

Fifth Lake

Location

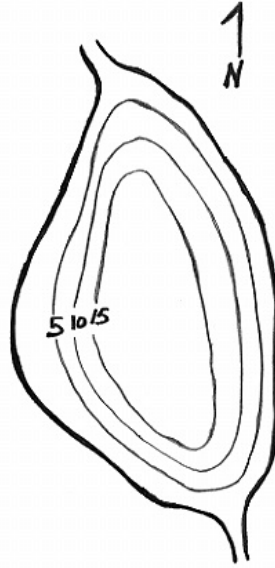
Pond Number: 040786
Watershed: Black River
County: Hamilton
Topographic Quadrangle: Old Forge

Sample Site

Latitude: 43° 44.923'
Longitude: 74° 47.531'

Morphometry

Surface Area: 13 Ac.
Mean Depth: 7.7 Ft
Maximum Depth: 16.7 Ft
Volume: 101 Ac./Ft.
Watershed Area: 288 Ac.
Hydraulic Retention Time: 0.06 Yr.
Shoreline Length: 0.6 Mi.
Elevation: 1,706 Ft.
Water Quality Classification: A
Trophic State: Mesotrophic



Temperature and Dissolved Oxygen

Fifth Lake had a minimum DO of 0.5 mg/L (August 1999), with a minimum temperature of 5.0°C and a maximum temperature of 24.1°C. In general, the lowest DO values occurred during the month of August.

pH

Figure 44 presents the seasonal mean pH trend in Fifth Lake, while Table 33 presents descriptive statistics for pH in Fifth Lake. The pH in Fifth Lake exhibited an increasing trend from 1995 to 1997, with relatively stable values from 1998 – 2003. The pH in Fifth Lake was similar to the county average.

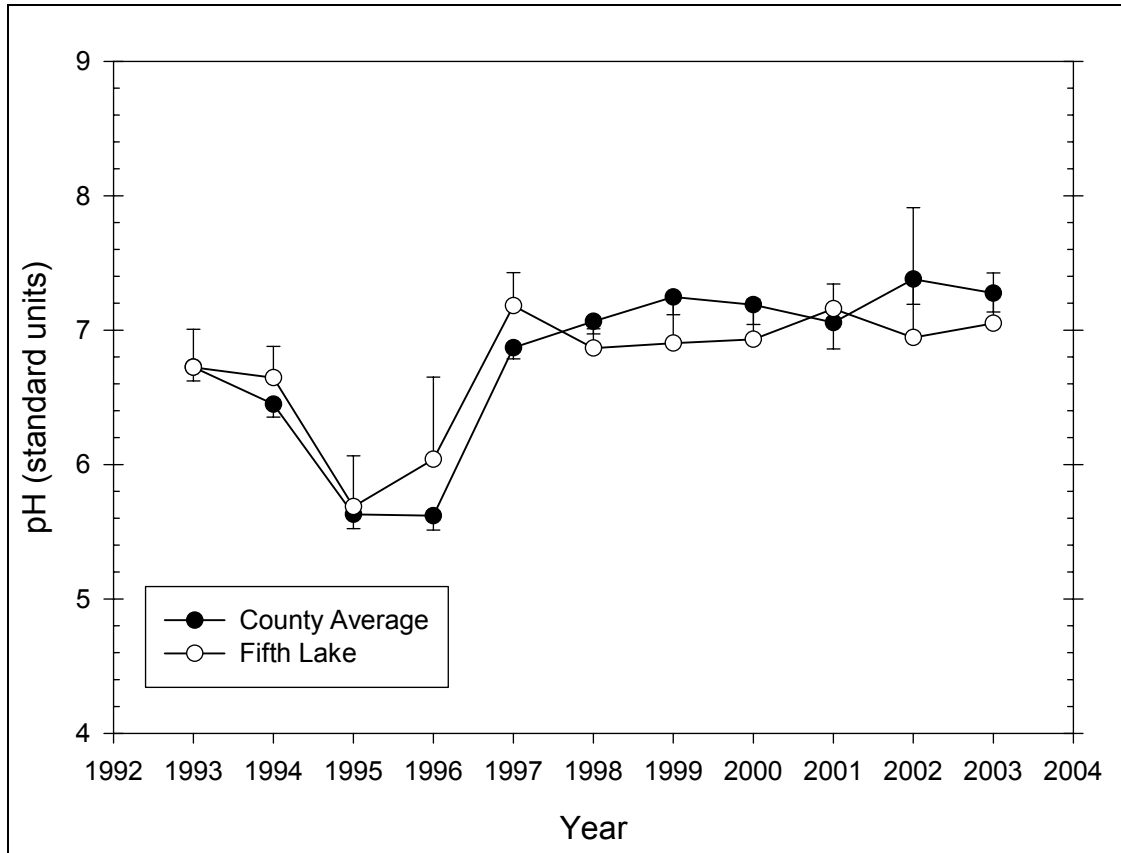


Figure 44 Seasonal mean pH trend in Fifth Lake

Table 33 – Descriptive Statistics for pH in Fifth Lake

| Year | Size | Missing | Mean | Std Dev | Std. Error | C.I. of Mean |
|------|-------|---------|-------|---------|------------|--------------|
| 1993 | 6 | 1 | 6.724 | 0.227 | 0.102 | 0.282 |
| 1994 | 6 | 0 | 6.647 | 0.222 | 0.0906 | 0.233 |
| 1995 | 6 | 0 | 5.687 | 0.360 | 0.147 | 0.378 |
| 1996 | 6 | 0 | 6.040 | 0.582 | 0.238 | 0.611 |
| 1997 | 6 | 0 | 7.182 | 0.235 | 0.0958 | 0.246 |
| 1998 | 6 | 0 | 6.867 | 0.137 | 0.0560 | 0.144 |
| 1999 | 5 | 0 | 6.904 | 0.277 | 0.124 | 0.344 |
| 2000 | 6 | 0 | 6.932 | 0.286 | 0.117 | 0.300 |
| 2001 | 4 | 0 | 7.160 | 0.116 | 0.0579 | 0.184 |
| 2002 | 4 | 0 | 6.945 | 0.607 | 0.304 | 0.966 |
| 2003 | 4 | 0 | 7.050 | 0.236 | 0.118 | 0.375 |
| | | | | | | |
| Year | Range | Max | Min | Median | 25% | 75% |
| 1993 | 0.580 | 6.950 | 6.370 | 6.760 | 6.588 | 6.898 |
| 1994 | 0.580 | 6.900 | 6.320 | 6.685 | 6.460 | 6.830 |
| 1995 | 1.070 | 6.270 | 5.200 | 5.635 | 5.530 | 5.850 |
| 1996 | 1.580 | 7.070 | 5.490 | 5.820 | 5.690 | 6.350 |
| 1997 | 0.640 | 7.650 | 7.010 | 7.100 | 7.070 | 7.160 |
| 1998 | 0.320 | 7.030 | 6.710 | 6.855 | 6.750 | 7.000 |
| 1999 | 0.720 | 7.250 | 6.530 | 6.830 | 6.748 | 7.130 |
| 2000 | 0.800 | 7.430 | 6.630 | 6.925 | 6.680 | 7.000 |
| 2001 | 0.250 | 7.320 | 7.070 | 7.125 | 7.075 | 7.245 |

| 2002 | 1.310 | 7.360 | 6.050 | 7.185 | 6.570 | 7.320 |
|------|----------|----------|-----------|-----------|--------|----------------|
| 2003 | 0.500 | 7.400 | 6.900 | 6.950 | 6.910 | 7.190 |
| | | | | | | |
| Year | Skewness | Kurtosis | K-S Dist. | K-S Prob. | Sum | Sum of Squares |
| 1993 | -1.041 | 0.908 | 0.189 | 0.644 | 33.620 | 226.267 |
| 1994 | -0.504 | -1.088 | 0.155 | 0.739 | 39.880 | 265.315 |
| 1995 | 0.522 | 0.980 | 0.165 | 0.707 | 34.120 | 194.677 |
| 1996 | 1.339 | 1.369 | 0.255 | 0.248 | 36.240 | 220.585 |
| 1997 | 2.213 | 5.133 | 0.370 | 0.010 | 43.090 | 309.733 |
| 1998 | 0.104 | -2.521 | 0.236 | 0.340 | 41.200 | 283.001 |
| 1999 | -0.107 | -0.522 | 0.205 | 0.573 | 34.520 | 238.633 |
| 2000 | 1.039 | 1.532 | 0.239 | 0.327 | 41.590 | 288.696 |
| 2001 | 1.227 | 0.645 | 0.255 | 0.409 | 28.640 | 205.103 |
| 2002 | -1.800 | 3.268 | 0.344 | 0.102 | 27.780 | 194.039 |
| 2003 | 1.879 | 3.561 | 0.367 | 0.064 | 28.200 | 198.977 |

Alkalinity

Figure 45 presents the seasonal mean alkalinity trend in Fifth Lake, while Table 34 presents descriptive statistics for alkalinity in Fifth Lake. The alkalinity in Fifth Lake exhibited no significant trend, although values in recent years (2000 – 2002) were lower than those from earlier years (1993 – 1995). The alkalinity in Fifth Lake was higher than the county average, though this difference may not be statistically significant for all years.

