01094400 NORTH NASHUA RIVER AT FITCHBURG, MA

LOCATION.--Lat 42°34'34", long 71°47'19", Worcester County, Hydrologic Unit 01070004, on right bank 400 ft upstream from Fifth Street Bridge at Fitchburg and 1.8 mi upstream from Baker Brook.

DRAINAGE AREA.--63.4 $mi^2$.

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

REVISED RECORDS.--WDR MA-RI-84-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 400 ft above sea level, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by mills and reservoirs upstream. Flow affected by diversions for municipal use. Satellite gage-height telemeter at station.

AVERAGE DISCHARGE.--27 years, 122 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,510 $ft^3/s$, Apr. 5, 1987, gage height, 7.78 ft; maximum gage height, 9.25 ft, Apr. 5, 1987, backwater from landslide; minimum discharge, 1.5 $ft^3/s$, Sept. 11, 12, 1995; minimum daily, 2.7 $ft^3/s$, Sept. 5, 1995.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,220 $ft^3/s$, Mar. 22, gage height, 5.83 ft; minimum, 3.7 $ft^3/s$, Aug. 9.

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 | 12 | 20 | 51 | 34 | e105 | 272 | 168 | 56 | 26 | 20 | 7.5 | 7.2 |
| 2 | 13 | 23 | 40 | 31 | 179 | 217 | 154 | 53 | 24 | 21 | 5.6 | 7.3 |
| 3 | 10 | 20 | 41 | 107 | 421 | 175 | 150 | 50 | 23 | 24 | 7.3 | 6.8 |
| 4 | 8.9 | 18 | 43 | e106 | 299 | 710 | 141 | 56 | 20 | 26 | 7.2 | 6.3 |
| 5 | 9.1 | 20 | 38 | 67 | 258 | 407 | 128 | 70 | 16 | 22 | 8.4 | 4.7 |
| 6 | 10 | 22 | 37 | 56 | 208 | 270 | 120 | 68 | 13 | 19 | 7.2 | 13 |
| 7 | 12 | 22 | 40 | 51 | 172 | 228 | 117 | 64 | 14 | 19 | 6.8 | 24 |
| 8 | 33 | 22 | 43 | 46 | 150 | 186 | 111 | 67 | 14 | 15 | 6.4 | 17 |
| 9 | 144 | 21 | 58 | 114 | 133 | 165 | 103 | 69 | 15 | 12 | 5.4 | 13 |
| 10 | 140 | 22 | 48 | 126 | 125 | 151 | 102 | 62 | 18 | 11 | 5.4 | 80 |
| 11 | 157 | 72 | 45 | 98 | 117 | 138 | 92 | 52 | 14 | 11 | 8.0 | 69 |
| 12 | 101 | 63 | 41 | e69 | 123 | 134 | 91 | 48 | 12 | 9.6 | 6.4 | 25 |
| 13 | 85 | 45 | 39 | 67 | 193 | 128 | 86 | 42 | 11 | 8.2 | 6.8 | 19 |
| 14 | 114 | 38 | 38 | 58 | 162 | 125 | 80 | 39 | 12 | 7.5 | 9.4 | 16 |
| 15 | 126 | 37 | 35 | 119 | 130 | 146 | 78 | 37 | 13 | 7.4 | 9.1 | 15 |
| 16 | 76 | 32 | 34 | 178 | 120 | 134 | 78 | 35 | 11 | 7.2 | 8.5 | 213 |
| 17 | 60 | 43 | 36 | 138 | 112 | 141 | 104 | 33 | 12 | 7.5 | 8.3 | 635 |
| 18 | 51 | 47 | 43 | 134 | 177 | 207 | 95 | 42 | 12 | 6.7 | 9.0 | 238 |
| 19 | 46 | 41 | 34 | 241 | 222 | 237 | 86 | 51 | 12 | 11 | 7.9 | 133 |
| 20 | 32 | 42 | 37 | 188 | 171 | 194 | 84 | 93 | 10 | 12 | 7.2 | 87 |
| 21 | 26 | 47 | 35 | 141 | 144 | 171 | 82 | 59 | 8.4 | 8.9 | 13 | 80 |
| 22 | 25 | 39 | 56 | 126 | 118 | 785 | 76 | 46 | 10 | 9.0 | 11 | 93 |
| 23 | 24 | 39 | 45 | 145 | e93 | 589 | 91 | 40 | 11 | 8.4 | 10 | 77 |
| 24 | 27 | 47 | 41 | 609 | 91 | 354 | 92 | 77 | 10 | 18 | 8.5 | 60 |
| 25 | 24 | 32 | 38 | 650 | 93 | 278 | 79 | 89 | 10 | 13 | 7.7 | 46 |
| 26 | 21 | 62 | 37 | 331 | 95 | 235 | 74 | 65 | 9.8 | 14 | 6.6 | 39 |
| 27 | 20 | 101 | e27 | 237 | 91 | 202 | 69 | 54 | 8.9 | 12 | 16 | 32 |
| 28 | 23 | 67 | 34 | 193 | 112 | 242 | 66 | 45 | 36 | 9.2 | 18 | 28 |
| 29 | 27 | 55 | 35 | 160 | --- | 252 | 61 | 38 | 43 | 8.0 | 11 | 27 |
| 30 | 28 | 49 | 43 | e125 | --- | 213 | 58 | 33 | 31 | 14 | 9.5 | 60 |
| 31 | 24 | --- | 43 | 120 | --- | 186 | --- | 29 | --- | 7.3 | 8.3 | --- |
| TOTAL | 1509.0 | 1208 | 1255 | 4865 | 4414.0 | 7872 | 2916 | 1662 | 480.1 | 398.9 | 267.4 | 2171.3 |
| MEAN | 48.7 | 40.3 | 40.5 | 157 | 158 | 254 | 97.2 | 53.6 | 16.0 | 12.9 | 8.63 | 72.4 |
| MAX | 157 | 101 | 58 | 650 | 421 | 785 | 168 | 93 | 43 | 26 | 18 | 635 |
| MIN | 8.9 | 18 | 27 | 31 | 91 | 125 | 58 | 29 | 8.4 | 6.7 | 5.4 | 4.7 |

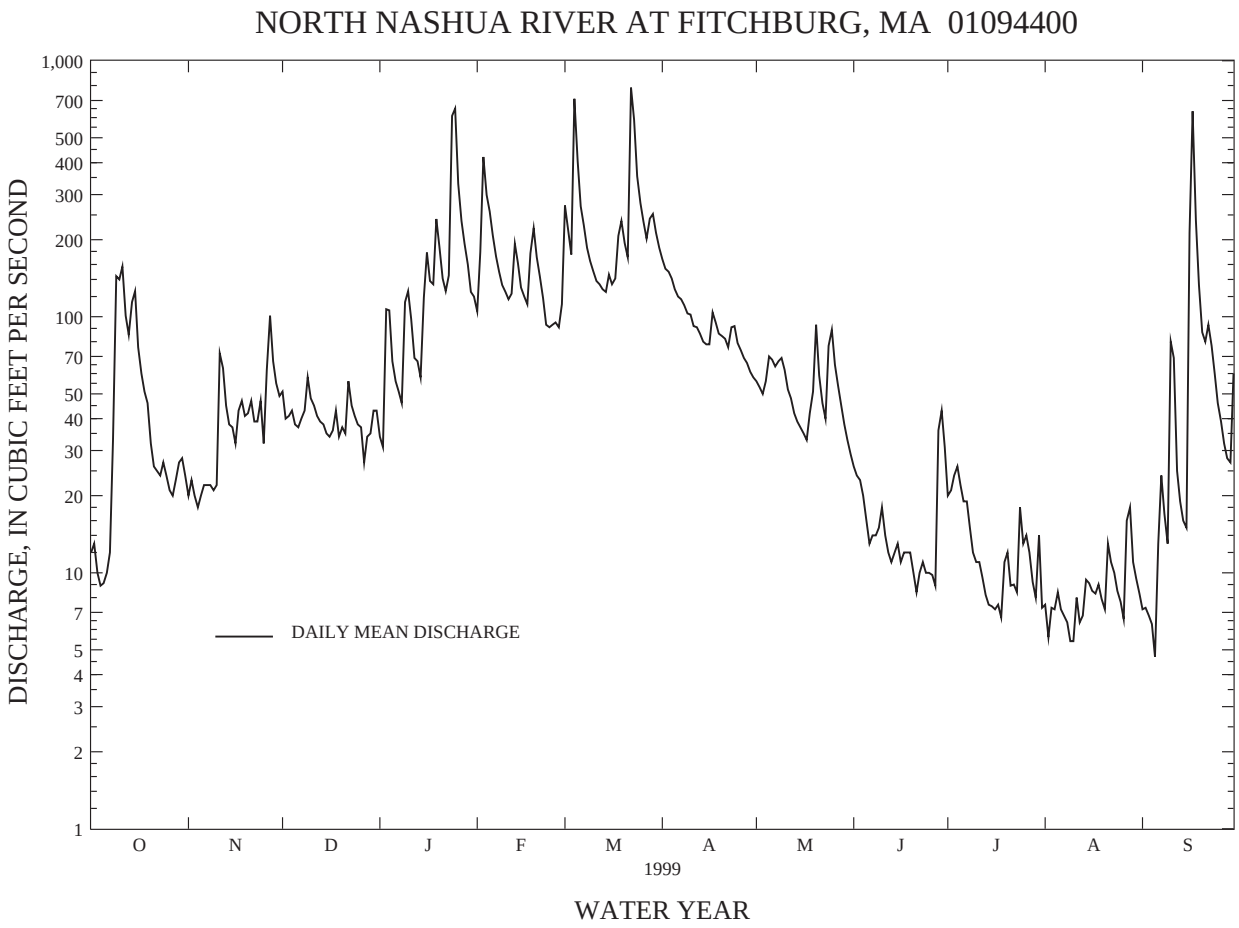
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1999, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 79.9 | 118 | 141 | 142 | 143 | 234 | 240 | 144 | 93.1 | 45.7 | 46.4 | 42.7 |
| MAX | 220 | 243 | 347 | 304 | 294 | 528 | 600 | 277 | 368 | 90.3 | 137 | 121 |
| (WY) | 1997 | 1996 | 1997 | 1996 | 1984 | 1983 | 1987 | 1984 | 1982 | 1996 | 1991 | 1991 |
| MIN | 18.7 | 31.3 | 40.5 | 24.6 | 34.6 | 84.1 | 84.1 | 53.6 | 16.0 | 12.9 | 8.63 | 8.33 |
| (WY) | 1998 | 1979 | 1999 | 1981 | 1980 | 1989 | 1985 | 1999 | 1999 | 1999 | 1999 | 1995 |

01094400 NORTH NASHUA RIVER AT FITCHBURG, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1973 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 49051.9 | | 29018.7 | | | |
| ANNUAL MEAN | 134 | | 79.5 | | 122 | |
| HIGHEST ANNUAL MEAN | | | | | 169 | 1973 |
| LOWEST ANNUAL MEAN | | | | | 59.5 | 1985 |
| HIGHEST DAILY MEAN | 1690 | Mar 10 | 785 | Mar 22 | 2830 | Apr 5 1987 |
| LOWEST DAILY MEAN | 7.0 | Sep 14 | 4.7 | Sep 5 | 2.7 | Sep 5 1995 |
| ANNUAL SEVEN-DAY MINIMUM | 9.2 | Aug 31 | 6.5 | Aug 7 | 4.3 | Aug 31 1995 |
| INSTANTANEOUS PEAK FLOW | | | 1220 | Mar 22 | 3510 | Apr 5 1987 |
| INSTANTANEOUS PEAK STAGE | | | 5.83 | Mar 22 | 9.25 | Apr 5 1987 |
| INSTANTANEOUS LOW FLOW | | | 3.7 | Aug 9 | 1.5 | Sep 11 1995 |
| 10 PERCENT EXCEEDS | 285 | | 182 | | 259 | |
| 50 PERCENT EXCEEDS | 85 | | 43 | | 79 | |
| 90 PERCENT EXCEEDS | 13 | | 8.7 | | 21 | |

e Estimated



01094500 NORTH NASHUA RIVER NEAR LEOMINSTER, MA

LOCATION.--Lat 42°30'06", long 71°43'23", Worcester County, Hydrologic Unit 01070004, on right bank 1.3 mi upstream from Wekepeke Brook, 2.5 mi southeast of Leominster, and 6.1 mi upstream from confluence with Nashua River.

DRAINAGE AREA.--110 $mi^2$, includes 2.1 $mi^2$ above outlet of Ashby (Fitchburg) Reservoir.

PERIOD OF RECORD.--Discharge: September 1935 to current year.
Water-quality records: Water years 1955, 1958.

REVISED RECORDS.--WDR MA-NH-RI-VT-73-1: Drainage area. WDR MA-RI-82-1: 1981. WDR MA-RI-92-1: 1978(M).

GAGE.--Water-stage recorder. Datum of gage is 270.04 ft above sea level.

REMARKS.--Records fair except those for discharges less than 35 $ft^3/s$ and greater than 450 $ft^3/s$, which are poor. Regulation at low flow by mills upstream. Flow includes diversion to basin for municipal supplies: for Fitchburg, from Mare Meadow Reservoir since 1955; for Leominster, from Wachusett Reservoir since 1966 and from the Southeast Well Field since 1958.

AVERAGE DISCHARGE.--64 years, 200 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,300 $ft^3/s$, Mar. 18, 1936, gage height, 20.53 ft, from floodmarks, by computation of peak flow over dam; minimum, 11 $ft^3/s$, Aug. 29, 1948; minimum daily, 22 $ft^3/s$, Sept. 27, 1936, Sept. 2, 1957.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,880 $ft^3/s$, Sept. 16, gage height, 4.02 ft; minimum, 22 $ft^3/s$, Sept. 6; minimum daily, 27 $ft^3/s$, Aug. 10, Sept. 5.

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

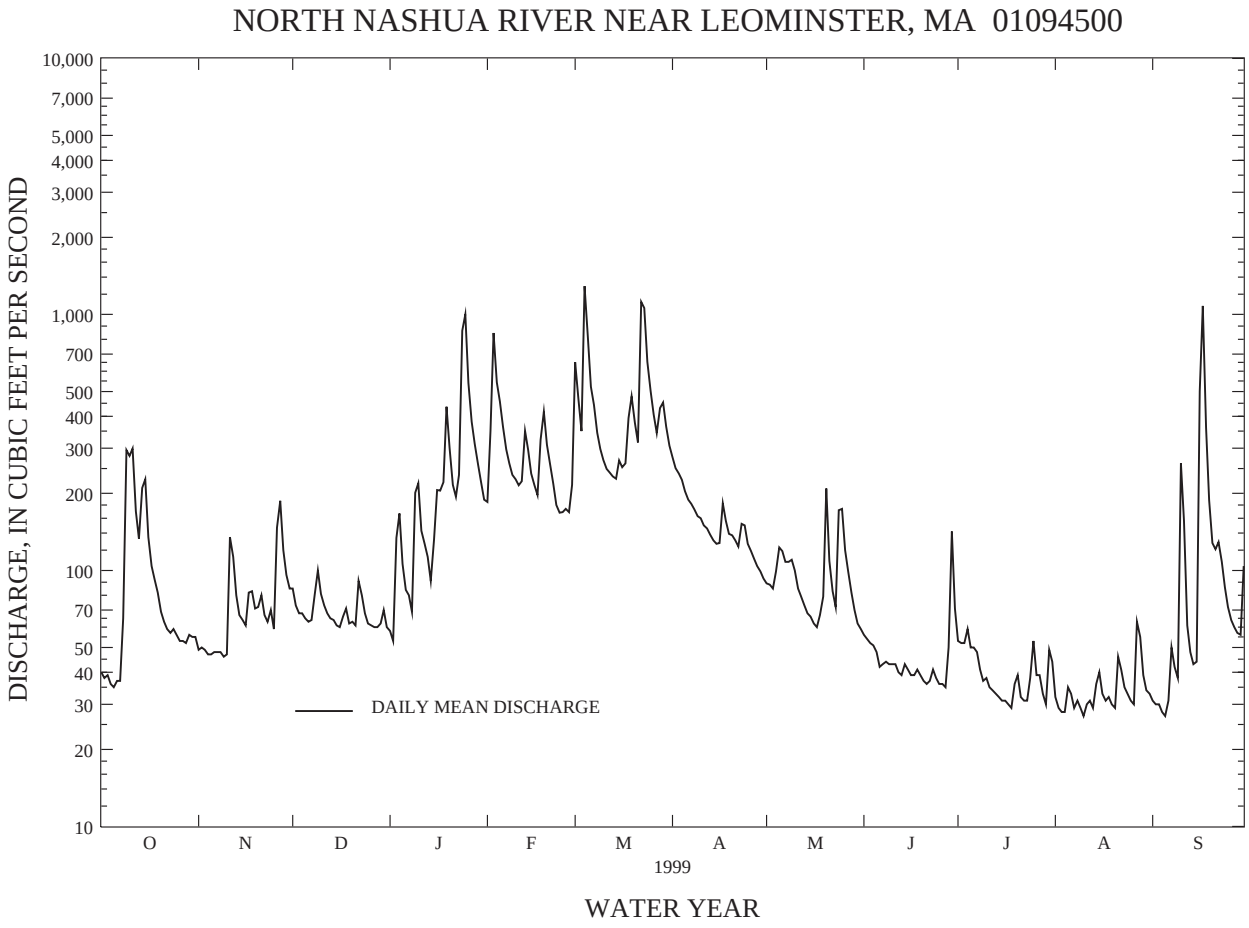
| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 40 | 49 | 85 | 58 | 185 | 651 | 277 | 89 | 56 | 53 | 32 | 31 |
| 2 | 38 | 50 | 73 | 53 | 350 | 467 | 251 | 88 | 54 | 52 | 29 | 30 |
| 3 | 39 | 49 | 68 | 134 | 846 | 350 | 239 | 85 | 52 | 52 | 28 | 30 |
| 4 | 36 | 47 | 68 | 167 | 543 | 1290 | 226 | 99 | 51 | 59 | 28 | 28 |
| 5 | 35 | 47 | 65 | 106 | 457 | 819 | 204 | 123 | 48 | 50 | 35 | 27 |
| 6 | 37 | 48 | 63 | 84 | 365 | 522 | 189 | 119 | 42 | 50 | 33 | 31 |
| 7 | 37 | 48 | 64 | 80 | 297 | 443 | 182 | 108 | 43 | 48 | 29 | 50 |
| 8 | 65 | 48 | 81 | 69 | 262 | 345 | 173 | 108 | 44 | 41 | 31 | 42 |
| 9 | 295 | 46 | 100 | 201 | 236 | 298 | 163 | 110 | 43 | 37 | 29 | 38 |
| 10 | 280 | 47 | 81 | 219 | 227 | 270 | 160 | 100 | 43 | 38 | 27 | 262 |
| 11 | 299 | 135 | 73 | 143 | 215 | 249 | 150 | 85 | 43 | 35 | 30 | 156 |
| 12 | 170 | 113 | 68 | 127 | 223 | 241 | 146 | 79 | 40 | 34 | 31 | 61 |
| 13 | 133 | 80 | 65 | 113 | 351 | 233 | 138 | 73 | 39 | 33 | 29 | 48 |
| 14 | 210 | 67 | 64 | 91 | 296 | 228 | 131 | 68 | 43 | 32 | 36 | 43 |
| 15 | 227 | 64 | 61 | 132 | 239 | 269 | 127 | 66 | 41 | 31 | 40 | 44 |
| 16 | 135 | 61 | 60 | 206 | 215 | 253 | 128 | 62 | 39 | 31 | 33 | 501 |
| 17 | 104 | 82 | 66 | 205 | 197 | 262 | 183 | 60 | 39 | 30 | 31 | 1080 |
| 18 | 92 | 83 | 71 | 221 | 324 | 394 | 156 | 67 | 41 | 29 | 32 | 361 |
| 19 | 82 | 71 | 62 | 436 | 417 | 479 | 139 | 79 | 39 | 36 | 30 | 188 |
| 20 | 69 | 72 | 63 | 301 | 310 | 378 | 137 | 209 | 37 | 39 | 29 | 128 |
| 21 | 63 | 80 | 61 | 216 | 261 | 316 | 131 | 109 | 36 | 32 | 46 | 121 |
| 22 | 59 | 67 | 91 | 194 | 218 | 1120 | 124 | 83 | 37 | 31 | 41 | 129 |
| 23 | 57 | 63 | 80 | 236 | 180 | 1060 | 152 | 72 | 41 | 31 | 35 | 108 |
| 24 | 59 | 70 | 68 | 864 | 168 | 653 | 150 | 172 | 38 | 38 | 33 | 86 |
| 25 | 56 | 59 | 62 | 1000 | 169 | 502 | 127 | 174 | 36 | 53 | 31 | 72 |
| 26 | 53 | 147 | 61 | 540 | 174 | 406 | 119 | 120 | 36 | 39 | 30 | 64 |
| 27 | 53 | 187 | 60 | 381 | 169 | 344 | 111 | 99 | 35 | 39 | 63 | 60 |
| 28 | 52 | 120 | 60 | 312 | 216 | 431 | 104 | 82 | 50 | 33 | 55 | 57 |
| 29 | 56 | 96 | 62 | 260 | --- | 453 | 99 | 70 | 142 | 30 | 39 | 56 |
| 30 | 55 | 85 | 70 | 221 | --- | 365 | 93 | 62 | 71 | 49 | 34 | 104 |
| 31 | 55 | --- | 60 | 189 | --- | 307 | --- | 59 | --- | 44 | 33 | --- |
| TOTAL | 3041 | 2281 | 2136 | 7559 | 8110 | 14398 | 4709 | 2979 | 1399 | 1229 | 1062 | 4036 |
| MEAN | 98.1 | 76.0 | 68.9 | 244 | 290 | 464 | 157 | 96.1 | 46.6 | 39.6 | 34.3 | 135 |
| MAX | 299 | 187 | 100 | 1000 | 846 | 1290 | 277 | 209 | 142 | 59 | 63 | 1080 |
| MIN | 35 | 46 | 60 | 53 | 168 | 228 | 93 | 59 | 35 | 29 | 27 | 27 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 1999, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 116 | 175 | 207 | 216 | 229 | 383 | 418 | 244 | 162 | 89.4 | 80.2 | 87.5 |
| MAX | 606 | 485 | 682 | 466 | 534 | 1289 | 1126 | 503 | 642 | 392 | 286 | 595 |
| (WY) | 1956 | 1956 | 1997 | 1996 | 1970 | 1936 | 1987 | 1984 | 1982 | 1938 | 1938 | 1938 |
| MIN | 39.4 | 44.4 | 58.6 | 50.3 | 63.7 | 140 | 133 | 85.4 | 46.6 | 36.5 | 34.3 | 32.6 |
| (WY) | 1942 | 1950 | 1966 | 1981 | 1980 | 1965 | 1985 | 1965 | 1999 | 1993 | 1999 | 1995 |

01094500 NORTH NASHUA RIVER NEAR LEOMINSTER, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1935 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 94309 | | 52939 | | | |
| ANNUAL MEAN | 258 | | 145 | | 200 | |
| HIGHEST ANNUAL MEAN | | | | | 307 | 1956 |
| LOWEST ANNUAL MEAN | | | | | 81.2 | 1965 |
| HIGHEST DAILY MEAN | 3350 | Mar 10 | 1290 | Mar 4 | 7530 | Mar 18 1936 |
| LOWEST DAILY MEAN | 33 | Sep 6 | 27 | Aug 10 | 22 | Sep 27 1936 |
| ANNUAL SEVEN-DAY MINIMUM | 35 | Sep 9 | 29 | Aug 7 | 24 | Aug 28 1993 |
| INSTANTANEOUS PEAK FLOW | | | 1880 | Sep 16 | 16300 | Mar 18 1936 |
| INSTANTANEOUS PEAK STAGE | | | 4.02 | Sep 16 | 20.53 | Mar 18 1936 |
| INSTANTANEOUS LOW FLOW | | | 22 | Sep 6 | 11 | Aug 29 1948 |
| 10 PERCENT EXCEEDS | 591 | | 319 | | 420 | |
| 50 PERCENT EXCEEDS | 148 | | 72 | | 126 | |
| 90 PERCENT EXCEEDS | 42 | | 33 | | 48 | |



01095220 STILLWATER RIVER NEAR STERLING, MA
(National Water Quality Assessment Site)

LOCATION.--Lat 42°24'39", long 71°47'30", Worcester County, Hydrologic Unit 01070004, on left bank at downstream side of bridge on Muddy Pond Road, 1.5 mi upstream of mouth and 2.5 mi southwest of Sterling.

DRAINAGE AREA.--31.6 $mi^2$.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Low-flow partial-record measurements in water years 1971–73, 1991–93. April 1994 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 400 ft above sea level, from topographic map.

REMARKS.--Records fair except those for estimated daily discharge, which are poor.

AVERAGE DISCHARGE.--5 years, 56.7 $ft^3/s$, 24.40 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 890 $ft^3/s$, Jan. 28, 1996, gage height, 8.50 ft from rating curve extended above 340 $ft^3/s$; minimum, 0.14 $ft^3/s$, Sept. 11, 12, 13, 1995.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 447 $ft^3/s$, Jan. 25, gage height, 7.12 ft; minimum, 0.49 $ft^3/s$, Oct. 8.

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 | 3.0 | 6.5 | 20 | 10 | e49 | 165 | 81 | 24 | 11 | 3.1 | 1.1 | 0.77 |
| 2 | 2.1 | 6.9 | 18 | 11 | 73 | 151 | 73 | 23 | 8.9 | 4.2 | 1.0 | .77 |
| 3 | 1.0 | 6.0 | 16 | 14 | 242 | 103 | 67 | 23 | 7.8 | 4.8 | .97 | .70 |
| 4 | .98 | 5.1 | 15 | 37 | 189 | 304 | 64 | 25 | 6.3 | 5.9 | .91 | .64 |
| 5 | .91 | 4.9 | 13 | e25 | 151 | 253 | 59 | 30 | 5.4 | 6.3 | .94 | .57 |
| 6 | .80 | 4.9 | 19 | e21 | 115 | 145 | 54 | 31 | 4.9 | 5.7 | .96 | .73 |
| 7 | .72 | 4.9 | 22 | 20 | 90 | e108 | 51 | 29 | 4.5 | 4.7 | .86 | .83 |
| 8 | 2.7 | 4.6 | 16 | e17 | 77 | e81 | 48 | 27 | 5.0 | 4.4 | 1.0 | .77 |
| 9 | 21 | 4.5 | 21 | 31 | 68 | e68 | 44 | 27 | 6.3 | 4.0 | 1.1 | .74 |
| 10 | 39 | 4.6 | 24 | e65 | 64 | e65 | 44 | 26 | 6.2 | 4.0 | .92 | 5.9 |
| 11 | 89 | 8.2 | 20 | e43 | 60 | e69 | 42 | 23 | 5.9 | 3.6 | 1.2 | 12 |
| 12 | 47 | 22 | 17 | e34 | 64 | 68 | 40 | 21 | 5.8 | 3.3 | 1.2 | 12 |
| 13 | 28 | 19 | 15 | 29 | 103 | 66 | 37 | 18 | 5.5 | 3.0 | 1.1 | 7.3 |
| 14 | 23 | 16 | 13 | e26 | 83 | 66 | 36 | 15 | 5.4 | 3.0 | 1.3 | 3.9 |
| 15 | 48 | 14 | 12 | 53 | 65 | 75 | 34 | 14 | 5.1 | 2.7 | 2.3 | 3.0 |
| 16 | 36 | 11 | 12 | 75 | 60 | 71 | 33 | 13 | 4.8 | 2.3 | 1.9 | 30 |
| 17 | 24 | 11 | 12 | 82 | 55 | 74 | 43 | 11 | 4.3 | 2.0 | 1.4 | 230 |
| 18 | 18 | 12 | 13 | 65 | 75 | 105 | 43 | 10 | 3.7 | 1.5 | 1.2 | 98 |
| 19 | 13 | 13 | 13 | 127 | 119 | 147 | 38 | 12 | 3.5 | 1.4 | 1.0 | 42 |
| 20 | 10 | 14 | 12 | 117 | 87 | 114 | 36 | 51 | 3.2 | 1.5 | .91 | 25 |
| 21 | 9.1 | 17 | 12 | 73 | 71 | 93 | 34 | 43 | 2.5 | 1.2 | 1.8 | 17 |
| 22 | 8.6 | 17 | 13 | 55 | e49 | 221 | 32 | 29 | 2.4 | 1.1 | 1.9 | 17 |
| 23 | 7.4 | 15 | 15 | 65 | e41 | 279 | 38 | 23 | 2.2 | .99 | 1.4 | 16 |
| 24 | 6.2 | 13 | 15 | 196 | e41 | 164 | 50 | 31 | 2.0 | 1.2 | 1.3 | 13 |
| 25 | 5.4 | 12 | 12 | 352 | 44 | 128 | 42 | 66 | 1.8 | 1.7 | 1.0 | 8.0 |
| 26 | 5.7 | 15 | 11 | e160 | 45 | 106 | 36 | 47 | 1.6 | 2.0 | .82 | 4.6 |
| 27 | 5.4 | 50 | 10 | 106 | 44 | 92 | 32 | 35 | 1.8 | 1.8 | 1.1 | 2.9 |
| 28 | 5.2 | 39 | 10 | 86 | 49 | 97 | 30 | 27 | 1.6 | 1.7 | 1.2 | 2.5 |
| 29 | 6.4 | 29 | 11 | e68 | --- | 137 | 28 | 22 | 2.0 | 1.4 | .96 | 2.6 |
| 30 | 6.5 | 24 | e12 | e56 | --- | 115 | 26 | 18 | 2.5 | 1.3 | .82 | 4.7 |
| 31 | 6.9 | --- | e10 | e49 | --- | 93 | --- | 14 | --- | 1.3 | .78 | --- |
| TOTAL | 481.01 | 424.1 | 454 | 2168 | 2273 | 3823 | 1315 | 808 | 133.9 | 87.09 | 36.35 | 563.92 |
| MEAN | 15.5 | 14.1 | 14.6 | 69.9 | 81.2 | 123 | 43.8 | 26.1 | 4.46 | 2.81 | 1.17 | 18.8 |
| MAX | 89 | 50 | 24 | 352 | 242 | 304 | 81 | 66 | 11 | 6.3 | 2.3 | 230 |
| MIN | .72 | 4.5 | 10 | 10 | 41 | 65 | 26 | 10 | 1.6 | .99 | .78 | .57 |
| CFSM | .49 | .45 | .46 | 2.21 | 2.57 | 3.90 | 1.39 | .82 | .14 | .09 | .04 | .59 |
| IN. | .57 | .50 | .53 | 2.55 | 2.68 | 4.50 | 1.55 | .95 | .16 | .10 | .04 | .66 |

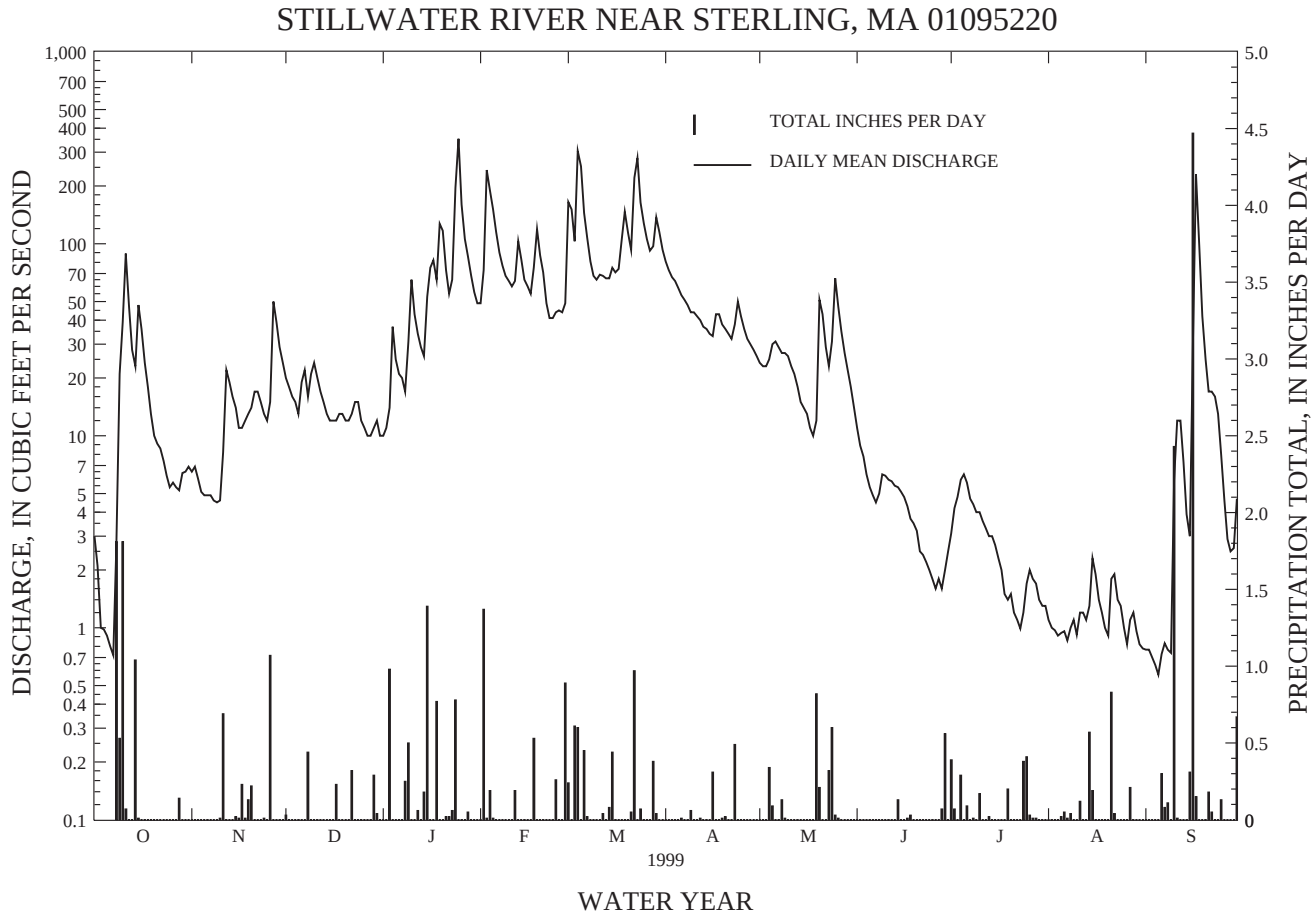
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1999, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 31.7 | 50.4 | 72.0 | 103 | 86.1 | 113 | 98.1 | 63.5 | 31.6 | 17.1 | 9.24 | 11.3 |
| MAX | 83.8 | 106 | 171 | 157 | 120 | 163 | 172 | 100 | 113 | 34.4 | 29.1 | 22.5 |
| (WY) | 1997 | 1996 | 1997 | 1996 | 1996 | 1998 | 1997 | 1998 | 1998 | 1996 | 1994 | 1996 |
| MIN | 4.80 | 14.1 | 14.6 | 69.9 | 44.8 | 84.3 | 43.8 | 26.1 | 4.46 | 2.81 | 1.17 | .92 |
| (WY) | 1998 | 1999 | 1999 | 1999 | 1995 | 1997 | 1999 | 1999 | 1999 | 1999 | 1999 | 1995 |

01095220 STILLWATER RIVER NEAR STERLING, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1994 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 22957.11 | | 12567.37 | | | |
| ANNUAL MEAN | 62.9 | | 34.4 | | 56.7 | |
| HIGHEST ANNUAL MEAN | | | | | 74.9 | 1996 |
| LOWEST ANNUAL MEAN | | | | | 34.4 | 1999 |
| HIGHEST DAILY MEAN | 640 | Mar 10 | 352 | Jan 25 | 742 | Jan 28 1996 |
| LOWEST DAILY MEAN | .72 | Oct 7 | .57 | Sep 5 | .24 | Sep 12 1995 |
| ANNUAL SEVEN-DAY MINIMUM | 1.3 | Oct 2 | .71 | Aug 31 | .29 | Sep 10 1995 |
| INSTANTANEOUS PEAK FLOW | | | 447 | Jan 25 | 890 | Jan 28 1996 |
| INSTANTANEOUS PEAK STAGE | | | 7.12 | Jan 25 | 8.50 | Jan 28 1996 |
| INSTANTANEOUS LOW FLOW | | | .49 | Oct 8 | .14 | Sep 11 1995 |
| ANNUAL RUNOFF (CFSM) | 1.99 | | 1.09 | | 1.80 | |
| ANNUAL RUNOFF (INCHES) | 27.03 | | 14.79 | | 24.39 | |
| 10 PERCENT EXCEEDS | 160 | | 89 | | 126 | |
| 50 PERCENT EXCEEDS | 33 | | 15 | | 34 | |
| 90 PERCENT EXCEEDS | 2.9 | | 1.2 | | 2.4 | |

e Estimated



01095220 STILLWATER RIVER NEAR STERLING, MA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1998 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1998 to current year.
WATER TEMPERATURE: April 1998 to current year.
PRECIPITATION: October 1998 to September 1999.

INSTRUMENTATION.--Specific conductance and temperature water-quality monitor.

REMARKS.--Extremes for period of daily record and current year are for those values reported.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum recorded, 235 µS/cm, Oct. 9, 1998; minimum, 43 µS/cm, June 14, 1998.
WATER TEMPERATURE: Maximum recorded, 27.6°C, July 6, 1999; minimum, 0.1°C, Dec. 30, 1998, Jan. 1, 1999.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum recorded, 235 µS/cm, Oct. 9; minimum, 46 µS/cm, Mar. 5.
WATER TEMPERATURE: Maximum recorded, 27.6°C, July 6; minimum, 0.1°C, Dec. 30, Jan. 1.

PRECIPITATION, TOTAL, INCHES, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY SUM VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | 0.00 | 0.03 | 0.00 | 0.00 | 0.24 | 0.00 | 0.00 | 0.00 | 0.39 | 0.00 | 0.00 |
| 2 | --- | .00 | .00 | .00 | 1.37 | .00 | .00 | .00 | .00 | .07 | .00 | .00 |
| 3 | --- | .00 | .00 | .98 | .01 | .61 | .00 | .00 | .00 | .00 | .00 | .00 |
| 4 | --- | .00 | .00 | .00 | .19 | .60 | .00 | .34 | .00 | .29 | .00 | .00 |
| 5 | --- | .00 | .00 | .00 | .01 | .00 | .00 | .09 | .00 | .00 | .02 | .00 |
| 6 | --- | .00 | .00 | .00 | .00 | .45 | .01 | .00 | .00 | .09 | .05 | .30 |
| 7 | --- | .00 | .00 | .00 | .00 | .02 | .00 | .00 | .00 | .00 | .01 | .08 |
| 8 | 1.81 | .00 | .44 | .25 | .00 | .00 | .00 | .13 | .00 | .01 | .04 | .11 |
| 9 | .53 | .00 | .00 | .50 | .00 | .00 | .06 | .01 | .00 | .00 | .00 | .00 |
| 10 | 1.81 | .01 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .17 | .00 | 2.43 |
| 11 | .07 | .69 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .12 | .01 |
| 12 | .00 | .00 | .00 | .06 | .19 | .04 | .01 | .00 | .00 | .00 | .00 | .00 |
| 13 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .02 | .00 | .00 |
| 14 | 1.04 | .00 | .00 | .18 | .00 | .08 | .00 | .00 | .13 | .00 | .57 | .00 |
| 15 | .01 | .02 | .00 | 1.39 | .00 | .44 | .00 | .00 | .00 | .00 | .19 | .31 |
| 16 | .00 | .01 | .00 | .00 | .00 | .00 | .31 | .00 | .00 | .00 | .00 | 4.47 |
| 17 | .00 | .23 | .23 | .00 | .00 | .00 | .00 | .00 | .01 | .00 | .00 | .15 |
| 18 | .00 | .01 | .00 | .77 | .53 | .00 | .00 | .00 | .03 | .00 | .00 | .00 |
| 19 | .00 | .13 | .00 | .00 | .00 | .00 | .01 | .82 | .00 | .20 | .00 | .00 |
| 20 | .00 | .22 | .00 | .00 | .00 | .00 | .02 | .21 | .00 | .00 | .00 | .00 |
| 21 | .00 | .00 | .00 | .02 | .00 | .05 | .00 | .00 | .00 | .00 | .83 | .18 |
| 22 | .00 | .00 | .32 | .02 | .00 | .97 | .00 | .00 | .00 | .00 | .04 | .05 |
| 23 | .00 | .00 | .00 | .06 | .00 | .00 | .49 | .32 | .00 | .00 | .00 | .00 |
| 24 | .00 | .01 | .00 | .78 | .00 | .07 | .00 | .60 | .00 | .38 | .00 | .00 |
| 25 | .00 | .00 | .00 | .00 | .26 | .00 | .00 | .03 | .00 | .41 | .00 | .13 |
| 26 | .00 | 1.07 | .00 | .00 | .00 | .00 | .00 | .01 | .00 | .03 | .00 | .00 |
| 27 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .01 | .21 | .00 |
| 28 | .14 | .00 | .00 | .05 | .89 | .38 | .00 | .00 | .07 | .01 | .00 | .00 |
| 29 | .00 | .00 | .29 | .00 | --- | .04 | .00 | .00 | .56 | .00 | .00 | .00 |
| 30 | .00 | .00 | .04 | .00 | --- | .00 | .00 | .00 | .00 | .00 | .00 | .67 |
| 31 | .00 | --- | .00 | .00 | --- | .00 | --- | .00 | --- | .00 | .00 | --- |
| TOTAL | --- | 2.40 | 1.35 | 5.06 | 3.45 | 3.99 | 0.91 | 2.56 | 0.80 | 2.08 | 2.08 | 8.89 |

01095220 STILLWATER RIVER NEAR STERLING, MA--Continued

SPECIFIC CONDUCTANCE (µS/CM AT 25°C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | 182 | 149 | 170 | 112 | 109 | 110 | 88 | 85 | 86 | 94 | 89 | 90 |
| 2 | 200 | 140 | 171 | 112 | 104 | 109 | 89 | 86 | 87 | 95 | 89 | 92 |
| 3 | 204 | 161 | 188 | 114 | 110 | 111 | 89 | 87 | 88 | 109 | 92 | 97 |
| 4 | 192 | 183 | 188 | 119 | 112 | 115 | 90 | 88 | 89 | 114 | 84 | 92 |
| 5 | 193 | 183 | 188 | 122 | 115 | 118 | 94 | 90 | 92 | 94 | 84 | 89 |
| 6 | 189 | 183 | 185 | 120 | 115 | 117 | 90 | 80 | 85 | 91 | 89 | 91 |
| 7 | 194 | 186 | 189 | 119 | 111 | 116 | 85 | 79 | 82 | 90 | 86 | 89 |
| 8 | 217 | 154 | 183 | 123 | 116 | 119 | 96 | 84 | 88 | 89 | 86 | 87 |
| 9 | 235 | 106 | 168 | 122 | 118 | 120 | 95 | 81 | 87 | 136 | 87 | 104 |
| 10 | 125 | 99 | 106 | 125 | 113 | 122 | 85 | 81 | 82 | 108 | 85 | 94 |
| 11 | 105 | 94 | 97 | 129 | 102 | 123 | 89 | 85 | 87 | 106 | 94 | 102 |
| 12 | 102 | 100 | 101 | 102 | 92 | 94 | 91 | 89 | 90 | 94 | 90 | 92 |
| 13 | 108 | 100 | 101 | 101 | 96 | 97 | 92 | 90 | 91 | 96 | 89 | 93 |
| 14 | 137 | 101 | 107 | 104 | 101 | 103 | 93 | 92 | 93 | 91 | 88 | 89 |
| 15 | 113 | 87 | 94 | 109 | 104 | 106 | 95 | 91 | 94 | 99 | 85 | 90 |
| 16 | 98 | 89 | 94 | 110 | 108 | 109 | 98 | 95 | 96 | 98 | 82 | 86 |
| 17 | 108 | 96 | 99 | 112 | 108 | 110 | 101 | 98 | 99 | 101 | 80 | 90 |
| 18 | 102 | 98 | 100 | 112 | 107 | 109 | 101 | 94 | 99 | 92 | 84 | 87 |
| 19 | 107 | 100 | 105 | 108 | 103 | 106 | 100 | 93 | 98 | 110 | 87 | 93 |
| 20 | 109 | 103 | 106 | 105 | 100 | 102 | 101 | 99 | 100 | 105 | 90 | 93 |
| 21 | 112 | 108 | 110 | 104 | 98 | 101 | 102 | 101 | 101 | 91 | 86 | 88 |
| 22 | 110 | 107 | 109 | 100 | 97 | 99 | 105 | 100 | 102 | 96 | 88 | 92 |
| 23 | 112 | 108 | 110 | 100 | 97 | 99 | 100 | 88 | 92 | 97 | 85 | 92 |
| 24 | 117 | 112 | 114 | 101 | 99 | 99 | 95 | 88 | 93 | 92 | 57 | 75 |
| 25 | 125 | 114 | 118 | 103 | 99 | 101 | 95 | 82 | 89 | 57 | 53 | 54 |
| 26 | 130 | 125 | 127 | 122 | 99 | 105 | 98 | 84 | 91 | 61 | 53 | 57 |
| 27 | 129 | 125 | 127 | 106 | 82 | 87 | 99 | 86 | 94 | 67 | 57 | 61 |
| 28 | 125 | 124 | 125 | 88 | 85 | 86 | 104 | 99 | 102 | 64 | 61 | 62 |
| 29 | 125 | 100 | 116 | 88 | 85 | 87 | 103 | 98 | 102 | 68 | 62 | 64 |
| 30 | 124 | 110 | 114 | 87 | 84 | 85 | 103 | 87 | 97 | 69 | 64 | 66 |
| 31 | 110 | 108 | 109 | --- | --- | --- | 95 | 88 | 92 | 72 | 65 | 69 |
| MONTH | 235 | 87 | 130 | 129 | 82 | 106 | 105 | 79 | 93 | 136 | 53 | 85 |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 74 | 68 | 71 | 84 | 61 | 68 | 76 | 73 | 75 | 102 | 96 | 98 |
| 2 | 117 | 66 | 85 | 66 | 58 | 62 | 79 | 76 | 77 | 102 | 99 | 100 |
| 3 | 79 | 62 | 69 | 75 | 62 | 69 | 80 | 76 | 79 | 103 | 99 | 101 |
| 4 | 70 | 62 | 64 | 75 | 48 | 59 | 81 | 80 | 80 | 102 | 100 | 101 |
| 5 | 68 | 59 | 63 | 56 | 46 | 52 | 83 | 78 | 81 | 102 | 98 | 100 |
| 6 | 69 | 58 | 62 | 61 | 53 | 57 | 84 | 78 | 81 | 100 | 97 | 98 |
| 7 | 68 | 61 | 64 | 64 | 55 | 59 | 87 | 83 | 85 | 100 | 99 | 100 |
| 8 | 73 | 62 | 67 | 74 | 57 | 64 | 89 | 82 | 86 | 102 | 100 | 100 |
| 9 | 82 | 62 | 71 | 81 | 64 | 70 | 88 | 85 | 86 | 101 | 98 | 100 |
| 10 | 84 | 71 | 77 | 79 | 67 | 73 | 88 | 84 | 86 | 101 | 99 | 100 |
| 11 | 82 | 71 | 76 | 80 | 71 | 76 | 87 | 84 | 85 | 102 | 99 | 101 |
| 12 | 85 | 75 | 79 | 84 | 72 | 77 | 89 | 85 | 87 | 104 | 100 | 101 |
| 13 | 82 | 68 | 72 | 84 | 74 | 79 | 92 | 86 | 89 | 108 | 99 | 103 |
| 14 | 72 | 64 | 68 | 82 | 73 | 78 | 93 | 89 | 91 | 109 | 104 | 106 |
| 15 | 83 | 63 | 70 | 79 | 73 | 76 | 95 | 91 | 93 | 110 | 105 | 108 |
| 16 | 82 | 67 | 75 | 80 | 67 | 74 | 98 | 92 | 94 | 113 | 107 | 111 |
| 17 | 82 | 74 | 78 | 86 | 76 | 80 | 98 | 89 | 93 | 121 | 110 | 115 |
| 18 | 85 | 66 | 78 | 83 | 73 | 79 | 93 | 88 | 90 | 121 | 113 | 118 |
| 19 | 70 | 65 | 67 | 73 | 70 | 72 | 95 | 90 | 92 | 122 | 119 | 120 |
| 20 | 71 | 66 | 68 | 71 | 69 | 70 | 103 | 91 | 93 | 122 | 94 | 108 |
| 21 | 72 | 67 | 70 | 73 | 70 | 71 | 99 | 90 | 93 | 99 | 93 | 95 |
| 22 | 81 | 64 | 71 | 79 | 58 | 69 | 95 | 93 | 94 | 113 | 95 | 104 |
| 23 | 87 | 66 | 74 | 61 | 58 | 59 | 97 | 92 | 95 | 121 | 108 | 116 |
| 24 | 87 | 73 | 79 | 67 | 59 | 63 | 92 | 86 | 88 | 124 | 104 | 119 |
| 25 | 80 | 73 | 77 | 73 | 64 | 68 | 92 | 86 | 89 | 104 | 86 | 92 |
| 26 | 86 | 75 | 79 | 72 | 66 | 70 | 94 | 89 | 91 | 91 | 86 | 89 |
| 27 | 87 | 73 | 80 | 77 | 71 | 73 | 93 | 90 | 92 | 87 | 83 | 86 |
| 28 | 99 | 72 | 82 | 77 | 68 | 74 | 95 | 91 | 93 | 87 | 83 | 85 |
| 29 | --- | --- | --- | 72 | 65 | 66 | 97 | 92 | 94 | 103 | 87 | 96 |
| 30 | --- | --- | --- | 71 | 65 | 69 | 99 | 94 | 97 | 111 | 94 | 103 |
| 31 | --- | --- | --- | 74 | 67 | 71 | --- | --- | --- | 99 | 95 | 98 |
| MONTH | 117 | 58 | 73 | 86 | 46 | 69 | 103 | 73 | 88 | 124 | 83 | 102 |

01095220 STILLWATER RIVER NEAR STERLING, MA--Continued

SPECIFIC CONDUCTANCE (µS/CM AT 25°C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 107 | 99 | 103 | 154 | 144 | 150 | 156 | 148 | 152 | 163 | 160 | 162 |
| 2 | 114 | 106 | 110 | 151 | 137 | 143 | 158 | 150 | 154 | 162 | 157 | 160 |
| 3 | 138 | 114 | 126 | 137 | 130 | 132 | 159 | 154 | 157 | 163 | 158 | 160 |
| 4 | 141 | 114 | 126 | 133 | 125 | 130 | 164 | 158 | 160 | 164 | 158 | 161 |
| 5 | 121 | 114 | 119 | 132 | 121 | 126 | 162 | 158 | 160 | 165 | 160 | 163 |
| 6 | 126 | 121 | 123 | 126 | 118 | 121 | 162 | 158 | 160 | 166 | 162 | 165 |
| 7 | 129 | 123 | 126 | 128 | 119 | 124 | 165 | 159 | 162 | 166 | 164 | 165 |
| 8 | 135 | 127 | 131 | 128 | 125 | 126 | 165 | 163 | 164 | 171 | 165 | 167 |
| 9 | 143 | 132 | 137 | 134 | 127 | 129 | 165 | 161 | 162 | 172 | 167 | 170 |
| 10 | 145 | 139 | 142 | 141 | 129 | 135 | 166 | 162 | 164 | 228 | 157 | 187 |
| 11 | 143 | 134 | 139 | 143 | 131 | 136 | 167 | 163 | 165 | 193 | 121 | 167 |
| 12 | 141 | 136 | 138 | 144 | 132 | 137 | 168 | 163 | 165 | 121 | 117 | 119 |
| 13 | 142 | 132 | 137 | 144 | 132 | 138 | 167 | 163 | 165 | 127 | 118 | 123 |
| 14 | 142 | 135 | 138 | 141 | 133 | 138 | 166 | 149 | 163 | 137 | 127 | 133 |
| 15 | 145 | 136 | 142 | 146 | 134 | 140 | 164 | 154 | 157 | 148 | 137 | 144 |
| 16 | 142 | 133 | 136 | 146 | 137 | 141 | 160 | 152 | 155 | 229 | 119 | 167 |
| 17 | 143 | 134 | 138 | 152 | 133 | 142 | 161 | 157 | 159 | 119 | 91 | 98 |
| 18 | 142 | 135 | 138 | 151 | 137 | 144 | 161 | 157 | 159 | 93 | 90 | 92 |
| 19 | 138 | 131 | 134 | 152 | 144 | 147 | 163 | 160 | 162 | 98 | 93 | 96 |
| 20 | 140 | 123 | 132 | 151 | 140 | 145 | 165 | 160 | 162 | 105 | 97 | 101 |
| 21 | 141 | 131 | 136 | 147 | 139 | 143 | 184 | 153 | 164 | 113 | 104 | 109 |
| 22 | 143 | 135 | 138 | 147 | 139 | 143 | 184 | 160 | 169 | 115 | 113 | 114 |
| 23 | 140 | 134 | 137 | 149 | 142 | 145 | 161 | 158 | 160 | 116 | 112 | 114 |
| 24 | 144 | 135 | 141 | 151 | 141 | 147 | 162 | 159 | 161 | 123 | 116 | 120 |
| 25 | 148 | 139 | 143 | 152 | 139 | 147 | 160 | 157 | 159 | 145 | 123 | 137 |
| 26 | 152 | 143 | 148 | 166 | 148 | 156 | 166 | 159 | 162 | 165 | 144 | 156 |
| 27 | 149 | 140 | 146 | 150 | 143 | 147 | 166 | 159 | 162 | 174 | 158 | 165 |
| 28 | 152 | 142 | 147 | 151 | 142 | 145 | 163 | 158 | 160 | 176 | 169 | 173 |
| 29 | 162 | 141 | 153 | 151 | 143 | 146 | 163 | 160 | 162 | 174 | 170 | 172 |
| 30 | 158 | 150 | 154 | 149 | 142 | 145 | 165 | 162 | 164 | 180 | 169 | 174 |
| 31 | --- | --- | --- | 150 | 145 | 148 | 165 | 162 | 163 | --- | --- | --- |
| MONTH | 162 | 99 | 135 | 166 | 118 | 140 | 184 | 148 | 161 | 229 | 90 | 144 |
| YEAR | 235 | 46 | 111 | | | | | | | | | |

