

# LAKE WATER QUALITY REPORT

— 2019 —



CITY OF  
**ORLANDO**  
STREETS AND STORMWATER



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## **PREFACE**

Water quality in Central Florida lakes is governed by a variety of natural and cultural factors. Natural factors are present regardless of human presence, and cultural factors are created directly, or indirectly, by human activity. These factors produce a multitude of physical, biological, and chemical influences, which collectively and interdependently control the health and public enjoyment of a lake.

Physical influences include characteristics of the lake such as its bathymetry, and the climate of its location, as well as sediment transport into the lake that may affect the water clarity. The depth and volume of a lake will determine the degree of insolation for aquatic plants, and the consistency of water characteristics such as temperature. Central Florida lakes are generally characterized as shallow bowl-shaped lakes, often formed by sinkholes. The sun and wind help keep Central Florida lakes mixed and at a more consistent temperature than those located in the temperate north, but most City of Orlando lakes will still stratify into distinct layers from time to time. All lakes also undergo a flushing process. Rain, groundwater, and tributaries from other bodies bring water into a lake, and evaporation, percolation, drainage wells, and outflow to receiving bodies allow water to leave a lake. The average length of time an element of water remains within the boundaries of the lake is known as the residence time, and is the amount of time allowed for nutrient uptake, chemical processes and settling of suspended materials. The treatment of waters flowing into a lake, and the resultant quality of waters flowing downstream are dependent on this process.

Biological influences are the bacteria, protozoan, animal and plant communities residing in or around the lake. Nutrients that find their way into lakes can promote vegetative growth along the shoreline and down to about four (4) meters deep, depending on the water clarity. There are desirable types of vegetation which are native to Central Florida lakes, as well as nuisance and exotic plants. Well managed desirable vegetation helps prevent a lake from becoming algae-dominated. Removal of exotic and nuisance plants



is a common practice in lake management, but if too much vegetation is removed too quickly (with herbicide, by hand, or with grass carp), algae will grow rapidly due to the availability of the nutrients. In an ideal environment, there would be a balance between vegetative growth and nutrient input to the lake that produces a consistent acceptable vegetation density.

Chemical influences would include the geology of the lake and chemical content of any inflows to the lake such as from a spring, industry or stormwater runoff. Historically, the volume and rate of stormwater runoff was lower than it is now because much of the rainwater was soaked into pervious surfaces covered by vegetation. Urbanization brought roads, rooftops, parking lots, and other impervious surfaces. Stormwater runoff has increased in both volume and rate because of these impervious surfaces. The Orlando area has drainage wells – direct conduits to the Floridan Aquifer – taking excessive stormwater runoff and lake overflow and mixing it with the groundwater. Stormwater runoff affects the water quality of lakes and groundwater in Orlando when it collects substances in its path to the receiving water body such as automotive fluids, dirt, nutrients (nitrogen and phosphorus), bacteria, leaves, and litter. These pollutants ultimately harm fish, aquatic wildlife and the public. Many of the substances found in stormwater are unintentional or unavoidable. For example, automobiles deposit petroleum products and heavy metals on the road with normal usage and leaves fall from trees into roads and parking lots, eventually washing into a lake. However, some of the undesirable substances found in stormwater runoff are placed there intentionally, or neglectfully by improper disposal of waste liquids and solids. Any wastewater or polluting material deposited in a street, alley, parking lot, driveway, or storm system will, without intervention, eventually affect the water quality of a lake and the groundwater.

Efforts by the public and private sectors of the community can certainly stop and reverse the degradation of lake water quality with behavior modifications and/or pollution prevention infrastructure. Pollution prevention is the most cost-effective and easiest method of preserving the water quality of our lakes. Local and state regulations require

new development and redevelopment to address water quality issues, especially concerning stormwater. Stormwater ponds collect and treat stormwater, as well as provide flood control. Innovative retro-fit stormwater treatment projects provide stormwater treatment and flood control in densely populated and poorly drained areas. The Greenwood Urban Wetlands near the intersection of Mills Avenue and Anderson Street is a good example of this.

The private sector can also help prevent lake water quality degradation. Citizens should choose to refrain from depositing the leaves and grass clippings from their property in the street and follow the label directions when fertilizing their lawns. Businesses should choose to dispose of their liquid waste through the sanitary sewer system where it can be treated (instead of the stormwater system). Construction sites should be properly managed, to keep soil and construction materials on-site and out of stormwater conveyances, preventing the clouding of waterbodies and to keep pollutants bound to those sediments out of lakes.

These are just a few examples of ways to prevent lake pollution. For more information about our lake water quality, contact the City of Orlando Streets and Stormwater Division, Stormwater Compliance Section at 407.246.2370.

A special thanks is extended to Austin Rhodes for his diligence and perseverance in compiling the data and creating all of the specialized graphs added in this year's edition of the annual water quality report.

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## **INTRODUCTION**

Orlando currently has 123 named water bodies that lie within 6 major drainage basins, of those waterbodies, 85 are lakes of natural origin, and the remaining 38 originated as borrow pits or stormwater ponds. In 1990, the City of Orlando instituted a lake monitoring program to collect and analyze chemical qualities and physical characteristics for 78 of these lakes. The City of Orlando currently collects water quality data quarterly from 94 natural lakes and man-made water bodies with significant public access (such as an adjacent park). Numerous lakes in Orlando are not included in the sampling program, as they are located on private property, or have a relatively limited drainage area.

The purpose of the monitoring program is to establish ambient water quality conditions, identify lakes with potential water quality problems, and to increase our knowledge of the chemical and physical processes that occur in our lakes. Water quality data is used to detect water quality trends and to evaluate the effectiveness of lake restoration projects and stormwater management practices.

This report includes individual data sheets for each lake monitored by the City of Orlando. Information provided for each lake includes: surface area, drainage basin area, mean depth, lake volume, drainage basin land uses, aeration, drain wells, grass carp presence, and the origin of the lake. In addition to physical data, the lake data sheets provide current and long-term water quality data including a graph, which describes water quality trends over time. Bathymetric maps, which detail the contours of the lake bottoms, are also available for most Orlando lakes in the Appendix.

## **METHODS AND MATERIALS**

Lake origin information was determined by the United States Department of Interior National Wetland Inventory Maps.

Mean depth data was determined using bathymetric data by dividing the lake's volume by surface area. Fifty lakes were mapped during 2003 by professional surveyors, and the remaining lakes mapped by City of Orlando employees using transecting recording fathometers.

Field data was collected using multi-parameter sondes. Water quality parameters measured included: temperature, pH, dissolved oxygen, and specific conductivity. These parameters were measured at depths of 0.3 meters, 0.5 meters, then continuing at 1 meter intervals until the bottom of the water column was reached. These sondes are calibrated before and after each day's sampling using the guidelines established in the current edition of the Florida Department of Environmental Protection (FDEP) Standard Operating Procedures for Field Activities.

Lake water samples taken by the City of Orlando were collected in the limnetic (surficial open water) zone. All samples were collected by submerging an intermediate vessel to collect water within the top 12 inches of the water column. Lake size and distribution was considered when deciding the number of samples to collect per lake. Some lakes were sampled and treated as separate waterbodies in this report. The reasoning is that even though the waterbodies have the same name, their lobes are sufficiently isolated by landmass to have different chemical characteristics. For example, values for Lake Cay Dee were reported as Lake Cay Dee North and Lake Cay Dee South. Lake Estelle, Lake Ivanhoe, and Lake Lucerne were also treated in this manner. Other lakes were large enough that multiple grab samples were collected over their area, and averaged, such as: Clear Lake, Lake Fairview, Lake Hiawassee, Lake Holden, Lake Lancaster, Lake Lawne, Lake Mann, Lake Nona, Lake Orlando, Turkey Lake, and Lake Underhill.

A National Environmental Laboratory Accreditation Conference (NELAC) certified laboratory using the United States Environmental Protection Agency (EPA) approved methods performed water quality analyses on all collected samples. The quarterly parameters analyzed for each lake and method references are as follows: alkalinity (SM 2320 B), ammonia as nitrogen (EPA 350.1), biochemical oxygen demand (SM 5210 B), chlorophyll-a (SM 10200 H-Acid, Corrected), total phosphorus as phosphorus (EPA 365.1), orthophosphate as phosphorus (EPA 365.1), nitrate + nitrite as nitrogen (EPA 353.2), nitrite as nitrogen (SM 4500 NO<sub>2</sub> B), total Kjeldahl nitrogen (EPA 351.2), total nitrogen (Calculation of TKN + NO<sub>x</sub>), , total dissolved solids (SM 2540 C), total suspended solids (SM 2540 D), total volatile suspended solids (EPA 160.4), true color (SM 2120 B), turbidity (EPA 180.1), and E. coli(EPA 1603).



## NUMERIC NUTRIENT CRITERIA

The Florida Department of Environmental Protection (FDEP) Numeric Nutrient Criteria (NNC) was adopted in 2011 to determine chlorophyll-*a*, total nitrogen (TN) and/or total phosphorus (TP) impairment for Florida lakes. Assessment for each nutrient is determined by the lake’s characteristics – low or high color and acidic or alkaline. The NNC criteria is applied by incorporating the annual geometric mean of chlorophyll-*a* with the appropriate lake characteristics. As displayed in the table below, the minimum or maximum numeric criteria for TN and TP is assigned based on the annual geometric mean chlorophyll-*a* concentration for a given year. Minimum interpretations are used when the chlorophyll-*a* concentrations exceed 20 ug/L (or 6 ug/L, when applicable). Conversely, maximum interpretations are applied when chlorophyll-*a* concentrations are below 20 ug/L (or 6 ug/L) The applicable numeric results for TN, TP and chlorophyll-*a* shall not be exceeded more than once in any consecutive three-year period. More than one exceedance will denote an impaired waterbody.

**Table from Rule 62-302.531, Florida Administrative Code**

Long Term Geometric Mean Lake Color and Alkalinity	Annual Geometric Mean Chlorophyll <i>a</i>	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	20 µg/L	0.05 mg/L	1.27 mg/L	0.16 mg/L <sup>1</sup>	2.23 mg/L
≤ 40 Platinum Cobalt Units and ≥ 20 mg/L CaCO <sub>3</sub>	20 µg/L	0.03 mg/L	1.05 mg/L	0.09 mg/L	1.91 mg/L
≤ 40 Platinum Cobalt Units and ≤ 20 mg/L CaCO <sub>3</sub>	6 µg/L	0.01 mg/L	0.51 mg/L	0.03 mg/L	0.93 mg/L

For more information, please refer to Florida Rule 62-302 and 62-303, F.A.C.

## TROPHIC STATES

Prior to the adoption of the Numeric Nutrient Criteria, the water quality of a Florida lake had been commonly assessed by determining the trophic state of the lake. The trophic state is a measure of the degree of productivity in the water column. Eutrophication is a process in which a lake becomes nutrient enriched, which in turn, alters the chemical, physical, and biological characteristics of the lake. Most water quality problems associated with Florida lakes can be attributed to eutrophication and the resultant undesirable changes in a lake's characteristics, such as excessive plant and algal growth.

Trophic state measurements are used by the City of Orlando as the primary indicator to detect changes over time and to rank lakes by water quality. The Florida Trophic State Index which is based on Chlorophyll-a, Total Nitrogen, and Total Phosphorus concentrations, and is calculated following the procedures outlined by the Florida Department of Environmental Protection on pages 86 and 87 of the State of Florida 1996 305(b) Main Report.

Empirical procedure for calculating the Florida Trophic State Index:

I. Phosphorus-Limited Lakes (TN/TP >30)

$$\text{TSI (AVG)} = 1/2 [\text{TSI (Chl } \underline{a}) + \text{TSI (TP)}],$$

$$\text{Where TSI (Chl } \underline{a}) = 16.8 + 14.4 \ln \text{Chl } \underline{a}, \text{ TSI (TP)} = 23.6 (\ln \text{TP} * 1000) - 23.8$$

II. Nitrogen-Limited Lakes (TN/TP <10)

$$\text{TSI (AVG)} = 1/2 [\text{TSI (Chl } \underline{a}) + \text{TSI (TN)}]$$

$$\text{Where TSI (Chl } \underline{a}) = 16.8 + 14.4 \ln \text{Chl } \underline{a}, \text{ TSI (TN)} = 59.6 + 21.5 \ln (\text{TN} + 0.001)$$

III. Nutrient-Balanced Lakes ( $10 \leq \text{TN/TP} \leq 30$ )

$$\text{TSI (AVG)} = 1/2 [\text{TSI (Chl } \underline{a}) + ((\text{TSI (TP)} + \text{TSI (TN)})/2)]$$

$$\text{Where TSI (Chl } \underline{a}) = 16.8 + 14.4 \ln \text{Chl } \underline{a}, \text{ TSI (TN)} = 56 + 19.8 \ln \text{TN}$$

$$\text{TSI (TP)} = 18.6 \ln (\text{TP} * 1000) - 18.4$$

Based on the Trophic State Index value, the lake is then characterized into one of the four (4) trophic states; oligotrophic, mesotrophic, eutrophic, or hypereutrophic.

A lake which has low nutrient concentrations in the water column will typically have good water transparency because the algae densities are low. These lakes are termed oligotrophic and are generally considered as having excellent water quality. Oligotrophic lakes tend to be deep with abundant oxygen and a small amount of organic material on the bottom. Lakes were assigned an oligotrophic status if their Trophic State Index was less than 40.

Lakes with moderate nutrient levels and water quality characteristics between oligotrophic and eutrophic conditions are termed mesotrophic. Mesotrophic lakes will typically have occasional water quality problems and are generally considered to have good water quality. Lakes were assigned a mesotrophic status if Trophic State Index values were between 40 and 49.

As the nutrient concentration increases in a lake, algae density increases and water transparency decreases. A lake with high levels of nutrients and planktonic algae is termed eutrophic. Eutrophic lakes are highly productive and will have the potential for water quality problems resulting from severe algal blooms that can deplete oxygen and form mucky organic layers on the lake bottom. Lakes were assigned a eutrophic status if Trophic State Index values were between 50 and 69.

Lakes that have reached advanced stages of the eutrophication process are termed hypereutrophic. Characteristics of these lakes include persistent algal blooms, extreme fluctuations in dissolved oxygen, and deep organic muck layers. Hypereutrophic lakes in Orlando tend to be shallow and have mucky sediments from organic material, which is



produced in the lake faster than it can be removed by decomposition processes. Lakes were assigned a hypereutrophic status if Trophic State Index values were greater than 70. The Florida Department of Environmental Protection (FDEP) uses Trophic State Index values to assign a good, fair, or poor rating to Florida lakes. Trophic State Index values between 0 and 59 correspond to good water quality, 60 to 69 is fair, and values 70 or greater indicate poor water quality (Hand, *et al.*, 1990).

Using these criteria, the majority of Orlando lakes have good water quality.

While the process of a lake going from an oligotrophic to a eutrophic state is a natural occurrence, human impact on the lake drainage basin can greatly accelerate this process. When the eutrophication process is accelerated due to human activity such as urbanization, the process is termed cultural eutrophication. Since most water quality problems in Florida can be attributed to cultural eutrophication, the majority of pollution abatement and lake restoration methods attempt to reverse this process through nutrient removal. In the City of Orlando, the major source of nutrients and other pollutants entering lakes originates from stormwater runoff. Since stormwater is recognized as a major source of pollution, Orlando has adopted strict requirements for onsite stormwater treatment and is active in retrofitting public stormwater systems to provide treatment of stormwater runoff.

The fact that a lake is eutrophic does not necessarily mean the condition is manmade and/or undesirable. Many Florida lakes are eutrophic because of naturally occurring high nutrient concentrations in the soils of the watershed. Water quality can be a matter of individual perspective and depend on primary uses for the lake. For example, an oligotrophic lake would be desirable to individuals who swim or ski, while a eutrophic lake is more productive and will tend to support larger populations of fish and wildlife for anglers and bird watchers.

One factor that the Florida Trophic State Index does not use in determining the trophic state of a lake is the biomass of aquatic macrophytes (vascular plants and large non-

planktonic algae, i.e. vegetation). This is a missing feature since the trophic state of a lake is meant to express overall productivity. Aquatic macrophytes can comprise a substantial amount of the productivity in a lake. Lakes that have large densities of aquatic macrophytes may have excellent water quality, but may not be truly oligotrophic because they have high productivity in the form of macrophytes instead of algae. For this reason, the Trophic State Index values should only be used as an indicator of water quality, not the overall trophic condition in lakes that have abundant aquatic macrophytes. Aquatic macrophytes are generally considered desirable because they improve wildlife habitat and can have a positive effect on water quality. An elevated concentration of macrophyte is considered undesirable if it interferes with lake uses, and processes. Some macrophytes, especially exotics such as hydrilla and water hyacinths, have the potential to cause severe water quality problems (such as low dissolved oxygen and high organic loading) if densities are not monitored and controlled.

## CHEMICAL CHARACTERISTICS

In addition to using Trophic State Index values as indicators of water quality, there are numerous other individual chemical constituents that impact water quality. The parameters the City of Orlando includes in its monitoring program and the results of this lake survey are as follows:

**Phosphorus** is an essential nutrient, but in high concentrations, can lead to rapid lake eutrophication resulting in excessive algae and aquatic plant growth. A major source of phosphorus in urban lakes is from stormwater runoff that transports phosphorus to lakes from lawns, driveways, and streets. High levels of phosphorus in a lake may also result from naturally occurring deposits in the soils of a lake watershed.

**Nitrogen** is a nutrient, which along with phosphorus can have a significant impact on the productivity of a lake. Nitrogen can be introduced into a lake from pollution such as stormwater runoff or from natural sources such as rainfall or groundwater. Some types of algae and bacteria are capable of nitrogen fixation, which converts atmospheric nitrogen gas to forms of nitrogen that can be utilized by plants

The ratio of total nitrogen to total phosphorus can be used to determine the limiting nutrient in a lake. The limiting nutrient is the nutrient in low concentration with respect to other nutrients. For example, if algae need 10 parts nitrogen to one (1) part phosphorus and there is an excess of nitrogen with respect to phosphorus, then the addition of nitrogen should not increase growth as long as more phosphorus does not become available. In this case, phosphorus is the limiting nutrient and efforts to decrease productivity should involve phosphorus removal. Determination of the limiting nutrient is generally done using the criteria that a lake with nitrogen to phosphorus ratios greater than 30 is phosphorus limited. Lakes with nitrogen to phosphorus ratios less than 10 are nitrogen limited and lakes with ratios between 10 and 30 are balanced.

**Orthophosphate** is a soluble form of phosphorus that can be directly utilized by algae and aquatic plants, as opposed to total phosphorus, which also measures forms of phosphorus that are temporarily unavailable for plant growth.

**Ammonia** is a nitrogen compound that can be directly utilized by algae and larger aquatic plants.

**Nitrates** and **Nitrites** are inorganic forms of nitrogen that can be utilized by algae, but generally to a lesser degree than ammonia (Wetzel, 1983).

**Specific Conductance** is a measurement of the total amount of ionized substances dissolved in water. High values for conductivity can be natural or caused by land use activities or discharges of contaminated water.

**Chlorophyll-a** is a pigment present in all green plants and is used to measure the densities of planktonic algae. High chlorophyll-a values indicate high planktonic algal densities, which is a result of excessive nutrients in the water. Algal blooms are the most common cause of water quality problems in Orlando lakes. Algae have the potential to change the apparent color of water and result in undesirable appearances such as surface scum. In addition to creating unaesthetic appearances, high algal densities can alter water chemistry such as depleting dissolved oxygen during low light conditions and elevating pH values due to high rates of photosynthesis.

**Biochemical Oxygen Demand (BOD)** is a measure of the potential for oxygen uptake by organic and inorganic materials in the water. Elevated BOD values indicate the presence of high concentrations of oxygen-demanding substances in a lake. High BOD concentrations are undesirable because there is a potential for oxygen depletion, which will result in water quality problems such as fish kills and increased nutrient release from the sediments.

The **pH** value of water is a measure of acidity or basicity. While pure water has a pH value of 7.0 on a scale of 0 (acidic) to 14 (basic), surface waters can vary considerably into the acidic or basic range from natural causes. Lakes with high pH values tend to be eutrophic with the highest values occurring in hypereutrophic lakes. Highly productive lakes tend to have elevated pH values because carbon dioxide concentrations can be reduced in the water column due to high rates of photosynthesis by planktonic algae, which in turn increase the pH.

The **Alkalinity** of a lake refers to the quantity of compounds that shift the pH to the basic side of the pH range. The higher the alkalinity, the more resistance exists for pH shifts to the acidic range. Generally, lakes with an alkalinity below 40 mg/l are considered soft-water lakes and lakes with an alkalinity over 40 mg/l are considered hard-water lakes. Soft-water lakes have reduced resistance to pH changes because of low concentrations of bicarbonates, carbonates, and hydroxides that function as buffering agents. Hard-water lakes tend to be more productive (eutrophic) than soft-water lakes. Alkalinity is a good indicator of a lake's susceptibility to acidification from atmospheric depositions such as acid rain.

**Dissolved Solids** are a measure of the amount of organic and inorganic materials in solution. These materials are mainly bicarbonates, chlorides, sulfates, magnesium, and sodium.

**Total Suspended Solids** and **Volatile Suspended Solids** are measures of solid material suspended in water. Volatile solids indicate the organic fraction of total solids. The higher values for solids were found in lakes with high planktonic algal densities, which indicate that most of the suspended solids materials are composed of algal cells. Suspended solids are important indicators of water quality because high levels entering a lake have the potential to cause severe water quality problems. Pollutants such as heavy metals and phosphorus tend to bind to solids and are carried into lakes via stormwater runoff or from construction activities.

**Turbidity** is the measure of relative clarity of a liquid. It is an optical characteristic of water and is an expression of the amount of light that is scattered by material in the water when a light is shined through the water sample. Material that causes water to be turbid includes clay, silt, finely divided inorganic and organic matter, algae, soluble colored organic compounds, and plankton or other microscopic organisms. High concentrations of particulate matter affect light penetration and productivity, recreational values, and habitat quality, and cause lakes to fill in faster. Particles also provide attachment places for other pollutants, notably metals and bacteria. For this reason, turbidity readings can be used as an indicator of potential pollution in a water body.

**True Color** is an important component of aquatic habitats because of how it affects light in the ecosystem. The light interactions that compose a color measurement may be best understood in the differentiation between apparent and true color. Apparent color is a measurement derived by visually matching the color of an unfiltered sample to a color wheel. Apparent color is more likely to fluctuate as a result of heavy rainfall events due to mixing of the water column and increased turbidity. True color is a measurement taken after the suspended substances have been removed through filtration. Once sunlight reaches a waterbody the radiant energy is primarily reflected, converted to heat, or converted to biochemical energy via photosynthesis based on the color characteristics of the waterbody. The resulting biomass growth and temperature changes affect the availability of habitat, dissolved oxygen, and nutrients.

## **PHYSICAL CHARACTERISTICS**

Morphological features such as size, shape, and depth have significant effects on the water quality of a lake. Most Florida lakes are solution lakes, which were formed through sinkhole activity (Swihart *et al.*, 1984). This is the reason that the majority of Orlando lakes are circular in shape. Other characteristics of solution lakes are highly variable depths and the tendency to undergo fluctuations in water level in response to changes in the groundwater table (Wetzel, 1983).

Size and depth are factors that determine if a lake will develop thermal stratification, which in turn can have an impact on nutrient and dissolved oxygen levels. Thermal stratification is the process in which a lake develops a layer of denser cooler water that underlies a surface layer of less dense, warmer water. The lower layer of water is termed the hypolimnion, the upper warmer layer is the epilimnion and the transitional layer, which acts as a barrier between the two, is the metalimnion. The metalimnion, which is also called a thermocline, is usually identified by a temperature change of 1° Celsius per meter (Wetzel, 1983).

The hypolimnion does not mix with surface waters and tends to become stagnant. The hypolimnion will become anoxic with time, which can cause sediment-bound phosphorus to be released to the water column. Water quality problems can occur when stratification occurs in lakes with nutrient rich bottom sediments. When the metalimnion is eliminated and the nutrient-rich anoxic waters of the hypolimnion mix throughout the lake, algal blooms can occur.

Field data collected during the past several years indicates that stratification is occasionally present in some Orlando lakes. Small differences in temperature between the top and bottom of the water column indicate that most of Orlando's lakes are either not stratified, or weakly stratified the majority of the year. Only a few of the deepest lakes in Orlando develop stable stratification.

The majority of the lakes that exhibited thermal stratification could be classified as polymictic (the lake stratifies and mixes multiple times throughout the year). Lakes with weak stratification mix with a minimum amount of disturbance such as a moderate wind. Data indicated that stratification can be present any time of year and the time of year it occurs, fluctuates on an annual basis. In some previous years, wintertime stratification occurred frequently when cold-water temperatures are followed by calm, warm conditions that only heats lake surfaces.

