

Elm Creek Gauging Station Data

U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES
 Station No 05287890 Elm Creek Nr Champlin, MN Source Agency USGS State 27 County 053
 WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

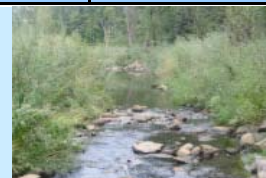
| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|-----|-----|------|------|------|------|-----|-----|-----|-----|-----|------|
| 1 | 19 | 115 | e15 | e4.0 | 1.6 | e7.5 | 86 | 35 | 33 | 57 | 5.4 | e4.1 |
| 2 | 20 | 115 | e13 | e3.9 | 1.7 | e6.0 | 80 | 32 | 29 | 54 | 5.1 | 3.9 |
| 3 | 17 | 113 | e13 | e3.9 | 1.7 | e7.0 | 76 | 29 | 25 | 53 | 5.0 | e3.7 |
| 4 | 15 | 110 | e12 | e3.9 | 1.6 | 8.4 | 69 | 25 | 23 | 51 | 5.1 | e5.7 |
| 5 | 12 | 105 | 12 | e3.9 | 2.2 | 7.0 | 63 | 22 | 26 | 48 | 4.4 | e7.4 |
| 6 | 9.6 | 99 | 11 | e3.6 | 3.8 | 11 | 59 | 22 | 25 | 45 | 4.2 | e9.2 |
| 7 | 7.6 | 93 | 11 | e3.2 | 3.6 | 28 | 54 | 20 | 24 | 42 | 3.9 | e10 |
| 8 | 7.2 | 88 | 11 | e3.1 | 2.5 | e31 | 50 | 19 | 33 | 39 | 4.0 | e11 |
| 9 | 6.7 | 84 | 10 | e3.0 | 2.9 | e25 | 46 | 21 | 42 | 36 | 4.2 | 10 |
| 10 | 6.2 | 80 | 11 | e2.6 | e2.8 | e28 | 44 | 24 | 54 | 32 | 4.3 | 9.9 |
| 11 | 6.2 | 76 | 11 | e2.2 | 2.6 | e32 | 44 | 24 | 65 | 29 | 3.9 | 8.8 |
| 12 | 5.8 | 72 | e10 | e2.2 | 2.2 | e29 | 48 | 22 | 69 | 26 | 3.8 | 8.8 |
| 13 | 5.7 | 68 | e9.4 | e1.5 | 3.0 | e26 | 48 | 27 | 73 | 23 | 3.4 | 15 |
| 14 | 5.5 | 65 | e8.1 | e1.3 | 8.8 | e22 | 45 | 33 | 80 | 20 | 3.3 | 27 |
| 15 | 6.0 | 62 | e7.8 | e1.4 | e17 | e15 | 42 | 36 | 80 | 18 | 3.1 | 29 |
| 16 | 6.2 | 57 | e7.4 | e1.5 | e19 | 12 | 44 | 35 | 76 | 16 | 3.4 | 25 |
| 17 | 6.0 | 48 | e7.1 | 1.6 | e17 | e11 | 58 | 36 | 70 | 14 | 4.6 | 22 |
| 18 | 5.7 | 40 | e7.4 | 1.9 | e15 | e8.1 | 66 | 45 | 64 | 12 | 4.1 | 18 |
| 19 | 5.6 | 35 | e6.5 | 1.7 | e14 | 7.9 | 75 | 64 | 58 | 11 | 4.1 | e16 |
| 20 | 5.5 | 35 | e6.3 | 1.6 | e13 | 6.4 | 82 | 74 | 62 | 12 | 3.8 | e15 |
| 21 | 5.2 | 32 | e6.6 | e3.0 | e12 | 7.4 | 83 | 83 | 81 | 11 | 3.4 | e15 |
| 22 | 5.3 | 30 | e5.3 | e2.2 | e12 | 8.7 | 79 | 89 | 74 | 8.6 | 3.1 | e50 |
| 23 | 6.9 | 29 | e4.0 | 1.6 | e11 | 11 | 72 | 87 | 66 | 9.0 | 3.0 | 85 |
| 24 | 7.2 | 26 | e3.6 | 1.5 | e10 | 13 | 65 | 78 | 62 | 9.6 | 2.9 | 86 |
| 25 | 7.2 | 23 | e4.5 | 1.5 | e9.3 | 15 | 58 | 70 | 59 | 8.7 | 4.6 | 89 |
| 26 | 27 | 22 | e3.9 | 1.6 | e8.6 | 15 | 54 | 64 | 57 | 9.0 | 7.4 | 91 |
| 27 | 37 | 21 | e3.9 | 1.7 | e7.9 | 18 | 50 | 59 | 55 | 8.4 | 6.9 | 89 |
| 28 | 58 | e17 | e3.9 | 1.8 | e7.2 | 25 | 45 | 53 | 56 | 7.7 | 6.4 | 87 |
| 29 | 103 | e16 | e3.9 | 1.7 | --- | 39 | 41 | 49 | 56 | 7.0 | 5.9 | 83 |
| 30 | 118 | e15 | e4.4 | 1.7 | --- | 66 | 37 | 43 | 58 | 6.1 | 6.1 | 75 |
| 31 | 117 | --- | e4.1 | 1.8 | --- | 90 | --- | 38 | --- | 5.6 | 5.0 | --- |



