

Fifth Lake

Location

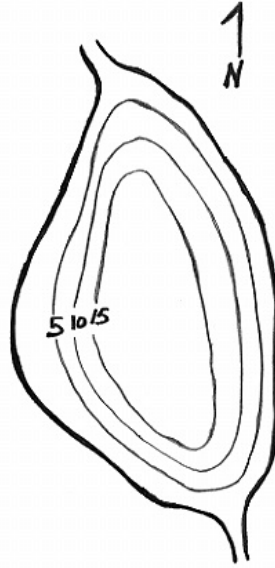
Pond Number: 040786
Watershed: Black River
County: Hamilton
Topographic Quadrangle: Old Forge

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.

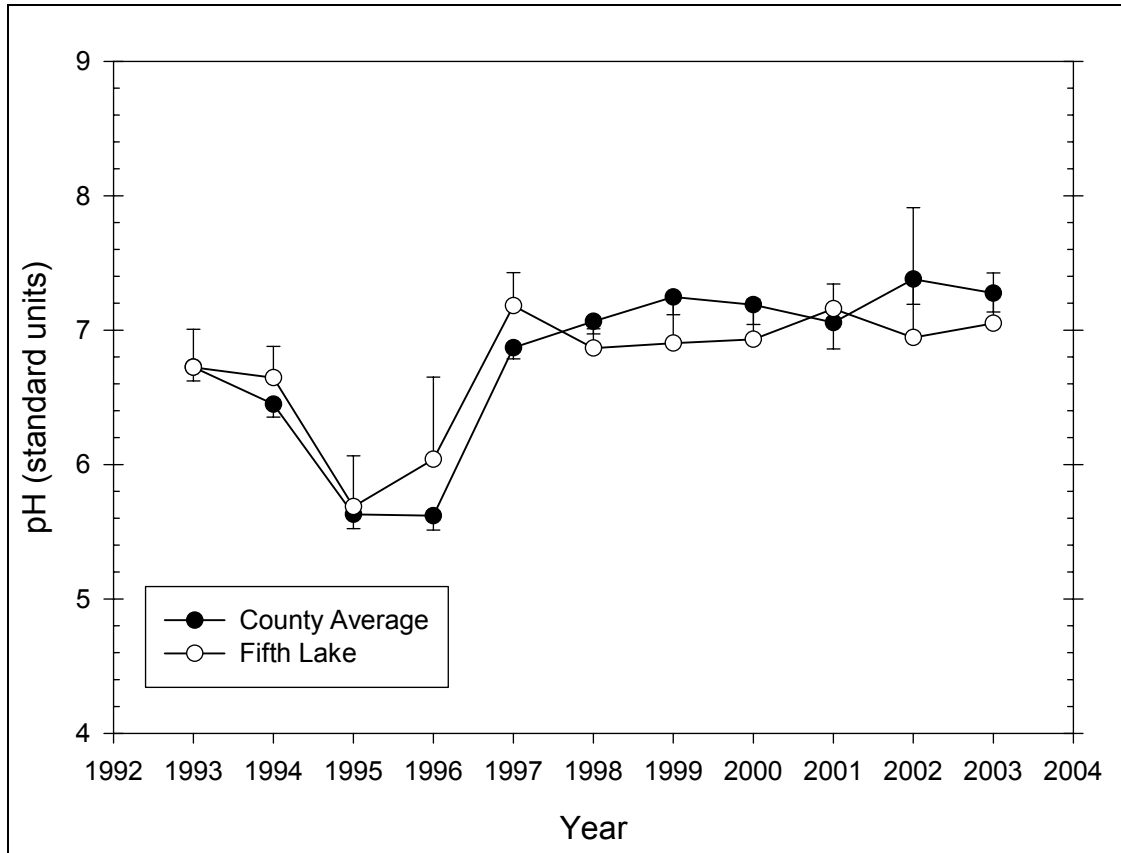


Figure 44 Seasonal mean pH trend in Fifth Lake

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.