Even though stratification was usually unstable in our Orlando lakes and did not persist for long periods of time, the hypolimnion tended to become low in oxygen. With the majority of the lakes not exhibiting stable thermal stratification, low dissolved oxygen was common in the lower water columns even during unstratified conditions. Anoxic conditions on the bottom of lakes were common. Most game fish could not survive in the lower levels of these lakes. Even though low dissolved oxygen values were more prevalent in lakes that exhibited thermal stratification, low values were also common in lakes that were not stratified.

Mechanical aeration units, which consist of a compressor and diffuser, are installed to promote the mixing of the water column to avoid stratification and to increase oxygen levels.



## WATER QUALITY TRENDS

The most important reason for having an ongoing water quality program is for the determination of changes in water quality over time. Lakes naturally fluctuate in water chemistry and quality between seasons and from year to year. Differences in factors such as water temperature, sunlight intensity, and rainfall patterns are responsible for these fluctuations. Because of natural and random fluctuations, long-term monitoring data is required to identify overall changes in water quality over time. The City of Orlando has had a comprehensive monitoring program since 1990, so we are becoming increasingly accurate in detecting trends in water quality.

Changes in water quality over time are determined using regression analysis, which is a simple model for the relationship between two variables. The relationships of changes in Florida Trophic State Index values over time are used to determine water quality trends. This analysis generates a regression line, which indicates whether there is a positive or negative relationship between time and water quality, by the slope of the line. Positive slopes indicate increasing trophic states over time, which is undesirable. Negative slopes indicate decreasing trophic states, which indicate improvements.

Regression analysis generates a value called the coefficient of determination ( $R^2$ ), which is used to measure the percent change, which is attributable to time. For example, an  $R^2$  of 0.40 would indicate that 40% of the change observed is correlated to changes in time, and the other 60% of change is due to other factors such as random fluctuations. A coefficient of determination value greater than 0.20 is considered statistically significant by the State of Florida for surface water trends (Swithart, et al. 1984).

Trend determinations for Orlando lakes were done by assigning each lake a status of improving, no trend, or degrading, depending on the line slope and  $R^2$  value for each regression analysis of trophic state over time. Improving trends were assigned to lakes with  $R^2$  values of greater than 0.20 and decreasing trophic states.

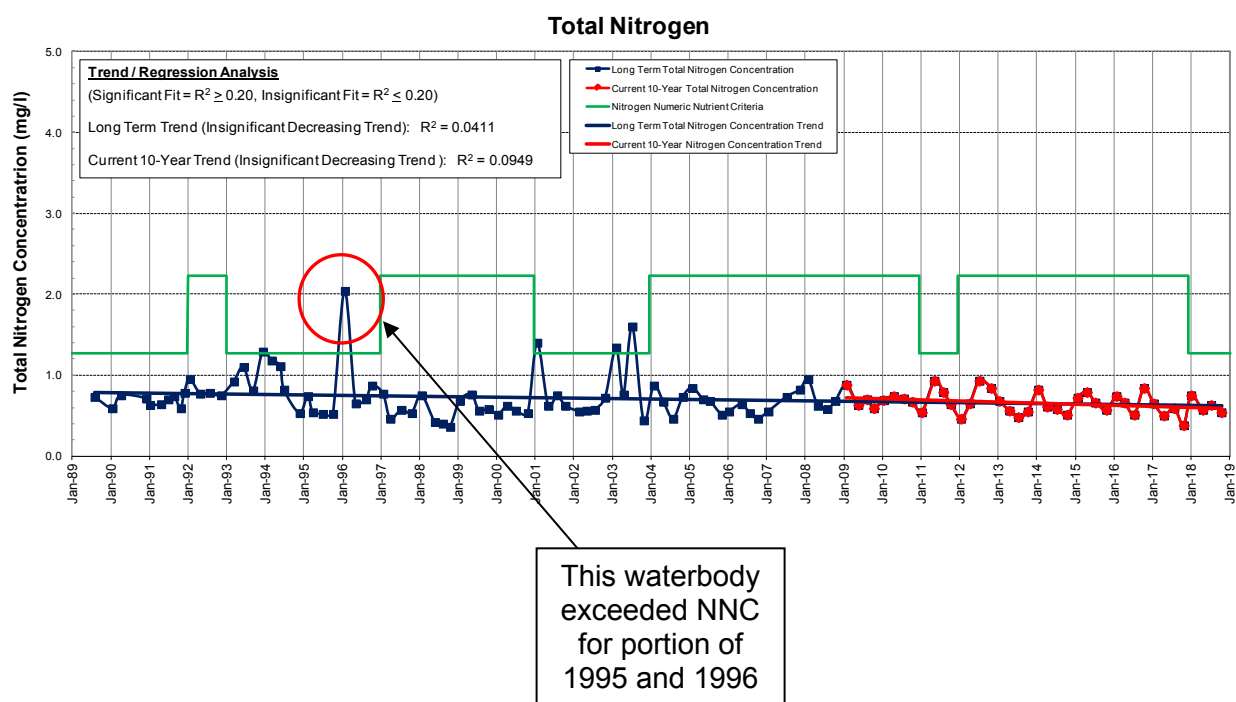
An insignificant trend label (improving or degrading) was assigned if the  $R^2$  value was less than 0.20. A degrading trend was assigned for increasing trophic states and  $R^2$  values greater than 0.20. The majority of lakes had at least 12 years of data with a minimum of 4 sample events per year.

Even though trend analysis indicates that a few lakes are degrading, it is encouraging that the vast majority of Orlando lakes are maintaining their water quality or improving. The number of degrading lakes in Orlando has dropped steadily since 1998 when the number of lakes with declining water quality was 12. That was the first year the City of Orlando began tracking lakes with declining water quality trends. Many of the lakes that had experienced a decline in water quality were identified through data that was collected. Corrective actions were implemented, such as structural retrofits with Best Management Protection (BMP) installations, community education, and increased street sweeping, eventually reversing the water quality decline. Analysis and research continues on the few remaining lakes that are showing negative trends, to determine the factors responsible for the decline, to ensure that appropriate corrective actions may be taken.

## HOW TO INTERPRET NUTRIENT GRAPHS:

When determining the overall health of a lake, nutrient criteria graphs created for this report can be used as a snapshot in quickly evaluating the water quality status following FDEP Numeric Nutrient Criteria (NNC) guidelines. As mentioned earlier in the report, when FDEP is evaluating a waterbody for impairments, they will use an annual mean of each nutrient concentration and assess over a three-year period for determining exceedances. The graphs presented here evaluate the status of the lake and the NNC criteria on a quarterly basis.

Although the nutrient graphs in this document may initially appear confusing, interpreting them is rather straightforward. The most important component of these graphs is the green “Numeric Nutrient Criteria” line that traverses the length of the graph. Wherever the red and blue lines cross above the green nutrient line, the lake was experiencing an exceedance of FDEP’s NNC on that date. The placement of green line in these graphs vary depending on color, alkalinity and chlorophyll-a concentrations.



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**DISCLAIMER:**

**Physical data presented in this appendix is intended for general information only.**

Information presented is based on the best data that was available. Some information included in this appendix was gathered from different sources and methods of collecting data were not always consistent. As such, all information and bathymetric mapping are intended for informational use only and should not be used for purposes such as detailed engineering designs, navigational aids, or surveys. Every effort is being made to ensure the accuracy and dependability of data by updating information using standardized procedures. If you need specific information on the source or methods used to collect data presented in this appendix, please contact the City of Orlando Streets and Stormwater Division at 407.246.2370.

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## Final Average Annual Water Quality Data for City of Orlando Lakes For 2019

Lake	BOD (mg/l)	Alk (mg/l)	pH	SpCond (uS/cm)	DO (mg/l)	DO (% Sat)	Temp (C)	TP (mg/l)	OP (mg/l)	TN (mg/l)	NH3 (mg/l)	NO3 (mg/l)	NO2 (mg/l)	TKN (mg/l)	Color (Pt/Co)	Turb (NTU)	TSS (mg/l)	E. coli (100ml)	SD (m)	Chl-a (mg/m <sup>3</sup> )
Adair	3.4	53.9	7.71	203	7.67	95.1	25.9	0.061	0.005	0.73	0.01	0.00	<0.005	0.73	18	2.95	5.75	27	1.07	38.14
Arnold	2.9	15.0	7.99	172	8.02	100.2	26.3	0.017	<0.002	0.66	0.05	<0.01	<0.005	0.65	9	2.50	4.20	17	1.48	16.86
Baldwin	2.00	62.1	7.29	289	8.61	103.8	25.0	0.013	<0.002	0.49	<0.01	<0.01	<0.005	0.49	13	1.41	2.35	3	2.65	4.60
Barton	<2.0	31.4	7.70	121	8.35	101.4	25.4	0.009	<0.002	0.38	<0.01	<0.01	<0.005	0.38	13	0.73	<2.0	3	3.34	2.14
Bay	2.1	51.1	7.04	185	6.91	87.9	27.9	0.017	0.002	0.62	0.01	0.01	<0.005	0.61	20	1.13	2.25	15	2.00	6.08
Beardall	2.9	99.3	7.36	215	6.30	78.1	25.8	0.068	0.005	0.69	0.05	0.03	0.006	0.66	18	3.78	6.08	18	0.70	24.24
Beauty	2.10	77.2	7.82	249	6.40	77.6	25.7	0.039	0.006	0.40	0.01	0.04	<0.005	0.36	8	1.95	3.05	44	2.05	6.87
Buck	<2.0	15.7	7.16	191	7.49	91.0	25.7	0.014	0.004	0.55	<0.01	<0.01	<0.005	0.55	68	0.91	<2.0	185	1.33	4.67
C	7.2	34.8	7.51	193	10.01	117.4	25.2	0.061	0.005	0.77	0.01	<0.01	<0.005	0.77	21	3.90	10.05	54	0.73	56.33
Cane	<2.0	19.6	7.57	191	8.16	99.8	25.7	0.015	0.002	0.41	<0.01	<0.01	<0.005	0.41	9	2.00	3.05	6	1.87	5.21
Catherine	2.9	75.3	7.83	227	7.39	91.3	26.1	0.044	0.004	0.76	0.01	<0.01	<0.005	0.76	44	2.33	4.60	15	1.22	20.56
Cay Dee North	<2.0	32.4	7.41	102	3.74	44.4	24.8	0.034	0.004	0.64	0.01	<0.01	<0.005	0.64	39	1.51	3.05	47	1.57	15.74
Cay Dee South	2.50	31.6	7.07	132	4.38	52.4	24.7	0.025	0.003	0.60	<0.01	<0.01	<0.005	0.60	38	1.54	2.64	81	1.80	13.01
Cherokee	3.1	65.6	7.53	206	9.25	113.8	25.9	0.043	0.003	0.58	<0.01	<0.01	<0.005	0.58	10	3.33	6.15	37	0.95	17.75
Clear	2.4	67.5	7.71	193	8.20	99.3	25.2	0.027	0.002	0.66	0.01	0.01	<0.005	0.65	10	4.96	6.86	6	1.06	15.22
Como	<2.0	32.0	7.45	95	5.55	67.0	25.5	0.117	0.080	0.47	0.04	0.05	<0.005	0.42	15	1.20	2.10	32	2.40	8.16
Concord	2.4	76.4	7.92	233	8.67	104.7	25.4	0.027	0.002	0.46	<0.01	<0.01	<0.005	0.46	9	2.41	4.45	18	1.17	8.80
Copeland	4.1	58.1	7.93	262	8.95	106.4	25.2	0.037	0.003	0.99	<0.01	<0.01	<0.005	0.99	16	4.98	7.95	50	0.84	15.75
Daniel	2.50	46.5	7.80	197	7.59	91.8	25.0	0.024	0.003	0.53	0.01	<0.01	<0.005	0.53	10	1.90	3.36	50	1.78	10.58
Davis	5.2	60.8	8.41	229	9.66	114.6	23.9	0.082	0.003	1.13	<0.01	<0.01	<0.005	1.12	18	8.63	21.45	318	0.52	38.20
Dot	3.3	67.1	7.75	197	7.18	86.9	25.5	0.048	0.004	0.49	0.01	0.03	0.005	0.46	11	2.96	5.15	76	1.84	15.60
Dover *	3.6	15.0	6.95	136	4.88	56.6	24.6	0.051	0.003	0.68	<0.01	<0.01	<0.005	0.68	33	2.80	5.35	174	0.69	14.70
Druid	<2.0	29.1	7.13	119	5.15	60.0	24.6	0.024	0.003	0.41	0.01	<0.01	<0.005	0.40	16	0.80	2.10	45	2.15	4.94
Emerald	3.8	44.4	8.68	183	9.35	114.2	25.7	0.067	0.003	0.94	<0.01	<0.01	<0.005	0.94	20	5.65	10.30	64	0.72	28.58
Eola	3.2	59.3	7.90	221	8.20	98.4	24.6	0.059	0.003	0.57	0.02	<0.01	<0.005	0.56	100	2.28	4.90	91	0.97	25.90
Estelle East	2.6	69.1	8.27	217	8.14	101.8	26.6	0.021	0.00	0.62	0.03	<0.01	<0.005	0.62	13	1.70	3.30	7	1.93	11.09
Estelle West *	<2.0	70.2	8.31	219	9.05	110.7	25.8	0.021	0.00	0.48	<0.01	<0.01	<0.005	0.47	14	1.31	2.70	8	2.25	6.81
Fairhope *	7.6	62.0	7.30	192	8.04	91.8	22.6	0.165	0.009	1.36	<0.01	<0.01	0.006	1.36	36	11.60	24.00	400	0.38	58.78
Fairview	2.60	55.1	7.85	183	7.83	95.5	25.5	0.017	0.002	0.62	0.01	0.01	<0.005	0.62	9	3.63	5.73	278	1.69	9.27
Farrar	2.2	23.4	7.49	205	8.97	113.0	27.2	0.015	<0.002	0.66	0.02	0.16	<0.005	0.50	9	2.88	4.25	191	1.63	11.73
Formosa	2.4	76.4	8.23	237	9.16	114.2	26.3	0.023	<0.002	0.51	<0.01	<0.01	<0.005	0.51	8	2.05	3.85	15	1.63	10.39
Fran	5.8	74.9	7.63	195	7.06	89.0	26.8	0.110	0.005	1.17	<0.01	<0.01	<0.005	1.17	31	6.70	14.40	125	1.44	41.78
Fredrica	2.0	17.6	7.19	125	7.68	91.9	24.9	0.010	<0.002	0.42	<0.01	<0.01	<0.005	0.42	6	0.48	<2.0	7	3.68	2.47

\* = Lakes with fewer than 4 sample events

BOD = Biochemical Oxygen Demand  
 Alk = Total Alkalinity  
 SpCond = Specific Conductance  
 % Sat = Percent Saturation of Dissolved Oxygen  
 DO = Dissolved Oxygen

Temp = Temperature  
 TP = Total Phosphorus  
 OP = Orthophosphate  
 TN = Total Nitrogen  
 NH3 = Ammonia

NO3 = Nitrate  
 NO2 = Nitrite  
 TKN = Total Kjeldahl Nitrogen  
 Turb = Turbidity  
 Color = True Color

TSS = Total Suspended Solids  
 E. coli = Total E. coli Colonies  
 SD = Secchi Depth  
 Chl-a = Chlorophyll-a (corrected)  
 (<) = Less Than

## Final Average Annual Water Quality Data for City of Orlando Lakes For 2019

Lake	BOD (mg/l)	Alk (mg/l)	pH	SpCond (uS/cm)	DO (mg/l)	DO (% Sat)	Temp (C)	TP (mg/l)	OP (mg/l)	TN (mg/l)	NH3 (mg/l)	NO3 (mg/l)	NO2 (mg/l)	TKN (mg/l)	Color (Pt/Co)	Turb (NTU)	TSS (mg/l)	E. coli (100ml)	SD (m)	Chl-a (mg/m <sup>3</sup> )
G	4.5	31.7	6.88	152	7.85	94.1	25.4	0.066	0.005	0.56	<0.01	<0.01	<0.005	0.56	28	4.33	9.05	45	0.73	22.58
Gear	2.2	63.4	8.01	196	8.31	102.1	25.8	0.027	0.004	0.63	<0.01	<0.01	<0.005	0.62	26	2.51	3.05	39	2.11	10.29
Gem Mary *	3.9	29.5	8.28	256	10.52	130.1	25.9	0.024	0.002	0.98	0.03	0.04	<0.005	0.94	5	6.40	7.85	10	0.83	14.83
George	<2.0	21.8	7.12	142	7.31	87.6	24.9	0.011	<0.002	0.50	<0.01	<0.01	<0.005	0.50	10	1.11	<2.0	15	2.70	2.94
Giles	2.5	19.3	7.71	157	8.74	107.1	25.5	0.021	<0.002	0.55	0.02	<0.01	<0.005	0.55	10	2.08	3.90	13	1.47	12.55
Greenwood	<2.0	54.5	7.19	202	5.44	62.8	24.0	0.089	0.037	0.54	0.04	0.07	0.005	0.47	24	1.66	2.45	111	1.89	5.47
Hiawassee	2.6	50.9	7.52	288	7.62	93.0	25.5	0.026	0.002	0.71	<0.0	0.02	<0.005	0.70	22	1.86	2.80	4	2.06	10.08
Highland	2.6	49.2	7.35	214	7.73	92.7	25.3	0.022	0.003	0.55	<0.01	0.02	<0.005	0.53	10	2.28	3.75	19	2.05	12.96
Holden	<2.0	52.2	7.90	209	8.49	102.2	25.0	0.012	<0.002	0.48	0.01	0.01	<0.005	0.47	8	0.83	2.55	12	2.66	2.86
Ivanhoe East	2.9	77.5	8.16	242	8.31	99.7	25.4	0.028	<0.002	0.60	<0.01	<0.01	<0.005	0.60	12	4.35	5.15	12	1.22	16.41
Ivanhoe Middle	<2.0	66.1	7.82	242	7.57	90.6	25.5	0.016	<0.002	0.39	0.03	<0.01	<0.005	0.39	13	1.45	2.15	3	2.31	4.54
Ivanhoe West	2.8	36.3	7.31	209	6.42	77.2	25.6	0.027	0.002	0.58	0.09	<0.01	<0.005	0.58	9	2.95	4.35	3	2.06	15.49
Kasey	4.7	26.5	7.38	91	7.73	92.2	24.3	0.070	0.004	0.94	<0.01	<0.01	<0.005	0.94	26	5.78	11.50	69	0.68	46.73
Kelly	2.9	34.0	7.80	96	7.66	97.2	27.5	0.047	0.003	0.62	<0.01	<0.01	<0.005	0.62	18	4.43	8.00	149	1.16	15.63
Kozart	7.7	85.9	8.33	235	8.79	106.9	24.7	0.139	0.010	1.61	0.02	<0.01	0.006	1.61	38	13.25	36.50	57	0.44	59.40
Kristy	3.2	37.4	7.30	113	5.84	73.9	27.1	0.039	0.004	0.65	<0.01	0.01	<0.005	0.64	29	2.13	4.05	54	1.46	18.01
Lake of the Woods *	4.2	89.4	7.54	247	5.59	65.4	22.8	0.104	0.013	0.64	0.04	0.10	0.007	0.53	13	6.80	10.55	57	0.43	34.58
Lancaster	3.6	46.7	7.90	186	8.81	109.1	26.5	0.032	0.003	0.68	0.01	0.03	<0.005	0.67	13	109.00	7.38	28	0.84	22.28
Lawne	3.2	66.5	7.32	190	5.74	69.4	25.5	0.063	0.005	1.02	<0.01	<0.01	<0.005	1.01	93	4.35	6.50	24	0.72	26.45
Lawsona	4.1	44.8	7.47	170	8.17	98.4	24.9	0.075	0.003	0.81	<0.01	<0.01	<0.005	0.81	19	5.88	12.85	133	0.73	30.30
Little Lake Fairview	2.1	59.1	7.71	190	7.48	90.6	25.4	0.015	0.002	0.47	0.01	<0.01	<0.005	0.47	11	0.79	<2.0	9	2.18	3.87
Lorna Doone	2.4	53.2	7.90	148	8.04	95.2	23.6	0.026	0.004	0.69	<0.01	0.02	<0.005	0.67	11	1.41	2.65	5	2.80	11.76
Lucerne East *	2.2	66.2	8.16	214	8.11	94.4	23.4	0.033	0.004	0.39	0.01	0.01	<0.005	0.39	6	1.90	2.68	99	2.55	9.62
Lucerne West	3.4	92.5	8.08	279	8.83	99.0	20.9	0.078	0.004	0.57	0.01	0.01	<0.005	0.57	7	6.44	9.92	46	0.79	23.82
Lurna	2.3	58.7	7.37	182	6.70	81.9	26.5	0.046	0.005	0.50	0.01	0.02	<0.005	0.49	10	2.23	2.90	27	1.75	12.94
Mann	2.2	67.9	7.99	183	6.40	74.9	25.0	0.018	<0.002	0.62	0.01	<0.01	<0.005	0.62	14	1.28	3.68	6	1.82	3.84
Mare Prairie *	2.6	34.6	7.34	200	7.20	84.7	23.9	0.030	0.004	0.72	<0.01	<0.01	<0.005	0.72	49	1.58	3.20	11	1.75	8.69
Michelle	3.1	47.9	7.35	181	7.50	90.0	24.9	0.053	0.005	0.81	<0.01	<0.01	<0.005	0.81	93	2.95	5.60	19	0.79	21.88
Mud	<2.0	19.3	7.00	100	7.54	92.3	26.1	0.030	0.005	0.72	<0.01	<0.01	<0.005	0.72	120	3.40	2.90	5	0.58	5.48
Nona	<2.0	4.9	7.06	167	8.03	97.4	25.5	0.007	<0.002	0.34	<0.01	<0.01	<0.005	0.34	11	0.68	2.08	<2.0	2.57	1.00

\* = Lakes with fewer than 4 sample events

<p>BOD = Biochemical Oxygen Demand                  Alk = Total Alkalinity                  SpCond = Specific Conductance                  % Sat = Percent Saturation of Dissolved Oxygen                  DO = Dissolved Oxygen</p>	<p>Temp = Temperature                  TP = Total Phosphorus                  OP = Orthophosphate                  TN = Total Nitrogen                  NH3 = Ammonia</p>	<p>NO3 = Nitrate                  NO2 = Nitrite                  TKN = Total Kjeldahl Nitrogen                  Turb = Turbidity                  Color = True Color</p>	<p>TSS = Total Suspended Solids                  E. coli = Total E. coli Colonies                  SD = Secchi Depth                  Chl-a = Chlorophyll-a (corrected)                  (&lt;) = Less Than</p>
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## Final Average Annual Water Quality Data for City of Orlando Lakes For 2019

