



Water-Data Report 2009

11290000 Tuolumne River at Modesto, CA

San Joaquin River Basin

LOCATION.--Lat 37°37'37", long 120°59'13" referenced to North American Datum of 1927, in SE ¼ SW ¼ sec.33, T.3 S., R.9 E., Stanislaus County, CA, Hydrologic Unit 18040002, on left bank on River Road, 100 ft west of bridge on Ninth Street in Modesto, and 0.25 mi downstream from Dry Creek.

DRAINAGE AREA.--1,884 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--1878-84, 1891-94, 1897 (gage heights only), January 1895 to December 1896, April 1940 to current year. Monthly discharge only for some periods, published in WSP 1315-A. Water-quality data for the period October 1985 to March 1987 are available in U.S. Geological Survey Open-File Report 88-479. Water-quality data for the period April 1987 to September 1988 are available in files of the U.S. Geological Survey.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NGVD of 1929 (levels by Modesto Irrigation District). Prior to July 11, 1947, at site 1,600 ft downstream at same datum; July 11, 1947, to Nov. 16, 1953, at site 900 ft downstream at same datum. Nov. 17, 1953 to Apr. 28, 2004, at site 100 ft upstream, at same datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated by reservoirs and powerplants upstream from station. Several major diversions for power, irrigation, and municipal supply upstream of station, including Modesto and Turlock Canals (stations 11289000 and 11289500). See REMARKS for Tuolumne River below La Grange Dam (station 11289650) and schematic diagram of Tuolumne River Basin available from the California Water Science Center.

EXTREMES FOR PERIOD OF RECORD.--(Water years 1896, and since water year 1941) Maximum discharge observed, 57,000 ft³/s, Dec. 9, 1950, elevation, 69.19 ft, maximum gage height, 71.21 ft, Jan. 4, 1997 (backwater caused by debris on railroad trestle 1,500 ft downstream of gage); minimum daily, 56 ft³/s, Aug. 6, 1977.

11290000 Tuolumne River at Modesto, CA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009
DAILY MEAN VALUES

[e, estimated]

| Day | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1 | 178 | 230 | 212 | 213 | 221 | 260 | e238 | 608 | 421 | 220 | 185 | 188 |
| 2 | 241 | 229 | 212 | 214 | 220 | 272 | e220 | 675 | 412 | 218 | 193 | 173 |
| 3 | 257 | 231 | 212 | 215 | 219 | 260 | 212 | 668 | 404 | 209 | 189 | 187 |
| 4 | 308 | 283 | 214 | 212 | 218 | 414 | 211 | 648 | 380 | 236 | 171 | 180 |
| 5 | 281 | 243 | 212 | 211 | 223 | 1,300 | 226 | 687 | 338 | 265 | 174 | 181 |
| 6 | 273 | 228 | 212 | 212 | 237 | 554 | 240 | 784 | 348 | 251 | 182 | 191 |
| 7 | 266 | 213 | 211 | 211 | 237 | 380 | 229 | 891 | 340 | 219 | 195 | 200 |
| 8 | 252 | 215 | 212 | 210 | 233 | 319 | 252 | 937 | 337 | 201 | 207 | 223 |
| 9 | 262 | 217 | 212 | 211 | 235 | 284 | 255 | 962 | 307 | 224 | 234 | 195 |
| 10 | 262 | 220 | 216 | 210 | 231 | 266 | 272 | 984 | 267 | 224 | 215 | 185 |
| 11 | 276 | 216 | 217 | 210 | 237 | 256 | 254 | 990 | 222 | 225 | 184 | 190 |
| 12 | 261 | 203 | 217 | 211 | 239 | 241 | 247 | 992 | 201 | 242 | 174 | 200 |
| 13 | 238 | 206 | 215 | 210 | 272 | 231 | 241 | 989 | 226 | 246 | 144 | 201 |
| 14 | 231 | 207 | 217 | 211 | 268 | 219 | 223 | 986 | 212 | 245 | 160 | 209 |
| 15 | 220 | 206 | 228 | 215 | 258 | 212 | 229 | 996 | 222 | 259 | 172 | 208 |
| 16 | 216 | 204 | 223 | 216 | 352 | 208 | 223 | 1,000 | 209 | 237 | 170 | 185 |
| 17 | 226 | 201 | 219 | 216 | 333 | 207 | 269 | 1,020 | 200 | 250 | 179 | 179 |
| 18 | 222 | 201 | 220 | 215 | 313 | 206 | 365 | 1,000 | 176 | 237 | 164 | 177 |
| 19 | 230 | 197 | 221 | 215 | 313 | 207 | 553 | 976 | 171 | 262 | 170 | 181 |
| 20 | 217 | 194 | 220 | 215 | 305 | 208 | 726 | 970 | 180 | 263 | 185 | 210 |
| 21 | 215 | e199 | 228 | 217 | 280 | 214 | 759 | 921 | 216 | 246 | 187 | 178 |
| 22 | 221 | e202 | 262 | 235 | 275 | 216 | 771 | 818 | 200 | 243 | 163 | 177 |
| 23 | 221 | e208 | 232 | 265 | 280 | 207 | 776 | 737 | 181 | 225 | 201 | 162 |
| 24 | 218 | e212 | 224 | 283 | 267 | 206 | 772 | 678 | 180 | 179 | 193 | 176 |
| 25 | 220 | 210 | 260 | 274 | 297 | 210 | 774 | 650 | 175 | 172 | 176 | 181 |
| 26 | 288 | 225 | 231 | 246 | 312 | 216 | 782 | 590 | 184 | 173 | 164 | 218 |
| 27 | 325 | 219 | 217 | 229 | 280 | 209 | 786 | 523 | 175 | 185 | 170 | 255 |
| 28 | 315 | 211 | 213 | 224 | 269 | 212 | 754 | 508 | 187 | 191 | 183 | 212 |
| 29 | 244 | 213 | 212 | 223 | --- | 225 | 650 | 466 | 213 | 189 | 198 | 214 |
| 30 | 231 | 212 | 213 | 222 | --- | 207 | 606 | 432 | 195 | 202 | 210 | 227 |
| 31 | 226 | --- | 213 | 221 | --- | 213 | --- | 430 | --- | 175 | 223 | --- |
| Total | 7,641 | 6,455 | 6,827 | 6,892 | 7,424 | 8,839 | 13,115 | 24,516 | 7,479 | 6,913 | 5,715 | 5,843 |
| Mean | 246 | 215 | 220 | 222 | 265 | 285 | 437 | 791 | 249 | 223 | 184 | 195 |
| Max | 325 | 283 | 262 | 283 | 352 | 1,300 | 786 | 1,020 | 421 | 265 | 234 | 255 |
| Min | 178 | 194 | 211 | 210 | 218 | 206 | 211 | 430 | 171 | 172 | 144 | 162 |
| Ac-ft | 15,160 | 12,800 | 13,540 | 13,670 | 14,730 | 17,530 | 26,010 | 48,630 | 14,830 | 13,710 | 11,340 | 11,590 |