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | 16.1 | 12.5 | 14.7 | 9.1 | 7.2 | 8.2 | 6.1 | 4.5 | 5.3 | 0.5 | 0.1 | 0.2 |
| 2 | 12.8 | 10.2 | 11.7 | 9.3 | 7.1 | 8.0 | 5.6 | 3.9 | 4.8 | .6 | .1 | .3 |
| 3 | 12.3 | 9.9 | 11.4 | 8.6 | 6.2 | 7.3 | 6.1 | 4.8 | 5.5 | .5 | .3 | .4 |
| 4 | 11.8 | 9.1 | 10.8 | 6.9 | 4.6 | 5.7 | 7.2 | 5.2 | 6.2 | .4 | .2 | .3 |
| 5 | 11.3 | 8.3 | 10.2 | 6.8 | 4.1 | 5.3 | 6.3 | 4.7 | 5.7 | .5 | .2 | .3 |
| 6 | 10.5 | 8.0 | 9.5 | 6.4 | 3.8 | 5.2 | 7.3 | 6.1 | 6.6 | .4 | .2 | .3 |
| 7 | 10.6 | 7.1 | 9.0 | 6.8 | 4.8 | 5.8 | 8.9 | 6.3 | 7.5 | .6 | .2 | .3 |
| 8 | 12.7 | 10.4 | 11.3 | 6.8 | 4.9 | 5.7 | 7.3 | 6.1 | 6.4 | .3 | .2 | .2 |
| 9 | 13.0 | 12.4 | 12.7 | 5.9 | 3.5 | 4.7 | 6.1 | 5.1 | 5.8 | .6 | .2 | .4 |
| 10 | 12.9 | 12.2 | 12.5 | 5.6 | 3.1 | 4.5 | 5.6 | 4.4 | 4.9 | .3 | .1 | .2 |
| 11 | 13.8 | 12.7 | 13.2 | 8.3 | 5.6 | 6.9 | 4.7 | 3.4 | 4.1 | .5 | .2 | .2 |
| 12 | 14.0 | 13.6 | 13.8 | 6.5 | 4.8 | 5.7 | 3.8 | 2.4 | 3.2 | .6 | .2 | .3 |
| 13 | 13.8 | 13.2 | 13.5 | 6.5 | 4.7 | 5.6 | 3.7 | 2.2 | 3.0 | .7 | .2 | .5 |
| 14 | 13.4 | 12.5 | 13.0 | 6.1 | 4.2 | 5.3 | 3.2 | 1.9 | 2.6 | .3 | .2 | .2 |
| 15 | 12.9 | 11.9 | 12.4 | 7.2 | 5.6 | 6.2 | 3.3 | 1.5 | 2.4 | .2 | .2 | .2 |
| 16 | 12.3 | 11.0 | 11.6 | 6.7 | 4.9 | 5.8 | 4.0 | 2.7 | 3.2 | .3 | .2 | .2 |
| 17 | 12.0 | 9.9 | 11.0 | 6.2 | 5.6 | 5.9 | 3.8 | 2.9 | 3.3 | .3 | .2 | .2 |
| 18 | 13.4 | 11.1 | 12.1 | 6.4 | 4.5 | 5.6 | 3.2 | 1.3 | 2.0 | .4 | .2 | .3 |
| 19 | 14.0 | 12.1 | 12.7 | 5.2 | 3.5 | 4.4 | 3.3 | 1.2 | 2.3 | .4 | .2 | .3 |
| 20 | 12.8 | 10.8 | 11.7 | 6.0 | 5.1 | 5.6 | 3.9 | 3.0 | 3.4 | .5 | .2 | .3 |
| 21 | 11.3 | 9.8 | 10.6 | 5.8 | 4.7 | 5.2 | 3.5 | 2.9 | 3.1 | .7 | .1 | .4 |
| 22 | 10.6 | 8.6 | 9.6 | 5.0 | 3.9 | 4.5 | 5.2 | 1.6 | 4.0 | 1.0 | .5 | .7 |
| 23 | 10.4 | 7.6 | 9.0 | 5.8 | 4.1 | 4.9 | 1.6 | .5 | 1.2 | .8 | .6 | .7 |
| 24 | 11.6 | 8.3 | 9.9 | 6.1 | 5.0 | 5.5 | 2.0 | .8 | 1.5 | .9 | .3 | .6 |
| 25 | 11.9 | 9.0 | 10.5 | 5.2 | 3.7 | 4.4 | 1.3 | .2 | .7 | .5 | .3 | .4 |
| 26 | 11.5 | 8.7 | 10.2 | 5.4 | 3.9 | 4.5 | 1.5 | .2 | .8 | .8 | .2 | .4 |
| 27 | 9.6 | 7.5 | 8.5 | 5.0 | 4.4 | 4.7 | 1.5 | .2 | .9 | 1.0 | .3 | .6 |
| 28 | 10.4 | 7.1 | 8.8 | 5.2 | 3.9 | 4.5 | 2.8 | 1.4 | 2.2 | .6 | .3 | .4 |
| 29 | 10.3 | 8.2 | 9.4 | 5.1 | 3.8 | 4.4 | 2.4 | 1.1 | 1.8 | .6 | .2 | .4 |
| 30 | 9.7 | 7.6 | 8.5 | 5.7 | 4.5 | 5.0 | 2.0 | .1 | 1.2 | .4 | .2 | .3 |
| 31 | 10.3 | 8.3 | 8.9 | --- | --- | --- | .5 | .1 | .2 | .5 | .2 | .3 |
| MONTH | 16.1 | 7.1 | 11.1 | 9.3 | 3.1 | 5.5 | 8.9 | .1 | 3.4 | 1.0 | .1 | .3 |

01095220 STILLWATER RIVER NEAR STERLING, MA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 0.6 | 0.2 | 0.4 | 1.3 | 0.8 | 1.0 | 10.5 | 8.5 | 9.5 | 16.6 | 10.9 | 13.7 |
| 2 | .6 | .3 | .4 | 1.7 | .6 | 1.1 | 10.8 | 9.1 | 9.9 | 17.5 | 11.9 | 14.7 |
| 3 | .7 | .3 | .4 | 2.6 | 1.2 | 1.9 | 10.1 | 9.0 | 9.6 | 15.3 | 13.4 | 14.3 |
| 4 | .7 | .2 | .5 | 3.4 | 1.2 | 2.3 | 10.9 | 8.7 | 9.5 | 14.0 | 13.3 | 13.5 |
| 5 | 1.1 | .3 | .6 | 1.9 | .6 | 1.3 | 11.4 | 7.9 | 9.5 | 14.2 | 13.1 | 13.5 |
| 6 | .8 | .3 | .5 | 1.8 | .6 | 1.3 | 11.8 | 7.8 | 9.6 | 16.1 | 13.1 | 14.4 |
| 7 | 1.2 | .3 | .7 | 1.6 | .5 | .9 | 13.2 | 9.9 | 11.3 | 16.2 | 14.7 | 15.4 |
| 8 | 1.4 | .3 | .7 | 1.7 | .4 | .9 | 14.2 | 10.4 | 12.1 | 15.8 | 15.2 | 15.5 |
| 9 | 1.4 | .3 | .7 | 2.2 | .5 | 1.2 | 12.1 | 10.6 | 11.4 | 17.9 | 14.7 | 16.2 |
| 10 | 1.6 | .6 | 1.0 | 2.3 | .6 | 1.3 | 12.6 | 10.0 | 11.1 | 18.6 | 14.7 | 16.5 |
| 11 | 1.9 | .4 | 1.0 | 2.2 | 1.0 | 1.5 | 12.1 | 8.5 | 10.2 | 18.5 | 13.9 | 16.2 |
| 12 | 2.0 | .8 | 1.4 | 2.2 | .9 | 1.5 | 12.6 | 9.2 | 10.7 | 18.3 | 13.8 | 16.1 |
| 13 | 1.9 | 1.0 | 1.4 | 3.0 | 1.1 | 1.9 | 11.9 | 9.0 | 10.3 | 18.1 | 13.1 | 15.7 |
| 14 | 1.8 | .6 | 1.1 | 3.9 | 1.5 | 2.6 | 11.8 | 9.1 | 10.3 | 18.4 | 12.8 | 15.7 |
| 15 | 1.9 | .3 | .9 | 2.5 | 1.5 | 2.1 | 13.0 | 8.9 | 10.9 | 18.8 | 13.5 | 16.2 |
| 16 | 2.3 | .6 | 1.2 | 3.0 | .7 | 1.8 | 11.5 | 9.8 | 10.6 | 18.8 | 13.5 | 16.2 |
| 17 | 1.8 | 1.0 | 1.4 | 4.8 | 1.9 | 3.3 | 11.7 | 9.2 | 10.4 | 19.4 | 13.9 | 16.7 |
| 18 | 1.9 | 1.4 | 1.6 | 6.0 | 3.3 | 4.6 | 12.6 | 9.4 | 10.9 | 17.7 | 15.0 | 16.6 |
| 19 | 1.7 | 1.2 | 1.4 | 5.3 | 4.2 | 4.6 | 13.6 | 10.0 | 11.7 | 17.7 | 16.7 | 17.2 |
| 20 | 2.4 | 1.4 | 1.8 | 5.0 | 3.8 | 4.3 | 12.6 | 11.0 | 11.9 | 18.1 | 16.4 | 17.0 |
| 21 | 2.8 | 1.3 | 1.9 | 5.1 | 4.1 | 4.5 | 14.0 | 9.9 | 11.8 | 19.2 | 15.2 | 17.2 |
| 22 | 2.0 | .5 | 1.1 | 5.5 | 4.2 | 4.9 | 12.7 | 10.9 | 11.8 | 19.6 | 15.5 | 17.5 |
| 23 | 1.8 | .3 | .8 | 5.9 | 3.2 | 4.5 | 11.7 | 10.4 | 11.4 | 17.9 | 16.6 | 17.3 |
| 24 | 2.1 | .6 | 1.1 | 5.7 | 4.2 | 4.6 | 12.8 | 9.0 | 10.7 | 16.6 | 16.0 | 16.4 |
| 25 | 1.1 | .4 | .7 | 6.3 | 4.3 | 5.3 | 13.1 | 8.6 | 10.8 | 16.2 | 15.0 | 15.6 |
| 26 | 2.3 | .7 | 1.2 | 6.8 | 5.5 | 6.1 | 14.2 | 10.1 | 11.9 | 15.7 | 14.6 | 15.2 |
| 27 | 2.7 | .5 | 1.3 | 7.4 | 5.6 | 6.4 | 12.9 | 10.6 | 11.8 | 16.5 | 14.1 | 15.2 |
| 28 | 1.6 | .5 | 1.1 | 6.7 | 5.8 | 6.4 | 13.6 | 10.0 | 11.9 | 18.4 | 14.3 | 16.3 |
| 29 | --- | --- | --- | 8.5 | 5.6 | 6.9 | 14.4 | 9.9 | 12.1 | 19.8 | 15.6 | 17.8 |
| 30 | --- | --- | --- | 9.1 | 8.0 | 8.5 | 15.7 | 10.6 | 12.9 | 20.9 | 16.7 | 18.9 |
| 31 | --- | --- | --- | 9.7 | 7.7 | 8.7 | --- | --- | --- | 22.6 | 18.1 | 20.3 |
| MONTH | 2.8 | .2 | 1.0 | 9.7 | .4 | 3.5 | 15.7 | 7.8 | 10.9 | 22.6 | 10.9 | 16.1 |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 23.0 | 18.5 | 20.8 | 21.4 | 20.0 | 20.4 | 25.2 | 21.7 | 23.1 | 20.3 | 14.3 | 16.9 |
| 2 | 23.4 | 20.0 | 21.6 | 22.2 | 19.9 | 20.9 | 24.9 | 19.8 | 22.0 | 20.2 | 14.7 | 17.3 |
| 3 | 23.4 | 20.6 | 21.8 | 24.1 | 19.5 | 21.8 | 23.5 | 18.5 | 20.6 | 21.3 | 15.6 | 18.2 |
| 4 | 22.3 | 18.8 | 20.5 | 24.3 | 21.2 | 22.8 | 23.4 | 17.3 | 19.9 | 21.7 | 16.8 | 19.0 |
| 5 | 20.6 | 17.0 | 18.8 | 26.2 | 22.2 | 24.1 | 22.0 | 18.5 | 20.1 | 22.1 | 18.4 | 19.9 |
| 6 | 21.1 | 16.8 | 18.9 | 27.6 | 23.5 | 25.4 | 23.1 | 17.9 | 20.2 | 21.6 | 19.3 | 20.2 |
| 7 | 23.9 | 18.8 | 21.2 | 25.8 | 22.5 | 24.3 | 23.4 | 17.6 | 19.9 | 22.5 | 19.4 | 20.7 |
| 8 | 25.2 | 20.8 | 22.8 | 23.1 | 20.1 | 21.6 | 19.9 | 17.7 | 18.7 | 21.6 | 19.9 | 20.6 |
| 9 | 22.2 | 17.5 | 19.6 | 20.4 | 18.9 | 19.4 | 22.1 | 16.8 | 18.8 | 23.0 | 19.4 | 20.9 |
| 10 | 20.7 | 16.5 | 18.3 | 22.1 | 18.9 | 20.3 | 20.8 | 14.9 | 17.5 | 20.8 | 19.1 | 20.1 |
| 11 | 20.6 | 15.7 | 18.0 | 21.6 | 17.4 | 19.7 | 17.8 | 16.4 | 17.1 | 20.4 | 18.1 | 19.2 |
| 12 | 21.4 | 15.7 | 18.7 | 21.7 | 16.5 | 19.3 | 23.0 | 16.9 | 19.1 | 20.3 | 17.3 | 18.8 |
| 13 | 21.8 | 18.2 | 20.0 | 20.9 | 18.1 | 19.4 | 22.4 | 17.7 | 19.9 | 19.2 | 16.4 | 18.0 |
| 14 | 22.2 | 19.5 | 20.8 | 20.6 | 16.2 | 18.6 | 21.3 | 19.9 | 20.6 | 18.2 | 16.6 | 17.4 |
| 15 | 22.3 | 19.1 | 20.7 | 22.6 | 17.4 | 20.1 | 19.9 | 18.0 | 19.0 | 17.9 | 17.0 | 17.5 |
| 16 | 20.2 | 16.6 | 18.5 | 23.7 | 18.9 | 21.4 | 21.6 | 16.3 | 18.7 | 17.6 | 16.2 | 17.1 |
| 17 | 18.5 | 16.6 | 17.5 | 25.3 | 20.2 | 22.9 | 23.5 | 18.3 | 20.4 | 17.4 | 15.6 | 16.2 |
| 18 | 18.2 | 16.0 | 17.0 | 25.6 | 21.5 | 23.6 | 23.5 | 19.5 | 21.2 | 15.8 | 14.8 | 15.3 |
| 19 | 19.6 | 14.7 | 17.3 | 23.5 | 20.9 | 22.1 | 22.8 | 18.1 | 19.9 | 16.0 | 14.2 | 15.1 |
| 20 | 20.0 | 16.3 | 18.1 | 22.7 | 18.9 | 20.9 | 20.9 | 16.6 | 18.6 | 15.9 | 14.1 | 15.0 |
| 21 | 18.8 | 16.5 | 17.7 | 22.1 | 16.9 | 19.8 | 18.1 | 15.9 | 16.8 | 15.6 | 15.0 | 15.3 |
| 22 | 21.2 | 16.1 | 18.7 | 23.6 | 19.1 | 21.4 | 17.0 | 15.5 | 16.2 | 15.6 | 14.4 | 15.2 |
| 23 | 21.2 | 17.5 | 19.6 | 25.1 | 20.6 | 22.7 | 20.5 | 15.3 | 17.4 | 15.6 | 13.4 | 14.5 |
| 24 | 23.0 | 18.4 | 20.7 | 23.5 | 20.5 | 22.1 | 20.4 | 16.1 | 18.1 | 16.4 | 13.9 | 15.2 |
| 25 | 21.5 | 18.3 | 20.0 | 24.5 | 20.6 | 22.3 | 21.6 | 16.2 | 18.6 | 16.7 | 14.7 | 15.5 |
| 26 | 23.5 | 18.6 | 21.0 | 22.5 | 19.9 | 21.4 | 19.9 | 17.1 | 18.4 | 15.6 | 13.2 | 14.5 |
| 27 | 23.9 | 18.7 | 21.5 | 23.9 | 19.7 | 21.7 | 19.1 | 18.1 | 18.5 | 15.4 | 12.2 | 13.9 |
| 28 | 25.2 | 21.0 | 23.0 | 24.5 | 19.6 | 22.0 | 21.8 | 17.8 | 19.4 | 16.1 | 13.8 | 14.9 |
| 29 | 25.0 | 21.8 | 23.2 | 22.9 | 19.5 | 21.5 | 22.9 | 18.6 | 20.2 | 16.1 | 14.9 | 15.5 |
| 30 | 23.6 | 20.5 | 22.1 | 24.9 | 20.4 | 22.4 | 20.3 | 16.3 | 18.1 | 16.5 | 14.8 | 15.8 |
| 31 | --- | --- | --- | 24.7 | 20.7 | 22.6 | 20.1 | 14.9 | 17.0 | --- | --- | --- |
| MONTH | 25.2 | 14.7 | 19.9 | 27.6 | 16.2 | 21.6 | 25.2 | 14.9 | 19.2 | 23.0 | 12.2 | 17.1 |
| YEAR | 27.6 | .1 | 10.9 | | | | | | | | | |

01095220 STILLWATER RIVER NEAR STERLING, MA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | TIME | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | OXYGEN, DIS-SOLVED (MG/L) (00300) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) |
|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | |
| 19... | 1150 | 13 | 109 | 6.4 | 19.2 | 12.7 | 8.3 | 5.9 | 16 |
| NOV | | | | | | | | | |
| 17... | 0840 | 11 | 111 | 7.4 | 7.8 | 6.0 | 10.3 | 5.7 | 21 |
| DEC | | | | | | | | | |
| 16... | 1000 | 12 | 95 | 6.6 | 8.0 | 3.0 | 13.3 | 5.2 | 17 |
| JAN | | | | | | | | | |
| 06... | 1040 | E21 | 100 | 6.5 | -6.5 | .1 | 13.0 | 4.7 | 19 |
| FEB | | | | | | | | | |
| 01... | 1040 | E49 | 88 | 7.1 | 6.3 | .1 | 13.0 | 4.1 | 16 |
| MAR | | | | | | | | | |
| 04... | 1100 | 332 | 70 | 6.3 | 7.8 | 4.0 | 12.2 | 2.7 | 13 |
| APR | | | | | | | | | |
| 09... | 1030 | 44 | 93 | 6.6 | 14.1 | 10.3 | 10.3 | 4.6 | 17 |
| MAY | | | | | | | | | |
| 19... | 1320 | 11 | 115 | 7.3 | 20.0 | 16.5 | 7.8 | 5.7 | 21 |
| JUN | | | | | | | | | |
| 10... | 0710 | 6.4 | 140 | 7.5 | 15.8 | 15.7 | 6.8 | 8.2 | 25 |
| JUL | | | | | | | | | |
| 08... | 1130 | 4.6 | 122 | 7.1 | 25.1 | 20.6 | 8.2 | 7.6 | 20 |
| AUG | | | | | | | | | |
| 04... | 0930 | .85 | 153 | 7.2 | 25.0 | 17.0 | 7.6 | 11 | 27 |
| SEP | | | | | | | | | |
| 16... | 0900 | 4.2 | 145 | 6.9 | 20.3 | 17.5 | 6.7 | 9.4 | 23 |
| 17... | 1350 | 256 | 93 | 6.3 | 16.5 | 16.5 | 7.9 | 4.6 | 15 |

| DATE | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) |
|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | |
| 19... | <0.10 | 190 | 1.1 | 62 | 1.7 | 71 | 7.8 | 11 | 9.1 | 0.021 |
| NOV | | | | | | | | | | |
| 17... | <.10 | 230 | 1.0 | 34 | 1.6 | 88 | 7.6 | 12 | 7.0 | .027 |
| DEC | | | | | | | | | | |
| 16... | <.10 | 120 | .99 | 33 | 1.3 | 68 | 7.9 | 9.3 | 7.0 | .031 |
| JAN | | | | | | | | | | |
| 06... | <.10 | 130 | .94 | 54 | 1.3 | 67 | 8.0 | 12 | 6.8 | .032 |
| FEB | | | | | | | | | | |
| 01... | <.10 | 94 | .84 | 36 | .97 | 61 | 7.5 | 9.5 | 7.7 | .026 |
| MAR | | | | | | | | | | |
| 04... | <.10 | 68 | .58 | 54 | .90 | 48 | 4.6 | 6.7 | 5.7 | <.020 |
| APR | | | | | | | | | | |
| 09... | <.10 | 81 | .84 | 43 | 1.0 | 59 | 4.3 | 11 | 6.1 | <.020 |
| MAY | | | | | | | | | | |
| 19... | <.10 | 51 | .99 | 55 | 1.2 | 70 | 3.8 | 11 | 7.1 | .033 |
| JUN | | | | | | | | | | |
| 10... | <.10 | 140 | 1.4 | 92 | 1.5 | 92 | 5.7 | 13 | 8.0 | .043 |
| JUL | | | | | | | | | | |
| 08... | <.10 | 69 | 1.4 | 101 | 1.6 | 98 | 5.2 | 11 | 6.4 | <.020 |
| AUG | | | | | | | | | | |
| 04... | <.10 | 67 | 1.9 | 177 | 1.8 | 95 | 7.3 | 13 | <.10 | <.020 |
| SEP | | | | | | | | | | |
| 16... | <.10 | 120 | 1.7 | 146 | 2.0 | 89 | 5.9 | 13 | 9.8 | .022 |
| 17... | <.10 | 200 | .80 | 123 | 1.3 | 71 | 5.7 | 9.7 | 11 | <.020 |

01095220 STILLWATER RIVER NEAR STERLING, MA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671) | CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681) | CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689) | SEDI-MENT, SUS-PENDED (MG/L) (80154) | SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331) |
|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | |
| 19... | 0.26 | 0.35 | <0.010 | <0.050 | <0.050 | 0.010 | 6.8 | 0.20 | 4 | 80 |
| NOV | | | | | | | | | | |
| 17... | .24 | .17 | <.010 | <.050 | .023 | <.010 | 4.4 | .20 | 5 | 47 |
| DEC | | | | | | | | | | |
| 16... | .15 | .20 | .017 | .020 | .013 | .012 | -- | .50 | 5 | 78 |
| JAN | | | | | | | | | | |
| 06... | .17 | .25 | <.010 | .005 | .015 | <.010 | 4.1 | .20 | 4 | 60 |
| FEB | | | | | | | | | | |
| 01... | .18 | .22 | <.010 | .006 | .008 | .020 | 3.6 | <.20 | 2 | 57 |
| MAR | | | | | | | | | | |
| 04... | .19 | .30 | <.010 | .007 | .058 | .013 | 3.9 | .70 | 22 | 40 |
| APR | | | | | | | | | | |
| 09... | .19 | .21 | <.010 | .005 | .010 | <.010 | 3.0 | .20 | 6 | 55 |
| MAY | | | | | | | | | | |
| 19... | .17 | .31 | <.010 | <.004 | .020 | .010 | 3.5 | .40 | 5 | 63 |
| JUN | | | | | | | | | | |
| 10... | .27 | .26 | <.010 | .005 | .016 | .019 | 3.8 | .30 | 3 | 38 |
| JUL | | | | | | | | | | |
| 08... | .24 | .36 | <.010 | .005 | .112 | <.010 | 4.1 | .20 | 4 | 75 |
| AUG | | | | | | | | | | |
| 04... | E.10 | .19 | <.010 | .004 | .008 | <.010 | 2.6 | .40 | 3 | 75 |
| SEP | | | | | | | | | | |
| 16... | .20 | .23 | <.010 | .004 | .015 | <.010 | 3.0 | .40 | 6 | 63 |
| 17... | .38 | .51 | <.010 | .012 | .044 | <.010 | 9.3 | .90 | 12 | 53 |

E Estimated

01095375 QUINAPOXET RIVER AT CANADA MILLS NEAR HOLDEN, MA

LOCATION.--Lat 42°22'22", long 71°49'43", Worcester County, Hydrologic Unit 01070004, on left bank, 300 ft upstream from bridge on Harris Street at Canada Mills, 2.1 mi north of Holden, MA, and about 3.5 mi upstream from mouth at Wachusett Reservoir.

DRAINAGE AREA.--44.4 $mi^2$.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1996 to current year.

GAGE.--Water stage recorder. Elevation of gage is 560 ft above sea level, from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by Quinapoxet Reservoir. Telephone gage-height telemeter at station.

AVERAGE DISCHARGE.--2 years, 61.2 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,670 $ft^3/s$, Mar. 10, 1998, gage height, 13.76 ft; minimum, 0.48 $ft^3/s$, Aug. 10, 1999.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 21, 1996, reached a discharge of 890 $ft^3/s$, gage height, 12.45 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 700 $ft^3/s$, Jan. 25, gage height, 10.64 ft; minimum daily, 0.57 $ft^3/s$, Aug. 10.

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 | 4.6 | 5.9 | 11 | 9.8 | e72 | 163 | 86 | 31 | 23 | 4.7 | 0.85 | 1.0 |
| 2 | 4.6 | 5.8 | 11 | 9.1 | 90 | 158 | 81 | 28 | 20 | 5.6 | .70 | 1.0 |
| 3 | 4.3 | 6.2 | 10 | e18 | 294 | 118 | 74 | 27 | 17 | 5.0 | .69 | 1.1 |
| 4 | 3.9 | 5.5 | 8.4 | e34 | 228 | 395 | 73 | 30 | 12 | 4.9 | .62 | 1.0 |
| 5 | 3.8 | 5.4 | 6.9 | e18 | 192 | 257 | 58 | 40 | 9.2 | 4.5 | .64 | .85 |
| 6 | 4.4 | 6.6 | 5.9 | e17 | 143 | e162 | 55 | 38 | 7.8 | 3.4 | .65 | 1.1 |
| 7 | 4.6 | 7.9 | 5.7 | e15 | 113 | e123 | 58 | 35 | 7.4 | 3.2 | .60 | 1.8 |
| 8 | 9.8 | 7.6 | 7.4 | 17 | 96 | e106 | 52 | 35 | 7.3 | 2.5 | .66 | 2.0 |
| 9 | 42 | 7.4 | 14 | 37 | 83 | 98 | 47 | 39 | 6.6 | 2.2 | .69 | 1.8 |
| 10 | 38 | 8.2 | 10 | 45 | 75 | 90 | 52 | 37 | 6.5 | 2.5 | .57 | 17 |
| 11 | 57 | 17 | 8.8 | e35 | 71 | 83 | 42 | 28 | 8.2 | 2.0 | .70 | 20 |
| 12 | 28 | 14 | 7.8 | e28 | 73 | 76 | 47 | 26 | 7.1 | 1.7 | .99 | 6.6 |
| 13 | 18 | 8.5 | 7.0 | 28 | 105 | 73 | 45 | 24 | 5.7 | 1.6 | .80 | 3.4 |
| 14 | 23 | 6.6 | 6.8 | 37 | 89 | 74 | 37 | 21 | 5.4 | 1.5 | 1.3 | 2.3 |
| 15 | 37 | 6.1 | 7.0 | 57 | 71 | 89 | 36 | 20 | 5.4 | 1.4 | 2.8 | 2.7 |
| 16 | 22 | 5.7 | 7.1 | 83 | 65 | 81 | 36 | 18 | 4.5 | 1.3 | 1.9 | 74 |
| 17 | 16 | 7.0 | 7.8 | 72 | 62 | 82 | 47 | 17 | 4.0 | 1.0 | 1.4 | 133 |
| 18 | 13 | 9.7 | 9.7 | 76 | 82 | 117 | 46 | 16 | 4.3 | .90 | 1.2 | 38 |
| 19 | 12 | 10 | 8.0 | 148 | 120 | 157 | 40 | 21 | 3.8 | 1.1 | .93 | 22 |
| 20 | 11 | 12 | 7.2 | 133 | 95 | 125 | 40 | 45 | 3.1 | 1.5 | .81 | 17 |
| 21 | 9.4 | 12 | 6.8 | 96 | 80 | 104 | 37 | 33 | 2.6 | 1.4 | 1.7 | 14 |
| 22 | 8.6 | 9.5 | 10 | 84 | 66 | 352 | 36 | 24 | 2.5 | 1.2 | 2.2 | 14 |
| 23 | 8.0 | 8.3 | 9.9 | 89 | 55 | 332 | 47 | 22 | 2.2 | 1.0 | 1.7 | 12 |
| 24 | 7.5 | 7.9 | 8.6 | 304 | 51 | 193 | 57 | 40 | 2.1 | .93 | 1.4 | 9.9 |
| 25 | 7.1 | 7.4 | e9.0 | 465 | 55 | 157 | 43 | 62 | 1.6 | 1.2 | 1.1 | 8.5 |
| 26 | 6.7 | 15 | e9.0 | 208 | 56 | 127 | 41 | 46 | 1.5 | 1.6 | .95 | 7.1 |
| 27 | 6.6 | 30 | e8.6 | 142 | 51 | 110 | 39 | 37 | 1.3 | 1.4 | 1.9 | 6.1 |
| 28 | 7.1 | 17 | 8.5 | 115 | 58 | 121 | 34 | 31 | 1.3 | 1.1 | 2.1 | 6.0 |
| 29 | 9.6 | 13 | 9.3 | 89 | --- | 131 | 38 | 34 | 2.4 | .97 | 1.4 | 5.3 |
| 30 | 8.4 | 12 | e13 | e63 | --- | 111 | 33 | 31 | 3.4 | .94 | 1.0 | 12 |
| 31 | 7.9 | --- | e13 | e67 | --- | 94 | --- | 28 | --- | 1.0 | .91 | --- |
| TOTAL | 443.9 | 295.2 | 273.2 | 2638.9 | 2691 | 4459 | 1457 | 964 | 189.2 | 65.24 | 35.86 | 442.55 |
| MEAN | 14.3 | 9.84 | 8.81 | 85.1 | 96.1 | 144 | 48.6 | 31.1 | 6.31 | 2.10 | 1.16 | 14.8 |
| MAX | 57 | 30 | 14 | 465 | 294 | 395 | 86 | 62 | 23 | 5.6 | 2.8 | 133 |
| MIN | 3.8 | 5.4 | 5.7 | 9.1 | 51 | 73 | 33 | 16 | 1.3 | .90 | .57 | .85 |
| CFSM | .32 | .22 | .20 | 1.92 | 2.16 | 3.24 | 1.09 | .70 | .14 | .05 | .03 | .33 |
| IN. | .37 | .25 | .23 | 2.21 | 2.25 | 3.74 | 1.22 | .81 | .16 | .05 | .03 | .37 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 1999, BY WATER YEAR (WY)

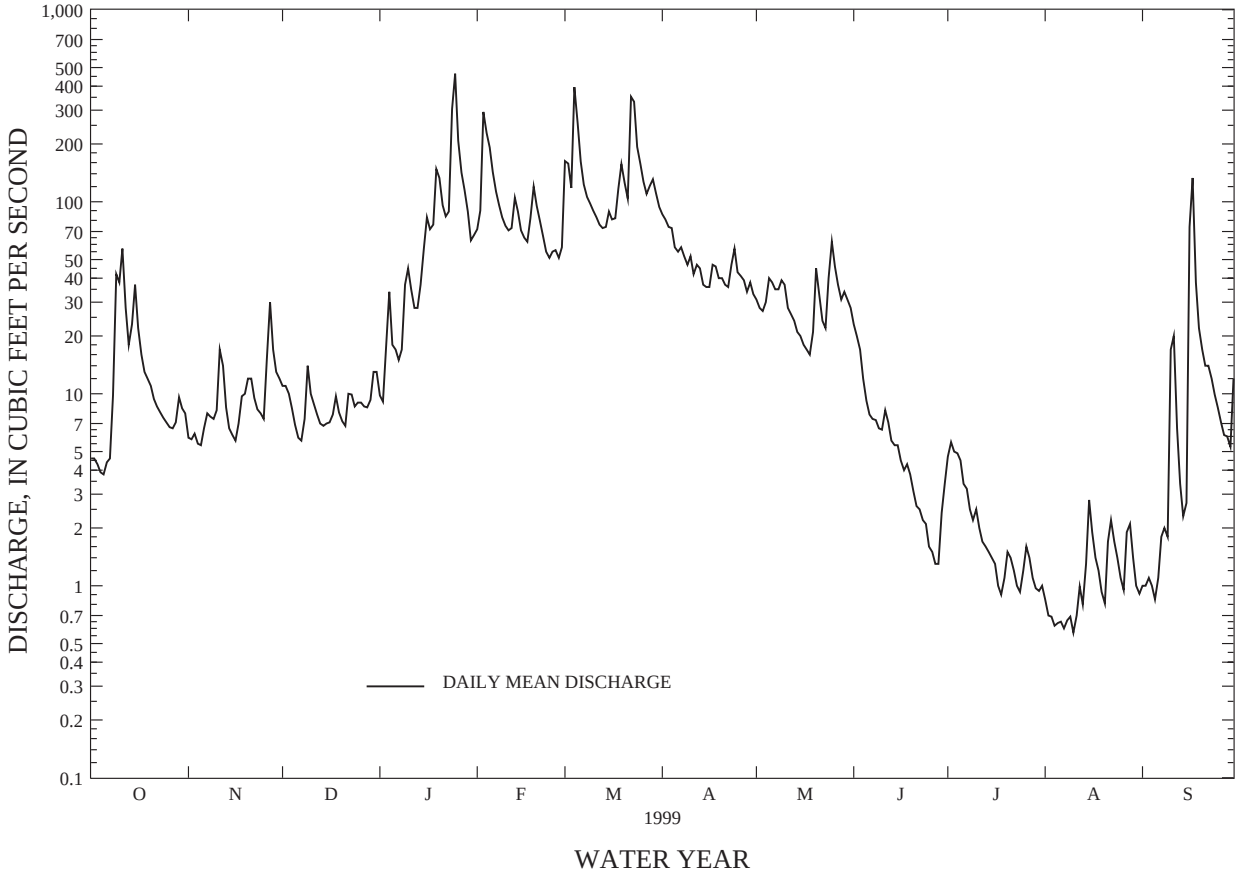
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 9.77 | 13.1 | 89.9 | 90.7 | 98.0 | 174 | 136 | 91.6 | 67.2 | 19.0 | 5.16 | 7.72 |
| MAX | 14.3 | 16.3 | 247 | 104 | 119 | 267 | 251 | 165 | 176 | 47.3 | 7.89 | 14.8 |
| (WY) | 1999 | 1998 | 1997 | 1997 | 1998 | 1998 | 1997 | 1998 | 1998 | 1998 | 1998 | 1999 |
| MIN | 5.23 | 9.84 | 8.81 | 82.6 | 78.9 | 113 | 48.6 | 31.1 | 6.31 | 2.10 | 1.16 | 3.48 |
| (WY) | 1998 | 1999 | 1999 | 1998 | 1997 | 1997 | 1999 | 1999 | 1999 | 1999 | 1999 | 1997 |

01095375 QUINAPOXET RIVER AT CANADA MILLS NEAR HOLDEN, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1997 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 30632.3 | | 13955.05 | | | |
| ANNUAL MEAN | 83.9 | | 38.2 | | 61.2 | |
| HIGHEST ANNUAL MEAN | | | | | 84.1 | 1998 |
| LOWEST ANNUAL MEAN | | | | | 38.2 | 1999 |
| HIGHEST DAILY MEAN | 1270 | Mar 10 | 465 | Jan 25 | 1270 | Mar 10 1998 |
| LOWEST DAILY MEAN | 3.6 | Sep 7 | .57 | Aug 10 | .57 | Aug 10 1999 |
| ANNUAL SEVEN-DAY MINIMUM | 3.8 | Sep 7 | .63 | Aug 4 | .63 | Aug 4 1999 |
| INSTANTANEOUS PEAK FLOW | | | 700 | Jan 25 | 1670 | Mar 10 1998 |
| INSTANTANEOUS PEAK STAGE | | | 10.64 | Jan 25 | 13.76 | Mar 10 1998 |
| INSTANTANEOUS LOW FLOW | | | .48 | Aug 10 | .48 | Aug 10 1999 |
| ANNUAL RUNOFF (CFSM) | 1.89 | | .86 | | 1.38 | |
| ANNUAL RUNOFF (INCHES) | 25.66 | | 11.69 | | 18.72 | |
| 10 PERCENT EXCEEDS | 199 | | 100 | | 181 | |
| 50 PERCENT EXCEEDS | 42 | | 12 | | 31 | |
| 90 PERCENT EXCEEDS | 5.4 | | 1.2 | | 3.2 | |

e Estimated

QUINAPOXET RIVER AT CANADA MILLS NEAR HOLDEN, MA 01095375



01095375 QUINAPOXET RIVER AT CANADA MILLS NEAR HOLDEN, MA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--April 1997 to current year.

INSTRUMENTATION.--Specific Conductance and Temperature water-quality monitor.

REMARKS.--Interruptions in the record are due to malfunctions of the instrument. Extremes for period of daily record and current year are for those values reported.

EXTREMES FOR PERIOD OF DAILY RECORD, APRIL 1997 TO CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum recorded, 659 µS/cm, Jan. 9, 1999; minimum, 61 µS/cm, June 18, 1998.
WATER TEMPERATURE: Maximum recorded, 28.5°C, Aug. 1, 1999; minimum, 0.0°C, on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum recorded, 659 µS/cm, Jan. 9; minimum, 78 µS/cm, Mar. 22.
WATER TEMPERATURE: Maximum recorded, 28.5°C, Aug. 1; minimum, 0.0°C, several days during winter periods.

SPECIFIC CONDUCTANCE (µS/CM AT 25°C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | 232 | 228 | 230 | --- | --- | --- | --- | --- | --- | 174 | 167 | 169 |
| 2 | 231 | 228 | 229 | --- | --- | --- | 178 | 172 | 175 | 189 | 172 | 180 |
| 3 | 234 | 226 | 230 | --- | --- | --- | 178 | 174 | 176 | 599 | 157 | 250 |
| 4 | 229 | 219 | 225 | --- | --- | --- | 177 | 173 | 176 | 437 | 218 | 341 |
| 5 | 228 | 217 | 223 | --- | --- | --- | 180 | 175 | 178 | 341 | 244 | 293 |
| 6 | 229 | 222 | 225 | --- | --- | --- | 178 | 175 | 177 | 244 | 219 | 235 |
| 7 | 227 | 222 | 224 | --- | --- | --- | 180 | 177 | 178 | 242 | 200 | 220 |
| 8 | 230 | 215 | 225 | --- | --- | --- | 181 | 174 | 178 | 201 | 183 | 190 |
| 9 | 217 | 159 | 178 | --- | --- | --- | 180 | 164 | 169 | 659 | 178 | 324 |
| 10 | 182 | 133 | 171 | --- | --- | --- | 182 | 176 | 180 | 477 | 323 | 391 |
| 11 | 163 | 136 | 156 | --- | --- | --- | 183 | 177 | 181 | 323 | 234 | 271 |
| 12 | 170 | 163 | 167 | --- | --- | --- | 187 | 181 | 185 | 290 | 216 | 238 |
| 13 | 178 | 168 | 173 | --- | --- | --- | 190 | 183 | 187 | 238 | 212 | 222 |
| 14 | 182 | 147 | 174 | --- | --- | --- | 191 | 185 | 189 | 227 | 217 | 221 |
| 15 | 167 | 149 | 159 | --- | --- | --- | 199 | 184 | 191 | 446 | 208 | 248 |
| 16 | 165 | 159 | 162 | --- | --- | --- | 200 | 197 | 199 | 444 | 257 | 311 |
| 17 | 165 | 159 | 162 | --- | --- | --- | 201 | 194 | 198 | 301 | 229 | 260 |
| 18 | 174 | 165 | 170 | --- | --- | --- | 200 | 183 | 194 | 229 | 172 | 185 |
| 19 | 179 | 174 | 177 | --- | --- | --- | 200 | 183 | 194 | 248 | 173 | 213 |
| 20 | 181 | 174 | 178 | --- | --- | --- | 199 | 194 | 197 | 179 | 159 | 173 |
| 21 | 178 | 174 | 177 | --- | --- | --- | 198 | 195 | 196 | 171 | 152 | 159 |
| 22 | 179 | 175 | 177 | --- | --- | --- | 196 | 182 | 189 | 190 | 171 | 180 |
| 23 | 181 | 177 | 178 | --- | --- | --- | 188 | 172 | 180 | 186 | 170 | 179 |
| 24 | --- | --- | --- | --- | --- | --- | 190 | 169 | 179 | 172 | 103 | 139 |
| 25 | --- | --- | --- | --- | --- | --- | 194 | 168 | 180 | 112 | 100 | 107 |
| 26 | --- | --- | --- | --- | --- | --- | 199 | 173 | 186 | 115 | 103 | 109 |
| 27 | --- | --- | --- | --- | --- | --- | 193 | 171 | 182 | 119 | 111 | 115 |
| 28 | --- | --- | --- | --- | --- | --- | 194 | 185 | 190 | 120 | 106 | 113 |
| 29 | --- | --- | --- | --- | --- | --- | 189 | 163 | 180 | 136 | 101 | 111 |
| 30 | --- | --- | --- | --- | --- | --- | 182 | 154 | 170 | 121 | 102 | 109 |
| 31 | --- | --- | --- | --- | --- | --- | 172 | 164 | 168 | 116 | 108 | 111 |
| MONTH | --- | --- | --- | --- | --- | --- | --- | --- | --- | 659 | 100 | 205 |

01095375 QUINAPOXET RIVER AT CANADA MILLS NEAR HOLDEN, MA--Continued

SPECIFIC CONDUCTANCE (µS/CM AT 25°C), WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 120 | 104 | 110 | 185 | 119 | 146 | 119 | 116 | 118 | 161 | 155 | 158 |
| 2 | 240 | 108 | 157 | 119 | 113 | 115 | 119 | 114 | 117 | 158 | 153 | 156 |
| 3 | 226 | 130 | 157 | 128 | 112 | 117 | 122 | 116 | 119 | 156 | 152 | 153 |
| 4 | 130 | 121 | 124 | 127 | 93 | 100 | 117 | 112 | 114 | 154 | 149 | 151 |
| 5 | 122 | 116 | 118 | 101 | 95 | 98 | 124 | 113 | 119 | 153 | 151 | 152 |
| 6 | 118 | 112 | 115 | 104 | 100 | 102 | 127 | 118 | 122 | 152 | 147 | 149 |
| 7 | 121 | 113 | 118 | 116 | 104 | 110 | 132 | 123 | 127 | 149 | 147 | 147 |
| 8 | 123 | 115 | 119 | 141 | 109 | 124 | 132 | 124 | 128 | 153 | 145 | 149 |
| 9 | 126 | 113 | 120 | 126 | 111 | 119 | 129 | 124 | 127 | 147 | 145 | 146 |
| 10 | 124 | 119 | 121 | 121 | 110 | 116 | 124 | 118 | 122 | 147 | 139 | 143 |
| 11 | 127 | 118 | 123 | 120 | 113 | 117 | 128 | 118 | 124 | 153 | 144 | 150 |
| 12 | 126 | 122 | 124 | 146 | 110 | 122 | 130 | 123 | 126 | 157 | 153 | 155 |
| 13 | 129 | 117 | 121 | 145 | 116 | 127 | 135 | 122 | 127 | 161 | 154 | 157 |
| 14 | 118 | 113 | 116 | 143 | 134 | 138 | 153 | 135 | 147 | 163 | 159 | 161 |
| 15 | 125 | 112 | 118 | 140 | 121 | 129 | 157 | 144 | 151 | 167 | 162 | 165 |
| 16 | 125 | 120 | 122 | 157 | 129 | 142 | 154 | 143 | 150 | 166 | 161 | 164 |
| 17 | 127 | 124 | 125 | 155 | 141 | 148 | 143 | 140 | 141 | 168 | 165 | 166 |
| 18 | 127 | 118 | 123 | 146 | 112 | 127 | 141 | 134 | 139 | 169 | 166 | 168 |
| 19 | 119 | 108 | 111 | 112 | 97 | 101 | 145 | 139 | 142 | 171 | 159 | 168 |
| 20 | 112 | 109 | 110 | 105 | 97 | 100 | 145 | 138 | 142 | 160 | 146 | 154 |
| 21 | 115 | 112 | 113 | 106 | 103 | 105 | 148 | 138 | 143 | 160 | 150 | 154 |
| 22 | 121 | 111 | 116 | 110 | 78 | 94 | 148 | 143 | 146 | 160 | 154 | 158 |
| 23 | 128 | 106 | 118 | 107 | 92 | 98 | 147 | 138 | 143 | 157 | 156 | 157 |
| 24 | 131 | 120 | 126 | 108 | 105 | 107 | 139 | 131 | 135 | 156 | 136 | 151 |
| 25 | 130 | 121 | 124 | 109 | 100 | 104 | 144 | 139 | 142 | 140 | 137 | 138 |
| 26 | 148 | 125 | 132 | 113 | 108 | 110 | 147 | 141 | 144 | 142 | 137 | 139 |
| 27 | 145 | 130 | 136 | 116 | 110 | 113 | 148 | 140 | 143 | 147 | 142 | 146 |
| 28 | 186 | 141 | 151 | 118 | 109 | 115 | 154 | 145 | 150 | 161 | 146 | 152 |
| 29 | --- | --- | --- | 109 | 101 | 103 | 159 | 145 | 152 | 170 | 161 | 167 |
| 30 | --- | --- | --- | 111 | 104 | 108 | 166 | 97 | 159 | 166 | 162 | 163 |
| 31 | --- | --- | --- | 116 | 111 | 114 | --- | --- | --- | 164 | 160 | 162 |
| MONTH | 240 | 104 | 124 | 185 | 78 | 115 | 166 | 97 | 135 | 171 | 136 | 155 |

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 169 | 163 | 166 | --- | --- | --- | 246 | 228 | 237 | 246 | 236 | 240 |
| 2 | 172 | 169 | 170 | --- | --- | --- | 239 | 220 | 231 | 243 | 238 | 240 |
| 3 | 174 | 171 | 173 | --- | --- | --- | 234 | 228 | 231 | 260 | 237 | 245 |
| 4 | 178 | 171 | 175 | --- | --- | --- | 240 | 230 | 236 | 267 | 254 | 259 |
| 5 | 183 | 173 | 178 | --- | --- | --- | 250 | 239 | 246 | 266 | 252 | 259 |
| 6 | 188 | 179 | 184 | --- | --- | --- | 249 | 225 | 236 | 265 | 247 | 256 |
| 7 | 190 | 182 | 187 | --- | --- | --- | 233 | 222 | 229 | 262 | 256 | 259 |
| 8 | 198 | 188 | 193 | --- | --- | --- | 242 | 226 | 232 | 265 | 258 | 262 |
| 9 | 202 | 198 | 200 | --- | --- | --- | 245 | 230 | 241 | 265 | 254 | 261 |
| 10 | 208 | 202 | 205 | --- | --- | --- | 230 | 222 | 227 | 262 | 185 | 230 |
| 11 | 208 | 204 | 206 | --- | --- | --- | 225 | 222 | 224 | 253 | 201 | 237 |
| 12 | 211 | 203 | 207 | --- | --- | --- | 257 | 224 | 236 | 265 | 243 | 252 |
| 13 | 219 | 206 | 210 | --- | --- | --- | 251 | 220 | 233 | 255 | 243 | 248 |
| 14 | 233 | 213 | 227 | --- | --- | --- | 245 | 202 | 228 | 259 | 245 | 248 |
| 15 | 245 | 213 | 235 | --- | --- | --- | 231 | 218 | 224 | 281 | 259 | 272 |
| 16 | 242 | 228 | 237 | --- | --- | --- | 232 | 226 | 229 | 274 | 125 | 206 |
| 17 | 250 | 214 | 238 | --- | --- | --- | 239 | 219 | 230 | 164 | 153 | 157 |
| 18 | 243 | 237 | 240 | --- | --- | --- | 240 | 228 | 235 | 173 | 156 | 164 |
| 19 | 238 | 216 | 223 | --- | --- | --- | 238 | 227 | 235 | 185 | 173 | 179 |
| 20 | 244 | 218 | 235 | --- | --- | --- | 236 | 231 | 234 | 187 | 184 | 185 |
| 21 | 246 | 217 | 241 | 237 | 222 | 227 | 235 | 233 | 234 | 187 | 185 | 186 |
| 22 | 239 | 214 | 225 | 238 | 218 | 231 | 238 | 234 | 235 | 185 | 182 | 183 |
| 23 | 244 | 216 | 226 | 244 | 219 | 230 | 246 | 237 | 242 | 185 | 181 | 183 |
| 24 | 251 | 230 | 244 | 244 | 217 | 229 | 252 | 245 | 248 | 193 | 185 | 189 |
| 25 | --- | --- | --- | 244 | 215 | 223 | 257 | 251 | 254 | 188 | 185 | 186 |
| 26 | --- | --- | --- | 223 | 209 | 216 | 256 | 226 | 241 | 192 | 187 | 188 |
| 27 | --- | --- | --- | 230 | 212 | 221 | 236 | 228 | 232 | 193 | 188 | 191 |
| 28 | --- | --- | --- | 231 | 213 | 223 | 242 | 226 | 233 | 198 | 192 | 196 |
| 29 | --- | --- | --- | 239 | 219 | 228 | 241 | 231 | 237 | 201 | 195 | 198 |
| 30 | --- | --- | --- | 241 | 225 | 232 | 236 | 228 | 231 | 206 | 182 | 197 |
| 31 | --- | --- | --- | 246 | 225 | 235 | 240 | 230 | 234 | --- | --- | --- |
| MONTH | --- | --- | --- | --- | --- | --- | 257 | 202 | 235 | 281 | 125 | 219 |