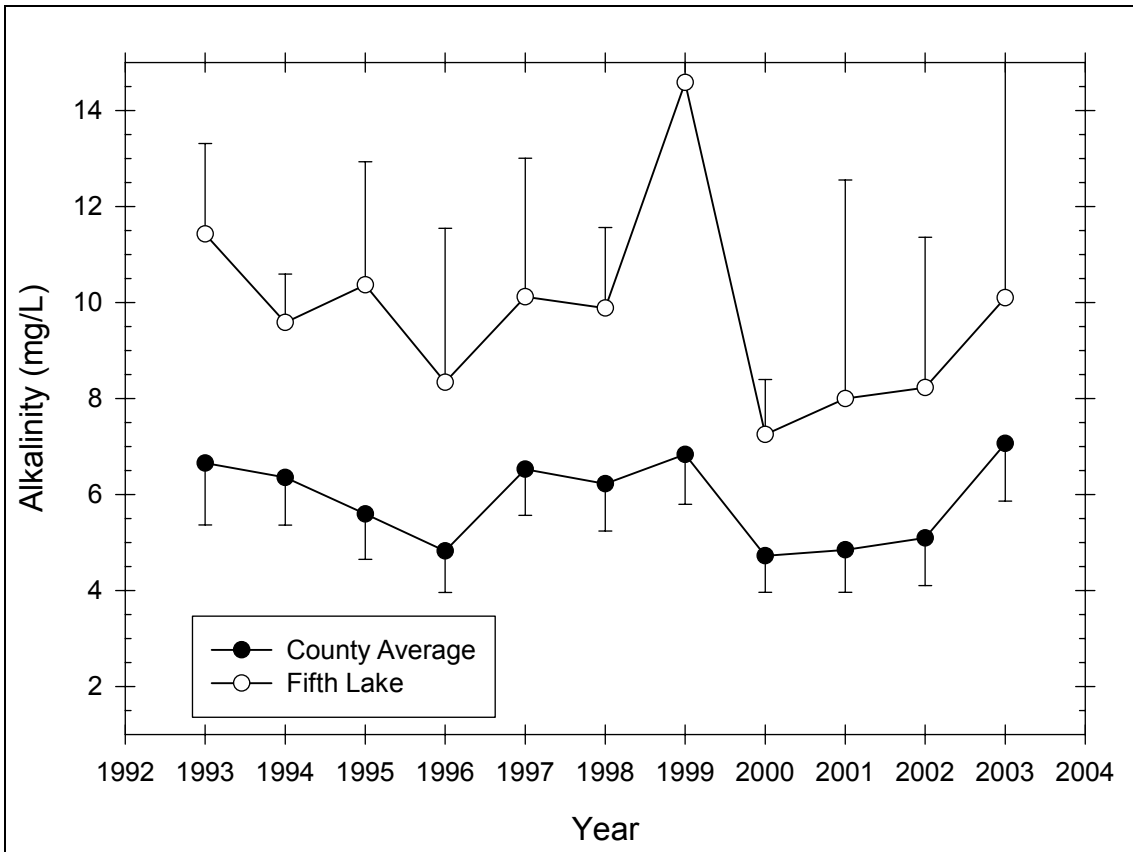


Figure 45 Seasonal mean alkalinity trend in Fifth Lake

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.