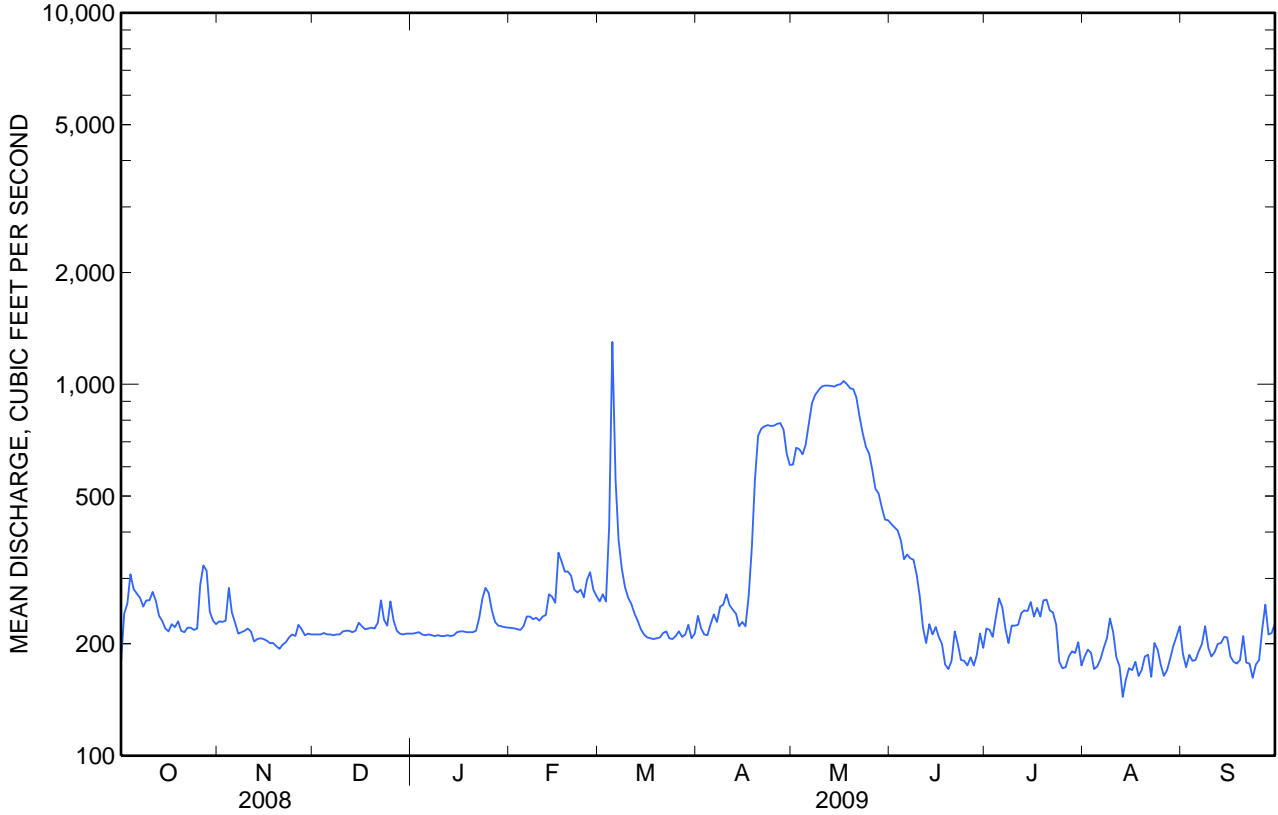
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2009, BY WATER YEAR (WY)

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Mean | 814 | 909 | 1,416 | 1,828 | 2,052 | 2,049 | 1,960 | 1,949 | 1,538 | 642 | 382 | 540 |
| Max | 4,760 | 4,124 | 8,677 | 15,500 | 8,782 | 7,658 | 9,268 | 10,420 | 7,665 | 4,244 | 2,225 | 4,041 |
| (WY) | (1984) | (1951) | (1951) | (1997) | (1997) | (1983) | (1983) | (1983) | (1942) | (1983) | (1983) | (1983) |
| Min | 78.2 | 93.1 | 110 | 154 | 166 | 199 | 169 | 138 | 94.5 | 78.8 | 67.5 | 72.6 |
| (WY) | (1978) | (1978) | (1978) | (1991) | (1991) | (1961) | (1977) | (1977) | (1977) | (1977) | (1977) | (1977) |

