Florida LAKEWATCH Report for Lake Alice in Alachua County Using Data Downloaded January 15 2024

Introduction for Lakes

This report summarizes data collected on systems that have been part of the LAKEWATCH program. Data are from the period of record for individual systems. Part one allows the comparison of data with Florida Department of Environmental Protection's Numeric Nutrient Criteria. Part two allows a comparison of the long-term mean nutrient concentrations with nutrient zone concentrations published by LAKEWATCH staff (Bachmann et al. 2012; https://lakewatch.ifas.ufl.edu/resources/bibliography/). Finally, this report examines data for long-term trends that may be occurring in individual systems but only for systems with **five or more years of data**. Step by step instructions on how to use the data tables are provided on page 4 of this report.

Florida Department of Environmental Protection (FDEP) Nutrient Criteria for Lakes (Table 1)

For lakes, the numeric interpretations of the nutrient criterion in paragraph 62-302.530(47)(b), F.A.C., based on chlorophyll are shown in Table 1. The applicable interpretations for TN and TP will vary on an annual basis, depending on the availability and concentration of chlorophyll data for the lake. The numeric interpretations for TN, TP, and chlorophyll shall not be exceeded more than once in any consecutive three year period.

a. If annual geometric mean chlorophyll does not exceed the chlorophyll value for one of three lake classification groups listed in the table below, then the TN and TP numeric interpretations for that calendar year shall be the annual geometric means of the maximum calculated numeric interpretation in Table 1.

b. If there are insufficient data to calculate the annual geometric mean chlorophyll for a given year or the annual geometric mean chlorophyll exceeds the values in Table 1 for the correct lake classification group, then the applicable numeric interpretations for TN and TP shall be the minimum values in Table 1.

Long-Term Data Summary for Lakes (Table 2): Definitions

- **Total Phosphorus (µg/L):** Nutrient most often limiting growth of plant/algae.
- **Total Nitrogen (µg/L):** Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- **Chlorophyll-uncorrected (µg/L):** Chlorophyll concentrations are used to measure relative abundances of open water algae.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filtered out.
- **Specific Conductance (µS/cm @ 25 C):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.
- **Lake Classification:** Numeric nutrient criteria for Florida require that lakes must first be classified into one of three group based on color and alkalinity or specific conductance; **colored lakes** (color greater than 40 Pt-Co units), **clear soft water lakes** (color less than or equal to 40 Pt-Co units and alkalinity less than or equal to 20 mg/L as CaCO3 or specific conductance less than or equal to 100 µs/cm @25 C), and **clear hard water lakes** (color less than 40 Pt-Co units and alkalinity greater than 20 mg/L as CaCO3 or specific conductance greater 100 µS/cm @ 25 C).

Table 1. Florida Department of Environmental Protection's Numeric Nutrient Criteria for lakes.

[1 For lakes with color > 40 PCU in the West Central Nutrient Watershed Region, the maximum TP limit shall be the 490 µg/L TP streams threshold for the region.]

Long Term Geometric Mean Lake Color and Long-Term Geometric Mean Color, Alkalinity and Specific Conductance	Annual Geometric Mean Chlorophyll-corrected	Minimum calculated numeric interpretation		Maximum calculated numeric interpretation	
		Annual Geometric Mean Total Phosphorus	Annual Geometric Mean Total Nitrogen	Annual Geometric Mean Total Phosphorus	Annual Geometric Mean Total Nitrogen
> 40 Platinum Cobalt Units **Colored Lakes**	20 µg/L	50 µg/L	1270 µg/L	160 µg/L[1]	2230 µg/L
≤ 40 Platinum Cobalt Units and > 20 mg/L $CaCO_3$ or >100 µS/cm@25 C **Clear Hard Water Lakes**	20 µg/L	30 µg/L	1050 µg/L	90 µg/L	1910 µg/L
≤ 40 Platinum Cobalt Units and ≤ 20 mg/L $CaCO_3$ or < 100 µS/cm@25 C **Clear Soft Water Lakes**	6 µg/L	10 µg/L	51 µg/L	30 µg/L	930 µg/L

For the purpose of subparagraph 62-302.531(2)(b)1., F.A.C., color shall be assessed as true color and shall be free from turbidity. Lake color and alkalinity shall be the long-term geometric mean, based on a minimum of ten data points over at least three years with at least one data point in each year. If insufficient alkalinity data are available, long-term geometric mean specific conductance values shall be used, with a value of <100 µS/cm@25 C used to estimate the mg/L $CaCO_3$ alkalinity concentration until such time that alkalinity data are available.