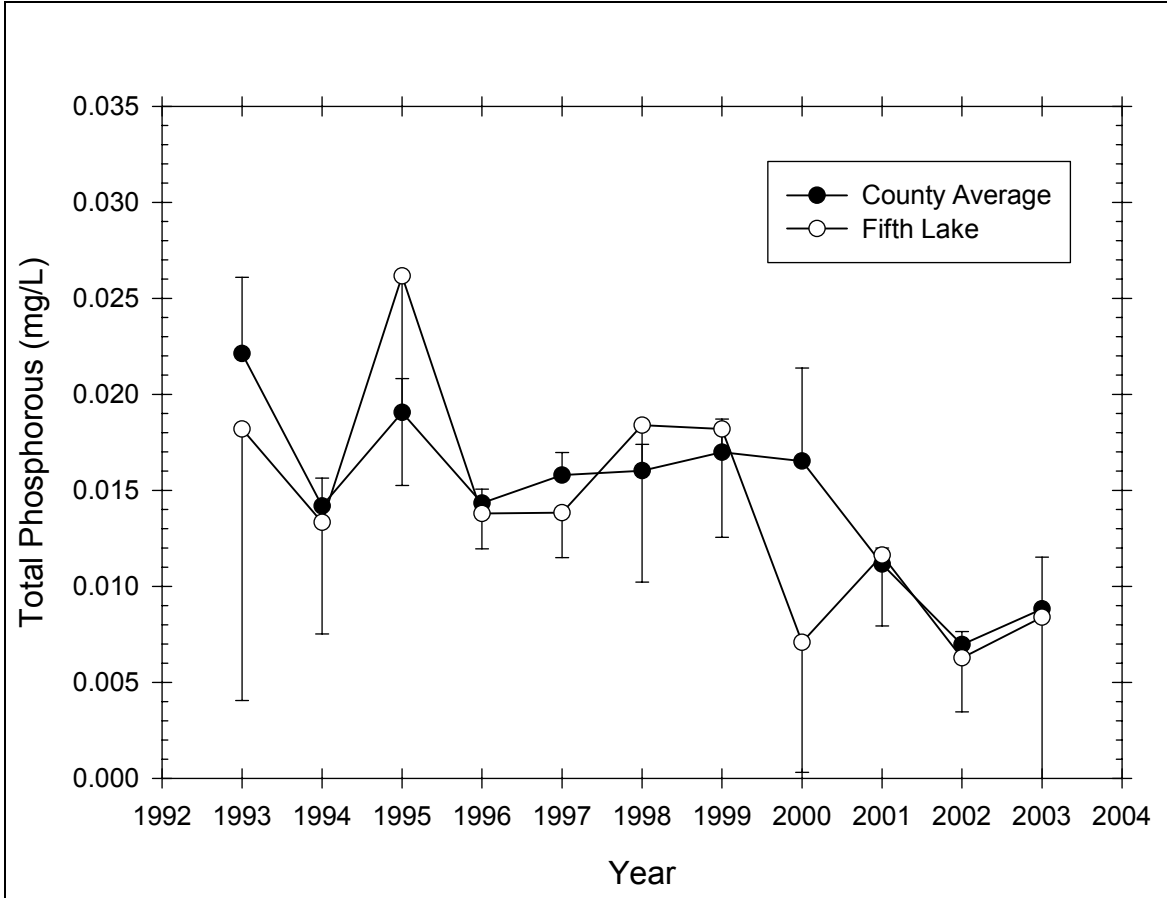


Figure 46 Seasonal mean total phosphorus in Fifth Lake

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.

