

## Raquette Lake

### Location

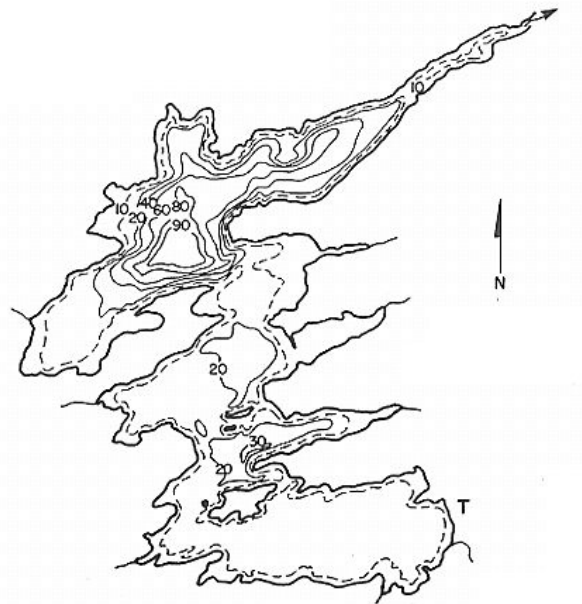
Pond Number: 060293  
Watershed: St. Lawrence River  
County: Hamilton  
Topographic Quadrangle: Raquette Lake

### Sample Site

Latitude: 43° 51.132'  
Longitude: 74° 39.189'

### Morphometry

Surface Area: 5,263 Ac.  
Mean Depth: 44 Ft.  
Maximum Depth: 95 Ft.  
Volume: 231,572 Ac./Ft.  
Watershed Area: 80,691 Ac.  
Hydraulic Retention Time: 1.1 Yr.  
Shoreline Length: 32.8 Mi.  
Elevation: 1,762 Ft.  
Water Quality Classification: AA  
Trophic State: Mesotrophic



## Temperature and Dissolved Oxygen

Raquette Lake had a minimum DO of 0.3 mg/L (October 2000), with a minimum temperature of 5.5°C and a maximum temperature of 23.9°C. In general, the lowest DO values occurred during the months of August through October.

## pH

Figure 174 presents the seasonal mean pH trend in Raquette Lake, while Table 137 presents descriptive statistics for pH in Raquette Lake. The pH in Raquette Lake exhibited an increasing trend from 1996 to 1999 with relatively stable values from 2000 to 2003. The pH in Raquette Lake was generally similar to the county average.

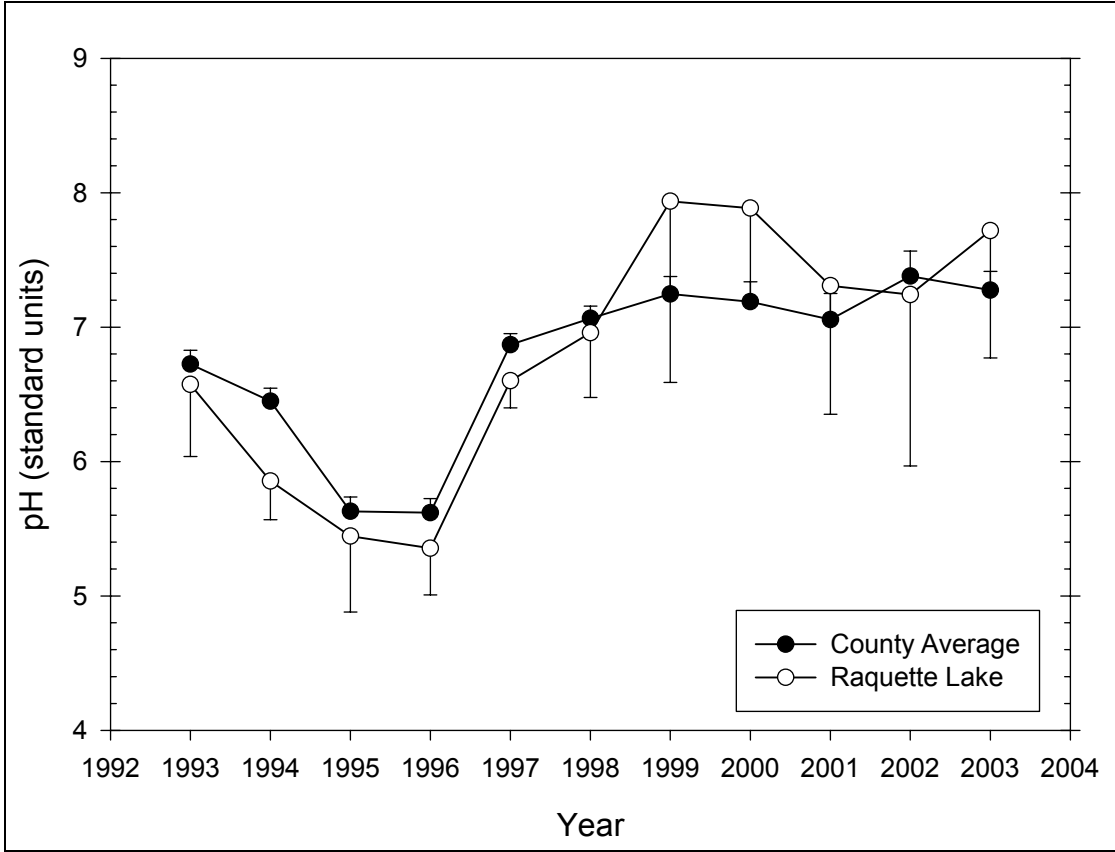


Figure 174 Seasonal mean pH trend in Raquette Lake

Table 137 – Descriptive Statistics for pH in Raquette Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	6.574	0.432	0.193	0.536
1994	6	0	5.855	0.273	0.111	0.287
1995	6	0	5.445	0.538	0.220	0.564
1996	6	0	5.355	0.331	0.135	0.347
1997	6	0	6.600	0.191	0.0779	0.200
1998	6	0	6.958	0.459	0.188	0.482
1999	5	0	7.936	1.084	0.485	1.346
2000	6	0	7.885	0.689	0.281	0.723
2001	4	0	7.307	0.601	0.300	0.956
2002	4	0	7.243	0.802	0.401	1.275
2003	4	0	7.718	0.595	0.297	0.947
Year	Range	Max	Min	Median	25%	75%
1993	0.920	7.060	6.140	6.410	6.223	7.023
1994	0.690	6.200	5.510	5.825	5.630	6.140
1995	1.430	6.130	4.700	5.330	5.170	6.010
1996	0.920	5.890	4.970	5.350	5.060	5.510
1997	0.500	6.830	6.330	6.560	6.510	6.810
1998	1.170	7.510	6.340	6.940	6.590	7.430
1999	3.040	9.350	6.310	7.960	7.495	8.465
2000	1.870	8.460	6.590	8.065	7.720	8.410
2001	1.250	7.830	6.580	7.410	6.815	7.800