11290000 Tuolumne River at Modesto, CA—Continued

SUMMARY STATISTICS

| | Calendar Year 2008 | | Water Year 2009 | | Water Years 1940 - 2009 | |
|---------------------------------|--------------------|--------|-----------------|--------|-------------------------|-------------|
| Annual total | 125,522 | | 107,659 | | | |
| Annual mean | 343 | | 295 | | 1,330 | |
| Highest annual mean | | | | | 5,518 | 1983 |
| Lowest annual mean | | | | | 185 | 1989 |
| Highest daily mean | 1,690 | Jan 25 | 1,300 | Mar 5 | 52,900 | Jan 4, 1997 |
| Lowest daily mean | 149 | Sep 5 | 144 | Aug 13 | 56 | Aug 6, 1977 |
| Annual seven-day minimum | 170 | Sep 24 | 166 | Aug 13 | 62 | Aug 2, 1977 |
| Maximum peak flow | | | 1,640 | Mar 5 | 57,000 | Dec 9, 1950 |
| Maximum peak stage | | | 41.81 | Mar 5 | 71.21 | Jan 4, 1997 |
| Annual runoff (ac-ft) | 249,000 | | 213,500 | | 963,300 | |
| 10 percent exceeds | 844 | | 607 | | 3,630 | |
| 50 percent exceeds | 228 | | 221 | | 538 | |
| 90 percent exceeds | 180 | | 181 | | 188 | |



11290000 Tuolumne River at Modesto, CA—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965-79, 1985-95, 2001 to current year.

CHEMICAL DATA: Water years 1985-88, 1993-95.

SEDIMENT: Water years 1985-88, 1993-95.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1985 to September 1988, December 1988 to March 1995, December 2000 to current year.

WATER TEMPERATURE: July 1965 to April 1979, October 1985 to March 1995, December 2000 to current year.

INSTRUMENTATION.--Water-quality monitor since December 2000.

REMARKS.--Data for the period October 1985 to March 1987 are available in U.S. Geological Survey Open-File Report 88-479. Data for the period April 1987 to September 1988 are available in the files of the U.S. Geological Survey. Interruptions in record were due to recorder malfunction and a fouled probe.

Specific conductance records rated excellent except for Oct. 10-15, Apr. 7-22, June 3-17, July 3-22, Aug. 4 to Sept. 1, which are rated good; and Sept. 2-22, which are rated fair.

Water-temperature records rated excellent.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 587 microsiemens, Mar. 12, 1993; minimum recorded, 22 microsiemens, Feb. 26, 27, 2001.

WATER TEMPERATURE: Maximum recorded, 34.5°C, July 3-5, 1991; minimum recorded, 3.5°C, several days during December 1990.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 194 microsiemens, Feb. 26; minimum recorded, 37 microsiemens, May 18.

WATER TEMPERATURE: Maximum recorded, 31.3°C, June 29; minimum recorded, 7.3°C, Dec. 18.

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**SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009**