Lake	BOD (mg/l)	Alk (mg/l)	pH	SpCond (uS/cm)	DO (mg/l)	DO (% Sat)	Temp (C)	TP (mg/l)	OP (mg/l)	TN (mg/l)	NH3 (mg/l)	NO3 (mg/l)	NO2 (mg/l)	TKN (mg/l)	Color (Pt/Co)	Turb (NTU)	TSS (mg/l)	E. coli (100ml)	SD (m)	Chl-a (mg/m3)
Olive	3.2	56.9	7.22	204	6.96	85.6	25.1	0.073	0.007	0.67	<0.01	<0.01	<0.005	0.67	20	3.08	5.70	84	0.93	20.17
Orlando	3.6	55.6	7.49	165	7.44	92.3	26.5	0.061	0.005	0.86	<0.01	<0.01	<0.005	0.86	49	4.01	7.58	38	0.93	25.23
Pamela	<2.0	32.5	7.10	210	6.10	74.4	25.7	0.017	<0.002	0.69	0.01	<0.01	<0.005	0.68	50	0.86	<2.0	1324	1.37	4.53
Park	2.9	39.4	7.42	133	6.87	81.3	25.3	0.044	0.003	0.73	0.06	<0.01	<0.005	0.72	10	4.35	5.55	66	1.21	20.98
Pineloch	3.7	50.3	8.36	193	9.48	115.7	25.7	0.016	<0.002	0.58	<0.01	<0.01	<0.005	0.58	5	4.88	8.15	21	0.89	21.89
Porter	<2.0	21.1	7.13	191	7.86	94.1	24.8	0.011	<0.002	0.32	<0.01	<0.01	<0.005	0.32	5	0.95	<2.0	5	3.02	3.74
Rabama	2.2	44.1	7.00	177	5.21	61.7	24.5	0.061	0.027	0.58	0.07	0.02	<0.005	0.57	23	1.61	2.55	133	2.27	6.09
Red	<2.0	8.2	6.87	174	7.58	91.8	25.7	0.013	<0.002	0.49	<0.01	<0.01	<0.005	0.49	51	0.90	<2.0	6	1.87	2.80
Richmond	9.6	58.2	8.41	154	7.86	95.1	25.6	0.095	0.014	2.18	0.02	<0.01	0.005	2.17	18	22.75	41.50	31	0.35	76.40
Rock	<2.0	29.2	7.67	111	7.65	94.3	26.3	0.025	0.00	0.52	0.02	0.02	<0.005	0.50	9	1.31	<2.0	20	1.84	9.18
Rowena	2.8	63.3	8.35	213	9.66	120.0	26.3	0.024	0.00	0.52	<0.01	<0.01	<0.005	0.52	9	2.20	6.65	15	1.32	15.80
Sandy	<2.0	65.4	7.51	266	7.26	85.1	23.5	0.067	0.035	0.63	0.06	0.11	0.006	0.51	25	2.87	2.73	312	1.93	2.05
Santiago	5.0	36.3	6.88	191	7.95	97.4	25.7	0.037	0.004	0.63	<0.01	<0.01	<0.005	0.63	21	3.85	7.85	72	0.94	22.43
Sarah	2.4	44.5	7.46	201	6.92	83.6	24.8	0.019	0.00	0.51	<0.01	<0.01	<0.005	0.51	16	1.29	2.24	16	1.61	7.79
Shannon	<2.0	18.9	7.42	143	8.35	100.6	24.9	0.015	<0.002	0.60	0.02	0.01	<0.005	0.58	16	2.63	3.80	9	1.67	7.21
Silver	2.10	49.0	7.93	197	7.80	97.0	26.6	0.018	0.00	0.50	<0.01	<0.01	<0.005	0.50	11	1.44	2.44	6	2.19	6.58
Spring Lake NW	2.80	43.9	7.49	192	7.34	86.9	25.1	0.040	0.003	0.74	<0.01	<0.01	<0.005	0.74	19	2.15	3.50	6	1.34	18.70
Spring Lake SW *	<2.0	55.1	7.70	299	8.06	97.8	25.3	0.014	<0.002	0.56	<0.01	<0.01	<0.005	0.55	16	1.09	<2.0	5	2.52	3.21
Sue	2.50	56.5	8.18	211	8.77	108.6	26.3	0.019	<0.002	0.56	<0.01	0.01	<0.005	0.55	9	2.85	4.80	6	1.54	13.49
Sunset	<2.0	56.9	7.78	154	7.71	93.2	25.2	0.018	<0.002	0.49	<0.01	<0.01	<0.005	0.49	10	1.05	<2.0	4	2.35	6.00
Susannah	<2.0	38.8	7.66	274	7.63	90.5	24.4	0.010	0.00	0.42	<0.01	<0.01	<0.005	0.42	25	0.44	<2.0	5	3.04	2.01
Tennessee	<2.0	43.1	7.27	209	7.28	89.2	25.4	0.023	<0.002	0.51	<0.01	0.02	<0.005	0.49	10	1.33	2.65	52	2.26	6.01
Terrace	3.10	37.1	7.78	205	8.01	98.6	25.6	0.062	0.003	0.83	0.05	0.08	<0.005	0.74	10	6.35	8.00	59	0.92	30.58
Theresa *	4.4	65.7	7.41	174	5.48	64.6	24.7	0.070	0.005	0.83	<0.01	<0.01	<0.005	0.83	26	3.85	6.95	119	0.85	28.30
Turkey	<2.0	35.9	7.47	196	7.59	92.0	25.6	0.021	0.002	0.60	<0.01	<0.01	<0.005	0.60	35	1.61	2.48	7	1.95	5.34
Underhill	<2.0	40.8	7.64	139	7.71	91.50	24.9	0.015	<0.002	0.43	<0.01	<0.01	<0.005	0.43	9	0.93	<2.0	7	2.61	3.40
Wade	4.9	50.0	7.43	198	9.80	118.50	25.4	0.058	0.004	0.76	<0.01	0.06	0.005	0.70	14	4.78	10.55	85	0.95	29.23
Walker	4.8	55.7	7.80	135	8.37	103.8	26.3	0.091	0.003	0.84	<0.01	<0.01	<0.005	0.84	15	7.33	16.78	33	0.49	39.52
Warren	<2.0	15.5	7.19	117	4.63	55.3	24.6	0.028	0.011	0.83	0.02	<0.01	<0.005	0.83	113	0.85	<2.0	43	1.10	4.94
Weldona	4.3	35.0	8.39	191	9.68	120.1	26.1	0.066	0.003	0.93	<0.01	<0.01	<0.005	0.93	18	7.25	13.23	29	0.67	33.78
Winyah	2.5	77.2	7.71	238	8.35	100.1	24.4	0.027	0.003	0.55	0.01	0.08	0.005	0.45	18	13.32	4.40	37	1.42	11.33

\* = Lakes with fewer than 4 sample events

BOD = Biochemical Oxygen Demand	Temp = Temperature	NO3 = Nitrate	TSS = Total Suspended Solids
Alk = Total Alkalinity	TP = Total Phosphorus	NO2 = Nitrite	E. Coli = Total E. Coli Colonies
SpCond = Specific Conductance	OP = Orthophosphate	TKN = Total Kjeldahl Nitrogen	SD = Secchi Depth
% Sat = Percent Saturation of Dissolved Oxygen	TN = Total Nitrogen	Turb = Turbidity	Chl-a = Chlorophyll-a (corrected)
DO = Dissolved Oxygen	NH3 = Ammonia	Color = True Color	( < ) = Less Than

## 2019 Trophic State Index Ranking for City of Orlando Lakes

(Information based on average Trophic State Index scores in 2019)

TSI Rank	Lake Name	TSI (FL)	T.P. mg/L	T.N. mg/L	Chlorophyll-a mg/m <sup>3</sup>	Secchi Depth meters	Trophic State
1	Nona	18.61	0.007	0.34	1.00	2.57	OLIGOTROPHIC
2	Barton	26.62	0.009	0.38	2.14	3.34	OLIGOTROPHIC
3	Susannah	27.87	0.010	0.42	2.01	3.04	OLIGOTROPHIC
4	Fredrica	28.94	0.010	0.42	2.47	3.68	OLIGOTROPHIC
5	Porter	30.65	0.011	0.32	3.74	3.02	OLIGOTROPHIC
6	George	32.15	0.011	0.50	2.94	2.70	OLIGOTROPHIC
7	Red	32.81	0.013	0.49	2.80	1.87	OLIGOTROPHIC
8	Holden	33.08	0.012	0.48	2.86	2.66	OLIGOTROPHIC
9	Spring Lake Southwest	33.74	0.014	0.56	3.21	2.52	OLIGOTROPHIC
10	Underhill	34.56	0.015	0.43	3.40	2.61	OLIGOTROPHIC
11	Baldwin	35.02	0.013	0.49	4.60	2.65	OLIGOTROPHIC
12	Little Lake Fairview	35.49	0.015	0.47	3.87	2.18	OLIGOTROPHIC
13	Ivanhoe Middle	36.24	0.016	0.39	4.54	2.31	OLIGOTROPHIC
14	Mann	36.45	0.018	0.62	3.84	1.82	OLIGOTROPHIC
15	Cane	36.48	0.015	0.41	5.21	1.87	OLIGOTROPHIC
16	Sandy	37.80	0.067	0.63	2.05	1.93	OLIGOTROPHIC
17	Buck	38.54	0.014	0.55	4.67	1.33	OLIGOTROPHIC
18	Beauty	38.65	0.039	0.40	6.87	2.05	OLIGOTROPHIC
19	Druid	38.83	0.024	0.41	4.94	2.15	OLIGOTROPHIC
20	Pamela	38.98	0.017	0.69	4.53	1.37	OLIGOTROPHIC
21	Sunset	39.43	0.018	0.49	6.00	2.35	OLIGOTROPHIC
22	Como	39.76	0.117	0.47	8.16	2.40	OLIGOTROPHIC
23	Shannon	40.06	0.015	0.60	7.21	1.67	MESOTROPHIC
24	Tennessee	40.47	0.023	0.51	6.01	2.26	MESOTROPHIC
25	Lucerne East *	41.01	0.033	0.39	9.62	2.55	MESOTROPHIC
26	Turkey	41.07	0.021	0.60	5.34	1.95	MESOTROPHIC
27	Greenwood	41.12	0.089	0.54	5.47	1.89	MESOTROPHIC
28	Silver	41.56	0.018	0.50	6.58	2.19	MESOTROPHIC
29	Estelle West *	41.65	0.021	0.48	6.81	2.25	MESOTROPHIC
30	Bay	42.01	0.017	0.62	6.08	2.00	MESOTROPHIC
31	Rock	42.84	0.025	0.52	9.18	1.84	MESOTROPHIC
32	Rabama	43.00	0.061	0.58	6.09	2.27	MESOTROPHIC
33	Ivanhoe West	43.01	0.027	0.58	15.49	2.06	MESOTROPHIC
34	Sarah	43.02	0.020	0.51	7.79	1.61	MESOTROPHIC
35	Mud	43.53	0.030	0.72	5.48	0.58	MESOTROPHIC
36	Warren	43.99	0.028	0.83	4.94	1.10	MESOTROPHIC
37	Hiawassee	44.35	0.026	0.71	10.08	2.06	MESOTROPHIC
38	Concord	44.40	0.027	0.46	8.80	1.17	MESOTROPHIC
39	Highland	44.89	0.022	0.55	12.96	2.05	MESOTROPHIC
40	Giles	45.17	0.021	0.55	12.55	1.47	MESOTROPHIC
41	Daniel	45.29	0.024	0.53	10.58	1.78	MESOTROPHIC
42	Fairview	45.45	0.017	0.62	9.27	1.69	MESOTROPHIC
43	Estelle East	45.56	0.021	0.62	11.09	1.93	MESOTROPHIC
44	Farrar *	45.65	0.015	0.66	11.73	1.63	MESOTROPHIC
45	Formosa	45.73	0.023	0.51	10.39	1.63	MESOTROPHIC
46	Lorna Doone	46.06	0.026	0.69	11.76	2.80	MESOTROPHIC
47	Cay Dee South	46.07	0.025	0.60	13.01	1.80	MESOTROPHIC

\* = Lakes with less than 4 sample events

## 2019 Trophic State Index Ranking for City of Orlando Lakes

(Information based on average Trophic State Index scores in 2019)

TSI Rank	Lake Name	TSI (FL)	T.P. mg/L	T.N. mg/L	Chlorophyll-a mg/m <sup>3</sup>	Secchi Depth meters	Trophic State
48	Cay Dee North	46.41	0.034	0.64	15.74	1.57	MESOTROPHIC
49	Mare Prairie	47.18	0.030	0.72	8.69	1.75	MESOTROPHIC
50	Gear	47.30	0.027	0.63	10.29	2.11	MESOTROPHIC
51	Sue	47.62	0.019	0.56	13.49	1.54	MESOTROPHIC
52	Winyah	47.88	0.027	0.55	11.33	1.42	MESOTROPHIC
53	Pineloch	48.16	0.016	0.58	21.89	0.89	MESOTROPHIC
54	Lurna	48.40	0.046	0.50	12.94	1.75	MESOTROPHIC
55	Arnold	48.50	0.017	0.66	16.86	1.48	MESOTROPHIC
56	Rowena	49.08	0.024	0.52	15.80	1.32	MESOTROPHIC
57	Dot	49.60	0.048	0.49	15.60	1.84	MESOTROPHIC
58	Ivanhoe East	50.42	0.028	0.60	16.41	1.22	EUTROPHIC
59	Clear	50.57	0.027	0.66	15.22	1.06	EUTROPHIC
60	Gem Mary *	50.70	0.024	0.98	14.83	0.83	EUTROPHIC
61	Dover *	51.33	0.051	0.68	14.70	0.69	EUTROPHIC
62	Kristy	52.18	0.039	0.65	18.01	1.46	EUTROPHIC
63	Cherokee	52.92	0.043	0.58	17.75	0.95	EUTROPHIC
64	Kelly	52.93	0.047	0.62	15.63	1.16	EUTROPHIC
65	Olive	53.15	0.073	0.67	20.17	0.93	EUTROPHIC
66	Spring Lake Northwest	53.54	0.040	0.74	18.70	1.34	EUTROPHIC
67	G	54.14	0.066	0.56	22.58	0.73	EUTROPHIC
68	Lucerne West	54.22	0.08	0.57	23.82	0.79	EUTROPHIC
69	Santiago	54.24	0.037	0.63	22.43	0.94	EUTROPHIC
70	Copeland	54.53	0.037	0.99	15.75	0.84	EUTROPHIC
71	Eola	54.53	0.059	0.57	25.90	0.97	EUTROPHIC
72	Catherine	54.68	0.044	0.76	20.56	1.22	EUTROPHIC
73	Lancaster	55.04	0.032	0.68	22.28	0.84	EUTROPHIC
74	Park	55.05	0.044	0.73	20.98	1.21	EUTROPHIC
75	Beardall	55.58	0.068	0.69	24.24	0.70	EUTROPHIC
76	Michelle	57.01	0.053	0.81	21.88	0.79	EUTROPHIC
77	Lake of the Woods *	57.08	0.104	0.64	34.58	0.43	EUTROPHIC
78	Wade	57.90	0.058	0.76	29.23	0.95	EUTROPHIC
79	Terrace	58.29	0.062	0.83	30.58	0.92	EUTROPHIC
80	Theresa	58.87	0.070	0.83	28.30	0.85	EUTROPHIC
81	Orlando	58.94	0.061	0.86	25.23	0.93	EUTROPHIC
82	Adair	59.03	0.061	0.73	38.14	1.07	EUTROPHIC
83	Emerald *	59.69	0.067	0.94	28.58	0.72	EUTROPHIC
84	Lawne	60.00	0.063	1.02	26.45	0.72	EUTROPHIC
85	Lawsona	60.30	0.075	0.81	30.30	0.73	EUTROPHIC
86	Weldona	60.62	0.066	0.93	33.78	0.67	EUTROPHIC
87	Walker	62.33	0.091	0.84	39.52	0.49	EUTROPHIC
88	C	62.48	0.061	0.77	56.33	0.73	EUTROPHIC
89	Davis	63.19	0.082	1.13	38.20	0.52	EUTROPHIC
90	Kasey	63.82	0.070	0.94	46.73	0.68	EUTROPHIC
91	Fran	65.73	0.110	1.17	41.78	1.44	EUTROPHIC
92	Fairhope *	70.69	0.165	1.36	58.78	0.38	HYPEREUTROPHIC
93	Kozart	71.72	0.139	1.61	59.40	0.44	HYPEREUTROPHIC
94	Richmond	73.74	0.095	2.18	76.40	0.35	HYPEREUTROPHIC

\* = Lakes with less than 4 sample events

## 2019 Improving / Degrading Long Term Trend Analysis on City of Orlando Lakes

(Information Based on Long Term Average of Trophic State Index Scores through 2019)

LAKE NAME	TREND	R <sup>2</sup> VALUE
These lakes showed an <b>Improving Trend</b> But are only labeled as Improving if R <sup>2</sup> is ≥ 0.20		
Holden	Improving	0.7857
Underhill	Improving	0.6163
Susannah	Improving	0.5620
Clear	Improving	0.5414
Lawne	Improving	0.4587
Red	Improving	0.4042
Lurna	Improving	0.3973
Rabama	Improving	0.3738
Ivanhoe West	Improving	0.3533
Ivanhoe Middle	Improving	0.3259
Rowena	Improving	0.3250
Spring Lake	Improving	0.3191
Lorna Doone	Improving	0.3055
Sandy	Improving	0.2952
Winyah	Improving	0.2910
Baldwin	Improving	0.2887
Barton	Improving	0.2804
Lucerne East	Improving	0.2506
Beauty	Improving	0.2478
Cherokee	Improving	0.2478
Estelle West	Improving	0.2248
Como	Improving	0.2167
Estelle East	Improving	0.2107
Arnold	Improving	0.2035
Greenwood	Insignificant	0.1946
Fredrica	Insignificant	0.1935
Lucerne West	Insignificant	0.1798
Davis	Insignificant	0.1695
Giles	Insignificant	0.1562
Formosa	Insignificant	0.1534
Sarah	Insignificant	0.1529
Emerald	Insignificant	0.1513
Ivanhoe East	Insignificant	0.1487
Sunset	Insignificant	0.1281
Adair	Insignificant	0.1259
Bay	Insignificant	0.1252
Mann	Insignificant	0.1145
Concord	Insignificant	0.1113
Copeland	Insignificant	0.1041
Orlando	Insignificant	0.0971
Sue	Insignificant	0.0957
Eola	Insignificant	0.0943
Highland	Insignificant	0.0914
George	Insignificant	0.0863
Porter	Insignificant	0.0859
Olive	Insignificant	0.0797
Walker	Insignificant	0.0758
Tennessee	Insignificant	0.0707
Pamela	Insignificant	0.0666
Druid	Insignificant	0.0644
Lawsona	Insignificant	0.0612
Mud	Insignificant	0.0597
G	Insignificant	0.0549
Catherine	Insignificant	0.0528
Fairview	Insignificant	0.0393

LAKE NAME	TREND	R <sup>2</sup> VALUE
These lakes showed an <b>Improving Trend</b> But are only labeled as Improving if R <sup>2</sup> is ≥ 0.20		
Turkey	Insignificant	0.0324
Daniel	Insignificant	0.0297
Park	Insignificant	0.0279
Buck	Insignificant	0.0258
Cay Dee South	Insignificant	0.0251
Terrace	Insignificant	0.0250
Farrar	Insignificant	0.0214
Pineloch	Insignificant	0.0205
Silver	Insignificant	0.0147
Dot	Insignificant	0.0138
Lancaster	Insignificant	0.0134
Gem Mary	Insignificant	0.0104
Spring Lake	Insignificant	0.0073
Warren	Insignificant	0.0066
Santiago	Insignificant	0.0061
Wade	Insignificant	0.0061
Nona	Insignificant	0.0058
Kozart	Insignificant	0.0016
Lake of the Woods	Insignificant	0.0008
Fairhope	Insignificant	0.0003
Rock	Insignificant	0.0003
Hiawassee	Insignificant	0.0000

LAKE NAME	TREND	R <sup>2</sup> VALUE
These lakes showed a <b>Degrading Trend</b> But are only labeled as Degrading if R <sup>2</sup> is ≥ 0.20		
Cane	Insignificant	0.0000
Mare Prairie	Insignificant	0.0002
Michelle	Insignificant	0.0021
Kristy	Insignificant	0.0043
Weldona	Insignificant	0.0056
Gear	Insignificant	0.0132
Kasey	Insignificant	0.0315
Cay Dee North	Insignificant	0.0349
Richmond	Insignificant	0.0560
Beardall	Insignificant	0.0755
C	Insignificant	0.0782
Kelly	Insignificant	0.1037
Shannon	Insignificant	0.1251
Theresa	Insignificant	0.1630
Dover	Degrading	0.2031
Little Lake Fairview	Degrading	0.2311
Fran	Degrading	0.3170

2019 LONG TERM TREND SUMMARY		
	Quantity	Percentage
Lakes with Significant Improvement	<b>24</b>	<b>25.5%</b>
Lakes with Insignificant Improvement	<b>53</b>	<b>56.4%</b>
Lakes with Significant Degradation	<b>3</b>	<b>3.2%</b>
Lakes with Insignificant Degradation	<b>14</b>	<b>14.9%</b>
Total Lakes in Analysis (Lakes with ≥ 5 years of data)	<b>94</b>	

## 2019 Improving / Degrading 10-Year Term Trend Analysis on City of Orlando Lakes

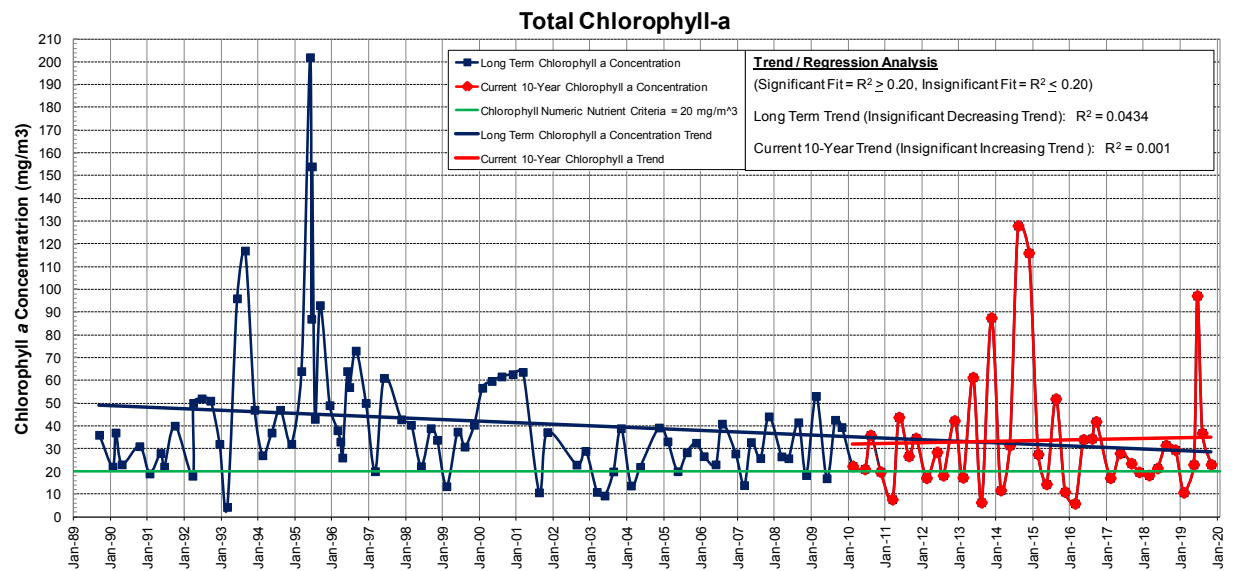
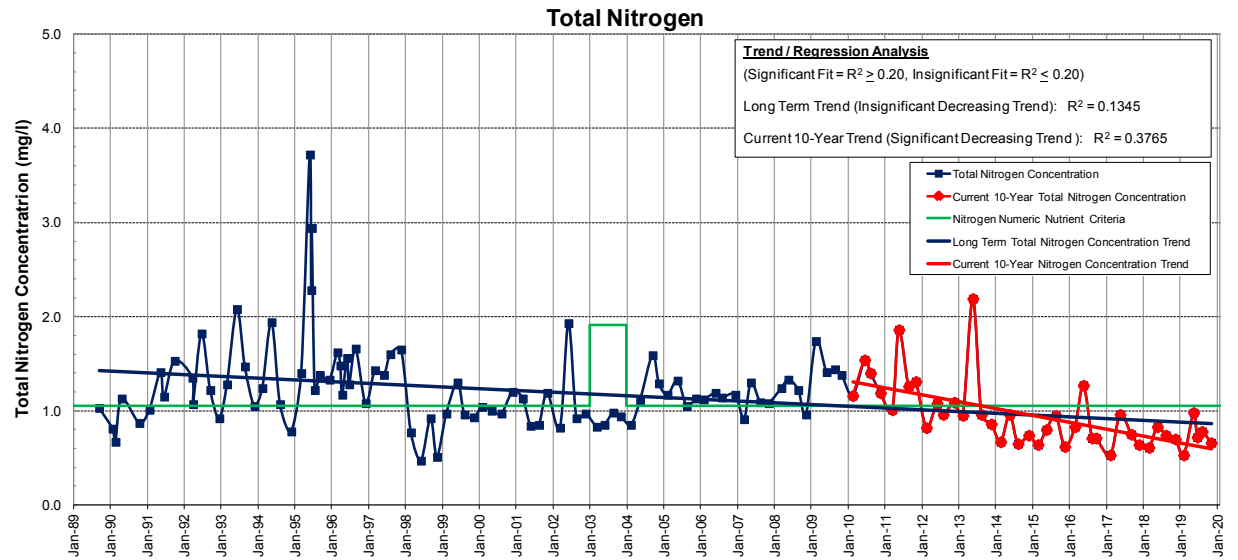
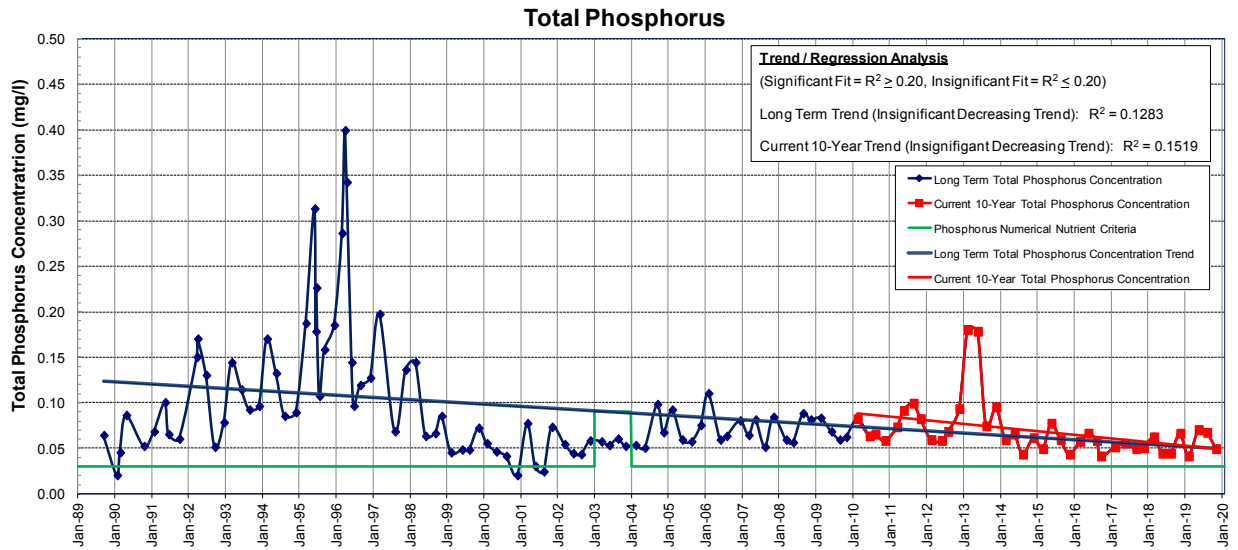
(Information Based on Long Term Average of Trophic State Index Scores through 2019)