2002	1.900	8.300	6.400	7.135	6.670	7.815
2003	1.180	8.380	7.200	7.645	7.215	8.220
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	0.401	-3.006	0.248	0.360	32.870	216.834
1994	0.171	-1.531	0.185	0.621	35.130	206.059
1995	0.124	-0.923	0.244	0.300	32.670	179.334
1996	0.615	0.319	0.153	0.744	32.130	172.602
1997	0.0342	-0.895	0.208	0.495	39.600	261.542
1998	-0.0437	-1.429	0.181	0.640	41.750	291.566
1999	-0.477	1.948	0.283	0.206	39.680	319.601
2000	-1.676	3.054	0.261	0.220	47.310	375.415
2001	-0.494	-3.136	0.279	0.305	29.230	214.681
2002	0.722	0.738	0.207	0.611	28.970	211.743
2003	0.242	-4.594	0.294	0.249	30.870	239.301

## Alkalinity

Figure 175 presents the seasonal mean alkalinity trend in Raquette Lake, while Table 138 presents descriptive statistics for alkalinity in Raquette Lake. The alkalinity in Raquette Lake exhibited no discernible trend, but varied up and down throughout the period of record. The alkalinity in Raquette Lake was significantly lower than the county average.

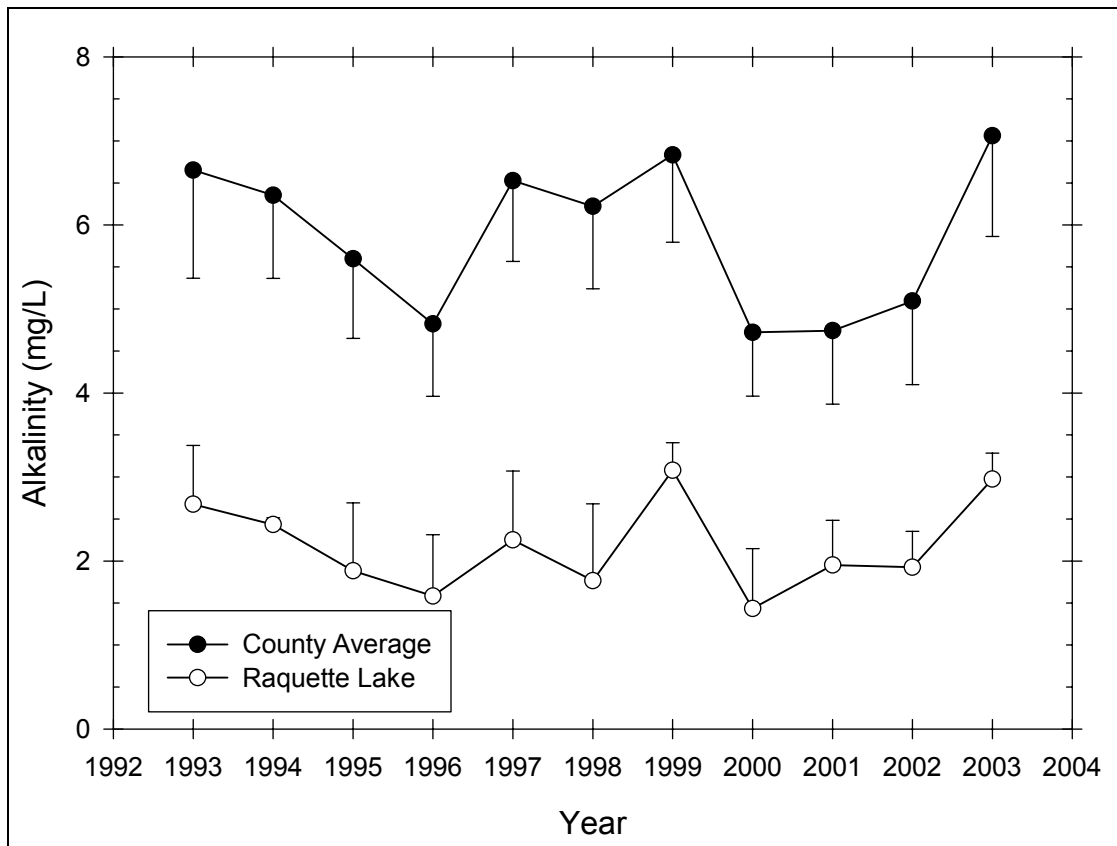


Figure 175 Seasonal alkalinity trend in Raquette Lake

**Table 138 – Descriptive Statistics for Alkalinity in Raquette Lake**

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	5	1	2.675	0.699	0.350	1.113
1994	6	0	2.433	0.0816	0.0333	0.0857
1995	6	0	1.883	0.808	0.330	0.848
1996	6	0	1.583	0.728	0.297	0.764
1997	6	0	2.250	0.822	0.335	0.862
1998	6	0	1.767	0.914	0.373	0.959
1999	6	1	3.080	0.327	0.146	0.406
2000	6	0	1.433	0.715	0.292	0.750
2001	6	2	4.340	4.572	2.286	7.275
2002	6	2	1.925	0.427	0.214	0.680
2003	6	2	2.975	0.310	0.155	0.493
Year	Range	Max	Min	Median	25%	75%
1993	1.600	3.600	2.000	2.550	2.150	3.200
1994	0.200	2.600	2.400	2.400	2.400	2.400
1995	2.300	2.900	0.600	2.150	1.300	2.200
1996	1.800	2.600	0.800	1.400	1.000	2.300
1997	2.400	3.100	0.700	2.400	2.200	2.700
1998	2.300	3.200	0.900	1.350	1.200	2.600
1999	0.900	3.500	2.600	3.100	2.900	3.275
2000	1.900	2.400	0.500	1.450	0.900	1.900
2001	9.760	11.160	1.400	2.400	1.850	6.830
2002	0.900	2.200	1.300	2.100	1.650	2.200
2003	0.700	3.400	2.700	2.900	2.750	3.200
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	0.844	-0.131	0.204	0.620	10.700	30.090
1994	2.449	6.000	0.492	<0.001	14.600	35.560
1995	-0.674	0.170	0.272	0.177	11.300	24.550
1996	0.532	-1.644	0.201	0.537	9.500	17.690
1997	-1.629	3.484	0.309	0.076	13.500	33.750
1998	0.999	-0.788	0.323	0.050	10.600	22.900
1999	-0.420	1.220	0.203	0.582	15.400	47.860
2000	0.0431	-1.443	0.196	0.563	8.600	14.880
2001	1.933	3.797	0.406	0.020	17.360	138.046
2002	-1.728	2.919	0.320	0.163	7.700	15.370
2003	1.138	0.758	0.218	0.570	11.900	35.690

## Total Phosphorus

Figure 176 presents the seasonal mean total phosphorus trend in Raquette Lake, while Table 139 presents descriptive statistics for total phosphorus in Raquette Lake. The total phosphorus in Raquette Lake exhibited a decreasing trend from 1993 to 2003. The total phosphorus in Raquette Lake was similar to the county average.

