 128 | 174 | 528 | 475 | 276 | 832 | 110 | 70 | 66 | 262 |
| 10 | 140 | 82 | 140 | 214 | 469 | 476 | 268 | 507 | 112 | 69 | 66 | 186 |
| 11 | 108 | 94 | 123 | 256 | 422 | 443 | 298 | 396 | 189 | 69 | 65 | 145 |
| 12 | 93 | 92 | 107 | 224 | 377 | 429 | 306 | 328 | 196 | 72 | 62 | 125 |
| 13 | 87 | 93 | 121 | 256 | 352 | 431 | 285 | 302 | 139 | 78 | 61 | 111 |
| 14 | 84 | 91 | 144 | 401 | 330 | 444 | 266 | 1170 | 118 | 77 | e61 | 102 |
| 15 | 82 | 87 | 145 | 1360 | 288 | 888 | 262 | 1490 | 107 | 75 | e65 | 100 |
| 16 | 82 | 85 | 133 | 1300 | 265 | 1050 | 272 | 958 | 102 | 73 | e65 | 106 |
| 17 | 81 | 85 | 114 | 692 | 251 | 1930 | 268 | 684 | 104 | 72 | e66 | 101 |
| 18 | 82 | 83 | 105 | 518 | 520 | 3270 | 251 | 531 | 99 | 73 | 67 | 96 |
| 19 | 82 | 82 | 99 | 674 | 770 | 2370 | 239 | 442 | 98 | 82 | 63 | 93 |
| 20 | 81 | 84 | 96 | 670 | 623 | 1510 | 238 | 391 | 98 | 72 | 80 | 90 |
| 21 | 80 | 82 | 93 | 503 | 515 | 1230 | 236 | 328 | 99 | 73 | 83 | 116 |
| 22 | 78 | 82 | 92 | 426 | 432 | 1460 | 234 | 288 | 97 | 71 | 79 | 140 |
| 23 | 77 | 82 | 90 | 499 | 361 | 1240 | 231 | 269 | 94 | 72 | 83 | 120 |
| 24 | 79 | 82 | 92 | 3480 | 323 | 984 | 224 | 275 | 90 | 89 | 74 | 102 |
| 25 | 79 | 81 | 89 | 2830 | 300 | 832 | 212 | 268 | 88 | 96 | 76 | 94 |
| 26 | 80 | 86 | 87 | 1170 | 284 | 711 | 209 | 255 | 87 | 80 | 103 | 88 |
| 27 | 80 | 85 | 86 | 771 | 266 | 617 | 204 | 220 | 87 | 73 | 231 | 114 |
| 28 | 81 | 84 | 84 | 604 | 260 | 545 | 224 | 201 | 87 | 74 | 137 | 140 |
| 29 | 80 | 84 | 86 | 484 | --- | 482 | 299 | 185 | 88 | 101 | 105 | 144 |
| 30 | 80 | 83 | 89 | 398 | --- | 436 | 292 | 174 | 86 | 85 | 90 | 1180 |
| 31 | 81 | --- | 89 | 334 | --- | 392 | --- | 156 | --- | 87 | 81 | --- |
| TOTAL | 2789 | 2562 | 3095 | 19763 | 12388 | 26185 | 8388 | 13311 | 3437 | 2423 | 2487 | 6417 |
| MEAN | 90.0 | 85.4 | 99.8 | 638 | 442 | 845 | 280 | 429 | 115 | 78.2 | 80.2 | 214 |
| MAX | 204 | 94 | 145 | 3480 | 888 | 3270 | 408 | 1490 | 196 | 101 | 231 | 1180 |
| MIN | 72 | 80 | 81 | 86 | 251 | 272 | 204 | 156 | 86 | 69 | 61 | 70 |
| CFSM | .20 | .19 | .22 | 1.38 | .96 | 1.83 | .61 | .93 | .25 | .17 | .17 | .46 |
| IN. | .23 | .21 | .25 | 1.59 | 1.00 | 2.11 | .68 | 1.07 | .28 | .20 | .20 | .52 |

02016000 COWPASTURE RIVER NEAR CLIFTON FORGE, VA--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1999, BY WATER YEAR (WY)

| | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| MEAN | 276 | 376 | 564 | 749 | 872 | 1112 | 840 | 646 | 384 | 218 | 231 | 214 |
| MAX | 1474 | 2745 | 1883 | 2253 | 1911 | 2531 | 2878 | 2342 | 1484 | 1213 | 1531 | 1510 |
| (WY) | 1938 | 1986 | 1974 | 1996 | 1998 | 1993 | 1987 | 1989 | 1982 | 1972 | 1969 | 1996 |
| MIN | 45.4 | 62.8 | 82.9 | 95.3 | 89.9 | 203 | 235 | 147 | 98.1 | 64.9 | 64.9 | 60.3 |
| (WY) | 1931 | 1932 | 1966 | 1981 | 1934 | 1981 | 1995 | 1930 | 1964 | 1930 | 1930 | 1932 |

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | FOR 1999 WATER YEAR | FOR 1998 CALENDAR YEAR | FOR 1999 WATER YEAR | FOR 1998 CALENDAR YEAR | FOR 1999 WATER YEAR |
|--------------------------|------------------------|---------------------|------------------------|---------------------|------------------------|---------------------|
| ANNUAL TOTAL | 258147 | 103245 | | | | |
| ANNUAL MEAN | 707 | 283 | | | 539 | |
| HIGHEST ANNUAL MEAN | | | | | 935 | 1973 |
| LOWEST ANNUAL MEAN | | | | | 248 | 1981 |
| HIGHEST DAILY MEAN | 13300 | Jan 8 | 3480 | Jan 24 | 33900 | Nov 5 1985 |
| LOWEST DAILY MEAN | 72 | Oct 3 | 61 | Aug 13 | 40 | Sep 1 1932 |
| ANNUAL SEVEN-DAY MINIMUM | 74 | Sep 28 | 64 | Aug 10 | 43 | Oct 8 1930 |
| INSTANTANEOUS PEAK FLOW | | | 5210 | Jan 24 | 40900 | Nov 5 1985 |
| INSTANTANEOUS PEAK STAGE | | | 7.55 | Jan 24 | 19.15 | Nov 5 1985 |
| INSTANTANEOUS LOW FLOW | | | a60 | Aug 13 | 38 | Sep 2 1932 |
| ANNUAL RUNOFF (CFSM) | 1.53 | | .61 | | 1.17 | |
| ANNUAL RUNOFF (INCHES) | 20.83 | | 8.33 | | 15.88 | |
| 10 PERCENT EXCEEDS | 1680 | | 609 | | 1170 | |
| 50 PERCENT EXCEEDS | 199 | | 120 | | 260 | |
| 90 PERCENT EXCEEDS | 80 | | 74 | | 86 | |

a Minimum recorded, could have been less during period of doubtful gage-height record, Aug 14-17, 1999.
 e Estimated.