01095375 QUINAPOXET RIVER AT CANADA MILLS NEAR HOLDEN, MA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OCTOBER | | | NOVEMBER | | | DECEMBER | | | JANUARY | |
| 1 | 17.9 | 13.4 | 16.0 | --- | --- | --- | --- | --- | --- | 0.5 | 0.1 | 0.2 |
| 2 | 14.7 | 11.3 | 12.8 | --- | --- | --- | 6.2 | 4.3 | 5.2 | .4 | .1 | .2 |
| 3 | 14.4 | 10.8 | 12.2 | --- | --- | --- | 6.9 | 5.5 | 6.2 | .2 | .0 | .1 |
| 4 | 14.0 | 9.5 | 11.5 | --- | --- | --- | 8.6 | 6.0 | 7.1 | .2 | .0 | .1 |
| 5 | 13.4 | 8.4 | 10.5 | --- | --- | --- | 7.0 | 5.2 | 6.3 | .4 | .0 | .1 |
| 6 | 12.1 | 8.1 | 9.7 | --- | --- | --- | 8.9 | 6.8 | 7.5 | .1 | .0 | .1 |
| 7 | 11.2 | 7.2 | 9.1 | --- | --- | --- | 10.9 | 7.5 | 9.0 | .3 | .0 | .1 |
| 8 | 13.2 | 10.1 | 12.0 | --- | --- | --- | 8.9 | 5.7 | 6.9 | .1 | .0 | .1 |
| 9 | 13.6 | 13.0 | 13.3 | --- | --- | --- | 5.7 | 4.2 | 5.1 | .2 | .0 | .1 |
| 10 | 13.5 | 12.8 | 13.2 | --- | --- | --- | 4.7 | 3.1 | 3.9 | .4 | .0 | .2 |
| 11 | 14.4 | 13.3 | 13.8 | --- | --- | --- | 4.3 | 2.7 | 3.5 | .3 | .0 | .1 |
| 12 | 14.1 | 13.4 | 13.9 | --- | --- | --- | 3.1 | 1.4 | 2.2 | .6 | .0 | .2 |
| 13 | 13.4 | 12.7 | 13.0 | --- | --- | --- | 3.1 | 1.5 | 2.2 | .7 | .1 | .4 |
| 14 | 12.9 | 11.9 | 12.5 | --- | --- | --- | 2.9 | 1.1 | 1.8 | .1 | .0 | .1 |
| 15 | 12.6 | 11.3 | 11.9 | --- | --- | --- | 2.9 | .8 | 1.7 | .1 | .0 | .1 |
| 16 | 12.8 | 10.4 | 11.4 | --- | --- | --- | 3.8 | 2.1 | 2.7 | .1 | .0 | .0 |
| 17 | 12.0 | 8.9 | 10.6 | --- | --- | --- | 3.6 | 2.5 | 3.1 | .1 | .0 | .1 |
| 18 | 14.5 | 11.1 | 12.6 | --- | --- | --- | 3.0 | .7 | 1.8 | .3 | .1 | .2 |
| 19 | 15.2 | 12.5 | 13.7 | --- | --- | --- | 2.8 | .7 | 1.7 | 1.4 | .2 | .9 |
| 20 | 13.4 | 10.7 | 11.9 | --- | --- | --- | 4.2 | 2.6 | 3.4 | 2.1 | 1.1 | 1.6 |
| 21 | 11.2 | 9.3 | 10.3 | --- | --- | --- | 4.2 | 3.3 | 3.6 | 2.2 | .8 | 1.5 |
| 22 | 10.4 | 7.7 | 9.0 | --- | --- | --- | 6.4 | 2.3 | 5.0 | 2.4 | 1.7 | 2.0 |
| 23 | 10.2 | 6.7 | 8.4 | --- | --- | --- | 2.3 | .6 | 1.0 | 2.2 | 1.9 | 2.0 |
| 24 | --- | --- | --- | --- | --- | --- | 1.5 | .2 | .7 | 2.5 | .9 | 1.7 |
| 25 | --- | --- | --- | --- | --- | --- | 1.0 | .1 | .3 | 1.7 | 1.1 | 1.5 |
| 26 | --- | --- | --- | --- | --- | --- | 1.0 | .1 | .5 | 1.7 | .8 | 1.2 |
| 27 | --- | --- | --- | --- | --- | --- | 1.2 | .1 | .6 | 2.1 | 1.0 | 1.5 |
| 28 | --- | --- | --- | --- | --- | --- | 2.1 | .9 | 1.5 | 1.5 | .6 | 1.1 |
| 29 | --- | --- | --- | --- | --- | --- | 1.6 | .4 | 1.1 | 1.3 | .1 | .6 |
| 30 | --- | --- | --- | --- | --- | --- | 1.4 | .0 | .7 | .8 | .0 | .2 |
| 31 | --- | --- | --- | --- | --- | --- | .3 | .0 | .1 | .1 | .0 | .0 |
| MONTH | --- | --- | --- | --- | --- | --- | --- | --- | --- | 2.5 | .0 | .6 |
| | | FEBRUARY | | | MARCH | | | APRIL | | | MAY | |
| 1 | 0.3 | 0.0 | 0.1 | 3.3 | 2.0 | 2.7 | 9.7 | 6.3 | 8.1 | 16.1 | 9.3 | 12.8 |
| 2 | .8 | .1 | .5 | 4.2 | 2.6 | 3.1 | 9.5 | 7.4 | 8.3 | 16.8 | 10.3 | 13.6 |
| 3 | 1.9 | .4 | 1.2 | 5.2 | 2.4 | 3.6 | 8.8 | 7.7 | 8.1 | 13.7 | 11.7 | 12.8 |
| 4 | 2.1 | 1.1 | 1.6 | 4.4 | 2.8 | 3.6 | 10.6 | 7.1 | 8.5 | 12.5 | 11.7 | 12.1 |
| 5 | 2.6 | 1.2 | 1.8 | 4.1 | 2.3 | 3.0 | 10.9 | 5.6 | 8.0 | 13.6 | 12.0 | 12.8 |
| 6 | 2.0 | 1.1 | 1.5 | 3.5 | 1.6 | 2.6 | 11.9 | 6.3 | 8.9 | 15.6 | 12.6 | 14.1 |
| 7 | 2.4 | 1.0 | 1.7 | 3.4 | 1.0 | 2.2 | 12.7 | 8.3 | 10.1 | 15.4 | 13.8 | 14.6 |
| 8 | 2.6 | 1.0 | 1.7 | 2.9 | .6 | 1.4 | 13.5 | 7.9 | 10.4 | 14.9 | 13.9 | 14.2 |
| 9 | 2.7 | .7 | 1.6 | 3.2 | .5 | 1.6 | 10.6 | 8.3 | 9.5 | 17.2 | 13.4 | 15.3 |
| 10 | 3.2 | 1.6 | 2.2 | 3.3 | .8 | 1.8 | 12.4 | 8.3 | 10.0 | 18.0 | 13.3 | 15.6 |
| 11 | 3.5 | 1.2 | 2.2 | 3.2 | 1.2 | 2.0 | 11.1 | 6.3 | 8.8 | 17.4 | 12.1 | 14.8 |
| 12 | 4.5 | 2.3 | 3.4 | 2.9 | 1.0 | 1.8 | 12.4 | 7.8 | 9.9 | 17.3 | 12.1 | 14.7 |
| 13 | 4.2 | 2.2 | 3.1 | 4.5 | 1.6 | 2.7 | 11.5 | 7.2 | 9.1 | 17.1 | 11.4 | 14.3 |
| 14 | 3.2 | 1.4 | 2.1 | 4.7 | 1.6 | 2.9 | 10.9 | 7.1 | 9.1 | 17.8 | 11.5 | 14.7 |
| 15 | 3.1 | .9 | 1.9 | 2.7 | 1.1 | 2.0 | 12.8 | 7.4 | 10.2 | 18.5 | 12.7 | 15.4 |
| 16 | 4.3 | 1.6 | 2.7 | 4.9 | 1.4 | 2.8 | 10.0 | 8.2 | 9.1 | 18.3 | 12.2 | 15.2 |
| 17 | 3.6 | 2.4 | 3.1 | 6.2 | 2.4 | 3.8 | 10.9 | 7.5 | 9.2 | 18.8 | 12.8 | 15.8 |
| 18 | 3.5 | 2.8 | 3.3 | 6.9 | 3.0 | 4.5 | 12.3 | 8.4 | 10.2 | 16.7 | 14.0 | 15.6 |
| 19 | 3.9 | 2.7 | 3.2 | 5.4 | 3.6 | 4.3 | 13.7 | 8.5 | 11.0 | 16.7 | 15.7 | 16.1 |
| 20 | 4.4 | 2.8 | 3.3 | 6.3 | 3.4 | 4.4 | 12.1 | 9.5 | 10.9 | 18.1 | 15.2 | 16.2 |
| 21 | 4.2 | 2.3 | 3.0 | 5.5 | 2.8 | 4.1 | 13.9 | 8.3 | 11.2 | 18.5 | 13.9 | 16.2 |
| 22 | 2.9 | .8 | 1.8 | 5.1 | 3.6 | 4.5 | 12.1 | 10.0 | 11.2 | 19.1 | 14.1 | 16.7 |
| 23 | 2.8 | .2 | 1.3 | 5.6 | 3.2 | 4.2 | 11.3 | 9.4 | 10.7 | 17.1 | 15.0 | 15.9 |
| 24 | 3.1 | 1.0 | 1.9 | 4.6 | 3.3 | 4.0 | 13.2 | 7.7 | 10.2 | 15.4 | 14.5 | 15.0 |
| 25 | 1.8 | .9 | 1.4 | 6.7 | 3.6 | 4.8 | 13.3 | 7.4 | 10.4 | 16.9 | 15.0 | 15.8 |
| 26 | 4.0 | 1.6 | 2.5 | 7.1 | 3.3 | 4.9 | 14.5 | 9.3 | 11.7 | 15.9 | 14.2 | 15.0 |
| 27 | 4.3 | 1.3 | 2.6 | 7.6 | 3.8 | 5.5 | 12.3 | 9.2 | 10.9 | 17.2 | 13.8 | 15.4 |
| 28 | 2.8 | 1.2 | 2.0 | 5.7 | 5.1 | 5.4 | 12.6 | 8.4 | 10.6 | 18.1 | 14.1 | 16.2 |
| 29 | --- | --- | --- | 8.9 | 5.2 | 6.7 | 14.4 | 8.6 | 11.3 | 20.6 | 15.3 | 18.0 |
| 30 | --- | --- | --- | 8.6 | 5.7 | 6.9 | 15.3 | 9.3 | 12.2 | 21.5 | 16.8 | 19.2 |
| 31 | --- | --- | --- | 10.2 | 5.3 | 7.5 | --- | --- | --- | 23.6 | 18.0 | 20.7 |
| MONTH | 4.5 | .0 | 2.1 | 10.2 | .5 | 3.7 | 15.3 | 5.6 | 9.9 | 23.6 | 9.3 | 15.3 |

01095375 QUINAPOXET RIVER AT CANADA MILLS NEAR HOLDEN, MA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DAY | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN | MAX | MIN | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | JUNE | | | JULY | | | AUGUST | | | SEPTEMBER | |
| 1 | 23.7 | 19.0 | 21.3 | --- | --- | --- | 28.5 | 23.1 | 25.0 | 21.7 | 14.3 | 17.7 |
| 2 | 23.5 | 20.4 | 21.9 | --- | --- | --- | 26.4 | 20.3 | 22.9 | 21.8 | 15.0 | 18.3 |
| 3 | 23.6 | 20.6 | 22.0 | --- | --- | --- | 24.6 | 18.6 | 21.2 | 22.8 | 16.2 | 19.4 |
| 4 | 22.5 | 18.1 | 20.2 | --- | --- | --- | 25.0 | 17.3 | 20.9 | 23.6 | 17.6 | 20.5 |
| 5 | 20.8 | 16.1 | 18.5 | --- | --- | --- | 24.4 | 18.9 | 21.1 | 23.9 | 19.5 | 21.2 |
| 6 | 21.8 | 16.1 | 19.0 | --- | --- | --- | 25.0 | 18.5 | 21.3 | 22.8 | 20.4 | 21.5 |
| 7 | 25.0 | 18.4 | 21.7 | --- | --- | --- | 25.5 | 17.9 | 20.7 | 23.8 | 20.6 | 21.9 |
| 8 | 25.8 | 21.1 | 23.2 | --- | --- | --- | 21.4 | 18.3 | 19.7 | 22.3 | 20.6 | 21.4 |
| 9 | 22.2 | 17.4 | 19.4 | --- | --- | --- | 24.2 | 16.7 | 19.6 | 24.3 | 20.2 | 21.9 |
| 10 | 21.8 | 16.6 | 18.7 | --- | --- | --- | 22.4 | 14.5 | 18.0 | 21.7 | 20.1 | 20.8 |
| 11 | 22.6 | 16.1 | 19.1 | --- | --- | --- | 18.6 | 17.0 | 17.8 | 22.2 | 18.8 | 20.5 |
| 12 | 23.5 | 16.5 | 20.2 | --- | --- | --- | 23.8 | 17.8 | 20.3 | 21.3 | 16.5 | 18.8 |
| 13 | 23.0 | 19.4 | 21.2 | --- | --- | --- | 23.7 | 18.3 | 21.1 | 20.6 | 15.3 | 17.9 |
| 14 | 23.0 | 20.2 | 21.5 | --- | --- | --- | 22.5 | 20.9 | 21.8 | 17.9 | 15.8 | 17.1 |
| 15 | 23.6 | 19.3 | 21.3 | --- | --- | --- | 20.9 | 18.3 | 19.4 | 18.2 | 17.0 | 17.6 |
| 16 | 21.4 | 16.5 | 18.9 | --- | --- | --- | 22.3 | 16.8 | 19.4 | 17.8 | 16.1 | 17.0 |
| 17 | 19.4 | 16.7 | 17.8 | --- | --- | --- | 25.2 | 19.0 | 21.8 | 17.1 | 15.8 | 16.6 |
| 18 | 18.5 | 16.0 | 17.2 | --- | --- | --- | 24.1 | 20.5 | 22.1 | 17.3 | 15.0 | 15.9 |
| 19 | 20.0 | 14.2 | 17.5 | --- | --- | --- | 25.0 | 18.1 | 20.7 | 17.2 | 13.5 | 15.4 |
| 20 | 21.4 | 16.2 | 18.7 | --- | --- | --- | 21.4 | 16.7 | 18.9 | 17.3 | 13.9 | 15.7 |
| 21 | 19.0 | 16.1 | 17.5 | 23.0 | 16.6 | 20.1 | 18.3 | 16.0 | 16.9 | 16.5 | 15.7 | 16.1 |
| 22 | 22.2 | 15.4 | 19.0 | 25.2 | 19.9 | 22.4 | 17.5 | 15.6 | 16.5 | 16.1 | 14.6 | 15.7 |
| 23 | 22.0 | 17.2 | 19.9 | 26.6 | 21.5 | 23.7 | 21.9 | 15.6 | 18.5 | 16.9 | 13.4 | 15.1 |
| 24 | 24.5 | 18.5 | 21.3 | 25.4 | 21.3 | 23.1 | 22.1 | 16.5 | 19.2 | 18.3 | 14.5 | 16.2 |
| 25 | --- | --- | --- | 27.2 | 21.2 | 23.6 | 23.0 | 16.6 | 19.7 | 18.0 | 15.2 | 16.4 |
| 26 | --- | --- | --- | 24.1 | 20.4 | 22.2 | 20.6 | 17.6 | 19.2 | 17.1 | 12.9 | 14.9 |
| 27 | --- | --- | --- | 25.1 | 20.2 | 22.5 | 20.0 | 18.8 | 19.3 | 16.5 | 12.4 | 14.7 |
| 28 | --- | --- | --- | 27.2 | 20.2 | 23.1 | 23.2 | 18.6 | 20.6 | 17.8 | 14.8 | 16.3 |
| 29 | --- | --- | --- | 26.3 | 19.8 | 22.7 | 24.3 | 19.2 | 21.2 | 17.2 | 15.9 | 16.6 |
| 30 | --- | --- | --- | 27.4 | 21.4 | 24.1 | 21.4 | 16.4 | 18.6 | 17.2 | 14.7 | 16.3 |
| 31 | --- | --- | --- | 27.2 | 21.9 | 24.4 | 22.0 | 14.4 | 17.5 | --- | --- | --- |
| MONTH | --- | --- | --- | --- | --- | --- | 28.5 | 14.4 | 20.0 | 24.3 | 12.4 | 17.8 |

01096000 SQUANNACOOK RIVER NEAR WEST GROTON, MA

LOCATION.--Lat 42°38'03", long 71°39'30", Middlesex County, Hydrologic Unit 01070004, on left bank 0.7 mi downstream from Trout Brook and 2.7 mi northwest of West Groton.

DRAINAGE AREA.--63.7 $mi^2$, excludes 2.16 $mi^2$, above outlet of Ashby Reservoir.

PERIOD OF RECORD.--Discharge: October 1949 to current year.
Water-quality records: Water year 1957.

REVISED RECORDS.--WDR MA-RI-84-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 244.27 ft above sea level.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Occasional regulation at low flow by mill upstream; regulation greater prior to 1961. Entire flow from 2.16 $mi^2$ upstream from outlet of Ashby Reservoir diverted for municipal supply of Fitchburg except for occasional periods of spill. Satellite gage-height telemeter at station.

AVERAGE DISCHARGE.--50 years, 113 $ft^3/s$, 24.13 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,220 $ft^3/s$, Apr. 6, 1987, gage height, 8.16 ft; minimum daily, 2.0 $ft^3/s$, Sept. 7, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 848 $ft^3/s$, Mar. 5, gage height, 5.13 ft; minimum, 4.9 $ft^3/s$, Aug. 11.

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 | 12 | 20 | 39 | 23 | 85 | 255 | 153 | 48 | 35 | 42 | 12 | 7.0 |
| 2 | 9.5 | 20 | 34 | 22 | 94 | 373 | 143 | 46 | 31 | 34 | 8.8 | 6.8 |
| 3 | 9.8 | 19 | 32 | 26 | 293 | 249 | 132 | 45 | 28 | 36 | 6.9 | 6.5 |
| 4 | 10 | 20 | 29 | 42 | 407 | 465 | 127 | e40 | 24 | 40 | 6.2 | 6.2 |
| 5 | 11 | 20 | 28 | 52 | 293 | e700 | 118 | 57 | 22 | 39 | 5.8 | 5.8 |
| 6 | 11 | 21 | 27 | 43 | 240 | e400 | 110 | 68 | 20 | 32 | 5.9 | 6.0 |
| 7 | 11 | 20 | 26 | 39 | 188 | 264 | 107 | 68 | 19 | 27 | 5.9 | 10 |
| 8 | 12 | 19 | 27 | 34 | 155 | 222 | 100 | 65 | 19 | 21 | 5.7 | 8.2 |
| 9 | 28 | 18 | 30 | 35 | 132 | 196 | 90 | 64 | 19 | 18 | 5.8 | 8.0 |
| 10 | 40 | 18 | 33 | 53 | 126 | 179 | 86 | 59 | 18 | 16 | 5.3 | 22 |
| 11 | 75 | 24 | 32 | 67 | 120 | 161 | 83 | 54 | 17 | 14 | 5.4 | 69 |
| 12 | 70 | 30 | 31 | 62 | 119 | 149 | 82 | 46 | 16 | 12 | 6.7 | 52 |
| 13 | 48 | 35 | 30 | e54 | e180 | 141 | 76 | 40 | 16 | 9.8 | 6.3 | 31 |
| 14 | 38 | 35 | 28 | e52 | 200 | 143 | 71 | 38 | 16 | 9.7 | 6.7 | 22 |
| 15 | 55 | 34 | 27 | 49 | 149 | 154 | 70 | 37 | 16 | 10 | 7.9 | 18 |
| 16 | 61 | 31 | 26 | 58 | 132 | 150 | 68 | 34 | 14 | 9.4 | 7.8 | 46 |
| 17 | 46 | 30 | 27 | e62 | 120 | 154 | 81 | 35 | 13 | 9.1 | 6.8 | 426 |
| 18 | 37 | 31 | 28 | e70 | 135 | 198 | 93 | 33 | 14 | 8.4 | 7.4 | 447 |
| 19 | 31 | 32 | 26 | e75 | 267 | 292 | 83 | 32 | 13 | 8.4 | 6.5 | 172 |
| 20 | 26 | 33 | e25 | 137 | 227 | 260 | 83 | 66 | 13 | 10 | 5.5 | 95 |
| 21 | 22 | 34 | 26 | 119 | 174 | 211 | 80 | 89 | 13 | 8.9 | 6.4 | 75 |
| 22 | 21 | 33 | 27 | 95 | 139 | 270 | 79 | 66 | 12 | 8.5 | 8.4 | 69 |
| 23 | 20 | 32 | 27 | 93 | 109 | 647 | 75 | 52 | 12 | 7.7 | 8.4 | 64 |
| 24 | 21 | 31 | 28 | 141 | 98 | 417 | 76 | 56 | 11 | 7.8 | 7.9 | 52 |
| 25 | 22 | 30 | 27 | 377 | 95 | 293 | 72 | 97 | 10 | 12 | 6.6 | 41 |
| 26 | 21 | 35 | 25 | 313 | 93 | 235 | 66 | 98 | 9.6 | 11 | 5.9 | 33 |
| 27 | 21 | 65 | 24 | 200 | 94 | 201 | 60 | 73 | 9.2 | 11 | 9.7 | 28 |
| 28 | 21 | 76 | 24 | 150 | 95 | 193 | 58 | 60 | 9.7 | 9.4 | 24 | 25 |
| 29 | 21 | 58 | 24 | 127 | --- | 228 | 55 | 50 | 32 | 8.2 | 13 | 25 |
| 30 | 20 | 46 | 26 | e100 | --- | 204 | 51 | 43 | 54 | 8.7 | 10 | 30 |
| 31 | 20 | --- | 24 | e90 | --- | 175 | --- | 40 | --- | 12 | 8.1 | --- |
| TOTAL | 871.3 | 950 | 867 | 2860 | 4559 | 8179 | 2628 | 1699 | 555.5 | 511.0 | 243.7 | 1906.5 |
| MEAN | 28.1 | 31.7 | 28.0 | 92.3 | 163 | 264 | 87.6 | 54.8 | 18.5 | 16.5 | 7.86 | 63.5 |
| MAX | 75 | 76 | 39 | 377 | 407 | 700 | 153 | 98 | 54 | 42 | 24 | 447 |
| MIN | 9.5 | 18 | 24 | 22 | 85 | 141 | 51 | 32 | 9.2 | 7.7 | 5.3 | 5.8 |
| CFSM | .44 | .50 | .44 | 1.45 | 2.56 | 4.14 | 1.38 | .86 | .29 | .26 | .12 | 1.00 |
| IN. | .51 | .55 | .51 | 1.67 | 2.66 | 4.78 | 1.53 | .99 | .32 | .30 | .14 | 1.11 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1999, BY WATER YEAR (WY)

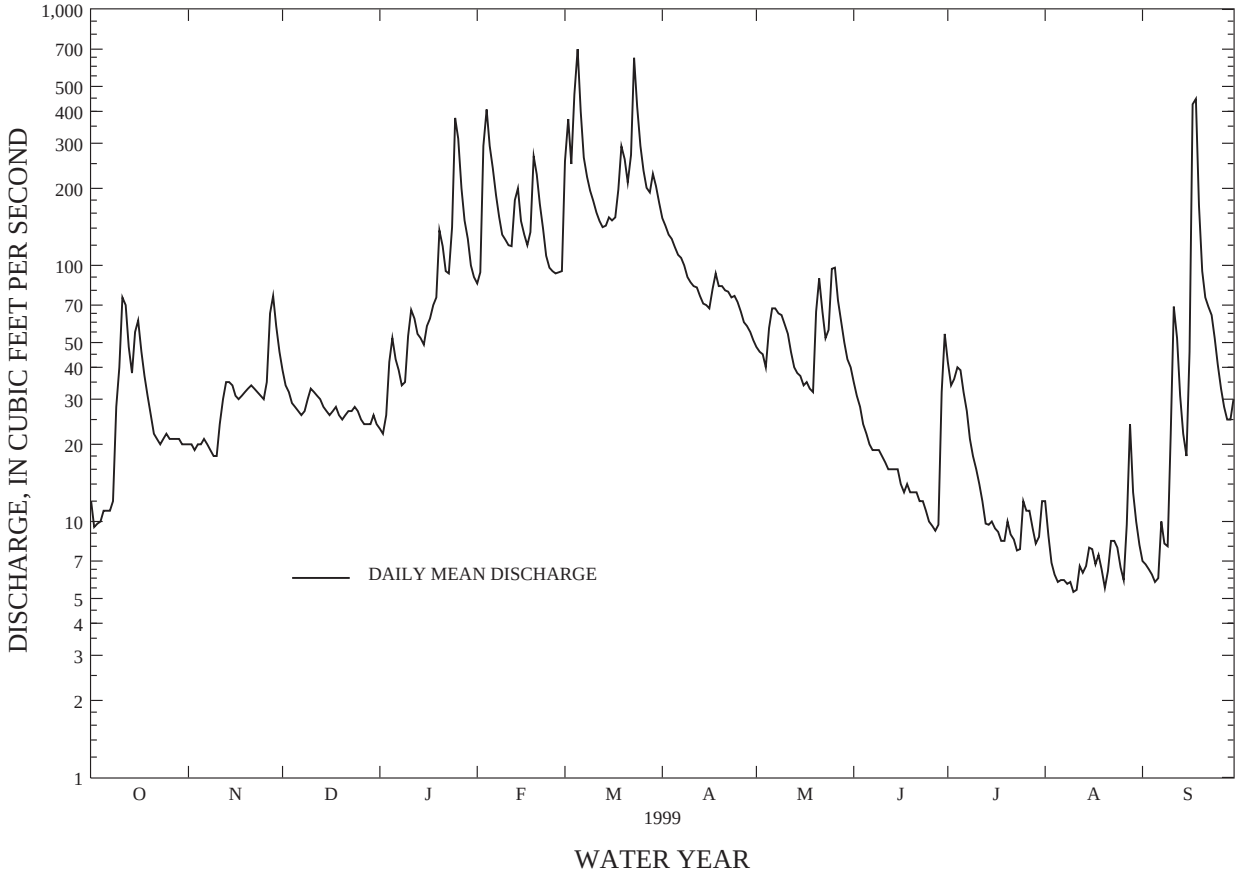
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 54.4 | 100 | 123 | 124 | 133 | 228 | 272 | 147 | 82.0 | 36.9 | 28.8 | 31.5 |
| MAX | 296 | 304 | 349 | 323 | 328 | 554 | 654 | 343 | 330 | 84.7 | 98.8 | 245 |
| (WY) | 1956 | 1956 | 1997 | 1956 | 1970 | 1983 | 1987 | 1954 | 1998 | 1951 | 1986 | 1954 |
| MIN | 9.41 | 12.6 | 22.7 | 20.1 | 33.6 | 81.5 | 75.8 | 51.9 | 18.5 | 8.26 | 6.21 | 6.80 |
| (WY) | 1965 | 1965 | 1966 | 1981 | 1980 | 1989 | 1985 | 1965 | 1999 | 1965 | 1966 | 1965 |

01096000 SQUANNACOOK RIVER NEAR WEST GROTON, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1950 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 50928.3 | | 25830.0 | | | |
| ANNUAL MEAN | 140 | | 70.8 | | 113 | |
| HIGHEST ANNUAL MEAN | | | | | 174 | 1956 |
| LOWEST ANNUAL MEAN | | | | | 35.9 | 1965 |
| HIGHEST DAILY MEAN | 1910 | Mar 10 | 700 | Mar 5 | 3420 | Apr 6 1987 |
| LOWEST DAILY MEAN | 9.5 | Oct 2 | 5.3 | Aug 10 | 2.0 | Sep 7 1965 |
| ANNUAL SEVEN-DAY MINIMUM | 11 | Oct 1 | 5.7 | Aug 5 | 4.3 | Aug 28 1966 |
| INSTANTANEOUS PEAK FLOW | | | 848 | Mar 5 | 4220 | Apr 6 1987 |
| INSTANTANEOUS PEAK STAGE | | | 5.13 | Mar 5 | 8.16 | Apr 6 1987 |
| INSTANTANEOUS LOW FLOW | | | 4.9 | Aug 11 | | |
| ANNUAL RUNOFF (CFSM) | 2.19 | | 1.11 | | 1.78 | |
| ANNUAL RUNOFF (INCHES) | 29.74 | | 15.08 | | 24.13 | |
| 10 PERCENT EXCEEDS | 338 | | 179 | | 257 | |
| 50 PERCENT EXCEEDS | 75 | | 34 | | 68 | |
| 90 PERCENT EXCEEDS | 15 | | 8.4 | | 15 | |

e Estimated

SQUANNACOOK RIVER NEAR WEST GROTON, MA 01096000



01096500 NASHUA RIVER AT EAST PEPPERELL, MA

LOCATION.--Lat 42°40'03", long 71°34'32", Middlesex County, Hydrologic Unit 01070004, on right bank 200 ft downstream from powerplant of James River-Pepperell Co. at East Pepperell and 0.8 mi upstream from Nissitissit River.

DRAINAGE AREA.--Total above gage, 435 $mi^2$, net above gage, 316 $mi^2$, excludes 119 $mi^2$ for use of Boston metropolitan district and city of Worcester.

PERIOD OF RECORD.--Discharge: October 1935 to current year.
Water-quality records: Water years 1952-53, 1973-74.

REVISED RECORDS.--WDR MA-RI-84-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 169.04 ft above sea level.

REMARKS.--Records good except those for estimated daily discharge, which are fair. Extremes and daily discharge include water released while diverting flow of Nashua River for use of Boston metropolitan district and water diverted into basin from Ware River Basin since 1955 for municipal use of Fitchburg. Prior to October 1981, water diverted around station through plant of James River-Pepperell Co. was added to daily figures. Flow regulated by powerplant immediately upstream. Telephone and satellite gage-height telemeters at station.

AVERAGE DISCHARGE.--64 years, 584 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,900 $ft^3/s$, Mar. 20, 1936, gage height, 19.1 ft, from floodmarks, from rating curve extended above 12,000 $ft^3/s$ on basis of velocity-area studies; minimum daily, 1.1 $ft^3/s$, Aug. 13, 1939.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,340 $ft^3/s$, Mar. 5, gage height, 5.69 ft; minimum daily, 53 $ft^3/s$, Aug. 2, 3, 26, Sept. 1, 4, 14.

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 | 105 | 165 | 266 | 190 | 652 | 926 | 916 | 254 | 169 | 160 | 69 | 53 |
| 2 | 111 | 178 | 272 | 188 | 554 | 1370 | 851 | 254 | 168 | 145 | 53 | 109 |
| 3 | 133 | 188 | 261 | 162 | 1200 | 1190 | 803 | 265 | 166 | 139 | 53 | 95 |
| 4 | 253 | 193 | 251 | 238 | 1760 | 1340 | 772 | 279 | 151 | 146 | 54 | 53 |
| 5 | 246 | 202 | 220 | 370 | 1580 | 2100 | 763 | 352 | 81 | 148 | 56 | 55 |
| 6 | 86 | 200 | 173 | 319 | 1310 | 2040 | 402 | 359 | 63 | 150 | 64 | 57 |
| 7 | 225 | 170 | 194 | 262 | 1110 | 1450 | 703 | 259 | 72 | 146 | 68 | 59 |
| 8 | 163 | 157 | 224 | 245 | 956 | 1160 | 526 | 249 | 168 | 184 | 66 | 61 |
| 9 | 273 | 159 | 227 | 273 | 850 | 1000 | 502 | 284 | 119 | 186 | 63 | 64 |
| 10 | 525 | 171 | 236 | 292 | 554 | 923 | 510 | 283 | 64 | 175 | 59 | 71 |
| 11 | 852 | 185 | 243 | 352 | 625 | 864 | 459 | 281 | 82 | 164 | 57 | 270 |
| 12 | 691 | 196 | 161 | 375 | 832 | 822 | 346 | 279 | 122 | 123 | 57 | 473 |
| 13 | 626 | 233 | 118 | 373 | 871 | 793 | 355 | 238 | 156 | 70 | 58 | 282 |
| 14 | 424 | 251 | 256 | 345 | 967 | 781 | 401 | 193 | 158 | 73 | 57 | 53 |
| 15 | 451 | 239 | 258 | 316 | 878 | 776 | 394 | 159 | 98 | 78 | 69 | 69 |
| 16 | 539 | 216 | 217 | 260 | 782 | 853 | 392 | 149 | 73 | 79 | 80 | 261 |
| 17 | 437 | 204 | 208 | 220 | 691 | 824 | 391 | 100 | 75 | 82 | 70 | 1030 |
| 18 | 144 | 213 | 222 | 582 | 730 | 898 | 393 | 198 | 76 | 83 | 87 | 1700 |
| 19 | 419 | 208 | 193 | 659 | 940 | 1100 | 397 | 232 | 78 | 86 | e141 | 943 |
| 20 | 269 | 233 | 151 | 810 | 1070 | 1170 | 404 | 269 | 101 | 85 | 96 | 647 |
| 21 | 293 | 266 | 193 | 756 | 927 | 1040 | 387 | 352 | 157 | 80 | 62 | 473 |
| 22 | 260 | 260 | 279 | 710 | 815 | 1050 | 364 | 398 | 153 | 78 | 62 | 425 |
| 23 | 149 | 221 | 204 | 542 | 582 | 1710 | 394 | 403 | 111 | 79 | 133 | 439 |
| 24 | 177 | 207 | 198 | 635 | 520 | 2060 | 415 | 247 | 64 | 82 | 158 | 232 |
| 25 | 276 | 229 | 208 | 1510 | 540 | 1530 | 414 | 211 | 66 | 82 | 81 | 103 |
| 26 | 284 | 250 | 208 | 1820 | 498 | 1200 | 409 | 451 | 66 | 85 | 53 | 268 |
| 27 | 211 | 248 | 164 | 1350 | 559 | 1120 | 320 | 410 | 71 | 85 | 55 | 250 |
| 28 | 195 | 393 | 140 | 1010 | 538 | 1020 | 248 | 321 | 77 | 85 | 59 | 241 |
| 29 | 216 | 411 | 173 | 854 | --- | 1150 | 251 | 226 | 82 | 84 | 67 | 225 |
| 30 | 190 | 290 | 185 | 769 | --- | 1160 | 253 | 227 | 115 | 82 | 133 | 119 |
| 31 | 165 | --- | 190 | 513 | --- | 1020 | --- | 194 | --- | 82 | 120 | --- |
| TOTAL | 9388 | 6736 | 6493 | 17300 | 23891 | 36440 | 14135 | 8376 | 3202 | 3406 | 2360 | 9180 |
| MEAN | 303 | 225 | 209 | 558 | 853 | 1175 | 471 | 270 | 107 | 110 | 76.1 | 306 |
| MAX | 852 | 411 | 279 | 1820 | 1760 | 2100 | 916 | 451 | 169 | 186 | 158 | 1700 |
| MIN | 86 | 157 | 118 | 162 | 498 | 776 | 248 | 100 | 63 | 70 | 53 | 53 |

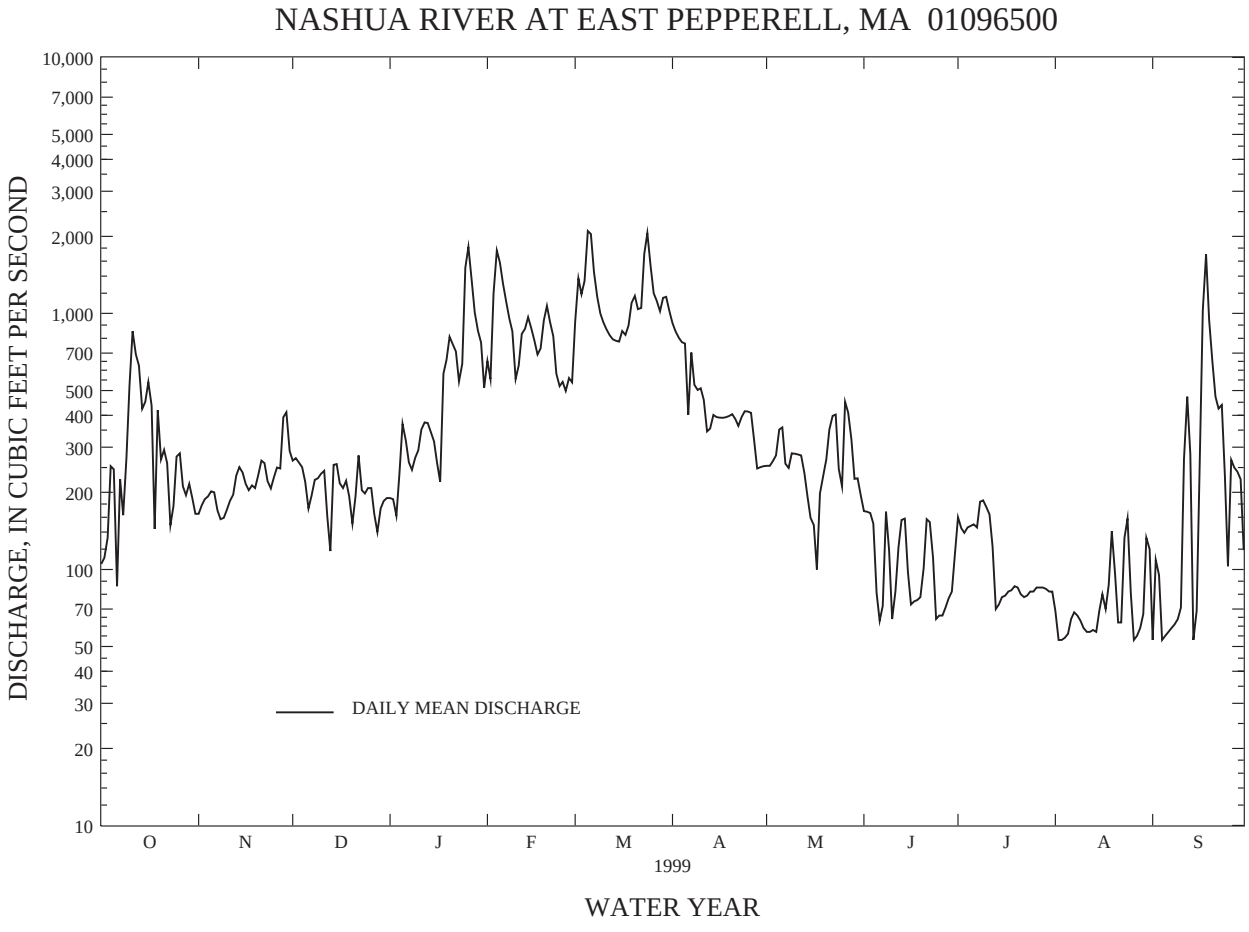
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1999, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 318 | 484 | 602 | 621 | 684 | 1143 | 1251 | 727 | 486 | 252 | 213 | 233 |
| MAX | 1356 | 1781 | 1616 | 1417 | 1544 | 3930 | 3676 | 1382 | 1976 | 1366 | 966 | 1671 |
| (WY) | 1956 | 1956 | 1997 | 1979 | 1970 | 1936 | 1987 | 1953 | 1982 | 1938 | 1938 | 1938 |
| MIN | 91.1 | 108 | 134 | 116 | 186 | 386 | 369 | 236 | 107 | 90.0 | 71.3 | 76.4 |
| (WY) | 1942 | 1965 | 1966 | 1981 | 1980 | 1989 | 1985 | 1965 | 1999 | 1966 | 1966 | 1995 |

01096500 NASHUA RIVER AT EAST PEPPERELL, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1936 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 273288 | | 140907 | | | |
| ANNUAL MEAN | 749 | | 386 | | 584 | |
| HIGHEST ANNUAL MEAN | | | | | 969 | 1956 |
| LOWEST ANNUAL MEAN | | | | | 214 | 1965 |
| HIGHEST DAILY MEAN | 4970 | Mar 12 | 2100 | Mar 5 | 19400 | Mar 20 1936 |
| LOWEST DAILY MEAN | 29 | Sep 17 | 53 | Aug 2 | 1.1 | Aug 13 1939 |
| ANNUAL SEVEN-DAY MINIMUM | 53 | Sep 12 | 59 | Aug 2 | 14 | Aug 1 1965 |
| INSTANTANEOUS PEAK FLOW | | | 2340 | Mar 5 | 20900 | Mar 20 1936 |
| INSTANTANEOUS PEAK STAGE | | | 5.69 | Mar 5 | 19.10 | Mar 20 1936 |
| INSTANTANEOUS LOW FLOW | | | 31 | Dec 12 | | |
| 10 PERCENT EXCEEDS | 1680 | | 941 | | 1260 | |
| 50 PERCENT EXCEEDS | 512 | | 239 | | 368 | |
| 90 PERCENT EXCEEDS | 123 | | 70 | | 97 | |

e Estimated



01097000 ASSABET RIVER AT MAYNARD, MA

LOCATION.--Lat 42°25'55", long 71°27'01", Middlesex County, Hydrologic Unit 01070005, on right bank at Maynard, 150 ft upstream from bridge on State Highway 27, 1.7 mi downstream from Assabet Brook, and 7.1 mi upstream from confluence with Sudbury River.

DRAINAGE AREA.--116 $mi^2$.

PERIOD OF RECORD.--Discharge: July 1941 to current year.
Water-quality records: Water years 1954, 1967-74.

REVISED RECORDS.--WSP 1231: 1945-46.

GAGE.--Water-stage recorder. Datum of gage is 142.12 ft above sea level.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Occasional diurnal fluctuation at low flow by mills upstream; greater regulation prior to 1969. Since 1962, high flow affected by retarding reservoirs and, since 1970, occasional release at low flow by these reservoirs.

AVERAGE DISCHARGE.--58 years, 190 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,250 $ft^3/s$, Aug. 20, 1955, gage height, 8.94 ft; maximum gage height, 8.96 ft, Aug. 20, 1955 (backwater from debris); minimum daily, 0.20 $ft^3/s$, Feb. 7, 1965.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1886, that of Aug. 20, 1955.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 789 $ft^3/s$, Feb. 4, gage height, 4.36 ft; minimum daily, 11 $ft^3/s$, Aug. 7, 10, 11.

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 | 30 | 53 | 102 | 68 | 227 | 418 | 307 | 97 | 62 | 24 | 13 | 16 |
| 2 | 24 | 51 | 96 | 54 | 245 | 606 | 282 | 91 | 56 | 40 | 13 | 22 |
| 3 | 23 | 56 | 88 | 90 | 593 | 577 | 261 | 86 | 49 | 36 | 12 | 20 |
| 4 | 25 | 52 | 87 | 241 | 770 | 556 | 244 | 106 | 38 | 37 | 12 | 19 |
| 5 | 26 | 50 | 80 | 237 | 710 | 591 | 229 | 130 | 37 | 33 | 12 | 18 |
| 6 | 28 | 49 | 73 | 167 | 595 | 543 | 215 | 126 | 34 | e26 | 12 | 18 |
| 7 | 26 | 49 | 69 | 111 | 503 | 469 | 211 | 124 | 32 | e24 | 11 | 17 |
| 8 | 31 | 48 | 70 | 94 | 421 | 398 | 202 | 117 | 31 | e22 | 12 | 18 |
| 9 | 181 | 47 | 97 | 119 | 357 | 351 | 181 | 127 | 28 | e20 | 12 | 17 |
| 10 | 248 | 47 | 105 | 225 | 312 | 321 | 175 | 119 | 29 | 20 | 11 | 52 |
| 11 | 430 | 63 | 94 | 215 | 284 | 300 | 168 | 108 | 28 | 18 | 11 | 202 |
| 12 | 401 | 80 | 81 | 159 | 275 | 288 | 160 | 94 | 27 | 16 | 13 | 170 |
| 13 | 303 | 79 | 73 | 131 | 299 | 280 | 155 | 81 | 28 | 14 | 15 | 99 |
| 14 | 208 | 67 | 69 | 119 | 309 | 282 | 148 | 74 | 28 | 15 | 23 | 61 |
| 15 | 203 | 60 | 72 | 121 | 275 | 305 | 141 | 68 | 31 | 14 | 66 | 45 |
| 16 | 185 | 54 | 73 | 184 | 242 | 315 | 150 | 64 | 28 | 14 | 40 | 105 |
| 17 | 143 | 56 | 75 | 205 | 225 | 319 | 167 | 66 | 25 | 14 | 23 | 398 |
| 18 | 114 | 71 | 80 | 198 | 242 | 346 | 164 | 63 | 24 | 14 | 22 | 386 |
| 19 | 99 | 73 | 84 | 291 | 322 | 378 | 151 | 70 | 22 | 15 | 19 | 304 |
| 20 | 84 | 73 | 75 | 329 | 345 | 375 | 143 | 167 | 21 | 22 | 20 | 197 |
| 21 | 73 | 85 | 73 | 300 | 306 | 341 | 150 | 154 | 20 | 16 | 23 | 127 |
| 22 | 68 | 83 | 86 | 253 | 262 | 367 | 140 | 112 | 21 | 15 | 23 | 90 |
| 23 | 71 | 79 | 85 | 250 | 224 | 457 | 151 | 86 | 20 | 14 | 21 | 74 |
| 24 | 64 | 71 | 78 | 383 | 195 | 486 | 169 | 110 | 24 | 14 | 18 | 65 |
| 25 | 57 | 65 | 69 | 669 | 187 | 446 | 161 | 176 | 25 | 16 | 21 | 59 |
| 26 | 62 | 74 | 61 | 677 | 188 | 394 | 146 | 181 | 22 | 20 | 23 | 55 |
| 27 | 60 | 141 | 57 | 552 | 193 | 346 | 131 | 138 | 21 | 31 | 21 | 50 |
| 28 | 51 | 171 | 57 | 449 | 203 | 337 | 120 | 112 | 18 | 23 | 22 | 54 |
| 29 | 55 | 142 | 61 | 367 | --- | 390 | 120 | 89 | 17 | 16 | 17 | 50 |
| 30 | 58 | 111 | 81 | 307 | --- | 391 | 111 | 76 | 17 | 15 | 14 | 53 |
| 31 | 54 | --- | 79 | 261 | --- | 346 | --- | 65 | --- | 14 | 14 | --- |
| TOTAL | 3485 | 2200 | 2430 | 7826 | 9309 | 12319 | 5253 | 3277 | 863 | 632 | 589 | 2861 |
| MEAN | 112 | 73.3 | 78.4 | 252 | 332 | 397 | 175 | 106 | 28.8 | 20.4 | 19.0 | 95.4 |
| MAX | 430 | 171 | 105 | 677 | 770 | 606 | 307 | 181 | 62 | 40 | 66 | 398 |
| MIN | 23 | 47 | 57 | 54 | 187 | 280 | 111 | 63 | 17 | 14 | 11 | 16 |

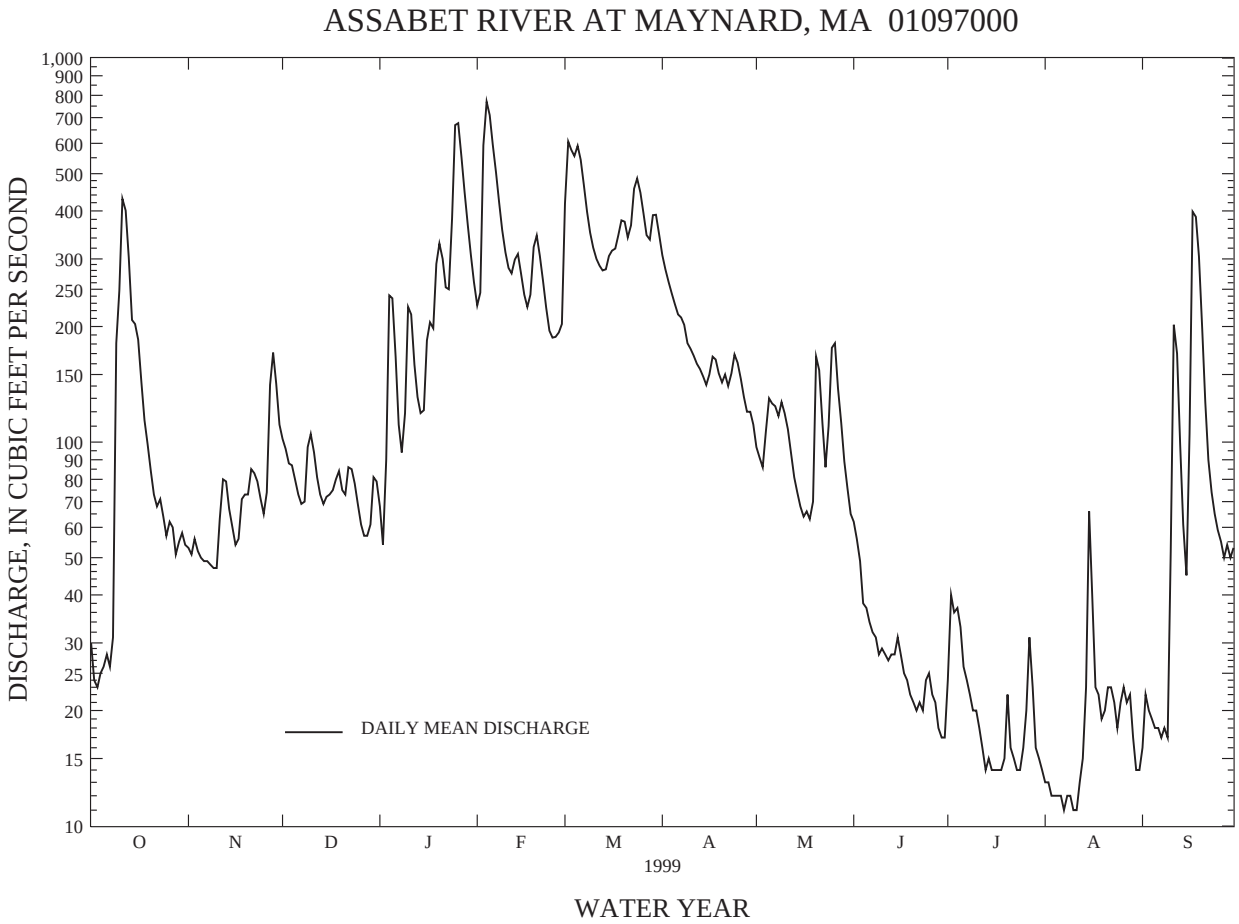
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1999, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 92.0 | 151 | 195 | 222 | 251 | 405 | 383 | 237 | 151 | 72.8 | 61.0 | 63.8 |
| MAX | 375 | 542 | 547 | 670 | 696 | 776 | 1052 | 443 | 788 | 254 | 561 | 542 |
| (WY) | 1956 | 1956 | 1997 | 1979 | 1970 | 1983 | 1987 | 1954 | 1982 | 1959 | 1955 | 1954 |
| MIN | 9.92 | 22.1 | 35.6 | 37.6 | 72.5 | 143 | 127 | 106 | 28.8 | 11.6 | 5.18 | 5.00 |
| (WY) | 1958 | 1950 | 1950 | 1966 | 1965 | 1989 | 1966 | 1999 | 1999 | 1966 | 1966 | 1957 |

01097000 ASSABET RIVER AT MAYNARD, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1941 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 92570 | | 51044 | | | |
| ANNUAL MEAN | 254 | | 140 | | 190 | |
| HIGHEST ANNUAL MEAN | | | | | 296 | 1984 |
| LOWEST ANNUAL MEAN | | | | | 73.3 | 1966 |
| HIGHEST DAILY MEAN | 1500 | Mar 11 | 770 | Feb 4 | 3650 | Aug 20 1955 |
| LOWEST DAILY MEAN | 21 | Sep 10 | 11 | Aug 7 | .20 | Feb 7 1965 |
| ANNUAL SEVEN-DAY MINIMUM | 21 | Sep 9 | 12 | Aug 5 | 1.0 | Feb 2 1965 |
| INSTANTANEOUS PEAK FLOW | | | 789 | Feb 4 | 4250 | Aug 20 1955 |
| INSTANTANEOUS PEAK STAGE | | | 4.36 | Feb 4 | 8.96 | Aug 20 1955 |
| INSTANTANEOUS LOW FLOW | | | 11 | Aug 9 | | |
| 10 PERCENT EXCEEDS | 572 | | 346 | | 423 | |
| 50 PERCENT EXCEEDS | 177 | | 80 | | 127 | |
| 90 PERCENT EXCEEDS | 43 | | 17 | | 25 | |

e Estimated



01097300 NASHOBA BROOK NEAR ACTON, MA

LOCATION.--Lat 42°30'45" (revised), long 71°24'17" (revised), Middlesex County, Hydrologic Unit 01070005, on right bank 500 ft downstream from dam at North Acton, 2.2 mi northeast of Acton, and 5 mi upstream from mouth. Prior to Jan. 8, 1997, lat. 42°30'39", long 71°24'25", on right bank 1,500 ft downstream from dam at North Acton.

DRAINAGE AREA.--12.8 $mi^2$.

PERIOD OF RECORD.--Discharge: Occasional low-flow measurements, water years 1962–63. July 1963 to current year. Water quality records: Water years 1972–74, 1976–78.

REVISED RECORDS.--WDR MA-RI-84-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 155 ft above sea level, from topographic map. Prior to Jan. 8, 1997, at site 1,000 ft downstream, at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Occasional regulation since 1967 by pond upstream.

AVERAGE DISCHARGE.--36 years, 20.5 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 679 $ft^3/s$, Jan. 26, 1979, gage height, 5.57 ft, at former site; maximum gage height, 6.89 ft, June 14, 1998; minimum discharge, 0.01 $ft^3/s$, Sept. 4, 7, 8, 12, 13, 1995, Sept. 3, 1999.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 102 $ft^3/s$, Jan. 25; gage height, 5.35 ft; minimum, 0.01 $ft^3/s$, Sept. 3.