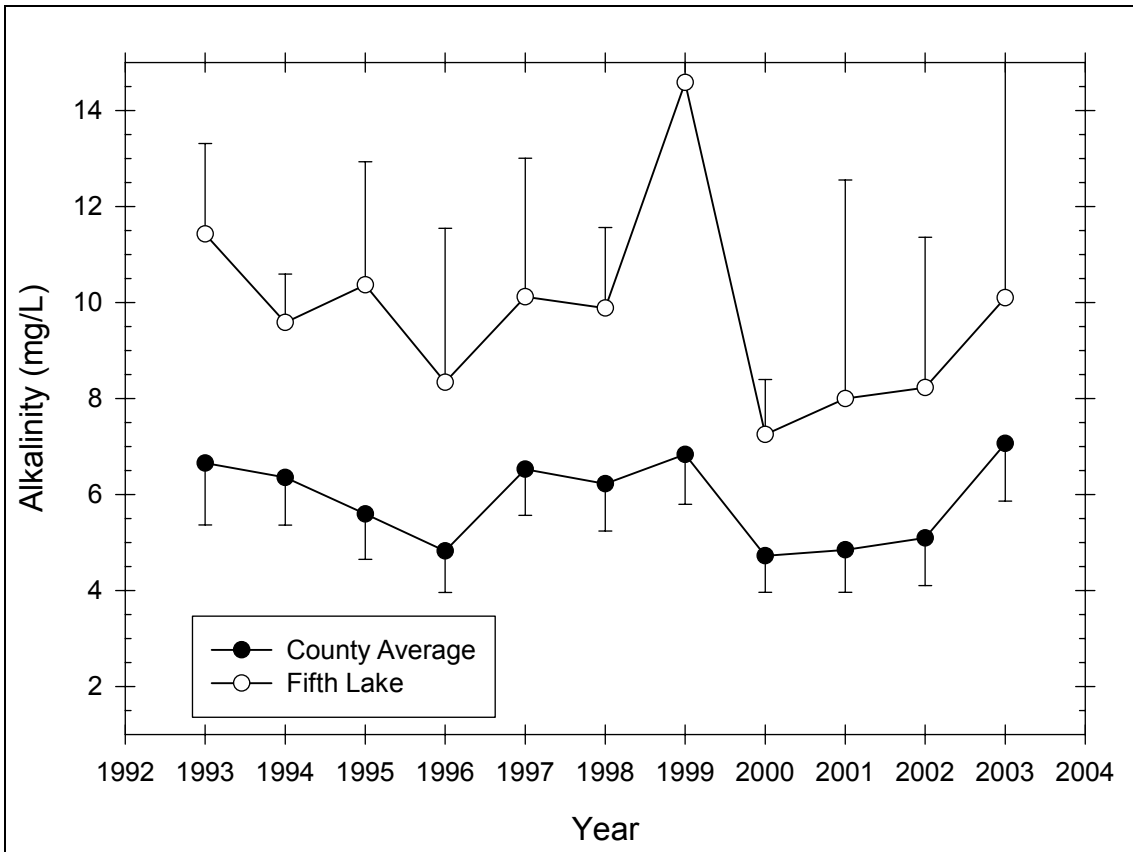


Figure 45 Seasonal mean alkalinity trend in Fifth Lake

Table 34 – Descriptive Statistics for Alkalinity in Fifth Lake

| Year | Size | Missing | Mean | Std Dev | Std. Error | C.I. of Mean |
|------|----------|----------|-----------|-----------|------------|----------------|
| 1993 | 5 | 1 | 11.425 | 1.184 | 0.592 | 1.884 |
| 1994 | 6 | 0 | 9.583 | 0.958 | 0.391 | 1.005 |
| 1995 | 6 | 0 | 10.367 | 2.443 | 0.998 | 2.564 |
| 1996 | 5 | 0 | 8.340 | 2.581 | 1.154 | 3.205 |
| 1997 | 6 | 0 | 10.117 | 2.752 | 1.124 | 2.888 |
| 1998 | 6 | 0 | 9.883 | 1.601 | 0.653 | 1.680 |
| 1999 | 6 | 1 | 14.580 | 2.922 | 1.307 | 3.628 |
| 2000 | 6 | 0 | 7.250 | 1.091 | 0.446 | 1.145 |
| 2001 | 6 | 2 | 8.000 | 2.861 | 1.431 | 4.553 |
| 2002 | 6 | 2 | 8.225 | 1.969 | 0.984 | 3.133 |
| 2003 | 6 | 2 | 10.100 | 5.308 | 2.654 | 8.447 |
| Year | Range | Max | Min | Median | 25% | 75% |
| 1993 | 2.700 | 12.900 | 10.200 | 11.300 | 10.500 | 12.350 |
| 1994 | 2.800 | 11.400 | 8.600 | 9.400 | 9.100 | 9.600 |
| 1995 | 6.400 | 12.800 | 6.400 | 11.050 | 8.700 | 12.200 |
| 1996 | 5.200 | 11.100 | 5.900 | 7.400 | 6.125 | 11.100 |
| 1997 | 6.000 | 13.600 | 7.600 | 9.150 | 7.700 | 13.500 |
| 1998 | 4.400 | 12.500 | 8.100 | 9.550 | 8.700 | 10.900 |
| 1999 | 7.800 | 19.500 | 11.700 | 14.000 | 13.050 | 15.525 |
| 2000 | 2.400 | 8.400 | 6.000 | 7.250 | 6.400 | 8.200 |
| 2001 | 6.600 | 11.600 | 5.000 | 7.700 | 5.800 | 10.200 |
| 2002 | 4.400 | 9.900 | 5.500 | 8.750 | 6.800 | 9.650 |
| 2003 | 12.700 | 16.200 | 3.500 | 10.350 | 6.250 | 13.950 |
| Year | Skewness | Kurtosis | K-S Dist. | K-S Prob. | Sum | Sum of Squares |
| 1993 | 0.473 | -1.371 | 0.201 | 0.629 | 45.700 | 526.330 |
| 1994 | 1.675 | 3.632 | 0.326 | 0.045 | 57.500 | 555.630 |
| 1995 | -0.895 | -0.244 | 0.221 | 0.422 | 62.200 | 674.660 |
| 1996 | 0.409 | -3.122 | 0.258 | 0.314 | 41.700 | 374.430 |
| 1997 | 0.697 | -1.910 | 0.255 | 0.246 | 60.700 | 651.950 |
| 1998 | 0.837 | 0.165 | 0.187 | 0.609 | 59.300 | 598.890 |
| 1999 | 1.565 | 3.255 | 0.352 | 0.042 | 72.900 | 1097.030 |
| 2000 | -0.0436 | -3.007 | 0.282 | 0.144 | 43.500 | 321.330 |
| 2001 | 0.496 | -0.906 | 0.188 | 0.667 | 32.000 | 280.560 |
| 2002 | -1.216 | 0.905 | 0.225 | 0.542 | 32.900 | 282.230 |
| 2003 | -0.257 | 0.310 | 0.168 | 0.703 | 40.400 | 492.580 |

Total Phosphorus

Figure 46 presents the seasonal mean total phosphorus trend in Fifth Lake, while Table 35 presents descriptive statistics for total phosphorus in Fifth Lake. The total phosphorus in Fifth Lake exhibited a decreasing trend from 1999 to 2002. The total phosphorus in Fifth Lake was similar to the county average.