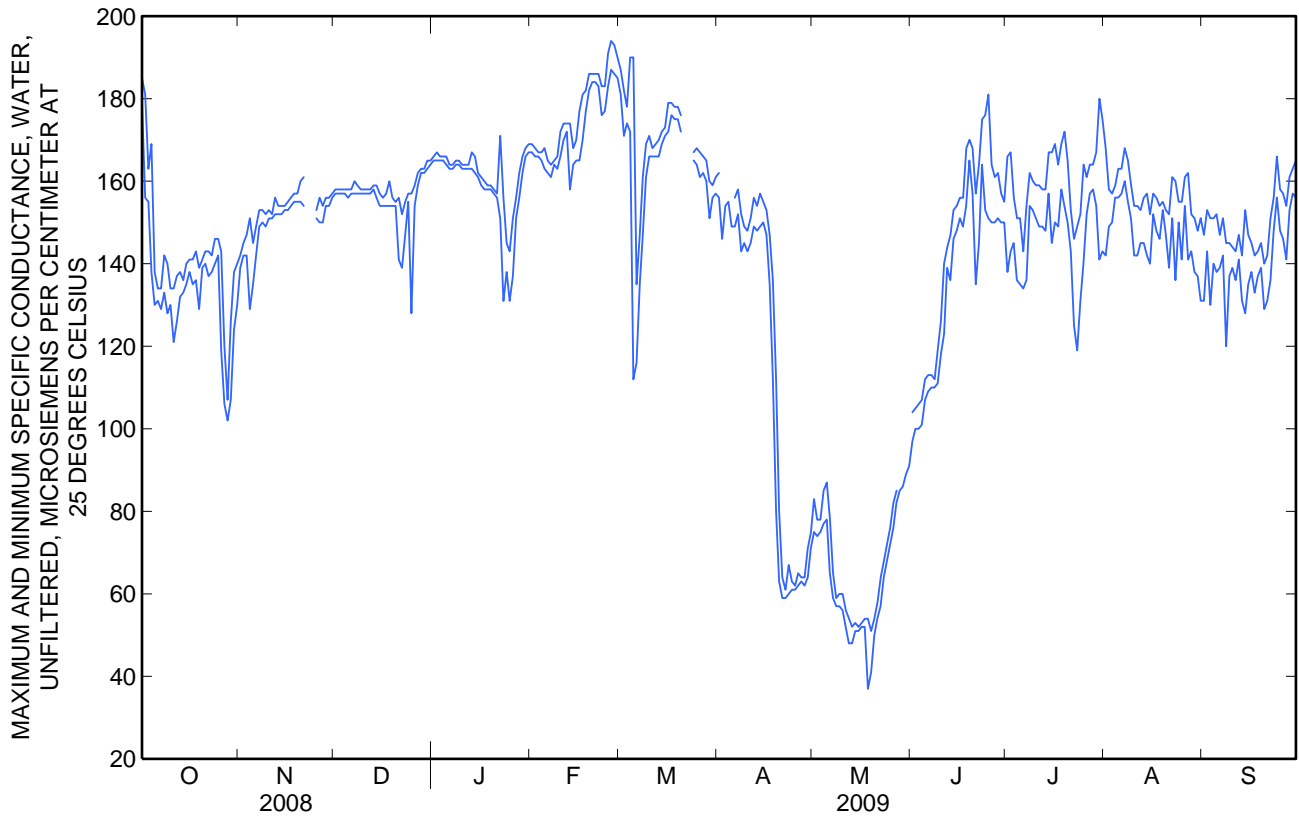
| Day | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min |
|--------------|----------------|------------|-----------------|------------|-----------------|------------|----------------|------------|-----------------|------------|--------------|------------|
| | October | | November | | December | | January | | February | | March | |
| 1 | 185 | 179 | 142 | 139 | 158 | 157 | 166 | 165 | 169 | 167 | 187 | 181 |
| 2 | 181 | 156 | 145 | 142 | 158 | 157 | 167 | 165 | 168 | 166 | 182 | 171 |
| 3 | 163 | 155 | 147 | 142 | 158 | 157 | 166 | 165 | 167 | 166 | 178 | 174 |
| 4 | 169 | 138 | 151 | 129 | 158 | 157 | 166 | 165 | 167 | 165 | 190 | 172 |
| 5 | 138 | 130 | 145 | 135 | 158 | 156 | 166 | 164 | 168 | 163 | 190 | 112 |
| 6 | 134 | 131 | 149 | 142 | 158 | 157 | 164 | 163 | 165 | 162 | 135 | 116 |
| 7 | 134 | 129 | 153 | 149 | 160 | 157 | 164 | 163 | 164 | 161 | 147 | 135 |
| 8 | 142 | 133 | 153 | 150 | 159 | 157 | 165 | 164 | 165 | 164 | 161 | 147 |
| 9 | 140 | 128 | 152 | 149 | 158 | 157 | 165 | 164 | 166 | 163 | 169 | 161 |
| 10 | 134 | 130 | 153 | 151 | 158 | 157 | 164 | 163 | 172 | 166 | 171 | 166 |
| 11 | 134 | 121 | 152 | 151 | 158 | 157 | 164 | 163 | 174 | 170 | 168 | 166 |
| 12 | 137 | 126 | 156 | 152 | 158 | 157 | 164 | 163 | 174 | 172 | 169 | 166 |
| 13 | 138 | 132 | 154 | 152 | 159 | 158 | 167 | 163 | 174 | 158 | 170 | 166 |
| 14 | 136 | 133 | 154 | 152 | 159 | 156 | 166 | 162 | 168 | 164 | 172 | 169 |
| 15 | 140 | 135 | 154 | 153 | 157 | 154 | 162 | 161 | 170 | 165 | 173 | 171 |
| 16 | 141 | 138 | 155 | 153 | 156 | 154 | 161 | 159 | 177 | 165 | 179 | 172 |
| 17 | 141 | 135 | 156 | 154 | 157 | 154 | 160 | 158 | 181 | 170 | 179 | 176 |
| 18 | 143 | 136 | 157 | 155 | 160 | 154 | 159 | 158 | 182 | 177 | 178 | 175 |
| 19 | 139 | 129 | 157 | 155 | 156 | 154 | 159 | 158 | 186 | 182 | 178 | 175 |
| 20 | 141 | 139 | 160 | 155 | 155 | 154 | 158 | 157 | 186 | 184 | 176 | 172 |
| 21 | 143 | 140 | 161 | 154 | 156 | 141 | 157 | 156 | 186 | 184 | --- | --- |
| 22 | 143 | 137 | --- | --- | 152 | 139 | 171 | 151 | 186 | 183 | --- | --- |
| 23 | 142 | 138 | --- | --- | 155 | 147 | 156 | 131 | 183 | 176 | --- | --- |
| 24 | 146 | 140 | --- | --- | 157 | 155 | 145 | 138 | 183 | 177 | 167 | 165 |
| 25 | 146 | 142 | 153 | 151 | 157 | 128 | 143 | 131 | 191 | 183 | 168 | 164 |
| 26 | 143 | 119 | 156 | 150 | 159 | 154 | 151 | 137 | 194 | 187 | 167 | 161 |
| 27 | 120 | 106 | 154 | 150 | 162 | 159 | 156 | 151 | 193 | 186 | 166 | 162 |
| 28 | 107 | 102 | 156 | 154 | 163 | 162 | 162 | 156 | 190 | 185 | 165 | 160 |
| 29 | 126 | 107 | 156 | 154 | 163 | 162 | 166 | 162 | --- | --- | 160 | 151 |
| 30 | 138 | 124 | 157 | 156 | 165 | 163 | 168 | 166 | --- | --- | 159 | 156 |
| 31 | 140 | 130 | --- | --- | 165 | 164 | 169 | 167 | --- | --- | 161 | 157 |
| Month | 185 | 102 | --- | --- | 165 | 128 | 171 | 131 | 194 | 158 | --- | --- |