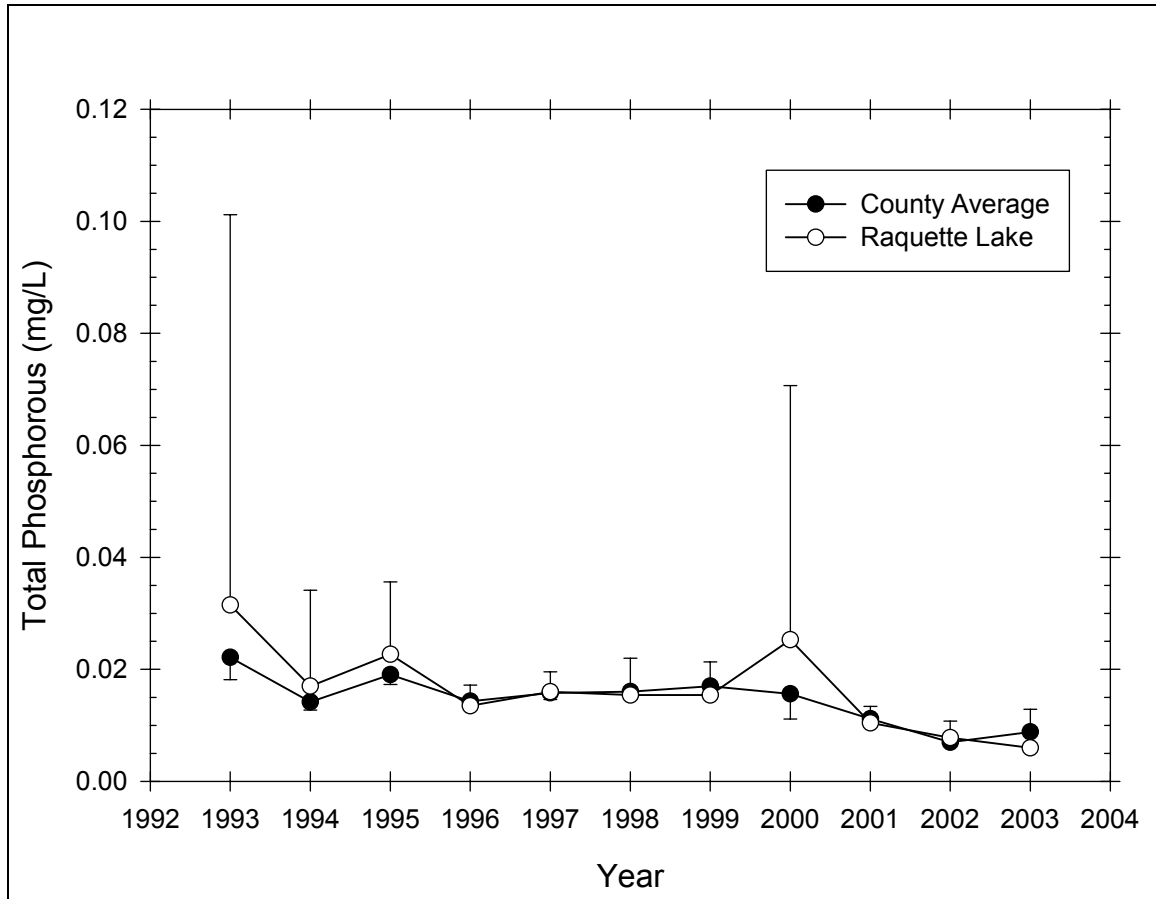


Figure 176 Seasonal mean total phosphorus trend in Raquette Lake

Table 139 – Descriptive Statistics for Total Phosphorus in Raquette Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	2	0.0315	0.0438	0.0219	0.0697
1994	6	0	0.0170	0.0163	0.00667	0.0171
1995	6	0	0.0227	0.0123	0.00504	0.0129
1996	6	0	0.0135	0.00351	0.00143	0.00368
1997	6	0	0.0160	0.00341	0.00139	0.00357
1998	6	1	0.0154	0.00532	0.00238	0.00661
1999	6	1	0.0154	0.00477	0.00214	0.00593
2000	6	1	0.0253	0.0366	0.0163	0.0454
2001	6	2	0.0104	0.00184	0.000919	0.00292
2002	6	2	0.00780	0.00185	0.000925	0.00294
2003	6	2	0.00597	0.00434	0.00217	0.00690
Year	Range	Max	Min	Median	25%	75%
1993	0.0920	0.0970	0.00500	0.0120	0.00800	0.0550
1994	0.0430	0.0500	0.00700	0.0115	0.00900	0.0130
1995	0.0320	0.0410	0.00900	0.0190	0.0140	0.0340
1996	0.00900	0.0190	0.01000	0.0125	0.0110	0.0160
1997	0.01000	0.0220	0.0120	0.0155	0.0140	0.0170
1998	0.0140	0.0230	0.00900	0.0160	0.0113	0.0185
1999	0.0130	0.0230	0.01000	0.0140	0.0130	0.0178
2000	0.0884	0.0894	0.001000	0.0130	0.00325	0.0366

2001	0.00430	0.0130	0.00870	0.0101	0.00920	0.0117
2002	0.00390	0.0103	0.00640	0.00725	0.00640	0.00920
2003	0.00980	0.0110	0.00120	0.00585	0.00250	0.00945
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	1.963	3.885	0.414	0.016	0.126	0.00972
1994	2.337	5.580	0.430	<0.001	0.102	0.00307
1995	0.675	-1.086	0.220	0.427	0.136	0.00384
1996	0.751	-0.779	0.262	0.217	0.0810	0.00116
1997	1.093	1.917	0.218	0.441	0.0960	0.00159
1998	0.393	0.0446	0.182	0.671	0.0770	0.00130
1999	1.057	2.086	0.250	0.350	0.0770	0.00128
2000	2.027	4.242	0.368	0.025	0.126	0.00854
2001	1.160	1.696	0.261	0.384	0.0418	0.000447
2002	1.071	-0.176	0.275	0.321	0.0312	0.000254
2003	0.121	-2.278	0.192	0.657	0.0239	0.000199

## Nitrate

Figure 177 presents the seasonal mean nitrate trend in Raquette Lake, while Table 140 presents descriptive statistics for nitrate in Raquette Lake. The nitrate in Raquette Lake exhibited a decreasing trend from 1994 to 2002. The nitrate in Raquette Lake was slightly higher than the county average from 1993 to 1999 and lower from 2000 to 2002, though any difference was not statistically significant.