Elm Creek Gauging Station Data, continued

| Statistics for Water Year October 2004 to September 2005 | | | | | | | | | | | | | |
|---|--------|--------|--------|--------------------|--------|-----------------|--------|-----------------------|--------|--------|--------|---------|--|
| | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | |
| TOTAL | 670.3 | 1,791 | 248.1 | 72.1 | 214.0 | 636.4 | 1,763 | 1,358 | 1,635 | 728.7 | 137.8 | 1,009.5 | |
| MEAN | 21.6 | 59.7 | 8.00 | 2.33 | 7.64 | 20.5 | 58.8 | 43.8 | 54.5 | 23.5 | 4.45 | 33.6 | |
| MAX | 118 | 115 | 15 | 4.0 | 19 | 90 | 86 | 89 | 81 | 57 | 7.4 | 91 | |
| MIN | 5.2 | 15 | 3.6 | 1.3 | 1.6 | 6.0 | 37 | 19 | 23 | 5.6 | 2.9 | 3.7 | |
| AC-FT | 1,330 | 3,550 | 492 | 143 | 424 | 1,260 | 3,500 | 2,690 | 3,240 | 1,450 | 273 | 2,000 | |
| CFSM | 0.25 | 0.69 | 0.09 | 0.03 | 0.09 | 0.24 | 0.68 | 0.51 | 0.63 | 0.27 | 0.05 | 0.39 | |
| IN. | 0.29 | 0.77 | 0.11 | 0.03 | 0.09 | 0.28 | 0.76 | 0.59 | 0.71 | 0.32 | 0.06 | 0.44 | |
| Statistics of monthly mean data for water years 1979-2005, by Water Year (WY) | | | | | | | | | | | | | |
| MEAN | 30.2 | 22.6 | 11.0 | 5.07 | 9.30 | 60.4 | 103 | 70.9 | 54.6 | 41.9 | 30.9 | 29.0 | |
| MAX | 240 | 67.4 | 41.3 | 22.0 | 99.1 | 185 | 414 | 203 | 196 | 157 | 151 | 170 | |
| (WY) | (1986) | (1994) | (1992) | (1992) | (1984) | (1985) | (2001) | (2002) | (2004) | (1993) | (2002) | (1991) | |
| MIN | 1.13 | 1.03 | 0.92 | 0.74 | 0.91 | 3.86 | 5.31 | 3.54 | 1.34 | 0.76 | 1.44 | 1.08 | |
| (WY) | (1990) | (1990) | (1990) | (1991) | (1990) | (2001) | (1987) | (2000) | (1988) | (1988) | (1989) | (1988) | |
| Summary Statistics | | | | 2004 Calendar Year | | 2005 Water Year | | Water Years 1979-2005 | | | | | |
| ANNUAL TOTAL | | | | 13,870.51 | | 10,263.9 | | | | | | | |
| ANNUAL MEAN | | | | 37.9 | | 28.1 | | 39.1 | | | | | |
| HIGHEST ANNUAL MEAN | | | | | | | | 82.2 | | | | | |
| LOWEST ANNUAL MEAN | | | | | | | | 4.54 | | | | | |
| HIGHEST DAILY MEAN | | | | 346 | | Jun 3 | | 118 | | Oct 30 | | 815 | |
| LOWEST DAILY MEAN | | | | 0.50 | | Jan 29 | | 1.3 | | Jan 14 | | 0.31 | |
| ANNUAL SEVEN-DAY MINIMUM | | | | 0.62 | | Jan 26 | | 1.6 | | Jan 13 | | 0.35 | |
| MAXIMUM PEAK FLOW | | | | | | | | 118 | | Oct 30 | | 875 | |
| MAXIMUM PEAK STAGE | | | | | | | | 6.46 | | Oct 30 | | 10.02 | |
| INSTANTANEOUS LOW FLOW | | | | | | | | a1.3 | | Jan 14 | | 0.29 | |
| ANNUAL RUNOFF (AC-FT) | | | | 27,510 | | | | 20,360 | | | | 28,350 | |
| ANNUAL RUNOFF (CFSM) | | | | 0.441 | | | | 0.327 | | | | 0.455 | |
| ANNUAL RUNOFF (INCHES) | | | | 6.00 | | | | 4.44 | | | | 6.18 | |
| 10 PERCENT EXCEEDS | | | | 106 | | | | 75 | | | | 108 | |
| 50 PERCENT EXCEEDS | | | | 12 | | | | 15 | | | | 12 | |
| 90 PERCENT EXCEEDS | | | | 0.80 | | | | 3.1 | | | | 1.9 | |