11290000 Tuolumne River at Modesto, CA—Continued

**SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009**

| Day | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min |
|--------------|--------------|------------|------------|------------|-------------|------------|-------------|------------|---------------|------------|------------------|------------|
| | April | | May | | June | | July | | August | | September | |
| 1 | 162 | 156 | 83 | 75 | 104 | 97 | 166 | 138 | 168 | 142 | 147 | 131 |
| 2 | --- | 146 | 78 | 74 | 105 | 100 | 167 | 143 | 158 | 149 | 153 | 143 |
| 3 | --- | 154 | 78 | 75 | 106 | 100 | 156 | 145 | 157 | 150 | 151 | 130 |
| 4 | --- | 155 | 85 | 77 | 107 | 101 | 151 | 136 | 159 | 156 | 151 | 140 |
| 5 | --- | 149 | 87 | 78 | 112 | 107 | 151 | 135 | 163 | 156 | 152 | 138 |
| 6 | 156 | 149 | 78 | 65 | 113 | 109 | 143 | 134 | 163 | 157 | 147 | 139 |
| 7 | 158 | 152 | 65 | 59 | 113 | 110 | 154 | 136 | 168 | 160 | 151 | 142 |
| 8 | 152 | 143 | 59 | 57 | 112 | 110 | 162 | 154 | 165 | 155 | 145 | 120 |
| 9 | 149 | 145 | 60 | 57 | 119 | 111 | 160 | 153 | 159 | 151 | 145 | 137 |
| 10 | 148 | 143 | 60 | 56 | 126 | 118 | 159 | 151 | 154 | 142 | 144 | 139 |
| 11 | 151 | 145 | 56 | 52 | 140 | 123 | 159 | 149 | 154 | 142 | 143 | 136 |
| 12 | 156 | 149 | 54 | 48 | 144 | 139 | 158 | 149 | 153 | 145 | 147 | 141 |
| 13 | 154 | 148 | 52 | 48 | 147 | 136 | 158 | 148 | 156 | 145 | 142 | 131 |
| 14 | 157 | 149 | 53 | 51 | 153 | 146 | 167 | 157 | 157 | 142 | 153 | 128 |
| 15 | 155 | 150 | 52 | 51 | 154 | 148 | 167 | 145 | 152 | 140 | 147 | 135 |
| 16 | 153 | 147 | 53 | 52 | 156 | 151 | 169 | 150 | 157 | 152 | 145 | 138 |
| 17 | 147 | 135 | 54 | 52 | 156 | 149 | 164 | 149 | 156 | 148 | 142 | 133 |
| 18 | 136 | 112 | 54 | 37 | 168 | 154 | 169 | 158 | 154 | 146 | 143 | 137 |
| 19 | 112 | 80 | 51 | 41 | 170 | 165 | 172 | 154 | 155 | 153 | 145 | 139 |
| 20 | 80 | 63 | 54 | 50 | 168 | 157 | 165 | 150 | 153 | 147 | 140 | 129 |
| 21 | 64 | 59 | 58 | 54 | 157 | 135 | 153 | 143 | 152 | 139 | 142 | 131 |
| 22 | 61 | 59 | 64 | 57 | 164 | 145 | 146 | 125 | 161 | 151 | 151 | 136 |
| 23 | 67 | 60 | 68 | 64 | 175 | 164 | 149 | 119 | 160 | 136 | 156 | 148 |
| 24 | 63 | 61 | 72 | 68 | 176 | 153 | 152 | 131 | 155 | 150 | 166 | 156 |
| 25 | 62 | 61 | 76 | 72 | 181 | 151 | 164 | 140 | 155 | 141 | 158 | 148 |
| 26 | 65 | 62 | 82 | 76 | 164 | 150 | 161 | 152 | 161 | 154 | 157 | 146 |
| 27 | 64 | 63 | 85 | 82 | 161 | 150 | 164 | 157 | 162 | 141 | 154 | 141 |
| 28 | 64 | 62 | --- | 85 | 162 | 151 | 164 | 158 | 152 | 143 | 161 | 153 |
| 29 | 71 | 64 | --- | 86 | 157 | 150 | 167 | 154 | 151 | 138 | 163 | 157 |
| 30 | 75 | 71 | --- | 89 | 155 | 150 | 180 | 141 | 148 | 137 | 165 | 156 |
| 31 | --- | --- | --- | 91 | --- | --- | 175 | 143 | 151 | 131 | --- | --- |
| Month | --- | 59 | --- | 37 | 181 | 97 | 180 | 119 | 168 | 131 | 166 | 120 |