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 | 1.4 | 4.8 | 8.5 | e4.3 | e16 | e40 | 23 | 6.5 | 4.2 | 0.30 | 0.31 | 0.02 |
| 2 | 1.5 | 4.4 | 7.4 | e3.3 | e25 | e60 | 21 | 5.9 | 3.7 | 1.4 | .21 | .02 |
| 3 | 1.3 | 4.3 | 6.8 | e4.3 | e74 | e52 | 21 | 5.4 | 3.3 | 2.3 | .12 | .02 |
| 4 | 1.1 | 4.1 | 9.9 | e21 | e65 | e48 | 19 | 5.8 | 2.9 | 1.9 | .09 | .02 |
| 5 | .94 | 4.2 | 13 | e22 | e55 | e55 | 17 | 8.2 | 3.6 | 1.5 | .08 | .02 |
| 6 | .89 | 3.9 | 5.8 | e13 | e45 | e46 | 16 | 8.9 | 2.5 | 1.1 | .08 | .04 |
| 7 | .80 | 4.0 | 6.6 | e8.7 | e37 | e41 | 15 | 8.3 | 2.1 | .81 | .07 | .06 |
| 8 | .87 | 4.1 | 11 | e6.3 | e32 | e35 | 14 | 7.1 | 2.4 | .63 | .06 | .04 |
| 9 | 6.0 | 4.1 | 10 | e7.0 | e28 | e30 | 14 | 7.2 | 1.8 | .41 | .05 | .04 |
| 10 | 19 | 4.1 | 9.9 | e13 | e24 | e27 | 13 | 6.7 | 1.7 | .36 | .03 | .77 |
| 11 | 34 | 5.4 | 8.7 | 15 | e22 | e26 | 12 | 5.6 | 1.5 | .32 | .03 | 20 |
| 12 | 30 | 7.7 | 7.4 | 11 | e21 | e25 | 12 | 4.7 | 1.3 | .33 | .06 | 13 |
| 13 | 17 | 7.3 | 6.8 | e8.7 | e26 | e24 | 11 | 4.4 | 1.2 | .35 | .04 | 4.3 |
| 14 | 12 | 6.4 | 6.5 | e6.7 | e24 | e24 | 11 | 4.3 | 1.3 | .18 | .05 | 2.4 |
| 15 | 18 | 6.8 | 6.1 | e6.7 | e22 | e25 | 10 | 3.9 | 1.2 | .10 | .11 | 1.7 |
| 16 | 20 | 6.1 | 5.9 | e11 | e20 | e26 | 10 | 3.5 | 1.0 | .13 | .08 | 5.0 |
| 17 | 15 | 6.1 | 6.1 | e12 | e18 | 28 | 12 | 3.3 | .82 | .07 | .08 | 42 |
| 18 | 11 | 6.2 | 7.1 | e13 | e22 | 38 | 12 | 2.9 | .73 | .05 | .15 | 39 |
| 19 | 9.5 | 5.8 | 7.0 | 19 | e30 | 46 | 11 | 4.2 | .68 | .05 | .13 | 16 |
| 20 | 7.0 | 6.0 | 6.8 | 28 | e28 | 41 | 11 | 20 | .74 | .12 | .06 | 8.5 |
| 21 | 5.9 | 7.0 | 6.6 | e24 | e24 | 33 | 12 | 31 | .63 | .24 | .05 | 4.8 |
| 22 | 5.5 | 7.1 | 6.7 | 21 | e21 | 36 | 11 | 13 | .42 | .11 | .05 | 4.5 |
| 23 | 5.0 | 6.9 | e5.1 | 21 | e18 | 52 | 11 | 7.5 | .26 | .08 | .05 | 6.6 |
| 24 | 4.7 | 6.4 | e5.1 | 38 | e16 | 40 | 13 | 10 | .16 | .13 | .04 | 7.3 |
| 25 | 4.5 | 5.7 | e4.3 | 91 | e15 | 35 | 11 | 24 | .13 | .46 | .04 | 5.2 |
| 26 | 4.3 | 6.2 | e4.0 | 62 | e15 | 31 | 9.8 | 18 | .13 | .59 | .03 | 4.0 |
| 27 | 4.1 | 16 | 4.8 | e35 | e16 | 27 | 9.0 | 12 | .13 | .64 | .05 | 3.3 |
| 28 | 4.2 | 18 | 5.2 | e29 | e22 | 27 | 8.2 | 10 | .11 | .48 | .07 | 2.9 |
| 29 | 5.0 | 13 | 6.2 | e24 | --- | 37 | 7.8 | 7.9 | .14 | .42 | .05 | 2.6 |
| 30 | 5.5 | 10 | e6.3 | e21 | --- | 33 | 7.1 | 6.2 | .20 | .28 | .03 | 2.8 |
| 31 | 5.3 | --- | e6.3 | e17 | --- | 26 | --- | 5.1 | --- | .24 | .02 | --- |
| TOTAL | 261.30 | 202.1 | 217.9 | 617.0 | 781 | 1114 | 384.9 | 271.5 | 40.98 | 16.08 | 2.37 | 196.95 |
| MEAN | 8.43 | 6.74 | 7.03 | 19.9 | 27.9 | 35.9 | 12.8 | 8.76 | 1.37 | .52 | .076 | 6.57 |
| MAX | 34 | 18 | 13 | 91 | 74 | 60 | 23 | 31 | 4.2 | 2.3 | .31 | 42 |
| MIN | .80 | 3.9 | 4.0 | 3.3 | 15 | 24 | 7.1 | 2.9 | .11 | .05 | .02 | .02 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1999, BY WATER YEAR (WY)

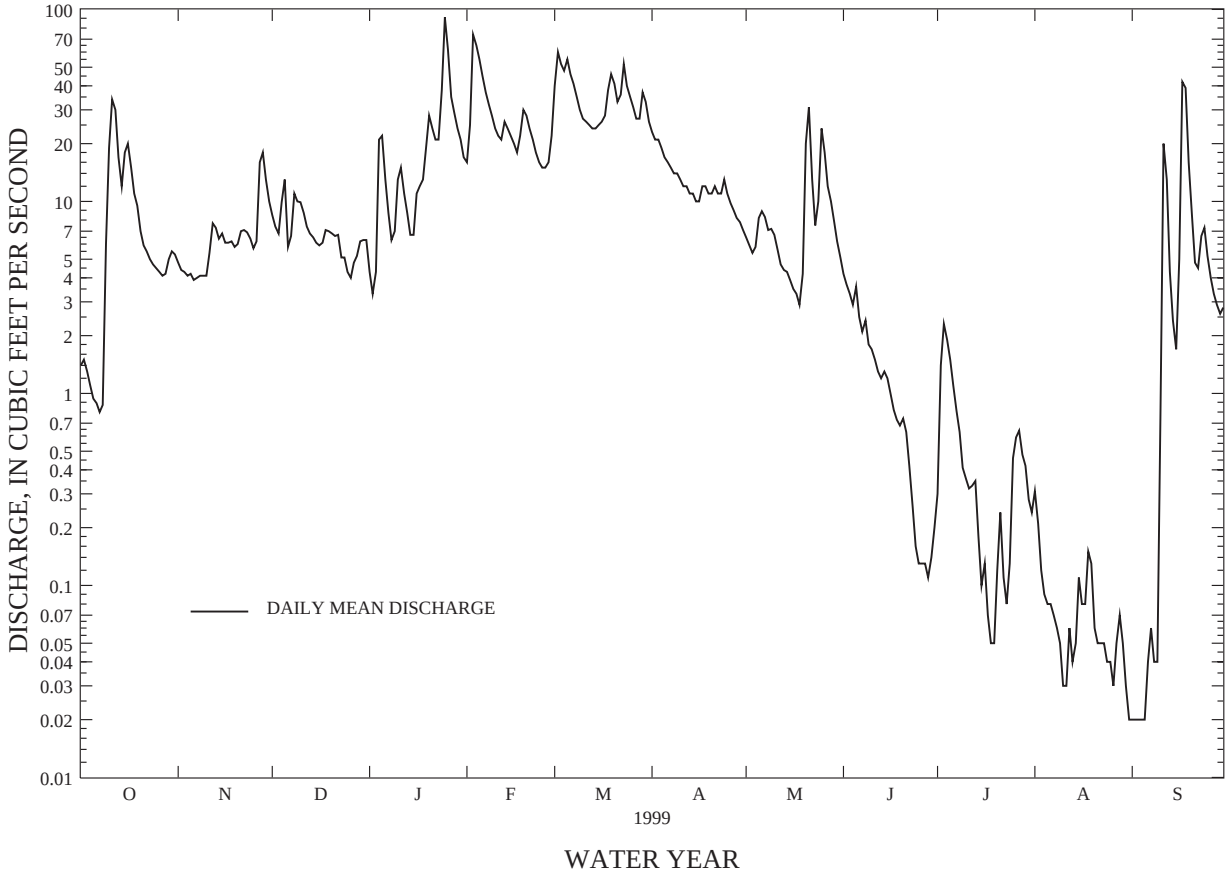
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 9.94 | 17.6 | 22.8 | 26.3 | 29.5 | 45.6 | 41.1 | 24.5 | 15.0 | 5.92 | 4.19 | 4.21 |
| MAX | 64.0 | 47.3 | 55.2 | 101 | 88.7 | 96.9 | 93.6 | 57.0 | 72.5 | 19.2 | 19.2 | 15.7 |
| (WY) | 1997 | 1976 | 1987 | 1979 | 1976 | 1977 | 1987 | 1978 | 1982 | 1982 | 1991 | 1991 |
| MIN | .60 | 1.20 | 2.34 | 2.58 | 6.30 | 15.1 | 12.7 | 8.59 | 1.37 | .52 | .076 | .27 |
| (WY) | 1998 | 1966 | 1966 | 1966 | 1980 | 1989 | 1966 | 1965 | 1999 | 1999 | 1999 | 1965 |

01097300 NASHOBA BROOK NEAR ACTON, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1963 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 8644.84 | | 4106.08 | | | |
| ANNUAL MEAN | 23.7 | | 11.2 | | 20.5 | |
| HIGHEST ANNUAL MEAN | | | | | 36.1 | 1978 |
| LOWEST ANNUAL MEAN | | | | | 7.09 | 1965 |
| HIGHEST DAILY MEAN | 270 | Jun 15 | 91 | Jan 25 | 560 | Jan 26 1979 |
| LOWEST DAILY MEAN | .19 | Sep 21 | .02 | Aug 31 | .01 | Sep 8 1995 |
| ANNUAL SEVEN-DAY MINIMUM | .24 | Sep 15 | .02 | Aug 30 | .02 | Sep 3 1995 |
| INSTANTANEOUS PEAK FLOW | | | 102 | Jan 25 | 679 | Jan 26 1979 |
| INSTANTANEOUS PEAK STAGE | | | 5.35 | Jan 25 | 6.89 | Jun 14 1998 |
| INSTANTANEOUS LOW FLOW | | | .01 | Sep 3 | .01 | Sep 4 1995 |
| 10 PERCENT EXCEEDS | 56 | | 29 | | 50 | |
| 50 PERCENT EXCEEDS | 15 | | 6.3 | | 12 | |
| 90 PERCENT EXCEEDS | 1.4 | | .08 | | 1.2 | |

e Estimated

NASHOBA BROOK NEAR ACTON, MA 01097300



01098530 SUDBURY RIVER AT SAXONVILLE, MA

LOCATION.--Lat 42°19'31", long 71°23'53", Middlesex County, Hydrologic Unit 01070005, on left bank at downstream side of new Danforth Street Bridge, at Saxonville, 600 ft east of Elm Street, 700 ft downstream from confluence with Lake Cochituate Outlet, and 0.7 mi downstream from Saxonville Dam.

DRAINAGE AREA.--106 $mi^2$.

PERIOD OF RECORD.--November 1979 to current year.
Water-quality records: Water years 1994-95.

GAGE.--Water-stage recorder. Datum of gage is 110.55 ft above sea level (Massachusetts Department of Public Works benchmark).

REMARKS.--Records good except those above 500 $ft^3/s$, which are fair, and those for estimated daily discharge, which are poor. Flow regulated by reservoirs upstream and affected by diversions and spill. Flow diverted as needed for use of Boston metropolitan district. Part of flow from Wachusett Reservoir on Nashua River is diverted into Sudbury Reservoir en route to Boston metropolitan district.

AVERAGE DISCHARGE.--19 years (water years 1981-99), 198 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,420 $ft^3/s$, June 7, 1982, gage height, 13.30 ft; maximum gage height, 13.47 ft, Apr. 8, 1987; minimum daily, 6.0 $ft^3/s$, June 26, 1993, Aug. 3, 1997.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 706 $ft^3/s$, Feb. 4, gage height, 9.31 ft; minimum daily, 5.7 $ft^3/s$, Aug. 4, 5, 10.

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 | 15 | 30 | 90 | 143 | e327 | 458 | 286 | 106 | 94 | 118 | 6.8 | 10 |
| 2 | 13 | 28 | 81 | 112 | e300 | 435 | 273 | 98 | 90 | 79 | 6.4 | 11 |
| 3 | 14 | 27 | 79 | 244 | e279 | 409 | 258 | 94 | 86 | 81 | 5.9 | 11 |
| 4 | 11 | 25 | 77 | 296 | e611 | 479 | 248 | 107 | 74 | 80 | 5.7 | 13 |
| 5 | 10 | 24 | 73 | 222 | 672 | 441 | 230 | 120 | 67 | 74 | 5.7 | 13 |
| 6 | 9.9 | 24 | 71 | 198 | 588 | 407 | 226 | 117 | 65 | 70 | 6.1 | 23 |
| 7 | 9.7 | 23 | 71 | 183 | 527 | 404 | 190 | 111 | 64 | 81 | 6.7 | 19 |
| 8 | 20 | 22 | 79 | 164 | 472 | 360 | 139 | 112 | 63 | 70 | 6.0 | 15 |
| 9 | 213 | 28 | 96 | 246 | 429 | 333 | 134 | 112 | 59 | 64 | 6.0 | 13 |
| 10 | 214 | 35 | 113 | 271 | 405 | 317 | 132 | 102 | 57 | 59 | 5.7 | 155 |
| 11 | 474 | 59 | 112 | 216 | 388 | 302 | 126 | 93 | 56 | 55 | 6.2 | 261 |
| 12 | 324 | 60 | 117 | 201 | 363 | 299 | 126 | 91 | 55 | 53 | 9.4 | 73 |
| 13 | 289 | 52 | 116 | 190 | 349 | 293 | 118 | 86 | 55 | 53 | 11 | 56 |
| 14 | 357 | 48 | 120 | 179 | 328 | 290 | 113 | 82 | 56 | 53 | 18 | 75 |
| 15 | 368 | 46 | 122 | 248 | 307 | 320 | 109 | 77 | 54 | 55 | 39 | 89 |
| 16 | 308 | 43 | 121 | 276 | 292 | 313 | 108 | 77 | 50 | 48 | 14 | 248 |
| 17 | 270 | 48 | 129 | 255 | 286 | 313 | 130 | 75 | 50 | 46 | 12 | 471 |
| 18 | 248 | 56 | 132 | 280 | 347 | 333 | 115 | 72 | 51 | 45 | 11 | 290 |
| 19 | 232 | 52 | 124 | e436 | 349 | 318 | 107 | 84 | 50 | 51 | 11 | 243 |
| 20 | 214 | 56 | 124 | e369 | 320 | 293 | 105 | 184 | 49 | 69 | 10 | 192 |
| 21 | 200 | 66 | 123 | 340 | 301 | 278 | 102 | 132 | 49 | 64 | 12 | 128 |
| 22 | 190 | 59 | 144 | 322 | 277 | 342 | 100 | 105 | 48 | 64 | 14 | 121 |
| 23 | 161 | 56 | 141 | 331 | 248 | 345 | 123 | 95 | 48 | 63 | 12 | 83 |
| 24 | 82 | 60 | 139 | 464 | 234 | 326 | 139 | 172 | 47 | 63 | 12 | 37 |
| 25 | 70 | 82 | 134 | e599 | 234 | 322 | 127 | 186 | 46 | 67 | 11 | 34 |
| 26 | 57 | 115 | 130 | e539 | 232 | 311 | 121 | 164 | 45 | 65 | 11 | 29 |
| 27 | 44 | 117 | 127 | e473 | 224 | 293 | 115 | 156 | 44 | 57 | 13 | 25 |
| 28 | 42 | 104 | 126 | e455 | 252 | 335 | 111 | 132 | 46 | 16 | 13 | 23 |
| 29 | 45 | 104 | 135 | e401 | --- | 341 | 107 | 121 | 46 | 8.3 | 11 | 23 |
| 30 | 44 | 94 | 186 | e359 | --- | 317 | 107 | 109 | 45 | 7.0 | 10 | 41 |
| 31 | 34 | --- | 149 | e344 | --- | 300 | --- | 102 | --- | 6.7 | 10 | --- |
| TOTAL | 4582.6 | 1643 | 3581 | 9356 | 9941 | 10627 | 4425 | 3474 | 1709 | 1785.0 | 331.6 | 2825 |
| MEAN | 148 | 54.8 | 116 | 302 | 355 | 343 | 148 | 112 | 57.0 | 57.6 | 10.7 | 94.2 |
| MAX | 474 | 117 | 186 | 599 | 672 | 479 | 286 | 186 | 94 | 118 | 39 | 471 |
| MIN | 9.7 | 22 | 71 | 112 | 224 | 278 | 100 | 72 | 44 | 6.7 | 5.7 | 10 |

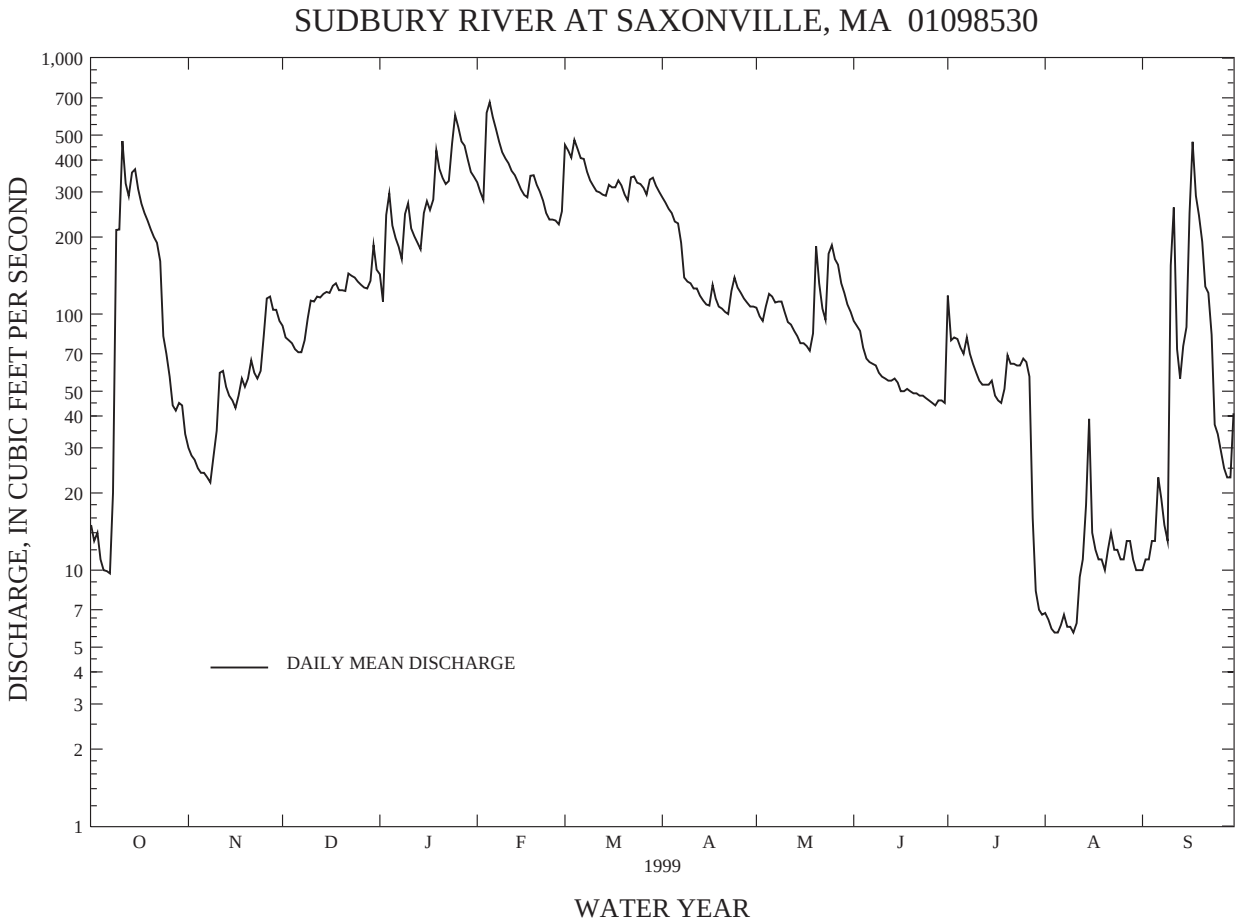
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 1999, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 117 | 174 | 249 | 234 | 270 | 342 | 366 | 216 | 170 | 73.8 | 80.3 | 65.1 |
| MAX | 376 | 385 | 572 | 471 | 480 | 757 | 920 | 415 | 739 | 156 | 192 | 147 |
| (WY) | 1997 | 1990 | 1997 | 1982 | 1990 | 1983 | 1987 | 1998 | 1982 | 1998 | 1989 | 1989 |
| MIN | 9.43 | 54.8 | 88.4 | 59.5 | 67.6 | 121 | 98.7 | 75.2 | 31.3 | 10.9 | 10.7 | 11.0 |
| (WY) | 1998 | 1999 | 1998 | 1981 | 1980 | 1985 | 1985 | 1986 | 1993 | 1993 | 1999 | 1997 |

01098530 SUDBURY RIVER AT SAXONVILLE, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1980 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 90597.8 | | 54280.2 | | | |
| ANNUAL MEAN | 248 | | 149 | | 198 | |
| HIGHEST ANNUAL MEAN | | | | | 253 | 1984 |
| LOWEST ANNUAL MEAN | | | | | 96.6 | 1985 |
| HIGHEST DAILY MEAN | 996 | Jun 16 | 672 | Feb 5 | 2250 | Jun 7 1982 |
| LOWEST DAILY MEAN | 9.4 | Sep 14 | 5.7 | Aug 4 | 5.6 | Oct 20 1997 |
| ANNUAL SEVEN-DAY MINIMUM | 10 | Sep 9 | 6.0 | Aug 4 | 5.8 | Oct 16 1997 |
| INSTANTANEOUS PEAK FLOW | | | 706 | Feb 4 | 2420 | Jun 7 1982 |
| INSTANTANEOUS PEAK STAGE | | | 9.31 | Feb 4 | 13.47 | Apr 8 1987 |
| INSTANTANEOUS LOW FLOW | | | 5.5 | Aug 3 | | |
| 10 PERCENT EXCEEDS | 586 | | 341 | | 435 | |
| 50 PERCENT EXCEEDS | 190 | | 105 | | 137 | |
| 90 PERCENT EXCEEDS | 21 | | 13 | | 30 | |

e Estimated



01099500 CONCORD RIVER BELOW RIVER MEADOW BROOK AT LOWELL, MA

LOCATION.--Lat 42°38'12", long 71°18'09", Middlesex County, Hydrologic Unit 01070005, on right bank 300 ft downstream from Rogers Street Bridge at Lowell, 0.3 mi downstream from River Meadow Brook, and 0.8 mi upstream from mouth.

DRAINAGE AREA.--Total above gage, 400 $mi^2$; net above gage, 307 $mi^2$ — diversion as needed from 92.6 $mi^2$ for use by Boston metropolitan district.

PERIOD OF RECORD.--Discharge: October 1936 to current year. October, November 1936 monthly discharge only, published in WSP 1301.
Water-quality records: Water years 1953, 1967-74.

REVISED RECORDS.--WDR MA-RI-84-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 67.41 ft above sea level.

REMARKS.--Records good except those for estimated daily discharge, which are poor. Low flow regulated by mills upstream. Daily discharge includes undiverted water from 92.6 $mi^2$ in basins of Sudbury River and Lake Cochituate. Prior to December 1961, diversion upstream for use of city of Lowell. Satellite and telephone gage-height telemeter at station.

AVERAGE DISCHARGE.--63 years, 650 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,410 $ft^3/s$, Jan. 28, 1979, gage height, 9.60 ft; maximum gage height of 9.60 ft also occurred Apr. 10, 1987; minimum daily, 4.0 $ft^3/s$, Sept. 29, 1957.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,930 $ft^3/s$, Feb. 6; gage height, 6.90 ft; minimum daily, 26 $ft^3/s$, Aug. 10.

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 | 105 | 217 | 424 | 357 | 1260 | 1010 | 1160 | e335 | 363 | 102 | 59 | 34 |
| 2 | 93 | 200 | 399 | 315 | 1210 | 1100 | 1110 | e315 | 281 | 141 | 48 | 33 |
| 3 | 84 | 200 | 340 | 383 | 1580 | 1210 | 1060 | e301 | 261 | 148 | 42 | 31 |
| 4 | 79 | 182 | 341 | 562 | 1690 | 1420 | 997 | 334 | 224 | 147 | 34 | 32 |
| 5 | 76 | 185 | 320 | 628 | 1850 | 1450 | 945 | 344 | 217 | 145 | 39 | 31 |
| 6 | 70 | 173 | 302 | 657 | 1920 | 1480 | 910 | 393 | 185 | 140 | 31 | 31 |
| 7 | 73 | 182 | 298 | 629 | 1890 | 1500 | 868 | 369 | 142 | 137 | 28 | 33 |
| 8 | 87 | 174 | 283 | 543 | 1810 | 1450 | 822 | 383 | 187 | 129 | 29 | 35 |
| 9 | 289 | 159 | 311 | 567 | 1730 | 1390 | 768 | 388 | 109 | 120 | 28 | 38 |
| 10 | 486 | 174 | 331 | 677 | 1610 | 1320 | 707 | 376 | 173 | 139 | 26 | 129 |
| 11 | 737 | 195 | 357 | 702 | 1470 | 1240 | 676 | 338 | 102 | 83 | 27 | 410 |
| 12 | 835 | 241 | 356 | 676 | 1380 | 1180 | 629 | 309 | 153 | 100 | 30 | 447 |
| 13 | 905 | 242 | 338 | 634 | 1330 | 1140 | 586 | 350 | 97 | 94 | 31 | 447 |
| 14 | 970 | 254 | 344 | 547 | 1250 | 1110 | 558 | 260 | 159 | 93 | 41 | 382 |
| 15 | 984 | 239 | 316 | 505 | 1200 | 1100 | 514 | 272 | 98 | 89 | 54 | 323 |
| 16 | 932 | 240 | 327 | 560 | 1130 | 1100 | 510 | 262 | 110 | 85 | 82 | 385 |
| 17 | 901 | 236 | 331 | 682 | 1060 | 1120 | 507 | 224 | 106 | 82 | 88 | 716 |
| 18 | 861 | 241 | 351 | 745 | 1040 | 1140 | 502 | 239 | 108 | 71 | 63 | 764 |
| 19 | 803 | 230 | 345 | 909 | 1070 | 1160 | 507 | 225 | 107 | 77 | 43 | 836 |
| 20 | 741 | 256 | 358 | 948 | 1080 | 1170 | 478 | 325 | 104 | 85 | 41 | 847 |
| 21 | 678 | 275 | 328 | 986 | 1080 | 1170 | 462 | 384 | 98 | 88 | 61 | 788 |
| 22 | 629 | 283 | 375 | 1000 | 1030 | 1210 | 452 | 430 | 94 | 95 | 42 | 708 |
| 23 | 567 | 285 | 371 | 1030 | 980 | 1240 | 440 | 431 | 91 | 116 | 37 | 628 |
| 24 | 530 | 276 | 363 | 1180 | 926 | 1250 | 457 | 432 | 91 | 114 | 42 | 553 |
| 25 | 482 | 277 | 356 | 1380 | 869 | 1280 | 436 | 534 | 90 | 116 | e49 | 472 |
| 26 | 386 | 264 | 320 | 1450 | 830 | 1270 | 466 | 541 | 86 | 115 | 40 | 317 |
| 27 | 376 | 368 | 315 | 1550 | 797 | 1220 | 439 | 536 | 84 | 112 | 39 | 307 |
| 28 | 284 | 400 | 308 | 1550 | 793 | 1200 | 421 | 506 | 88 | 109 | 42 | 247 |
| 29 | 273 | 450 | 271 | 1470 | --- | 1210 | e390 | 463 | 90 | 94 | 42 | 191 |
| 30 | 253 | 416 | 349 | 1390 | --- | 1200 | e370 | 418 | 85 | 74 | 38 | 168 |
| 31 | 237 | --- | 357 | 1300 | --- | 1190 | --- | 367 | --- | 66 | 35 | --- |
| TOTAL | 14806 | 7514 | 10485 | 26512 | 35865 | 38230 | 19147 | 11384 | 4183 | 3306 | 1331 | 10363 |
| MEAN | 478 | 250 | 338 | 855 | 1281 | 1233 | 638 | 367 | 139 | 107 | 42.9 | 345 |
| MAX | 984 | 450 | 424 | 1550 | 1920 | 1500 | 1160 | 541 | 363 | 148 | 88 | 847 |
| MIN | 70 | 159 | 271 | 315 | 793 | 1010 | 370 | 224 | 84 | 66 | 26 | 31 |

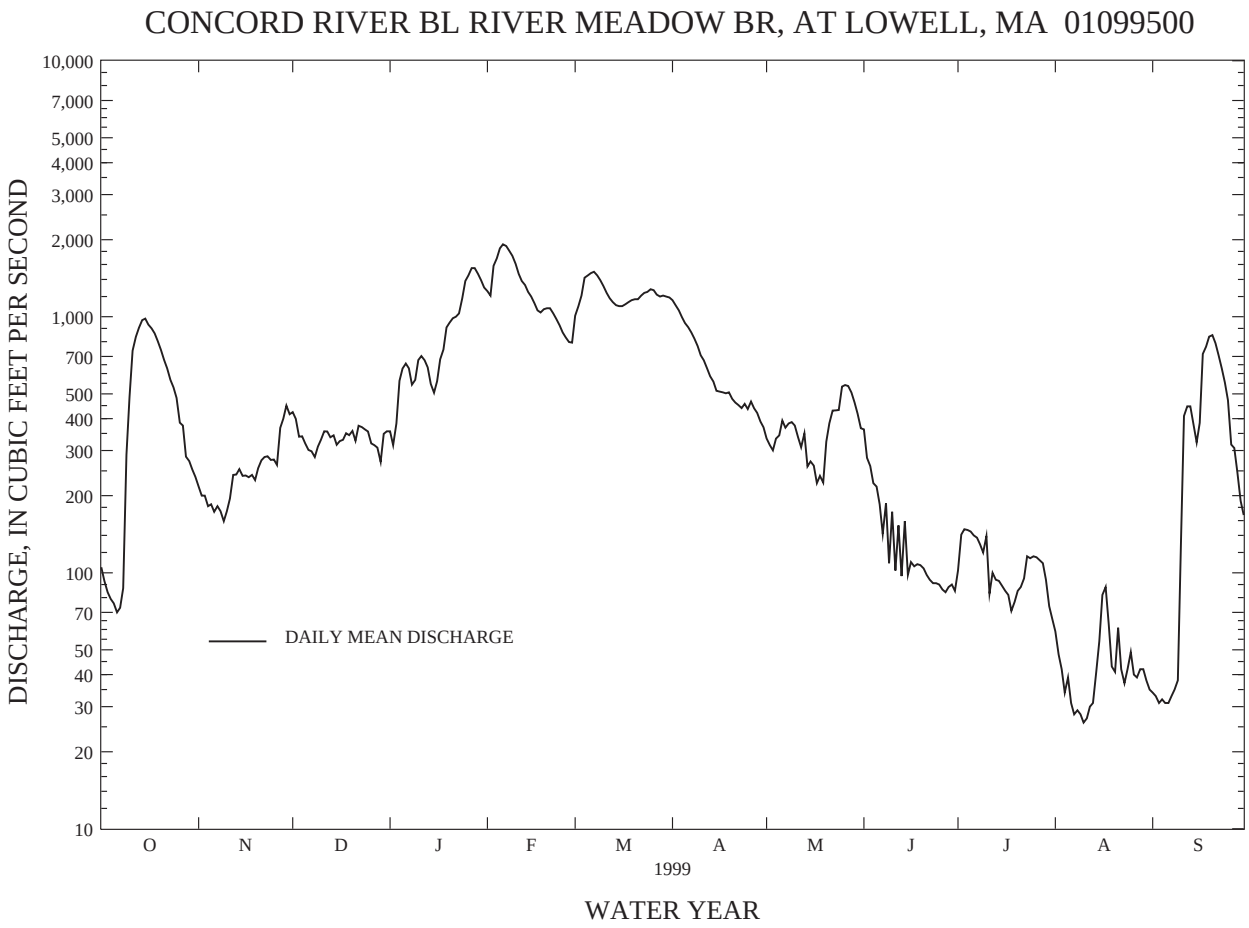
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 1999, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 329 | 529 | 712 | 743 | 875 | 1266 | 1300 | 813 | 519 | 267 | 233 | 235 |
| MAX | 1320 | 1866 | 1853 | 1996 | 1856 | 2510 | 3149 | 1599 | 2502 | 1512 | 1403 | 1694 |
| (WY) | 1997 | 1956 | 1997 | 1979 | 1970 | 1983 | 1987 | 1954 | 1982 | 1938 | 1955 | 1954 |
| MIN | 38.3 | 86.9 | 133 | 150 | 230 | 479 | 377 | 283 | 116 | 50.0 | 33.1 | 25.4 |
| (WY) | 1942 | 1966 | 1966 | 1981 | 1980 | 1989 | 1966 | 1941 | 1964 | 1949 | 1966 | 1957 |

01099500 CONCORD RIVER BELOW RIVER MEADOW BROOK AT LOWELL, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1937 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 327906 | | 183126 | | | |
| ANNUAL MEAN | 898 | | 502 | | 650 | |
| HIGHEST ANNUAL MEAN | | | | | 1112 | 1984 |
| LOWEST ANNUAL MEAN | | | | | 242 | 1966 |
| HIGHEST DAILY MEAN | 3040 | Jun 18 | 1920 | Feb 6 | 5340 | Jan 28 1979 |
| LOWEST DAILY MEAN | 67 | Sep 14 | 26 | Aug 10 | 4.0 | Sep 29 1957 |
| ANNUAL SEVEN-DAY MINIMUM | 70 | Sep 14 | 28 | Aug 6 | 16 | Sep 26 1957 |
| INSTANTANEOUS PEAK FLOW | | | 1930 | Feb 6 | 5410 | Jan 28 1979 |
| INSTANTANEOUS PEAK STAGE | | | 6.90 | Feb 6 | 9.60 | Jan 28 1979 |
| INSTANTANEOUS LOW FLOW | | | 25 | Sep 6 | | |
| 10 PERCENT EXCEEDS | 2080 | | 1210 | | 1400 | |
| 50 PERCENT EXCEEDS | 756 | | 351 | | 488 | |
| 90 PERCENT EXCEEDS | 154 | | 60 | | 99 | |

e Estimated



01100000 MERRIMACK RIVER BELOW CONCORD RIVER AT LOWELL, MA
(National Water Quality Assessment Site)

LOCATION.--Lat 42°38'45", long 71°17'56", Middlesex County, Hydrologic Unit 01070002, on right bank at Lowell, 1,100 ft downstream from Concord River.

DRAINAGE AREA.--Total above gage, 4,635 $mi^2$; net above gage, 4,425 $mi^2$—excludes 210 $mi^2$ for use of Boston metropolitan district and city of Worcester.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Discharge: June 1923 to current year.
Water-quality records: Water years 1954, 1966-74, 1999.

GAGE.--Water-stage recorder. Datum of gage is 5.18 ft above sea level. Prior to Mar. 7, 1934, at Boott Mills, 1,800 ft upstream and 700 ft above mouth of Concord River, in same gage pool and at same datum; gage-height record (provided by Proprietors of the Locks and Canals on Merrimack River) was indicative of flow including that of Concord River.

REMARKS.--Records excellent. Daily discharge includes water released from 210 $mi^2$ in basins of Sudbury and Nashua Rivers and Lake Cochituate. Flow regulated by powerplants, by Franklin Falls Reservoir since 1942, and by Squam, Newfound, Winnipesaukee, Winnisquam, and other lakes and reservoirs upstream. Telephone and satellite gage-height telemeters at station.

AVERAGE DISCHARGE.--76 years, 7,708 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 173,000 $ft^3/s$, Mar. 20, 1936, gage height, 68.4 ft, from floodmarks; minimum daily, 199 $ft^3/s$, Sept. 23, 1923.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since 1735, that of Mar. 20, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 33,600 $ft^3/s$, Sept. 19; gage height, 49.69 ft; minimum daily, 597 $ft^3/s$, Aug. 7.

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

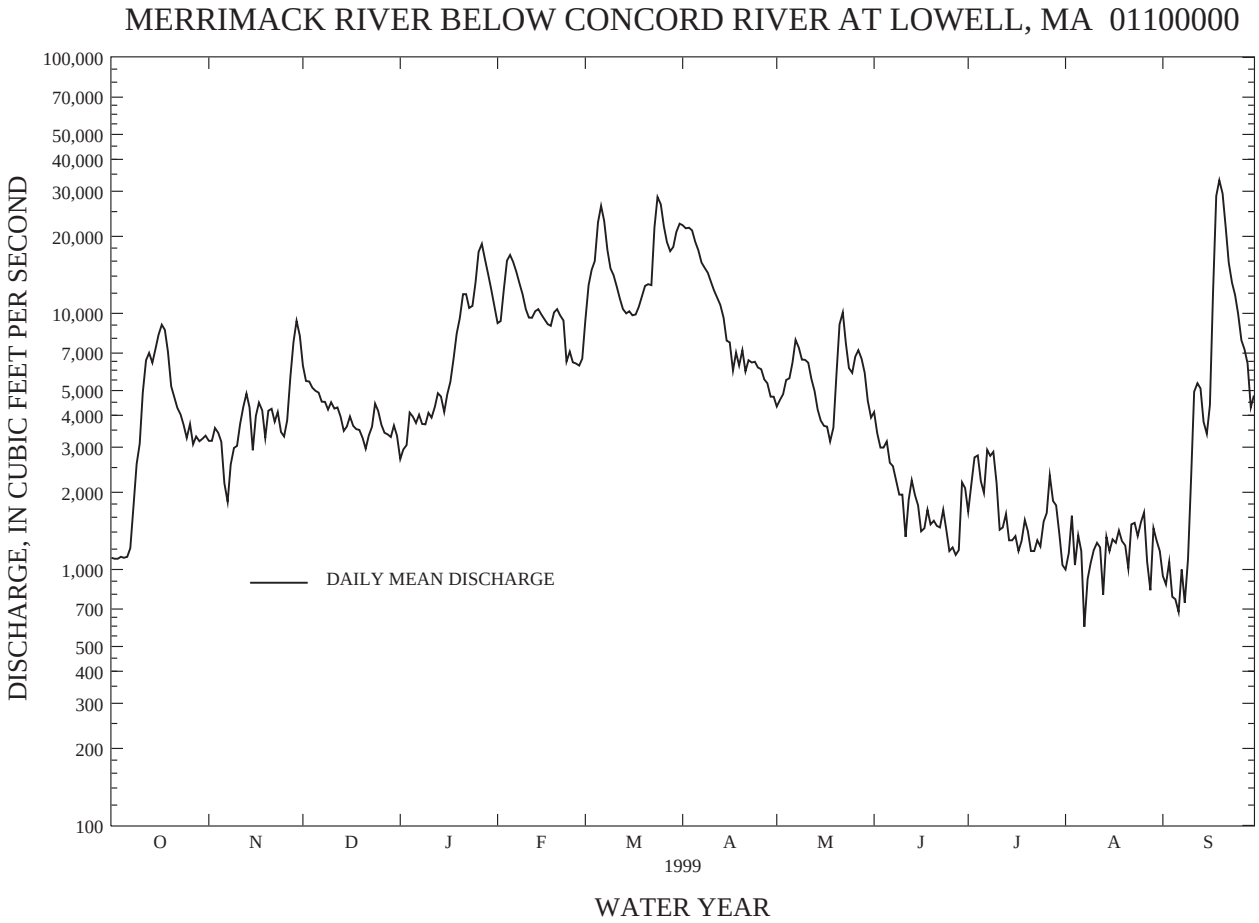
| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1110 | 3180 | 6260 | 2700 | 9170 | 9390 | 22100 | 4330 | 4120 | 1680 | 1000 | 943 |
| 2 | 1100 | 3180 | 5450 | 2940 | 9340 | 12900 | 21500 | 4600 | 3410 | 2170 | 1160 | 874 |
| 3 | 1100 | 3570 | 5420 | 3060 | 12300 | 14800 | 21600 | 4840 | 2990 | 2740 | 1620 | 1070 |
| 4 | 1120 | 3420 | 5130 | 4100 | 16100 | 16000 | 21100 | 5500 | 2990 | 2790 | 1040 | 782 |
| 5 | 1110 | 3150 | 4990 | 3960 | 16900 | 22700 | 19100 | 5580 | 3160 | 2210 | 1360 | 765 |
| 6 | 1120 | 2170 | 4900 | 3730 | 15900 | 26300 | 17600 | 6430 | 2610 | 1990 | 1180 | 682 |
| 7 | 1210 | 1840 | 4520 | 4020 | 14500 | 23000 | 15800 | 7890 | 2530 | 2930 | 597 | 1000 |
| 8 | 1740 | 2570 | 4510 | 3700 | 13100 | 17700 | 15100 | 7350 | 2220 | 2780 | 917 | 741 |
| 9 | 2580 | 2980 | 4210 | 3690 | 11900 | 15000 | 14400 | 6600 | 1960 | 2880 | 1060 | 1100 |
| 10 | 3100 | 3040 | 4500 | 4090 | 10400 | 14100 | 13300 | 6590 | 1960 | 2170 | 1190 | 2270 |
| 11 | 4900 | 3700 | 4250 | 3920 | 9640 | 12700 | 12300 | 6420 | 1340 | 1430 | 1270 | 4950 |
| 12 | 6570 | 4330 | 4290 | 4310 | 9620 | 11400 | 11500 | 5560 | 1870 | 1460 | 1220 | 5340 |
| 13 | 7010 | 4860 | 3960 | 4880 | 10200 | 10400 | 10800 | 4970 | 2230 | 1650 | 797 | 5090 |
| 14 | 6420 | 4290 | 3480 | 4740 | 10400 | 10000 | 9610 | 4210 | 1950 | 1300 | 1340 | 3770 |
| 15 | 7260 | 2920 | 3620 | 4120 | 9900 | 10200 | 7830 | 3820 | 1780 | 1300 | 1180 | 3380 |
| 16 | 8240 | 3980 | 3960 | 4840 | 9460 | 9830 | 7710 | 3640 | 1410 | 1350 | 1310 | 4390 |
| 17 | 9040 | 4480 | 3640 | 5400 | 9090 | 9910 | 5980 | 3610 | 1450 | 1180 | 1270 | 11900 |
| 18 | 8620 | 4180 | 3530 | 6680 | 8950 | 10600 | 7040 | 3160 | 1710 | 1290 | 1420 | 28800 |
| 19 | 7100 | 3270 | 3510 | 8350 | 10100 | 11600 | 6260 | 3580 | 1500 | 1560 | 1290 | 33100 |
| 20 | 5190 | 4170 | 3260 | 9570 | 10400 | 12800 | 7180 | 5790 | 1550 | 1410 | 1240 | 29400 |
| 21 | 4710 | 4240 | 2960 | 11900 | 9810 | 13000 | 5940 | 9070 | 1480 | 1180 | 1010 | 21800 |
| 22 | 4280 | 3780 | 3330 | 11900 | 9380 | 12900 | 6560 | 10100 | 1460 | 1180 | 1500 | 15800 |
| 23 | 4030 | 4120 | 3610 | 10500 | 6490 | 21700 | 6430 | 7630 | 1710 | 1300 | 1520 | 13200 |
| 24 | 3660 | 3440 | 4440 | 10700 | 7090 | 28500 | 6480 | 6120 | 1430 | 1230 | 1350 | 11800 |
| 25 | 3260 | 3310 | 4160 | 13200 | 6440 | 26700 | 6150 | 5860 | 1180 | 1540 | 1530 | 9960 |
| 26 | 3700 | 3820 | 3670 | 17400 | 6370 | 21900 | 6050 | 6790 | 1220 | 1660 | 1670 | 7860 |
| 27 | 3080 | 5680 | 3420 | 18700 | 6250 | 19000 | 5520 | 7180 | 1140 | 2330 | 1070 | 7240 |
| 28 | 3310 | 7740 | 3370 | 16300 | 6660 | 17500 | 5340 | 6640 | 1190 | 1850 | 830 | 6390 |
| 29 | 3170 | 9360 | 3290 | 14200 | --- | 18200 | 4730 | 5860 | 2190 | 1780 | 1450 | 4290 |
| 30 | 3240 | 8180 | 3650 | 12400 | --- | 20800 | 4730 | 4560 | 2080 | 1370 | 1300 | 4780 |
| 31 | 3330 | --- | 3330 | 10700 | --- | 22400 | --- | 3920 | --- | 1040 | 1180 | --- |
| TOTAL | 125410 | 122950 | 126620 | 240700 | 285860 | 503930 | 325740 | 178200 | 59820 | 54730 | 37871 | 243467 |
| MEAN | 4045 | 4098 | 4085 | 7765 | 10210 | 16260 | 10860 | 5748 | 1994 | 1765 | 1222 | 8116 |
| MAX | 9040 | 9360 | 6260 | 18700 | 16900 | 28500 | 22100 | 10100 | 4120 | 2930 | 1670 | 33100 |
| MIN | 1100 | 1840 | 2960 | 2700 | 6250 | 9390 | 4730 | 3160 | 1140 | 1040 | 597 | 682 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 1999, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 4150 | 6609 | 7631 | 7174 | 7565 | 12970 | 19280 | 11630 | 6319 | 3415 | 2795 | 3005 |
| MAX | 12730 | 17690 | 20380 | 18530 | 18400 | 45780 | 37440 | 24770 | 23660 | 14520 | 11110 | 19650 |
| (WY) | 1978 | 1928 | 1997 | 1978 | 1970 | 1936 | 1987 | 1954 | 1984 | 1973 | 1990 | 1938 |
| MIN | 1036 | 1843 | 2127 | 1621 | 2105 | 4132 | 6979 | 4093 | 1825 | 1161 | 901 | 895 |
| (WY) | 1965 | 1965 | 1930 | 1925 | 1931 | 1940 | 1995 | 1941 | 1964 | 1965 | 1965 | 1957 |

01100000 MERRIMACK RIVER BELOW CONCORD RIVER AT LOWELL, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1923 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 3474960 | | 2305298 | | | |
| ANNUAL MEAN | 9520 | | 6316 | | 7708 | |
| HIGHEST ANNUAL MEAN | | | | | 12490 | 1984 |
| LOWEST ANNUAL MEAN | | | | | 3068 | 1965 |
| HIGHEST DAILY MEAN | 47700 | Jun 18 | 33100 | Sep 19 | 161000 | Mar 20 1936 |
| LOWEST DAILY MEAN | 1100 | Oct 2 | 597 | Aug 7 | 199 | Sep 23 1923 |
| ANNUAL SEVEN-DAY MINIMUM | 1110 | Sep 30 | 845 | Sep 2 | 581 | Sep 12 1995 |
| INSTANTANEOUS PEAK FLOW | | | 33600 | Sep 19 | 173000 | Mar 20 1936 |
| INSTANTANEOUS PEAK STAGE | | | 49.69 | Sep 19 | 68.40 | Mar 20 1936 |
| INSTANTANEOUS LOW FLOW | | | 394 | Aug 6 | | |
| 10 PERCENT EXCEEDS | 21900 | | 14400 | | 17200 | |
| 50 PERCENT EXCEEDS | 6260 | | 4240 | | 5160 | |
| 90 PERCENT EXCEEDS | 1910 | | 1200 | | 1640 | |



01100000 MERRIMACK RIVER BELOW CONCORD RIVER AT LOWELL, MA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1954, 1966-74, 1999.

REMARKS.--Only volatile organic compounds measured at or above the non-detection levels for one or more samples are listed in the water-quality tables. Volatile organic compounds analyzed by schedule 2020 are listed with non-detection values or minimum reporting levels in the section "Explanation of the Records."

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | TIME | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | OXYGEN, DIS-SOLVED (MG/L) (00300) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | |
| 26... | 1010 | 3860 | 128 | 7.5 | 13.9 | 11.7 | 9.2 | 6.1 | 22 | 0.18 |
| NOV | | | | | | | | | | |
| 23... | 0940 | 2560 | 133 | 7.5 | 7.4 | 6.0 | 10.8 | 6.0 | 22 | .12 |
| DEC | | | | | | | | | | |
| 21... | 0920 | 2400 | 151 | 7.1 | 2.9 | 2.0 | 12.5 | 6.5 | 26 | .14 |
| JAN | | | | | | | | | | |
| 26... | 1220 | 18100 | 153 | 6.6 | 3.6 | 1.0 | 13.9 | 5.5 | 33 | <.10 |
| MAR | | | | | | | | | | |
| 02... | 1000 | 12100 | 169 | 7.4 | 6.7 | 3.1 | 13.6 | 5.9 | 34 | <.10 |
| APR | | | | | | | | | | |
| 08... | 1130 | 15000 | 88 | 7.0 | 19.0 | 11.0 | 11.0 | 3.9 | 18 | .12 |
| MAY | | | | | | | | | | |
| 12... | 0930 | 5740 | 137 | 7.4 | 14.0 | 16.0 | 12.9 | 4.6 | 20 | .19 |
| JUN | | | | | | | | | | |
| 03... | 1100 | 2320 | 141 | 7.2 | 27.0 | 24.0 | 7.4 | 5.8 | 26 | .16 |
| 25... | 1400 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | |
| 20... | 0945 | 1350 | 186 | 7.3 | 20.9 | 26.7 | 5.8 | 7.7 | 39 | <.10 |
| AUG | | | | | | | | | | |
| 05... | 1020 | 1190 | 156 | -- | 22.7 | 26.3 | .5 | -- | -- | -- |
| 24... | 0900 | 1370 | 190 | 7.3 | 20.5 | 23.7 | 2.2 | 8.1 | 37 | .23 |
| SEP | | | | | | | | | | |
| 13... | 0930 | 4990 | 192 | 7.1 | 20.7 | 20.0 | 8.3 | 8.3 | 37 | .19 |
| 18... | 1000 | 28400 | 114 | 6.8 | 17.5 | 18.0 | 8.6 | 4.6 | 21 | .12 |
| 21... | 0900 | 23200 | 83 | 6.6 | 18.7 | 17.2 | 9.2 | 3.9 | 13 | .10 |

01100000 MERRIMACK RIVER BELOW CONCORD RIVER AT LOWELL, MA--Continued

| DATE | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | |
| 26... | 190 | 1.2 | 84 | 1.8 | 84 | 6.0 | 15 | 8.7 | 0.244 | 1.7 | 0.45 |
| NOV | | | | | | | | | | | |
| 23... | 78 | 1.1 | 30 | 1.6 | 80 | 5.4 | 14 | 7.9 | .234 | .41 | .52 |
| DEC | | | | | | | | | | | |
| 21... | 110 | 1.3 | 37 | 1.6 | 90 | 6.1 | 17 | 11 | .330 | .61 | .73 |
| JAN | | | | | | | | | | | |
| 26... | 88 | 1.1 | 69 | 1.4 | 88 | 5.5 | 20 | 6.8 | .206 | .38 | .59 |
| MAR | | | | | | | | | | | |
| 02... | 86 | 1.1 | 58 | 1.3 | 96 | 5.4 | 21 | 7.1 | .232 | .43 | .58 |
| APR | | | | | | | | | | | |
| 08... | 56 | .78 | 31 | .85 | 61 | 4.7 | 11 | 5.8 | .086 | .24 | .30 |
| MAY | | | | | | | | | | | |
| 12... | 120 | .86 | 37 | 1.1 | 71 | 4.3 | 13 | 6.1 | .149 | .40 | .47 |
| JUN | | | | | | | | | | | |
| 03... | 130 | 1.1 | 21 | 1.3 | 93 | 4.5 | 17 | 7.7 | .161 | .46 | .54 |
| 25... | -- | -- | -- | -- | -- | -- | -- | 12 | -- | -- | -- |
| JUL | | | | | | | | | | | |
| 20... | 16 | 1.5 | 9.6 | 2.4 | 117 | 3.3 | 25 | 10 | -- | -- | -- |
| AUG | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 24... | 41 | 1.5 | 21 | 2.5 | 117 | 3.3 | 25 | 11 | .185 | .49 | .62 |
| SEP | | | | | | | | | | | |
| 13... | 55 | 1.7 | 43 | 2.8 | 106 | 3.0 | 25 | 11 | .098 | .36 | .60 |
| 18... | 150 | .95 | 69 | 1.5 | 73 | 4.4 | 13 | 7.6 | .092 | .35 | .76 |
| 21... | 140 | .79 | 58 | 1.2 | 63 | 4.8 | 8.4 | 7.3 | .040 | .28 | .52 |

| DATE | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671) | CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681) | CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689) | CHLORO-FORM TOTAL (UG/L) (32106) | TRI-CHLORO-ETHYL-ENE TOTAL (UG/L) (39180) | CIS-1,2 -DI-CHLORO-ETHENE WATER TOTAL (UG/L) (77093) | METHYL TERT-BUTYL ETHER WAT UNF REC (UG/L) (78032) | SEDI-MENT, SUS-PENDED (MG/L) (80154) | SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | |
| 26... | 0.021 | 0.029 | 0.050 | 0.047 | 8.4 | 0.60 | -- | -- | -- | -- | 5 | 63 |
| NOV | | | | | | | | | | | | |
| 23... | .016 | .045 | .068 | .044 | 3.3 | .20 | -- | -- | -- | -- | 6 | 54 |
| DEC | | | | | | | | | | | | |
| 21... | .020 | .061 | .133 | .073 | 21 | .20 | -- | -- | -- | -- | 9 | 51 |
| JAN | | | | | | | | | | | | |
| 26... | .015 | .029 | .107 | .026 | 3.8 | .80 | -- | -- | -- | -- | 13 | 50 |
| MAR | | | | | | | | | | | | |
| 02... | .021 | .034 | .073 | .023 | 3.4 | .30 | -- | -- | -- | -- | 7 | 80 |
| APR | | | | | | | | | | | | |
| 08... | <.010 | .018 | .034 | .020 | 2.8 | .20 | -- | -- | -- | -- | 6 | 62 |
| MAY | | | | | | | | | | | | |
| 12... | <.010 | .033 | .056 | .026 | 3.6 | .30 | -- | -- | -- | -- | 4 | 80 |
| JUN | | | | | | | | | | | | |
| 03... | .015 | .041 | .079 | .034 | 3.3 | .60 | -- | -- | -- | -- | 4 | 83 |
| 25... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL | | | | | | | | | | | | |
| 20... | -- | -- | -- | -- | 2.8 | .50 | -- | -- | -- | -- | 3 | 80 |
| AUG | | | | | | | | | | | | |
| 05... | -- | -- | -- | -- | -- | -- | 0.149 | E0.081 | E0.060 | 4.3 | -- | -- |
| 24... | .022 | .084 | .109 | .062 | 3.2 | .30 | -- | -- | -- | -- | 2 | 70 |
| SEP | | | | | | | | | | | | |
| 13... | .013 | .042 | .095 | .023 | 3.1 | .80 | -- | -- | -- | -- | 11 | 76 |
| 18... | <.010 | .024 | .217 | .014 | 6.1 | >4.0 | -- | -- | -- | -- | 86 | 41 |
| 21... | <.010 | .021 | .072 | <.010 | 8.4 | 1.1 | -- | -- | -- | -- | 19 | 84 |

01100568 SHAWSHEEN RIVER AT HANSCOM FIELD NEAR BEDFORD, MA

LOCATION.--Lat 42°28'01", long 71°16'22", Middlesex County, Hydrologic Unit 01070002, on left bank 300 ft downstream from FAA hangar, on Hanscom Field (revised), and 1.6 mi south of Bedford.