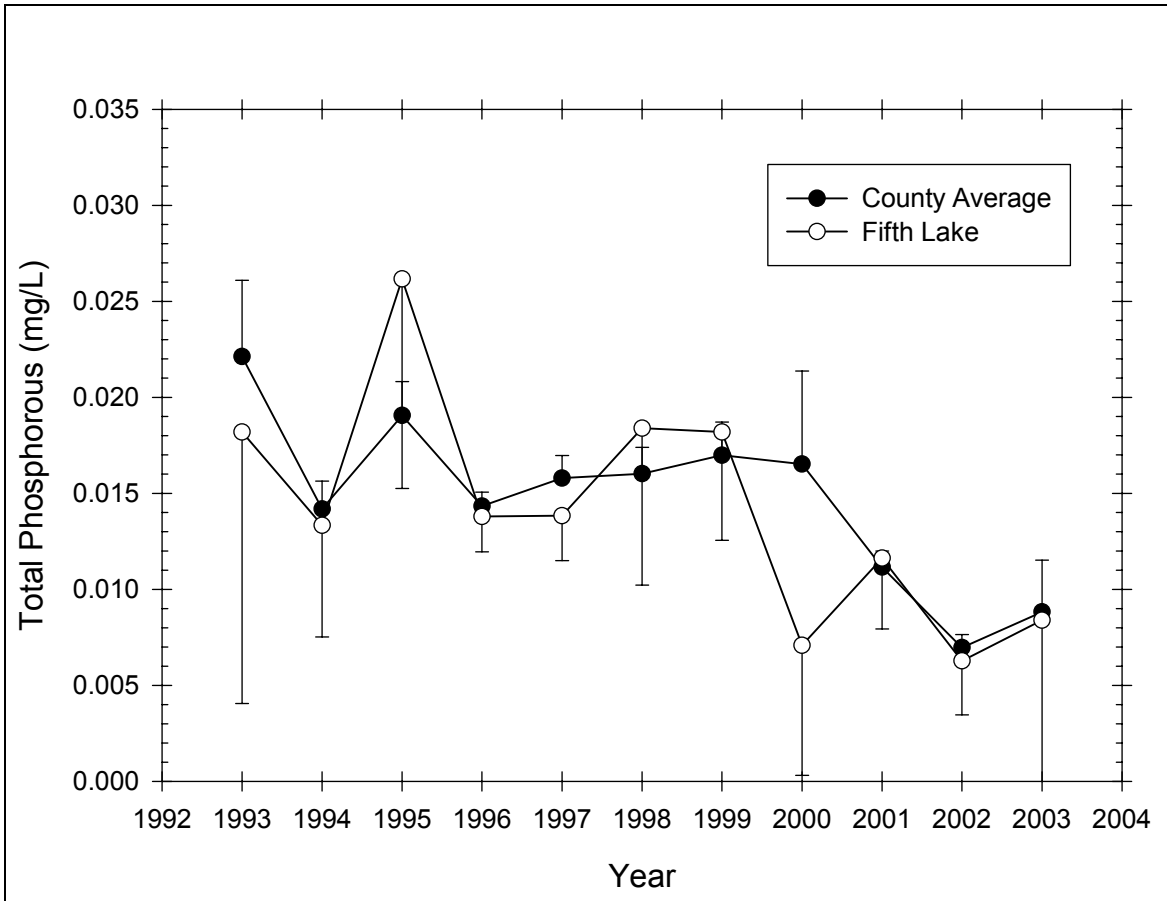


Figure 46 Seasonal mean total phosphorus in Fifth Lake

Table 35 – Descriptive Statistics for Total Phosphorus in Fifth Lake

| Year | Size | Missing | Mean | Std Dev | Std. Error | C.I. of Mean |
|------|---------|---------|----------|---------|------------|--------------|
| 1993 | 6 | 1 | 0.0182 | 0.0114 | 0.00509 | 0.0141 |
| 1994 | 6 | 0 | 0.0133 | 0.00554 | 0.00226 | 0.00581 |
| 1995 | 6 | 0 | 0.0262 | 0.0104 | 0.00425 | 0.0109 |
| 1996 | 5 | 0 | 0.0138 | 0.00148 | 0.000663 | 0.00184 |
| 1997 | 6 | 0 | 0.0138 | 0.00223 | 0.000910 | 0.00234 |
| 1998 | 6 | 1 | 0.0184 | 0.00658 | 0.00294 | 0.00817 |
| 1999 | 6 | 1 | 0.0182 | 0.00455 | 0.00203 | 0.00565 |
| 2000 | 6 | 0 | 0.00708 | 0.00645 | 0.00263 | 0.00677 |
| 2001 | 6 | 2 | 0.0116 | 0.00232 | 0.00116 | 0.00369 |
| 2002 | 6 | 2 | 0.00627 | 0.00176 | 0.000882 | 0.00281 |
| 2003 | 6 | 2 | 0.00840 | 0.00629 | 0.00314 | 0.0100 |
| Year | Range | Max | Min | Median | 25% | 75% |
| 1993 | 0.0290 | 0.0330 | 0.00400 | 0.0180 | 0.00925 | 0.0270 |
| 1994 | 0.0150 | 0.0240 | 0.00900 | 0.0125 | 0.00900 | 0.0130 |
| 1995 | 0.0300 | 0.0410 | 0.0110 | 0.0275 | 0.0190 | 0.0310 |
| 1996 | 0.00400 | 0.0160 | 0.0120 | 0.0140 | 0.0128 | 0.0145 |
| 1997 | 0.00600 | 0.0170 | 0.0110 | 0.0140 | 0.0120 | 0.0150 |
| 1998 | 0.0170 | 0.0280 | 0.0110 | 0.0180 | 0.0133 | 0.0227 |
| 1999 | 0.0120 | 0.0240 | 0.0120 | 0.0170 | 0.0158 | 0.0217 |
| 2000 | 0.0140 | 0.0150 | 0.001000 | 0.00550 | 0.00150 | 0.0140 |

| 2001 | 0.00500 | 0.0150 | 0.01000 | 0.0107 | 0.0101 | 0.0131 |
|------|----------|----------|-----------|-----------|---------|----------------|
| 2002 | 0.00380 | 0.00890 | 0.00510 | 0.00555 | 0.00530 | 0.00725 |
| 2003 | 0.0150 | 0.0164 | 0.00140 | 0.00790 | 0.00385 | 0.0130 |
| | | | | | | |
| Year | Skewness | Kurtosis | K-S Dist. | K-S Prob. | Sum | Sum of Squares |
| 1993 | 0.0902 | -1.055 | 0.136 | 0.745 | 0.0910 | 0.00218 |
| 1994 | 1.852 | 3.913 | 0.357 | 0.016 | 0.0800 | 0.00122 |
| 1995 | -0.113 | 0.0157 | 0.154 | 0.740 | 0.157 | 0.00465 |
| 1996 | 0.552 | 0.868 | 0.246 | 0.368 | 0.0690 | 0.000961 |
| 1997 | 0.148 | -1.128 | 0.200 | 0.544 | 0.0830 | 0.00117 |
| 1998 | 0.602 | -0.0578 | 0.148 | 0.744 | 0.0920 | 0.00187 |
| 1999 | -0.109 | -0.197 | 0.204 | 0.579 | 0.0910 | 0.00174 |
| 2000 | 0.339 | -2.520 | 0.285 | 0.135 | 0.0425 | 0.000509 |
| 2001 | 1.664 | 2.666 | 0.306 | 0.206 | 0.0465 | 0.000557 |
| 2002 | 1.908 | 3.725 | 0.399 | 0.025 | 0.0251 | 0.000167 |
| 2003 | 0.432 | 0.397 | 0.181 | 0.683 | 0.0336 | 0.000401 |

Nitrate

Figure 47 presents the seasonal mean nitrate trend in Fifth Lake, while Table 36 presents descriptive statistics for nitrate in Fifth Lake. The nitrate in Fifth Lake exhibited a decreasing trend from 1996 to 2002/2003. The nitrate in Fifth Lake was slightly higher than the county average, though this difference was not statistically significant.