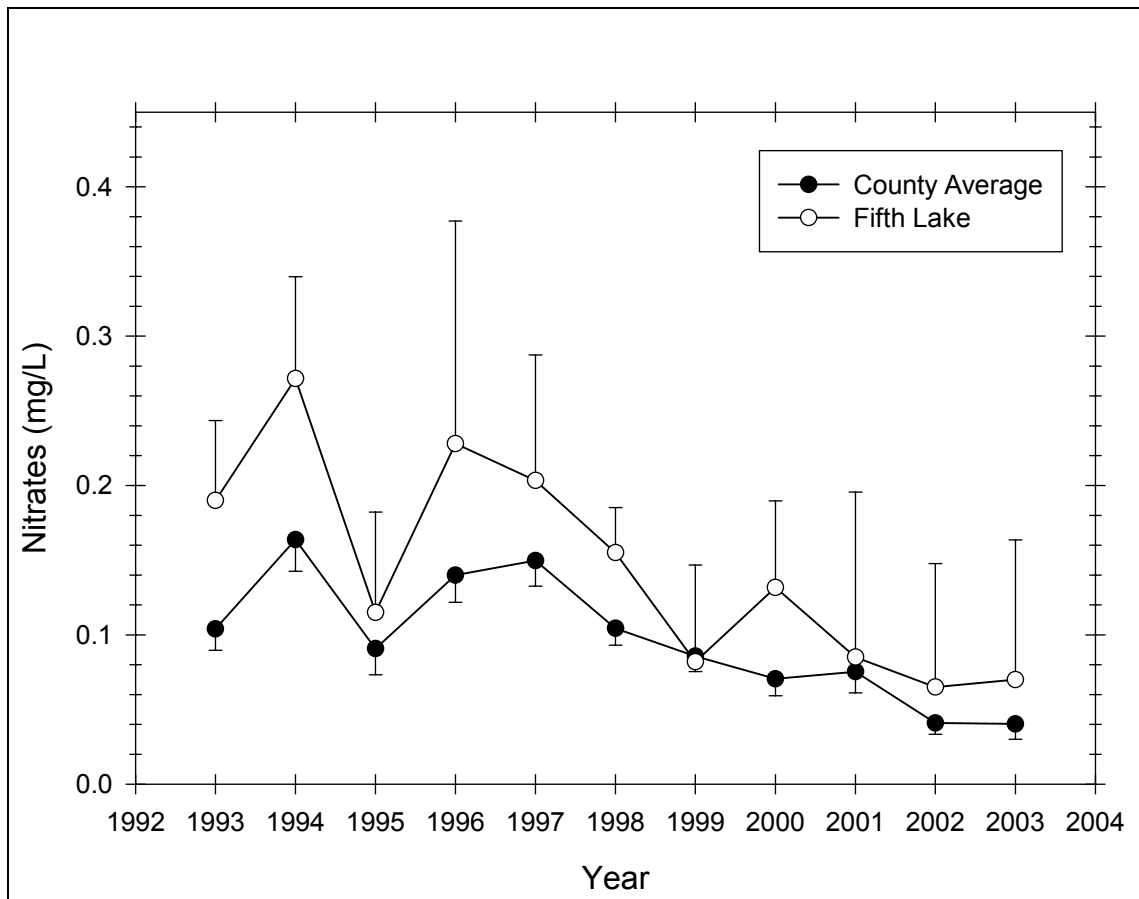


Figure 47 Seasonal mean nitrate trend in Fifth Lake

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.

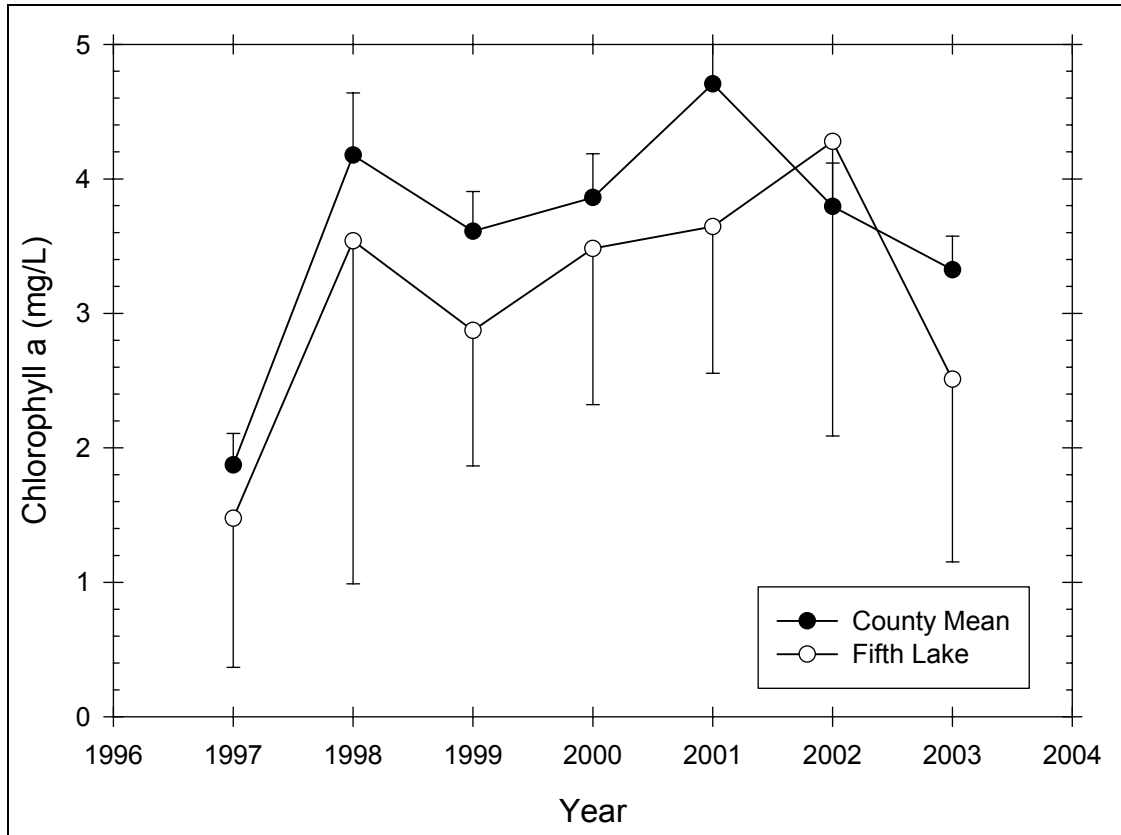


Figure 48 Seasonal mean chlorophyll a trend in Fifth Lake

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.