11290000 Tuolumne River at Modesto, CA—Continued



11290000 Tuolumne River at Modesto, CA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

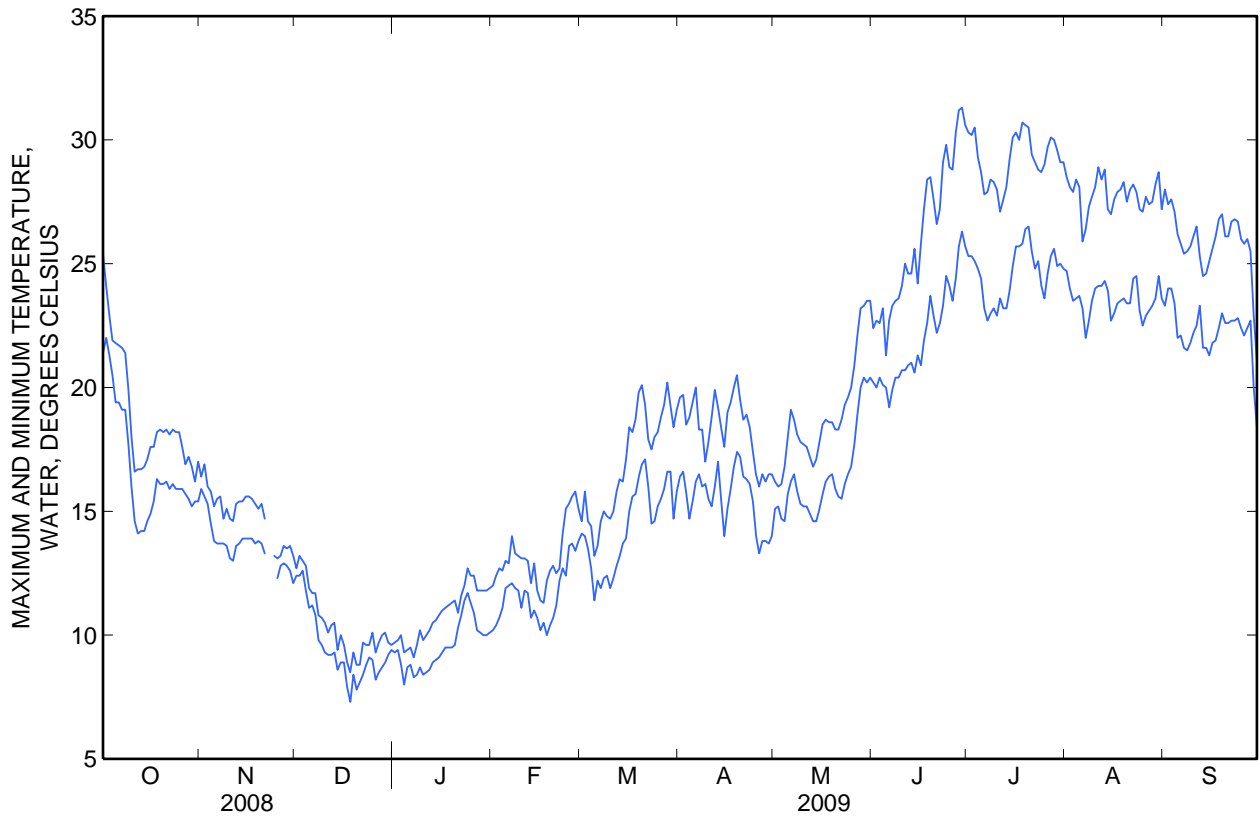
| Day | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min |
|--------------|---------|------|----------|------|----------|------|---------|------|----------|------|-------|------|
| | October | | November | | December | | January | | February | | March | |
| 1 | 25.4 | 21.4 | 16.4 | 15.9 | 12.7 | 12.4 | 9.7 | 9.3 | 12.0 | 10.2 | 14.6 | 14.1 |
| 2 | 24.1 | 22.0 | 16.9 | 15.6 | 13.2 | 12.4 | 9.8 | 9.4 | 12.4 | 10.4 | 15.8 | 14.0 |
| 3 | 22.9 | 21.3 | 16.0 | 15.3 | 13.0 | 12.6 | 10.0 | 8.8 | 12.7 | 10.7 | 14.6 | 13.5 |
| 4 | 21.9 | 20.5 | 15.8 | 14.5 | 12.8 | 11.8 | 9.3 | 8.0 | 12.6 | 11.1 | 14.4 | 12.7 |
| 5 | 21.8 | 19.4 | 15.2 | 13.8 | 11.9 | 11.1 | 9.4 | 8.7 | 13.0 | 11.9 | 13.2 | 11.4 |
| 6 | 21.7 | 19.4 | 15.5 | 13.7 | 11.7 | 11.2 | 9.5 | 8.8 | 12.9 | 12.0 | 13.6 | 12.2 |
| 7 | 21.6 | 19.1 | 15.6 | 13.7 | 11.7 | 10.8 | 9.1 | 8.3 | 14.0 | 12.1 | 14.6 | 11.9 |
| 8 | 21.4 | 19.1 | 14.7 | 13.7 | 10.8 | 9.8 | 9.6 | 8.4 | 13.3 | 11.9 | 15.0 | 12.3 |
| 9 | 19.9 | 17.7 | 15.1 | 13.6 | 10.7 | 9.6 | 10.2 | 8.7 | 13.2 | 11.8 | 14.8 | 12.4 |
| 10 | 18.0 | 16.0 | 14.7 | 13.1 | 10.5 | 9.3 | 9.8 | 8.4 | 13.1 | 11.1 | 14.7 | 11.9 |
| 11 | 16.6 | 14.6 | 14.6 | 13.0 | 10.1 | 9.2 | 10.0 | 8.5 | 13.1 | 11.8 | 15.0 | 12.3 |
| 12 | 16.7 | 14.1 | 15.3 | 13.6 | 10.4 | 9.2 | 10.2 | 8.6 | 13.0 | 11.7 | 15.8 | 12.8 |
| 13 | 16.7 | 14.2 | 15.4 | 13.7 | 10.5 | 9.3 | 10.5 | 8.9 | 12.1 | 10.7 | 16.3 | 13.2 |
| 14 | 16.8 | 14.2 | 15.4 | 13.9 | 9.4 | 8.6 | 10.6 | 9.0 | 12.9 | 11.0 | 16.2 | 13.7 |
| 15 | 17.1 | 14.6 | 15.6 | 13.9 | 10.0 | 8.9 | 10.8 | 9.1 | 11.8 | 10.7 | 17.1 | 13.9 |
| 16 | 17.6 | 14.9 | 15.6 | 13.9 | 9.6 | 8.9 | 11.0 | 9.3 | 11.4 | 10.2 | 18.4 | 15.0 |
| 17 | 17.6 | 15.4 | 15.5 | 13.9 | 8.9 | 7.9 | 11.1 | 9.5 | 11.3 | 10.5 | 18.2 | 15.6 |
| 18 | 18.2 | 16.3 | 15.3 | 13.7 | 8.5 | 7.3 | 11.2 | 9.5 | 12.2 | 10.0 | 18.7 | 15.7 |
| 19 | 18.3 | 16.1 | 15.1 | 13.8 | 9.3 | 8.4 | 11.3 | 9.5 | 12.6 | 10.4 | 19.8 | 16.4 |
| 20 | 18.2 | 16.1 | 15.3 | 13.7 | 8.8 | 7.8 | 11.4 | 9.6 | 12.8 | 10.7 | 20.1 | 16.9 |
| 21 | 18.3 | 16.2 | 14.7 | 13.3 | 8.8 | 8.1 | 10.9 | 10.3 | 12.5 | 11.2 | 19.3 | 17.1 |
| 22 | 18.1 | 15.9 | --- | --- | 9.7 | 8.4 | 11.6 | 10.8 | 12.7 | 12.2 | 17.9 | 16.0 |
| 23 | 18.3 | 16.1 | --- | --- | 9.6 | 8.8 | 12.0 | 11.4 | 14.1 | 12.7 | 17.5 | 14.5 |
| 24 | 18.2 | 15.9 | 13.2 | --- | 9.6 | 9.1 | 12.7 | 11.7 | 15.1 | 12.4 | 18.0 | 14.6 |
| 25 | 18.2 | 15.9 | 13.1 | 12.3 | 10.1 | 9.0 | 12.4 | 11.3 | 15.3 | 13.6 | 18.2 | 15.2 |
| 26 | 17.6 | 15.9 | 13.2 | 12.8 | 9.3 | 8.2 | 12.4 | 10.9 | 15.6 | 13.7 | 18.8 | 15.5 |
| 27 | 16.9 | 15.7 | 13.6 | 12.9 | 9.7 | 8.5 | 11.8 | 10.2 | 15.8 | 13.4 | 19.3 | 15.9 |
| 28 | 17.2 | 15.5 | 13.5 | 12.8 | 10.0 | 8.7 | 11.8 | 10.1 | 15.1 | 13.8 | 20.2 | 16.6 |
| 29 | 16.8 | 15.2 | 13.6 | 12.6 | 10.1 | 8.9 | 11.8 | 10.0 | --- | --- | 19.3 | 16.6 |
| 30 | 16.2 | 15.4 | 13.2 | 12.1 | 9.7 | 9.2 | 11.8 | 10.0 | --- | --- | 18.4 | 14.7 |
| 31 | 17.0 | 15.4 | --- | --- | 9.6 | 9.4 | 11.9 | 10.1 | --- | --- | 19.1 | 15.8 |
| Month | 25.4 | 14.1 | --- | --- | 13.2 | 7.3 | 12.7 | 8.0 | 15.8 | 10.0 | 20.2 | 11.4 |