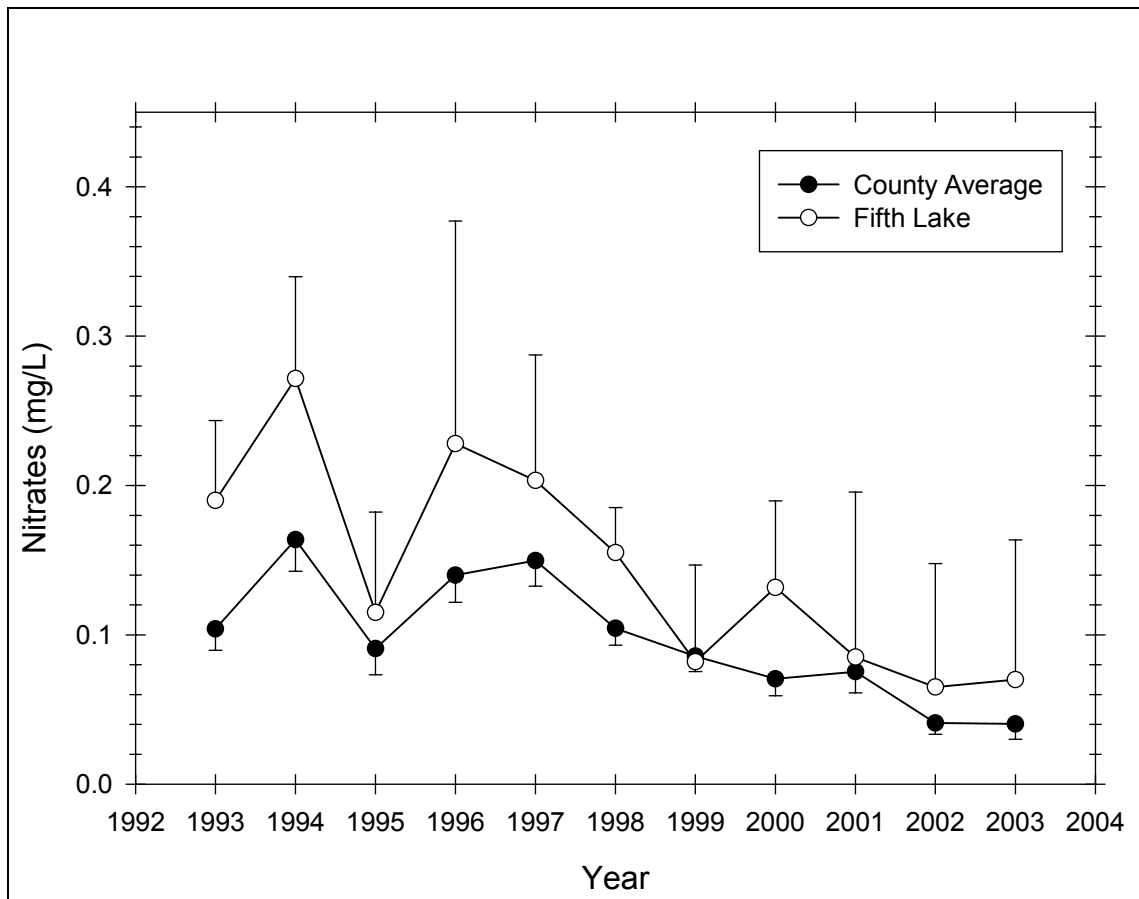


Figure 47 Seasonal mean nitrate trend in Fifth Lake

Table 36 – Descriptive Statistics for Nitrate in Fifth Lake

| Year | Size | Missing | Mean | Std Dev | Std. Error | C.I. of Mean |
|------|-------------|----------|-----------|-----------|------------|----------------|
| 1993 | 6 | 1 | 0.190 | 0.0430 | 0.0192 | 0.0534 |
| 1994 | 6 | 0 | 0.272 | 0.0649 | 0.0265 | 0.0681 |
| 1995 | 6 | 0 | 0.115 | 0.0641 | 0.0262 | 0.0673 |
| 1996 | 5 | 0 | 0.228 | 0.120 | 0.0537 | 0.149 |
| 1997 | 6 | 0 | 0.203 | 0.0802 | 0.0327 | 0.0841 |
| 1998 | 6 | 0 | 0.155 | 0.0288 | 0.0118 | 0.0302 |
| 1999 | 6 | 1 | 0.0820 | 0.0522 | 0.0233 | 0.0648 |
| 2000 | 6 | 0 | 0.132 | 0.0553 | 0.0226 | 0.0580 |
| 2001 | 6 | 2 | 0.0850 | 0.0695 | 0.0348 | 0.111 |
| 2002 | 6 | 2 | 0.0650 | 0.0520 | 0.0260 | 0.0827 |
| 2003 | 6 | 2 | 0.0700 | 0.0589 | 0.0294 | 0.0937 |
| Year | Range | Max | Min | Median | 25% | 75% |
| 1993 | 0.1000 | 0.250 | 0.150 | 0.170 | 0.158 | 0.228 |
| 1994 | 0.180 | 0.360 | 0.180 | 0.270 | 0.230 | 0.320 |
| 1995 | 0.190 | 0.220 | 0.0300 | 0.1000 | 0.0900 | 0.150 |
| 1996 | 0.270 | 0.370 | 0.1000 | 0.250 | 0.108 | 0.325 |
| 1997 | 0.220 | 0.320 | 0.1000 | 0.210 | 0.130 | 0.250 |
| 1998 | 0.0800 | 0.200 | 0.120 | 0.155 | 0.130 | 0.170 |
| 1999 | 0.120 | 0.160 | 0.0400 | 0.0600 | 0.0400 | 0.123 |
| 2000 | 0.160 | 0.230 | 0.0700 | 0.120 | 0.1000 | 0.150 |
| 2001 | 0.130 | 0.150 | 0.0200 | 0.0850 | 0.0250 | 0.145 |
| 2002 | 0.110 | 0.140 | 0.0300 | 0.0450 | 0.0300 | 0.1000 |
| 2003 | 0.140 | 0.150 | 0.01000 | 0.0600 | 0.0300 | 0.110 |
| Year | Skewness | Kurtosis | K-S Dist. | K-S Prob. | Sum | Sum of Squares |
| 1993 | 0.754 | -1.682 | 0.279 | 0.222 | 0.950 | 0.188 |
| 1994 | -0.0487 | -0.727 | 0.131 | 0.771 | 1.630 | 0.464 |
| 1995 | 0.642 | 1.033 | 0.259 | 0.229 | 0.690 | 0.0999 |
| 1996 | -0.0758 | -2.503 | 0.237 | 0.414 | 1.140 | 0.318 |
| 1997 | 0.114 | -0.606 | 0.153 | 0.743 | 1.220 | 0.280 |
| 1998 | 0.452 | -0.109 | 0.141 | 0.766 | 0.930 | 0.148 |
| 1999 | 0.992 | -0.551 | 0.263 | 0.287 | 0.410 | 0.0445 |
| 2000 | 1.208 | 1.939 | 0.203 | 0.523 | 0.790 | 0.119 |
| 2001 | -1.591E-015 | -5.795 | 0.286 | 0.280 | 0.340 | 0.0434 |
| 2002 | 1.597 | 2.340 | 0.288 | 0.269 | 0.260 | 0.0250 |
| 2003 | 0.941 | 1.500 | 0.250 | 0.432 | 0.280 | 0.0300 |

Chlorophyll a

Figure 48 presents the seasonal mean chlorophyll *a* trend in Fifth Lake, while Table 37 presents descriptive statistics for chlorophyll *a* in Fifth Lake. The chlorophyll *a* in Fifth Lake exhibited an increasing trend from 1997 to 2002, followed by a large decrease in 2003. The chlorophyll *a* in Fifth Lake was slightly lower than the county average, though this difference was not statistically significant.