DRAINAGE AREA.--2.09 $mi^2$.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Discharge: October 1995 to current year.
Precipitation: March 1996 to current year.

GAGE.--Water-stage recorder and tipping bucket rain gage. Elevation of gage is 115 ft above sea level, from topographic map. Telephone gage-height and rainfall telemeter at station.

REMARKS.--Records fair except those above 50 $ft^3/s$ and those for estimated daily discharge, which are poor. Collection, computation, and publication of precipitation data do not necessarily conform to standards used by the National Weather Service.

AVERAGE DISCHARGE.--4 years, 5.01 $ft^3/s$, 32.24 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 684 $ft^3/s$, June 13, 1998, gage height, 8.69 ft, from rating curve extended above 170 $ft^3/s$; minimum, 0.52 $ft^3/s$, Oct. 1-6, 1997.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 613 $ft^3/s$, Sept. 10, gage height, 8.17 ft, from rating curve extended above 170 $ft^3/s$; minimum, 0.58 $ft^3/s$, Sept. 1, 2, 3.

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 | 1.8 | 2.3 | 2.4 | 1.6 | 2.2 | 13 | 3.6 | 1.9 | 1.3 | 7.1 | 0.79 | 0.65 |
| 2 | 1.1 | e2.2 | 2.5 | 1.6 | 39 | 3.5 | 3.4 | 1.8 | 1.2 | 1.0 | .73 | .61 |
| 3 | 1.1 | e2.2 | 2.5 | 39 | 43 | 4.6 | 3.2 | 2.5 | 1.2 | .93 | .70 | .63 |
| 4 | 1.1 | e2.2 | 2.7 | 3.8 | 5.3 | 9.0 | 3.1 | 3.9 | 1.2 | 1.7 | .72 | .64 |
| 5 | 1.1 | e2.2 | 3.0 | 2.1 | 4.3 | 3.5 | 2.9 | 2.3 | 1.1 | .89 | 1.6 | .69 |
| 6 | 1.1 | e2.4 | 3.0 | 2.1 | 3.5 | 3.4 | 2.9 | 1.8 | 1.1 | 1.8 | 2.0 | .79 |
| 7 | 1.1 | e2.5 | 3.1 | 2.1 | 3.2 | 3.8 | 3.0 | 1.7 | 1.2 | 1.1 | 1.0 | e.81 |
| 8 | 13 | e2.3 | 6.4 | 2.1 | 2.9 | 3.0 | 2.8 | 2.0 | 1.2 | .81 | .71 | .98 |
| 9 | 31 | 2.1 | 2.8 | 19 | 2.7 | 3.0 | 2.9 | 1.7 | 1.2 | .79 | .67 | .71 |
| 10 | 31 | 2.0 | 2.5 | 2.6 | 2.7 | 3.0 | 2.8 | e1.7 | 1.1 | 1.0 | .66 | 103 |
| 11 | 9.5 | 6.7 | 2.5 | 2.0 | 2.6 | 2.9 | 2.7 | e1.5 | 1.1 | .73 | 1.1 | e31 |
| 12 | 3.3 | 2.1 | 2.4 | 2.3 | 3.8 | 3.1 | 2.7 | e1.3 | 1.2 | .79 | .68 | e1.0 |
| 13 | 2.5 | 2.0 | 2.4 | 1.9 | 3.5 | 3.5 | 2.6 | e1.2 | 1.7 | .74 | .65 | e.90 |
| 14 | 16 | 2.0 | 2.4 | 1.7 | 2.4 | 3.4 | 2.5 | e1.1 | 1.2 | .75 | 11 | e.80 |
| 15 | 3.7 | 2.0 | 2.4 | 20 | 2.2 | e3.0 | 2.5 | e1.0 | 1.1 | .78 | 2.0 | e2.1 |
| 16 | 2.6 | 2.0 | 2.4 | 5.2 | 2.3 | e3.3 | 4.1 | e.92 | 1.1 | .73 | .81 | 49 |
| 17 | 2.4 | 3.2 | 4.1 | 4.3 | 2.2 | e3.6 | 3.4 | e1.2 | 1.1 | .73 | .78 | 18 |
| 18 | 2.3 | 2.1 | 2.5 | 38 | 9.5 | 5.4 | 2.4 | e1.5 | 1.0 | .75 | .75 | e2.3 |
| 19 | 2.2 | 2.1 | 2.4 | 20 | 3.1 | 4.2 | 2.7 | e1.4 | 1.0 | 2.9 | .74 | e1.6 |
| 20 | 2.1 | 3.9 | 2.3 | 3.6 | 2.7 | 3.7 | 2.6 | e1.4 | 1.0 | .78 | .74 | e1.3 |
| 21 | 2.0 | 2.3 | 2.3 | 2.8 | 2.5 | 3.5 | 2.3 | 1.5 | 1.0 | .70 | 1.2 | e1.2 |
| 22 | 1.9 | 2.1 | 3.8 | 4.0 | 2.3 | 8.9 | 2.3 | 1.4 | .96 | .69 | 1.1 | e1.1 |
| 23 | 1.9 | 2.1 | 2.3 | 6.9 | 2.1 | 3.9 | 4.0 | 1.5 | .94 | 8.2 | .74 | e1.0 |
| 24 | 1.9 | 2.1 | 2.3 | 25 | 2.1 | 4.6 | 2.2 | 12 | .94 | 6.3 | .70 | e.93 |
| 25 | 1.9 | 2.1 | 2.3 | 4.9 | 2.3 | 3.9 | 2.0 | 2.1 | .93 | 1.2 | .69 | e.90 |
| 26 | 1.8 | 18 | 2.3 | 3.2 | 2.5 | 3.5 | 2.2 | 1.6 | .81 | .94 | .91 | e.85 |
| 27 | 1.9 | 3.0 | 2.3 | 3.0 | 2.2 | 3.4 | 2.0 | 1.6 | .82 | .86 | 1.6 | e.83 |
| 28 | 3.3 | 2.5 | 2.3 | 2.8 | 13 | 8.7 | 1.9 | 1.4 | .90 | .83 | .72 | e.82 |
| 29 | 2.5 | 2.3 | 4.1 | 2.6 | --- | 4.2 | 1.9 | 1.3 | .96 | .81 | .67 | e.80 |
| 30 | 2.4 | 2.3 | 3.6 | 2.4 | --- | 3.7 | 1.9 | 1.3 | .93 | 2.1 | .68 | e9.0 |
| 31 | 2.4 | --- | 1.6 | 2.2 | --- | 3.6 | --- | 1.3 | --- | .85 | .66 | --- |
| TOTAL | 153.9 | 89.3 | 85.9 | 234.8 | 172.1 | 137.8 | 81.5 | 60.82 | 32.49 | 50.28 | 38.50 | 234.94 |
| MEAN | 4.96 | 2.98 | 2.77 | 7.57 | 6.15 | 4.45 | 2.72 | 1.96 | 1.08 | 1.62 | 1.24 | 7.83 |
| MAX | 31 | 18 | 6.4 | 39 | 43 | 13 | 4.1 | 12 | 1.7 | 8.2 | 11 | 103 |
| MIN | 1.1 | 2.0 | 1.6 | 1.6 | 2.1 | 2.9 | 1.9 | .92 | .81 | .69 | .65 | .61 |
| CFSM | 2.38 | 1.42 | 1.33 | 3.62 | 2.94 | 2.13 | 1.30 | .94 | .52 | .78 | .59 | 3.75 |
| IN. | 2.74 | 1.59 | 1.53 | 4.18 | 3.06 | 2.45 | 1.45 | 1.08 | .58 | .89 | .69 | 4.18 |
| STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1999, BY WATER YEAR (WY) | | | | | | | | | | | | |
| MEAN | 7.41 | 4.34 | 4.04 | 6.44 | 5.83 | 5.53 | 5.54 | 4.63 | 6.75 | 3.62 | 2.06 | 4.21 |
| MAX | 19.6 | 4.88 | 8.14 | 7.57 | 7.65 | 7.95 | 8.19 | 8.65 | 21.9 | 6.62 | 2.72 | 7.83 |
| (WY) | 1997 | 1997 | 1997 | 1999 | 1998 | 1998 | 1997 | 1998 | 1998 | 1996 | 1998 | 1999 |
| MIN | 1.20 | 2.98 | 2.19 | 5.02 | 3.84 | 4.27 | 2.72 | 1.96 | 1.08 | 1.62 | 1.24 | 1.63 |
| (WY) | 1998 | 1999 | 1996 | 1997 | 1997 | 1997 | 1999 | 1999 | 1999 | 1999 | 1999 | 1997 |

01100568 SHAWSHEEN RIVER AT HANSCOM FIELD NEAR BEDFORD, MA--Continued

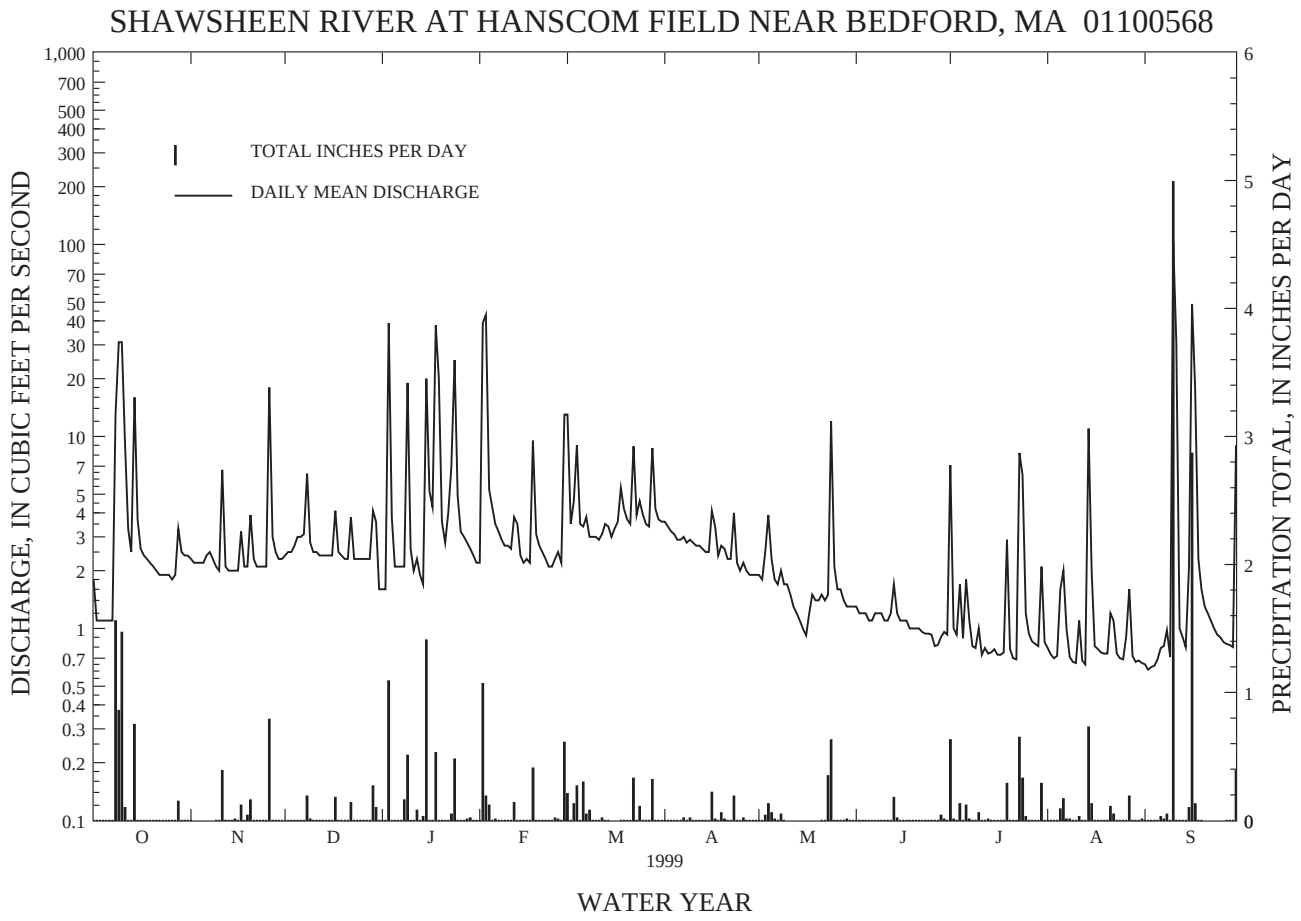
| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1995 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 2333.2 | | 1372.33 | | | |
| ANNUAL MEAN | 6.39 | | 3.76 | | 5.02 | |
| HIGHEST ANNUAL MEAN | | | | | 6.25 | 1998 |
| LOWEST ANNUAL MEAN | | | | | 3.76 | 1999 |
| HIGHEST DAILY MEAN | 205 | Jun 13 | 103 | Sep 10 | 209 | Oct 21 1996 |
| LOWEST DAILY MEAN | 1.1 | Sep 17 | .61 | Sep 2 | .52 | Oct 2 1997 |
| ANNUAL SEVEN-DAY MINIMUM | 1.2 | Oct 1 | .65 | Aug 29 | .65 | Aug 29 1999 |
| INSTANTANEOUS PEAK FLOW | | | 613 | Sep 10 | 684 | Jun 13 1998 |
| INSTANTANEOUS PEAK STAGE | | | 8.17 | Sep 10 | 8.69 | Jun 13 1998 |
| INSTANTANEOUS LOW FLOW | | | .58 | Sep 1 | .52 | Oct 1 1997 |
| ANNUAL RUNOFF (CFSM) | 3.06 | | 1.80 | | 2.40 | |
| ANNUAL RUNOFF (INCHES) | 41.53 | | 24.43 | | 32.67 | |
| 10 PERCENT EXCEEDS | 11 | | 5.0 | | 8.0 | |
| 50 PERCENT EXCEEDS | 3.3 | | 2.1 | | 2.9 | |
| 90 PERCENT EXCEEDS | 1.7 | | .79 | | 1.1 | |

e Estimated

PRECIPITATION, TOTAL, INCHES, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY SUM VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.21 | 0.00 | 0.00 | 0.00 | 0.63 | 0.00 | 0.00 |
| 2 | .00 | --- | .00 | .00 | 1.07 | .00 | .00 | .00 | .00 | .01 | .00 | .00 |
| 3 | .00 | --- | .00 | 1.09 | .19 | .13 | .00 | .04 | .00 | .00 | .00 | .00 |
| 4 | .00 | --- | .00 | .00 | .12 | .27 | .00 | .13 | .00 | .13 | .00 | .00 |
| 5 | .00 | --- | .00 | .00 | .00 | .00 | .00 | .06 | .00 | .00 | .09 | .00 |
| 6 | .00 | --- | .00 | .00 | .01 | .30 | .00 | .01 | .00 | .12 | .17 | .03 |
| 7 | .00 | --- | .00 | .00 | .00 | .05 | .02 | .00 | .00 | .01 | .01 | .01 |
| 8 | 1.56 | --- | .19 | .16 | .00 | .08 | .00 | .05 | .00 | .00 | .01 | .05 |
| 9 | .86 | .00 | .01 | .51 | .00 | .00 | .02 | .00 | .00 | .00 | .00 | .00 |
| 10 | 1.47 | .00 | .00 | .00 | .00 | .00 | .00 | --- | .00 | .06 | .00 | 4.99 |
| 11 | .10 | .39 | .00 | .00 | .00 | .00 | .00 | --- | .00 | .00 | .03 | .00 |
| 12 | .00 | .00 | .00 | .08 | .14 | .02 | .00 | --- | .00 | .00 | .00 | .00 |
| 13 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | --- | .18 | .01 | .00 | .00 |
| 14 | .75 | .00 | .00 | .03 | .00 | .00 | .00 | --- | .02 | .00 | .73 | .00 |
| 15 | .00 | .01 | .00 | 1.41 | .00 | --- | .00 | --- | .00 | .00 | .13 | .10 |
| 16 | .00 | .00 | .00 | .00 | .00 | --- | .22 | --- | .00 | .00 | .00 | 2.87 |
| 17 | .00 | .12 | .18 | .00 | .00 | --- | .01 | --- | .00 | .00 | .00 | .13 |
| 18 | .00 | .00 | .00 | .53 | .41 | .00 | .00 | --- | .00 | .00 | .00 | .00 |
| 19 | .00 | .04 | .00 | .00 | .00 | .00 | .06 | --- | .00 | .29 | .00 | .00 |
| 20 | .00 | .16 | .00 | .00 | .00 | .00 | .01 | --- | .00 | .00 | .00 | --- |
| 21 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .11 | --- |
| 22 | .00 | .00 | .14 | .00 | .00 | .33 | .00 | .00 | .00 | .00 | .05 | --- |
| 23 | .00 | .00 | .00 | .05 | .00 | .00 | .19 | .35 | .00 | .65 | .00 | --- |
| 24 | .00 | .00 | .00 | .48 | .00 | .11 | .00 | .63 | .00 | .33 | .00 | --- |
| 25 | .00 | .00 | .00 | .00 | .02 | .00 | .00 | .00 | .00 | .03 | .00 | --- |
| 26 | .00 | .79 | .00 | .00 | .01 | .00 | .02 | .00 | .00 | .00 | .00 | --- |
| 27 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .19 | .00 |
| 28 | .15 | .00 | .00 | .01 | .61 | .32 | .00 | .00 | .04 | .00 | .00 | .00 |
| 29 | .00 | .00 | .27 | .02 | --- | .00 | .00 | .01 | .01 | .00 | .00 | .00 |
| 30 | .00 | .00 | .10 | .00 | --- | .00 | .00 | .00 | .00 | .29 | .00 | .39 |
| 31 | .00 | --- | .00 | .00 | --- | .00 | --- | .00 | --- | .00 | .01 | --- |
| TOTAL | 4.89 | --- | 0.89 | 4.37 | 2.58 | --- | 0.55 | --- | 0.25 | 2.56 | 1.53 | --- |

01100568 SHAWSHEEN RIVER AT HANSCOM FIELD NEAR BEDFORD, MA--Continued



01100568 SHAWSHEEN RIVER AT HANSCOM FIELD NEAR BEDFORD, MA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--September 1995 to current year.

REMARKS.--Instantaneous records are based on composite samples and are representative of the cross section.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | TIME | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | OXYGEN, DIS-SOLVED (MG/L) (00300) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625) | E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | |
| 11... | 1045 | 3.2 | 420 | 6.5 | 24.2 | 19.5 | 753 | 6.9 | 76 | 3900 | 6400 |
| 18... | 0930 | 2.3 | 476 | 6.6 | 22.0 | 16.5 | 756 | 7.7 | 80 | 3000 | 6900 |
| 25... | 0945 | .90 | 222 | 6.9 | 18.0 | 17.5 | 756 | 8.0 | 84 | 1900 | 1600 |

| DATE | HARD-NESS TOTAL (MG/L AS CACO3) (00900) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SODIUM PERCENT (00932) | SODIUM AD-SORP-TION RATIO (00931) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | |
| 11... | 75 | 24 | 3.8 | 46 | 55 | 2 | 4.5 | 36 | 34 | 78 | <0.10 |
| 18... | 85 | 27 | 4.4 | 51 | 55 | 2 | 5.1 | 43 | 7.6 | 20 | <.10 |
| 25... | 39 | 13 | 1.8 | 27 | 56 | 2 | 4.2 | 25 | 14 | 39 | <.10 |

| DATE | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846) | NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623) | NITRO-GEN, TOTAL (MG/L AS N) (00600) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | |
| 11... | 12 | 229 | 229 | 0.015 | 1.26 | 0.119 | 0.15 | 0.50 | 0.62 | 0.48 | 1.9 |
| 18... | 14 | 275 | 161 | <.010 | 1.21 | .149 | .19 | .24 | .39 | .33 | 1.6 |
| 25... | 5.4 | 130 | 127 | .019 | 1.64 | .563 | .73 | .62 | 1.2 | .79 | 2.8 |

01100568 SHAWSHEEN RIVER AT HANSCOM FIELD NEAR BEDFORD, MA--Continued

| DATE | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666) | PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671) | ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106) | ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095) | ARSENIC DIS-SOLVED (UG/L AS AS) (01000) | BARIUM, DIS-SOLVED (UG/L AS BA) (01005) | BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010) | CADMIUM DIS-SOLVED (UG/L AS CD) (01025) | CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030) | COBALT, DIS-SOLVED (UG/L AS CO) (01035) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | |
| 11... | 0.043 | 0.019 | <0.010 | 49 | <1.0 | 6 | 31 | <1.0 | <1.0 | <1.0 | 2.1 |
| 18... | .020 | .009 | <.010 | 32 | <1.0 | 4 | 30 | <1.0 | <1.0 | <1.0 | 1.7 |
| 25... | .092 | .017 | .010 | 17 | <1.0 | E2 | 15 | <1.0 | <1.0 | <1.0 | <1.0 |

| DATE | COPPER, DIS-SOLVED (UG/L AS CU) (01040) | IRON, DIS-SOLVED (UG/L AS FE) (01046) | LEAD, DIS-SOLVED (UG/L AS PB) (01049) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) | MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060) | NICKEL, DIS-SOLVED (UG/L AS NI) (01065) | SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145) | SILVER, DIS-SOLVED (UG/L AS AG) (01075) | ZINC, DIS-SOLVED (UG/L AS ZN) (01090) | URANIUM NATURAL DIS-SOLVED (UG/L AS U) (22703) | CARBON, ORGANIC TOTAL (MG/L AS C) (00680) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | | | | | | | | | | | |
| 11... | 2.0 | 280 | <1.0 | 380 | 1.2 | 4.2 | <1 | <1.0 | 35 | <1.0 | 6.4 |
| 18... | 1.3 | 390 | <1.0 | 359 | <1.0 | 3.4 | <1 | <1.0 | 27 | <1.0 | 5.0 |
| 25... | 4.9 | 53 | <1.0 | 141 | <1.0 | 2.0 | <2 | <1.0 | 36 | <1.0 | 7.1 |

Contrast of flow conditions at the same location of the Ipswich River on August 28, 1998 (upper photo) and July 20, 1999 (lower photo), 200 feet upstream of Russell Street bridge and 1,000 feet upstream of the Ipswich River at South Middleton gaging station. (photos by D. S. Armstrong)

01100600 SHAWSHEEN RIVER NEAR WILMINGTON, MA

LOCATION.--Lat 42°34'05", long 71°12'55", Middlesex County, Hydrologic Unit 01070002, on right bank at downstream side of bridge on State Highway 129, 1 mi upstream from Content Brook, and 2.5 mi northwest of Wilmington.

DRAINAGE AREA.--36.5 $mi^2$.

PERIOD OF RECORD.--Discharge: November 1963 to current year.
Water-quality records: Water year 1973.

REVISED RECORDS.--WDR MA-NH-RI-VT-74-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 80.44 ft above sea level.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Diversion upstream at times each year since 1973 for municipal supply of Burlington. Telephone and satellite gage-height telemeter at station.

AVERAGE DISCHARGE.--35 years (water years 1965-99), 59.4 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,850 $ft^3/s$, Oct. 22, 1996, gage height, 10.49 ft, minimum, 0.70 $ft^3/s$, Aug. 19, 1983.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 455 $ft^3/s$, Feb. 4, gage height, 6.24 ft, minimum, 1.7 $ft^3/s$, Sept. 4.

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 | 6.0 | 14 | 31 | 28 | 55 | 97 | 74 | 26 | 16 | 11 | 8.9 | 2.4 |
| 2 | 4.8 | 13 | 27 | 20 | 58 | 188 | 61 | 27 | 14 | 18 | 6.1 | 2.2 |
| 3 | 4.6 | 12 | 25 | 26 | 268 | 154 | 49 | 23 | 13 | 12 | 4.9 | 2.2 |
| 4 | 7.9 | 12 | 18 | 76 | 392 | 125 | 47 | 25 | 12 | 5.4 | 4.0 | 1.9 |
| 5 | 3.5 | 11 | 16 | 132 | 226 | 132 | 43 | 36 | 11 | 5.3 | 3.5 | 1.8 |
| 6 | 2.0 | 11 | 15 | 121 | 165 | 122 | 40 | 38 | 12 | 2.6 | 4.1 | 1.9 |
| 7 | 1.9 | 11 | 16 | 74 | 131 | 98 | 38 | 35 | 11 | 7.9 | 4.8 | 3.5 |
| 8 | 2.3 | 22 | 16 | 34 | 104 | 84 | 37 | 28 | 10 | 6.8 | 4.7 | 3.2 |
| 9 | 52 | 19 | 27 | 32 | 86 | 77 | 34 | 27 | 9.6 | 5.2 | 3.7 | 2.8 |
| 10 | 136 | 12 | 29 | 75 | 76 | 70 | 34 | 23 | 10 | 5.0 | 3.1 | 17 |
| 11 | 183 | 16 | 24 | 88 | 68 | 60 | 33 | 21 | 9.2 | 4.9 | 3.0 | 173 |
| 12 | 172 | 34 | 18 | 73 | 64 | 58 | 33 | 17 | 8.6 | 3.8 | 3.8 | 256 |
| 13 | 134 | 28 | 16 | 50 | 68 | 57 | 32 | 14 | 8.8 | 3.7 | 3.3 | 152 |
| 14 | 85 | 27 | 13 | 31 | 75 | 59 | 30 | 12 | 10 | 3.5 | 5.7 | 69 |
| 15 | 76 | 24 | 11 | 32 | 75 | 65 | 29 | 10 | 9.2 | 3.0 | 23 | 18 |
| 16 | e91 | 23 | 11 | 70 | 65 | 71 | 28 | 9.5 | 8.0 | 2.8 | 15 | 30 |
| 17 | e76 | 22 | 13 | 112 | 56 | 77 | 40 | 11 | 7.4 | 2.6 | 8.9 | 136 |
| 18 | e57 | 26 | 26 | 130 | 57 | 86 | 46 | 11 | 7.9 | 2.3 | 5.9 | 224 |
| 19 | e44 | 23 | 22 | 216 | 79 | 98 | 42 | 12 | 7.3 | 2.9 | 4.8 | 156 |
| 20 | e36 | 26 | 17 | 280 | 109 | 96 | 42 | 37 | 6.6 | 12 | 4.2 | 83 |
| 21 | e24 | 30 | 15 | 180 | 101 | 85 | 41 | 51 | 6.2 | 6.3 | 4.2 | 34 |
| 22 | e21 | 31 | 15 | 136 | 79 | 84 | 36 | 40 | 6.2 | 4.0 | 4.8 | 21 |
| 23 | e21 | 27 | 19 | 111 | 62 | 94 | 38 | 22 | 6.0 | 16 | 5.6 | 26 |
| 24 | e21 | 24 | 19 | 137 | 48 | 101 | 45 | 38 | 5.6 | 15 | 4.4 | 21 |
| 25 | e24 | 22 | 18 | 269 | 40 | 95 | 40 | 63 | 4.8 | 18 | 3.7 | 17 |
| 26 | e12 | 23 | 14 | 236 | 41 | 86 | 36 | 74 | 4.4 | 14 | 3.4 | 17 |
| 27 | e12 | 50 | 9.9 | 157 | 42 | 77 | 33 | 57 | 3.6 | 9.0 | 3.5 | 13 |
| 28 | 14 | 63 | 12 | 115 | 45 | 72 | 33 | 28 | 3.5 | 7.7 | 4.9 | 13 |
| 29 | 17 | 60 | 20 | 91 | --- | 85 | 30 | 24 | 3.4 | 6.2 | 3.6 | 12 |
| 30 | 18 | 43 | 34 | 73 | --- | 99 | 28 | 22 | 5.0 | 5.4 | 2.9 | 16 |
| 31 | 16 | --- | 44 | 58 | --- | 89 | --- | 19 | --- | 17 | 2.7 | --- |
| TOTAL | 1375.0 | 759 | 610.9 | 3263 | 2735 | 2841 | 1172 | 880.5 | 250.3 | 239.3 | 169.1 | 1525.9 |
| MEAN | 44.4 | 25.3 | 19.7 | 105 | 97.7 | 91.6 | 39.1 | 28.4 | 8.34 | 7.72 | 5.45 | 50.9 |
| MAX | 183 | 63 | 44 | 280 | 392 | 188 | 74 | 74 | 16 | 18 | 23 | 256 |
| MIN | 1.9 | 11 | 9.9 | 20 | 40 | 57 | 28 | 9.5 | 3.4 | 2.3 | 2.7 | 1.8 |

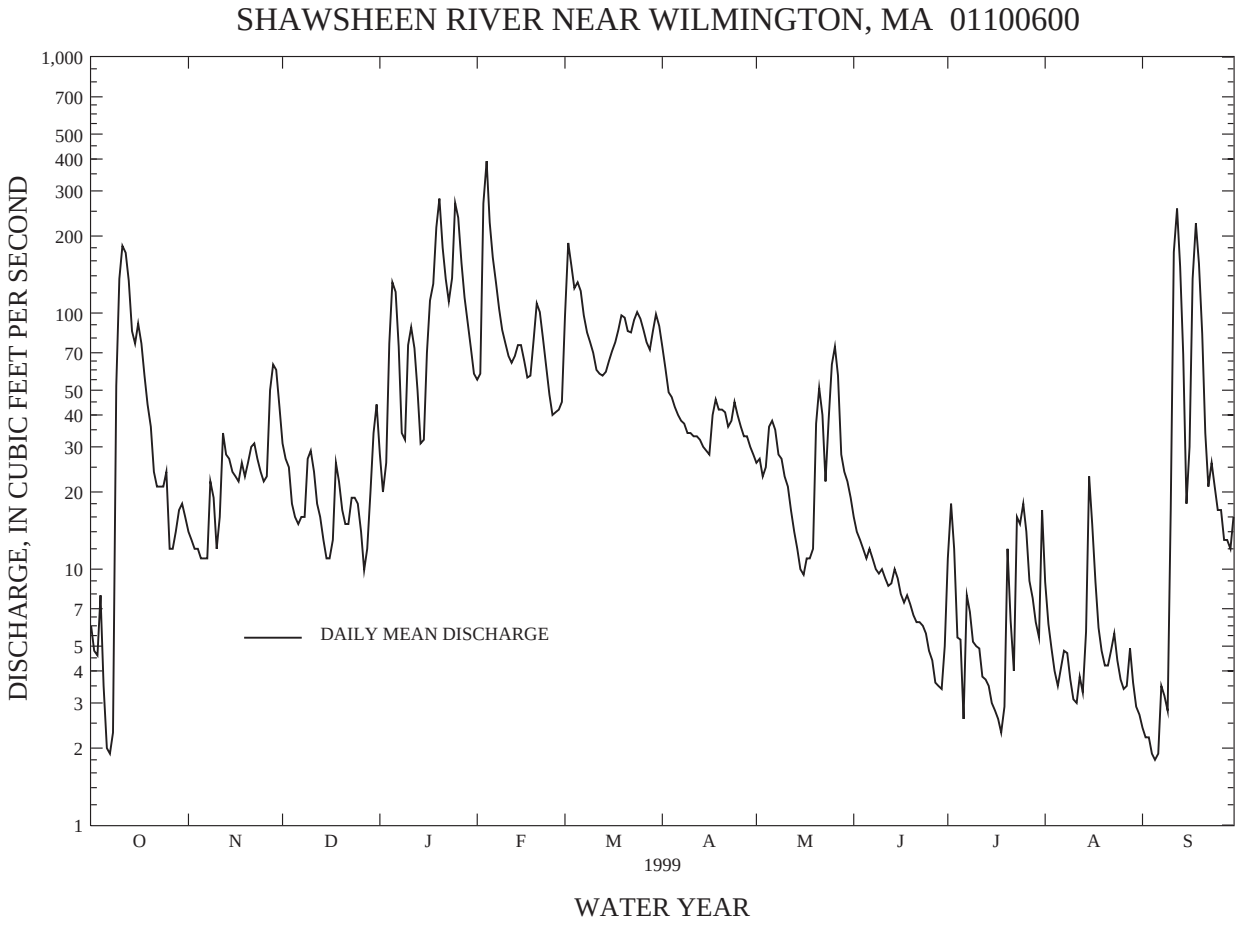
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1999, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 34.4 | 54.4 | 67.1 | 75.5 | 83.5 | 116 | 101 | 63.6 | 48.4 | 25.0 | 21.9 | 22.0 |
| MAX | 204 | 128 | 156 | 289 | 208 | 279 | 269 | 130 | 251 | 72.4 | 56.9 | 56.4 |
| (WY) | 1997 | 1976 | 1997 | 1979 | 1984 | 1983 | 1987 | 1967 | 1982 | 1973 | 1976 | 1991 |
| MIN | 5.45 | 7.82 | 13.6 | 9.70 | 12.4 | 41.8 | 38.3 | 28.4 | 8.34 | 3.81 | 1.74 | 4.46 |
| (WY) | 1998 | 1966 | 1966 | 1981 | 1980 | 1989 | 1966 | 1999 | 1999 | 1965 | 1966 | 1965 |

01100600 SHAWSHEEN RIVER NEAR WILMINGTON, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1964 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 30549.6 | | 15821.0 | | | |
| ANNUAL MEAN | 83.7 | | 43.3 | | 59.4 | |
| HIGHEST ANNUAL MEAN | | | | | 107 | 1984 |
| LOWEST ANNUAL MEAN | | | | | 28.2 | 1966 |
| HIGHEST DAILY MEAN | 1120 | Jun 15 | 392 | Feb 4 | 1610 | Oct 22 1996 |
| LOWEST DAILY MEAN | 1.9 | Oct 7 | 1.8 | Sep 5 | .63 | Oct 19 1997 |
| ANNUAL SEVEN-DAY MINIMUM | 3.9 | Oct 2 | 2.2 | Aug 31 | 1.0 | Sep 2 1995 |
| INSTANTANEOUS PEAK FLOW | | | 455 | Feb 4 | 1850 | Oct 22 1996 |
| INSTANTANEOUS PEAK STAGE | | | 6.24 | Feb 4 | 10.49 | Oct 22 1996 |
| INSTANTANEOUS LOW FLOW | | | 1.7 | Sep 4 | .70 | Aug 19 1983 |
| 10 PERCENT EXCEEDS | 172 | | 102 | | 128 | |
| 50 PERCENT EXCEEDS | 57 | | 24 | | 38 | |
| 90 PERCENT EXCEEDS | 12 | | 3.8 | | 7.6 | |

e Estimated



01101000 PARKER RIVER AT BYFIELD, MA

LOCATION.--Lat 42°45'10", long 70°56'46", Essex County, Hydrologic Unit 01090001, on left bank 1,400 ft downstream from dam, 0.5 mi south of Byfield, 0.7 mi upstream from Wheeler Brook, and 5.5 mi southwest of Newburyport.

DRAINAGE AREA.--21.3 $mi^2$.

PERIOD OF RECORD.--October 1945 to current year. October 1945 monthly discharge only, published in WSP 1301.

REVISED RECORDS.--WDR MA-RI-84-1: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 23.46 ft above sea level (levels by Massachusetts Department of Public Works).

REMARKS.--Records good except those for estimated daily discharges, which are fair. Occasional regulation by mill and ponds upstream. Satellite gage-height telemeter at station.

AVERAGE DISCHARGE.--54 years, 37.2 $ft^3/s$, 23.73 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 883 $ft^3/s$, Oct. 22, 1996, gage height, 7.82 ft; minimum daily, 0.04 $ft^3/s$, Sept. 3-7, 1995.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 160 $ft^3/s$, Jan. 25, gage height, 3.20 ft; minimum, 0.06 $ft^3/s$, Sept. 3.

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 | e2.0 | 9.8 | 16 | 11 | e80 | 67 | 71 | 15 | 17 | 0.54 | 0.92 | 0.08 |
| 2 | e1.5 | 8.6 | 14 | 9.7 | 84 | 90 | 71 | 14 | 15 | .57 | .75 | .07 |
| 3 | e1.3 | 7.9 | 13 | 15 | 98 | 90 | 66 | 17 | 14 | .62 | .62 | .07 |
| 4 | e1.2 | 7.6 | 12 | 30 | 119 | 90 | 59 | 19 | 11 | .69 | .58 | .06 |
| 5 | e1.1 | 7.6 | 13 | 31 | 122 | 90 | 53 | 19 | 8.0 | .64 | .55 | .06 |
| 6 | .94 | 7.4 | 13 | 29 | 114 | 85 | 47 | 21 | 6.2 | .65 | .55 | .06 |
| 7 | 1.1 | 7.6 | 12 | 26 | 108 | 77 | 41 | 23 | 5.1 | .71 | .49 | .12 |
| 8 | 1.5 | 7.9 | 11 | 22 | 98 | 75 | 37 | 23 | 3.3 | .61 | .44 | .11 |
| 9 | 9.6 | 7.6 | 11 | 27 | 88 | 65 | 33 | 27 | 2.0 | .53 | .40 | .11 |
| 10 | 22 | 7.6 | 11 | 34 | 77 | 59 | 30 | 27 | 1.9 | .49 | .29 | .69 |
| 11 | 43 | 9.7 | 11 | 32 | 71 | 56 | 27 | 24 | 1.8 | .45 | .28 | 1.6 |
| 12 | 53 | 12 | 10 | 30 | 73 | 53 | 24 | 23 | 1.6 | .43 | .28 | .64 |
| 13 | 55 | 12 | 10 | 31 | 74 | 52 | 23 | 22 | 1.4 | .43 | e.24 | .77 |
| 14 | 53 | 11 | 11 | 32 | 69 | 54 | 22 | 20 | 1.4 | .39 | e.24 | 1.2 |
| 15 | 50 | 11 | 11 | 38 | 63 | 54 | 21 | 17 | 1.1 | .34 | e.33 | 1.3 |
| 16 | 46 | 10 | 10 | 46 | 58 | 57 | 20 | 14 | .90 | .28 | e.17 | 12 |
| 17 | 40 | 11 | 11 | 49 | 54 | 59 | 23 | 13 | .85 | .28 | e.17 | 37 |
| 18 | 35 | 13 | 12 | 55 | 54 | 64 | 24 | 12 | .85 | .28 | e.09 | 45 |
| 19 | 30 | 13 | 12 | 76 | 59 | 71 | 23 | 12 | .82 | e.28 | e.09 | 48 |
| 20 | 26 | 13 | 12 | 95 | 59 | 73 | 23 | 18 | .74 | e.28 | e.09 | 42 |
| 21 | 24 | 15 | 11 | 106 | 56 | 69 | 23 | 19 | .69 | e.28 | e.09 | 34 |
| 22 | 22 | 16 | 12 | 106 | 51 | 70 | 23 | 17 | .72 | e.38 | e.09 | 27 |
| 23 | 20 | 15 | 11 | 107 | 46 | 73 | 23 | 18 | .69 | e.38 | e.09 | 22 |
| 24 | 18 | 13 | 10 | 116 | 41 | 74 | 22 | 31 | .62 | e.62 | e.09 | 18 |
| 25 | 15 | 12 | 9.6 | 147 | 37 | 75 | 20 | 42 | .56 | e.77 | .11 | 14 |
| 26 | 14 | 13 | 8.7 | 155 | 35 | 73 | 19 | 47 | .47 | e1.1 | .11 | 11 |
| 27 | 13 | 18 | 8.2 | 142 | 34 | 68 | 18 | 44 | .41 | 1.4 | .09 | 8.3 |
| 28 | 13 | 17 | 8.1 | 127 | 36 | 68 | 17 | 36 | .36 | 1.3 | .08 | 6.6 |
| 29 | 12 | 16 | 9.5 | 113 | --- | 72 | 16 | 30 | .43 | 1.2 | .08 | 5.9 |
| 30 | 11 | 16 | 16 | e100 | --- | 69 | 16 | 25 | .40 | 1.1 | .11 | 7.2 |
| 31 | 10 | --- | 14 | e90 | --- | 66 | --- | 20 | --- | .98 | .11 | --- |
| TOTAL | 645.24 | 346.3 | 354.1 | 2027.7 | 1958 | 2158 | 935 | 709 | 100.31 | 19.00 | 8.62 | 344.94 |
| MEAN | 20.8 | 11.5 | 11.4 | 65.4 | 69.9 | 69.6 | 31.2 | 22.9 | 3.34 | .61 | .28 | 11.5 |
| MAX | 55 | 18 | 16 | 155 | 122 | 90 | 71 | 47 | 17 | 1.4 | .92 | 48 |
| MIN | .94 | 7.4 | 8.1 | 9.7 | 34 | 52 | 16 | 12 | .36 | .28 | .08 | .06 |
| CFSM | .98 | .54 | .54 | 3.07 | 3.28 | 3.27 | 1.46 | 1.07 | .16 | .03 | .01 | .54 |
| IN. | 1.13 | .60 | .62 | 3.54 | 3.42 | 3.77 | 1.63 | 1.24 | .18 | .03 | .02 | .60 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1999, BY WATER YEAR (WY)

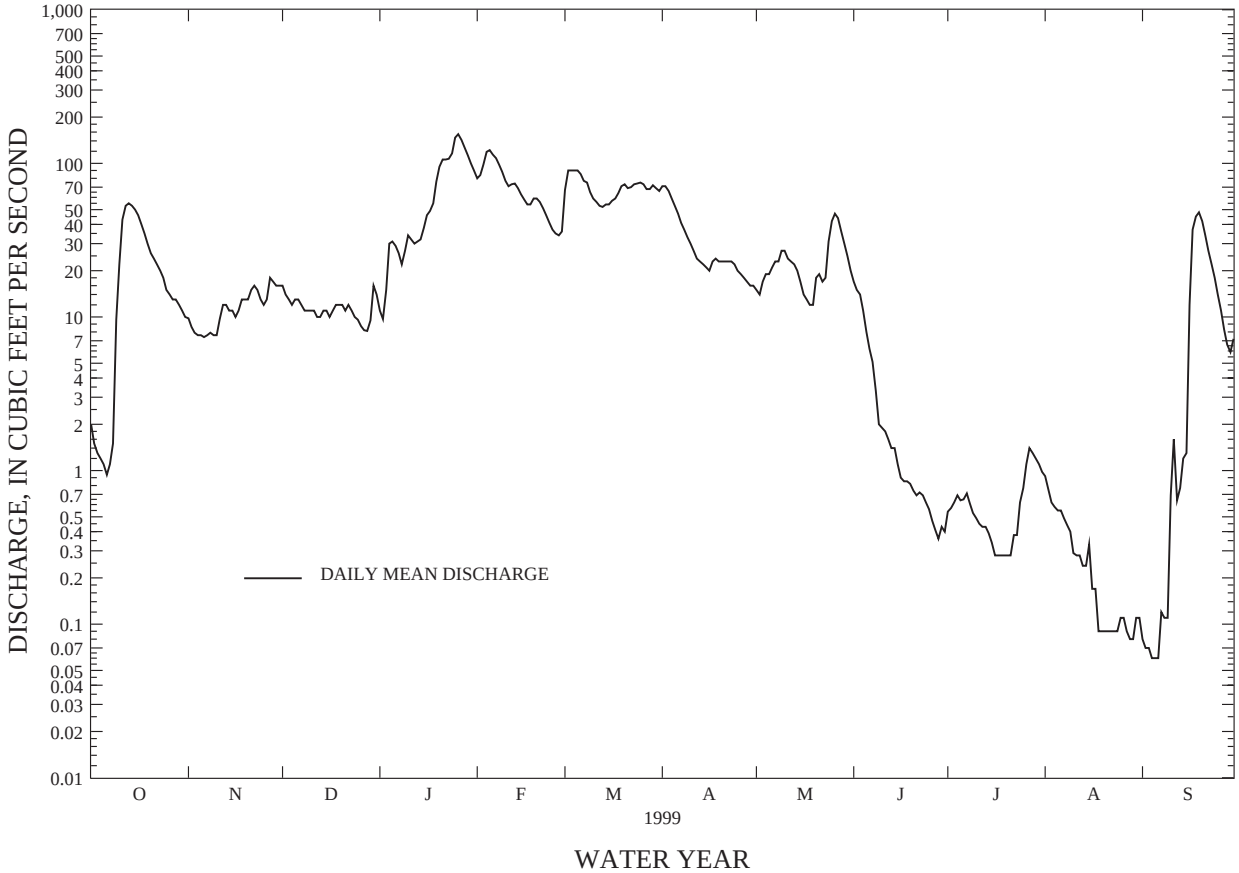
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 16.4 | 29.6 | 41.7 | 43.9 | 52.0 | 84.9 | 82.8 | 49.6 | 27.7 | 8.65 | 5.37 | 6.41 |
| MAX | 186 | 87.3 | 117 | 116 | 122 | 226 | 249 | 151 | 138 | 39.6 | 18.0 | 65.8 |
| (WY) | 1997 | 1973 | 1997 | 1958 | 1976 | 1983 | 1987 | 1983 | 1982 | 1972 | 1982 | 1954 |
| MIN | .15 | .92 | 1.74 | 2.98 | 5.25 | 33.6 | 25.2 | 19.2 | 3.34 | .59 | .13 | .11 |
| (WY) | 1998 | 1966 | 1966 | 1966 | 1980 | 1989 | 1985 | 1985 | 1999 | 1995 | 1995 | 1997 |

01101000 PARKER RIVER AT BYFIELD, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1946 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 18675.56 | | 9606.21 | | | |
| ANNUAL MEAN | 51.2 | | 26.3 | | 37.2 | |
| HIGHEST ANNUAL MEAN | | | | | 64.8 | 1984 |
| LOWEST ANNUAL MEAN | | | | | 13.2 | 1966 |
| HIGHEST DAILY MEAN | 297 | Jun 16 | 155 | Jan 26 | 858 | Oct 22 1996 |
| LOWEST DAILY MEAN | .43 | Sep 17 | .06 | Sep 4 | .04 | Sep 3 1995 |
| ANNUAL SEVEN-DAY MINIMUM | .45 | Sep 15 | .07 | Aug 31 | .04 | Sep 2 1995 |
| INSTANTANEOUS PEAK FLOW | | | 160 | Jan 25 | 883 | Oct 22 1996 |
| INSTANTANEOUS PEAK STAGE | | | 3.20 | Jan 25 | 7.82 | Oct 22 1996 |
| INSTANTANEOUS LOW FLOW | | | .06 | Sep 3 | | |
| ANNUAL RUNOFF (CFSM) | 2.40 | | 1.24 | | 1.75 | |
| ANNUAL RUNOFF (INCHES) | 32.62 | | 16.78 | | 23.73 | |
| 10 PERCENT EXCEEDS | 131 | | 73 | | 89 | |
| 50 PERCENT EXCEEDS | 35 | | 14 | | 24 | |
| 90 PERCENT EXCEEDS | 1.2 | | .31 | | 1.4 | |

e Estimated

PARKER RIVER AT BYFIELD, MA 01101000



01101500 IPSWICH RIVER AT SOUTH MIDDLETON, MA
(National Water Quality Assessment Site)

LOCATION.--Lat 42°34'10", long 71°01'39", Essex County, Hydrologic Unit 01090001, on right bank in Peabody, 700 ft downstream from Boston Street Bridge at South Middleton, 1.3 mi downstream from Wills Brook, and 2 mi south of Middleton.

DRAINAGE AREA.--44.5 $mi^2$.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Discharge: June 1938 to current year.
Water-quality records: Water years 1957, 1959, 1999.

REVISED RECORDS.--WSP 1301: 1942(M). WSP 1621: 1938-58 (monthly runoff). WDR MA-RI-84-1: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 44.97 ft above sea level (Massachusetts Geodetic Survey benchmark.)

REMARKS.--Records fair except those for estimated daily discharges and those for discharges less than 10 $ft^3/s$, which are poor. Diversions upstream for municipal supply of Reading, Lynn, and Peabody. Occasional regulation by mill upstream. Satellite gage-height telemeter at station.

AVERAGE DISCHARGE.--61 years, 63.9 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,010 $ft^3/s$, Apr. 7, 1987, maximum gage height, 7.88 ft Oct. 21, 1997; minimum, 0.05 $ft^3/s$, Sept. 6, 7, 8, 9, 11, 1997.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 333 $ft^3/s$, Feb. 3, gage height, 5.02 ft; minimum, 0.08 $ft^3/s$, Sept. 4, 5, 6.