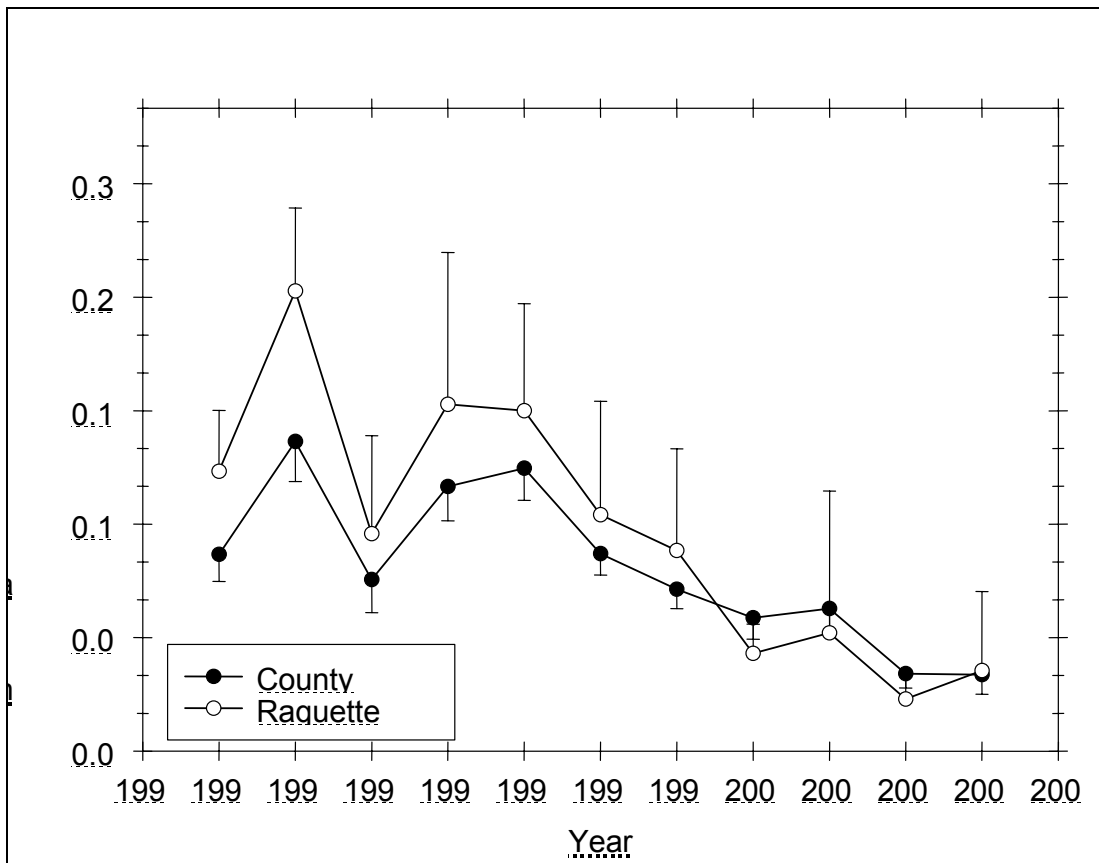


Figure 177 Seasonal mean nitrate trend in Raquette Lake

**Table 140 – Descriptive Statistics for Nitrate in Raquette Lake**

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	0.148	0.0259	0.0116	0.0321
1994	6	0	0.243	0.0418	0.0171	0.0439
1995	6	0	0.115	0.0493	0.0201	0.0517
1996	6	0	0.183	0.0766	0.0313	0.0804
1997	6	0	0.180	0.0540	0.0221	0.0567
1998	6	0	0.125	0.0572	0.0233	0.0600
1999	6	1	0.106	0.0434	0.0194	0.0538
2000	6	0	0.0517	0.0147	0.00601	0.0154
2001	6	2	0.0625	0.0472	0.0236	0.0751
2002	6	2	0.0275	0.00957	0.00479	0.0152
2003	6	2	0.0425	0.0263	0.0131	0.0418
Year	Range	Max	Min	Median	25%	75%
1993	0.0600	0.180	0.120	0.140	0.128	0.172
1994	0.110	0.300	0.190	0.240	0.210	0.280
1995	0.120	0.180	0.0600	0.1000	0.0800	0.170
1996	0.200	0.310	0.110	0.160	0.130	0.230
1997	0.120	0.240	0.120	0.175	0.130	0.240
1998	0.130	0.210	0.0800	0.1000	0.0800	0.180
1999	0.120	0.170	0.0500	0.110	0.0800	0.125
2000	0.0400	0.0800	0.0400	0.0500	0.0400	0.0500
2001	0.1000	0.130	0.0300	0.0450	0.0300	0.0950
2002	0.0200	0.0400	0.0200	0.0250	0.0200	0.0350
2003	0.0500	0.0700	0.0200	0.0400	0.0200	0.0650
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	0.363	-2.413	0.221	0.494	0.740	0.112
1994	0.166	-1.322	0.143	0.763	1.460	0.364
1995	0.541	-1.740	0.207	0.502	0.690	0.0915
1996	0.959	-0.000620	0.257	0.239	1.100	0.231
1997	0.137	-2.465	0.211	0.482	1.080	0.209
1998	0.813	-1.428	0.284	0.136	0.750	0.110
1999	0.422	1.435	0.263	0.288	0.530	0.0637
2000	1.840	3.912	0.378	0.007	0.310	0.0171
2001	1.517	1.980	0.271	0.339	0.250	0.0223
2002	0.855	-1.289	0.283	0.289	0.110	0.00330
2003	0.124	-5.290	0.304	0.212	0.170	0.00930

## Chlorophyll a

Figure 178 presents the seasonal mean chlorophyll *a* trend in Raquette Lake, while Table 141 presents descriptive statistics for chlorophyll *a* in Raquette Lake. The chlorophyll *a* in Raquette Lake was relatively stable from 1998 to 2001 followed by a decreasing trend from 2001 to 2003. The chlorophyll *a* in Raquette Lake was generally slightly higher than the county average, though this difference was not statistically significant.