LAKE NAME	TREND	R <sup>2</sup> VALUE
These lakes showed an <b>Improving Trend</b> But are only labeled as Improving if R <sup>2</sup> is ≥ 0.20		
Bay	Improving	0.7857
Mare Prairie	Improving	0.6163
Ivanhoe Middle	Improving	0.5620
Winyah	Improving	0.5414
Sandy	Improving	0.4587
Estelle West	Improving	0.3086
Mann	Improving	0.2800
Ivanhoe West	Improving	0.2151
Weldona	Improving	0.2118
Concord	Improving	0.2061
Susannah	Insignificant	0.1933
Rock	Insignificant	0.1838
Greenwood	Insignificant	0.1264
Lancaster	Insignificant	0.1217
Tennessee	Insignificant	0.1140
Highland	Insignificant	0.1127
Formosa	Insignificant	0.1094
Red	Insignificant	0.0892
Adair	Insignificant	0.0645
G	Insignificant	0.0455
Rowena	Insignificant	0.0371
Druid	Insignificant	0.0301
Silver	Insignificant	0.0300
Lake of the Woods	Insignificant	0.0244
Sunset	Insignificant	0.0231
Daniel	Insignificant	0.0222
Sarah	Insignificant	0.0192
Beardall	Insignificant	0.0189
Estelle East	Insignificant	0.0181
Terrace	Insignificant	0.0162
Lawsona	Insignificant	0.0146
Spring Lake	Insignificant	0.0141
Gem Mary	Insignificant	0.0136
Baldwin	Insignificant	0.0126
Hiawassee	Insignificant	0.0123
Walker	Insignificant	0.0123
Giles	Insignificant	0.0083
Lawne	Insignificant	0.0058
Lorna Doone	Insignificant	0.0056
Lucerne West	Insignificant	0.0019
Orlando	Insignificant	0.0019
Wade	Insignificant	0.0009
Como	Insignificant	0.0007
Lurna	Insignificant	0.0004
Kristy	Insignificant	0.0001
Porter	Insignificant	0.0000
LAKE NAME	TREND	R <sup>2</sup> VALUE
These lakes showed a <b>Degrading Trend</b> But are only labeled as Degrading if R <sup>2</sup> is ≥ 0.20		
Copeland	Insignificant	0.0001
Warren	Insignificant	0.0002
Underhill	Insignificant	0.0004
Dover	Insignificant	0.0005
C	Insignificant	0.0006
Davis	Insignificant	0.0006

LAKE NAME	TREND	R <sup>2</sup> VALUE
These lakes showed an <b>Improving Trend</b> But are only labeled as Improving if R <sup>2</sup> is ≥ 0.20		
Shannon	Insignificant	0.0028
Pamela	Insignificant	0.0051
Nona	Insignificant	0.0064
Olive	Insignificant	0.0065
Arnold	Insignificant	0.0084
Eola	Insignificant	0.0100
Santiago	Insignificant	0.0122
Fredrica	Insignificant	0.0135
Michelle	Insignificant	0.0139
Fairhope	Insignificant	0.0149
Park	Insignificant	0.0176
Kasey	Insignificant	0.0219
Dot	Insignificant	0.0233
Kozart	Insignificant	0.0310
Cane	Insignificant	0.0317
Mud	Insignificant	0.0369
Lucerne East	Insignificant	0.0384
Sue	Insignificant	0.0402
Cay Dee North	Insignificant	0.0425
Emerald	Insignificant	0.0485
Gear	Insignificant	0.0540
Cay Dee South	Insignificant	0.0547
Catherine	Insignificant	0.0629
Holden	Insignificant	0.0646
George	Insignificant	0.0686
Farrar	Insignificant	0.0709
Beauty	Insignificant	0.0730
Fran	Insignificant	0.0817
Barton	Insignificant	0.0829
Ivanhoe East	Insignificant	0.0941
Cherokee	Insignificant	0.0978
Theresa	Insignificant	0.1101
Richmond	Insignificant	0.1196
Rabama	Insignificant	0.1365
Fairview	Insignificant	0.1484
Kelly	Insignificant	0.1777
Little Lake Fairview	Insignificant	0.1856
Pineloch	Degrading	0.2270
Clear	Degrading	0.2383
Buck	Degrading	0.2471
Spring Lake	Degrading	0.2569
Turkey	Degrading	0.3118

2019 LONG TERM TREND SUMMARY		
	Quantity	Percentage
Lakes with Significant Improvement	<b>24</b>	<b>25.5%</b>
Lakes with Insignificant Improvement	<b>53</b>	<b>56.4%</b>
Lakes with Significant Degradation	<b>3</b>	<b>3.2%</b>
Lakes with Insignificant Degradation	<b>14</b>	<b>14.9%</b>
Total Lakes in Analysis (Lakes with ≥ 5 years of data)	<b>94</b>	

# LAKE ADAIR NUTRIENT TRENDS

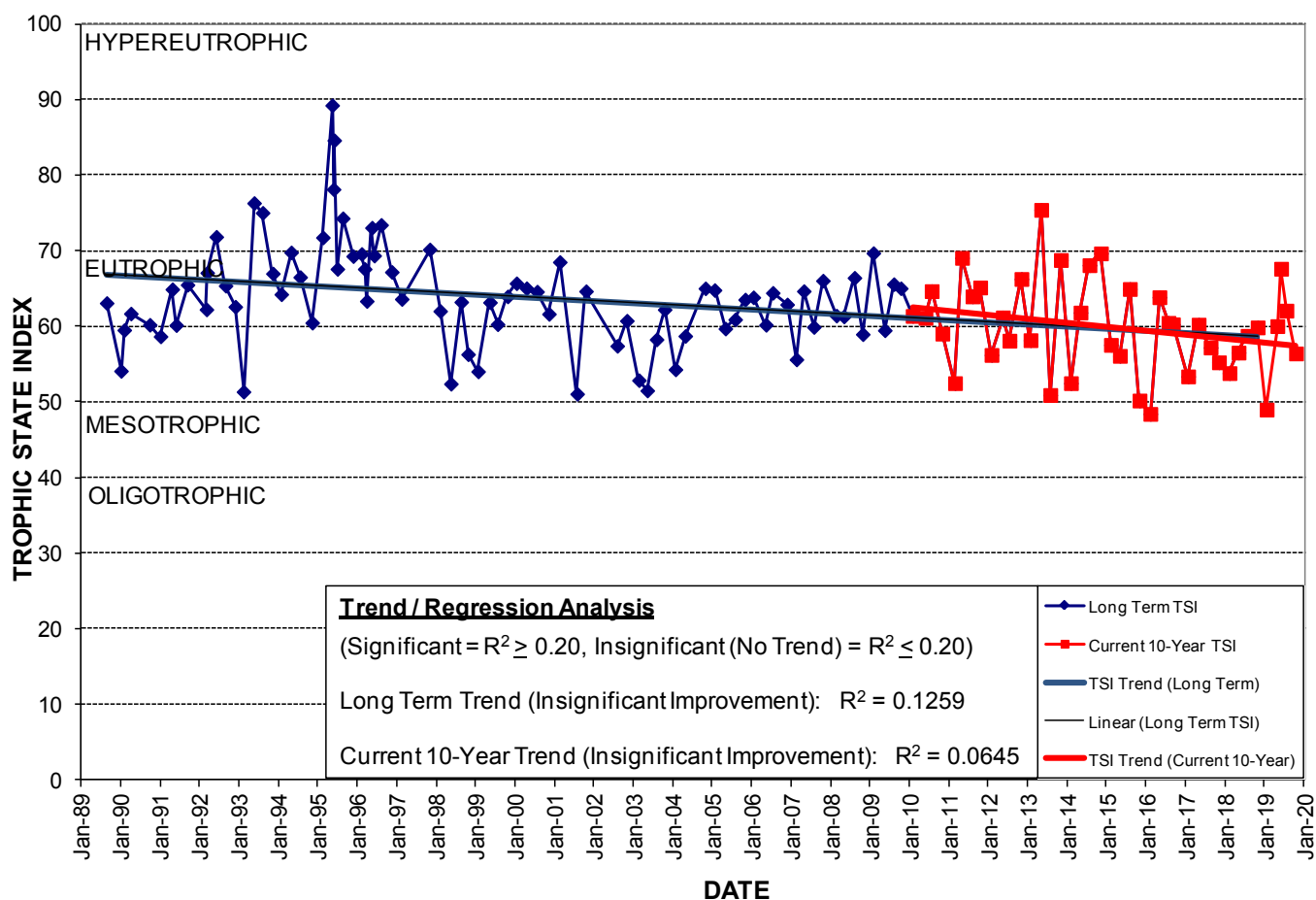


# LAKE ADAIR

Lake Origin: <b>Natural</b> Lake Surface Area: <b>25 acres</b> Lake Volume: <b>9,700,000 ft<sup>3</sup></b> Shoreline Length: <b>4,575 ft (1,394 m)</b> Mean Depth: <b>8.9 ft (2.7 m)</b> Maximum Depth: <b>14.0 ft (4.3 m)</b> Drain Wells: <b>1</b> Aeration: <b>No</b> Grass Carp ( <i>Ctenopharyngodon idella</i> ): <b>Yes</b>	Location: Lat <b>N 28° 33' 35.6"</b> Long <b>W 81° 23' 27.4"</b> Section <b>23</b> Township <b>22S</b> Range <b>29E</b> Water Management District: <b>St. Johns River</b> Drainage Code: <b>HB-27</b> Drainage Basin Area: <b>277 acres</b> Land Use: <b>Residential: 43% Commercial: 40%</b> <b>Industrial: 3% Highways: 4% Natural: 10%</b> Limiting Nutrient: <b>Balanced for Nitrogen and Phosphorus</b>
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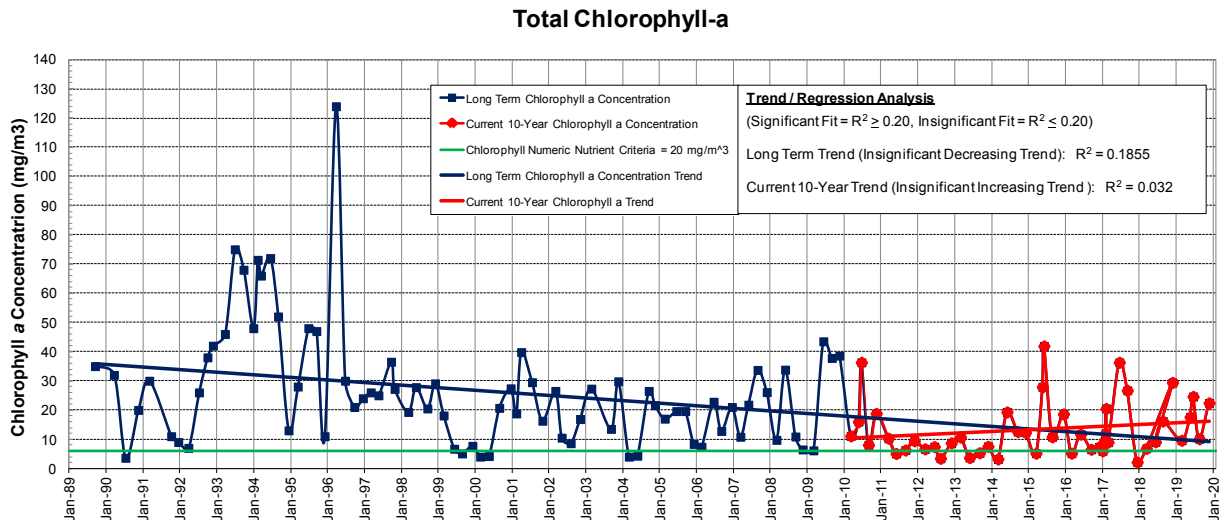
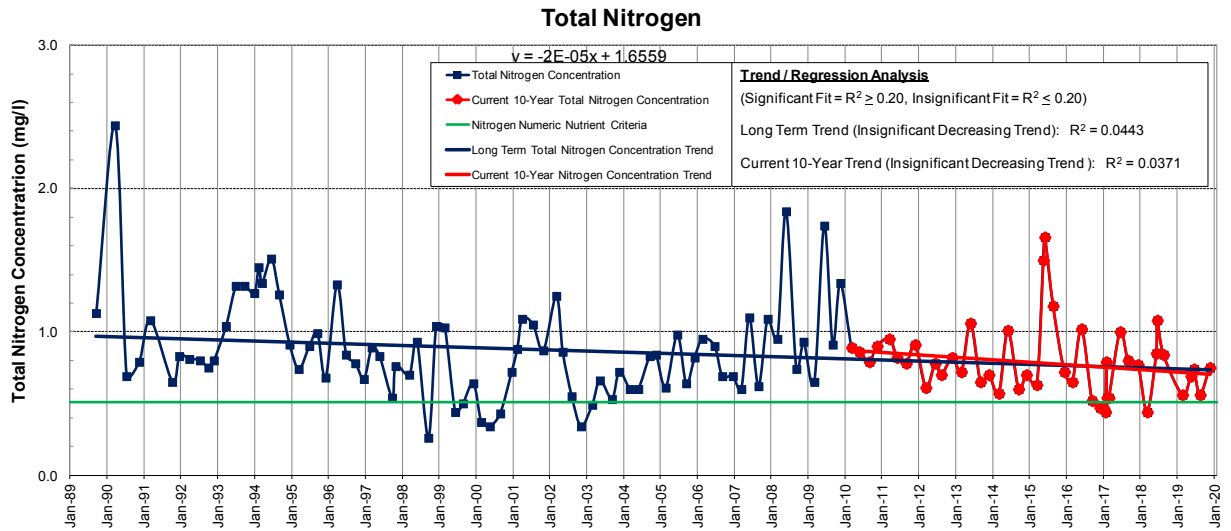
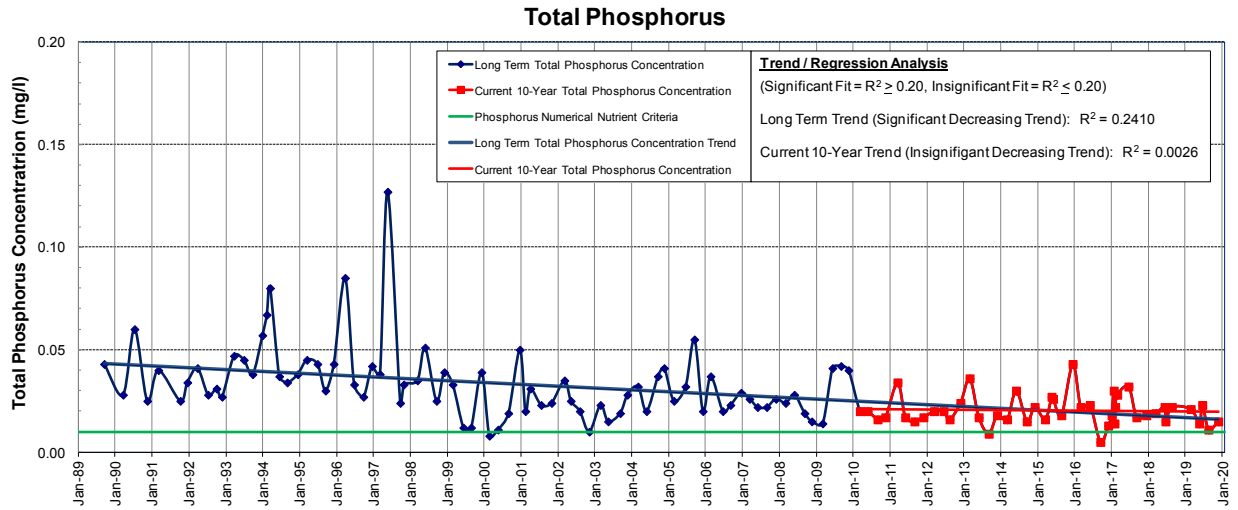
2017 - 2019 Water Quality Data	TSI Ranking (out of 94 lakes): 82				
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.041	0.53	0.30	10.70	48.99
Maximum	0.079	0.98	1.58	97.20	67.62
Average	0.056	0.73	0.85	29.20	57.70

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** West of Edgewater Dr. in College Park, surrounded by Lake Adair Blvd.

# LAKE ARNOLD NUTRIENT TRENDS





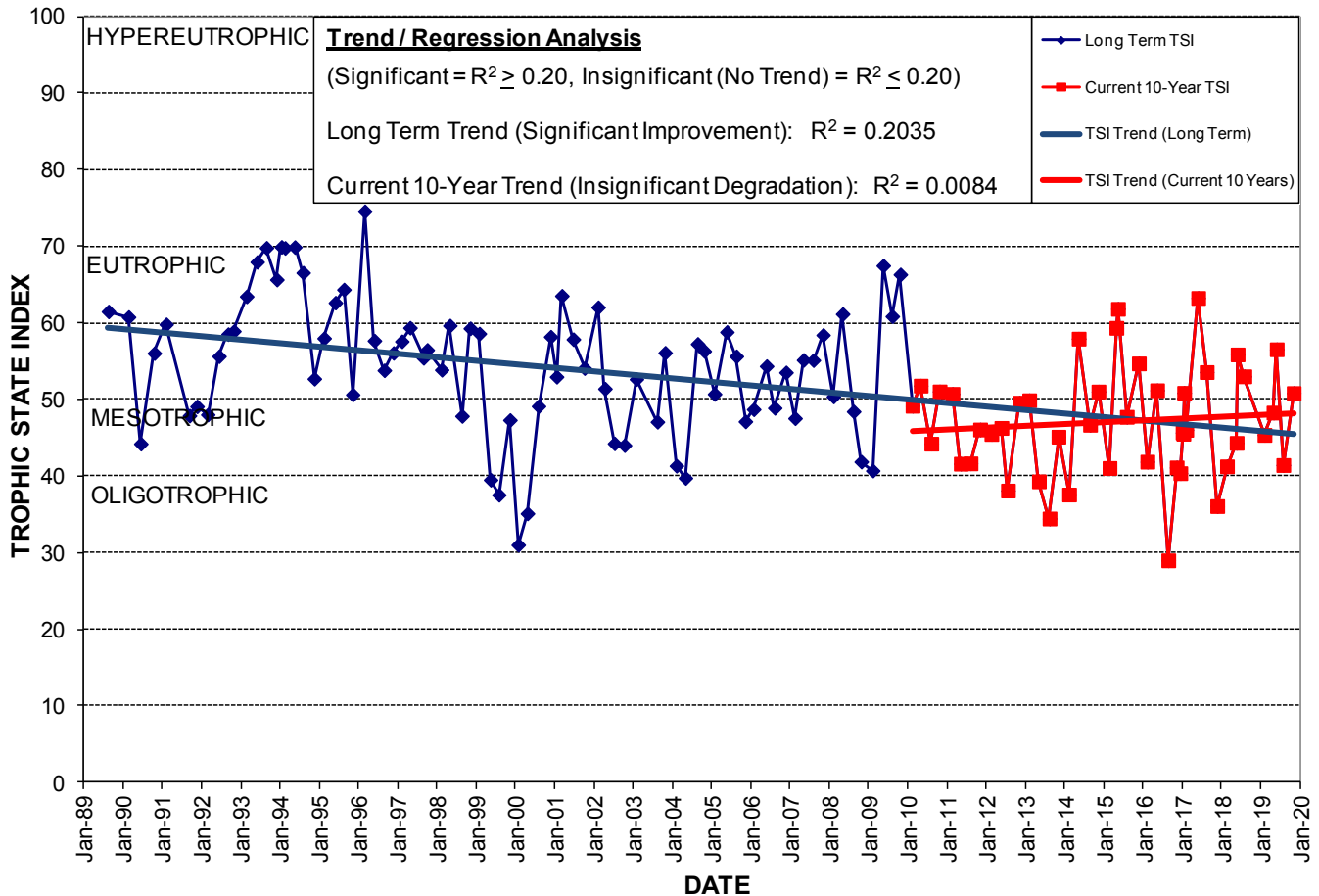
# LAKE ARNOLD

Lake Origin: **Natural**  
 Lake Surface Area: **24 acres**  
 Lake Volume: **23,298,500 ft<sup>3</sup>**  
 Shoreline Length: **4,226 ft (1,288 m)**  
 Mean Depth: **20.6 ft (6.3 m)**  
 Maximum Depth: **41.4 ft (12.6 m)**  
 Drain Wells: **1** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 31' 51.6"** Long **W 81° 20' 31.2"**  
 Section **32** Township **22S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-22**  
 Drainage Basin Area: **262 acres**  
 Land Use: **Residential: 86% Commercial: 4%**  
**Industrial: 0% Highways: 0% Natural: 10%**  
 Limiting Nutrient: **Phosphorus**

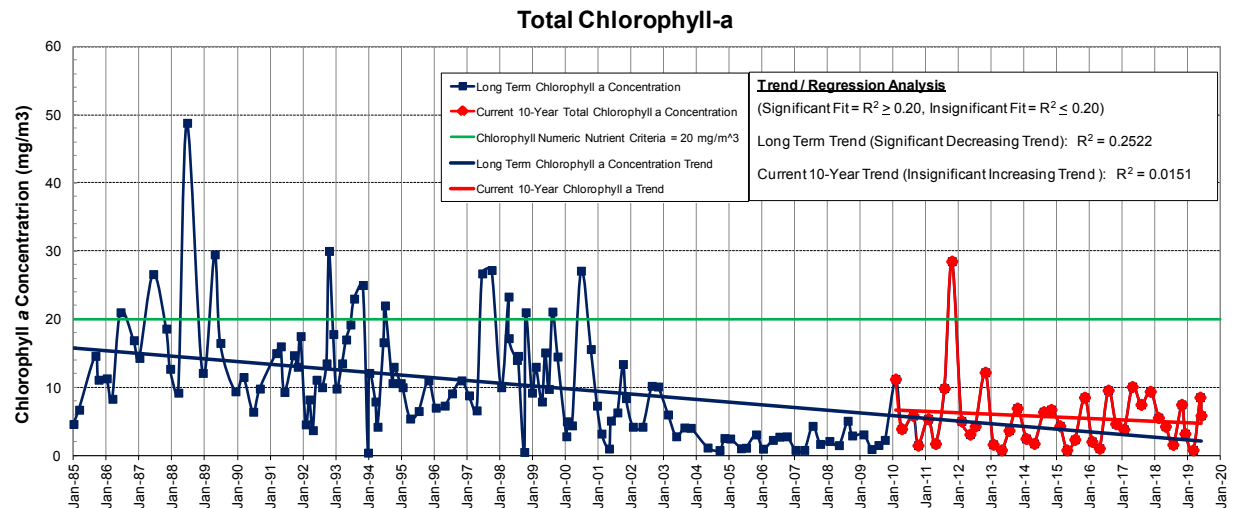
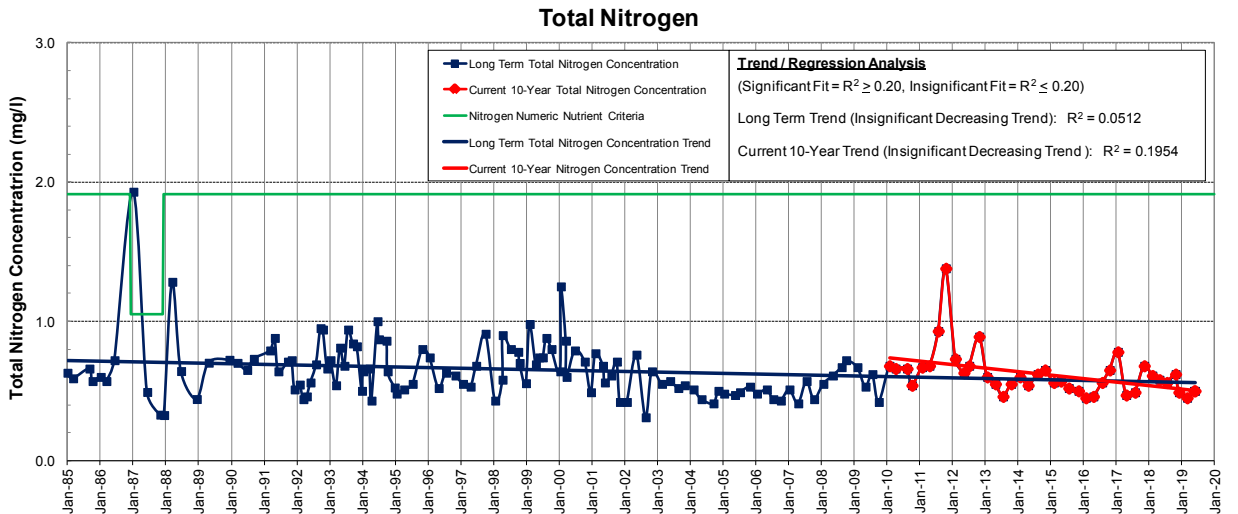
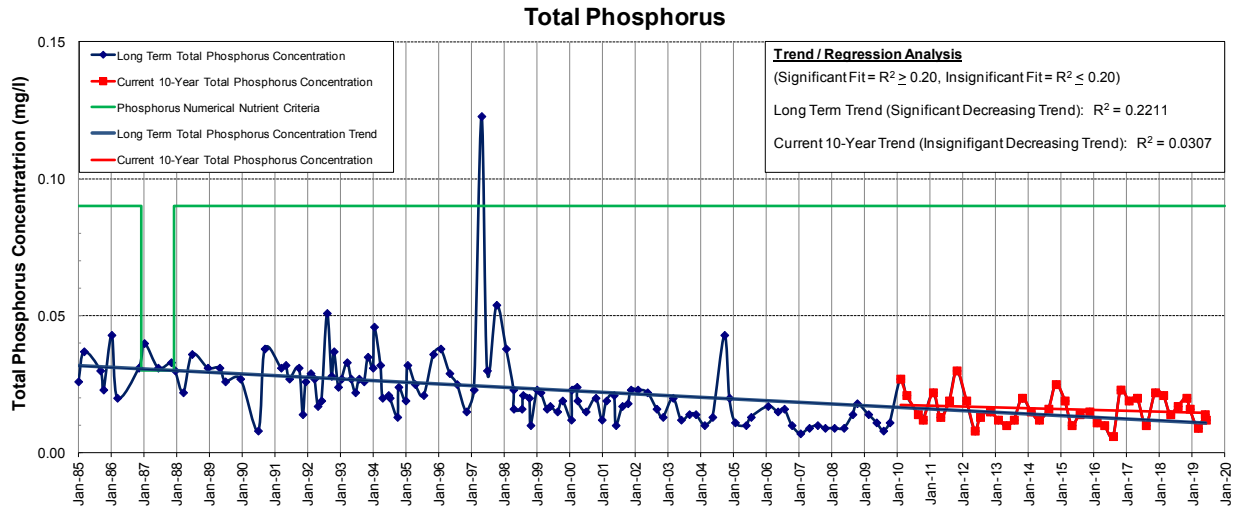
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 55			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.011	0.44	0.37	2.14	36
Maximum	0.032	1.08	2.53	36.30	63
Average	0.020	0.70	1.42	15.75	48

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Found mostly in Dover Shores, east of Crystal Lake Dr. between Clemwood Dr. and Hargill Dr.