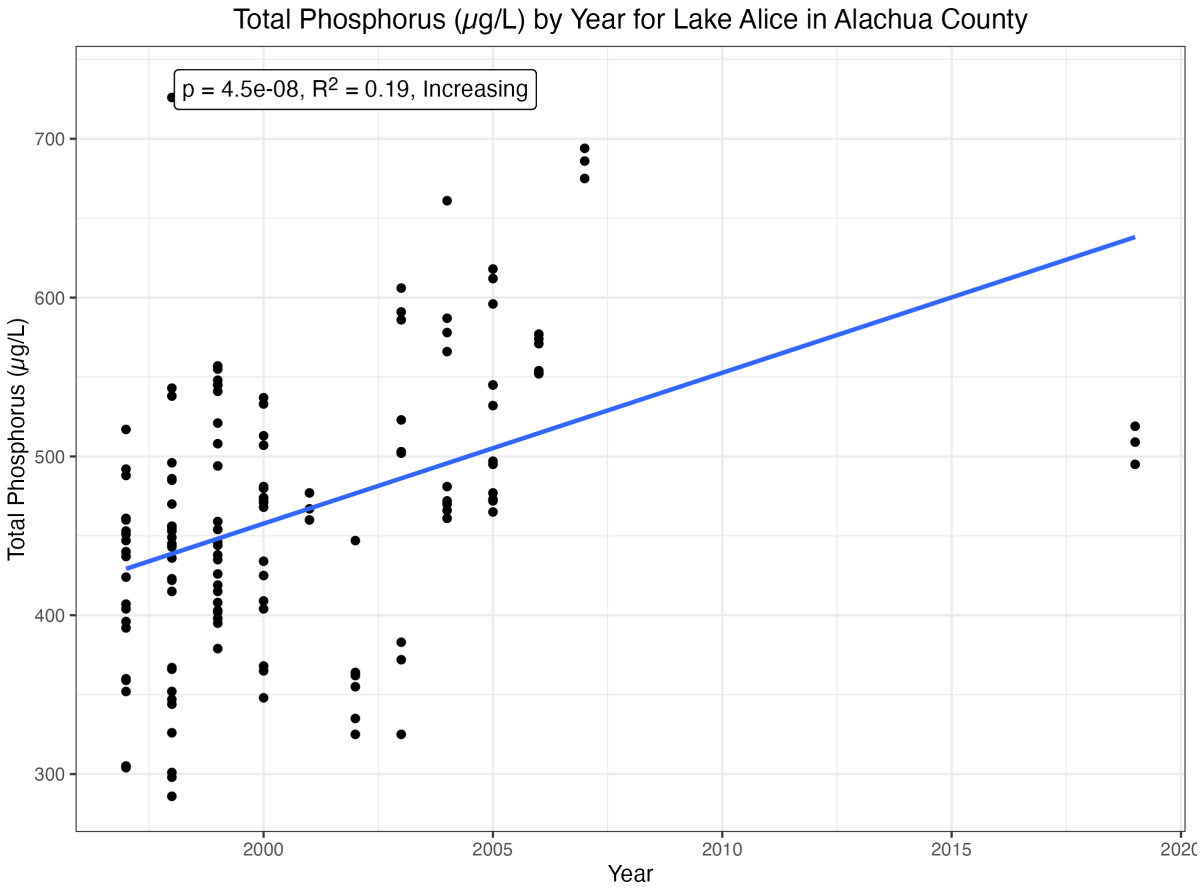
Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and classification variables color and specific conductance (collected quarterly). Values in bold can be used with Table 1 to evaluate compliance with nutrient criteria.

Parameter	Minimum Annual Geometric Means	Maximum Annual Geometric Means	Grand Geometric Mean
Total Phosphorus (µg/L)	286	726	457
Total Nitrogen (µg/L)	380	1340	635
Chlorophyll- uncorrected (µg/L)	3	55	12
Secchi (ft)	1.9	10.6	4
Secchi (m)	0.57	3.18	1.2
Color (Pt-Co Units)	29	58	36
Specific Conductance (µS/cm@25 C)	262	349	302
Lake Classification	Clear Hard Water		

Table 3. Base File Data, long-term nutrient grand geometric means and Nutrient Zone classification listing the 90th percentile concentrations in Figure 1. Values in bold can be used for Nutrient Zone comparisons.

County	Alachua
Name	Alice
GNIS Number	277748
Latitude	29.6431944444444
Longitude	-82.3604722222222
Water Body Type	Lake
Surface Area (ha and acre)	11 ha, 26 acres
Period of Record (year)	1997 to 2019
Lake Tophic Status (CHL)	Mesotrophic
TP Zone	TP6
Grand TP Geometric Mean Concentration (ug/ L, min, and max.)	482 (363 to 685)
TN Zone	TN4
Grand TN Geometric Mean Concentration (ug/ L, min, and max.)	677 (561 to 1099)

Figure 2 and Figure 3. Trend plots of annual average total phosphorus and annual average total nitrogen versus year. The R2 value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R2 the stronger the relation) and the p value indicates if the relation is significant ($p < 0.05$ is significant). Trend Status are reported on plots.