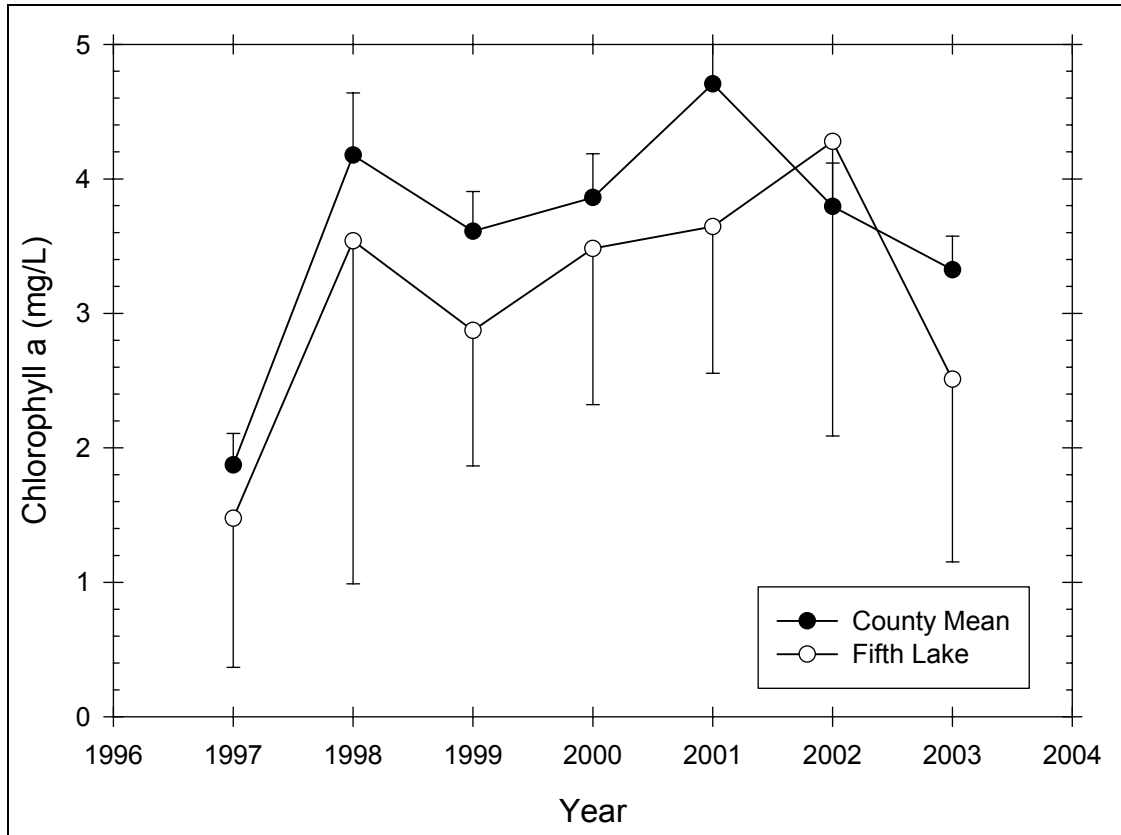


Figure 48 Seasonal mean chlorophyll a trend in Fifth Lake

Table 37 – Descriptive Statistics for Chlorophyll a in Fifth Lake

| Year | Size | Missing | Mean | Std Dev | Std. Error | C.I. of Mean |
|------|----------|----------|-----------|-----------|------------|----------------|
| 1997 | 6 | 0 | 1.475 | 1.056 | 0.431 | 1.108 |
| 1998 | 6 | 0 | 3.540 | 2.431 | 0.993 | 2.552 |
| 1999 | 6 | 1 | 2.872 | 0.812 | 0.363 | 1.008 |
| 2000 | 6 | 1 | 3.482 | 0.935 | 0.418 | 1.161 |
| 2001 | 6 | 2 | 3.645 | 0.686 | 0.343 | 1.091 |
| 2002 | 6 | 2 | 4.277 | 1.377 | 0.688 | 2.191 |
| 2003 | 6 | 2 | 2.510 | 0.854 | 0.427 | 1.359 |
| Year | Range | Max | Min | Median | 25% | 75% |
| 1997 | 2.870 | 3.470 | 0.600 | 1.155 | 0.780 | 1.690 |
| 1998 | 5.460 | 6.730 | 1.270 | 2.495 | 1.760 | 6.490 |
| 1999 | 2.050 | 3.880 | 1.830 | 2.680 | 2.333 | 3.572 |
| 2000 | 2.440 | 4.900 | 2.460 | 3.180 | 2.880 | 4.113 |
| 2001 | 1.670 | 4.420 | 2.750 | 3.705 | 3.210 | 4.080 |
| 2002 | 3.010 | 6.320 | 3.310 | 3.740 | 3.515 | 5.040 |
| 2003 | 1.950 | 3.670 | 1.720 | 2.325 | 1.885 | 3.135 |
| Year | Skewness | Kurtosis | K-S Dist. | K-S Prob. | Sum | Sum of Squares |
| 1997 | 1.732 | 3.188 | 0.253 | 0.259 | 8.850 | 18.626 |
| 1998 | 0.792 | -1.855 | 0.288 | 0.126 | 21.240 | 104.748 |
| 1999 | 0.0375 | -1.201 | 0.194 | 0.625 | 14.360 | 43.877 |
| 2000 | 0.871 | 0.523 | 0.227 | 0.467 | 17.410 | 64.117 |
| 2001 | -0.518 | 1.599 | 0.265 | 0.368 | 14.580 | 54.555 |

| | | | | | | |
|------|-------|-------|-------|-------|--------|--------|
| 2002 | 1.866 | 3.616 | 0.396 | 0.027 | 17.110 | 78.875 |
| 2003 | 1.039 | 0.550 | 0.208 | 0.606 | 10.040 | 27.390 |

Transparency

Figure 49 presents the seasonal mean transparency trend in Fifth Lake, while Table 38 presents descriptive statistics for transparency in Fifth Lake. The transparency in Fifth Lake exhibited a stable trend. The transparency in Fifth Lake was slightly lower than the county average, though this difference was not statistically significant.