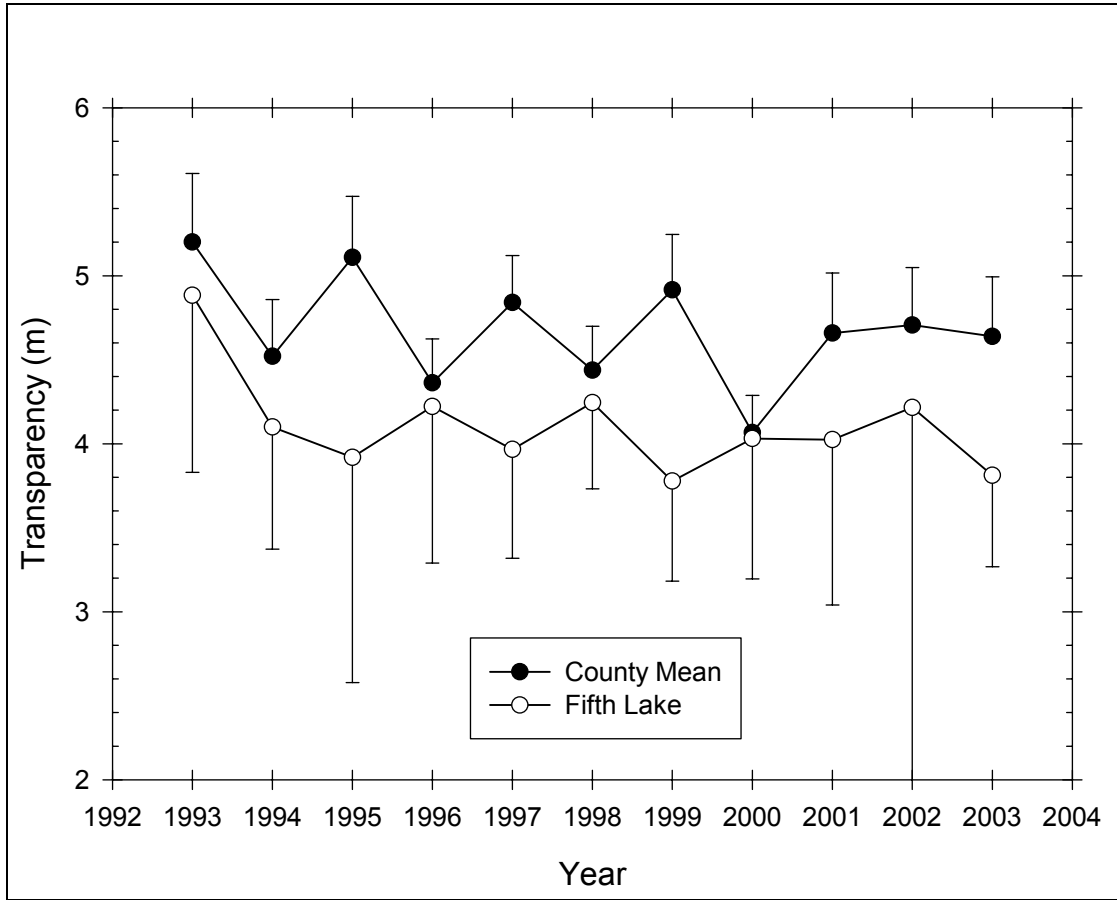


Figure 49 Seasonal mean transparency in Fifth Lake

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.