Total Phosphorus (μg/L) by Year for Lake Alice in Alachua County
p = 4.5e-08, R2 = 0.19, Increasing
Total Phosphorus (μg/L)
700
600
500
400
300
2000
2005
2010
2015
Year

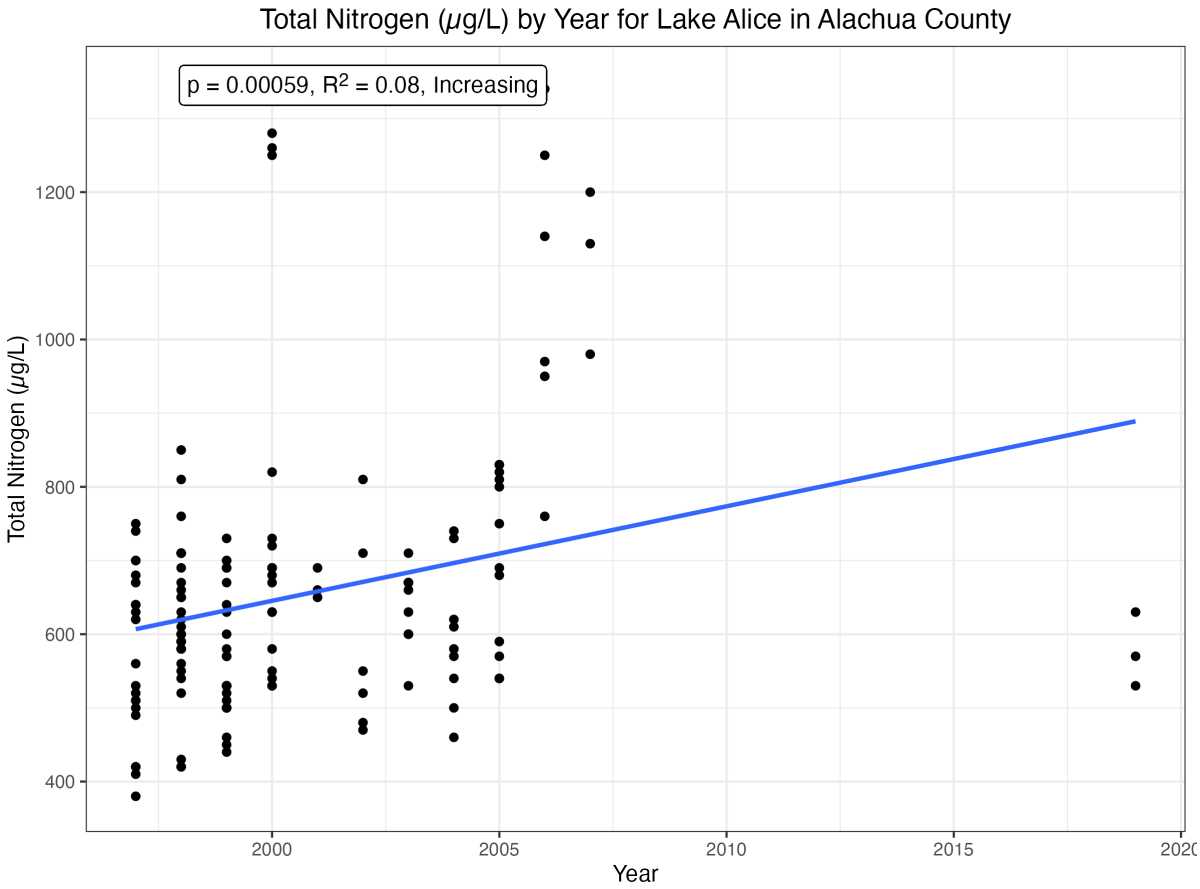
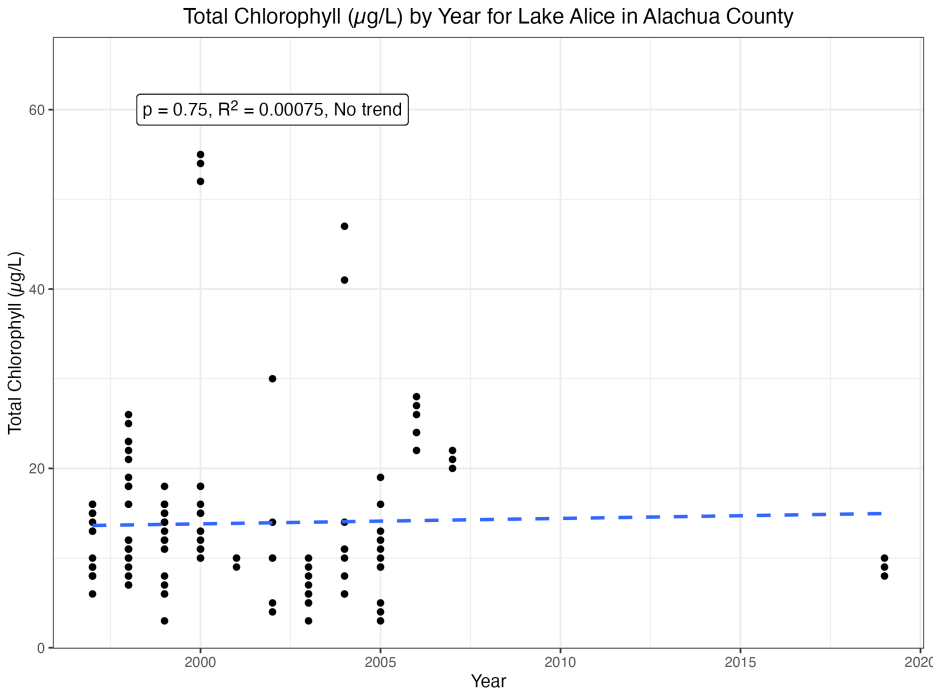
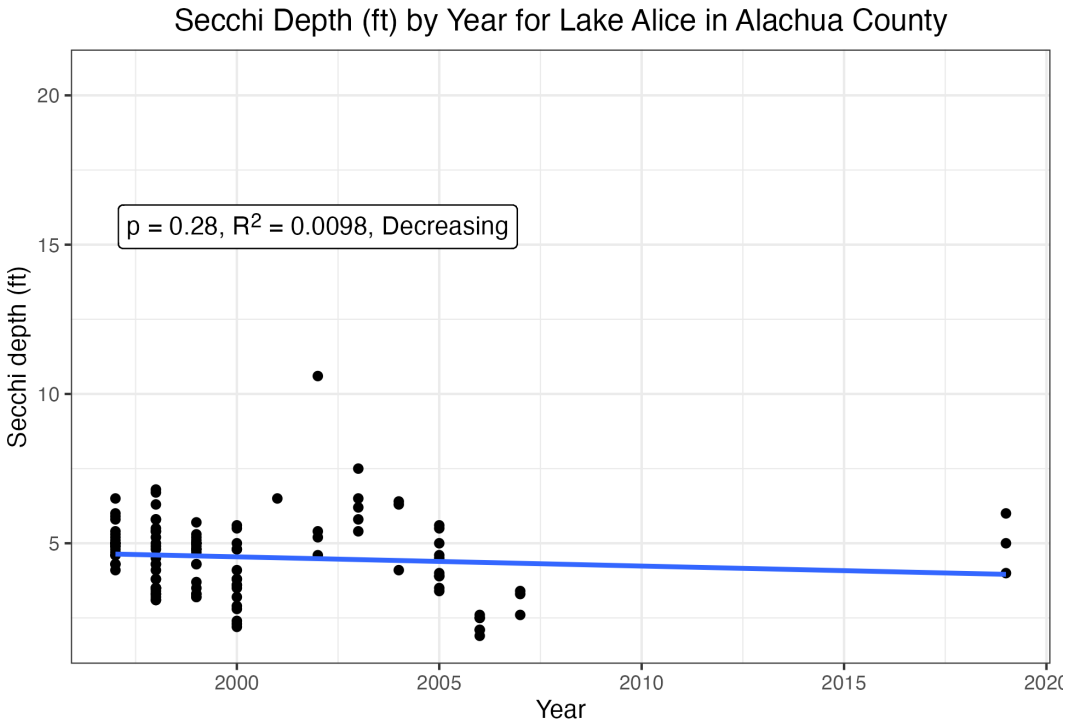


Figure 4 and Figure 5. Trend plots of annual average chlorophyll and annual average Secchi versus year. The R2 value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the R2 the stronger the relations and the p value indicates if the relation is significant ($p < 0.05$ is significant). Trend status are reported on plots.


Total Chlorophyll (μg/L) by Year for Lake Alice in Alachua County
p = 0.75, R2 = 0.00075, No trend
Total Chlorophyll (μg/L)
0
20
40
60
2000
2005
2010
2015
Year


Secchi Depth (ft) by Year for Lake Alice in Alachua County
p = 0.28, R2 = 0.0098, Decreasing
Secchi depth (ft)
5
10
15
20
2000
2005
2010
2015
Year