# LAKE BALDWIN NUTRIENT TRENDS



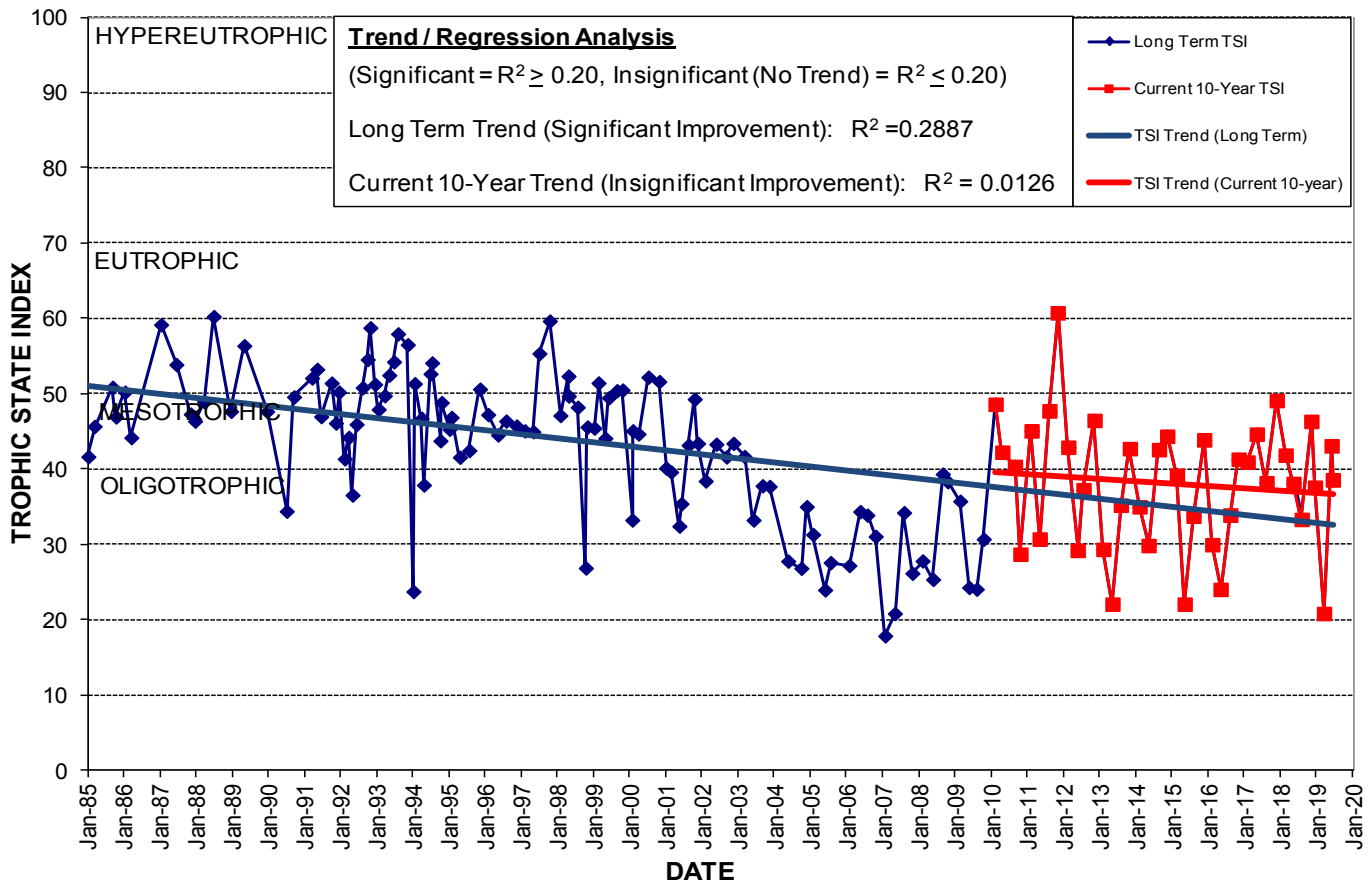
# LAKE BALDWIN

Lake Origin: **Natural**  
 Lake Surface Area: **194 acres**  
 Lake Volume: **122,895,700 ft<sup>3</sup>**  
 Shoreline Length: **10,979 ft (3,346 m)**  
 Mean Depth: **14.4 ft (4.4 m)**  
 Maximum Depth: **26.0 ft (7.9 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat N **28° 34' 21.7"** Long W **81° 19' 19.2"**  
 Section **16** Township **22S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LE-02**  
 Drainage Basin Area: **1,026 acres**  
 Land Use: **Residential: 30% Commercial: 21%**  
**Industrial: 1% Highways: 0% Natural: 48%**  
 Limiting Nutrient: **Nitrogen**

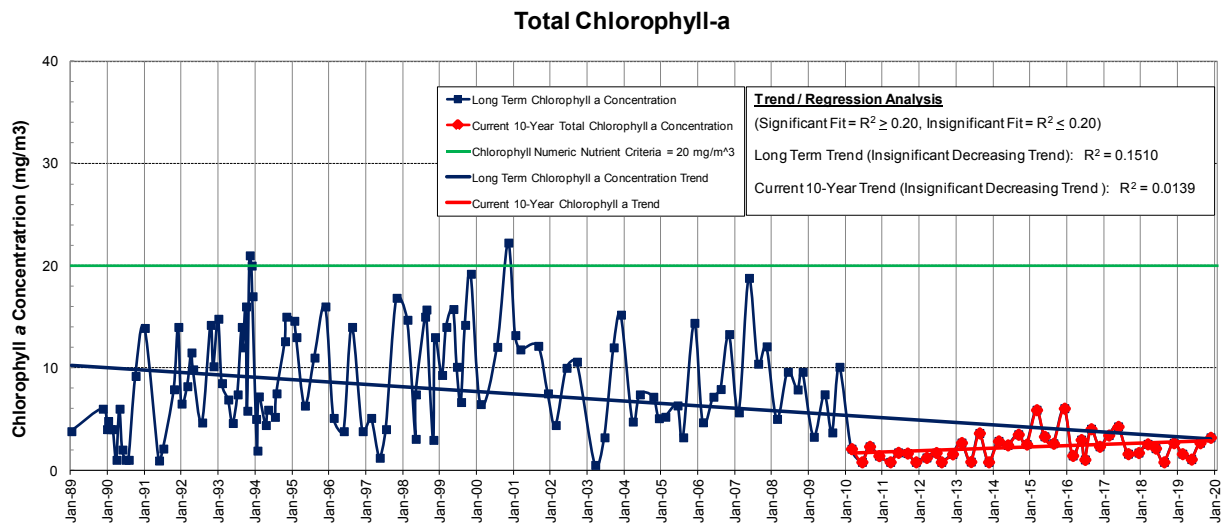
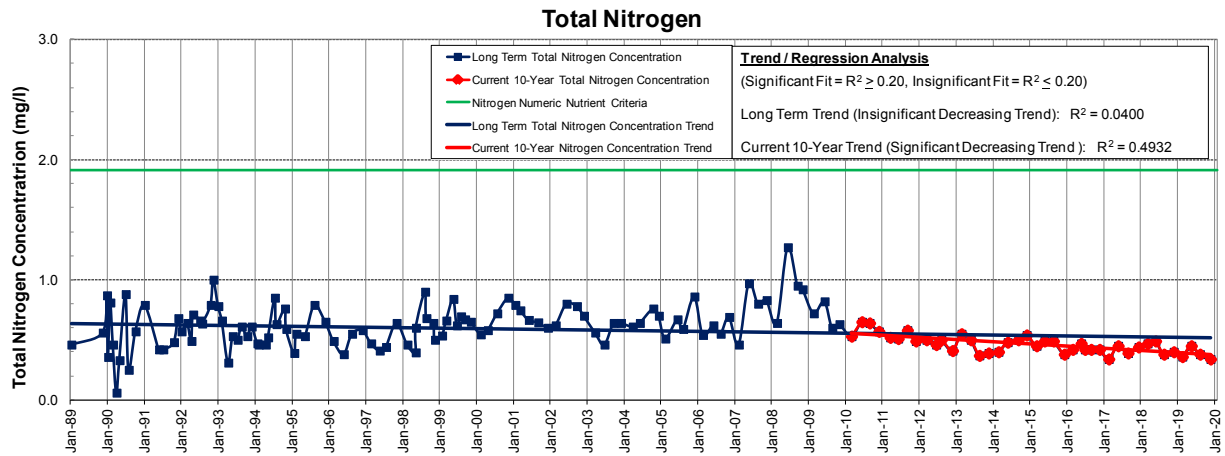
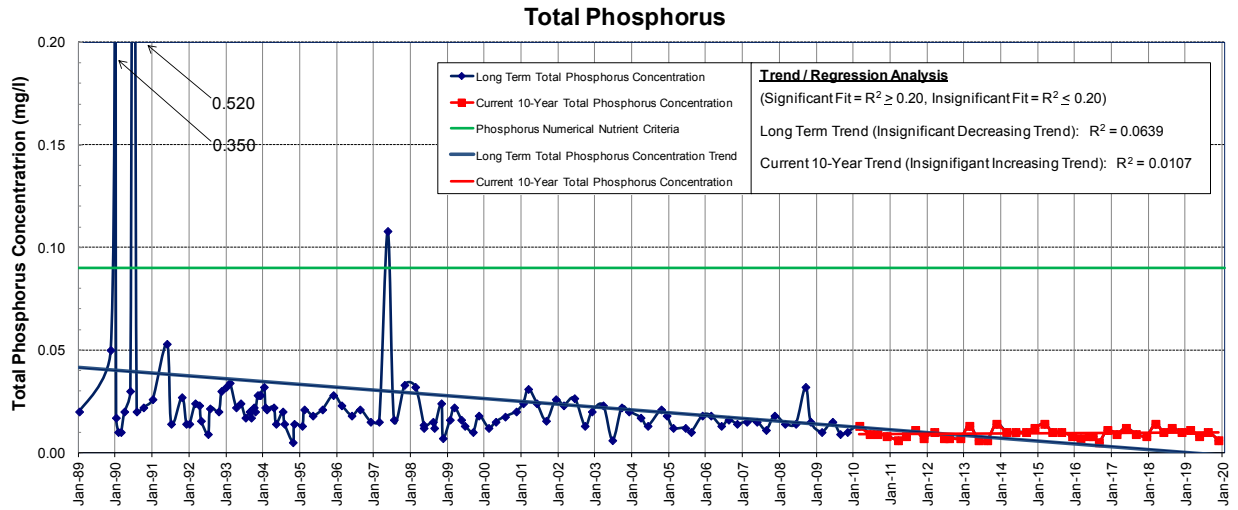
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 11			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.009	0.45	1.05	0.80	21
Maximum	0.022	0.78	4.03	10.10	49
Average	0.016	0.56	2.07	5.68	39

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** In Baldwin Park subdivision, on the old Naval Training Center property east of Leahy Dr. and north of Holland St.

# LAKE BARTON NUTRIENT TRENDS



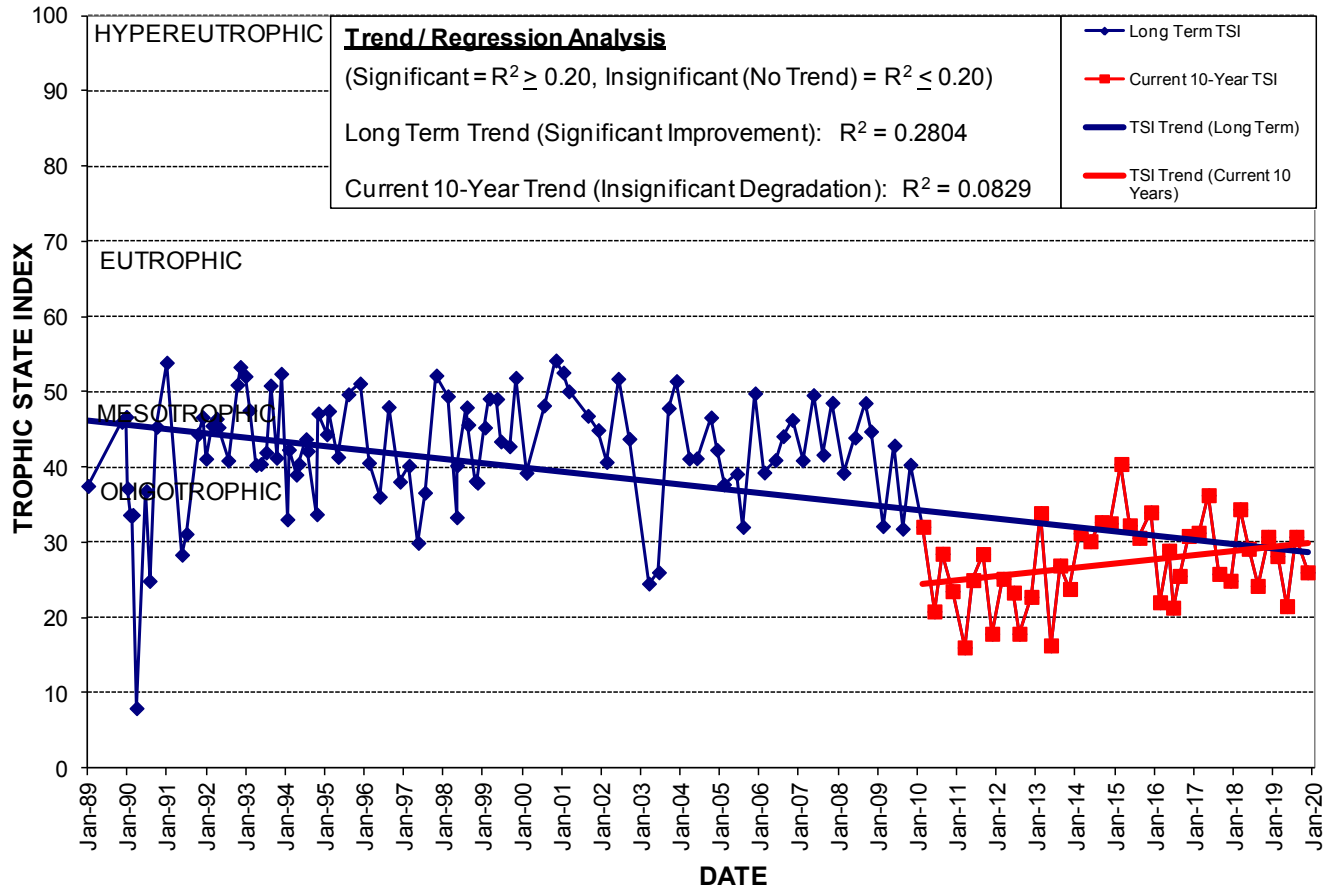
# LAKE BARTON

Lake Origin: **Natural**  
 Lake Surface Area: **129 acres**  
 Lake Volume: **89,161,500 ft<sup>3</sup>**  
 Shoreline Length: **9,773 ft (2,979 m)**  
 Mean Depth: **15.3 ft (4.7 m)**  
 Maximum Depth: **34.2 ft (10.4 m)**  
 Drain Wells: **1** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat N **28° 33' 02.5"** Long W **81° 18' 55.8"**  
 Section **23** Township **22S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LE-08**  
 Drainage Basin Area: **689 acres**  
 Land Use: **Residential: 20% Commercial: 25%**  
**Industrial: 36% Highways: 6% Natural: 14%**  
 Limiting Nutrient: **Nitrogen**

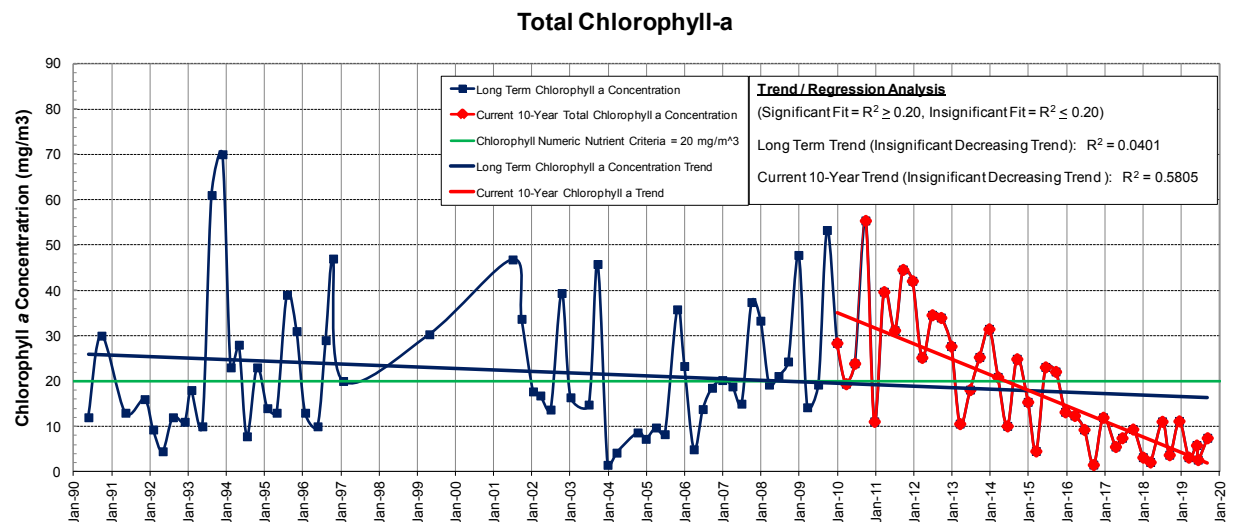
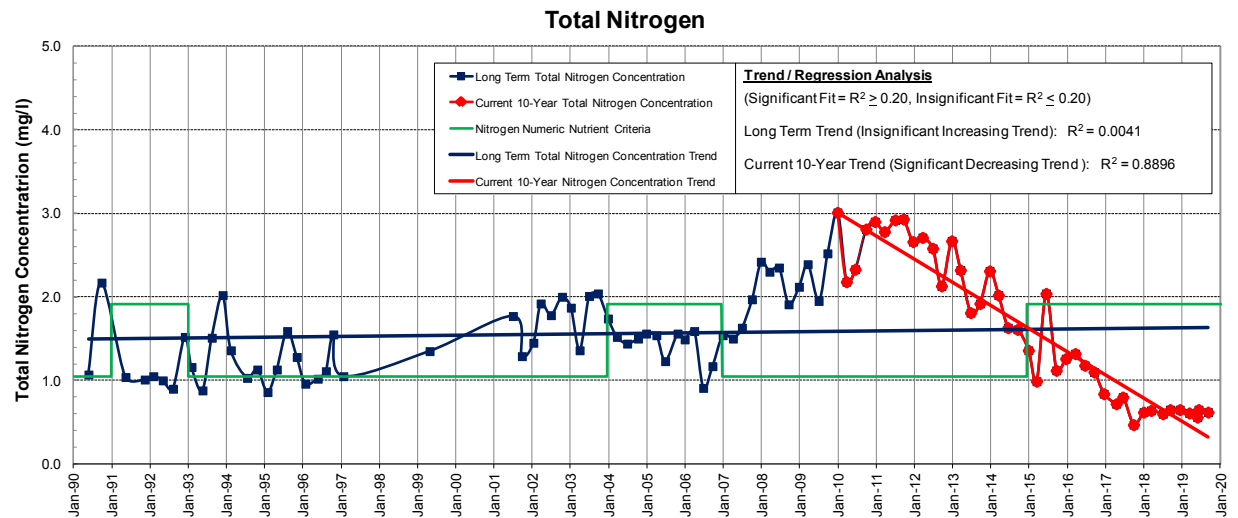
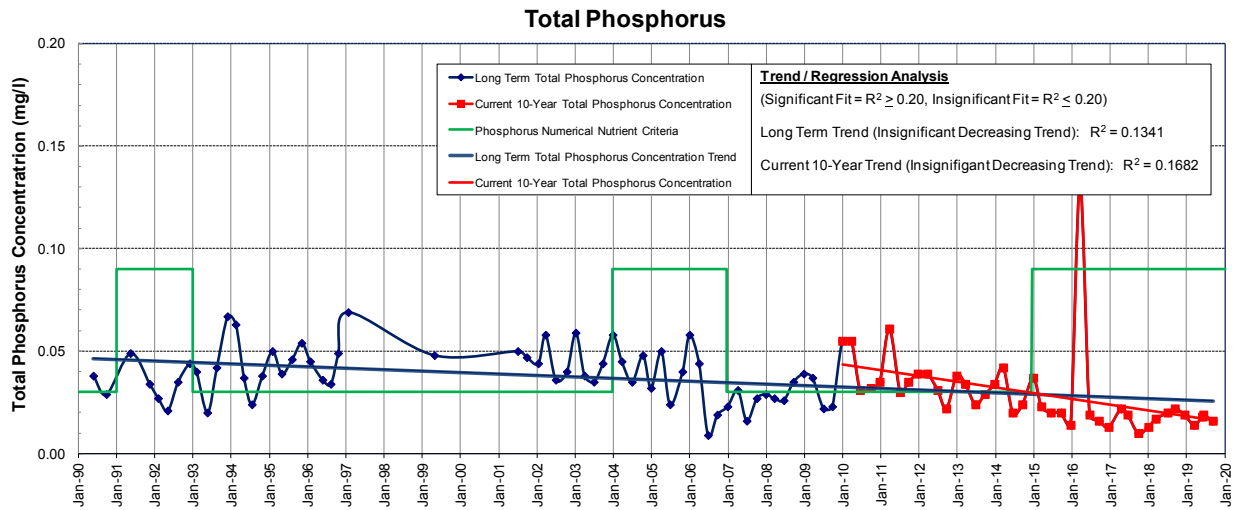
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 2			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.006	0.34	1.54	0.80	22
Maximum	0.014	0.49	4.45	4.27	36
Average	0.010	0.41	3.12	2.31	29

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Approximately 0.2 miles Southwest of the Semoran Blvd. and Colonial Dr. Intersection.