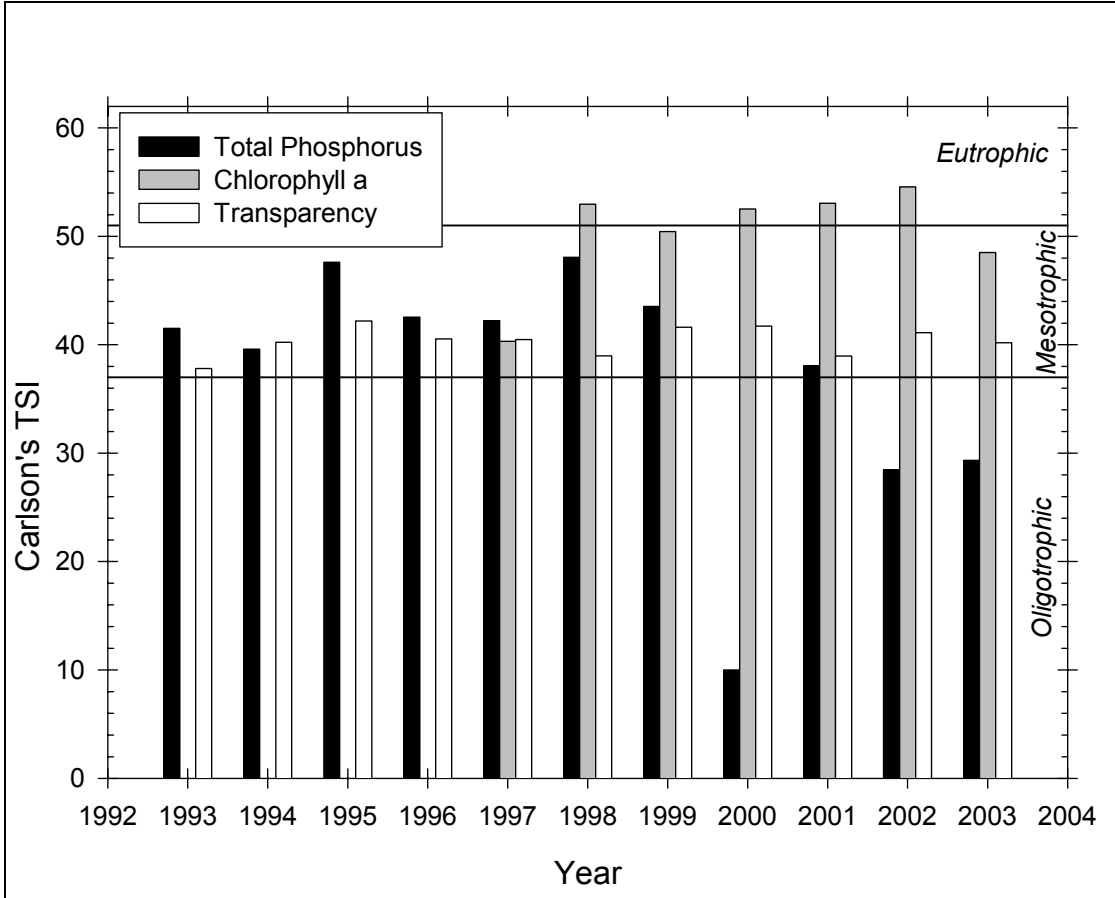


Figure 50 Carlson TSI trend in Fifth Lake

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.