2005 Annual Report



USGS Automatic Event Samples for Water Year 2005

| DATE & TIME | Sp Cond mS/cm | pH | TSS mg/L | COD mg/L | Ammonia mg/L | Nitrite mg/L | Total N mg/L | Dissolved NO ₂ +NO ₃ mg/L | Total P mg/L | Dissolved P mg/L | Dissolved Chloride mg/L |
|---|---------------------|-----|-------------|-------------|-----------------|-----------------|--------------------|---|--------------------|------------------------|-------------------------------|
| Oct 28, 2004 04:34 to Oct 30, 2004 10:34 | 439 | 7.9 | 10 | 40 | E.04 | 0.012 | 1.2 | 0.42 | 0.21 | 0.11 | 46.7 |
| Apr 16, 2005 15:52 to Apr 19, 2005 09:52 | 530 | 7.9 | 25 | 40 | 0.05 | <.008 | 1.4 | 0.07 | 0.2 | 0.08 | 63.6 |
| Jun 08, 2005 11:47 to Jun 10, 2005 08:47 | 565 | 7.8 | <10 | 40 | 0.05 | 0.014 | 1.3 | 0.2 | 0.24 | 0.17 | 64.8 |
| Jun 10, 2005 13:10 to Jun 13, 2005 10:10 | 554 | 7.8 | 25 | 40 | E.04 | 0.013 | 1.4 | 0.21 | 0.31 | 0.2 | 62.2 |
| Jun 20, 2005 15:00 to Jun 21, 2005 00:00 | 458 | 7.6 | 208 | 60 | 0.09 | 0.016 | 2 | 0.88 | 0.51 | 0.22 | 46.9 |
| Aug 26, 2005 04:52 to Aug 26, 2005 16:53 | 568 | 8.1 | 15 | 40 | 0.23 | 0.089 | 1.8 | 0.36 | 0.36 | 0.17 | 54.5 |
| Sep 22, 2005 12:58 to Sep 25, 2005 09:58 | 448 | 7.7 | <10 | 40 | <.04 | 0.018 | 1.6 | 0.27 | 0.29 | 0.16 | 52.4 |

E = Estimated
 Sp Cond = Specific Conductivity
 TSS = Total Suspended Sediments
 COD = Chemical Oxygen Demand