# BAY LAKE NUTRIENT TRENDS



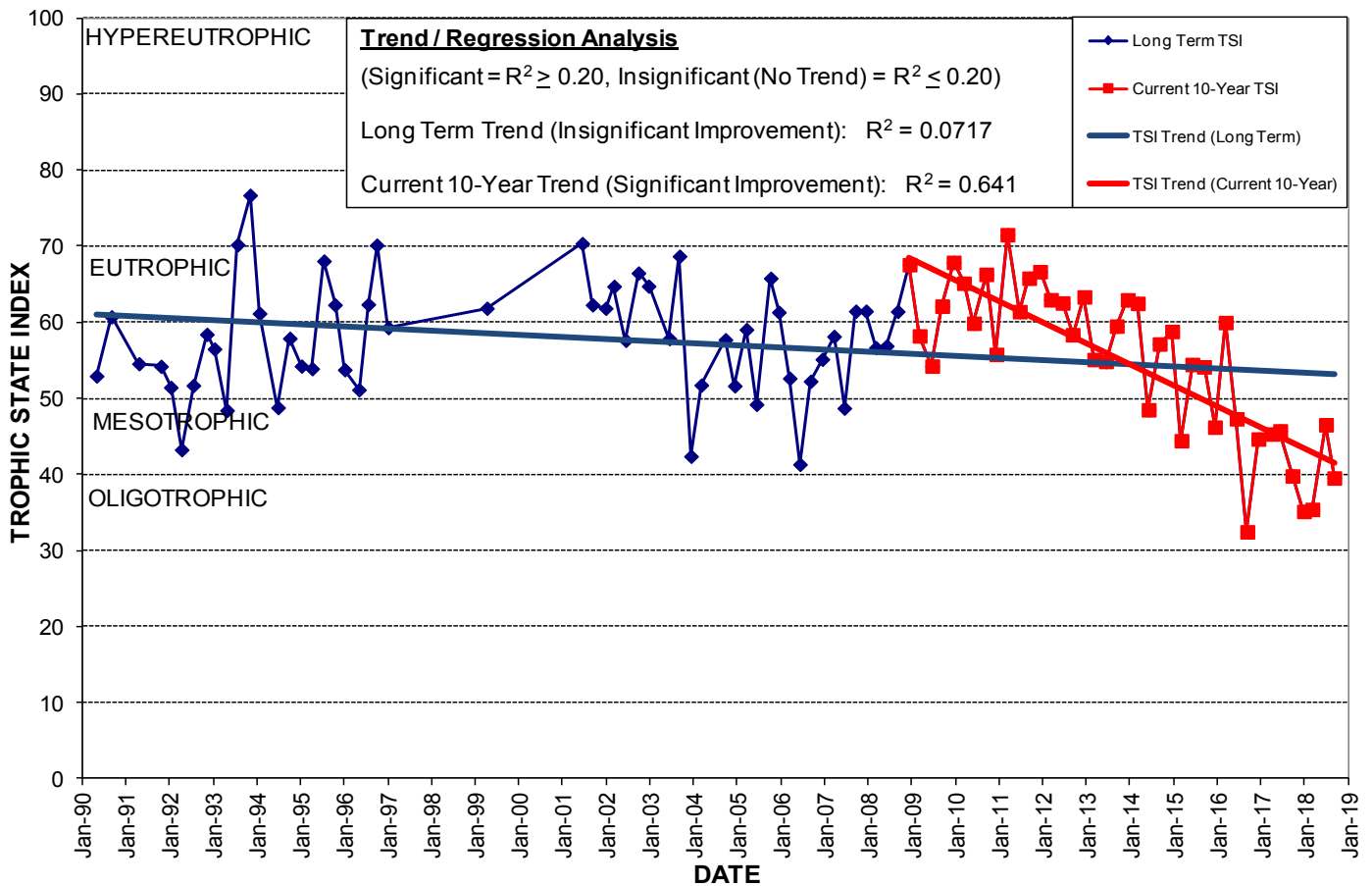
# BAY LAKE

Lake Origin: **Natural**  
 Lake Surface Area: **34 acres**  
 Lake Volume: **12,250,000 ft<sup>3</sup>**  
 Shoreline Length: **4,778 ft (1,456 m)**  
 Mean Depth: **8.3 ft (2.5 m)**  
 Maximum Depth: **14.0 ft (4.3 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 35' 28.3"** Long **W 81° 25' 18.5"**  
 Section **9** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LE-03**  
 Drainage Basin Area: **30 acres**  
 Land Use: **Residential: 0% Commercial: 94%**  
**Industrial: 0% Highways: 0% Natural: 6%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 30			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.010	0.47	0.36	2.14	35
Maximum	0.022	0.84	3.21	12.00	49
Average	0.017	0.65	2.07	6.54	42

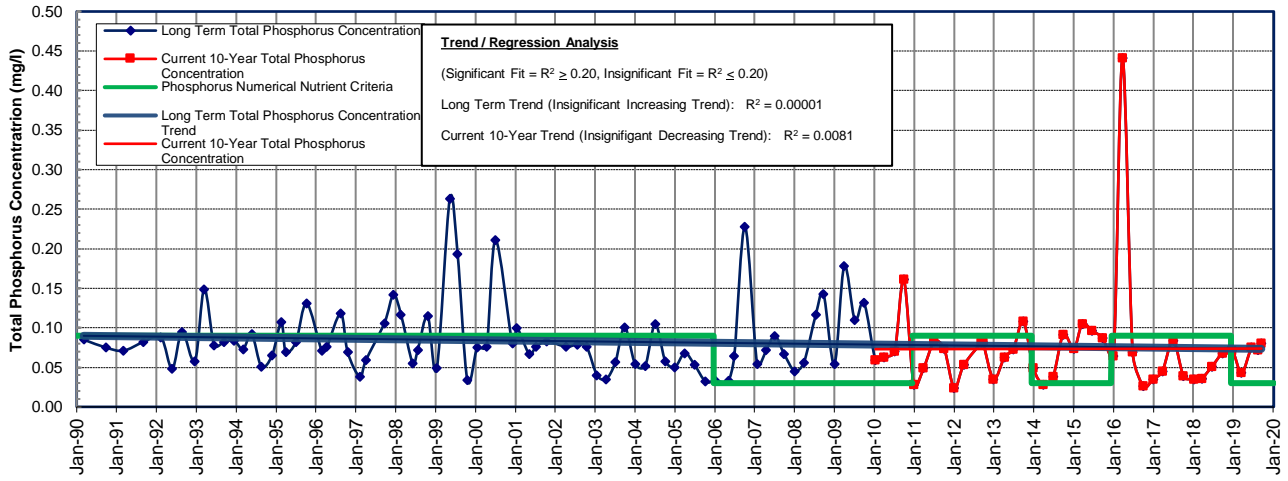
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



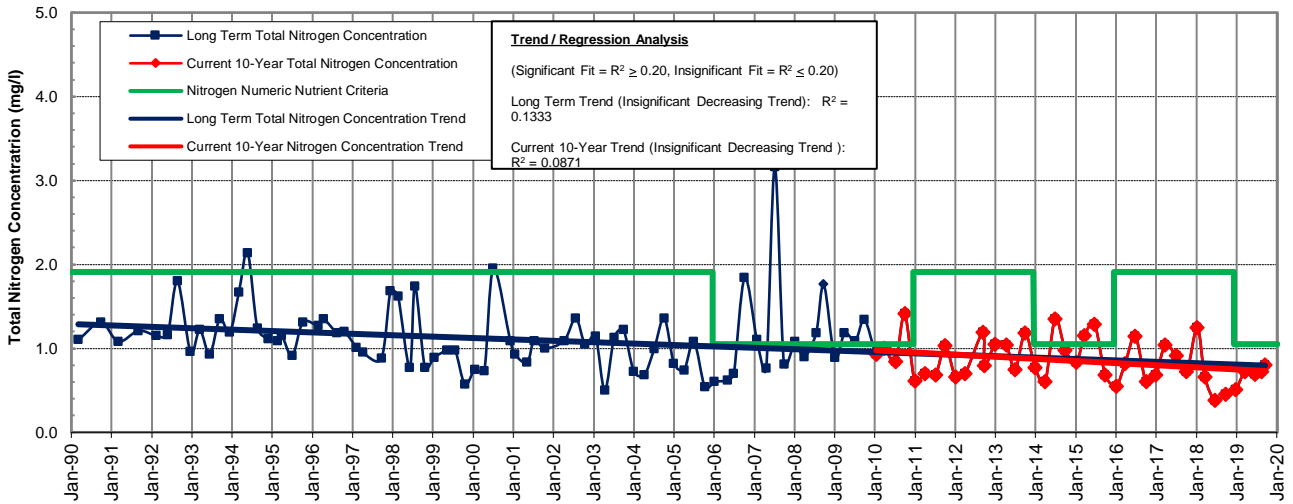
**Location:** Adjacent to John Young Pkwy. (on the west side) approx. 0.5 mile south of Lee Rd.

# LAKE BEARDALL NUTRIENT TRENDS

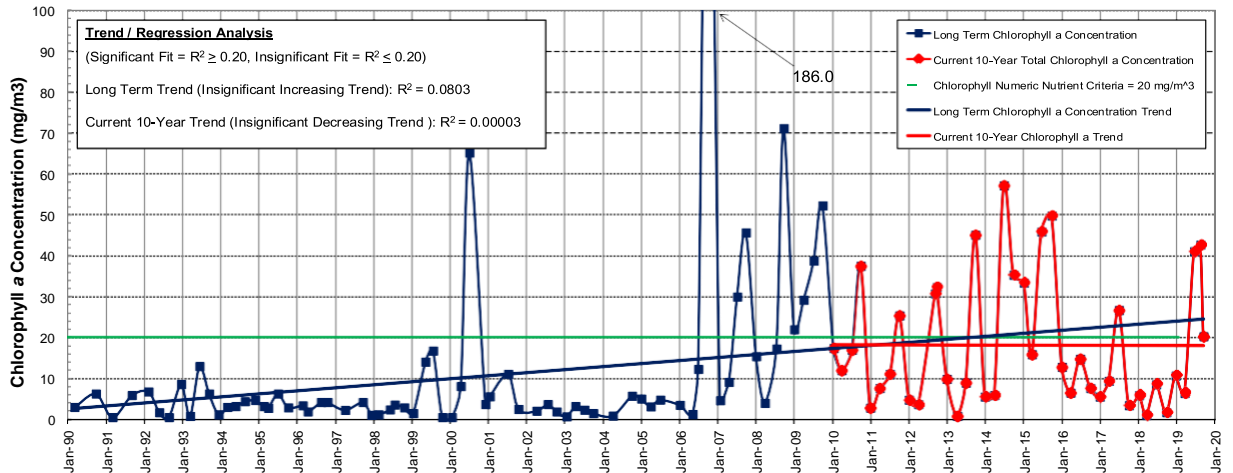
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a





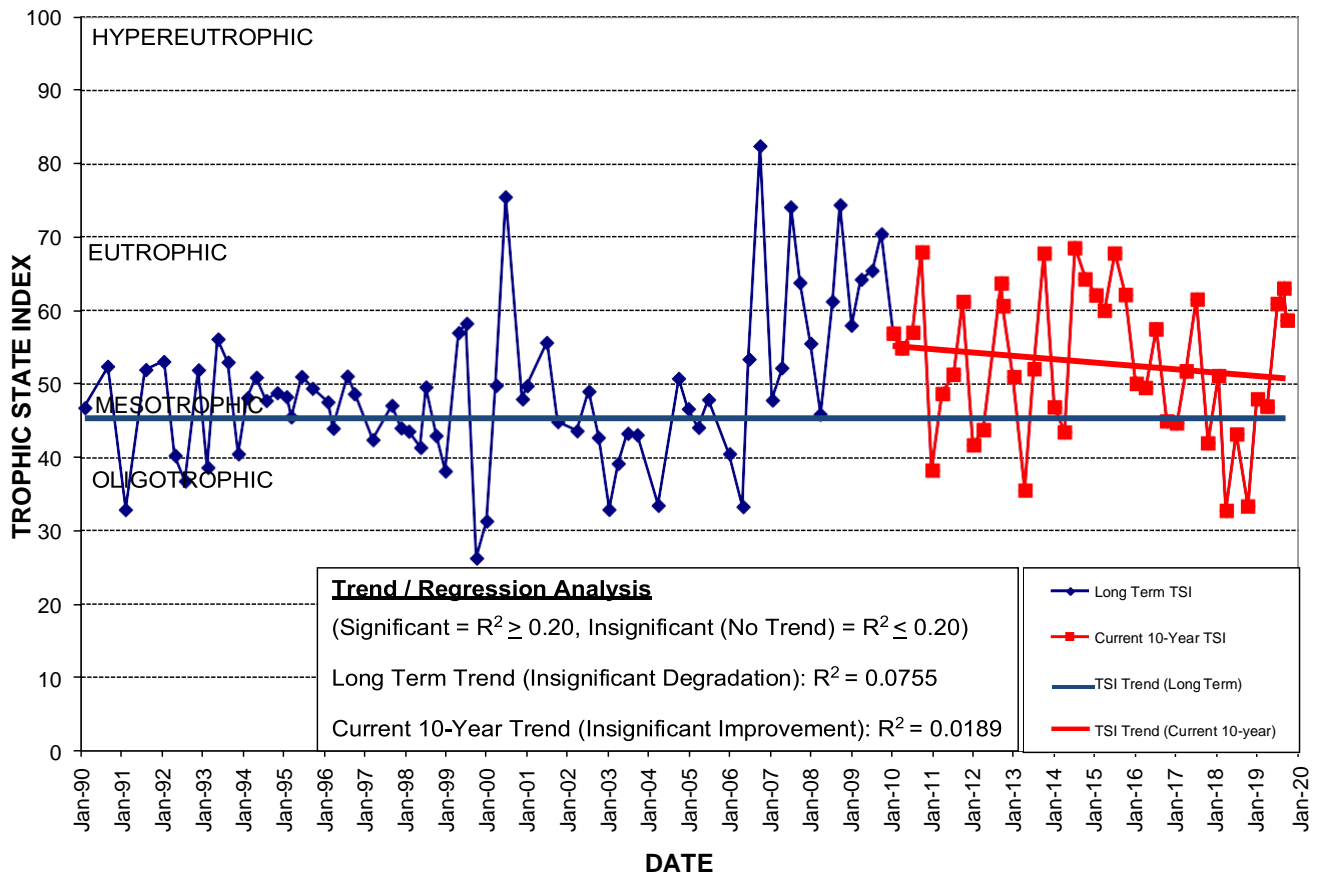
# LAKE BEARDALL

Lake Origin: **Excavation**  
 Lake Surface Area: **3 acres**  
 Lake Volume: **842,900 ft<sup>3</sup>**  
 Shoreline Length: **2,636 ft (803 m)**  
 Mean Depth: **6.2 ft (1.9 m)**  
 Maximum Depth: **10.6 ft (3.2 m)**  
 Drain Wells: **No** Aeration: **Yes** (installed 1/99)  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 32' 11.8"** Long **W 81° 24' 11.2"**  
 Section **34** Township **22S** Range **29E**  
 Water Management District: **South Florida**  
 Drainage Code: **SC-12**  
 Drainage Basin Area: **160 acres**  
 Land Use: **Residential: 9% Commercial: 68%**  
**Industrial: 12% Highways: 7% Natural: 4%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data	TSI Ranking (out of 94 lakes): 75				
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.035	0.38	0.32	1.07	33
Maximum	0.084	1.25	2.15	42.70	63
Average	0.056	0.73	1.12	14.11	49

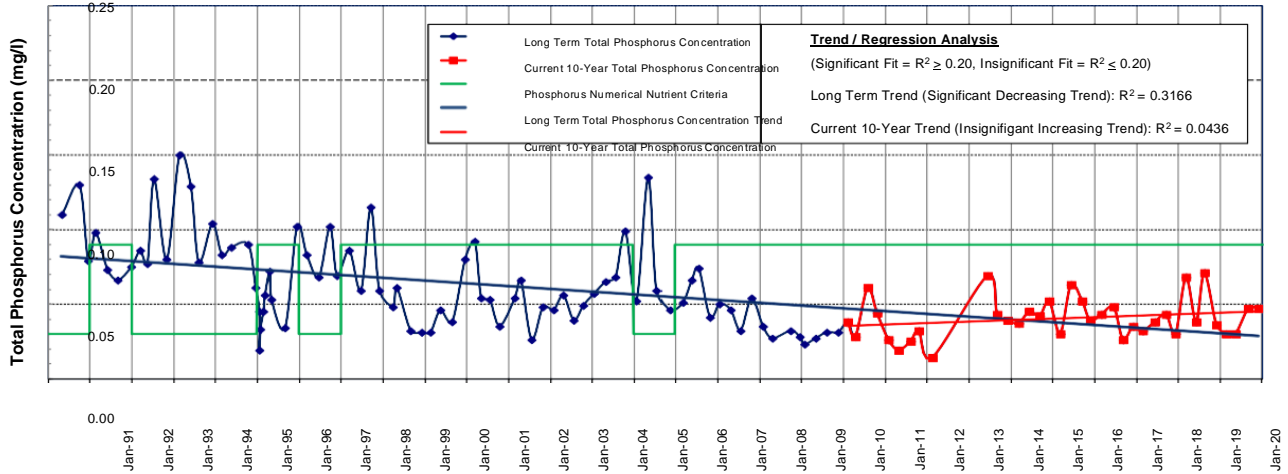
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



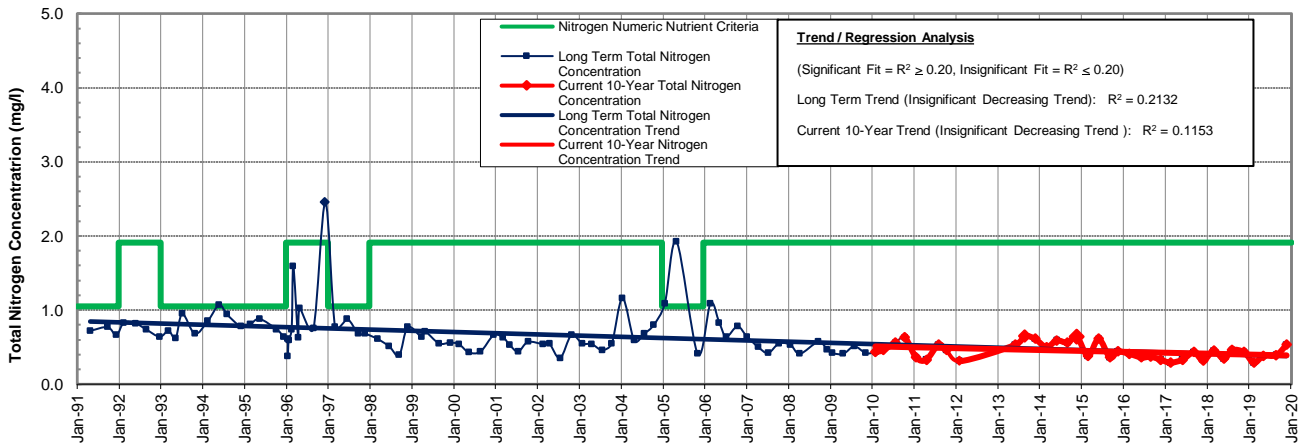
**Location:** Just south of the Citrus Bwl between Rio Grande Ave. and Tampa Ave. Outfall flows to Clear Lake.

# LAKE BEAUTY NUTRIENT TRENDS

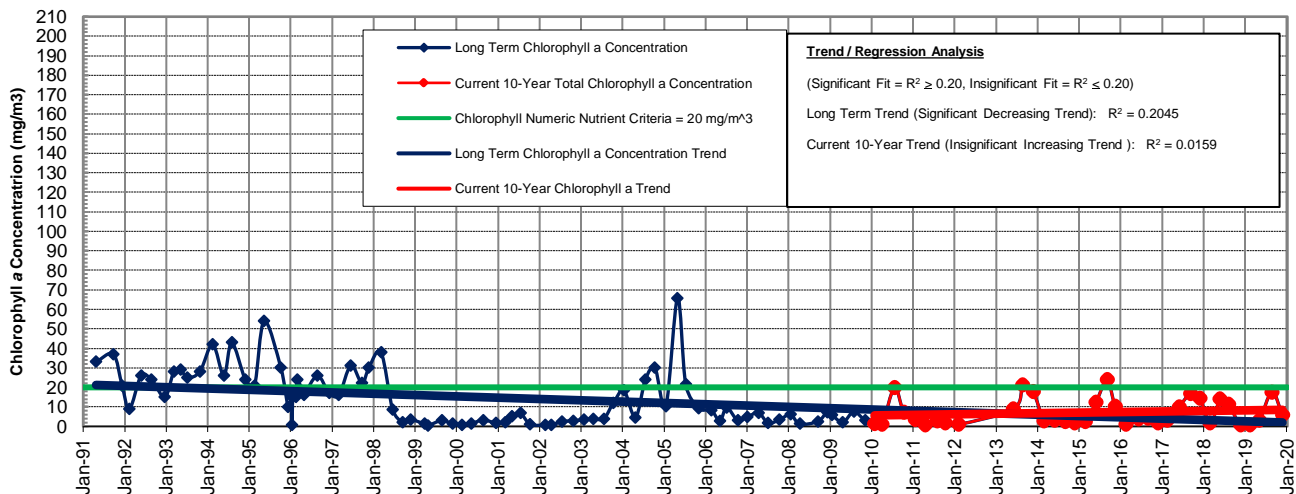
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



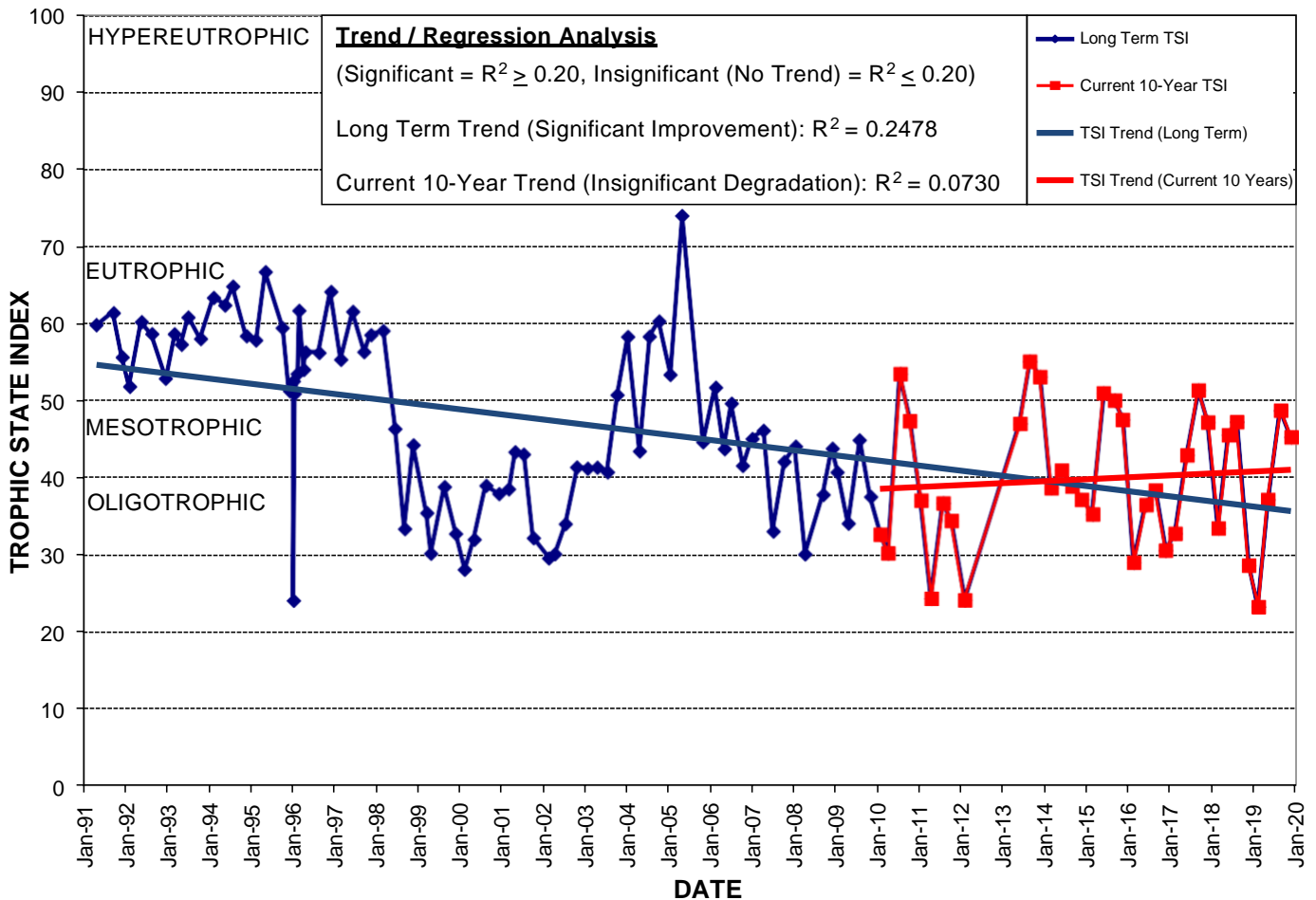
# LAKE BEAUTY

Lake Origin: **Natural**  
 Lake Surface Area: **2 acres**  
 Lake Volume: **594,000 ft<sup>3</sup>**  
 Shoreline Length: **1,114 ft (339 m)**  
 Mean Depth: **6.3 ft (1.9 m)**  
 Maximum Depth: **13.0 ft (4.0 m)**  
 Drain Wells: **No** Aeration: **Yes** (installed 10/86)  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 31' 23.5"** Long **W 81° 22' 37.9"**  
 Section **2** Township **23S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-33**  
 Drainage Basin Area: **47 acres**  
 Land Use: **Residential: 0% Commercial: 95%**  
**Industrial: 0% Highways: 0% Natural: 4%**  
 Limiting Nutrient: **Balanced for Phosphorus & Nitrogen**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 18			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.030	0.29	1.17	0.80	23
Maximum	0.071	0.53	2.84	17.60	51
Average	0.043	0.39	1.81	8.28	40