11290000 Tuolumne River at Modesto, CA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

| Day | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min |
|--------------|-------|------|------|------|------|------|------|------|--------|------|-----------|------|
| | April | | May | | June | | July | | August | | September | |
| 1 | 19.6 | 16.4 | 16.2 | 15.1 | 22.4 | 20.2 | 30.3 | 25.3 | 28.5 | 24.7 | 28.0 | 23.3 |
| 2 | 19.7 | 16.6 | 16.0 | 15.2 | 22.7 | 20.0 | 30.2 | 25.3 | 28.1 | 24.0 | 27.4 | 24.0 |
| 3 | 18.5 | 15.7 | 16.1 | 14.7 | 22.6 | 20.4 | 30.5 | 25.1 | 27.9 | 23.5 | 27.6 | 24.0 |
| 4 | 18.8 | 14.7 | 16.8 | 14.6 | 23.2 | 20.1 | 29.3 | 24.8 | 28.4 | 23.6 | 27.1 | 23.4 |
| 5 | 19.4 | 15.4 | 18.0 | 15.7 | 21.3 | 20.0 | 28.7 | 24.4 | 28.1 | 23.7 | 26.2 | 22.0 |
| 6 | 20.0 | 16.2 | 19.1 | 16.2 | 22.7 | 19.2 | 27.8 | 23.2 | 25.9 | 23.2 | 25.8 | 22.1 |
| 7 | 18.3 | 16.5 | 18.7 | 16.5 | 23.3 | 19.9 | 27.9 | 22.7 | 26.4 | 22.0 | 25.4 | 21.6 |
| 8 | 18.3 | 16.0 | 18.1 | 15.8 | 23.5 | 20.4 | 28.4 | 23.0 | 27.3 | 22.7 | 25.5 | 21.5 |
| 9 | 17.0 | 16.1 | 17.8 | 15.3 | 23.6 | 20.4 | 28.3 | 23.2 | 27.7 | 23.5 | 25.7 | 21.8 |
| 10 | 17.8 | 15.5 | 17.7 | 15.2 | 24.1 | 20.7 | 28.0 | 22.9 | 28.1 | 24.0 | 26.1 | 22.2 |
| 11 | 18.8 | 15.2 | 17.6 | 15.2 | 25.0 | 20.7 | 27.1 | 23.6 | 28.9 | 24.1 | 26.5 | 22.5 |
| 12 | 19.9 | 16.0 | 17.2 | 14.9 | 24.6 | 20.9 | 27.6 | 23.2 | 28.4 | 24.1 | 25.3 | 23.3 |
| 13 | 19.2 | 17.0 | 16.8 | 14.6 | 24.6 | 21.0 | 28.1 | 23.2 | 28.8 | 24.3 | 24.5 | 21.6 |
| 14 | 18.4 | 15.5 | 17.1 | 14.6 | 25.6 | 20.6 | 29.2 | 23.9 | 27.2 | 23.9 | 24.6 | 21.6 |
| 15 | 17.6 | 14.0 | 17.8 | 15.1 | 24.2 | 21.3 | 30.1 | 24.9 | 27.0 | 22.7 | 25.1 | 21.3 |
| 16 | 19.0 | 15.1 | 18.5 | 15.7 | 25.8 | 20.9 | 30.3 | 25.7 | 27.6 | 23.0 | 25.6 | 21.8 |
| 17 | 19.4 | 15.9 | 18.7 | 16.2 | 27.2 | 21.9 | 30.0 | 25.7 | 27.9 | 23.4 | 26.1 | 21.9 |
| 18 | 20.0 | 16.8 | 18.6 | 16.4 | 28.4 | 22.6 | 30.7 | 25.8 | 28.0 | 23.5 | 26.8 | 22.4 |
| 19 | 20.5 | 17.4 | 18.6 | 16.5 | 28.5 | 23.7 | 30.6 | 26.4 | 28.3 | 23.6 | 27.0 | 23.0 |
| 20 | 19.5 | 17.2 | 18.3 | 15.9 | 27.6 | 22.9 | 30.5 | 26.5 | 27.5 | 23.4 | 26.1 | 22.6 |
| 21 | 18.7 | 16.4 | 18.3 | 15.6 | 26.6 | 22.2 | 29.4 | 25.5 | 28.0 | 23.4 | 26.1 | 22.6 |
| 22 | 18.9 | 16.3 | 18.7 | 15.5 | 27.2 | 22.6 | 29.1 | 24.8 | 28.2 | 24.4 | 26.7 | 22.7 |
| 23 | 18.4 | 16.1 | 19.3 | 16.1 | 29.1 | 23.3 | 28.8 | 25.1 | 27.9 | 24.5 | 26.8 | 22.7 |
| 24 | 17.4 | 15.4 | 19.6 | 16.5 | 29.8 | 24.5 | 28.7 | 24.1 | 27.2 | 23.1 | 26.7 | 22.8 |
| 25 | 16.5 | 14.0 | 20.0 | 16.8 | 28.9 | 24.1 | 29.0 | 23.6 | 27.1 | 22.5 | 26.0 | 22.4 |
| 26 | 16.0 | 13.3 | 20.9 | 17.7 | 28.8 | 23.5 | 29.7 | 24.6 | 27.7 | 22.9 | 25.8 | 22.1 |
| 27 | 16.5 | 13.8 | 22.1 | 18.9 | 30.3 | 24.4 | 30.1 | 25.3 | 27.4 | 23.1 | 26.0 | 22.4 |
| 28 | 16.2 | 13.8 | 23.2 | 20.0 | 31.2 | 25.7 | 30.0 | 25.6 | 27.5 | 23.3 | 25.5 | 22.7 |
| 29 | 16.5 | 13.7 | 23.3 | 20.4 | 31.3 | 26.3 | 29.6 | 24.9 | 28.2 | 23.6 | 22.9 | 20.0 |
| 30 | 16.5 | 14.0 | 23.5 | 20.2 | 30.6 | 25.7 | 29.1 | 25.0 | 28.7 | 24.5 | 21.1 | 18.4 |
| 31 | --- | --- | 23.5 | 20.4 | --- | --- | 29.1 | 24.8 | 27.2 | 23.6 | --- | --- |
| Month | 20.5 | 13.3 | 23.5 | 14.6 | 31.3 | 19.2 | 30.7 | 22.7 | 28.9 | 22.0 | 28.0 | 18.4 |