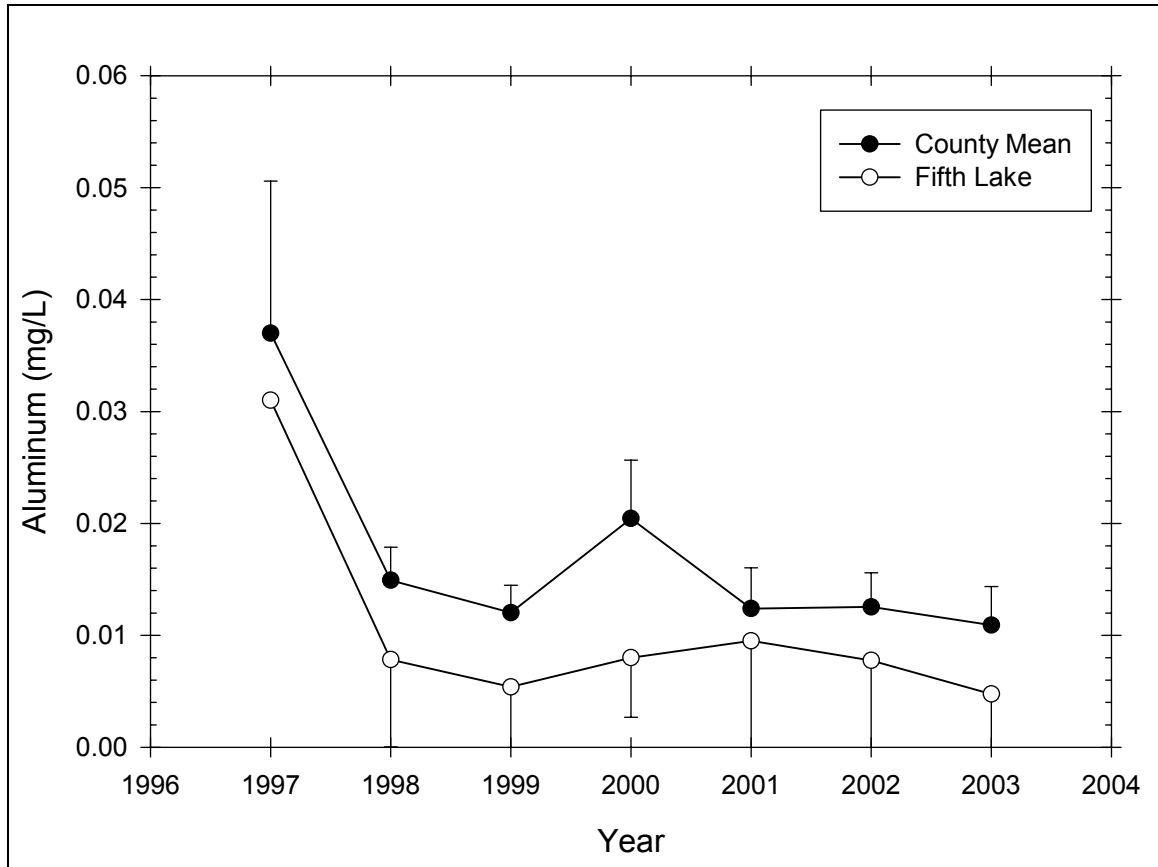


Figure 51 Seasonal mean aluminum trend in Fifth Lake

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.