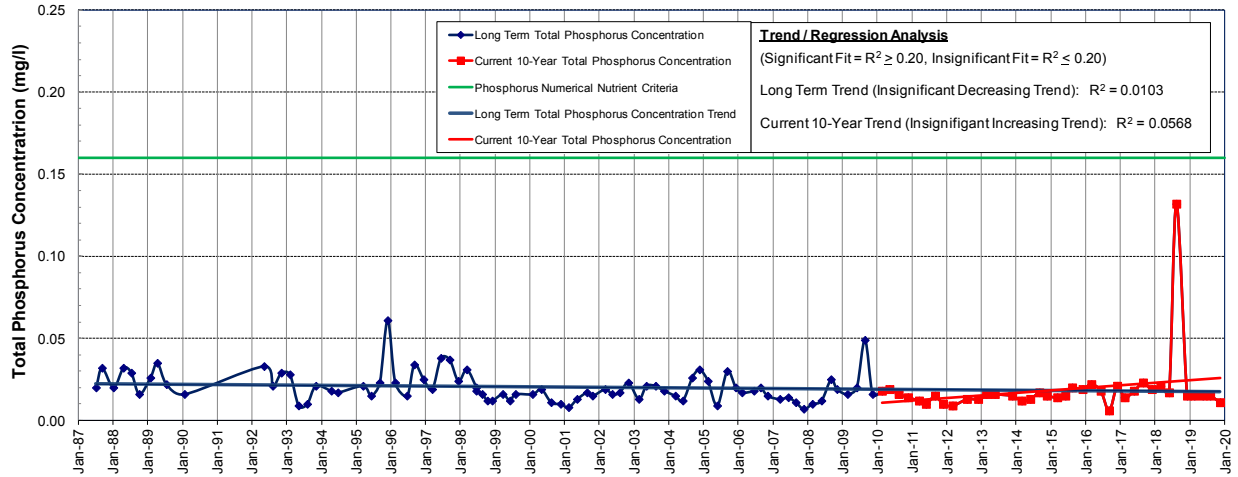
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



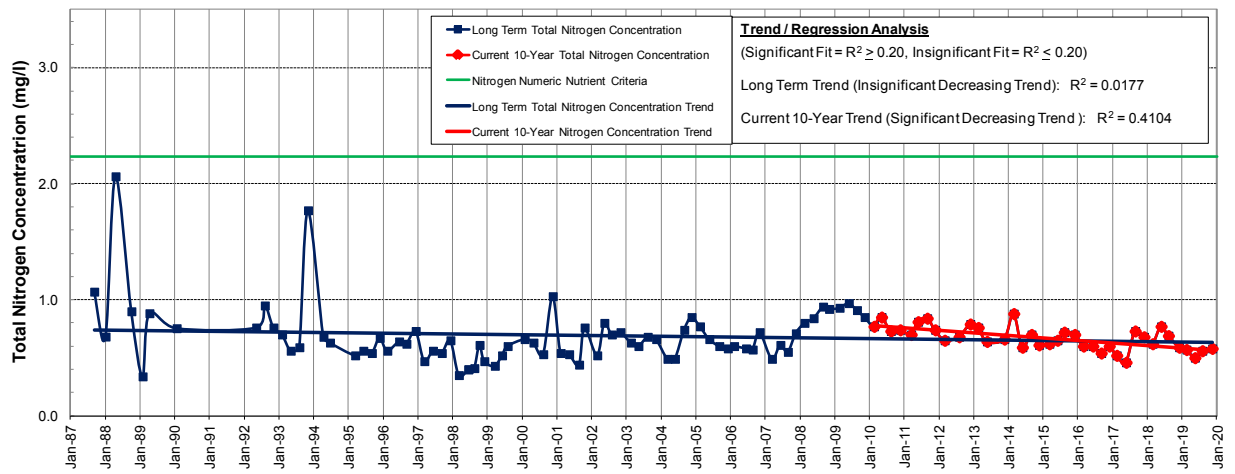
**Location:** Adjacent to Orange Ave. (on the west side) between Lake Beauty Dr. and Miller St., in front of Arnold Palmer's Hospital for Women and Children.

# BUCK LAKE NUTRIENT TRENDS

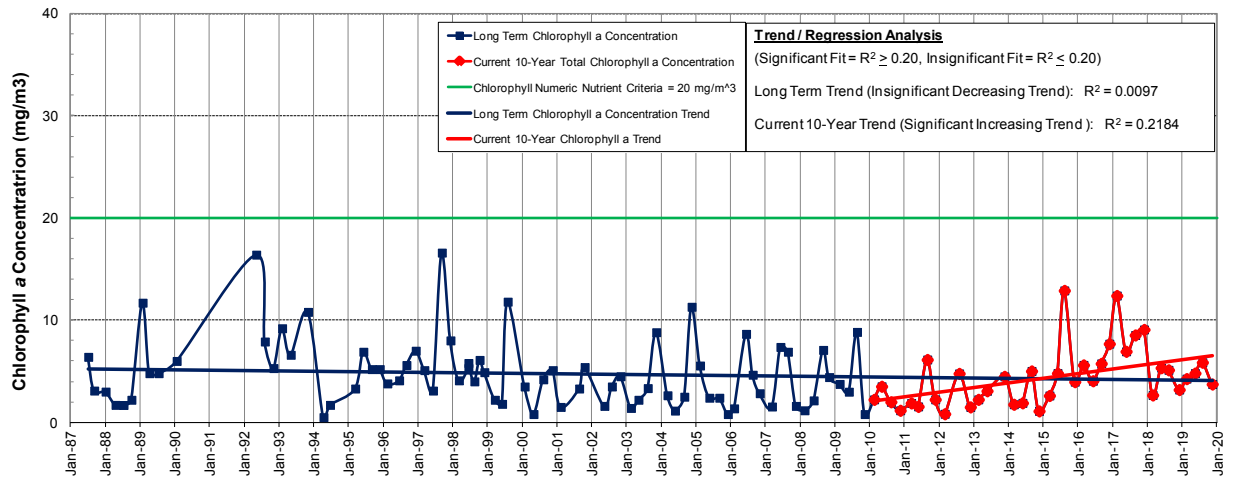
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



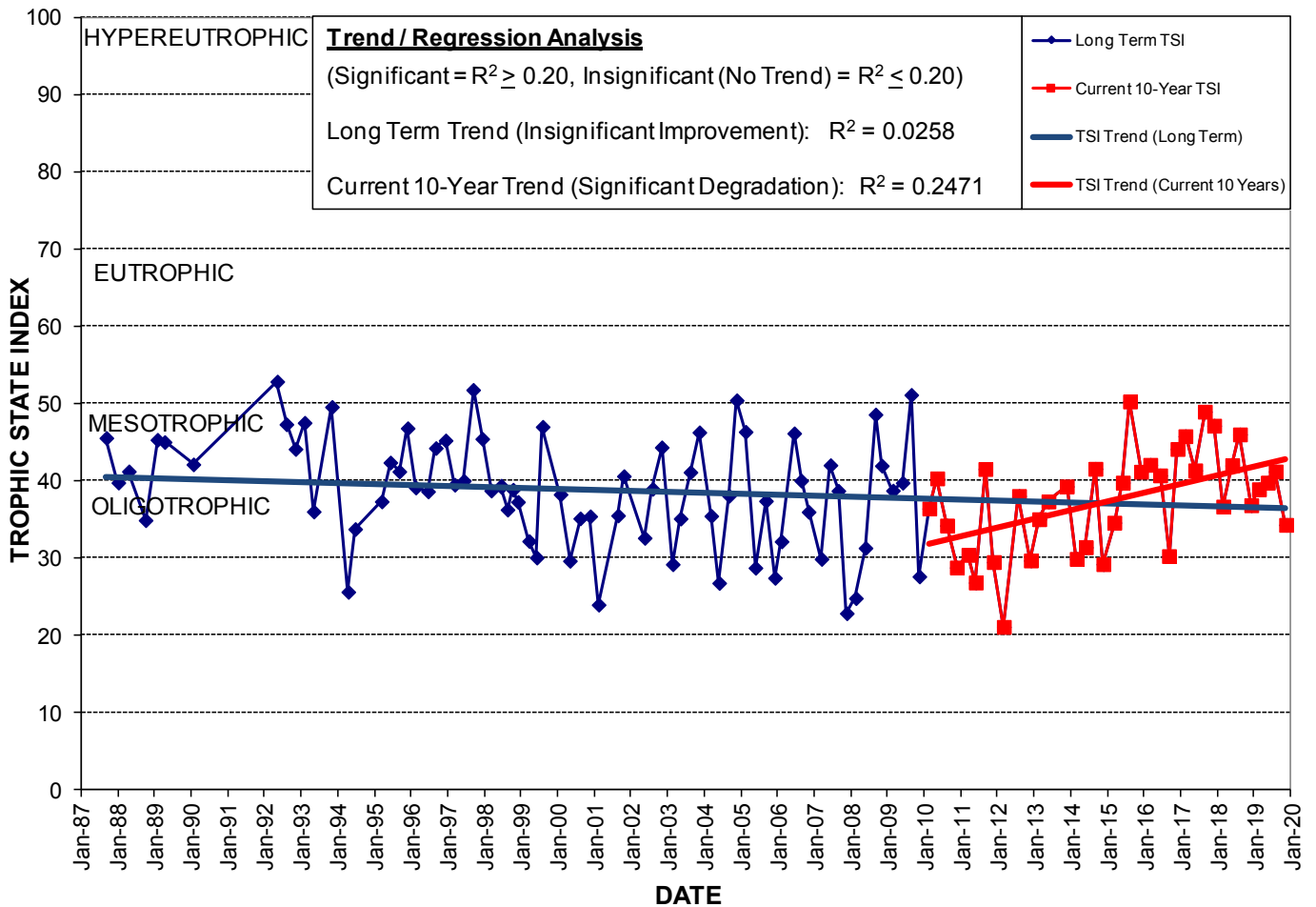
# BUCK LAKE

Lake Origin: **Natural**  
 Lake Surface Area: **127 acres**  
 Lake Volume: **74,136,500 ft<sup>3</sup>**  
 Shoreline Length: **10,687 ft (3,257 m)**  
 Mean Depth: **13.2 ft (4.0 m)**  
 Maximum Depth: **25.2 ft (7.7 m)**  
 Drain Wells: **1** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 24' 33.8"** Long **W 81° 14' 53.5"**  
 Section 7 Township **24S** Range **31E**  
 Water Management District: **South Florida**  
 Drainage Code: **BC-05D**  
 Drainage Basin Area: **1,270 acres**  
 Land Use: **Residential: 0% Commercial: 0%**  
**Industrial: 0% Highways: 5% Natural: 95%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 17			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.011	0.46	0.62	2.67	34
Maximum	0.132	0.77	2.23	12.40	49
Average	0.026	0.61	1.47	6.00	42

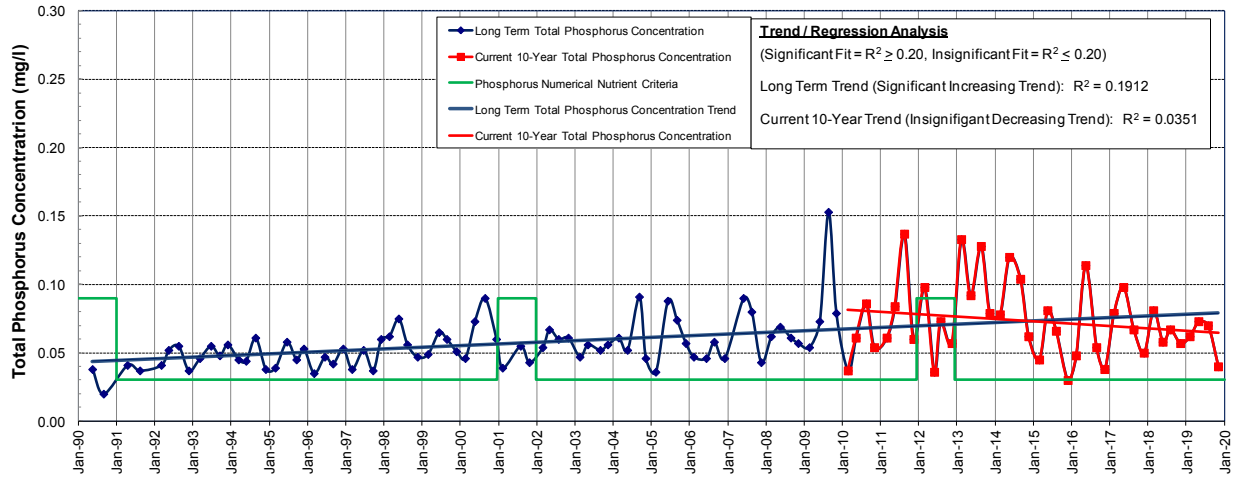
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



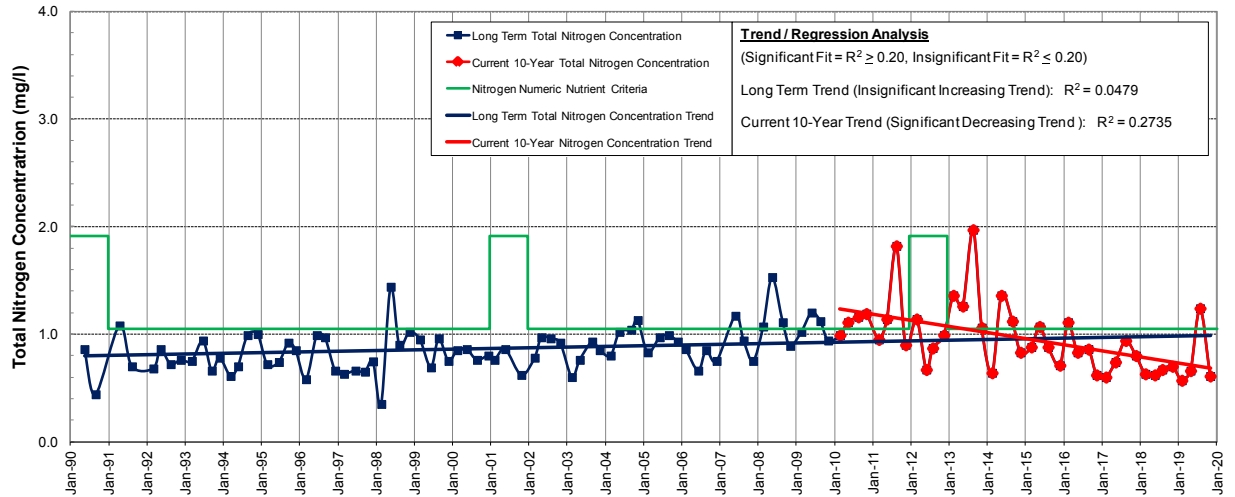
**Location:** Adjacent to Orange Ave. (on the west side) between Lake Beauty Dr. and Miller St., in front of Arnold Palmer’s Hospital for Women and Children.

# LAKE C NUTRIENT TRENDS

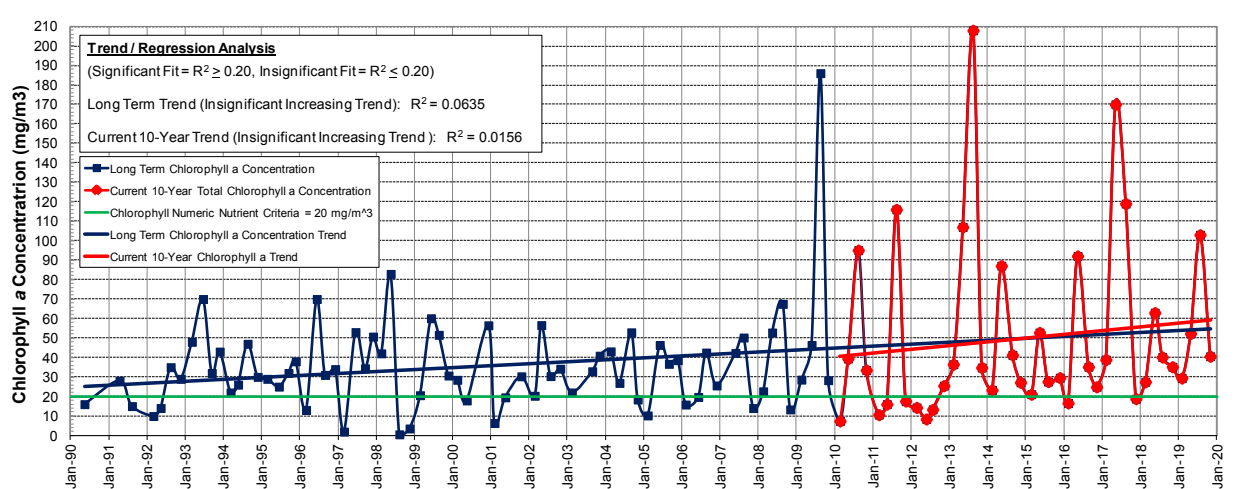
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



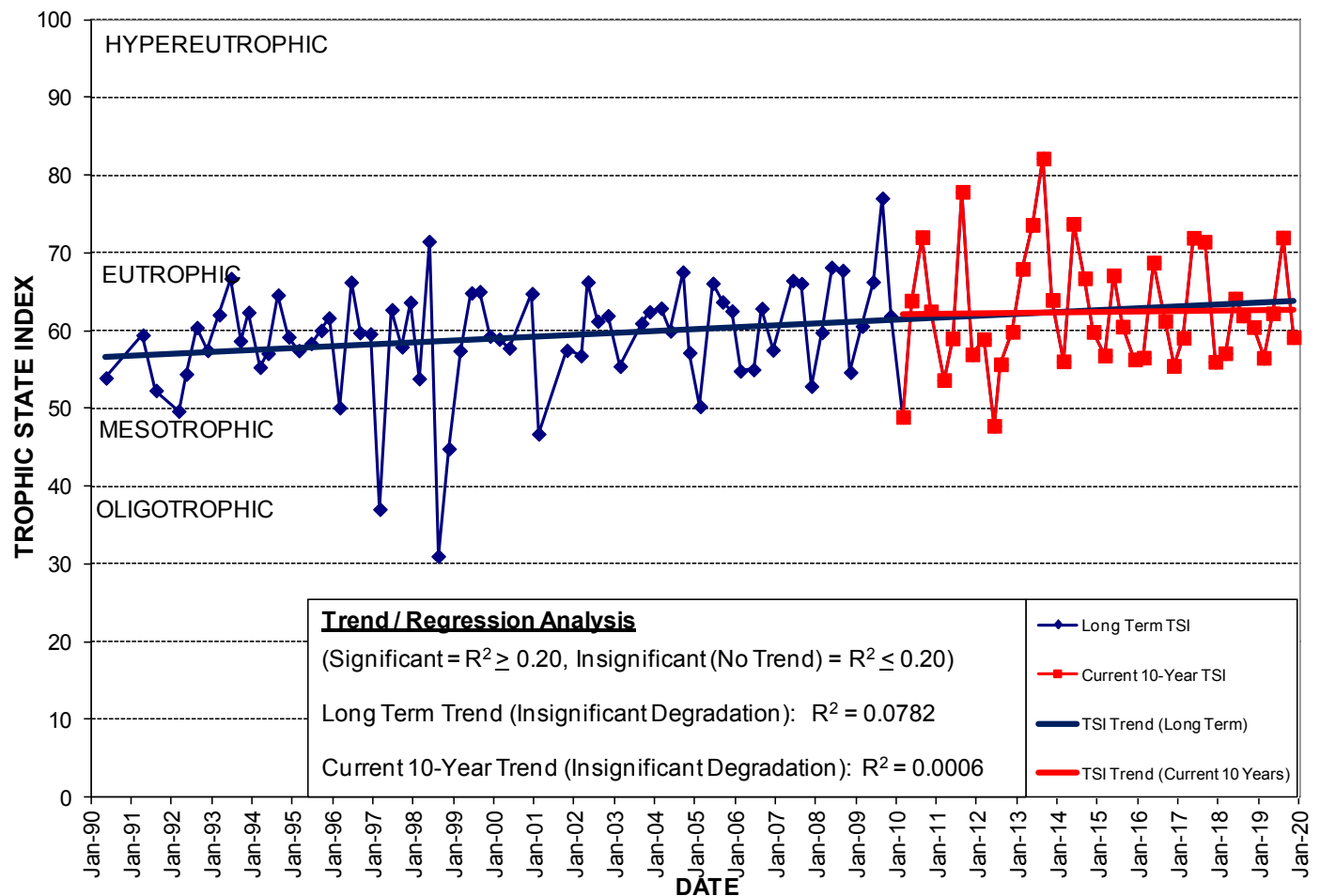
# LAKE C

Lake Origin: **Excavation**  
 Lake Surface Area: **4 acres**  
 Lake Volume: **1,275,000 ft<sup>3</sup>**  
 Shoreline Length: **2,551 ft (777 m)**  
 Mean Depth: **7.6 ft (2.3 m)**  
 Maximum Depth: **16.0 ft (4.9 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 31' 52.0"** Long **W 81° 19' 10.9"**  
 Section **33** Township **22S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code\*: **LE-35**  
 Drainage Basin Area\*: **249 acres**  
 Land Use\*: **Residential: 80% Commercial: 17%**  
**Industrial: 0% Highways: 0% Natural: 3%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data	TSI Ranking (out of 94 lakes): 88				
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.040	0.57	0.61	18.80	56
Maximum	0.098	1.24	1.12	170.00	72
Average	0.067	0.73	0.74	61.49	63

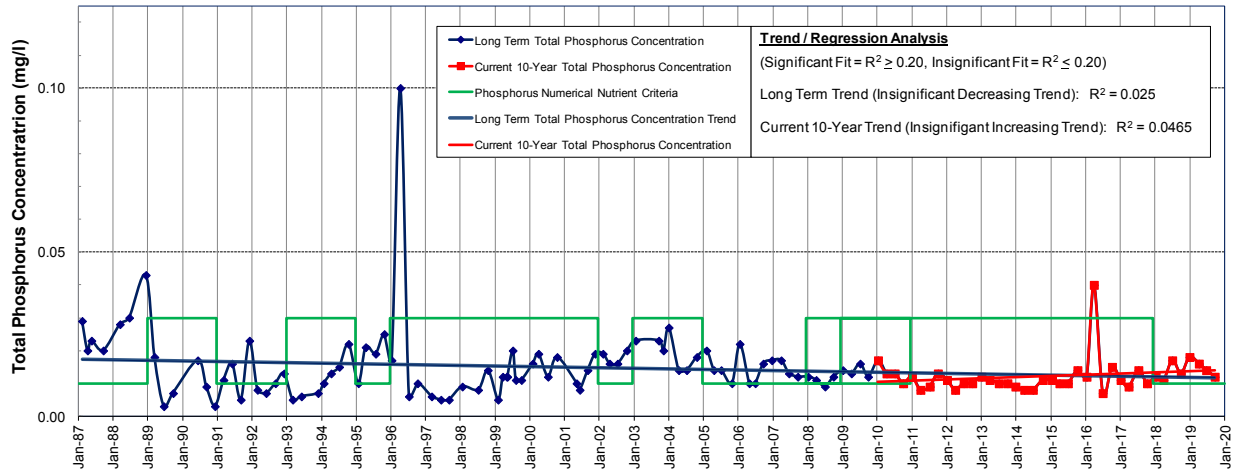
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



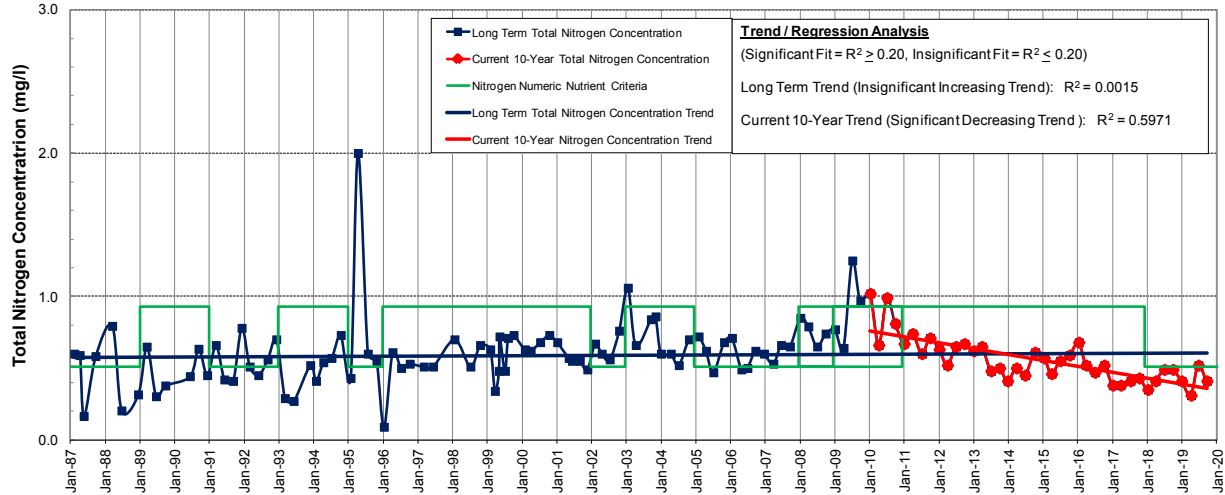
**Location:** Just north of Lido St. and Wendy Way intersection.