11290000 Tuolumne River at Modesto, CA—Continued



11290000 Tuolumne River at Modesto, CA—Continued

CROSS SECTION ANALYSES
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

| Date | Time | Specific conductance, µS/cm @ 25 degC (00095) | Temperature, deg C (00010) | DepthTo bottom at sample location, feet (81903) | Sam- pling depth, feet (00003) | Stream width, feet (00004) | Loca- tion in X-sect. looking dwnstrm ft from l bank (00009) |
|------------|------|---|----------------------------------|---|--|-------------------------------------|---|
| Apr | | | | | | | |
| 22... | 1028 | 57 | 16.6 | 2.50 | 1.50 | 132 | 7.00 |
| 22... | 1030 | 57 | 16.6 | 6.00 | 1.20 | 132 | 20.0 |
| 22... | 1031 | 57 | 16.6 | 6.00 | 4.80 | 132 | 20.0 |
| 22... | 1035 | 57 | 16.6 | 6.50 | 1.30 | 132 | 33.0 |
| 22... | 1036 | 57 | 16.6 | 6.50 | 5.20 | 132 | 33.0 |
| 22... | 1038 | 56 | 16.6 | 5.80 | 1.10 | 132 | 46.0 |
| 22... | 1039 | 56 | 16.6 | 5.80 | 4.70 | 132 | 46.0 |
| 22... | 1043 | 70 | 17.2 | 4.80 | .90 | 132 | 60.0 |
| 22... | 1044 | 59 | 16.9 | 4.80 | 3.90 | 132 | 60.0 |
| 22... | 1046 | 64 | 17.1 | 4.50 | 2.70 | 132 | 73.0 |
| 22... | 1050 | 63 | 17.1 | 2.90 | 1.80 | 132 | 86.0 |
| 22... | 1052 | 63 | 17.1 | 2.60 | 1.50 | 132 | 99.0 |
| 22... | 1053 | 63 | 17.1 | 3.80 | 2.20 | 132 | 112 |
| 22... | 1055 | 63 | 17.1 | 3.30 | 2.00 | 132 | 125 |
| Jul | | | | | | | |
| 22... | 1357 | 126 | 27.2 | .45 | .30 | 75.0 | 3.75 |
| 22... | 1358 | 126 | 27.3 | 1.90 | 1.00 | 75.0 | 11.2 |
| 22... | 1359 | 126 | 27.2 | 2.40 | 1.40 | 75.0 | 18.8 |
| 22... | 1400 | 126 | 27.2 | 2.40 | 1.40 | 75.0 | 26.2 |
| 22... | 1401 | 126 | 27.3 | 2.90 | .60 | 75.0 | 33.8 |
| 22... | 1402 | 126 | 27.3 | 2.90 | 2.40 | 75.0 | 33.8 |
| 22... | 1403 | 126 | 27.3 | 2.20 | 1.30 | 75.0 | 41.2 |
| 22... | 1404 | 125 | 27.3 | 2.00 | 1.20 | 75.0 | 48.8 |
| 22... | 1405 | 126 | 27.3 | 1.90 | 1.00 | 75.0 | 56.2 |
| 22... | 1406 | 126 | 27.4 | 1.20 | .70 | 75.0 | 63.8 |
| 22... | 1407 | 126 | 27.3 | .30 | .20 | 75.0 | 71.2 |

Note: Instantaneous discharge at the mean time of the cross-sectional measurements: Apr. 22, 778 ft³/s; July 22, 237 ft³/s.