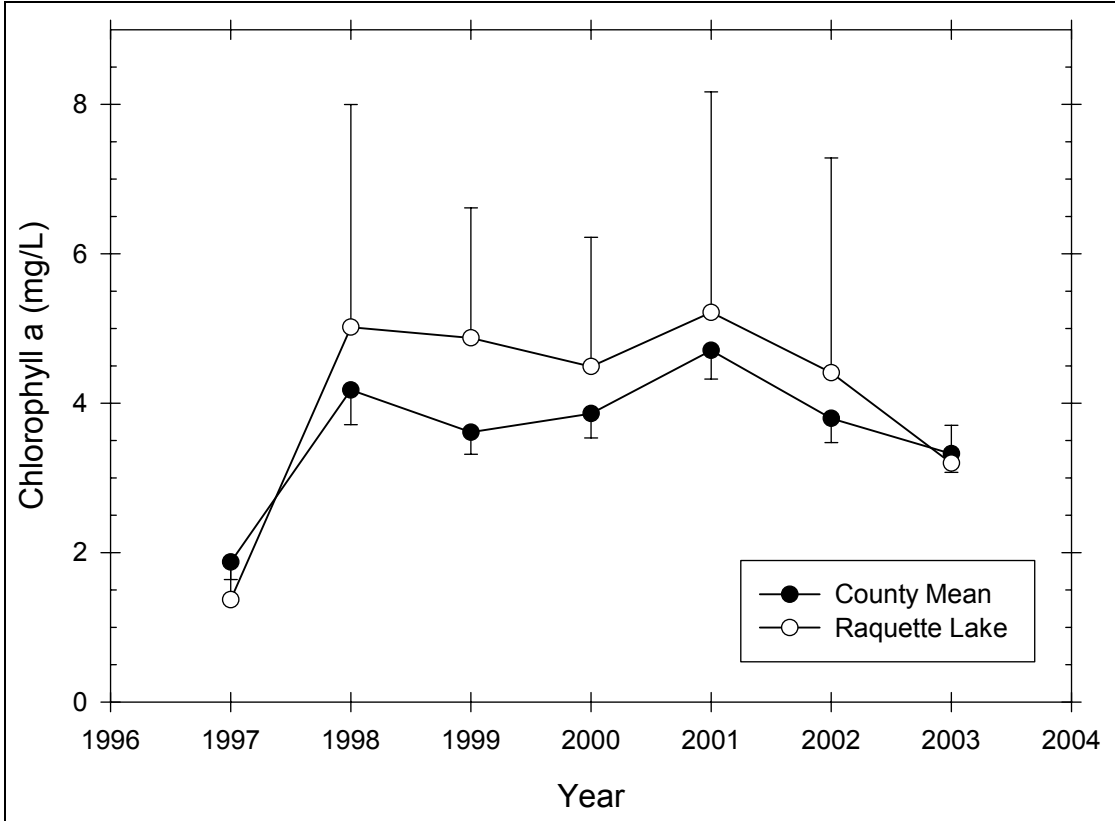


Figure 178 Seasonal mean chlorophyll a trend in Raquette Lake

Table 141 – Descriptive Statistics for Chlorophyll a in Raquette Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	0	1.370	0.439	0.179	0.461
1998	6	0	5.018	2.839	1.159	2.980
1999	6	1	4.874	1.403	0.628	1.742
2000	6	0	4.490	1.649	0.673	1.730
2001	6	2	5.215	1.856	0.928	2.954
2002	6	2	4.410	1.807	0.903	2.875
2003	6	2	3.198	0.319	0.159	0.507
Year	Range	Max	Min	Median	25%	75%
1997	1.210	1.800	0.590	1.390	1.290	1.760
1998	6.420	8.890	2.470	3.490	3.370	8.400
1999	3.320	6.790	3.470	4.240	3.853	6.115
2000	4.230	6.390	2.160	4.480	3.260	6.170
2001	4.540	7.430	2.890	5.270	4.030	6.400
2002	4.400	6.450	2.050	4.570	3.270	5.550
2003	0.730	3.630	2.900	3.130	2.965	3.430
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	-1.186	1.779	0.261	0.221	8.220	12.227
1998	0.898	-1.770	0.370	0.010	30.110	191.410
1999	0.655	-1.800	0.274	0.241	24.370	126.655
2000	-0.195	-1.250	0.179	0.649	26.940	134.553
2001	-0.177	1.460	0.240	0.475	20.860	119.123

2002	-0.524	1.616	0.268	0.354	17.640	87.588
2003	1.028	0.595	0.209	0.601	12.790	41.201

### Transparency

Figure 179 presents the seasonal mean transparency trend in Raquette Lake, while Table 142 presents descriptive statistics for transparency in Raquette Lake. The transparency in Raquette Lake exhibited a decreasing trend from 1993 to 1998 and a slight increasing trend from 1998 to 2003. The transparency in Raquette Lake was slightly higher than the county average in 1993 and 1994 and slightly lower than the county average from 1997 to 2003, though any difference was not statistically significant.