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 | 5.6 | 23 | 44 | 22 | e86 | 142 | 98 | 19 | 27 | 0.38 | 0.25 | 0.11 |
| 2 | 4.2 | 23 | 36 | 18 | 97 | 173 | 93 | 17 | 20 | .41 | .25 | .11 |
| 3 | 3.7 | 21 | 30 | 34 | 283 | 161 | 86 | 16 | 17 | .44 | .23 | .11 |
| 4 | 3.2 | 19 | 28 | 88 | 287 | 181 | 81 | 17 | 13 | .35 | .18 | .10 |
| 5 | 3.0 | 17 | 26 | 67 | 278 | 185 | 76 | 23 | 11 | .27 | .15 | .09 |
| 6 | 2.6 | 17 | 28 | 56 | 257 | 166 | 71 | 26 | 8.7 | .50 | .15 | .11 |
| 7 | 2.7 | 16 | 29 | 50 | 242 | 150 | 67 | 25 | 7.0 | .38 | .15 | .17 |
| 8 | 4.1 | 13 | 27 | 49 | 211 | 141 | 63 | 25 | 5.7 | .28 | .15 | .16 |
| 9 | 53 | 14 | 28 | 57 | 175 | 128 | 59 | 28 | 4.3 | .23 | .14 | .15 |
| 10 | 68 | 14 | 27 | 80 | 156 | 116 | 56 | 27 | 3.9 | .18 | .15 | 3.5 |
| 11 | 91 | 18 | 27 | 71 | 140 | 107 | 49 | 23 | 3.7 | .15 | .15 | 36 |
| 12 | 93 | 25 | 26 | 59 | 130 | 101 | 46 | 25 | 3.0 | .15 | .15 | 12 |
| 13 | 88 | 24 | 22 | 55 | 140 | 97 | 44 | 37 | 2.7 | .15 | .15 | 3.9 |
| 14 | 88 | 21 | 20 | 59 | 132 | 102 | 41 | 34 | 2.6 | .14 | .35 | 1.9 |
| 15 | 104 | 21 | 32 | 72 | 114 | 106 | 37 | 28 | 2.2 | .22 | .17 | 1.3 |
| 16 | 101 | 21 | 34 | 91 | 106 | 109 | 35 | 19 | 1.7 | .20 | .15 | 31 |
| 17 | 92 | 22 | 25 | 91 | 99 | 119 | 42 | 15 | 1.5 | .18 | .15 | 103 |
| 18 | 83 | 27 | 28 | 95 | 103 | 136 | 42 | 12 | 1.3 | .25 | .18 | 67 |
| 19 | 75 | 25 | 23 | 157 | e98 | 142 | 39 | 12 | .93 | .31 | .19 | 44 |
| 20 | 67 | 30 | 20 | 163 | e94 | 136 | 45 | 27 | .79 | .15 | .18 | 39 |
| 21 | 60 | 46 | 19 | 157 | e92 | 126 | 39 | 28 | .67 | .15 | .20 | 38 |
| 22 | 54 | 62 | 19 | 163 | e90 | 127 | 35 | 23 | .52 | .15 | .20 | 38 |
| 23 | 48 | 58 | 22 | 165 | e84 | 131 | 35 | 24 | .50 | .24 | .19 | 35 |
| 24 | 43 | 48 | 20 | 189 | 68 | 124 | 35 | 43 | .43 | 4.0 | .17 | 29 |
| 25 | 39 | 39 | 18 | 260 | 59 | 125 | 31 | 69 | .29 | 11 | .13 | 24 |
| 26 | 35 | 36 | 17 | 225 | 54 | 119 | 29 | 66 | .23 | 3.4 | .11 | 20 |
| 27 | 32 | 46 | 15 | 193 | 51 | 110 | 28 | 62 | .17 | 1.6 | .14 | 16 |
| 28 | 29 | 45 | 14 | 167 | 55 | 109 | 26 | 55 | .15 | .78 | .15 | 12 |
| 29 | 30 | 43 | 15 | 135 | --- | 116 | 24 | 48 | .15 | .53 | .15 | 9.2 |
| 30 | 27 | 48 | 30 | e110 | --- | 109 | 22 | 41 | .18 | .38 | .13 | 9.4 |
| 31 | 24 | --- | 30 | e94 | --- | 103 | --- | 34 | --- | .28 | .13 | --- |
| TOTAL | 1453.1 | 882 | 779 | 3292 | 3781 | 3997 | 1474 | 948 | 141.31 | 27.83 | 5.32 | 574.31 |
| MEAN | 46.9 | 29.4 | 25.1 | 106 | 135 | 129 | 49.1 | 30.6 | 4.71 | .90 | .17 | 19.1 |
| MAX | 104 | 62 | 44 | 260 | 287 | 185 | 98 | 69 | 27 | 11 | .35 | 103 |
| MIN | 2.6 | 13 | 14 | 18 | 51 | 97 | 22 | 12 | .15 | .14 | .11 | .09 |

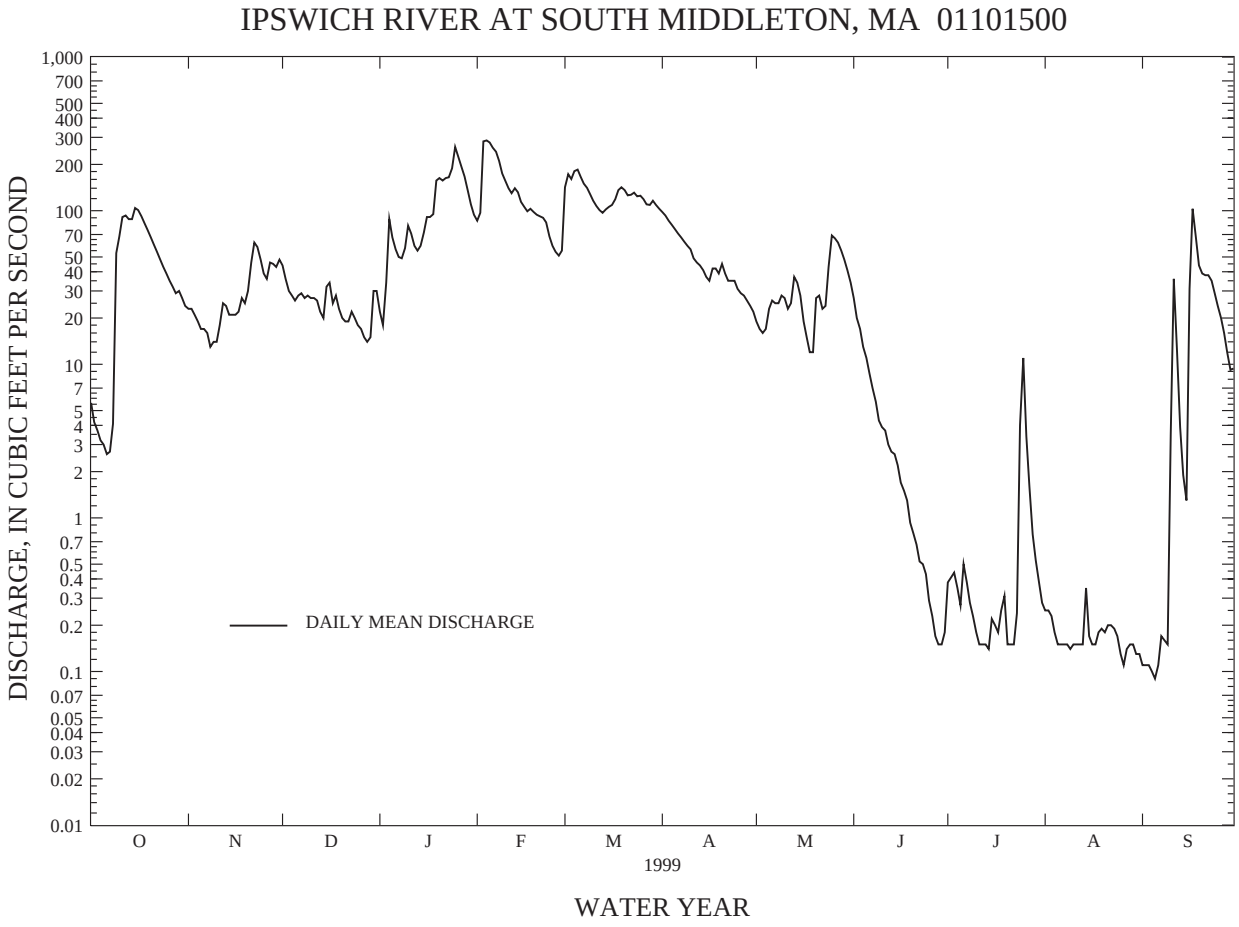
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1999, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 30.0 | 51.6 | 69.8 | 72.2 | 87.0 | 151 | 140 | 81.2 | 46.4 | 18.7 | 12.6 | 14.8 |
| MAX | 240 | 199 | 217 | 215 | 212 | 351 | 389 | 298 | 262 | 195 | 95.5 | 164 |
| (WY) | 1963 | 1956 | 1987 | 1979 | 1984 | 1983 | 1987 | 1954 | 1982 | 1938 | 1938 | 1954 |
| MIN | .38 | 1.28 | 1.05 | 1.07 | 9.66 | 36.3 | 29.6 | 18.5 | 4.71 | .74 | .17 | .26 |
| (WY) | 1998 | 1966 | 1966 | 1966 | 1980 | 1989 | 1985 | 1965 | 1999 | 1966 | 1999 | 1957 |

01101500 IPSWICH RIVER AT SOUTH MIDDLETON, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1938 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 34940.5 | | 17354.87 | | | |
| ANNUAL MEAN | 95.7 | | 47.5 | | 63.9 | |
| HIGHEST ANNUAL MEAN | | | | | 121 | 1984 |
| LOWEST ANNUAL MEAN | | | | | 18.6 | 1966 |
| HIGHEST DAILY MEAN | 591 | Jun 15 | 287 | Feb 4 | 995 | Apr 7 1987 |
| LOWEST DAILY MEAN | 1.0 | Sep 14 | .09 | Sep 5 | .05 | Sep 7 1997 |
| ANNUAL SEVEN-DAY MINIMUM | 2.4 | Sep 8 | .11 | Aug 31 | .08 | Sep 5 1997 |
| INSTANTANEOUS PEAK FLOW | | | 333 | Feb 3 | 1010 | Apr 7 1987 |
| INSTANTANEOUS PEAK STAGE | | | 5.02 | Feb 3 | 7.88 | Oct 21 1996 |
| INSTANTANEOUS LOW FLOW | | | .08 | Sep 4 | .05 | Sep 6 1997 |
| 10 PERCENT EXCEEDS | 217 | | 127 | | 156 | |
| 50 PERCENT EXCEEDS | 67 | | 27 | | 38 | |
| 90 PERCENT EXCEEDS | 7.8 | | .17 | | 2.2 | |

e Estimated



01101500 IPSWICH RIVER AT SOUTH MIDDLETON, MA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1957, 1959, 1999.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | TIME | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | OXYGEN, DIS-SOLVED (MG/L) (00300) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) |
|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | |
| 27... | 1210 | 32 | 244 | 7.0 | 16.8 | 9.7 | 9.2 | 12 | 47 |
| NOV | | | | | | | | | |
| 18... | 0920 | 26 | 218 | 7.1 | 6.0 | 6.0 | 10.3 | 13 | 51 |
| DEC | | | | | | | | | |
| 14... | 0850 | 20 | 247 | 6.8 | 2.8 | 2.0 | 12.0 | 12 | 50 |
| JAN | | | | | | | | | |
| 11... | 1100 | 72 | 345 | 6.6 | -.5 | 1.0 | 12.6 | 12 | 82 |
| 25... | 1100 | 264 | 233 | 6.7 | 5.6 | .1 | 12.2 | 7.8 | 57 |
| FEB | | | | | | | | | |
| 02... | 1030 | 79 | 345 | 6.4 | 5.2 | .1 | 11.6 | 11 | 78 |
| MAR | | | | | | | | | |
| 10... | 1030 | 116 | 260 | 6.7 | .7 | .1 | 12.2 | 9.9 | 57 |
| APR | | | | | | | | | |
| 15... | 1300 | 37 | 285 | 7.1 | 16.2 | 4.7 | 11.9 | 12 | 64 |
| MAY | | | | | | | | | |
| 24... | 1200 | 40 | 265 | 7.0 | 19.5 | 16.3 | 8.2 | 12 | 56 |
| JUN | | | | | | | | | |
| 19... | 0900 | .99 | 305 | 6.9 | 19.4 | 19.1 | 7.1 | 14 | 60 |
| JUL | | | | | | | | | |
| 10... | 1100 | .19 | 328 | 7.2 | 25.6 | 21.8 | 6.3 | 14 | 68 |
| AUG | | | | | | | | | |
| 17... | 1130 | .15 | 308 | 7.5 | 28.1 | 21.7 | 6.7 | 15 | 60 |
| SEP | | | | | | | | | |
| 11... | 1015 | 45 | 267 | 7.0 | 22.7 | 21.5 | 7.0 | 15 | 49 |
| 17... | 1145 | 116 | 191 | 6.7 | 14.4 | 17.5 | 8.0 | 12 | 26 |

01101500 IPSWICH RIVER AT SOUTH MIDDLETON, MA--Continued

| DATE | FLUORIDE, DISSOLVED (MG/L AS F) (00950) | IRON, DISSOLVED (UG/L AS FE) (01046) | MAGNESIUM, DISSOLVED (MG/L AS MG) (00925) | MANGANESE, DISSOLVED (UG/L AS MN) (01056) | POTASSIUM, DISSOLVED (MG/L AS K) (00935) | SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300) | SILICA, DISSOLVED (MG/L AS SIO2) (00955) | SODIUM, DISSOLVED (MG/L AS NA) (00930) | SULFATE DISSOLVED (MG/L AS SO4) (00945) | NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608) |
|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | |
| 27... | <0.10 | 560 | 2.7 | 172 | 2.8 | 171 | 12 | 27 | 13 | 0.091 |
| NOV | | | | | | | | | | |
| 18... | <.10 | 600 | 2.9 | 151 | 3.2 | 164 | 14 | 28 | 12 | .057 |
| DEC | | | | | | | | | | |
| 14... | <.10 | 460 | 2.8 | 115 | 2.8 | 185 | 13 | 26 | 14 | .081 |
| JAN | | | | | | | | | | |
| 11... | <.10 | 290 | 3.1 | 220 | 3.3 | 216 | 10 | 48 | 13 | .128 |
| 25... | <.10 | 230 | 1.9 | 222 | 1.9 | 145 | 7.1 | 32 | 8.7 | .055 |
| FEB | | | | | | | | | | |
| 02... | <.10 | 280 | 2.6 | 135 | 2.2 | 197 | 10 | 45 | 14 | .087 |
| MAR | | | | | | | | | | |
| 10... | <.10 | 140 | 2.3 | 27 | 2.0 | 158 | 7.0 | 32 | 13 | <.020 |
| APR | | | | | | | | | | |
| 15... | <.10 | 270 | 2.8 | 114 | 2.4 | 177 | 4.7 | 36 | 12 | .022 |
| MAY | | | | | | | | | | |
| 24... | <.10 | 390 | 2.5 | 141 | 2.0 | 190 | 5.5 | 28 | 8.7 | .062 |
| JUN | | | | | | | | | | |
| 19... | <.10 | 390 | 2.9 | 221 | 2.6 | 200 | 7.6 | 32 | 7.6 | .058 |
| JUL | | | | | | | | | | |
| 10... | .23 | 220 | 3.2 | 337 | 4.8 | 226 | 6.4 | 38 | 9.9 | .031 |
| AUG | | | | | | | | | | |
| 17... | <.10 | 180 | 3.4 | 263 | 3.9 | 172 | 5.7 | 34 | 13 | .029 |
| SEP | | | | | | | | | | |
| 11... | .10 | 270 | 3.3 | 1010 | 3.2 | 159 | 7.1 | 28 | 12 | <.020 |
| 17... | <.10 | 380 | 2.4 | 265 | 2.7 | 130 | 7.2 | 17 | 29 | .024 |

| DATE | NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623) | NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613) | PHOSPHORUS DISSOLVED (MG/L AS P) (00666) | PHOSPHORUS TOTAL (MG/L AS P) (00665) | PHOSPHORUS ORTHO, DISSOLVED (MG/L AS P) (00671) | CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681) | CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689) | SEDIMENT, SUSPENDED (MG/L) (80154) | SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331) |
|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | |
| 27... | 0.74 | 0.79 | <0.010 | 0.016 | 0.046 | <0.010 | 15 | <0.20 | 32 | 27 |
| NOV | | | | | | | | | | |
| 18... | .27 | .36 | .014 | <.050 | .026 | .012 | 12 | <.20 | 9 | 53 |
| DEC | | | | | | | | | | |
| 14... | .50 | .63 | <.010 | .097 | .039 | .015 | 12 | .50 | 4 | 67 |
| JAN | | | | | | | | | | |
| 11... | .55 | .64 | .014 | .013 | .027 | .012 | 10 | .20 | 4 | 53 |
| 25... | .38 | .50 | .014 | .014 | .032 | .011 | 9.7 | .50 | 5 | 53 |
| FEB | | | | | | | | | | |
| 02... | .42 | <.10 | .010 | .012 | .023 | <.010 | -- | <.20 | 2 | 78 |
| MAR | | | | | | | | | | |
| 10... | .36 | .38 | <.010 | .006 | .014 | .023 | 6.9 | <.20 | 1 | 80 |
| APR | | | | | | | | | | |
| 15... | .38 | .52 | <.010 | .009 | .024 | .011 | 9.5 | .20 | 4 | 53 |
| MAY | | | | | | | | | | |
| 24... | .54 | .57 | <.010 | .019 | .041 | .014 | 13 | .40 | 5 | 75 |
| JUN | | | | | | | | | | |
| 19... | .65 | .70 | <.010 | .024 | .048 | .018 | 11 | .20 | 6 | 92 |
| JUL | | | | | | | | | | |
| 10... | .48 | .53 | <.010 | .015 | .032 | <.010 | 8.1 | .20 | 4 | 82 |
| AUG | | | | | | | | | | |
| 17... | .37 | .41 | <.010 | .009 | .025 | <.010 | 6.0 | .20 | 6 | 62 |
| SEP | | | | | | | | | | |
| 11... | .45 | .63 | <.010 | .014 | .048 | <.010 | 7.7 | .80 | 5 | 85 |
| 17... | .45 | .65 | <.010 | <.004 | .058 | .013 | 8.8 | .60 | 7 | 78 |

01102000 IPSWICH RIVER NEAR IPSWICH, MA

LOCATION.--Lat 42°39'35", long 70°53'39", Essex County, Hydrologic Unit 01090001, on left bank 200 ft downstream from Willowdale Dam, 1.5 mi downstream from Howlett Brook, and 4 mi upstream from Ipswich.

DRAINAGE AREA.--125 $mi^2$.

PERIOD OF RECORD.--Discharge: June 1930 to current year.
Water-quality records: Water years 1954, 1976-79.

REVISED RECORDS.--WSP 1621: 1930-58 (monthly runoff). WDR MA-RI-84-1: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 20.63 ft above sea level.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Diversions upstream for municipal supply of Reading, Lynn, Peabody, Danvers, Salem, and Beverly. Some regulation by reservoirs upstream. Telephone and satellite gage-height telemeter at station.

AVERAGE DISCHARGE.--69 years, 189 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,550 $ft^3/s$, Apr. 8, 1987, gage height, 9.43 ft; minimum, 0.34 $ft^3/s$, Sept. 20, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since 1886, that of Apr. 8, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 798 $ft^3/s$, Feb. 6, gage height, 4.96 ft; minimum, 0.77 $ft^3/s$, Sept. 4-7; minimum daily, 0.77 $ft^3/s$, Sept. 6.

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 | 19 | 58 | 78 | 56 | 305 | 263 | 326 | 81 | 102 | 5.8 | 12 | 1.2 |
| 2 | 13 | 54 | 76 | 46 | 285 | 349 | 307 | 74 | 89 | 6.4 | 9.6 | 1.0 |
| 3 | 12 | 51 | 73 | 54 | 405 | 418 | 288 | 66 | 78 | 7.6 | 7.3 | .91 |
| 4 | 11 | 49 | 67 | 95 | 546 | 463 | 267 | 68 | 67 | 8.4 | 6.7 | .81 |
| 5 | 9.9 | 46 | 57 | 110 | 733 | 468 | 249 | 88 | 57 | 8.8 | 7.2 | .78 |
| 6 | 9.2 | 43 | 48 | 114 | 753 | 469 | 231 | 106 | 48 | 8.9 | 6.4 | .77 |
| 7 | 8.3 | 42 | 41 | 114 | 681 | 453 | 216 | 108 | 42 | 9.6 | 5.6 | 1.1 |
| 8 | 8.4 | 46 | 41 | 100 | 609 | 438 | 203 | 103 | 37 | 8.3 | 4.8 | 1.6 |
| 9 | 46 | 43 | 44 | 91 | 537 | 420 | 192 | 103 | 32 | 7.9 | 4.0 | 1.7 |
| 10 | 94 | 39 | 47 | 97 | 482 | 394 | 181 | 103 | 26 | 8.4 | 3.5 | 2.0 |
| 11 | 149 | 43 | 45 | 102 | 443 | 367 | 171 | 90 | 22 | 8.7 | 3.2 | 38 |
| 12 | 176 | 55 | 39 | 102 | 408 | 340 | 160 | 64 | 22 | 7.3 | 2.8 | 67 |
| 13 | 202 | 56 | 38 | 97 | 398 | 322 | 151 | 51 | 22 | 6.4 | 2.7 | 78 |
| 14 | 215 | 57 | 38 | 90 | 368 | 313 | 142 | 47 | 18 | 5.6 | 2.6 | 80 |
| 15 | 233 | 55 | 35 | 92 | 344 | 307 | 133 | 47 | 16 | 5.0 | 2.7 | 77 |
| 16 | 223 | 53 | 36 | 117 | 316 | 308 | 126 | 43 | 18 | 4.4 | 3.0 | 73 |
| 17 | 208 | 53 | 44 | 127 | 295 | 318 | 127 | 49 | 16 | 3.7 | 3.2 | 116 |
| 18 | 199 | 56 | 46 | 143 | e280 | 338 | 126 | 44 | 15 | 3.1 | 3.5 | 150 |
| 19 | 188 | 58 | 47 | 246 | e265 | 363 | 124 | 50 | 15 | 2.9 | 4.4 | 191 |
| 20 | 175 | 60 | 46 | 366 | e265 | 387 | 118 | 65 | 14 | 3.1 | 4.3 | 222 |
| 21 | 159 | 64 | 42 | 433 | e265 | 395 | 112 | 80 | 13 | 3.0 | 3.7 | 221 |
| 22 | 146 | 67 | 41 | 450 | e260 | 398 | 112 | 72 | 12 | 3.0 | 3.4 | 199 |
| 23 | 134 | 70 | 42 | 441 | 248 | 393 | 113 | 65 | 12 | 2.8 | 3.4 | 168 |
| 24 | 123 | 75 | 41 | 453 | 225 | 381 | 112 | 75 | 11 | 2.8 | 3.2 | 143 |
| 25 | 110 | 77 | 36 | 516 | 199 | 378 | 112 | 102 | 10 | 6.7 | 2.9 | 122 |
| 26 | 96 | 76 | 34 | 529 | 185 | 368 | 108 | 120 | 9.2 | 29 | 2.5 | 106 |
| 27 | 85 | 77 | 30 | 550 | 191 | 353 | 102 | 131 | 7.9 | 35 | 2.2 | 95 |
| 28 | 75 | 80 | 29 | 491 | 188 | 347 | 102 | 131 | 7.2 | 32 | 2.1 | 83 |
| 29 | 68 | 83 | 29 | 388 | --- | 351 | 96 | 127 | 6.4 | 26 | 2.0 | 70 |
| 30 | 64 | 80 | 42 | e340 | --- | 345 | 89 | 122 | 5.8 | 20 | 1.7 | 60 |
| 31 | 61 | --- | 45 | e320 | --- | 336 | --- | 113 | --- | 15 | 1.4 | --- |
| TOTAL | 3319.8 | 1766 | 1397 | 7270 | 10479 | 11543 | 4896 | 2588 | 850.5 | 305.6 | 128.0 | 2370.87 |
| MEAN | 107 | 58.9 | 45.1 | 235 | 374 | 372 | 163 | 83.5 | 28.4 | 9.86 | 4.13 | 79.0 |
| MAX | 233 | 83 | 78 | 550 | 753 | 469 | 326 | 131 | 102 | 35 | 12 | 222 |
| MIN | 8.3 | 39 | 29 | 46 | 185 | 263 | 89 | 43 | 5.8 | 2.8 | 1.4 | .77 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1999, BY WATER YEAR (WY)

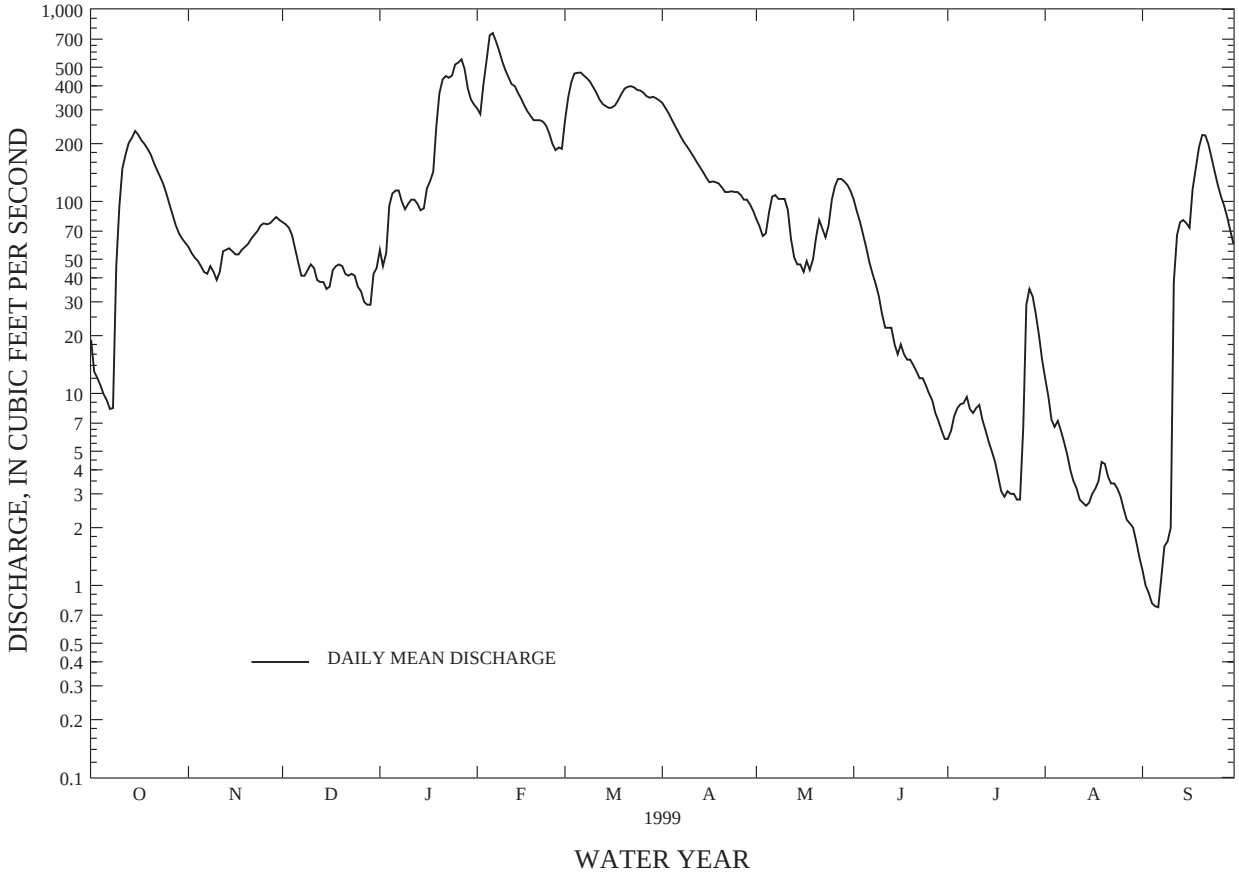
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 79.7 | 135 | 192 | 212 | 247 | 450 | 433 | 241 | 146 | 56.8 | 36.2 | 42.1 |
| MAX | 749 | 525 | 621 | 566 | 627 | 1158 | 1233 | 833 | 821 | 518 | 356 | 390 |
| (WY) | 1997 | 1933 | 1997 | 1958 | 1984 | 1983 | 1987 | 1954 | 1982 | 1938 | 1938 | 1954 |
| MIN | 4.75 | 6.87 | 11.5 | 14.4 | 16.4 | 75.0 | 97.1 | 83.5 | 25.6 | 5.75 | 2.13 | 1.76 |
| (WY) | 1998 | 1966 | 1966 | 1966 | 1980 | 1989 | 1985 | 1999 | 1976 | 1957 | 1965 | 1965 |

01102000 IPSWICH RIVER NEAR IPSWICH, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1930 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 101163.6 | | 46913.77 | | | |
| ANNUAL MEAN | 277 | | 129 | | 189 | |
| HIGHEST ANNUAL MEAN | | | | | 351 | 1984 |
| LOWEST ANNUAL MEAN | | | | | 57.7 | 1966 |
| HIGHEST DAILY MEAN | 1940 | Jun 17 | 753 | Feb 6 | 3520 | Apr 8 1987 |
| LOWEST DAILY MEAN | 8.3 | Oct 7 | .77 | Sep 6 | .59 | Sep 21 1978 |
| ANNUAL SEVEN-DAY MINIMUM | 10 | Oct 2 | .94 | Sep 1 | .94 | Sep 1 1999 |
| INSTANTANEOUS PEAK FLOW | | | 798 | Feb 6 | 3550 | Apr 8 1987 |
| INSTANTANEOUS PEAK STAGE | | | 4.96 | Feb 6 | 9.43 | Apr 8 1987 |
| INSTANTANEOUS LOW FLOW | | | .77 | Sep 4 | .34 | Sep 20 1978 |
| 10 PERCENT EXCEEDS | 643 | | 367 | | 448 | |
| 50 PERCENT EXCEEDS | 191 | | 73 | | 114 | |
| 90 PERCENT EXCEEDS | 26 | | 3.6 | | 11 | |

e Estimated

IPSWICH RIVER NEAR IPSWICH, MA 01102000



01102029 MILL BROOK AT ROCKPORT, MA

LOCATION.--42°39'06", long 70°376'50", Essex County, Hydrologic Unit 01090001, on right bank, 150 ft upstream from Mill Brook pump house on Applecart Road, and 0.7 mi southwest of Rockport.

DRAINAGE AREA.--1.03 $mi^2$.

PERIOD OF RECORD.--December 1998 to September 1999.

GAGE.--Water-stage recorder and satellite telemeter. Elevation of gage is 40 ft above sea level, from topographic map.

REMARKS.--Records good.

EXTREMES FOR PERIOD DECEMBER 1998 TO SEPTEMBER 1999.--Maximum discharge, 18 $ft^3/s$, gage height, 2.21 ft, minimum, no flow, many days during summer period.

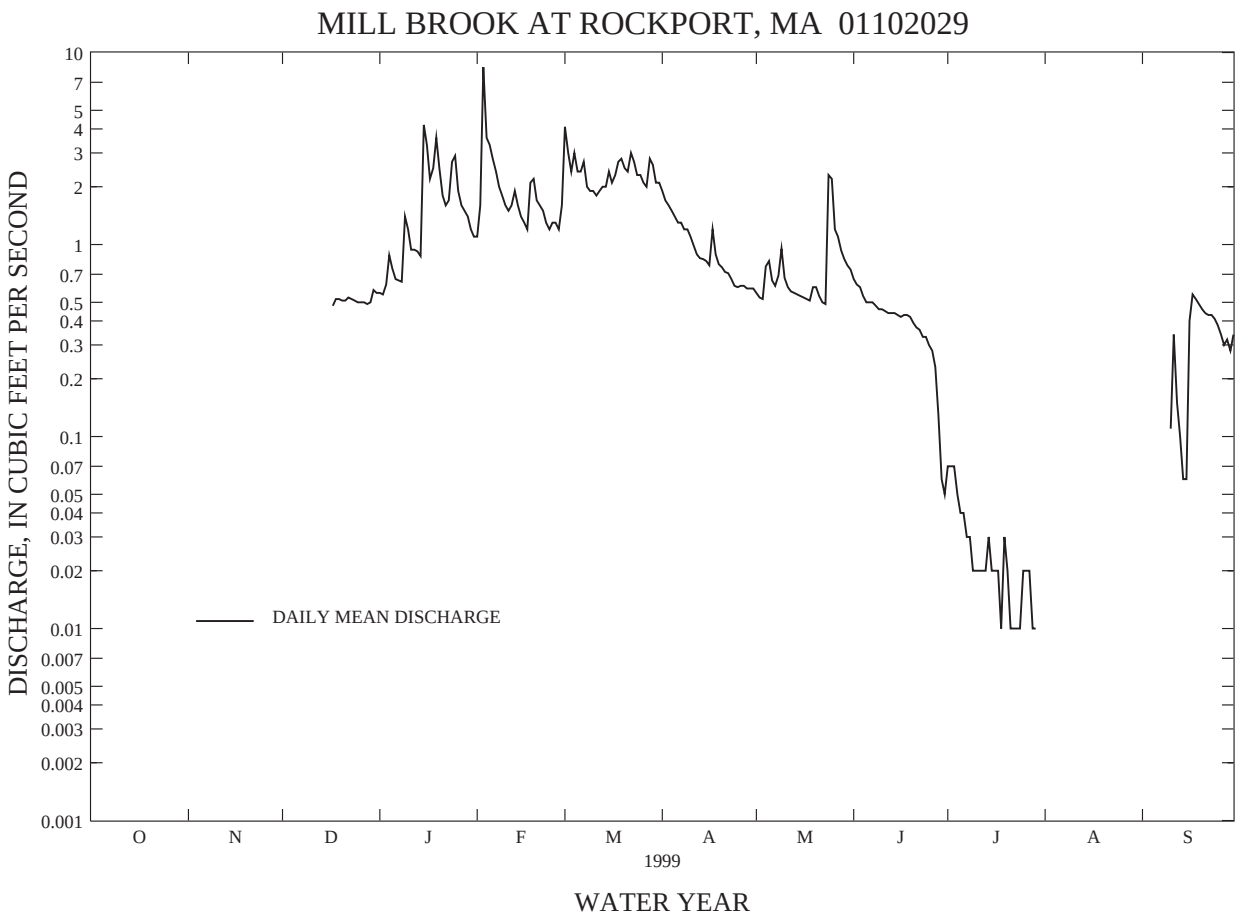
DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | --- | --- | --- | 0.56 | 1.1 | 4.1 | 1.9 | 0.56 | 0.66 | 0.07 | 0.00 | 0.00 |
| 2 | --- | --- | --- | .55 | 1.6 | 3.0 | 1.7 | .53 | .62 | .07 | .00 | .00 |
| 3 | --- | --- | --- | .62 | 8.4 | 2.4 | 1.6 | .52 | .60 | .07 | .00 | .00 |
| 4 | --- | --- | --- | .88 | 3.6 | 3.0 | 1.5 | .77 | .54 | .05 | .00 | .00 |
| 5 | --- | --- | --- | .75 | 3.3 | 2.4 | 1.4 | .82 | .50 | .04 | .00 | .00 |
| 6 | --- | --- | --- | .66 | 2.8 | 2.4 | 1.3 | .65 | .50 | .04 | .00 | .00 |
| 7 | --- | --- | --- | .65 | 2.4 | 2.7 | 1.3 | .61 | .50 | .03 | .00 | .00 |
| 8 | --- | --- | --- | .64 | 2.0 | 2.0 | 1.2 | .69 | .48 | .03 | .00 | .00 |
| 9 | --- | --- | --- | 1.4 | 1.8 | 1.9 | 1.2 | .95 | .46 | .02 | .00 | .00 |
| 10 | --- | --- | --- | 1.2 | 1.6 | 1.9 | 1.1 | .67 | .46 | .02 | .00 | .11 |
| 11 | --- | --- | --- | .94 | 1.5 | 1.8 | .99 | .60 | .45 | .02 | .00 | .34 |
| 12 | --- | --- | --- | .94 | 1.6 | 1.9 | .89 | .57 | .44 | .02 | .00 | .15 |
| 13 | --- | --- | --- | .92 | 1.9 | 2.0 | .85 | .56 | .44 | .02 | .00 | .10 |
| 14 | --- | --- | --- | .87 | 1.6 | 2.0 | .84 | .55 | .44 | .03 | .00 | .06 |
| 15 | --- | --- | --- | 4.2 | 1.4 | 2.4 | .82 | .54 | .43 | .02 | .01 | .06 |
| 16 | --- | --- | --- | 3.3 | 1.3 | 2.1 | .78 | .53 | .42 | .02 | .00 | .40 |
| 17 | --- | --- | 0.48 | 2.2 | 1.2 | 2.3 | 1.2 | .52 | .43 | .02 | .00 | .55 |
| 18 | --- | --- | .52 | 2.5 | 2.1 | 2.7 | .89 | .51 | .43 | .01 | .00 | .52 |
| 19 | --- | --- | .52 | 3.6 | 2.2 | 2.8 | .79 | .60 | .42 | .03 | .00 | .49 |
| 20 | --- | --- | .51 | 2.5 | 1.7 | 2.5 | .76 | .60 | .39 | .02 | .00 | .46 |
| 21 | --- | --- | .51 | 1.8 | 1.6 | 2.4 | .72 | .54 | .37 | .01 | .00 | .44 |
| 22 | --- | --- | .53 | 1.6 | 1.5 | 3.0 | .71 | .50 | .36 | .01 | .01 | .43 |
| 23 | --- | --- | .52 | 1.7 | 1.3 | 2.7 | .66 | .49 | .33 | .01 | .00 | .43 |
| 24 | --- | --- | .51 | 2.7 | 1.2 | 2.3 | .61 | 2.3 | .33 | .01 | .00 | .41 |
| 25 | --- | --- | .50 | 2.9 | 1.3 | 2.3 | .60 | 2.2 | .30 | .02 | .00 | .38 |
| 26 | --- | --- | .50 | 1.9 | 1.3 | 2.1 | .61 | 1.2 | .28 | .02 | .00 | .34 |
| 27 | --- | --- | .50 | 1.6 | 1.2 | 2.0 | .61 | 1.1 | .23 | .02 | .00 | .30 |
| 28 | --- | --- | .49 | 1.5 | 1.6 | 2.8 | .59 | .93 | .13 | .01 | .00 | .32 |
| 29 | --- | --- | .50 | 1.4 | --- | 2.6 | .59 | .84 | .06 | .01 | .00 | .28 |
| 30 | --- | --- | .58 | 1.2 | --- | 2.1 | .59 | .78 | .05 | .00 | .00 | .34 |
| 31 | --- | --- | .56 | 1.1 | --- | 2.1 | --- | .74 | --- | .00 | .00 | --- |
| TOTAL | --- | --- | --- | 49.28 | 56.1 | 74.7 | 29.30 | 23.97 | 12.05 | 0.77 | 0.02 | 6.91 |
| MEAN | --- | --- | --- | 1.59 | 2.00 | 2.41 | .98 | .77 | .40 | .025 | .001 | .23 |
| MAX | --- | --- | --- | 4.2 | 8.4 | 4.1 | 1.9 | 2.3 | .66 | .07 | .01 | .55 |
| MIN | --- | --- | --- | .55 | 1.1 | 1.8 | .59 | .49 | .05 | .00 | .00 | .00 |
| CFSM | --- | --- | --- | 1.54 | 1.95 | 2.34 | .95 | .75 | .39 | .02 | .00 | .22 |
| IN. | --- | --- | --- | 1.78 | 2.03 | 2.70 | 1.06 | .87 | .44 | .03 | .00 | .25 |

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

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | --- | --- | --- | 1.59 | 2.00 | 2.41 | .98 | .77 | .40 | .025 | .001 | .23 |
| MAX | --- | --- | --- | 1.59 | 2.00 | 2.41 | .98 | .77 | .40 | .025 | .001 | .23 |
| (WY) | --- | --- | --- | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 |
| MIN | --- | --- | --- | 1.59 | 2.00 | 2.41 | .98 | .77 | .40 | .025 | .001 | .23 |
| (WY) | --- | --- | --- | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 |

01102029 MILL BROOK AT ROCKPORT, MA--Continued



011020308 SAWMILL BROOK NEAR ROCKPORT, MA

LOCATION.--42°38'18", long 70°36'37", Essex County, Hydrologic Unit 01090001, on right bank, 20 ft upstream from culvert beneath Frank Road, 0.2 mi upstream from estuarine mouth, and 1.1 mi south of Rockport.

DRAINAGE AREA.--0.59 $mi^2$.

PERIOD OF RECORD.--December 1998 to September 1999.

GAGE.--Water-stage recorder and satellite telemeter. Elevation of gage is 40 ft above sea level, from topographic map.

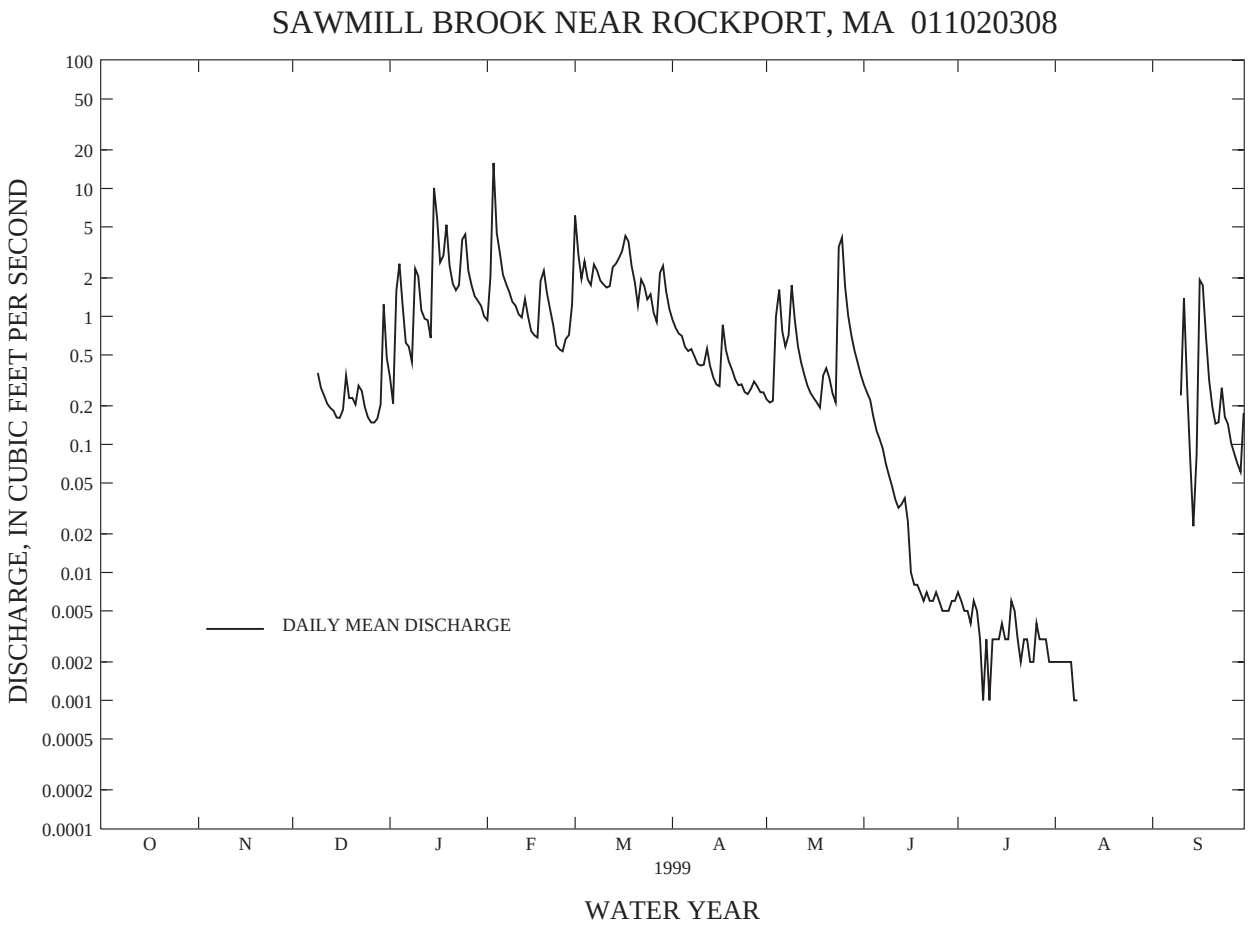
REMARKS.--Records excellent from zero to 2.5 $ft^3/s$ and good greater than 2.5 $ft^3/s$. Flows may be affected by pumping from water-supply detention pond 100 ft upstream from gage.

EXTREMES FOR PERIOD DECEMBER 1998 TO SEPTEMBER 1999.--Maximum discharge, 48 $ft^3/s$, gage height, 3.00 ft (from peak stage indicator), minimum, no flow, many days during summer period.

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 | --- | --- | --- | 0.332 | 0.933 | 6.14 | 0.943 | 0.225 | 0.294 | 0.007 | 0.002 | 0.000 |
| 2 | --- | --- | --- | .209 | 2.06 | 3.04 | .817 | .212 | .255 | .006 | .002 | .000 |
| 3 | --- | --- | --- | 1.59 | 15.8 | 1.97 | .733 | .219 | .222 | .005 | .002 | .000 |
| 4 | --- | --- | --- | 2.58 | 4.46 | 2.69 | .704 | .997 | .165 | .005 | .002 | .000 |
| 5 | --- | --- | --- | 1.25 | 3.13 | 1.94 | .581 | 1.62 | .128 | .004 | .002 | .000 |
| 6 | --- | --- | --- | .622 | 2.12 | 1.76 | .535 | .765 | .110 | .006 | .002 | .000 |
| 7 | --- | --- | --- | .580 | 1.79 | 2.54 | .556 | .582 | .093 | .005 | .001 | .000 |
| 8 | --- | --- | --- | .440 | 1.55 | 2.27 | .489 | .717 | .070 | .003 | .001 | .000 |
| 9 | --- | --- | 0.362 | 2.36 | 1.30 | 1.91 | .425 | 1.75 | .057 | .001 | .000 | .000 |
| 10 | --- | --- | .277 | 2.06 | 1.21 | 1.78 | .413 | .943 | .047 | .003 | .000 | .241 |
| 11 | --- | --- | .240 | 1.12 | 1.04 | 1.68 | .419 | .579 | .037 | .001 | .000 | 1.39 |
| 12 | --- | --- | .208 | .962 | .979 | 1.72 | .561 | .437 | .032 | .003 | .000 | .270 |
| 13 | --- | --- | .193 | .934 | 1.37 | 2.42 | .409 | .348 | .034 | .003 | .000 | .074 |
| 14 | --- | --- | .183 | .678 | .996 | 2.59 | .333 | .288 | .038 | .003 | .000 | .023 |
| 15 | --- | --- | .162 | 10.1 | .771 | 2.87 | .294 | .252 | .025 | .004 | .000 | .084 |
| 16 | --- | --- | .161 | 5.90 | .712 | 3.25 | .285 | .230 | .010 | .003 | .000 | 1.93 |
| 17 | --- | --- | .187 | 2.64 | .684 | 4.25 | .859 | .212 | .008 | .003 | .000 | 1.75 |
| 18 | --- | --- | .345 | 2.99 | 1.89 | 3.85 | .549 | .194 | .008 | .006 | .000 | .688 |
| 19 | --- | --- | .230 | 5.20 | 2.28 | 2.48 | .442 | .345 | .007 | .005 | .000 | .319 |
| 20 | --- | --- | .231 | 2.49 | 1.53 | 1.85 | .381 | .394 | .006 | .003 | .000 | .196 |
| 21 | --- | --- | .205 | 1.80 | 1.15 | 1.22 | .321 | .330 | .007 | .002 | .000 | .145 |
| 22 | --- | --- | .288 | 1.60 | .853 | 1.94 | .290 | .250 | .006 | .003 | .000 | .149 |
| 23 | --- | --- | .261 | 1.75 | .594 | 1.73 | .295 | .213 | .006 | .003 | .000 | .277 |
| 24 | --- | --- | .195 | 3.99 | .553 | 1.36 | .257 | 3.50 | .007 | .002 | .000 | .164 |
| 25 | --- | --- | .163 | 4.37 | .534 | 1.49 | .247 | 4.12 | .006 | .002 | .000 | .144 |
| 26 | --- | --- | .148 | 2.27 | .665 | 1.07 | .272 | 1.72 | .005 | .004 | .000 | .102 |
| 27 | --- | --- | .148 | 1.74 | .715 | .907 | .310 | 1.02 | .005 | .003 | .000 | .085 |
| 28 | --- | --- | .159 | 1.44 | 1.23 | 2.19 | .285 | .708 | .005 | .003 | .000 | .071 |
| 29 | --- | --- | .206 | 1.32 | --- | 2.48 | .256 | .542 | .006 | .003 | .000 | .061 |
| 30 | --- | --- | 1.24 | 1.21 | --- | 1.57 | .255 | .439 | .006 | .002 | .000 | .176 |
| 31 | --- | --- | .475 | 1.00 | --- | 1.14 | --- | .349 | --- | .002 | .000 | --- |
| TOTAL | --- | --- | --- | 67.527 | 52.899 | 70.097 | 13.516 | 24.500 | 1.705 | 0.108 | 0.014 | 8.339 |
| MEAN | --- | --- | --- | 2.18 | 1.89 | 2.26 | .45 | .79 | .057 | .003 | .000 | .28 |
| MAX | --- | --- | --- | 10.1 | 15.8 | 6.14 | .943 | 4.12 | .294 | .007 | .002 | 1.93 |
| MIN | --- | --- | --- | .209 | .534 | .907 | .247 | .194 | .005 | .001 | .000 | .000 |
| CFSM | --- | --- | --- | 3.69 | 3.20 | 3.83 | .76 | 1.34 | .10 | .01 | .00 | .47 |
| IN. | --- | --- | --- | 4.26 | 3.34 | 4.42 | .85 | 1.54 | .11 | .01 | .00 | .53 |
| STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 1999, BY WATER YEAR (WY) | | | | | | | | | | | | |
| MEAN | --- | --- | --- | 2.18 | 1.89 | 2.26 | .45 | .79 | .057 | .003 | .000 | .28 |
| MAX | --- | --- | --- | 2.18 | 1.89 | 2.26 | .45 | .79 | .057 | .003 | .000 | .28 |
| (WY) | --- | --- | --- | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 |
| MIN | --- | --- | --- | 2.18 | 1.89 | 2.26 | .45 | .79 | .057 | .003 | .000 | .28 |
| (WY) | --- | --- | --- | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 |

011020308 SAWMILL BROOK NEAR ROCKPORT, MA



01102345 SAUGUS RIVER AT SAUGUS IRONWORKS AT SAUGUS, MA
(National Water Quality Assessment Site)

LOCATION.--Lat 42°28'05", long 71°00'27", Essex County, Hydrologic Unit 01090001, on left bank 20 ft upstream from Bridge Street opposite Saugus Ironworks National Historic Site, at Saugus.

DRAINAGE AREA.--23.3 $mi^2$.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1994 to current year.

GAGE.--Water stage recorder. Elevation of gage is 15 ft above sea level.

REMARKS.--Records good except those for estimated daily discharges, which are fair. There is evidence of seasonal regulation by ponds upstream. Telephone gage-height telemeter at station.

AVERAGE DISCHARGE.--5 years, 31.2 $ft^3/s$, 18.19 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 942 $ft^3/s$, Oct. 21, 1996, gage height, 6.58 ft; minimum, about 0.60 $ft^3/s$, Sept. 5, 6, 1995.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 211 $ft^3/s$, Sept. 16, gage height, 4.17 ft; minimum, 0.46 $ft^3/s$, Sept. 5, 6.