Data are provisional and are subject to change



**Elm Creek Near Champlin (USGS Station 05287890)
Manual Water Quality Samples for Water Year 2005**

| DATE | Sample Start Time | Disch Inst cfs | Water Temp. °C | Air Temp. °C | Barom Press mm Hg | DO mg/L | DO % Satur | COD mg/L | Sp cond mS/cm | pH |
|--------------|-------------------|----------------|----------------|--------------|-------------------|---------|------------|----------|---------------|-----|
| Oct 06, 2004 | 10:00 | 9 | 11.1 | | 746 | 8.8 | 80 | 50 | 515 | 7.7 |
| Nov 17, 2004 | 09:20 | 50 | 5 | 6 | 744 | 11.2 | 88 | 40 | 497 | 7.8 |
| Dec 15, 2004 | 09:30 | 8.1 | 0.1 | 0 | 741 | 13.7 | 94 | 30 | 698 | 7.8 |
| Jan 20, 2005 | 10:45 | 1.6 | 0.1 | | 741 | 10.7 | 74 | 20 | 733 | 7.8 |
| Feb 07, 2005 | 11:05 | 3.3 | 0.1 | | 746 | 9.9 | 68 | 30 | 844 | 7.4 |
| Mar 14, 2005 | 10:20 | 24 | 0 | | 744 | 6.4 | 44 | 50 | 658 | 7.2 |
| Mar 31, 2005 | 11:20 | 86 | 1.3 | 13 | 742 | 9.6 | 68 | 40 | 320 | 7.3 |
| Apr 22, 2005 | 10:05 | 78 | 12.3 | 13 | 739 | 8.7 | 81 | 40 | 543 | 7.8 |
| May 10, 2005 | 10:00 | 26 | 15.2 | 17.5 | 738 | 7.9 | 79 | 40 | 601 | 7.7 |
| Jul 12, 2005 | 10:10 | 26 | 23.8 | 26 | 747 | 2.8 | 33 | 60 | 595 | 7.4 |
| Aug 02, 2005 | 10:10 | 5.2 | 23 | 27 | 742 | 3.4 | 40 | 40 | 604 | 7.3 |
| Sep 08, 2005 | 09:30 | 10 | 17.7 | 17 | 745 | 4.9 | 51 | 30 | 544 | 7.3 |

| DATE | Sample Start Time | TSS mg/L | Volatile Residue mg/L | Dissolved Chloride mg/L | Ammonia mg/L | Dissolved NO ₂ +NO ₃ mg/L | Nitrite mg/L | Total Nitrogen mg/L | Dissolved P mg/L | Total P mg/L |
|--------------|-------------------|----------|-----------------------|-------------------------|--------------|---|--------------|---------------------|------------------|--------------|
| Oct 06, 2004 | 10:00 | <10 | <10 | 47.7 | 0.09 | 0.14 | 0.021 | 1.1 | 0.11 | 0.15 |
| Nov 17, 2004 | 09:20 | 13 | <10 | 49.6 | <.04 | E.06 | E.005 | 1.4 | E.03 | 0.13 |
| Dec 15, 2004 | 09:30 | <10 | <10 | 58.7 | 0.08 | 0.08 | <.008 | 0.99 | E.02 | 0.07 |
| Jan 20, 2005 | 10:45 | 20 | <10 | 18.6 | 0.26 | 0.08 | E.007 | 0.48 | <.04 | 0.04 |
| Feb 07, 2005 | 11:05 | <10 | <10 | 137 | 0.84 | 0.44 | 0.021 | 1.9 | 0.24 | 0.34 |
| Mar 14, 2005 | 10:20 | <10 | <10 | 87.8 | 0.84 | 0.38 | 0.036 | 2.2 | 0.25 | 0.34 |
| Mar 31, 2005 | 11:20 | 27 | 12 | 40.9 | 0.52 | 0.45 | 0.013 | 1.9 | 0.18 | 0.32 |
| Apr 22, 2005 | 10:05 | 16 | <10 | 69.7 | <.04 | <.06 | <.008 | 1.3 | 0.08 | 0.16 |
| May 10, 2005 | 10:00 | <10 | <10 | 69.5 | 0.07 | 0.06 | 0.01 | 1.1 | 0.11 | 0.17 |
| Jul 12, 2005 | 10:10 | 22 | <10 | 61.8 | 1.13 | <.06 | 0.012 | 3 | 0.19 | 0.48 |
| Aug 02, 2005 | 10:10 | 11 | <10 | 55.1 | 1.23 | 0.19 | 0.128 | 2.6 | 0.29 | 0.43 |
| Sep 08, 2005 | 09:30 | <10 | <10 | 58.2 | 0.07 | 0.36 | 0.092 | 1.3 | 0.13 | 0.19 |

Data are provisional and are subject to change

E = Estimated



Annual Runoff Summary