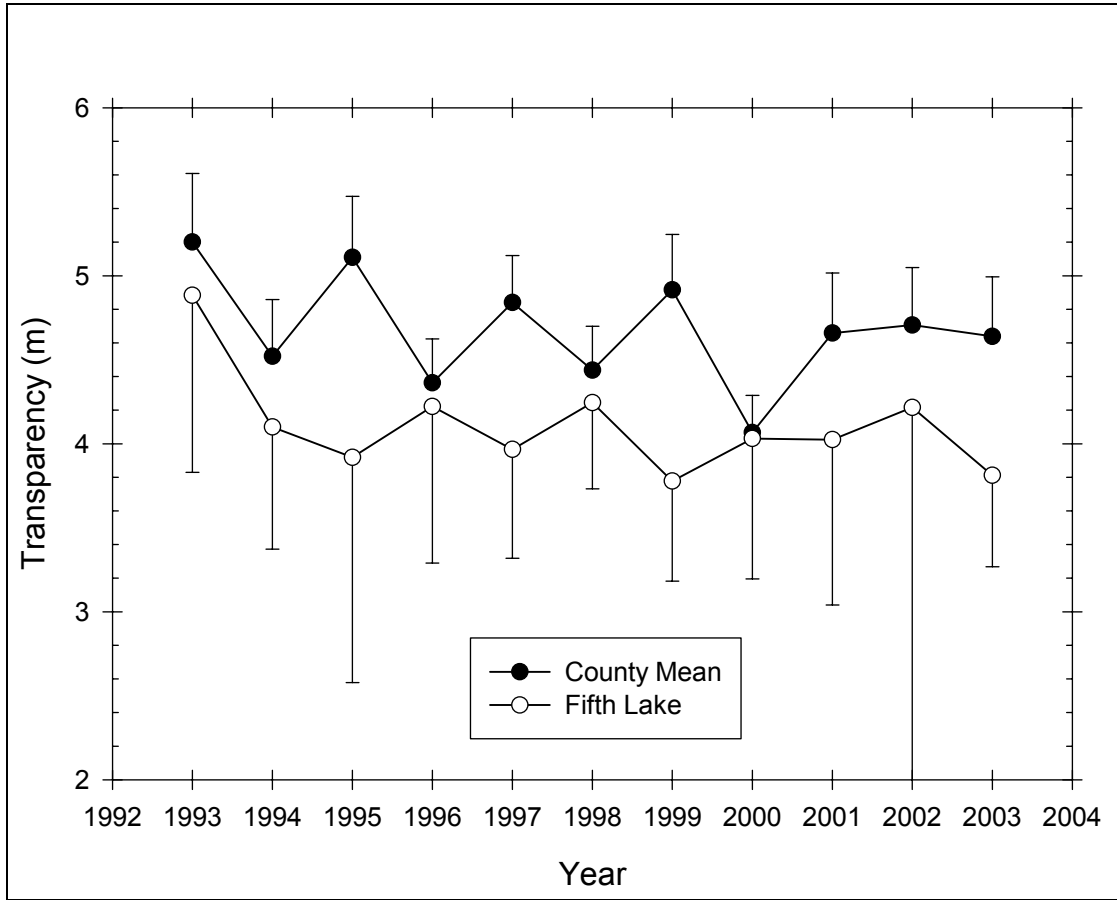


Figure 49 Seasonal mean transparency in Fifth Lake

Table 38 – Descriptive Statistics for Transparency in Fifth Lake

| Year | Size | Missing | Mean | Std Dev | Std. Error | C.I. of Mean |
|------|------|---------|-------|---------|------------|--------------|
| 1993 | 6 | 1 | 4.884 | 0.849 | 0.380 | 1.054 |
| 1994 | 6 | 0 | 4.100 | 0.693 | 0.283 | 0.727 |
| 1995 | 6 | 1 | 3.920 | 1.080 | 0.483 | 1.341 |
| 1996 | 5 | 0 | 4.222 | 0.750 | 0.336 | 0.932 |
| 1997 | 6 | 0 | 3.967 | 0.618 | 0.252 | 0.648 |
| 1998 | 6 | 0 | 4.245 | 0.489 | 0.199 | 0.513 |
| 1999 | 5 | 0 | 3.778 | 0.480 | 0.215 | 0.596 |
| 2000 | 6 | 0 | 4.032 | 0.796 | 0.325 | 0.835 |
| 2001 | 4 | 0 | 4.025 | 0.618 | 0.309 | 0.984 |

| | | | | | | |
|-------------|-----------------|-----------------|------------------|------------------|------------|-----------------------|
| 2002 | 4 | 1 | 4.217 | 0.895 | 0.517 | 2.223 |
| 2003 | 4 | 0 | 3.813 | 0.342 | 0.171 | 0.545 |
| | | | | | | |
| Year | Range | Max | Min | Median | 25% | 75% |
| 1993 | 2.000 | 5.940 | 3.940 | 5.150 | 4.053 | 5.460 |
| 1994 | 1.700 | 4.900 | 3.200 | 4.200 | 3.400 | 4.700 |
| 1995 | 2.450 | 5.850 | 3.400 | 3.450 | 3.400 | 4.088 |
| 1996 | 1.850 | 5.500 | 3.650 | 4.050 | 3.695 | 4.525 |
| 1997 | 1.700 | 4.600 | 2.900 | 3.975 | 3.820 | 4.530 |
| 1998 | 1.300 | 4.770 | 3.470 | 4.300 | 3.930 | 4.700 |
| 1999 | 1.300 | 4.400 | 3.100 | 3.770 | 3.490 | 4.100 |
| 2000 | 2.000 | 5.300 | 3.300 | 3.800 | 3.350 | 4.640 |
| 2001 | 1.300 | 4.500 | 3.200 | 4.200 | 3.550 | 4.500 |
| 2002 | 1.550 | 5.250 | 3.700 | 3.700 | 3.700 | 4.862 |
| 2003 | 0.800 | 4.200 | 3.400 | 3.825 | 3.550 | 4.075 |
| | | | | | | |
| Year | Skewness | Kurtosis | K-S Dist. | K-S Prob. | Sum | Sum of Squares |
| 1993 | -0.0500 | -2.046 | 0.225 | 0.474 | 24.420 | 122.148 |
| 1994 | -0.287 | -1.864 | 0.177 | 0.658 | 24.600 | 103.260 |
| 1995 | 2.228 | 4.970 | 0.451 | 0.001 | 19.600 | 81.495 |
| 1996 | 1.736 | 3.210 | 0.312 | 0.117 | 21.110 | 91.379 |
| 1997 | -0.996 | 1.226 | 0.240 | 0.323 | 23.800 | 96.316 |
| 1998 | -0.660 | -0.236 | 0.171 | 0.686 | 25.470 | 109.314 |
| 1999 | -0.242 | 0.586 | 0.171 | 0.704 | 18.890 | 72.287 |
| 2000 | 0.879 | -0.555 | 0.206 | 0.507 | 24.190 | 100.692 |
| 2001 | -0.984 | -0.620 | 0.279 | 0.307 | 16.100 | 65.950 |
| 2002 | 1.732 | -- | 0.385 | 0.089 | 12.650 | 54.943 |
| 2003 | -0.180 | -0.896 | 0.156 | 0.710 | 15.250 | 58.493 |

TSI

Figure 50 presents the Carlson trophic state index trend in Fifth Lake. All TSI values were in the mesotrophic range from 1993 – 1997. Chlorophyll *a* TSI hovered around the mesotrophic-eutrophic boundary for the rest of the study period while transparency TSI remained mesotrophic and total phosphorus TSI was oligotrophic in 2000, 2002, and 2003.

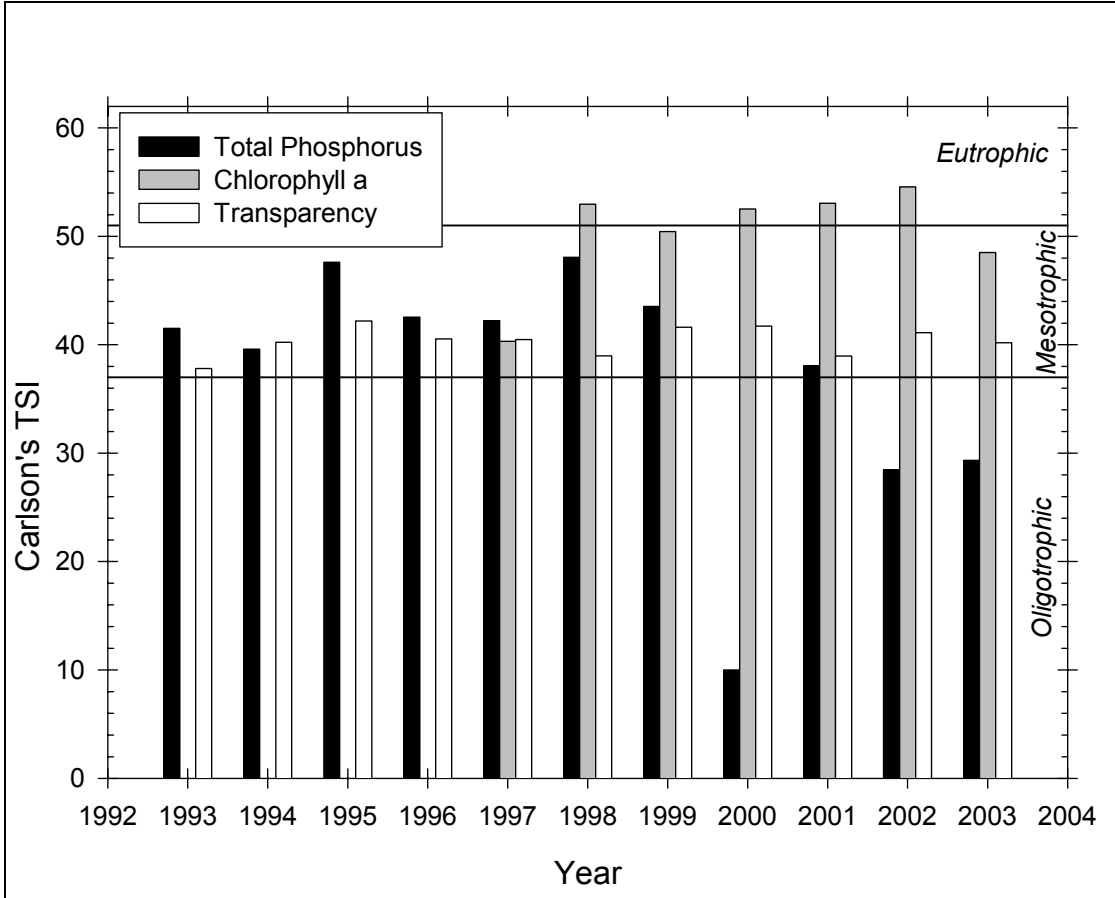


Figure 50 Carlson TSI trend in Fifth Lake

Aluminum

Figure 51 presents the seasonal mean aluminum trend in Fifth Lake, while Table 39 presents descriptive statistics for aluminum in Fifth Lake. The aluminum in Fifth Lake exhibited a stable trend, except for a high value in 1997. The aluminum in Fifth Lake was slightly lower than the county average, though this difference was not statistically significant.