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 | 2.3 | 4.4 | 5.6 | 9.0 | e33 | 101 | 45 | 6.5 | 5.8 | 10 | 1.5 | 0.56 |
| 2 | 2.1 | 4.2 | 5.2 | e8.0 | 50 | 82 | 43 | 6.3 | 5.3 | 7.3 | 1.1 | .56 |
| 3 | 2.0 | 4.2 | 5.0 | 30 | 148 | 81 | 41 | 6.2 | 4.9 | 7.2 | .92 | .51 |
| 4 | 1.9 | 4.2 | 4.8 | 53 | 98 | 107 | 40 | 9.6 | 4.5 | 3.8 | .87 | .51 |
| 5 | 1.8 | 4.3 | 4.6 | 27 | e84 | 91 | 37 | 9.9 | 4.1 | 2.8 | .92 | .50 |
| 6 | 1.8 | 4.5 | 4.6 | e16 | e70 | 80 | 30 | 8.8 | 3.8 | 4.3 | 1.0 | .50 |
| 7 | 1.8 | 4.5 | 4.5 | 15 | e62 | 78 | 29 | 7.9 | 3.6 | 6.5 | 1.4 | 5.8 |
| 8 | 5.4 | 4.5 | 6.0 | e13 | e58 | e60 | 26 | 8.3 | 3.4 | 3.6 | .99 | 2.8 |
| 9 | 53 | 4.4 | 9.9 | e28 | e52 | 53 | 24 | 11 | 3.3 | 2.4 | .89 | 1.8 |
| 10 | 52 | 4.3 | 7.0 | 37 | e47 | 51 | 23 | 8.1 | 3.7 | 2.1 | .74 | 36 |
| 11 | 52 | 9.4 | 5.9 | 21 | e43 | 46 | 21 | 6.8 | 3.8 | 2.1 | .77 | 83 |
| 12 | 39 | 12 | 5.3 | 19 | 39 | 44 | 21 | 6.2 | 3.7 | 1.6 | .84 | 28 |
| 13 | 37 | 7.7 | 5.1 | 17 | 50 | 45 | 20 | 5.7 | 3.5 | 1.5 | .81 | 9.1 |
| 14 | 45 | 6.6 | 4.8 | 15 | 48 | 48 | 19 | 5.4 | 3.8 | 1.4 | 1.3 | 5.6 |
| 15 | 57 | 6.2 | 4.6 | 49 | 43 | 52 | 19 | 5.2 | 3.7 | 1.3 | 7.0 | 4.7 |
| 16 | 45 | 6.0 | 4.7 | 70 | 36 | 55 | 14 | 5.0 | 2.9 | 1.2 | 4.3 | 71 |
| 17 | 33 | 6.7 | 6.4 | 52 | 32 | 57 | 17 | 4.8 | 2.8 | 1.1 | 2.1 | 164 |
| 18 | 26 | 8.0 | 9.3 | 51 | 55 | 60 | 13 | 4.7 | 2.9 | .97 | 1.6 | 92 |
| 19 | 19 | 6.4 | 6.4 | 125 | 62 | 58 | 12 | 5.5 | 2.8 | 2.6 | 1.1 | 66 |
| 20 | 13 | 7.5 | 5.8 | 91 | 47 | 58 | 12 | 17 | 2.4 | 4.4 | .95 | 50 |
| 21 | 9.9 | 7.6 | 5.5 | e75 | 42 | 57 | 10 | 10 | 2.1 | 2.4 | 1.0 | 38 |
| 22 | 8.1 | 6.2 | 7.5 | e56 | 39 | 61 | 9.5 | 7.0 | 2.1 | 1.6 | 1.8 | 27 |
| 23 | 7.0 | 5.4 | 7.5 | e50 | e33 | 59 | 11 | 6.1 | 2.0 | 6.3 | 1.6 | 15 |
| 24 | 6.3 | 5.2 | 5.7 | e74 | 34 | 54 | 11 | 40 | 1.9 | 5.9 | 1.1 | 11 |
| 25 | 5.8 | 4.9 | e5.2 | 97 | 32 | 54 | 9.1 | 35 | 1.7 | 8.4 | .86 | 10 |
| 26 | 5.0 | 7.5 | e4.8 | 82 | 33 | 50 | 8.4 | 18 | 1.6 | 4.6 | .76 | 9.6 |
| 27 | 4.7 | 12 | e4.3 | 75 | 34 | 48 | 8.4 | 13 | 1.5 | 2.8 | 1.5 | 7.7 |
| 28 | 4.8 | 7.7 | 4.5 | 69 | 40 | 57 | 7.8 | 11 | 1.4 | 2.2 | 1.3 | 7.0 |
| 29 | 5.9 | 6.2 | 5.5 | 57 | --- | 58 | 7.2 | 8.7 | 1.4 | 1.8 | .87 | 6.6 |
| 30 | 5.2 | 5.9 | 19 | 46 | --- | 50 | 6.9 | 7.6 | 1.3 | 1.6 | .63 | 11 |
| 31 | 4.6 | --- | 15 | e36 | --- | 47 | --- | 6.6 | --- | 1.8 | .55 | --- |
| TOTAL | 557.4 | 188.6 | 200.0 | 1463.0 | 1444 | 1902 | 595.3 | 311.9 | 91.7 | 107.57 | 43.07 | 765.84 |
| MEAN | 18.0 | 6.29 | 6.45 | 47.2 | 51.6 | 61.4 | 19.8 | 10.1 | 3.06 | 3.47 | 1.39 | 25.5 |
| MAX | 57 | 12 | 19 | 125 | 148 | 107 | 45 | 40 | 5.8 | 10 | 7.0 | 164 |
| MIN | 1.8 | 4.2 | 4.3 | 8.0 | 32 | 44 | 6.9 | 4.7 | 1.3 | .97 | .55 | .50 |
| CFSM | .77 | .27 | .28 | 2.03 | 2.21 | 2.63 | .85 | .43 | .13 | .15 | .06 | 1.10 |
| IN. | .89 | .30 | .32 | 2.34 | 2.31 | 3.04 | .95 | .50 | .15 | .17 | .07 | 1.22 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1999, BY WATER YEAR (WY)

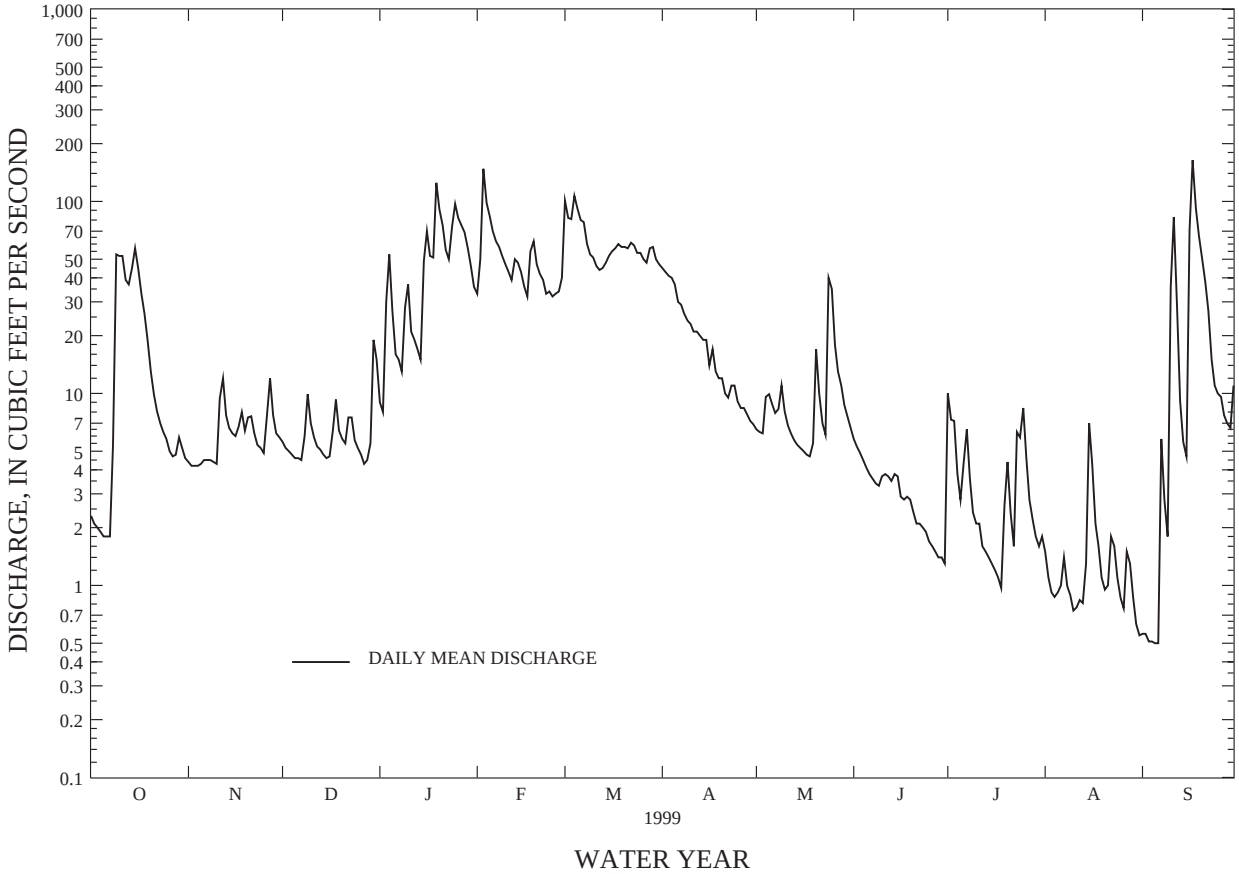
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 32.9 | 26.6 | 38.2 | 49.8 | 49.0 | 62.5 | 48.0 | 30.2 | 24.3 | 7.74 | 3.81 | 11.6 |
| MAX | 122 | 49.2 | 108 | 62.3 | 80.7 | 105 | 96.3 | 65.3 | 117 | 24.1 | 6.36 | 25.5 |
| (WY) | 1997 | 1997 | 1997 | 1996 | 1998 | 1994 | 1997 | 1998 | 1998 | 1998 | 1994 | 1999 |
| MIN | 2.35 | 6.29 | 6.45 | 38.9 | 18.8 | 26.8 | 13.0 | 7.89 | 3.06 | 2.23 | 1.39 | 2.11 |
| (WY) | 1998 | 1999 | 1999 | 1995 | 1995 | 1995 | 1995 | 1995 | 1999 | 1997 | 1999 | 1997 |

01102345 SAUGUS RIVER AT SAUGUS IRONWORKS AT SAUGUS, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1993 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 15405.9 | | 7670.38 | | | |
| ANNUAL MEAN | 42.2 | | 21.0 | | 31.2 | |
| HIGHEST ANNUAL MEAN | | | | | 45.0 | 1997 |
| LOWEST ANNUAL MEAN | | | | | 15.5 | 1995 |
| HIGHEST DAILY MEAN | 511 | Jun 14 | 164 | Sep 17 | 812 | Oct 21 1996 |
| LOWEST DAILY MEAN | 1.6 | Sep 20 | .50 | Sep 5 | .50 | Sep 5 1999 |
| ANNUAL SEVEN-DAY MINIMUM | 1.9 | Sep 14 | .53 | Aug 31 | .53 | Aug 31 1999 |
| INSTANTANEOUS PEAK FLOW | | | 211 | Sep 16 | 942 | Oct 21 1996 |
| INSTANTANEOUS PEAK STAGE | | | 4.17 | Sep 16 | 6.58 | Oct 21 1996 |
| INSTANTANEOUS LOW FLOW | | | .46 | Sep 5 | .06 | Sep 5 1995 |
| ANNUAL RUNOFF (CFSM) | 1.81 | | .90 | | 1.34 | |
| ANNUAL RUNOFF (INCHES) | 24.60 | | 12.25 | | 18.19 | |
| 10 PERCENT EXCEEDS | 112 | | 57 | | 79 | |
| 50 PERCENT EXCEEDS | 21 | | 7.3 | | 14 | |
| 90 PERCENT EXCEEDS | 3.3 | | 1.4 | | 2.0 | |

e Estimated

SAUGUS RIVER AT SAUGUS IRONWORKS AT SAUGUS, MA 01102345



01102345 SAUGUS RIVER AT SAUGUS IRONWORKS AT SAUGUS, MA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1999.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | TIME | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | OXYGEN, DIS-SOLVED (MG/L) (00300) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) |
|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | |
| 27... | 1000 | 4.8 | 502 | 7.6 | 13.2 | 8.6 | 10.2 | 25 | 99 |
| NOV | | | | | | | | | |
| 18... | 1140 | 8.4 | 232 | 7.4 | 9.6 | 6.5 | 10.9 | 22 | 100 |
| DEC | | | | | | | | | |
| 15... | 1020 | 4.5 | 502 | 7.5 | 13.4 | 1.0 | 14.0 | 25 | 100 |
| JAN | | | | | | | | | |
| 19... | 1030 | 128 | 385 | 6.8 | 9.1 | 1.3 | 12.8 | 9.7 | 93 |
| FEB | | | | | | | | | |
| 04... | 1145 | 94 | 334 | 7.0 | 7.4 | 1.3 | 13.4 | 13 | 75 |
| MAR | | | | | | | | | |
| 09... | 1030 | 53 | 522 | 7.4 | .4 | .9 | 13.3 | 17 | 120 |
| APR | | | | | | | | | |
| 15... | 1000 | 19 | 500 | 7.5 | 13.3 | 8.5 | 11.5 | 19 | 110 |
| MAY | | | | | | | | | |
| 12... | 1240 | 6.2 | 577 | 7.5 | 19.5 | 14.8 | 9.6 | 25 | 140 |
| JUN | | | | | | | | | |
| 14... | 1230 | 3.2 | 624 | 7.6 | 26.4 | 21.0 | 6.9 | 27 | 130 |
| JUL | | | | | | | | | |
| 13... | 1020 | 1.5 | 504 | 7.5 | 19.0 | 18.5 | 7.7 | 22 | 110 |
| AUG | | | | | | | | | |
| 09... | 1030 | .96 | 585 | 7.8 | 21.4 | 18.3 | 8.0 | 26 | 120 |
| SEP | | | | | | | | | |
| 11... | 0915 | 81 | 207 | 6.9 | 20.9 | 21.0 | 6.6 | 11 | 33 |
| 17... | 1100 | 172 | 243 | 7.2 | 15.6 | 18.5 | 7.2 | 12 | 42 |

01102345 SAUGUS RIVER AT SAUGUS IRONWORKS AT SAUGUS, MA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | FLUORIDE, DISSOLVED (MG/L AS F) (00950) | IRON, DISSOLVED (UG/L AS FE) (01046) | MAGNESIUM, DISSOLVED (MG/L AS MG) (00925) | MANGANESE, DISSOLVED (UG/L AS MN) (01056) | POTASSIUM, DISSOLVED (MG/L AS K) (00935) | SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300) | SILICA, DISSOLVED (MG/L AS SIO2) (00955) | SODIUM, DISSOLVED (MG/L AS NA) (00930) | SULFATE DISSOLVED (MG/L AS SO4) (00945) | NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608) |
|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | |
| 27... | <0.10 | 140 | 7.9 | 69 | 3.5 | 295 | 14 | 57 | 18 | 0.093 |
| NOV | | | | | | | | | | |
| 18... | <.10 | 160 | 6.4 | 48 | 3.7 | 262 | 11 | 54 | 15 | .071 |
| DEC | | | | | | | | | | |
| 15... | <.10 | 230 | 8.1 | 129 | 3.3 | 302 | 13 | 54 | 19 | .114 |
| JAN | | | | | | | | | | |
| 19... | <.10 | 140 | 3.6 | 192 | 2.2 | 210 | 4.7 | 56 | 11 | .091 |
| FEB | | | | | | | | | | |
| 04... | <.10 | 140 | 4.7 | 84 | 1.8 | 192 | 6.6 | 44 | 13 | .041 |
| MAR | | | | | | | | | | |
| 09... | <.10 | 160 | 7.6 | 87 | 2.3 | 282 | 8.2 | 64 | 15 | .049 |
| APR | | | | | | | | | | |
| 15... | <.10 | 230 | 9.4 | 136 | 2.9 | 298 | 6.8 | 60 | 15 | <.020 |
| MAY | | | | | | | | | | |
| 12... | .19 | 250 | 8.1 | 207 | 3.4 | 336 | 9.1 | 70 | 16 | .055 |
| JUN | | | | | | | | | | |
| 14... | .27 | 140 | 9.8 | 97 | 3.4 | 364 | 12 | 65 | 16 | .035 |
| JUL | | | | | | | | | | |
| 13... | .19 | 64 | 7.2 | 73 | 3.2 | 299 | 9.4 | 53 | 16 | .020 |
| AUG | | | | | | | | | | |
| 09... | .29 | 140 | 8.8 | 57 | 3.9 | 322 | 11 | 66 | 15 | <.020 |
| SEP | | | | | | | | | | |
| 11... | <.10 | 150 | 3.6 | 143 | 2.4 | 128 | 5.2 | 21 | 23 | <.020 |
| 17... | <.10 | 230 | 4.7 | 88 | 2.5 | 145 | 6.6 | 25 | 14 | .020 |

| DATE | NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623) | NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITROGEN, NITRITE DISSOLVED (MG/L AS N) (00613) | PHOSPHORUS DISSOLVED (MG/L AS P) (00666) | PHOSPHORUS TOTAL (MG/L AS P) (00665) | PHOSPHORUS ORTHO, DISSOLVED (MG/L AS P) (00671) | CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681) | CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689) | SEDIMENT, SUSPENDED (MG/L) (80154) | SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331) |
|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | |
| 27... | 0.37 | 0.39 | 0.010 | <0.050 | 0.018 | <0.010 | 6.0 | <0.20 | 7 | 50 |
| NOV | | | | | | | | | | |
| 18... | .59 | .64 | <.010 | .018 | .026 | .013 | 5.7 | .20 | 4 | 50 |
| DEC | | | | | | | | | | |
| 15... | .41 | .31 | .012 | .053 | E.035 | .013 | 4.6 | -- | 3 | 69 |
| JAN | | | | | | | | | | |
| 19... | .38 | .58 | <.010 | .019 | .060 | .010 | 5.7 | 1.1 | 10 | 56 |
| FEB | | | | | | | | | | |
| 04... | <.10 | <.10 | <.010 | .011 | .023 | <.010 | 5.2 | <.20 | 4 | 71 |
| MAR | | | | | | | | | | |
| 09... | .35 | .36 | <.010 | .008 | .022 | <.010 | 5.4 | <.20 | 3 | 91 |
| APR | | | | | | | | | | |
| 15... | .32 | .41 | .012 | .007 | .027 | .013 | 6.3 | .30 | 2 | 75 |
| MAY | | | | | | | | | | |
| 12... | .40 | .47 | .015 | .014 | .038 | .014 | 6.0 | .40 | 8 | 61 |
| JUN | | | | | | | | | | |
| 14... | .45 | .56 | .013 | .019 | .069 | .012 | 6.3 | .70 | 12 | 76 |
| JUL | | | | | | | | | | |
| 13... | .33 | .41 | .011 | .019 | .060 | <.010 | 5.1 | .30 | 3 | 80 |
| AUG | | | | | | | | | | |
| 09... | .31 | .36 | <.010 | .020 | .042 | .012 | 5.1 | .30 | 2 | 67 |
| SEP | | | | | | | | | | |
| 11... | .47 | .69 | <.010 | .057 | <.004 | .030 | 7.9 | .20 | 11 | 70 |
| 17... | .46 | .77 | <.010 | .032 | .081 | .014 | 9.0 | 1.1 | 17 | 57 |

01102460 ABERJONA RIVER NEAR WOBURN, MA

LOCATION.--Lat 42°29'29", long 71°07'46", Middlesex County, Hydrologic Unit 01090001, at Salem Street, downstream side bridge, 1.4 mi northeast of Woburn.

DRAINAGE AREA.--6.91 $mi^2$.

PERIOD of RECORD.--Water Years 1973-74, 1999.

REMARKS.--Discharge obtained by discharge measurements on the day of sampling. Instantaneous records are based on composite samples and are representative of the cross section.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | TIME | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | OXYGEN, DIS-SOLVED (MG/L) (00300) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625) | E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | | |
| 18... | 1145 | 3.3 | 655 | 7.3 | 21.5 | 19.0 | 764 | 12.4 | 134 | -- | -- |
| JUN | | | | | | | | | | | |
| 15... | 1130 | 2.2 | 658 | 7.1 | 24.5 | 24.0 | 756 | 8.4 | 101 | -- | -- |
| 29... | 0935 | .95 | 708 | 7.0 | 26.0 | 24.0 | 748 | 3.0 | 36 | -- | -- |
| JUL | | | | | | | | | | | |
| 27... | 1130 | 3.1 | 491 | 6.8 | 26.0 | 25.5 | 752 | 5.3 | 66 | 740 | 820 |
| SEP | | | | | | | | | | | |
| 02... | 1100 | .61 | 657 | 6.9 | 25.0 | 17.0 | 762 | 7.0 | 73 | 710 | 550 |

| DATE | FECAL COLI-FORM 24-HR MEM.FIL (COLS./ 100 ML) (31613) | E. COLI WTR FLT MF 0.7U NUT AG-AR+MUG 4HR35D COL/100 (50278) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666) |
|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | |
| 18... | 180 | 180 | 0.056 | 1.50 | 5.76 | 5.9 | 6.6 | 0.039 | 0.010 | 0.014 |
| JUN | | | | | | | | | | |
| 15... | 740 | 360 | .065 | .845 | 5.36 | 5.8 | 5.2 | .037 | .016 | .012 |
| 29... | 420 | 360 | .053 | .546 | 6.18 | 7.1 | 13 | .042 | .010 | .008 |
| JUL | | | | | | | | | | |
| 27... | -- | -- | .078 | .873 | 4.93 | 5.8 | 8.2 | .029 | <.010 | .006 |
| SEP | | | | | | | | | | |
| 02... | -- | -- | .044 | .839 | 5.47 | 6.4 | 6.9 | .042 | <.010 | <.004 |

01102474 ABERJONA RIVER NEAR WINCHESTER, MA

LOCATION.--Lat 42°28'10", long 71°07'32", Middlesex County, Hydrologic Unit 01090001, at Washington Street, upstream side of bridge, 2.2 mi south from Route 128 and 1.5 mi north of Winchester.

DRAINAGE AREA.--11.9 $mi^2$, excludes 0.6 $mi^2$ drained by Winchester North Reservoir.

PERIOD of RECORD.--Water Years 1967, 1973-74, 1999

REMARKS.--Discharge obtained by discharge measurements on the day of sampling. Instantaneous records are based on composite samples and are representative of the cross section.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | TIME | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | OXYGEN, DIS-SOLVED (MG/L) (00300) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625) |
|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | |
| 18... | 1240 | 4.4 | 668 | 7.2 | 22.0 | 16.0 | 764 | 7.9 | 80 | -- |
| JUN | | | | | | | | | | |
| 15... | 1245 | 2.6 | 633 | 6.9 | 26.5 | 21.0 | 757 | 4.9 | 55 | -- |
| 29... | 1115 | 1.3 | 628 | 7.0 | 26.5 | 24.0 | 747 | 4.3 | 52 | -- |
| JUL | | | | | | | | | | |
| 26... | 1230 | 6.0 | 495 | 7.0 | 27.5 | 21.5 | 751 | 5.2 | 60 | 700 |
| SEP | | | | | | | | | | |
| 02... | 1200 | .43 | 568 | 7.0 | 28.0 | 17.0 | 761 | 4.4 | 46 | 380 |

| DATE | E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633) | FECAL COLI-FORM 24-HR MEM.FIL (COLS./ 100 ML) (31613) | E. COLI WTR FLT MF 0.7U NUT AG-AR+MUG 4HR35D COL/100 (50278) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666) |
|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | |
| 18... | -- | 370 | 240 | 0.105 | 2.03 | 3.11 | 3.0 | 3.4 | 0.013 | 0.009 |
| JUN | | | | | | | | | | |
| 15... | -- | 780 | 500 | .328 | 2.74 | 1.09 | 1.6 | 1.7 | .010 | .011 |
| 29... | -- | 1,400 | 1,000 | .264 | 2.71 | .428 | .95 | .99 | .014 | .011 |
| JUL | | | | | | | | | | |
| 26... | 720 | -- | -- | .248 | 1.94 | 3.85 | 4.4 | 4.1 | <.010 | .015 |
| SEP | | | | | | | | | | |
| 02... | 520 | -- | -- | .065 | 3.18 | .154 | .39 | .49 | <.010 | .007 |

01102500 ABERJONA RIVER AT WINCHESTER, MA
(National Water Quality Assessment Site)

LOCATION.--Lat 42°26'50", long 71°08'22", Middlesex County, Hydrologic Unit 01090001, on left bank at Winchester, 0.5 mi upstream from head of Mystic Lakes.

DRAINAGE AREA.--24.1 $mi^2$, excludes 0.6 $mi^2$ drained by Winchester North Reservoir.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Discharge: April 1939 to current year.
Water-quality records: Water year 1958-59, 1973, 1999.

REVISED RECORDS.--WDR MA-RI-79-1: 1955. WDR MA-RI-84-1: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is sea level.

REMARKS.--Records good. Flow affected by diversions for industrial use and for municipal supply of Woburn and Winchester, and by wastage and leakage from Winchester North Reservoir. Some regulation by Winchester at dam 1,800 ft upstream. Telephone and satellite gage-height telemeter at station.

AVERAGE DISCHARGE.--60 years, 29.5 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,330 $ft^3/s$, Jan. 25, 1979, gage height, 15.46 ft, from rating curve extended above 400 $ft^3/s$ on basis of slope-area measurement of peak flow, maximum gage height, 16.78 ft, Oct. 21, 1996 (backwater from Upper Mystic Lake); no flow for part of Oct. 10, 12, 1950, caused by pumpage from gage pool; minimum daily discharge, 0.25 $ft^3/s$, Oct. 10, 1950.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since 1886, that of Jan. 25, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 480 $ft^3/s$, Sept. 16, gage height, 13.03 ft; minimum, 1.2 $ft^3/s$, May 18; minimum daily, 1.4 $ft^3/s$, May 18, Aug. 30.

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

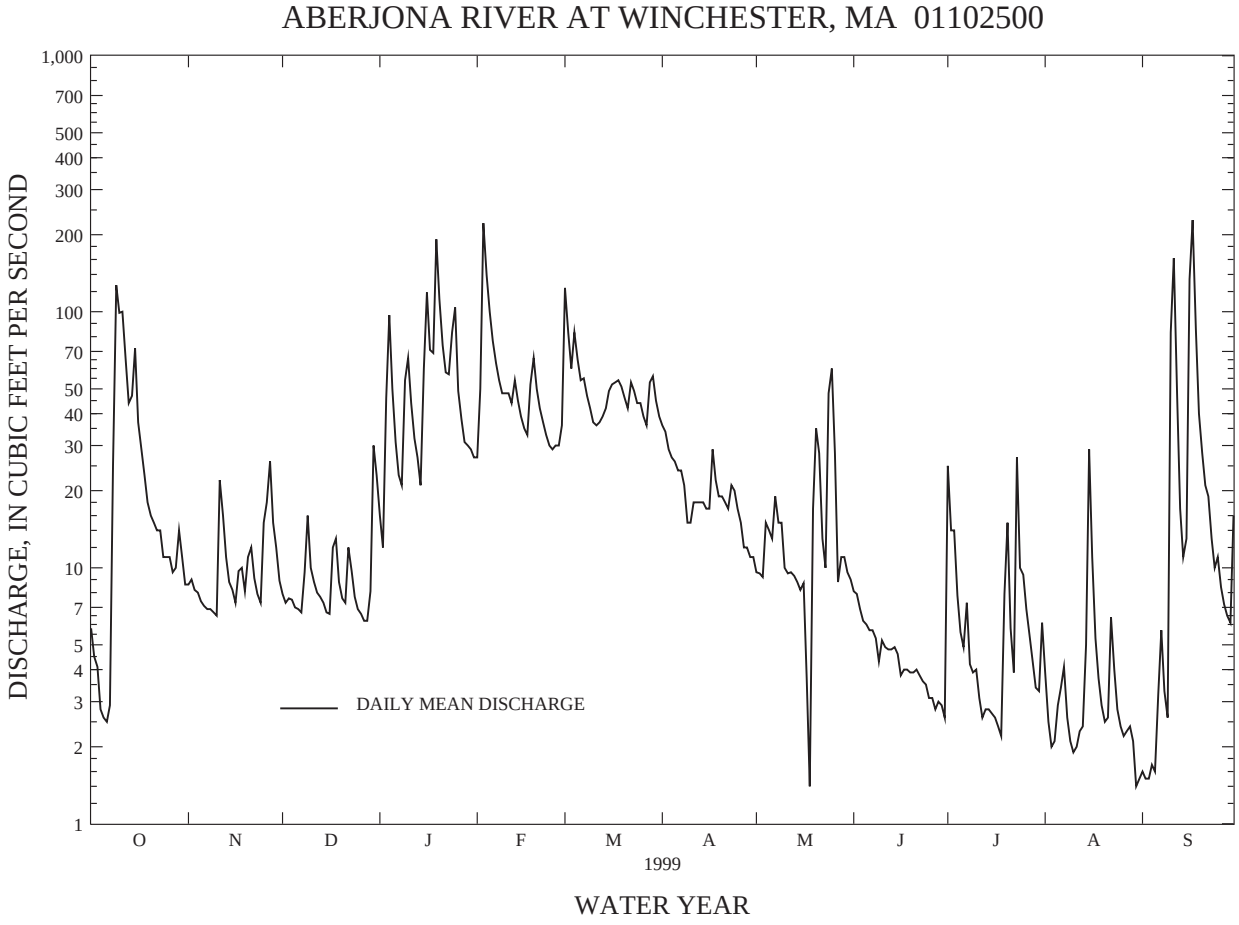
| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.8 | 8.6 | 7.9 | 16 | 27 | 124 | 36 | 9.6 | 8.1 | 25 | 3.9 | 1.6 |
| 2 | 4.5 | 9.0 | 7.3 | 12 | 50 | 83 | 34 | 9.5 | 7.9 | 14 | 2.5 | 1.5 |
| 3 | 4.1 | 8.2 | 7.6 | 46 | 222 | 60 | 29 | 9.2 | 6.9 | 14 | 2.0 | 1.5 |
| 4 | 2.8 | 8.0 | 7.5 | 97 | 139 | 83 | 27 | 15 | 6.2 | 7.8 | 2.1 | 1.7 |
| 5 | 2.6 | 7.4 | 7.0 | 50 | 100 | 65 | 26 | 14 | 6.0 | 5.6 | 2.9 | 1.6 |
| 6 | 2.5 | 7.1 | 6.9 | 31 | 77 | 54 | 24 | 13 | 5.7 | 4.9 | 3.4 | 3.2 |
| 7 | 2.9 | 6.9 | 6.7 | 23 | 63 | 55 | 24 | 19 | 5.7 | 7.3 | 4.1 | 5.7 |
| 8 | 25 | 6.9 | 9.6 | 21 | 54 | 47 | 21 | 15 | 5.3 | 4.2 | 2.6 | 3.3 |
| 9 | 127 | 6.7 | 16 | 54 | 48 | 42 | 15 | 15 | 4.3 | 3.9 | 2.1 | 2.6 |
| 10 | 99 | 6.5 | 10 | 66 | 48 | 37 | 15 | 10 | 5.2 | 4.0 | 1.9 | 83 |
| 11 | 100 | 22 | 8.8 | 44 | 48 | 36 | 18 | 9.5 | 4.9 | 3.1 | 2.0 | 162 |
| 12 | 65 | 16 | 8.0 | 32 | 44 | 37 | 18 | 9.6 | 4.8 | 2.6 | 2.3 | 48 |
| 13 | 44 | 11 | 7.7 | 27 | 54 | 39 | 18 | 9.3 | 4.8 | 2.8 | 2.4 | 17 |
| 14 | 47 | 8.8 | 7.3 | 21 | 45 | 42 | 18 | 8.8 | 4.9 | 2.8 | 5.0 | 11 |
| 15 | 72 | 8.2 | 6.7 | 60 | 39 | 49 | 17 | 8.2 | 4.6 | 2.7 | 29 | 13 |
| 16 | 37 | 7.3 | 6.6 | 119 | 35 | 52 | 17 | 8.7 | 3.8 | 2.6 | 11 | 134 |
| 17 | 29 | 9.7 | 12 | 71 | 33 | 53 | 29 | 3.7 | 4.0 | 2.4 | 5.3 | 228 |
| 18 | 23 | 10 | 13 | 69 | 52 | 54 | 22 | 1.4 | 4.0 | 2.2 | 3.7 | 85 |
| 19 | 18 | 8.1 | 8.8 | 192 | 66 | 51 | 19 | 17 | 3.9 | 7.9 | 2.9 | 40 |
| 20 | 16 | 11 | 7.6 | 112 | 50 | 46 | 19 | 35 | 3.9 | 15 | 2.5 | 28 |
| 21 | 15 | 12 | 7.3 | 74 | 42 | 42 | 18 | 28 | 4.0 | 5.8 | 2.6 | 21 |
| 22 | 14 | 9.1 | 12 | 58 | 37 | 53 | 17 | 13 | 3.8 | 3.9 | 6.4 | 19 |
| 23 | 14 | 7.9 | 9.7 | 57 | 33 | 49 | 21 | 10 | 3.6 | 27 | 4.0 | 13 |
| 24 | 11 | 7.3 | 7.7 | 83 | 30 | 44 | 20 | 48 | 3.5 | 10 | 2.8 | 10 |
| 25 | 11 | 15 | 6.9 | 104 | 29 | 44 | 17 | 60 | 3.1 | 9.4 | 2.4 | 11 |
| 26 | 11 | 18 | 6.6 | 49 | 30 | 39 | 15 | 28 | 3.1 | 6.9 | 2.2 | 8.4 |
| 27 | 9.6 | 26 | 6.2 | 38 | 30 | 36 | 12 | 8.8 | 2.8 | 5.5 | 2.3 | 7.2 |
| 28 | 10 | 15 | 6.2 | 31 | 36 | 53 | 12 | 11 | 3.0 | 4.3 | 2.4 | 6.5 |
| 29 | 14 | 12 | 8.1 | 30 | --- | 56 | 11 | 11 | 2.9 | 3.4 | 2.1 | 6.1 |
| 30 | 11 | 8.9 | 30 | 29 | --- | 45 | 11 | 9.6 | 2.6 | 3.3 | 1.4 | 16 |
| 31 | 8.6 | --- | 23 | 27 | --- | 39 | --- | 9.0 | --- | 6.1 | 1.5 | --- |
| TOTAL | 856.4 | 318.6 | 296.7 | 1743 | 1561 | 1609 | 600 | 476.9 | 137.3 | 220.4 | 123.7 | 989.9 |
| MEAN | 27.6 | 10.6 | 9.57 | 56.2 | 55.8 | 51.9 | 20.0 | 15.4 | 4.58 | 7.11 | 3.99 | 33.0 |
| MAX | 127 | 26 | 30 | 192 | 222 | 124 | 36 | 60 | 8.1 | 27 | 29 | 228 |
| MIN | 2.5 | 6.5 | 6.2 | 12 | 27 | 36 | 11 | 1.4 | 2.6 | 2.2 | 1.4 | 1.5 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1999, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 14.7 | 23.8 | 31.9 | 37.8 | 41.8 | 64.1 | 53.6 | 33.5 | 22.8 | 10.1 | 9.86 | 10.2 |
| MAX | 125 | 102 | 95.7 | 169 | 104 | 167 | 175 | 134 | 159 | 40.4 | 79.4 | 78.2 |
| (WY) | 1997 | 1956 | 1970 | 1979 | 1984 | 1983 | 1987 | 1954 | 1982 | 1959 | 1955 | 1954 |
| MIN | .48 | .59 | .63 | 2.34 | 4.39 | 19.2 | 12.4 | 11.3 | 3.02 | .69 | .62 | .49 |
| (WY) | 1942 | 1942 | 1942 | 1966 | 1980 | 1989 | 1966 | 1965 | 1957 | 1950 | 1957 | 1957 |

01102500 ABERJONA RIVER AT WINCHESTER, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1939 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 18124.0 | | 8932.9 | | | |
| ANNUAL MEAN | 49.7 | | 24.5 | | 29.5 | |
| HIGHEST ANNUAL MEAN | | | | | 58.3 | 1984 |
| LOWEST ANNUAL MEAN | | | | | 8.23 | 1966 |
| HIGHEST DAILY MEAN | 1020 | Jun 14 | 228 | Sep 17 | 1070 | Oct 21 1996 |
| LOWEST DAILY MEAN | 1.1 | Sep 3 | 1.4 | May 18 | .25 | Oct 10 1950 |
| ANNUAL SEVEN-DAY MINIMUM | 3.6 | Oct 1 | 1.5 | Aug 30 | .31 | Dec 6 1941 |
| INSTANTANEOUS PEAK FLOW | | | 480 | Sep 16 | 1330 | Jan 25 1979 |
| INSTANTANEOUS PEAK STAGE | | | 13.03 | Sep 16 | 16.78 | Oct 21 1996 |
| INSTANTANEOUS LOW FLOW | | | 1.2 | May 18 | .00 | Oct 10 1950 |
| 10 PERCENT EXCEEDS | 109 | | 55 | | 69 | |
| 50 PERCENT EXCEEDS | 32 | | 11 | | 17 | |
| 90 PERCENT EXCEEDS | 6.6 | | 2.8 | | 1.4 | |



01102500 ABERJONA RIVER AT WINCHESTER, MA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958-59, 1973, 1999.

REMARKS.--Only volatile organic compounds measured at or above the non-detection level and pesticide compounds measured at or above the minimum reporting level for one or more samples are listed in the water-quality tables. Volatile organic compounds analyzed by schedule 2020, and pesticide compounds analyzed by schedule 2001, are listed with non-detection values or minimum reporting levels in the section "Explanation of the Records."

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | TIME | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | PH WATER WHOLE LAB (STAND-ARD UNITS) (00403) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | OXYGEN, DIS-SOLVED (MG/L) (00300) | CALCIUM DIS-SOLVED (MG/L AS CA) (00915) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950) |
|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | |
| 23... | 0940 | 14 | 448 | 7.4 | 8.3 | 9.9 | 7.8 | 29 | 81 | 0.13 |
| NOV | | | | | | | | | | |
| 24... | 1050 | 7.2 | 486 | 7.5 | 15.4 | 8.0 | 8.8 | 30 | 86 | .13 |
| DEC | | | | | | | | | | |
| 15... | 1330 | 6.6 | 500 | 7.3 | 12.9 | 4.5 | 10.8 | 33 | 94 | .13 |
| JAN | | | | | | | | | | |
| 19... | 1415 | 197 | 670 | 7.0 | 11.0 | 2.0 | 12.8 | 16 | 170 | <.10 |
| FEB | | | | | | | | | | |
| 09... | 1140 | 40 | 518 | 7.1 | 5.5 | 2.0 | 12.3 | 23 | 110 | <.10 |
| MAR | | | | | | | | | | |
| 01... | 1200 | 129 | 500 | 7.0 | 10.5 | 3.2 | 12.6 | 15 | 120 | <.10 |
| 08... | 1040 | 44 | 1010 | 7.6 | -1.4 | .2 | 15.0 | 25 | 260 | <.10 |
| APR | | | | | | | | | | |
| 07... | 1220 | 24 | 622 | 7.4 | 17.6 | 11.0 | 9.6 | 32 | 140 | .13 |
| 12... | 1030 | 18 | 624 | 7.4 | 12.8 | 10.8 | 10.1 | 30 | 130 | .13 |
| 19... | 0930 | 20 | 583 | 7.5 | 15.3 | 11.0 | 10.3 | 31 | 120 | .12 |
| 30... | 0930 | 11 | 611 | 7.6 | 15.3 | 12.2 | 10.0 | 36 | 130 | .15 |
| MAY | | | | | | | | | | |
| 05... | 1020 | 15 | 523 | 7.3 | 14.6 | 12.0 | 7.6 | 28 | 110 | .17 |
| 10... | 1100 | 9.1 | 563 | 7.4 | 20.8 | 15.9 | 6.0 | 32 | 120 | .19 |
| 14... | 1000 | 8.8 | 610 | -- | 16.7 | 13.8 | 6.4 | -- | -- | -- |
| 17... | 1030 | 2.0 | 640 | 7.4 | 19.6 | 14.7 | 5.5 | 38 | 120 | .21 |
| 20... | 0945 | 14 | 322 | 6.9 | 17.1 | 15.9 | 5.7 | 16 | 64 | <.10 |
| 24... | 0900 | 42 | 308 | 6.9 | 18.6 | 15.0 | 6.9 | 14 | 61 | <.10 |
| JUN | | | | | | | | | | |
| 02... | 1015 | 7.5 | 563 | 7.3 | 23.2 | 21.5 | 5.7 | 29 | 110 | .19 |
| 07... | 1010 | 5.8 | 602 | 7.4 | 28.4 | 20.3 | 5.4 | 34 | 120 | .19 |
| 14... | 0930 | 4.8 | 617 | 7.3 | 25.3 | 21.1 | 4.1 | 33 | 120 | .23 |
| 21... | 0930 | 3.9 | 618 | 7.3 | 21.7 | 18.0 | 4.7 | 35 | 120 | .17 |
| 28... | 0930 | 3.1 | 616 | 7.2 | 31.7 | 22.0 | 5.0 | 34 | 110 | .29 |
| JUL | | | | | | | | | | |
| 06... | 1040 | 4.3 | 543 | 7.2 | 30.2 | 24.8 | 3.1 | 31 | 92 | .22 |
| 12... | 1015 | 2.6 | 521 | 7.2 | 23.0 | 19.3 | 3.9 | 30 | 100 | .27 |
| 19... | 0940 | 2.0 | 576 | 7.2 | 28.4 | 22.3 | 4.2 | 33 | 110 | .26 |
| 26... | 1030 | 7.2 | 477 | 7.1 | 24.2 | 22.8 | 3.6 | 29 | 73 | .13 |
| AUG | | | | | | | | | | |
| 02... | 1045 | 2.6 | 517 | 7.1 | 27.0 | 22.8 | 3.8 | 33 | 94 | .25 |
| 09... | 0845 | 2.3 | 520 | 7.2 | 19.4 | 19.2 | 3.2 | 32 | 95 | .24 |
| 17... | 0930 | 5.5 | 505 | 7.2 | 26.4 | 22.0 | 4.8 | 32 | 68 | .12 |
| 23... | 0730 | 4.3 | 535 | 6.9 | 17.9 | 18.0 | 4.1 | 36 | 87 | .23 |
| 29... | 1015 | 2.3 | 507 | 7.3 | 25.5 | 20.3 | 5.5 | 32 | 94 | .26 |
| SEP | | | | | | | | | | |
| 07... | 0930 | 5.3 | 508 | 7.4 | 27.2 | 23.0 | 4.8 | 32 | 89 | .23 |
| 11... | 0800 | 187 | 150 | 7.5 | 20.4 | 20.3 | 6.6 | 8.4 | 22 | <.10 |
| 17... | 0950 | 234 | 215 | 7.1 | 16.4 | 19.0 | 7.0 | 12 | 34 | <.10 |

01102500 ABERJONA RIVER AT WINCHESTER, MA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | IRON, DIS-SOLVED (UG/L AS FE) (01046) | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935) | SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300) | SILICA, DIS-SOLVED (MG/L AS SIO2) (00955) | SODIUM, DIS-SOLVED (MG/L AS NA) (00930) | SULFATE DIS-SOLVED (MG/L AS SO4) (00945) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | |
| 23... | 61 | 4.9 | 165 | 4.1 | 263 | 9.7 | 49 | 28 | 1.48 | 1.8 | 1.7 | 0.068 |
| NOV | | | | | | | | | | | | |
| 24... | 37 | 5.2 | 130 | 3.8 | 277 | 9.2 | 49 | 31 | 1.60 | 2.0 | 2.3 | .016 |
| DEC | | | | | | | | | | | | |
| 15... | 31 | 6.0 | 177 | 4.0 | 314 | 10 | 52 | 37 | 2.25 | 2.6 | 2.2 | <.010 |
| JAN | | | | | | | | | | | | |
| 19... | 150 | 2.9 | 146 | 3.3 | 343 | 4.2 | 96 | 17 | 1.03 | 1.4 | 1.5 | <.010 |
| FEB | | | | | | | | | | | | |
| 09... | 220 | 3.9 | 134 | 2.3 | 281 | 8.0 | 60 | 22 | 1.11 | 1.4 | 1.5 | <.010 |
| MAR | | | | | | | | | | | | |
| 01... | 110 | 2.6 | 127 | 2.2 | 260 | 4.7 | 70 | 14 | .949 | 1.1 | 1.3 | .012 |
| 08... | 180 | 4.2 | 135 | 3.0 | 542 | 7.4 | 148 | 21 | .956 | 1.2 | 1.2 | <.010 |
| APR | | | | | | | | | | | | |
| 07... | 130 | 5.5 | 227 | 3.7 | 357 | 6.5 | 77 | 30 | 1.58 | 1.9 | 2.0 | .029 |
| 12... | 140 | 5.4 | 201 | 3.7 | 355 | 6.4 | 78 | 29 | 1.68 | 2.1 | 2.1 | .028 |
| 19... | 150 | 5.5 | 163 | 3.4 | 340 | 5.6 | 69 | 30 | 1.48 | 1.8 | 1.9 | .033 |
| 30... | 330 | 6.2 | 221 | 3.8 | 352 | 6.6 | 70 | 34 | 1.47 | 1.8 | 1.9 | .047 |
| MAY | | | | | | | | | | | | |
| 05... | 140 | 5.0 | 228 | 2.9 | 310 | 6.0 | 59 | 25 | 1.07 | 1.5 | 1.6 | .047 |
| 10... | 170 | 5.7 | 333 | 3.7 | -- | 7.6 | 65 | 26 | .832 | 1.1 | 1.2 | .064 |
| 14... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 17... | 210 | 6.6 | 430 | 4.1 | 368 | 8.8 | 70 | 35 | 1.52 | 1.7 | 1.7 | .092 |
| 20... | 110 | 2.9 | 227 | 2.4 | 183 | 3.9 | 35 | 15 | .652 | .97 | 1.3 | .039 |
| 24... | 80 | 2.4 | 192 | 2.1 | 197 | 3.4 | 32 | 14 | .767 | 1.0 | 1.8 | .040 |
| JUN | | | | | | | | | | | | |
| 02... | 270 | 5.1 | 327 | 3.1 | 336 | 8.0 | 56 | 25 | .664 | .94 | 1.1 | .148 |
| 07... | 140 | 6.1 | 397 | 1.0 | 367 | 9.8 | 64 | 28 | .588 | <.10 | 1.0 | .140 |
| 14... | 81 | 5.9 | 364 | 3.3 | 368 | 9.6 | 58 | 32 | .490 | .93 | 1.0 | .126 |
| 21... | 37 | 6.3 | 419 | 3.4 | 378 | 10 | 61 | 33 | .444 | .77 | .91 | .096 |
| 28... | 87 | 6.2 | 246 | 3.6 | 353 | 10 | 62 | 36 | .072 | .41 | .69 | .044 |
| JUL | | | | | | | | | | | | |
| 06... | 51 | 5.1 | 549 | 3.5 | 333 | 9.2 | 50 | 43 | 2.40 | 2.8 | 2.7 | .172 |
| 12... | 39 | 5.3 | 394 | 3.0 | 348 | 9.5 | 50 | 26 | .322 | .70 | .82 | .096 |
| 19... | 23 | 6.0 | 276 | 3.1 | 314 | 9.8 | 56 | 30 | .087 | .38 | .39 | .032 |
| 26... | 270 | 4.8 | 319 | 3.4 | 278 | 8.3 | 42 | 45 | 3.27 | 3.6 | 3.4 | .194 |
| AUG | | | | | | | | | | | | |
| 02... | 100 | 5.7 | 338 | 4.2 | 286 | 9.9 | 51 | 31 | <.020 | .48 | .69 | <.010 |
| 09... | 41 | 5.7 | 267 | 3.1 | 289 | 9.9 | 51 | 28 | .163 | .44 | .57 | .043 |
| 17... | 230 | 5.1 | 235 | 4.1 | 274 | 8.7 | 42 | 63 | 4.93 | 4.5 | 5.4 | .120 |
| 23... | 89 | 5.9 | 453 | 4.3 | 307 | 10 | 52 | 43 | 1.27 | 1.4 | 1.7 | .210 |
| 29... | 33 | 5.8 | 273 | 3.3 | 280 | 9.5 | 53 | 31 | .132 | .30 | .46 | .054 |
| SEP | | | | | | | | | | | | |
| 07... | 29 | 5.5 | 263 | 4.0 | 286 | 7.9 | 51 | 34 | .196 | .47 | .71 | .034 |
| 11... | 230 | 1.4 | 118 | 1.9 | 86 | 2.7 | 15 | 14 | .751 | 1.0 | 1.6 | .015 |
| 17... | 190 | 1.9 | 67 | 2.2 | 120 | 3.8 | 22 | 18 | 1.10 | 1.4 | 2.0 | .025 |

01102500 ABERJONA RIVER AT WINCHESTER, MA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666) | PHOS-PHORUS TOTAL (MG/L AS P) (00665) | PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671) | CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681) | CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689) | ATRA-ZINE, WATER, DISS, REC (UG/L) (39632) | BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (82673) | CAR-BARYL WATER FLTRD 0.7 U GF, REC (82680) | CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933) | ATRA-ZINE, WATER, DISS, REC (UG/L) (04040) | DI-AZINON, DIS-SOLVED (UG/L) (39572) | DEETHYL EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | | |
| 23... | <0.050 | <0.050 | <0.010 | 4.9 | 0.20 | -- | -- | -- | -- | -- | -- | -- |
| NOV | | | | | | | | | | | | |
| 24... | <.050 | .040 | <.010 | 3.8 | .70 | -- | -- | -- | -- | -- | -- | -- |
| DEC | | | | | | | | | | | | |
| 15... | E.028 | E.033 | .010 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN | | | | | | | | | | | | |
| 19... | .016 | .058 | <.010 | 4.5 | .70 | -- | -- | -- | -- | -- | -- | -- |
| FEB | | | | | | | | | | | | |
| 09... | .007 | .026 | <.010 | 3.7 | .30 | -- | -- | -- | -- | -- | -- | -- |
| MAR | | | | | | | | | | | | |
| 01... | .008 | .044 | .018 | 3.5 | .40 | -- | -- | -- | -- | -- | -- | -- |
| 08... | .005 | .024 | <.010 | 3.5 | .20 | -- | -- | -- | -- | -- | -- | -- |
| APR | | | | | | | | | | | | |
| 07... | <.004 | .030 | <.010 | 4.3 | .60 | <0.001 | <0.0020 | E0.0190 | <0.0040 | <0.0020 | <0.002 | <0.0020 |
| 12... | .007 | .020 | <.010 | -- | .40 | .004 | <.0020 | <.0030 | <.0040 | <.0020 | E.003 | <.0020 |
| 19... | .004 | .024 | .013 | 4.1 | .40 | E.004 | <.0020 | <.0030 | <.0040 | <.0020 | .007 | <.0020 |
| 30... | .005 | .024 | .013 | 4.0 | .30 | .006 | E.0018 | <.0030 | <.0040 | E.0018 | .005 | E.0031 |
| MAY | | | | | | | | | | | | |
| 05... | .008 | .042 | .013 | 5.4 | .40 | .005 | E.0022 | E.0118 | <.0040 | <.0020 | .060 | <.0020 |
| 10... | .007 | .035 | .013 | 4.6 | .50 | E.003 | <.0020 | E.0051 | <.0040 | E.0023 | .016 | <.0020 |
| 14... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 17... | .005 | .032 | .011 | 4.2 | .40 | .005 | <.0020 | E.0037 | <.0040 | E.0027 | E.002 | <.0020 |
| 20... | .014 | .088 | .010 | 6.8 | .80 | <.007 | E.0031 | E.452 | .0077 | <.0020 | .215 | <.0020 |
| 24... | .021 | .095 | .010 | 5.4 | 1.2 | E.004 | <.0020 | E.493 | .0057 | <.0020 | .247 | <.0020 |
| JUN | | | | | | | | | | | | |
| 02... | .008 | .038 | <.010 | 4.7 | .50 | <.004 | <.0020 | E.0076 | <.0040 | <.0020 | .022 | <.0020 |
| 07... | .007 | .041 | .017 | -- | .40 | -- | -- | -- | -- | -- | -- | -- |
| 14... | .012 | .045 | <.010 | 4.1 | .50 | <.001 | <.0020 | E.0224 | <.0040 | <.0020 | .006 | <.0020 |
| 21... | .008 | .034 | <.010 | 3.8 | -- | <.001 | <.0020 | E.0208 | <.0040 | E.0042 | <.002 | <.0020 |
| 28... | .011 | .056 | <.010 | 4.0 | -- | .006 | <.0020 | E.0208 | <.0040 | E.0059 | .014 | <.0020 |
| JUL | | | | | | | | | | | | |
| 06... | .008 | .072 | .010 | 5.7 | .30 | <.001 | <.0020 | E.104 | <.0040 | <.0020 | .031 | <.0020 |
| 12... | .009 | .031 | <.010 | 4.4 | .20 | <.020 | <.0020 | E.0735 | <.0040 | <.0050 | .019 | <.0020 |
| 19... | .006 | .028 | <.010 | 3.5 | .40 | <.001 | <.0020 | E.0231 | <.0040 | <.0020 | <.002 | <.0020 |
| 26... | .017 | .045 | <.010 | 6.4 | .50 | <.001 | <.0020 | E.0450 | <.0040 | <.0020 | .266 | <.0020 |
| AUG | | | | | | | | | | | | |
| 02... | .010 | .039 | <.010 | 4.9 | .30 | <.006 | <.0020 | E.0281 | <.0080 | <.0040 | .046 | <.0020 |
| 09... | .009 | .031 | <.010 | 4.1 | -- | .004 | <.0020 | E.0184 | <.0040 | <.0040 | .028 | <.0020 |
| 17... | .012 | .051 | <.010 | 5.8 | .50 | <.001 | <.0020 | E.105 | <.0040 | <.0020 | .101 | <.0020 |
| 23... | .007 | .037 | <.010 | 4.4 | -- | .008 | <.0020 | E.196 | <.0040 | <.0020 | .022 | <.0020 |
| 29... | .004 | .024 | <.010 | 3.2 | .30 | .006 | <.0020 | E.0497 | <.0040 | E.0043 | <.020 | <.0020 |
| SEP | | | | | | | | | | | | |
| 07... | .017 | .051 | <.010 | 4.8 | .50 | -- | -- | -- | -- | -- | -- | -- |
| 11... | .020 | .101 | <.010 | 4.6 | 1.2 | -- | -- | -- | -- | -- | -- | -- |
| 17... | .014 | .112 | <.010 | 5.6 | 2.2 | -- | -- | -- | -- | -- | -- | -- |

01102500 ABERJONA RIVER AT WINCHESTER, MA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | METO-LACHLOR WATER DISSOLV (UG/L) (39415) | SI-MAZINE, WATER, DISS, REC (UG/L) (04035) | TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661) | BROMO-DI-CHLORO-METHANE TOTAL (UG/L) (32101) | CHLORO-FORM TOTAL (UG/L) (32106) | TETRA-CHLORO-ETHYL-ENE TOTAL (UG/L) (34475) | TRI-CHLORO-ETHYL-ENE TOTAL (UG/L) (39180) | CIS-1,2-DI-CHLORO-ETHENE WATER TOTAL (UG/L) (77093) | METHYL TERT-BUTYL ETHER WAT UNF REC (UG/L) (78032) | SEDI-MENT, SUS-PENDED (MG/L) (80154) | SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | | | | | | |
| 23... | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9 | 49 |
| NOV | | | | | | | | | | | |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | 11 | 71 |
| DEC | | | | | | | | | | | |
| 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4 | 88 |
| JAN | | | | | | | | | | | |
| 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7 | 93 |
| FEB | | | | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4 | 79 |
| MAR | | | | | | | | | | | |
| 01... | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9 | 95 |
| 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4 | 64 |
| APR | | | | | | | | | | | |
| 07... | 0.008 | 0.0057 | <0.0020 | -- | -- | -- | -- | -- | -- | 8 | 86 |
| 12... | .004 | E.0041 | <.0020 | -- | -- | -- | -- | -- | -- | 7 | 71 |
| 19... | E.003 | E.0046 | <.0020 | E0.044 | 0.193 | 0.190 | 0.300 | 0.182 | 2.18 | 5 | 70 |
| 30... | .005 | .0052 | E.0017 | -- | -- | -- | -- | -- | -- | 6 | 72 |
| MAY | | | | | | | | | | | |
| 05... | <.002 | <.0050 | .0046 | -- | -- | -- | -- | -- | -- | 6 | 79 |
| 10... | E.002 | E.0031 | E.0036 | -- | -- | -- | -- | -- | -- | 8 | 89 |
| 14... | -- | -- | -- | .107 | .568 | .476 | .573 | .282 | 3.40 | -- | -- |
| 17... | <.002 | E.0046 | <.0020 | .105 | .487 | .438 | .445 | .234 | 1.90 | 5 | 98 |
| 20... | .007 | <.0050 | .0048 | E.064 | .263 | E.092 | E.157 | E.129 | 1.36 | 12 | 80 |
| 24... | <.002 | <.0050 | .0054 | -- | -- | -- | -- | -- | -- | 12 | 93 |
| JUN | | | | | | | | | | | |
| 02... | <.004 | <.0050 | <.0020 | -- | -- | -- | -- | -- | -- | 6 | 89 |
| 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8 | 75 |
| 14... | <.002 | <.0050 | <.0020 | -- | -- | -- | -- | -- | -- | 7 | 81 |
| 21... | <.002 | <.0050 | <.0020 | -- | -- | -- | -- | -- | -- | 11 | 56 |
| 28... | E.004 | <.0050 | E.0023 | .329 | 1.53 | 1.06 | .348 | .177 | .213 | 9 | 66 |
| JUL | | | | | | | | | | | |
| 06... | <.004 | <.0050 | <.0020 | .272 | 1.21 | .518 | .268 | .146 | .329 | 7 | 84 |
| 12... | .006 | <.0050 | E.0014 | -- | -- | -- | -- | -- | -- | 3 | 88 |
| 19... | <.002 | <.0050 | <.0020 | -- | -- | -- | -- | -- | -- | 2 | 80 |
| 26... | <.002 | <.0050 | <.0020 | -- | -- | -- | -- | -- | -- | 4 | 82 |
| AUG | | | | | | | | | | | |
| 02... | <.002 | <.0050 | <.0020 | .481 | 1.87 | .586 | .276 | .152 | .301 | 3 | 78 |
| 09... | <.002 | <.0050 | <.0020 | -- | -- | -- | -- | -- | -- | 3 | 67 |
| 17... | <.002 | <.0050 | <.0020 | -- | -- | -- | -- | -- | -- | 4 | 82 |
| 23... | <.002 | <.0050 | <.0020 | -- | -- | -- | -- | -- | -- | 3 | 78 |
| 29... | <.002 | <.0050 | <.0020 | -- | -- | -- | -- | -- | -- | 5 | 50 |
| SEP | | | | | | | | | | | |
| 07... | -- | -- | -- | .387 | 1.41 | .459 | .246 | E.107 | E.160 | 6 | 88 |
| 11... | -- | -- | -- | <.048 | E.048 | E.014 | E.036 | E.039 | E.150 | 17 | 77 |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | 29 | 90 |

01103015 MILL BROOK AT ARLINGTON, MA

LOCATION.--Lat 42°25'20", long 71°08'59", Middlesex County, Hydrologic Unit 01090001, 500 ft upstream from mouth, 0.6 mi north of Arlington.