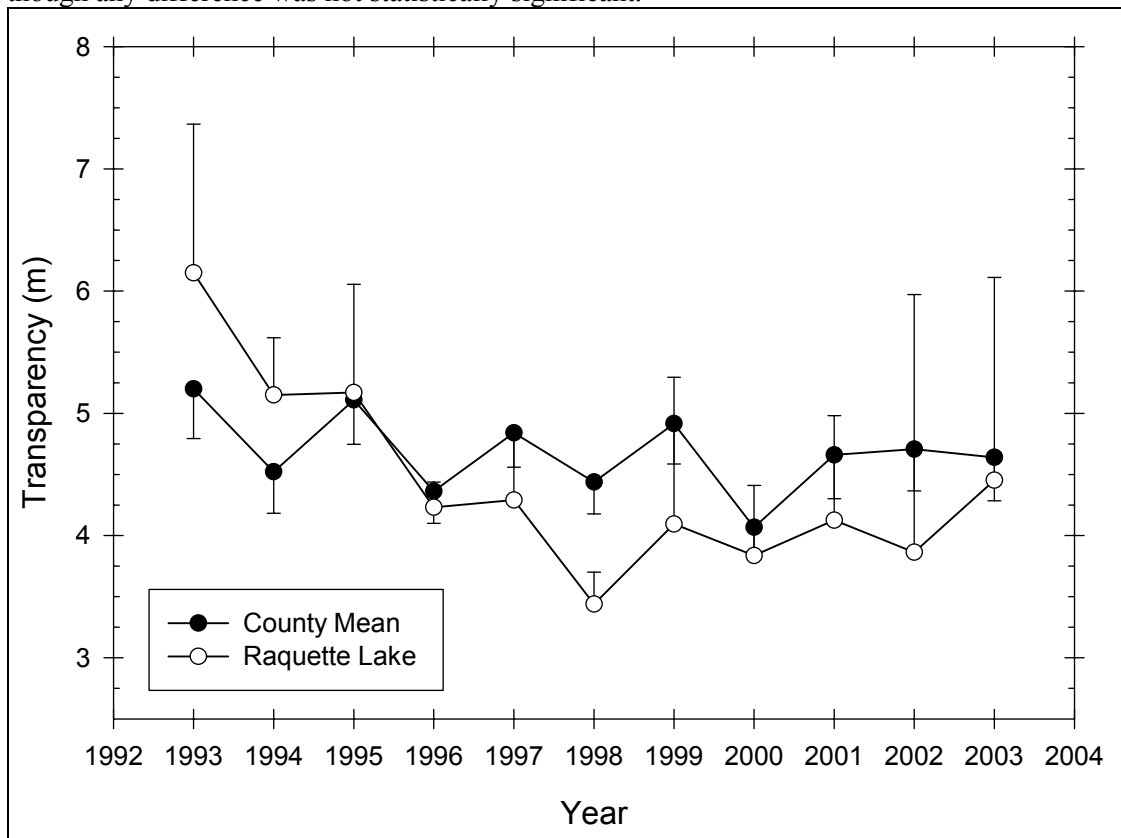


Figure 179 Seasonal mean transparency trend in Raquette Lake

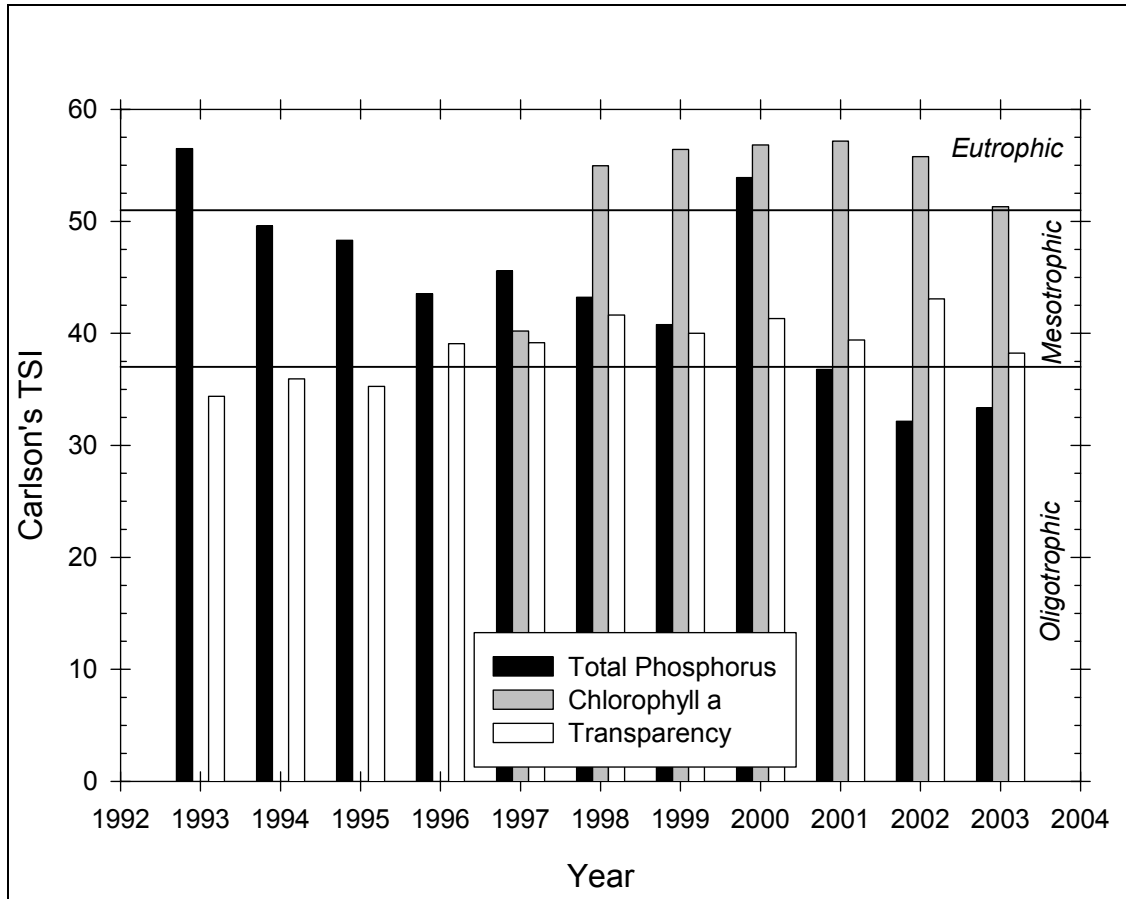
Table 142 – Descriptive Statistics for Transparency in Raquette Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	6.150	0.979	0.438	1.216
1994	6	0	5.150	0.446	0.182	0.468
1995	6	0	5.170	0.843	0.344	0.885
1996	6	0	4.232	0.198	0.0806	0.207
1997	6	0	4.290	0.508	0.207	0.533
1998	6	0	3.438	0.251	0.102	0.263
1999	5	0	4.094	0.967	0.432	1.200
2000	6	0	3.837	0.547	0.223	0.574
2001	4	0	4.125	0.538	0.269	0.856
2002	4	0	3.862	1.326	0.663	2.110

2003	4	0	4.453	1.043	0.522	1.660
<b>Year</b>	<b>Range</b>	<b>Max</b>	<b>Min</b>	<b>Median</b>	<b>25%</b>	<b>75%</b>
1993	2.120	7.270	5.150	5.760	5.375	7.157
1994	1.300	5.700	4.400	5.300	4.900	5.300
1995	2.100	6.100	4.000	5.275	4.500	5.870
1996	0.550	4.500	3.950	4.200	4.140	4.400
1997	1.450	4.900	3.450	4.295	4.120	4.680
1998	0.760	3.800	3.040	3.435	3.350	3.570
1999	2.270	5.370	3.100	3.650	3.400	4.980
2000	1.250	4.450	3.200	3.845	3.300	4.380
2001	1.300	4.800	3.500	4.100	3.750	4.500
2002	2.950	5.750	2.800	3.450	2.950	4.775
2003	2.500	5.650	3.150	4.505	3.700	5.205
<b>Year</b>	<b>Skewness</b>	<b>Kurtosis</b>	<b>K-S Dist.</b>	<b>K-S Prob.</b>	<b>Sum</b>	<b>Sum of Squares</b>
1993	0.406	-2.945	0.255	0.327	30.750	192.950
1994	-0.882	1.056	0.298	0.098	30.900	160.130
1995	-0.320	-1.887	0.235	0.346	31.020	163.929
1996	0.0170	-0.550	0.160	0.723	25.390	107.637
1997	-0.712	0.699	0.202	0.529	25.740	111.715
1998	-0.271	1.268	0.196	0.565	20.630	71.248
1999	0.568	-2.106	0.277	0.230	20.470	87.542
2000	-0.0335	-2.457	0.185	0.621	23.020	89.815
2001	0.265	0.869	0.195	0.649	16.500	68.930
2002	1.452	1.912	0.269	0.349	15.450	64.953
2003	-0.277	0.407	0.173	0.696	17.810	82.565

## TSI

Figure 180 presents the Carlson trophic state index trend in Raquette Lake. Transparency TSI increased from upper oligotrophic in 1993 through 1995 to lower mesotrophic from 1996 to 2003. Chlorophyll *a* TSI was in the eutrophic range from 1998 to 2003 and mesotrophic in 1997. Total phosphorus TSI was eutrophic in 1993 and 2000, mesotrophic and decreasing from 1994 through 1999, and oligotrophic in 2001 to 2003.