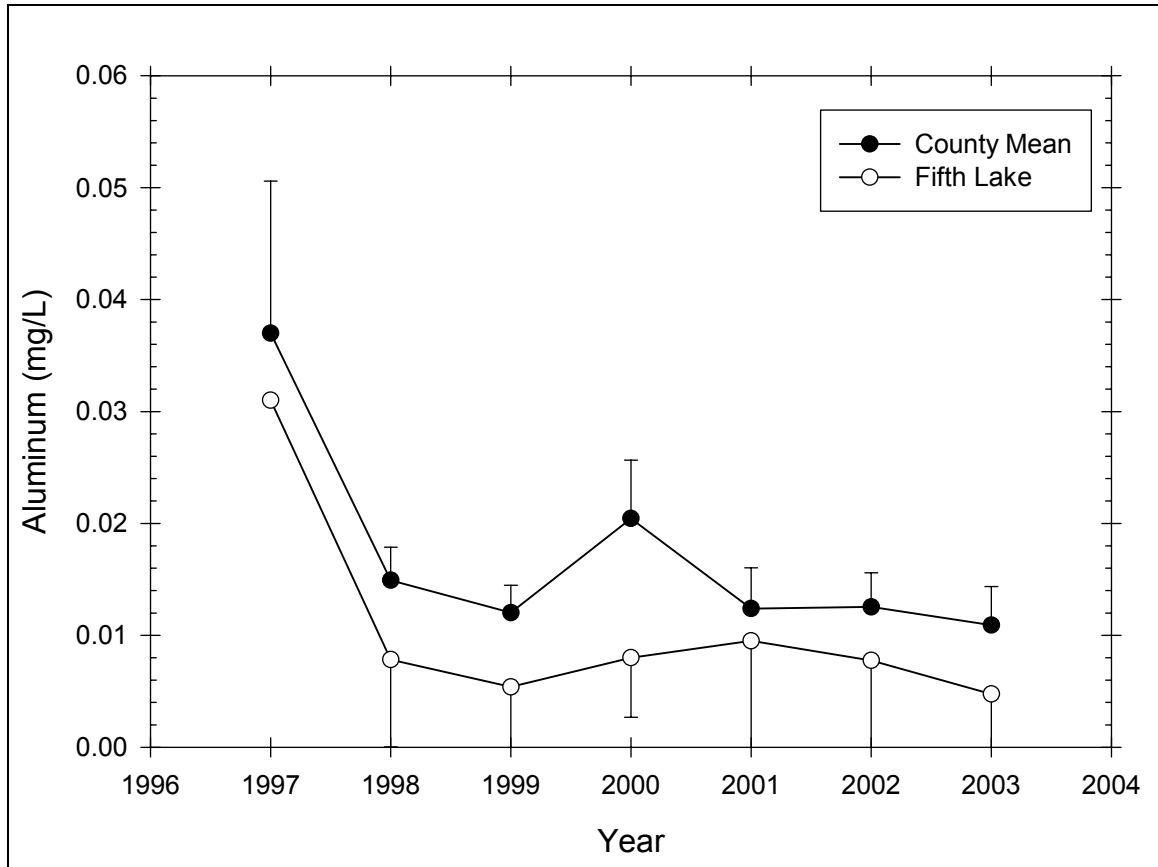


Figure 51 Seasonal mean aluminum trend in Fifth Lake

Table 39 – Descriptive Statistics for Aluminum in Fifth Lake

| Year | Size | Missing | Mean | Std Dev | Std. Error | C.I. of Mean |
|------|----------|----------|-----------|-----------|------------|----------------|
| 1997 | 6 | 5 | 0.0310 | -- | -- | -- |
| 1998 | 6 | 0 | 0.00783 | 0.00744 | 0.00304 | 0.00781 |
| 1999 | 6 | 1 | 0.00540 | 0.00439 | 0.00196 | 0.00545 |
| 2000 | 6 | 0 | 0.00800 | 0.00506 | 0.00207 | 0.00531 |
| 2001 | 6 | 2 | 0.00950 | 0.00624 | 0.00312 | 0.00994 |
| 2002 | 6 | 2 | 0.00775 | 0.00544 | 0.00272 | 0.00865 |
| 2003 | 6 | 2 | 0.00475 | 0.00299 | 0.00149 | 0.00475 |
| Year | Range | Max | Min | Median | 25% | 75% |
| 1997 | 0.000 | 0.0310 | 0.0310 | 0.0310 | 0.0310 | 0.0310 |
| 1998 | 0.0180 | 0.0180 | 0.000 | 0.00700 | 0.00200 | 0.0130 |
| 1999 | 0.0110 | 0.0130 | 0.00200 | 0.00400 | 0.00275 | 0.00700 |
| 2000 | 0.0130 | 0.0150 | 0.00200 | 0.00700 | 0.00400 | 0.0130 |
| 2001 | 0.0140 | 0.0170 | 0.00300 | 0.00900 | 0.00450 | 0.0145 |
| 2002 | 0.0130 | 0.0150 | 0.00200 | 0.00700 | 0.00400 | 0.0115 |
| 2003 | 0.00700 | 0.00800 | 0.001000 | 0.00500 | 0.00250 | 0.00700 |
| Year | Skewness | Kurtosis | K-S Dist. | K-S Prob. | Sum | Sum of Squares |
| 1998 | 0.279 | -2.190 | 0.283 | 0.139 | 0.0470 | 0.000645 |
| 1999 | 1.882 | 3.768 | 0.336 | 0.067 | 0.0270 | 0.000223 |
| 2000 | 0.431 | -1.358 | 0.245 | 0.295 | 0.0480 | 0.000512 |
| 2001 | 0.328 | -2.239 | 0.212 | 0.590 | 0.0380 | 0.000478 |

| | | | | | | |
|------|--------|--------|-------|-------|--------|----------|
| 2002 | 0.769 | 1.222 | 0.232 | 0.513 | 0.0310 | 0.000329 |
| 2003 | -0.423 | -0.416 | 0.162 | 0.708 | 0.0190 | 0.000117 |

Calcium

Figure 52 presents the seasonal mean calcium trend in Fifth Lake, while Table 40 presents descriptive statistics for calcium in Fifth Lake. The calcium in Fifth Lake exhibited a slight increasing trend over the study period. The calcium in Fifth Lake was higher than the county average, though this difference was not statistically significant.