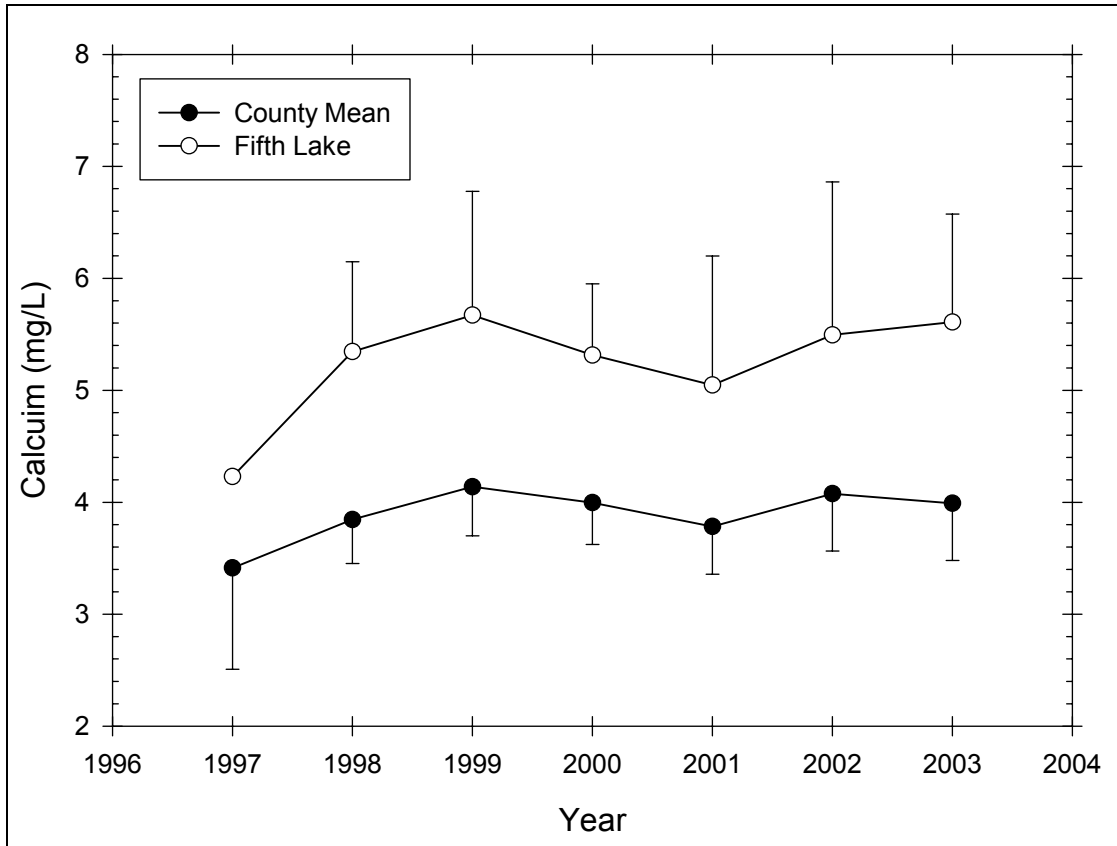


Figure 52 Seasonal mean calcium trend in Fifth Lake

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.

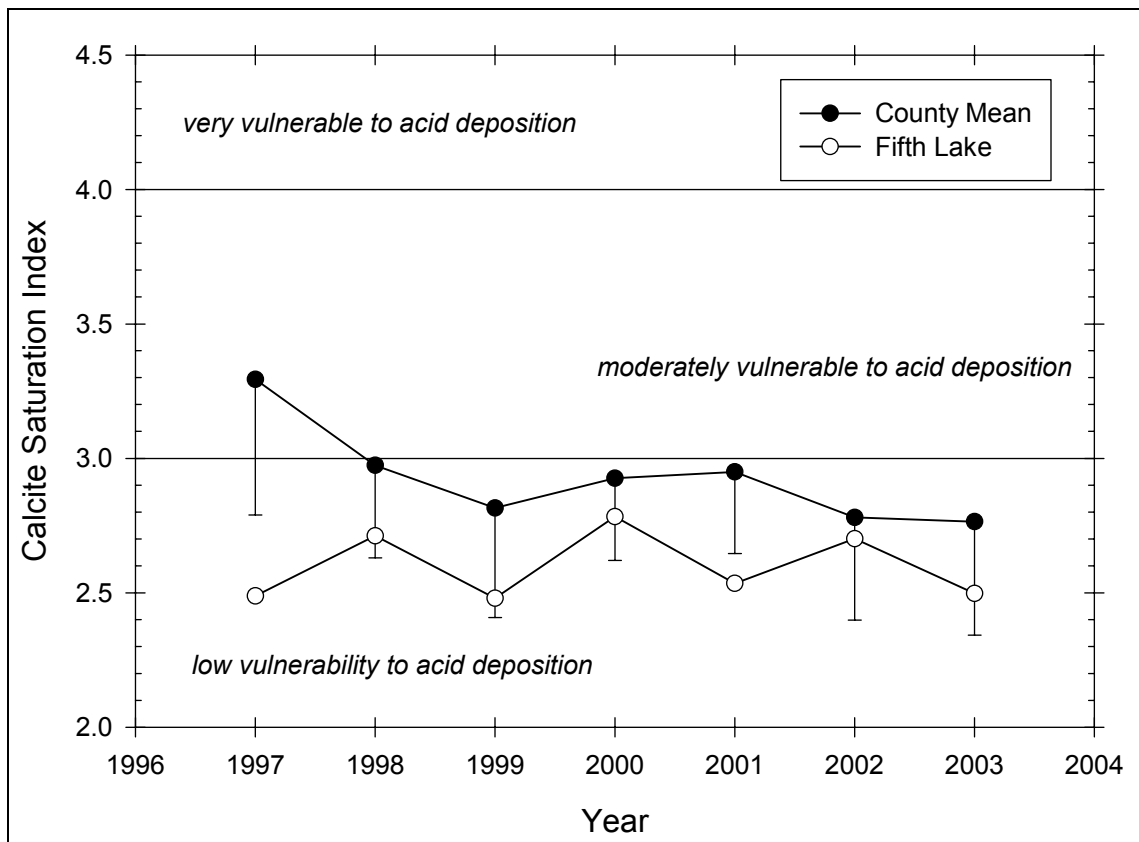


Figure 53 Seasonal mean CSI trend in Fifth Lake