**Figure 180** Carlson TSI trend in Raquette Lake

## Aluminum

Figure 181 presents the seasonal mean aluminum trend in Raquette Lake, while Table 143 presents descriptive statistics for aluminum in Raquette Lake. The aluminum in Raquette Lake exhibited a decreasing trend from 1997 to 2003. The aluminum in Raquette Lake was slightly higher than the county average from 1997 to 1999 and similar to the county average from 2000 to 2003, though any difference except for 1997 was not statistically significant.

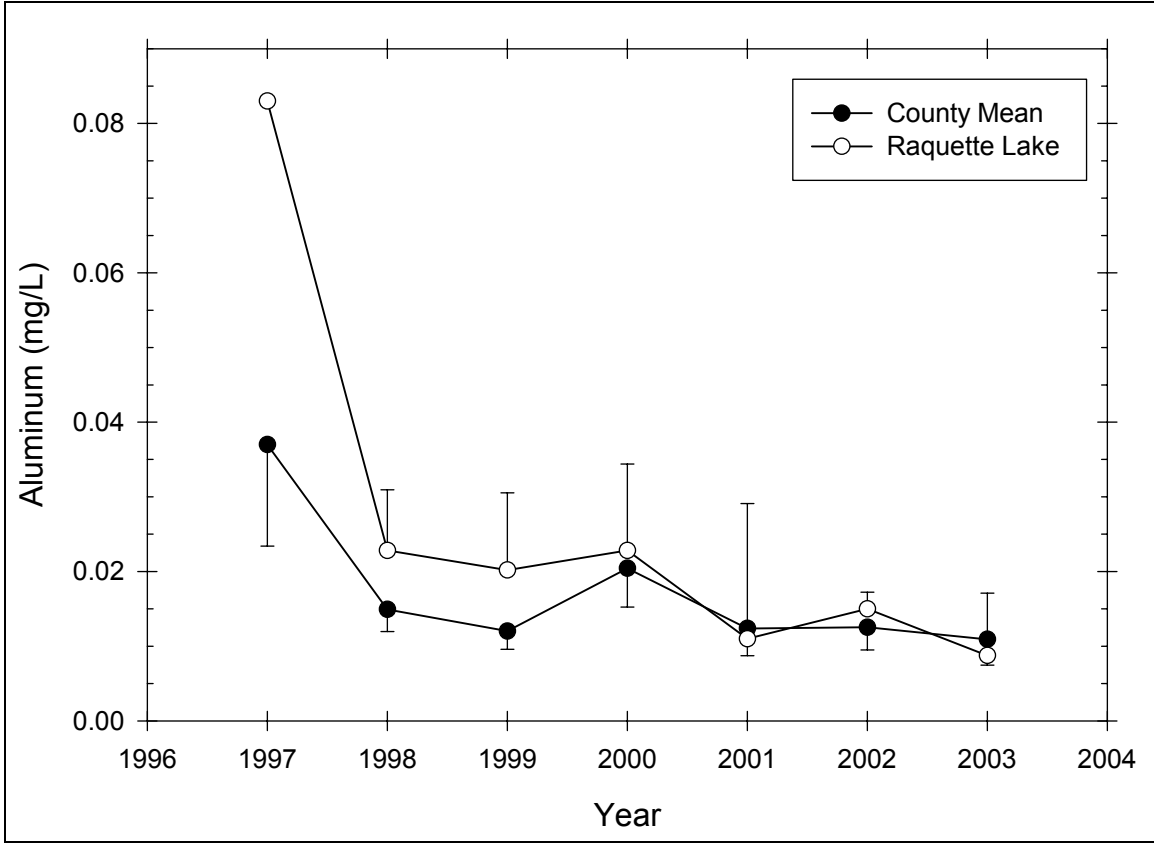


Figure 181 Seasonal mean aluminum trend in Raquette Lake

Table 143 – Descriptive Statistics for Aluminum in Raquette Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	5	0.0830	--	--	--
1998	6	0	0.0228	0.00773	0.00316	0.00811
1999	6	1	0.0202	0.00832	0.00372	0.0103
2000	6	0	0.0228	0.0110	0.00450	0.0116
2001	6	2	0.0110	0.0114	0.00569	0.0181
2002	6	2	0.0150	0.00141	0.000707	0.00225
2003	6	2	0.00875	0.00525	0.00263	0.00836
Year	Range	Max	Min	Median	25%	75%
1997	0.000	0.0830	0.0830	0.0830	0.0830	0.0830
1998	0.0230	0.0320	0.00900	0.0235	0.0220	0.0270
1999	0.0220	0.0340	0.0120	0.0190	0.0150	0.0235
2000	0.0300	0.0450	0.0150	0.0195	0.0180	0.0200
2001	0.0240	0.0280	0.00400	0.00600	0.00500	0.0170
2002	0.00300	0.0160	0.0130	0.0155	0.0140	0.0160
2003	0.0120	0.0160	0.00400	0.00750	0.00500	0.0125
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	--	--	--	--	0.0830	0.00689
1998	-1.166	2.373	0.290	0.118	0.137	0.00343
1999	1.448	2.729	0.310	0.122	0.101	0.00232
2000	2.288	5.445	0.435	<0.001	0.137	0.00374
2001	1.958	3.871	0.420	0.013	0.0440	0.000872

2002	-1.414	1.500	0.260	0.387	0.0600	0.000906
2003	1.165	1.085	0.231	0.515	0.0350	0.000389

### Calcium

Figure 182 presents the seasonal mean calcium trend in Raquette Lake, while Table 144 presents descriptive statistics for calcium in Raquette Lake. The calcium in Raquette Lake was low and did not exhibit any discernible trend. The calcium in Raquette Lake was significantly lower than the county average.