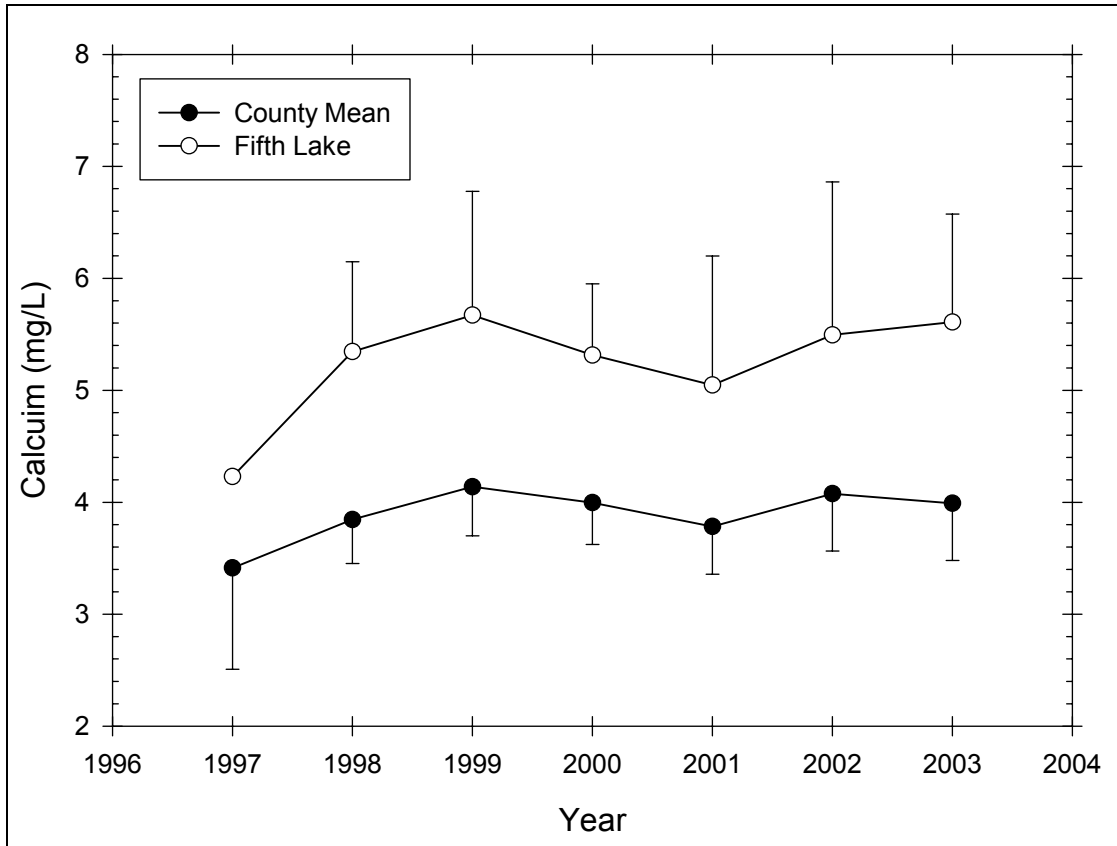


Figure 52 Seasonal mean calcium trend in Fifth Lake

Table 40 – Descriptive Statistics for Calcium in Fifth Lake

| Year | Size | Missing | Mean | Std Dev | Std. Error | C.I. of Mean |
|------|-------|---------|-------|---------|------------|--------------|
| 1997 | 6 | 5 | 4.230 | -- | -- | -- |
| 1998 | 6 | 0 | 5.345 | 0.764 | 0.312 | 0.802 |
| 1999 | 6 | 1 | 5.672 | 0.890 | 0.398 | 1.105 |
| 2000 | 6 | 0 | 5.315 | 0.606 | 0.247 | 0.636 |
| 2001 | 6 | 2 | 5.048 | 0.724 | 0.362 | 1.153 |
| 2002 | 6 | 2 | 5.495 | 0.859 | 0.429 | 1.366 |
| 2003 | 6 | 2 | 5.610 | 0.606 | 0.303 | 0.964 |
| Year | Range | Max | Min | Median | 25% | 75% |
| 1997 | 0.000 | 4.230 | 4.230 | 4.230 | 4.230 | 4.230 |
| 1998 | 1.680 | 6.270 | 4.590 | 5.240 | 4.690 | 6.040 |
| 1999 | 2.070 | 6.660 | 4.590 | 6.110 | 4.808 | 6.255 |

| 2000 | 1.380 | 6.270 | 4.890 | 4.965 | 4.910 | 5.890 |
|------|----------|----------|-----------|-----------|--------|----------------|
| 2001 | 1.730 | 6.050 | 4.320 | 4.910 | 4.600 | 5.495 |
| 2002 | 1.700 | 6.270 | 4.570 | 5.570 | 4.765 | 6.225 |
| 2003 | 1.300 | 6.180 | 4.880 | 5.690 | 5.115 | 6.105 |
| | | | | | | |
| Year | Skewness | Kurtosis | K-S Dist. | K-S Prob. | Sum | Sum of Squares |
| 1997 | -- | -- | -- | -- | 4.230 | 17.893 |
| 1998 | 0.159 | -2.827 | 0.297 | 0.101 | 32.070 | 174.336 |
| 1999 | -0.370 | -2.428 | 0.289 | 0.186 | 28.360 | 164.025 |
| 2000 | 1.122 | -0.880 | 0.371 | 0.010 | 31.890 | 171.329 |
| 2001 | 1.082 | 2.136 | 0.309 | 0.195 | 20.190 | 103.483 |
| 2002 | -0.166 | -4.945 | 0.288 | 0.272 | 21.980 | 122.992 |
| 2003 | -0.441 | -2.992 | 0.256 | 0.406 | 22.440 | 126.990 |

Calcite Saturation Index

Figure 53 presents the calcite saturation index trend in Fifth Lake. Fifth Lake CSI was in the low vulnerability range and slightly lower than the county average throughout the study period.

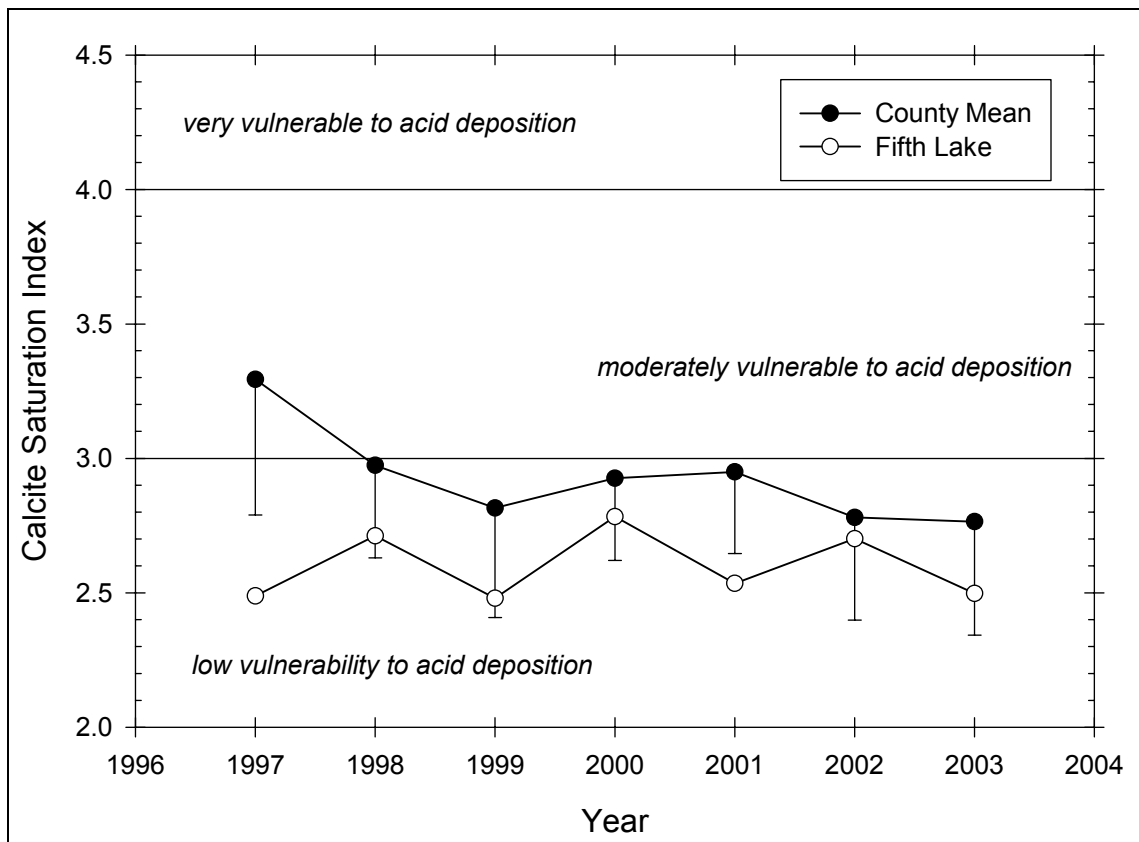


Figure 53 Seasonal mean CSI trend in Fifth Lake