DRAINAGE AREA.--About 5.3 $mi^2$.

PERIOD of RECORD.--Water Years 1999.

REMARKS.--Discharge obtained by discharge measurements on the day of sampling. Instantaneous records are based on composite samples and are representative of the cross section.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | TIME | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | OXYGEN, DIS-SOLVED (MG/L) (00300) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625) |
|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | |
| 19... | 1245 | 5.3 | 274 | 7.1 | 22.0 | 18.0 | 762 | 6.1 | 64 | -- |
| JUN | | | | | | | | | | |
| 16... | 1310 | 1.1 | 688 | 7.5 | 19.5 | 19.0 | 762 | 7.7 | 83 | -- |
| JUL | | | | | | | | | | |
| 01... | 1230 | 1.4 | 348 | 6.8 | 21.5 | 20.0 | 762 | 6.2 | 68 | -- |
| 27... | 1330 | .75 | 622 | 7.0 | 25.0 | 24.5 | 752 | 6.5 | 79 | 2,900 |
| AUG | | | | | | | | | | |
| 25... | 1400 | .60 | 675 | 6.7 | 29.5 | 24.0 | 760 | 7.4 | 88 | 1,200 |

| DATE | E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633) | FECAL COLI-FORM 24-HR MEM.FIL (COLS./ 100 ML) (31613) | E. COLI WTR FLT MF 0.7U NUT AG-AR+MUG 4HR35D COL/100 (50278) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666) |
|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | |
| 19... | -- | 37,000 | 27,000 | 0.092 | 0.982 | 0.971 | 1.9 | 4.1 | 0.160 | 0.196 |
| JUN | | | | | | | | | | |
| 16... | -- | 18,000 | 1,000 | .053 | 1.96 | .281 | .53 | .72 | .035 | .038 |
| JUL | | | | | | | | | | |
| 01... | -- | 48,000 | 30,000 | .096 | .985 | .431 | 1.4 | 1.4 | .060 | .098 |
| 27... | 2,500 | -- | -- | .027 | 1.63 | .451 | .69 | .69 | <.010 | .011 |
| AUG | | | | | | | | | | |
| 25... | K600 | -- | -- | .024 | 2.17 | .229 | .38 | .40 | <.010 | .007 |

01103017 MYSTIC RIVER AT MEDFORD, MA

LOCATION.--Lat 42°25'14", long 71°08'36", Middlesex County, Hydrologic Unit 01090001, at Route 60, upstream side High Street bridge, 1 mi west of Medford.

DRAINAGE AREA.--Not determined.

PERIOD of RECORD.--Water Years 1999.

REMARKS.--Discharge obtained by discharge measurements on the day of sampling. Instantaneous records are based on composite samples and are representative of the cross section.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | TIME | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | OXYGEN, DIS-SOLVED (MG/L) (00300) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625) |
|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | |
| 19... | 1100 | 123 | 614 | 8.4 | 19.5 | 18.5 | 762 | 11.1 | 119 | -- |
| JUN | | | | | | | | | | |
| 16... | 1240 | -- | 639 | 7.3 | 22.0 | 23.0 | 764 | 7.7 | 90 | -- |
| JUL | | | | | | | | | | |
| 06... | 1200 | -- | 628 | 7.4 | 31.0 | 28.0 | 752 | 4.7 | 61 | -- |
| 29... | 1230 | -- | 600 | 8.4 | 27.0 | 27.0 | 740 | 7.8 | 101 | 77 |
| SEP | | | | | | | | | | |
| 03... | 1000 | -- | 601 | 8.6 | 27.0 | 22.0 | 760 | 9.8 | 113 | 23 |

| DATE | E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633) | FECAL COLI-FORM 24-HR MEM.FIL (COLS./ 100 ML) (31613) | E. COLI WTR FLT MF 0.7U NUT AG-AR+MUG 4HR35D COL/100 (50278) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666) |
|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | |
| 19... | -- | 20 | 20 | 0.023 | 1.19 | 0.157 | 0.47 | 0.81 | <0.010 | 0.005 |
| JUN | | | | | | | | | | |
| 16... | -- | 40 | 30 | .025 | .945 | .036 | .47 | .87 | <.010 | .016 |
| JUL | | | | | | | | | | |
| 06... | -- | 70 | 30 | .020 | .604 | .099 | .62 | .87 | .010 | .013 |
| 29... | 130 | -- | -- | .016 | .542 | <.020 | .22 | .47 | <.010 | .005 |
| SEP | | | | | | | | | | |
| 03... | K72 | -- | -- | .024 | .280 | <.020 | .19 | .41 | <.010 | <.004 |

01103025 ALEWIFE BROOK NEAR ARLINGTON, MA

LOCATION.--Lat 42°24'25", long 71°07'04", Middlesex County, Hydrologic Unit 01090001, at Broadway Street, downstream side of bridge, 0.6 mi upstream from mouth, 1 mi east of Arlington.

DRAINAGE AREA.--About 8.5 $mi^2$.

PERIOD of RECORD.--Water Years 1973-74, 1999

REMARKS.--Discharge obtained by discharge measurements on the day of sampling. Instantaneous records are based on composite samples and are representative of the cross section.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

| DATE | TIME | DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061) | SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095) | PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400) | TEMPER-ATURE AIR (DEG C) (00020) | TEMPER-ATURE WATER (DEG C) (00010) | BARO-METRIC PRES-SURE (MM OF HG) (00025) | OXYGEN, DIS-SOLVED (MG/L) (00300) | OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301) | COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625) |
|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | |
| 20... | 1400 | 13 | 806 | 7.1 | 23.0 | 17.5 | 758 | 5.0 | 53 | -- |
| JUN | | | | | | | | | | |
| 17... | 1230 | 5.9 | 838 | 7.3 | 17.0 | 20.0 | 761 | 3.5 | 39 | -- |
| 30... | 1140 | 1.4 | 880 | 7.5 | 24.0 | 25.0 | 758 | 2.7 | 33 | -- |
| JUL | | | | | | | | | | |
| 28... | 1145 | 2.2 | 708 | 7.1 | 27.5 | 25.0 | 758 | 2.8 | 34 | 16,000 |
| SEP | | | | | | | | | | |
| 02... | 1330 | 1.9 | 730 | 7.3 | 32.5 | 17.5 | 760 | 6.9 | 73 | 2,900 |

| DATE | E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633) | FECAL COLI-FORM 24-HR MEM.FIL (COLS./ 100 ML) (31613) | E. COLI WTR FLT MF 0.7U NUT AG-AR+MUG 4HR35D COL/100 (50278) | NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631) | NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608) | NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623) | NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625) | PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671) | PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666) |
|---|---|---|---|---|---|---|---|---|---|---|
| MAY | | | | | | | | | | |
| 20... | -- | 17,000 | 10,000 | 0.032 | 0.759 | 0.325 | 0.50 | 1.2 | 0.013 | 0.018 |
| JUN | | | | | | | | | | |
| 17... | -- | 1,200 | 700 | .043 | .363 | .521 | .98 | 1.6 | .018 | .031 |
| 30... | -- | 900 | 900 | .032 | .254 | .303 | .74 | 1.4 | .019 | .024 |
| JUL | | | | | | | | | | |
| 28... | 14,000 | -- | -- | .024 | .328 | .269 | .56 | 1.1 | .012 | .024 |
| SEP | | | | | | | | | | |
| 02... | 2,900 | -- | -- | .035 | .289 | .406 | .63 | .99 | <.010 | .018 |

Hydrologic Technician Joe Zanca drilling holes for ice discharge measurement at Charles River at Medway, Massachusetts, February 1, 2000. (photo by L. Y. Comeau)

01103280 CHARLES RIVER AT MEDWAY, MA

LOCATION.--Lat 42°08'23", long 71°23'24", Norfolk County, Hydrologic Unit 01090001, on right bank at upstream side of Walker Street bridge at intersection with Populatic Street, 0.5 mi east of Medway, MA.

DRAINAGE AREA.--65.7 $mi^2$.

PERIOD OF RECORD.--November 1997 to September 1998.

GAGE.--Water-stage recorder with satellite telemeter. Elevation of gage is 175 ft above sea level from topographic map.

REMARKS.--Records good except those for estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--1 year (1999), 103 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,100 $ft^3/s$, gage height, 5.34 ft, June 14, 1998; minimum, 2.0 $ft^3/s$, Sept. 5, 1999.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 703 $ft^3/s$, Feb. 4, gage height, 3.83 ft; minimum, 2.0 $ft^3/s$, Sept. 5.

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 | 18 | 32 | 56 | e60 | e180 | 371 | 190 | 55 | 43 | 16 | 3.4 | 3.5 |
| 2 | 19 | 31 | 47 | e43 | 191 | 430 | 170 | 51 | 37 | 29 | 3.0 | 3.0 |
| 3 | 19 | 31 | 43 | e100 | 581 | 408 | 153 | 49 | 33 | 27 | 2.7 | 2.5 |
| 4 | 19 | 29 | 40 | e230 | 671 | 421 | 143 | 61 | 28 | 24 | 2.4 | 2.1 |
| 5 | 17 | 28 | 37 | e150 | 589 | 384 | 133 | 80 | 25 | 21 | 2.4 | 2.1 |
| 6 | 16 | 27 | 35 | e100 | 442 | 346 | 122 | 83 | 22 | 16 | 5.1 | 3.8 |
| 7 | 16 | 27 | 35 | e74 | 353 | 313 | 113 | 78 | 20 | 17 | 6.7 | 3.7 |
| 8 | 19 | 27 | 35 | e64 | 302 | e260 | 106 | 72 | 18 | 15 | 6.4 | 5.3 |
| 9 | 133 | 26 | 46 | e100 | 262 | e230 | 99 | 76 | 16 | 11 | 5.8 | 6.6 |
| 10 | 195 | 26 | 48 | e180 | 235 | 224 | 97 | 69 | 15 | 11 | 5.1 | 95 |
| 11 | 295 | 43 | 44 | e130 | 209 | 206 | 93 | 58 | 15 | 9.3 | 4.4 | 294 |
| 12 | 281 | 67 | 41 | e110 | 195 | 195 | 89 | 50 | 13 | 7.9 | 4.0 | 272 |
| 13 | 250 | 70 | 38 | e90 | 206 | 194 | 86 | 44 | 13 | 7.0 | 3.8 | 209 |
| 14 | 200 | 58 | 36 | e120 | 199 | 204 | 80 | 39 | 14 | 6.3 | 3.5 | 114 |
| 15 | 163 | 51 | 33 | e150 | 180 | 218 | 75 | 35 | 15 | 5.6 | 5.4 | 70 |
| 16 | 131 | 44 | 32 | 254 | 161 | 231 | 72 | 32 | 13 | 4.8 | 7.3 | 158 |
| 17 | 111 | 41 | 35 | 231 | 147 | 253 | 97 | 30 | 12 | 4.3 | 7.3 | 342 |
| 18 | 90 | 45 | 45 | 285 | 187 | 267 | 103 | 28 | 12 | 3.8 | 6.5 | 320 |
| 19 | 73 | 44 | 42 | 452 | 257 | 266 | 92 | 34 | 13 | 11 | 4.6 | 254 |
| 20 | 62 | 42 | 40 | 447 | 264 | 253 | 84 | 157 | 11 | 53 | 3.2 | 170 |
| 21 | 53 | 50 | 39 | 383 | 244 | 232 | 81 | 178 | 16 | 57 | 2.8 | 107 |
| 22 | 47 | 51 | 43 | 299 | 206 | 279 | 75 | 153 | 9.4 | 36 | 3.2 | 80 |
| 23 | 43 | 47 | 48 | 274 | e150 | 299 | 85 | 100 | 7.4 | 20 | 4.6 | 62 |
| 24 | 41 | 43 | 44 | 354 | 128 | 298 | 107 | 162 | 8.7 | 14 | 4.7 | 51 |
| 25 | 38 | 40 | e35 | 507 | 119 | 276 | 99 | 261 | 7.5 | 12 | 4.0 | 43 |
| 26 | 37 | 48 | e25 | 496 | 120 | 247 | 84 | 248 | 7.3 | 10 | 3.6 | 38 |
| 27 | 36 | 81 | e24 | 390 | 127 | 220 | 75 | 207 | 7.0 | 8.8 | 5.8 | 34 |
| 28 | 35 | 88 | e27 | 308 | 145 | 235 | 68 | 149 | 6.5 | 7.5 | 6.7 | 30 |
| 29 | 37 | 76 | e33 | 256 | --- | 246 | 62 | 100 | 6.5 | 6.3 | 6.2 | 30 |
| 30 | 37 | 64 | e45 | e210 | --- | 238 | 58 | 72 | 6.9 | 4.8 | 5.0 | 37 |
| 31 | 36 | --- | e70 | e190 | --- | 214 | --- | 55 | --- | 3.8 | 4.0 | --- |
| TOTAL | 2567 | 1377 | 1241 | 7037 | 7050 | 8458 | 2991 | 2866 | 471.2 | 480.2 | 143.6 | 2842.6 |
| MEAN | 82.8 | 45.9 | 40.0 | 227 | 252 | 273 | 99.7 | 92.5 | 15.7 | 15.5 | 4.63 | 94.8 |
| MAX | 295 | 88 | 70 | 507 | 671 | 430 | 190 | 261 | 43 | 57 | 7.3 | 342 |
| MIN | 16 | 26 | 24 | 43 | 119 | 194 | 58 | 28 | 6.5 | 3.8 | 2.4 | 2.1 |
| CFSM | 1.26 | .70 | .61 | 3.46 | 3.83 | 4.15 | 1.52 | 1.41 | .24 | .24 | .07 | 1.44 |
| IN. | 1.45 | .78 | .70 | 3.98 | 3.99 | 4.79 | 1.69 | 1.62 | .27 | .27 | .08 | 1.61 |

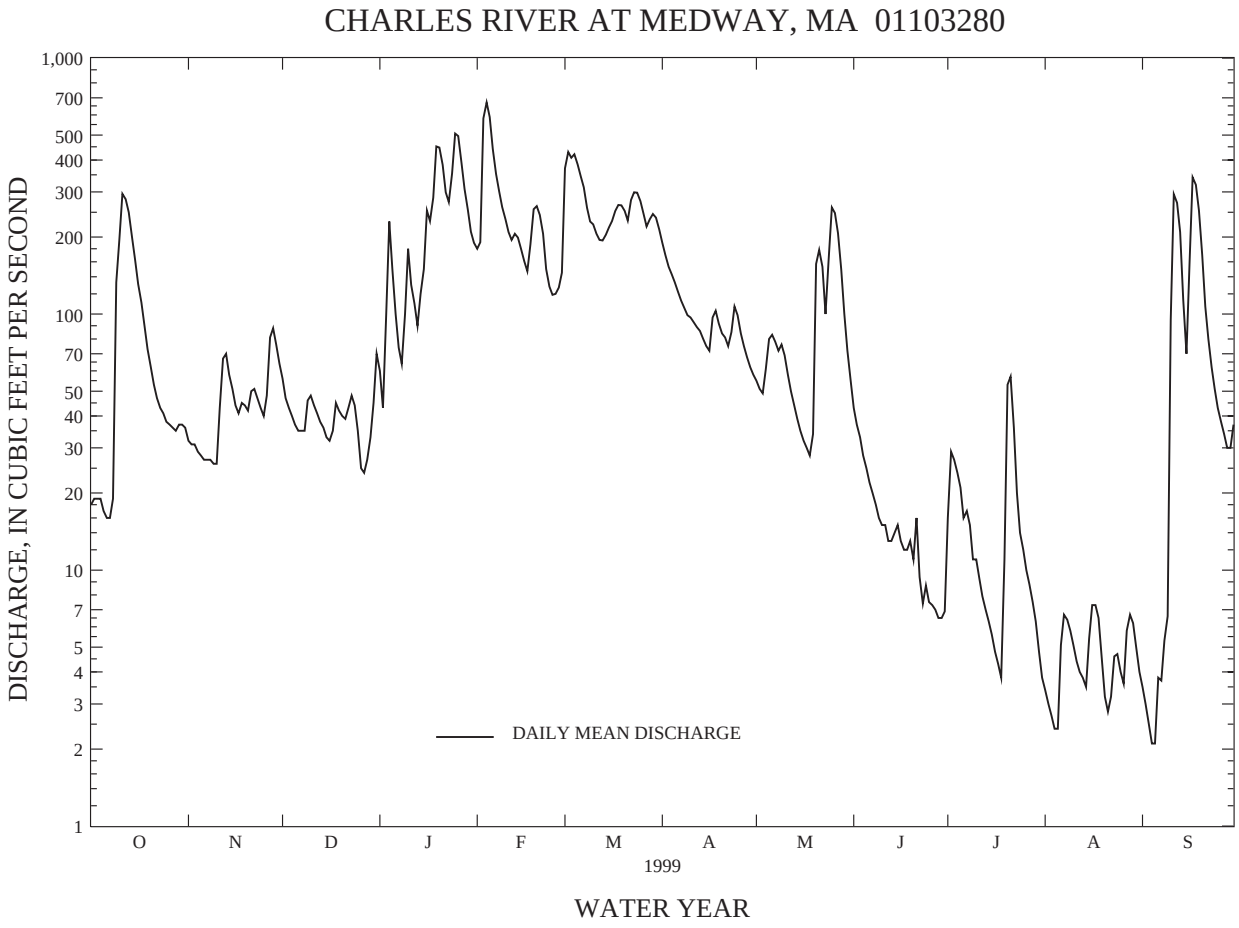
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 1999, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 82.8 | 45.9 | 43.1 | 211 | 254 | 306 | 156 | 182 | 177 | 76.5 | 16.8 | 56.8 |
| MAX | 82.8 | 45.9 | 46.3 | 227 | 257 | 338 | 212 | 271 | 339 | 138 | 28.9 | 94.8 |
| (WY) | 1999 | 1999 | 1998 | 1999 | 1998 | 1998 | 1998 | 1998 | 1998 | 1998 | 1998 | 1999 |
| MIN | 82.8 | 45.9 | 40.0 | 195 | 252 | 273 | 99.7 | 92.5 | 15.7 | 15.5 | 4.63 | 18.9 |
| (WY) | 1999 | 1999 | 1999 | 1998 | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 | 1999 | 1998 |

01103280 CHARLES RIVER AT MEDWAY, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1998 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 59562 | | 37524.6 | | | |
| ANNUAL MEAN | 163 | | 103 | | 103 | |
| HIGHEST ANNUAL MEAN | | | | | 103 | 1999 |
| LOWEST ANNUAL MEAN | | | | | 103 | 1999 |
| HIGHEST DAILY MEAN | 1050 | Jun 15 | 671 | Feb 4 | 1050 | Jun 15 1998 |
| LOWEST DAILY MEAN | 13 | Sep 19 | 2.1 | Sep 4 | 2.1 | Sep 4 1999 |
| ANNUAL SEVEN-DAY MINIMUM | 14 | Sep 15 | 3.0 | Sep 1 | 3.0 | Sep 1 1999 |
| INSTANTANEOUS PEAK FLOW | | | 703 | Feb 4 | 1100 | Jun 14 1998 |
| INSTANTANEOUS PEAK STAGE | | | 3.83 | Feb 4 | 5.34 | Jun 14 1998 |
| INSTANTANEOUS LOW FLOW | | | 2.0 | Sep 5 | 2.0 | Sep 5 1999 |
| ANNUAL RUNOFF (CFSM) | 2.48 | | 1.56 | | 1.56 | |
| ANNUAL RUNOFF (INCHES) | 33.72 | | 21.25 | | 21.26 | |
| 10 PERCENT EXCEEDS | 377 | | 265 | | 321 | |
| 50 PERCENT EXCEEDS | 91 | | 50 | | 73 | |
| 90 PERCENT EXCEEDS | 19 | | 5.7 | | 12 | |

e Estimated



01103500 CHARLES RIVER AT DOVER, MA

LOCATION.--Lat 42°15'22", long 71°15'38", Norfolk County, Hydrologic Unit 01090001, on right bank 0.3 mi downstream from highway bridge, 0.8 mi downstream from Noanet Brook, and 1.3 mi northeast of intersection of Centre and Walpole Streets in Dover.

DRAINAGE AREA.--183 $mi^2$.

PERIOD OF RECORD.--Discharge: October 1937 to current year. Prior to October 1977, published as "at Charles River Village."
Water-quality records: Water years 1975-95 (National stream-quality accounting network station).

REVISED RECORDS.--WDR MA-RI-84-1: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 89.76 ft above sea level.

REMARKS.--Records good. Flow affected by diversions to and from basin for municipal supplies. Telephone and satellite gage-height telemeters at station.

AVERAGE DISCHARGE.--62 years, 306 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,220 $ft^3/s$, Aug. 23, 1955, gage height, 9.24 ft and Mar. 22, 1968, gage height, 8.72 ft; minimum, 0.5 $ft^3/s$, Oct. 24, 1952 (caused by unusual regulation); minimum daily, 0.9 $ft^3/s$, Oct. 24, 1952.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since flood in 1886, that of August 1955 and March 1968. Flood in March 1936 reached a discharge of 3,170 $ft^3/s$, by computation of flow over dam at site 0.2 mi upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,060 $ft^3/s$, Feb. 6; gage height, 4.22 ft; minimum 7.1 $ft^3/s$, Sept. 4, 5.

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 | 68 | 118 | 193 | 178 | 649 | 492 | 515 | 167 | 168 | 32 | 22 | 11 |
| 2 | 61 | 114 | 190 | 137 | 593 | 546 | 488 | 157 | 134 | 42 | 20 | 11 |
| 3 | 56 | 111 | 161 | 193 | 846 | 610 | 459 | 149 | 116 | 51 | 18 | 10 |
| 4 | 53 | 108 | 144 | 305 | 877 | 711 | 432 | 160 | 99 | 55 | 17 | 8.4 |
| 5 | 51 | 108 | 134 | 359 | 990 | 740 | 399 | 187 | 90 | 53 | 16 | 7.8 |
| 6 | 49 | 109 | 127 | 391 | 1050 | 754 | 366 | 206 | 81 | 49 | 15 | 7.8 |
| 7 | 48 | 109 | 121 | 393 | 1040 | 767 | 340 | 209 | 72 | 53 | 14 | 8.9 |
| 8 | 50 | 107 | 121 | 355 | 979 | 730 | 312 | 206 | 64 | 44 | 14 | 10 |
| 9 | 209 | 103 | 134 | 356 | 898 | 690 | 288 | 210 | 57 | 42 | 14 | 11 |
| 10 | 311 | 102 | 138 | 374 | 812 | 652 | 272 | 203 | 56 | 40 | 13 | 33 |
| 11 | 537 | 124 | 140 | 359 | 730 | 611 | 262 | 190 | 54 | 35 | 13 | 229 |
| 12 | 552 | 148 | 134 | 340 | 669 | 576 | 255 | 172 | 51 | 32 | 13 | 281 |
| 13 | 576 | 165 | 126 | 326 | 636 | 545 | 244 | 153 | 49 | 30 | 13 | 339 |
| 14 | 567 | 172 | 118 | 280 | 583 | 526 | 235 | 139 | 48 | 29 | 13 | 365 |
| 15 | 530 | 164 | 115 | 299 | 540 | 527 | 226 | 128 | 47 | 26 | 16 | 375 |
| 16 | 479 | 151 | 109 | 441 | 506 | 516 | 218 | 118 | 44 | 23 | 16 | 458 |
| 17 | 427 | 143 | 111 | 460 | 475 | 515 | 231 | 108 | 43 | 21 | 15 | 567 |
| 18 | 375 | 143 | 121 | 513 | 478 | 532 | 238 | 102 | 43 | 19 | 15 | 526 |
| 19 | 323 | 143 | 125 | 689 | 496 | 540 | 243 | 103 | 41 | 18 | 20 | 545 |
| 20 | 271 | 143 | 122 | 711 | 500 | 540 | 240 | 162 | 40 | 21 | 21 | 541 |
| 21 | 222 | 148 | 119 | 749 | 509 | 536 | 232 | 212 | 39 | 28 | 19 | 493 |
| 22 | 185 | 150 | 125 | 764 | 498 | 567 | 221 | 242 | 37 | 48 | 17 | 458 |
| 23 | 165 | 148 | 122 | 770 | 470 | 576 | 219 | 243 | 39 | 71 | 16 | 412 |
| 24 | 155 | 141 | 121 | 816 | 438 | 593 | 225 | 270 | 38 | 56 | 15 | 345 |
| 25 | 147 | 131 | 114 | 902 | 410 | 593 | 234 | 323 | 35 | 50 | 14 | 278 |
| 26 | 138 | 146 | 105 | 899 | 382 | 577 | 230 | 347 | 33 | 42 | 13 | 215 |
| 27 | 131 | 185 | 97 | 910 | 361 | 554 | 213 | 363 | 30 | 39 | 12 | 160 |
| 28 | 129 | 204 | 96 | 901 | 360 | 566 | 200 | 355 | 27 | 34 | 13 | 126 |
| 29 | 126 | 208 | 100 | 844 | --- | 575 | 186 | 323 | 26 | 27 | 12 | 111 |
| 30 | 127 | 197 | 154 | 775 | --- | 553 | 176 | 275 | 25 | 25 | 12 | 114 |
| 31 | 120 | --- | 177 | 706 | --- | 536 | --- | 220 | --- | 24 | 12 | --- |
| TOTAL | 7238 | 4243 | 4014 | 16495 | 17775 | 18346 | 8399 | 6402 | 1726 | 1159 | 473 | 7056.9 |
| MEAN | 233 | 141 | 129 | 532 | 635 | 592 | 280 | 207 | 57.5 | 37.4 | 15.3 | 235 |
| MAX | 576 | 208 | 193 | 910 | 1050 | 767 | 515 | 363 | 168 | 71 | 22 | 567 |
| MIN | 48 | 102 | 96 | 137 | 360 | 492 | 176 | 102 | 25 | 18 | 12 | 7.8 |

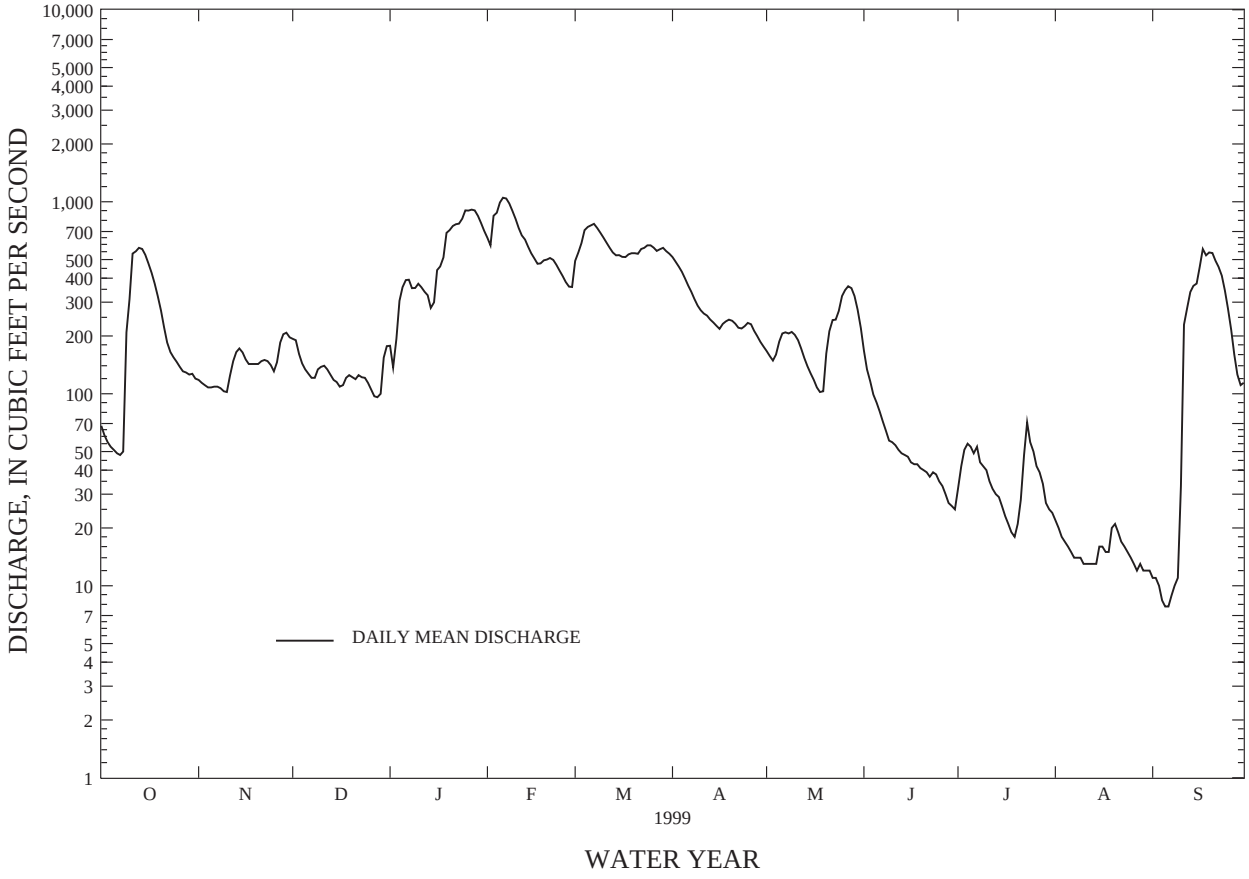
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1999, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 143 | 249 | 343 | 373 | 434 | 617 | 583 | 361 | 236 | 126 | 114 | 102 |
| MAX | 600 | 892 | 866 | 1180 | 998 | 1172 | 1474 | 746 | 1129 | 1060 | 956 | 640 |
| (WY) | 1956 | 1956 | 1997 | 1979 | 1970 | 1983 | 1987 | 1954 | 1982 | 1938 | 1955 | 1954 |
| MIN | 13.4 | 33.1 | 54.6 | 45.3 | 86.7 | 227 | 169 | 138 | 57.5 | 19.5 | 9.01 | 7.78 |
| (WY) | 1958 | 1966 | 1966 | 1981 | 1980 | 1985 | 1966 | 1986 | 1999 | 1957 | 1957 | 1957 |

01103500 CHARLES RIVER AT DOVER, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1938 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 155053 | | 93326.9 | | | |
| ANNUAL MEAN | 425 | | 256 | | 306 | |
| HIGHEST ANNUAL MEAN | | | | | 496 | 1984 |
| LOWEST ANNUAL MEAN | | | | | 117 | 1966 |
| HIGHEST DAILY MEAN | 1980 | Jun 18 | 1050 | Feb 6 | 3190 | Mar 22 1968 |
| LOWEST DAILY MEAN | 45 | Sep 21 | 7.8 | Sep 5 | .90 | Oct 24 1952 |
| ANNUAL SEVEN-DAY MINIMUM | 51 | Sep 15 | 9.1 | Sep 2 | 4.3 | Sep 10 1995 |
| INSTANTANEOUS PEAK FLOW | | | 1060 | Feb 6 | 3220 | Aug 23 1955 |
| INSTANTANEOUS PEAK STAGE | | | 4.22 | Feb 6 | 9.24 | Aug 23 1955 |
| INSTANTANEOUS LOW FLOW | | | 7.1 | Sep 4 | .50 | Oct 24 1952 |
| 10 PERCENT EXCEEDS | 939 | | 593 | | 690 | |
| 50 PERCENT EXCEEDS | 276 | | 161 | | 211 | |
| 90 PERCENT EXCEEDS | 80 | | 19 | | 42 | |

CHARLES RIVER AT DOVER, MA 01103500



01104000 MOTHER BROOK AT DEDHAM, MA

LOCATION.--Lat 42°15'18", long 71°09'53", Norfolk County, Hydrologic Unit 01090001, on right bank 100 ft upstream from Washington Street Bridge at Dedham and 0.4 mi downstream from point of diversion from Charles River.

PERIOD OF RECORD.--Discharge: October 1931 to current year.
Water-quality records: Water years 1959, 1969-70.

REVISED RECORDS.--WSP 1301: 1932(M).

GAGE.--Water-stage recorder. Concrete control since June 10, 1960. Datum of gage is 0.03 ft below sea level. Dec. 9, 1931, to June 9, 1960, nonrecording gage at site 200 ft upstream at same datum.

REMARKS.--Records good except those for estimated daily discharge, which are poor. Mother Brook is a diversion from Charles River to Neponset River through Dedham and Hyde Park.

AVERAGE DISCHARGE.--68 years, 76.5 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,040 $ft^3/s$, Mar. 21, 1968, gage height, 87.18 ft; maximum gage height, 92.90 ft, Aug. 24, 1955, from graph based on gage readings; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 386 $ft^3/s$, Sept. 17, gage height, 83.66 ft; minimum, 0.06 $ft^3/s$, July 21.

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 | 0.90 | 0.48 | 0.53 | e0.28 | 164 | 128 | 92 | 2.9 | 7.7 | 2.8 | 0.19 | 0.26 |
| 2 | .66 | .49 | .64 | .44 | 160 | 202 | 81 | 1.8 | 21 | .22 | .22 | .28 |
| 3 | .52 | .65 | .64 | 12 | 256 | 216 | 65 | 3.2 | 17 | .21 | .28 | .28 |
| 4 | .45 | .64 | .68 | 37 | 245 | 257 | 57 | 15 | 12 | .24 | .24 | .28 |
| 5 | .30 | .60 | .64 | 33 | 261 | 282 | 42 | 20 | 6.8 | .14 | .63 | .36 |
| 6 | .34 | .52 | .64 | 39 | 274 | 280 | 28 | 22 | 3.9 | .85 | .22 | 1.3 |
| 7 | .34 | .48 | .64 | 42 | 281 | 301 | 24 | 21 | 2.3 | .54 | .20 | .71 |
| 8 | 2.9 | .47 | .98 | 29 | 269 | 284 | 18 | 20 | 1.2 | 1.0 | .19 | 1.0 |
| 9 | 16 | .64 | .36 | 35 | 247 | 257 | 13 | 20 | .83 | 1.4 | .96 | .41 |
| 10 | 37 | .64 | .34 | 48 | 225 | 234 | 10 | 16 | .85 | 1.3 | 1.4 | 15 |
| 11 | 139 | 2.1 | .34 | 30 | 196 | 215 | 6.0 | 12 | .82 | .88 | 1.4 | 39 |
| 12 | 122 | .59 | .34 | 31 | 171 | 197 | 4.9 | 12 | .66 | .57 | 1.4 | 29 |
| 13 | 108 | .56 | .34 | 32 | 163 | 178 | 4.1 | 21 | .64 | .47 | 1.6 | 32 |
| 14 | 108 | .48 | .40 | 26 | 138 | 162 | 2.3 | 18 | .69 | .41 | 1.5 | 39 |
| 15 | 103 | .49 | .41 | 55 | 111 | 169 | 4.8 | 14 | .98 | .38 | 1.9 | 58 |
| 16 | 76 | .50 | .43 | 127 | 94 | 169 | 25 | 10 | .93 | .36 | 1.3 | 155 |
| 17 | 47 | .80 | .81 | 120 | 80 | 157 | 33 | 7.4 | .79 | .36 | 1.0 | 340 |
| 18 | 28 | .50 | .26 | 134 | 89 | 163 | 34 | 5.1 | .73 | .35 | .93 | 275 |
| 19 | 18 | .48 | .23 | 195 | 103 | 167 | 32 | 4.1 | .67 | .98 | .83 | 226 |
| 20 | 9.2 | .77 | .23 | 173 | 94 | 159 | 29 | 12 | .65 | .24 | .74 | 217 |
| 21 | 3.1 | .53 | .23 | 168 | e84 | 150 | 25 | 18 | .66 | .10 | .95 | 190 |
| 22 | .95 | .37 | .50 | 169 | 91 | 159 | 20 | 24 | .99 | .10 | .98 | 159 |
| 23 | .67 | .36 | .43 | 170 | 77 | 169 | 19 | 25 | .96 | 1.1 | .73 | 136 |
| 24 | .64 | .36 | .48 | 182 | 60 | 161 | 22 | 44 | .83 | 1.4 | .65 | 94 |
| 25 | .64 | .34 | .48 | 224 | 53 | 162 | 18 | 61 | .76 | .92 | .64 | 60 |
| 26 | .63 | 1.4 | .38 | 229 | 45 | 154 | 16 | 58 | .53 | .16 | .79 | 30 |
| 27 | .64 | .37 | .23 | 231 | 37 | 139 | 14 | 61 | .30 | .12 | .66 | 17 |
| 28 | .72 | .38 | .23 | 229 | 34 | 150 | 9.3 | 53 | .30 | .12 | .49 | 24 |
| 29 | .70 | .47 | .68 | e200 | --- | 163 | 6.6 | 39 | .25 | .15 | .30 | 22 |
| 30 | .56 | .46 | 1.0 | e175 | --- | 149 | 4.3 | 25 | .20 | .16 | .26 | 24 |
| 31 | .48 | --- | e.28 | e165 | --- | 113 | --- | 11 | --- | .17 | .27 | --- |
| TOTAL | 827.34 | 17.92 | 14.80 | 3340.72 | 4102 | 5846 | 759.3 | 676.5 | 86.92 | 18.20 | 23.85 | 2185.88 |
| MEAN | 26.7 | .60 | .48 | 108 | 146 | 189 | 25.3 | 21.8 | 2.90 | .59 | .77 | 72.9 |
| MAX | 139 | 2.1 | 1.0 | 231 | 281 | 301 | 92 | 61 | 21 | 2.8 | 1.9 | 340 |
| MIN | .30 | .34 | .23 | .28 | 34 | 113 | 2.3 | 1.8 | .20 | .10 | .19 | .26 |

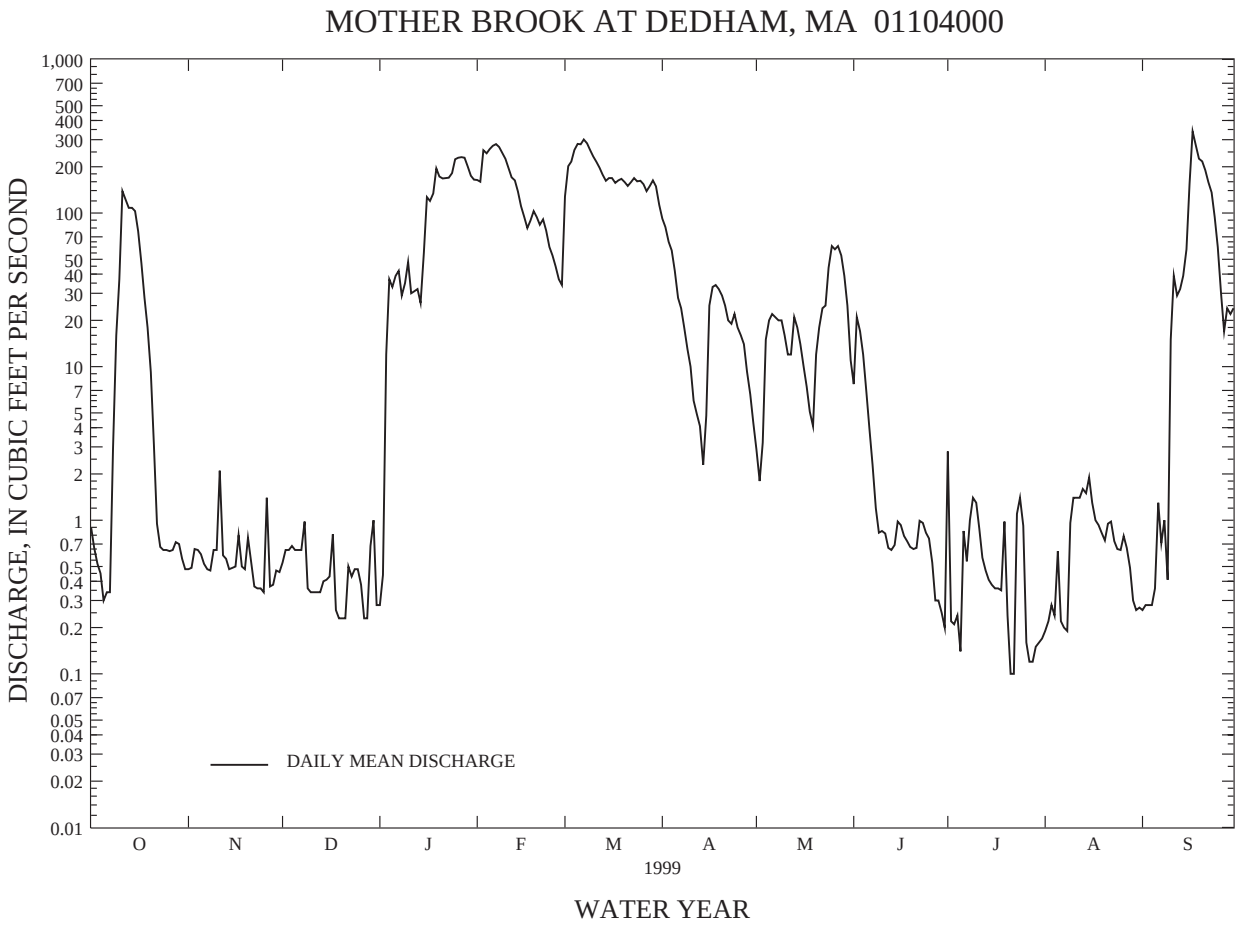
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1999, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 27.4 | 55.5 | 84.6 | 97.3 | 113 | 176 | 159 | 89.3 | 54.2 | 22.3 | 21.4 | 20.7 |
| MAX | 182 | 308 | 285 | 287 | 360 | 490 | 437 | 253 | 328 | 339 | 306 | 189 |
| (WY) | 1956 | 1956 | 1973 | 1976 | 1970 | 1936 | 1987 | 1954 | 1982 | 1938 | 1955 | 1954 |
| MIN | .000 | .60 | .43 | .14 | .14 | .54 | 25.3 | .000 | .000 | .061 | .000 | .097 |
| (WY) | 1942 | 1999 | 1959 | 1959 | 1959 | 1959 | 1999 | 1960 | 1955 | 1957 | 1949 | 1943 |

01104000 MOTHER BROOK AT DEDHAM, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1932 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 34098.27 | | 17899.43 | | | |
| ANNUAL MEAN | 93.4 | | 49.0 | | 76.5 | |
| HIGHEST ANNUAL MEAN | | | | | 149 | 1938 |
| LOWEST ANNUAL MEAN | | | | | 20.6 | 1960 |
| HIGHEST DAILY MEAN | 521 | Jun 20 | 340 | Sep 17 | 1010 | Mar 21 1968 |
| LOWEST DAILY MEAN | .23 | Dec 19 | .10 | Jul 21 | .00 | Sep 12 1941 |
| ANNUAL SEVEN-DAY MINIMUM | .34 | Dec 18 | .15 | Jul 26 | .00 | Sep 12 1941 |
| INSTANTANEOUS PEAK FLOW | | | 386 | Sep 17 | 1040 | Mar 21 1968 |
| INSTANTANEOUS PEAK STAGE | | | 83.66 | Sep 17 | 92.90 | Aug 24 1955 |
| INSTANTANEOUS LOW FLOW | | | .06 | Jul 21 | .00 | Sep 12 1941 |
| 10 PERCENT EXCEEDS | 245 | | 170 | | 204 | |
| 50 PERCENT EXCEEDS | 32 | | 4.1 | | 38 | |
| 90 PERCENT EXCEEDS | .48 | | .29 | | 1.3 | |

e Estimated



01104200 CHARLES RIVER AT WELLESLEY, MA

LOCATION.--Lat 42°18'59", long 71°13'42", Norfolk County, Hydrologic Unit 01090001, on left bank at east limits of Wellesley, 30 ft upstream from a horseshoe-shaped dam and 50 ft upstream from bridge on State Highway 9.

DRAINAGE AREA.--211 $mi^2$.

PERIOD OF RECORD.--Discharge: August 1959 to current year.
Water-quality records: Water year 1968.

GAGE.--Water-stage recorder and masonry dam. Datum of gage is 67.92 ft above sea level.

REMARKS.--Records good. Flow affected by diversion to Mother Brook (station 01104000), and by diversions to and from basin for municipal supplies. Occasional regulation at dam 0.2 mi upstream and by other ponds upstream.

AVERAGE DISCHARGE.--40 years, 288 $ft^3/s$.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,410 $ft^3/s$, Mar. 21, 1968, gage height, 6.20 ft; no flow Sept. 15, Oct. 6, 1959 (caused by closing of gates at dam at gage); minimum daily, 1.0 $ft^3/s$, Aug. 24, 31, Sept. 8, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 963 $ft^3/s$, Feb. 7, gage height, 4.53 ft; minimum daily, 6.1 $ft^3/s$, July 31.

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 | 85 | 145 | 223 | 215 | 638 | 487 | 552 | 191 | 146 | 57 | 13 | 11 |
| 2 | 83 | 141 | 234 | 180 | 667 | 491 | 534 | 177 | 118 | 61 | 19 | 11 |
| 3 | 78 | 139 | 210 | 262 | 927 | 535 | 513 | 118 | 117 | 59 | 23 | 12 |
| 4 | 74 | 111 | 181 | 432 | 896 | 617 | 481 | 145 | 110 | 67 | 24 | 11 |
| 5 | 69 | 121 | 168 | 415 | 903 | 634 | 459 | 182 | 103 | 68 | 22 | 11 |
| 6 | 68 | 128 | 161 | 427 | 942 | 647 | 435 | 203 | 96 | 35 | 21 | 11 |
| 7 | 66 | 129 | 151 | 430 | 949 | 654 | 405 | 213 | 87 | 48 | 16 | 12 |
| 8 | 75 | 128 | 154 | 403 | 929 | 639 | 379 | 217 | 79 | 58 | 15 | 11 |
| 9 | 335 | 124 | 165 | 429 | 885 | 625 | 360 | 225 | 76 | 57 | 12 | 13 |
| 10 | 413 | 122 | 165 | 456 | 827 | 602 | 337 | 220 | 74 | 53 | 12 | 82 |
| 11 | 651 | 154 | 166 | 424 | 773 | 568 | 327 | 210 | 71 | 50 | 12 | 268 |
| 12 | 632 | 177 | 161 | 394 | 723 | 547 | 311 | 147 | 70 | 49 | 11 | 267 |
| 13 | 615 | 190 | 151 | 380 | 696 | 528 | 300 | 135 | 67 | 45 | 12 | 319 |
| 14 | 625 | 205 | 109 | 324 | 638 | 514 | 293 | 135 | 68 | 24 | 14 | 350 |
| 15 | 610 | 200 | 122 | 369 | 597 | 511 | 180 | 128 | 60 | 18 | 23 | 372 |
| 16 | 558 | 188 | 128 | 524 | 564 | 510 | 194 | 121 | 59 | 30 | 20 | 464 |
| 17 | 510 | 174 | 132 | 515 | 537 | 518 | 231 | 114 | 57 | 32 | 18 | 584 |
| 18 | 462 | 171 | 141 | 580 | 560 | 522 | 237 | 109 | 55 | 28 | 14 | 477 |
| 19 | 410 | 167 | 149 | 796 | 586 | 526 | 248 | 108 | 52 | 33 | 15 | 462 |
| 20 | 361 | 166 | 146 | 768 | 561 | 529 | 253 | 149 | 49 | 41 | 12 | 463 |
| 21 | 309 | 171 | 143 | 760 | 552 | 531 | 251 | 192 | 46 | 37 | 9.8 | 440 |
| 22 | 255 | 173 | 141 | 767 | 539 | 562 | 242 | 234 | 45 | 46 | 21 | 421 |
| 23 | 218 | 172 | 152 | 774 | 524 | 561 | 246 | 253 | 24 | 99 | 25 | 401 |
| 24 | 196 | 164 | 144 | 831 | 498 | 565 | 245 | 323 | 24 | 92 | 25 | 361 |
| 25 | 182 | 160 | 137 | 891 | 472 | 573 | 255 | 370 | 39 | 94 | 21 | 313 |
| 26 | 172 | 171 | 127 | 860 | 448 | 568 | 255 | 367 | 41 | 73 | 16 | 263 |
| 27 | 163 | 215 | 118 | 839 | 430 | 552 | 238 | 378 | 42 | 28 | 17 | 159 |
| 28 | 159 | 234 | 115 | 838 | 436 | 568 | 226 | 382 | 38 | 21 | 16 | 130 |
| 29 | 155 | 246 | 118 | 801 | --- | 591 | 213 | 369 | 20 | 36 | 14 | 121 |
| 30 | 149 | 242 | 173 | 727 | --- | 561 | 199 | 335 | 8.5 | 18 | 13 | 124 |
| 31 | 151 | --- | 188 | 644 | --- | 552 | --- | 285 | --- | 6.1 | 12 | --- |
| TOTAL | 8889 | 5028 | 4773 | 17455 | 18697 | 17388 | 9399 | 6735 | 1941.5 | 1463.1 | 517.8 | 6944 |
| MEAN | 287 | 168 | 154 | 563 | 668 | 561 | 313 | 217 | 64.7 | 47.2 | 16.7 | 231 |
| MAX | 651 | 246 | 234 | 891 | 949 | 654 | 552 | 382 | 146 | 99 | 25 | 584 |
| MIN | 66 | 111 | 109 | 180 | 430 | 487 | 180 | 108 | 8.5 | 6.1 | 9.8 | 11 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1999, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 153 | 242 | 330 | 350 | 408 | 551 | 543 | 341 | 235 | 114 | 101 | 94.5 |
| MAX | 495 | 561 | 805 | 1018 | 766 | 1048 | 1223 | 697 | 951 | 439 | 430 | 253 |
| (WY) | 1997 | 1990 | 1997 | 1979 | 1970 | 1983 | 1987 | 1998 | 1982 | 1998 | 1990 | 1961 |
| MIN | 23.2 | 34.0 | 52.6 | 43.8 | 95.7 | 211 | 154 | 124 | 64.7 | 24.5 | 13.0 | 14.9 |
| (WY) | 1966 | 1966 | 1966 | 1981 | 1980 | 1985 | 1985 | 1986 | 1999 | 1997 | 1965 | 1965 |

01104200 CHARLES RIVER AT WELLESLEY, MA--Continued

| SUMMARY STATISTICS | FOR 1998 CALENDAR YEAR | | FOR 1999 WATER YEAR | | WATER YEARS 1959 - 1999 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 162600 | | 99230.4 | | | |
| ANNUAL MEAN | 445 | | 272 | | 288 | |
| HIGHEST ANNUAL MEAN | | | | | 458 | 1984 |
| LOWEST ANNUAL MEAN | | | | | 108 | 1966 |
| HIGHEST DAILY MEAN | 1730 | Jun 19 | 949 | Feb 7 | 2330 | Mar 22 1968 |
| LOWEST DAILY MEAN | 44 | Sep 17 | 6.1 | Jul 31 | 1.0 | Aug 24 1965 |
| ANNUAL SEVEN-DAY MINIMUM | 59 | Sep 15 | 11 | Aug 31 | 4.1 | Aug 20 1965 |
| INSTANTANEOUS PEAK FLOW | | | 963 | Feb 7 | 2410 | Mar 21 1968 |
| INSTANTANEOUS PEAK STAGE | | | 4.53 | Feb 7 | 6.20 | Mar 21 1968 |
| INSTANTANEOUS LOW FLOW | | | 2.5 | Jul 30 | .00 | Sep 15 1959 |
| 10 PERCENT EXCEEDS | 947 | | 616 | | 631 | |
| 50 PERCENT EXCEEDS | 357 | | 181 | | 209 | |
| 90 PERCENT EXCEEDS | 102 | | 21 | | 43 | |