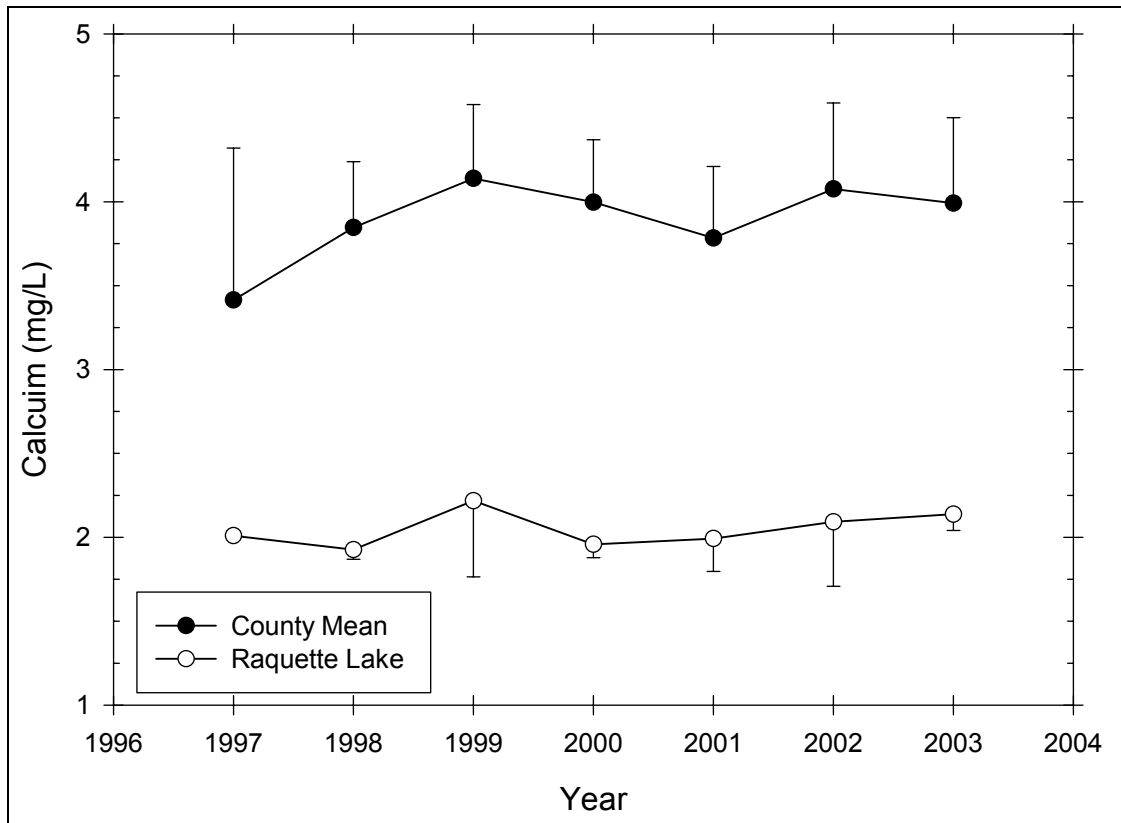


Figure 182 Seasonal mean calcium trend in Raquette Lake

Table 144 – Descriptive Statistics for Calcium in Raquette Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	5	2.010	--	--	--
1998	6	0	1.927	0.0547	0.0223	0.0574
1999	6	1	2.218	0.365	0.163	0.454
2000	6	0	1.958	0.0765	0.0312	0.0803
2001	6	2	1.992	0.123	0.0614	0.195
2002	6	2	2.093	0.242	0.121	0.385
2003	6	2	2.137	0.0608	0.0304	0.0967
Year	Range	Max	Min	Median	25%	75%
1997	0.000	2.010	2.010	2.010	2.010	2.010
1998	0.140	1.980	1.840	1.950	1.880	1.960
1999	0.940	2.820	1.880	2.110	1.977	2.408
2000	0.180	2.060	1.880	1.940	1.890	2.040

2001	0.290	2.110	1.820	2.020	1.915	2.070
2002	0.540	2.280	1.740	2.175	1.940	2.245
2003	0.140	2.190	2.050	2.155	2.100	2.175
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	--	--	--	--	2.010	4.040
1998	-0.964	-0.619	0.263	0.213	11.560	22.287
1999	1.446	2.258	0.243	0.382	11.090	25.132
2000	0.495	-1.905	0.192	0.586	11.750	23.040
2001	-1.242	2.279	0.307	0.203	7.970	15.925
2002	-1.672	2.938	0.328	0.140	8.370	17.690
2003	-1.521	2.764	0.331	0.131	8.550	18.287

### Calcite Saturation Index

Figure 183 presents the calcite saturation index trend in Raquette Lake. The CSI in Raquette Lake was variable from year to year but in general decreased in the lake over time between 1997 and 2003. The CSI value was in the moderately vulnerable to acid deposition range for most of the period of record. The CSI in Raquette Lake was generally slightly higher than the county average, though this difference was not statistically significant.

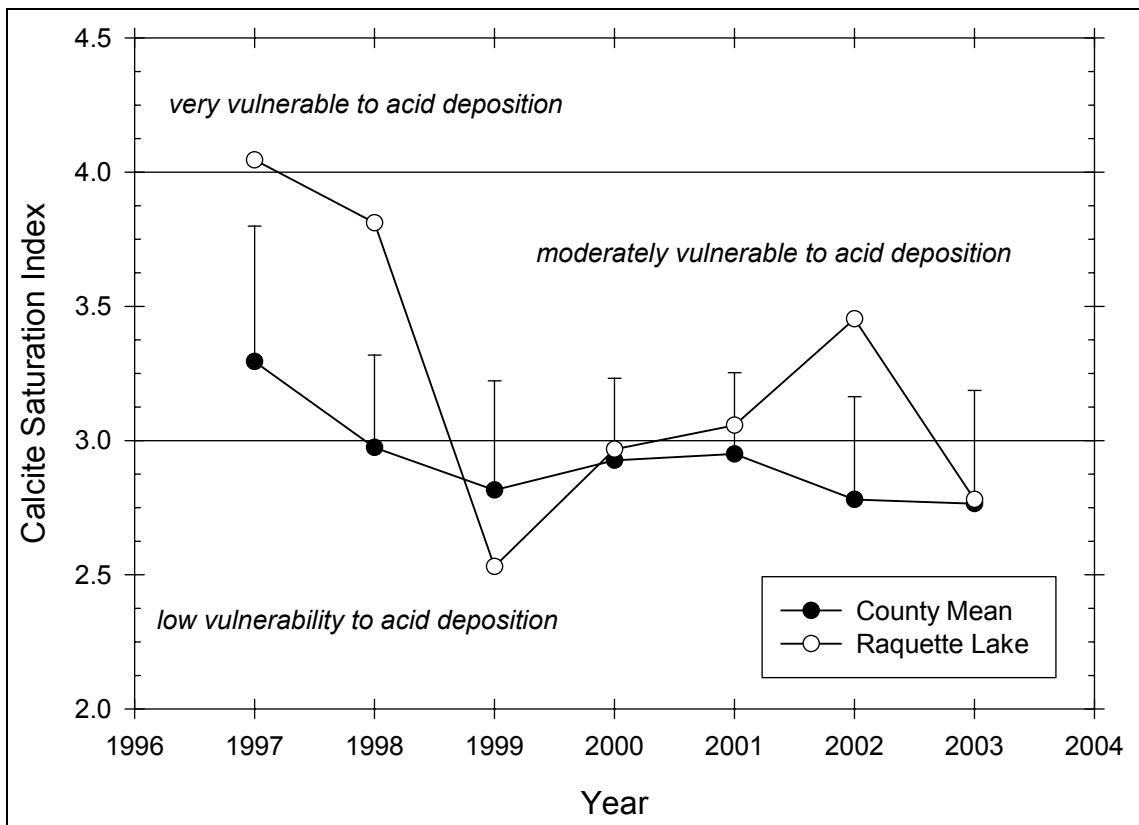


Figure 183 Seasonal mean CSI trend in Raquette Lake