# LAKE CANE NUTRIENT TRENDS

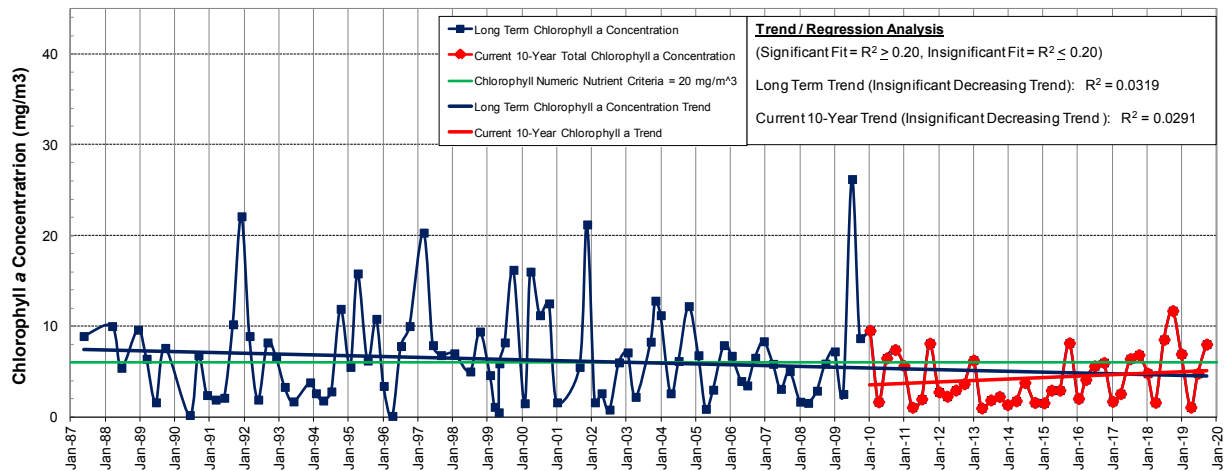
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a





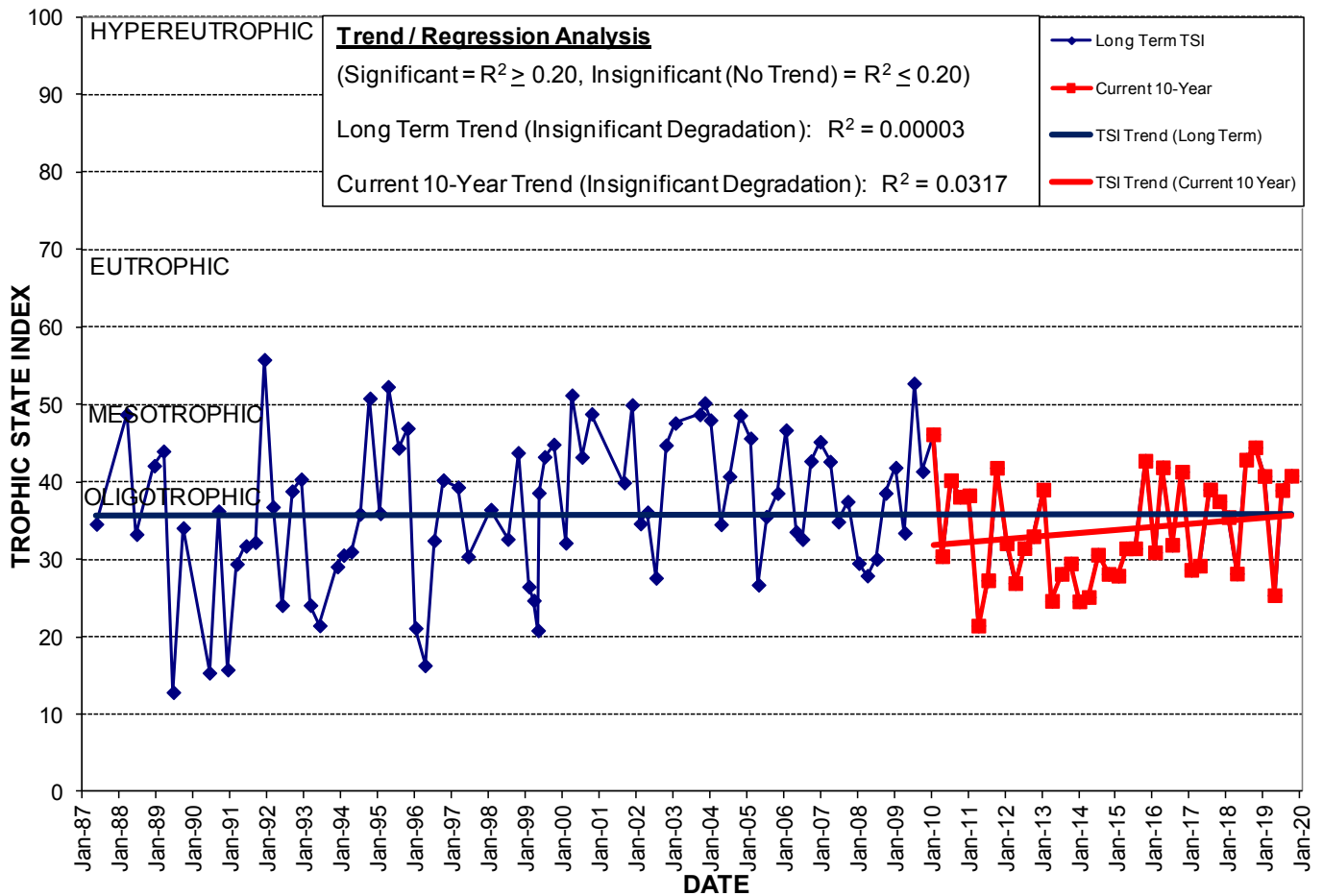
# LAKE CANE

Lake Origin: **Natural**  
 Lake Surface Area: **82 acres**  
 Lake Volume: **62,169,700 ft<sup>3</sup>**  
 Shoreline Length: **7,396 ft (2,424 m)**  
 Mean Depth: **16.7 ft (5.1 m)**  
 Maximum Depth: **37.4 ft (11.4 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 29' 06.7"** Long **W 81° 28' 22.1"**  
 Section **13** Township **23S** Range **28E**  
 Water Management District: **South Florida**  
 Drainage Code: **SC-06**  
 Drainage Basin Area: **6 acres**  
 Land Use: **Residential: 28% Commercial: 0%**  
**Industrial: 0% Highways: 1% Natural: 71%**  
 Limiting Nutrient: **Balanced for Phosphorus & Nitrogen**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 15			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.009	0.31	1.24	1.07	25
Maximum	0.018	0.52	2.82	11.70	44
Average	0.013	0.42	2.21	5.42	36

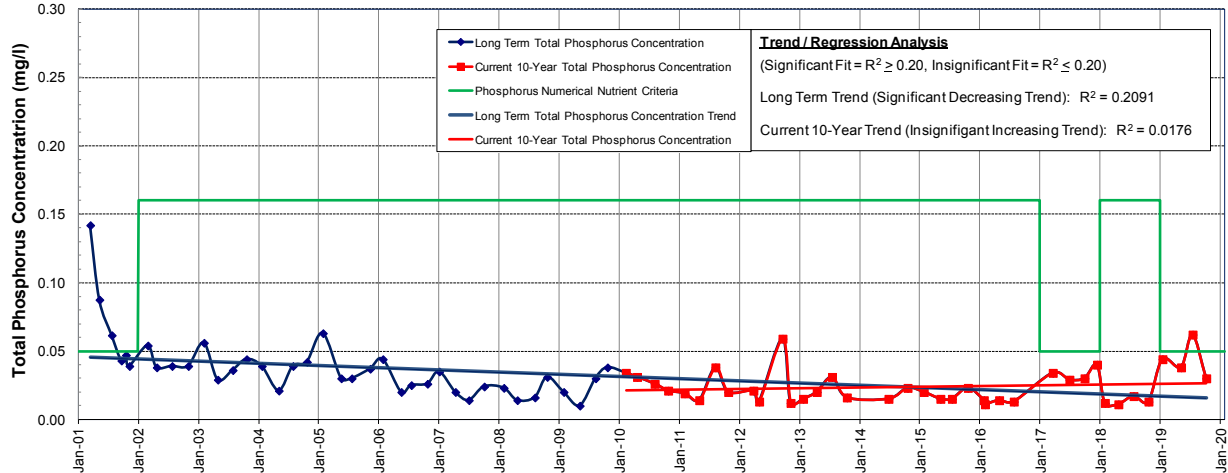
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



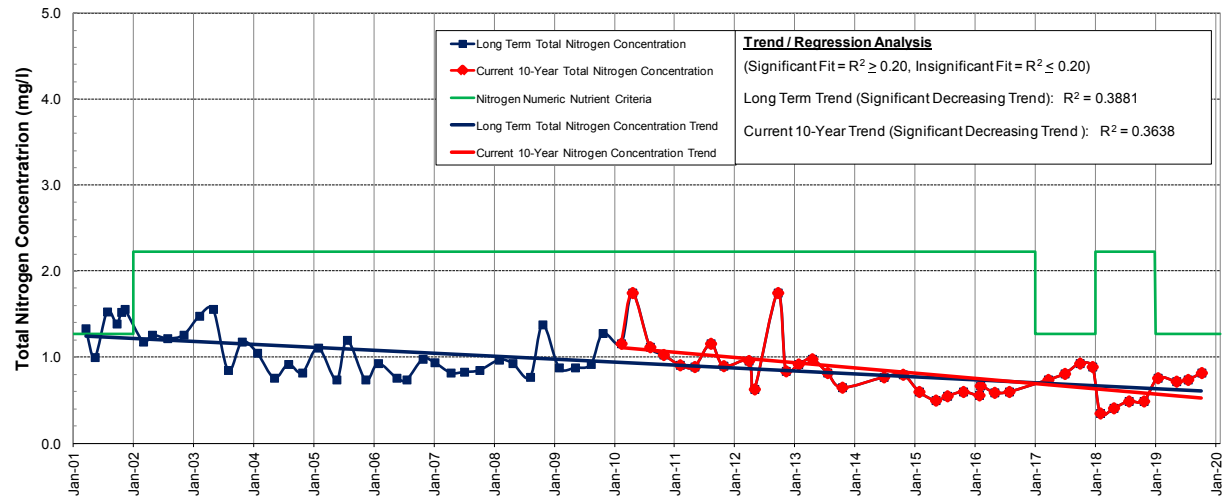
**Location:** Northeast of Turkey Lake Rd. and Vineland Rd. intersection.

# LAKE CATHERINE NUTRIENT TRENDS

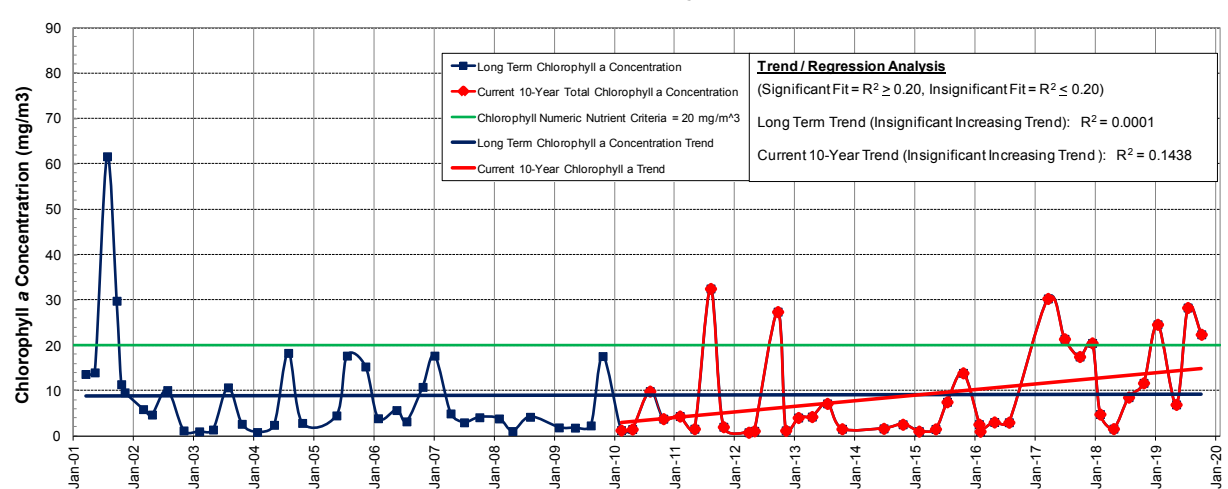
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



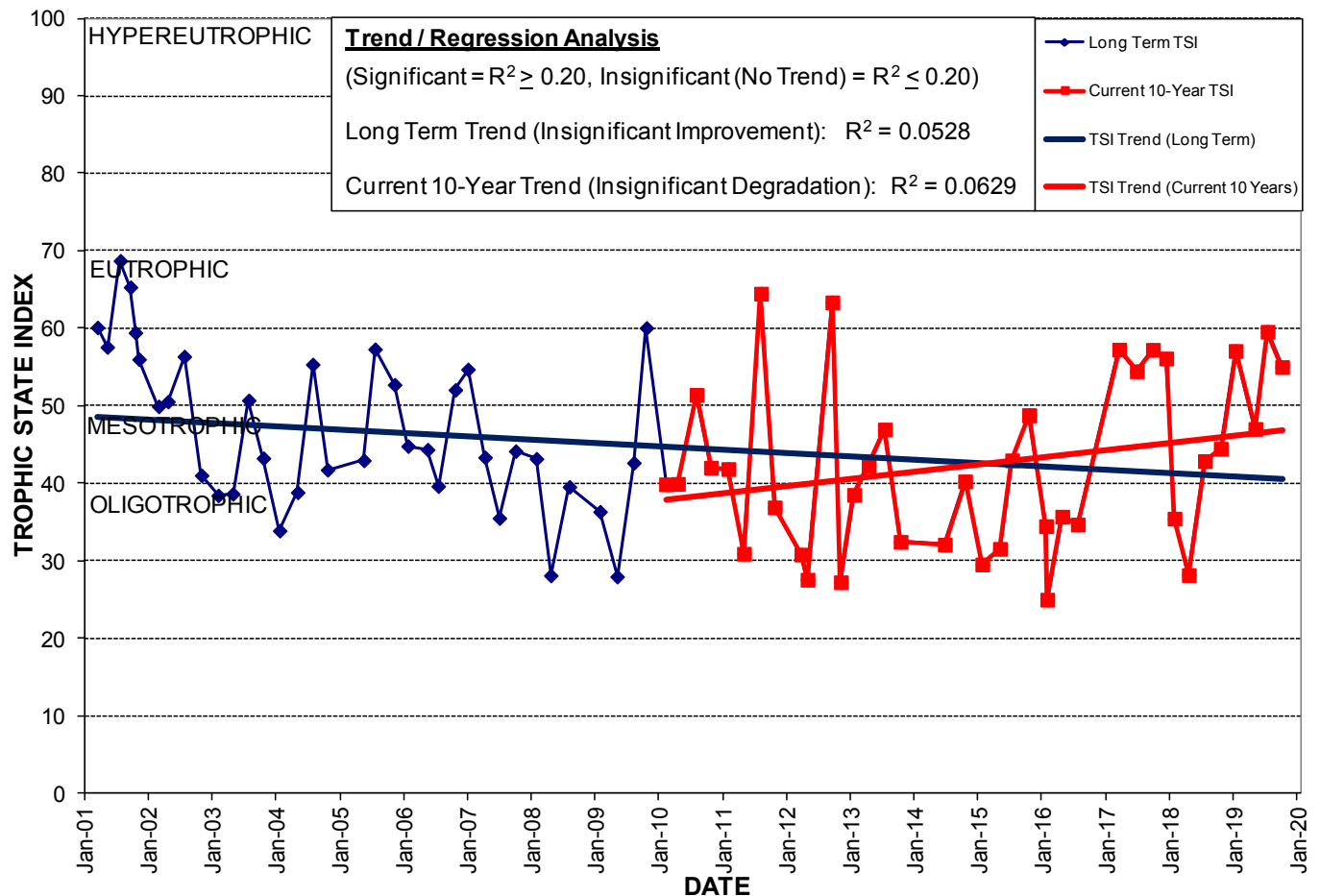
# LAKE CATHERINE

Lake Origin: **Natural**  
 Lake Surface Area: **83 acres**  
 Lake Volume: **No Data**  
 Shoreline Length: **18,587 ft (5,665 m)**  
 Mean Depth: **No Data**  
 Maximum Depth: **31.0 ft (9.4 m)**  
 Drain Wells: **3** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 81° 24' 41"** Long **W 28° 30' 11"**  
 Section **09** Township **23N** Range **29W**  
 Water Management District: **South Florida**  
 Drainage Code: **SC-23**  
 Drainage Basin Area: **224 acres**  
 Land Use: **Residential: 22% Commercial: 28%**  
**Industrial: 3% Highways: 38% Natural: 10%**  
 Limiting Nutrient: **Balanced for Phosphorus & Nitrogen**

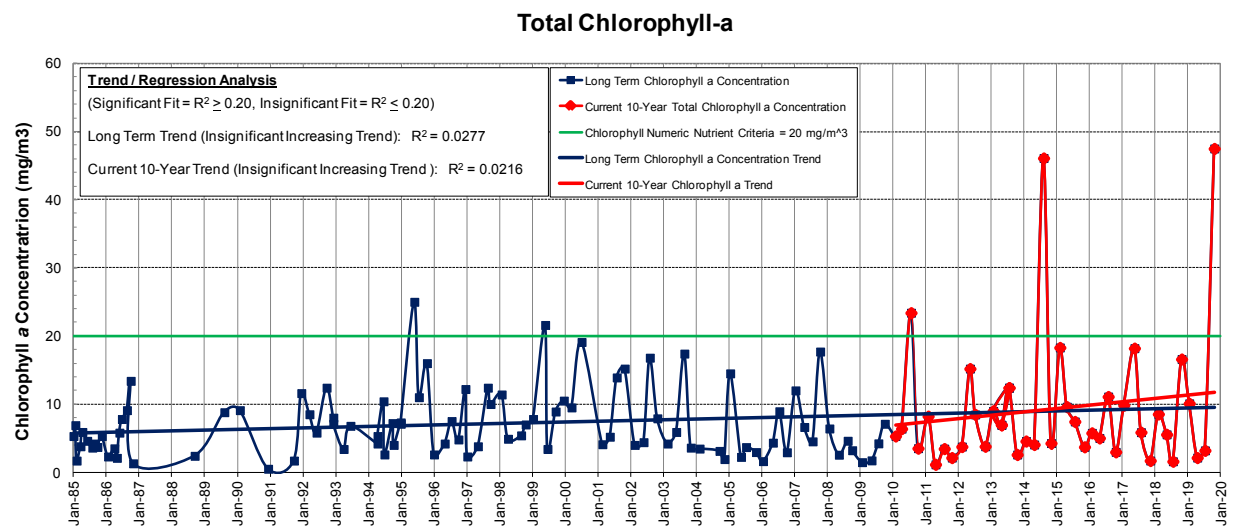
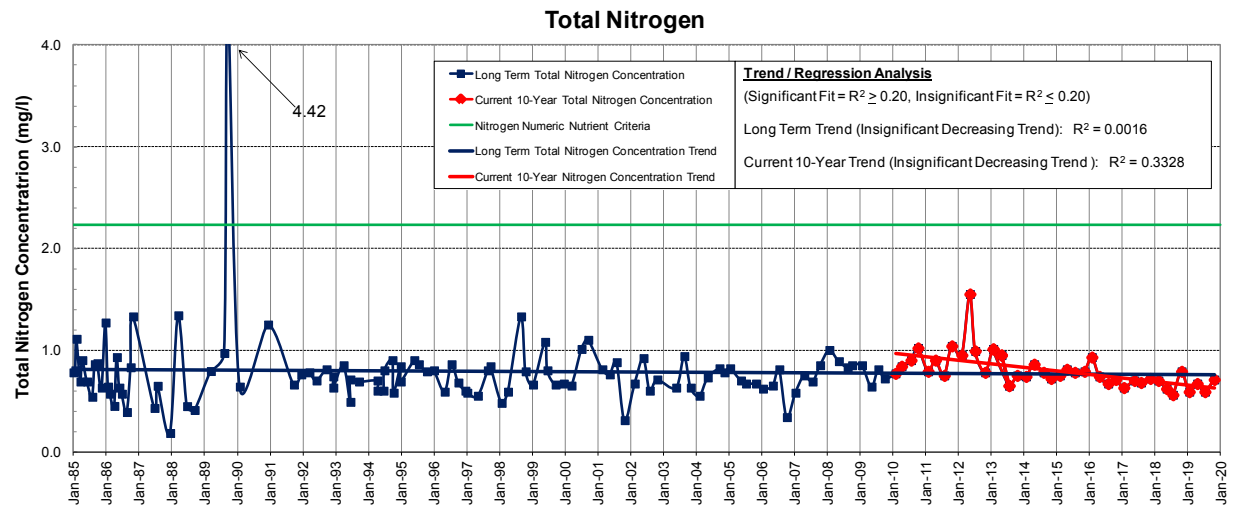
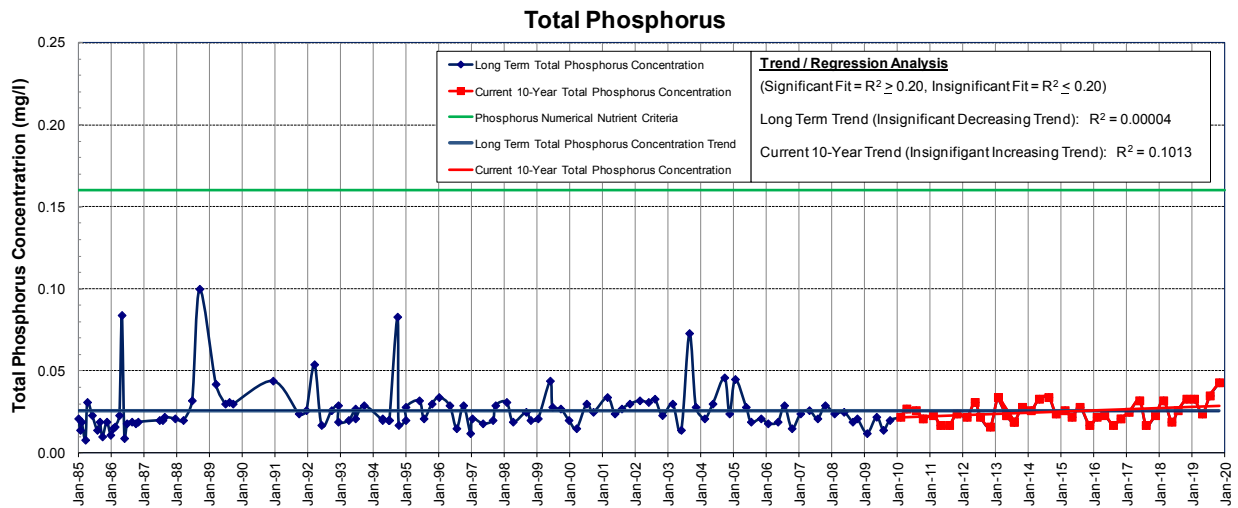
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 72			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.011	0.35	0.97	1.60	28
Maximum	0.062	0.93	2.82	30.30	60
Average	0.030	0.68	1.61	16.55	50

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** South off 33<sup>rd</sup> St., north of Americana Blvd., East of John Young Pkwy.

# LAKE CAY DEE NORTH NUTRIENT TRENDS



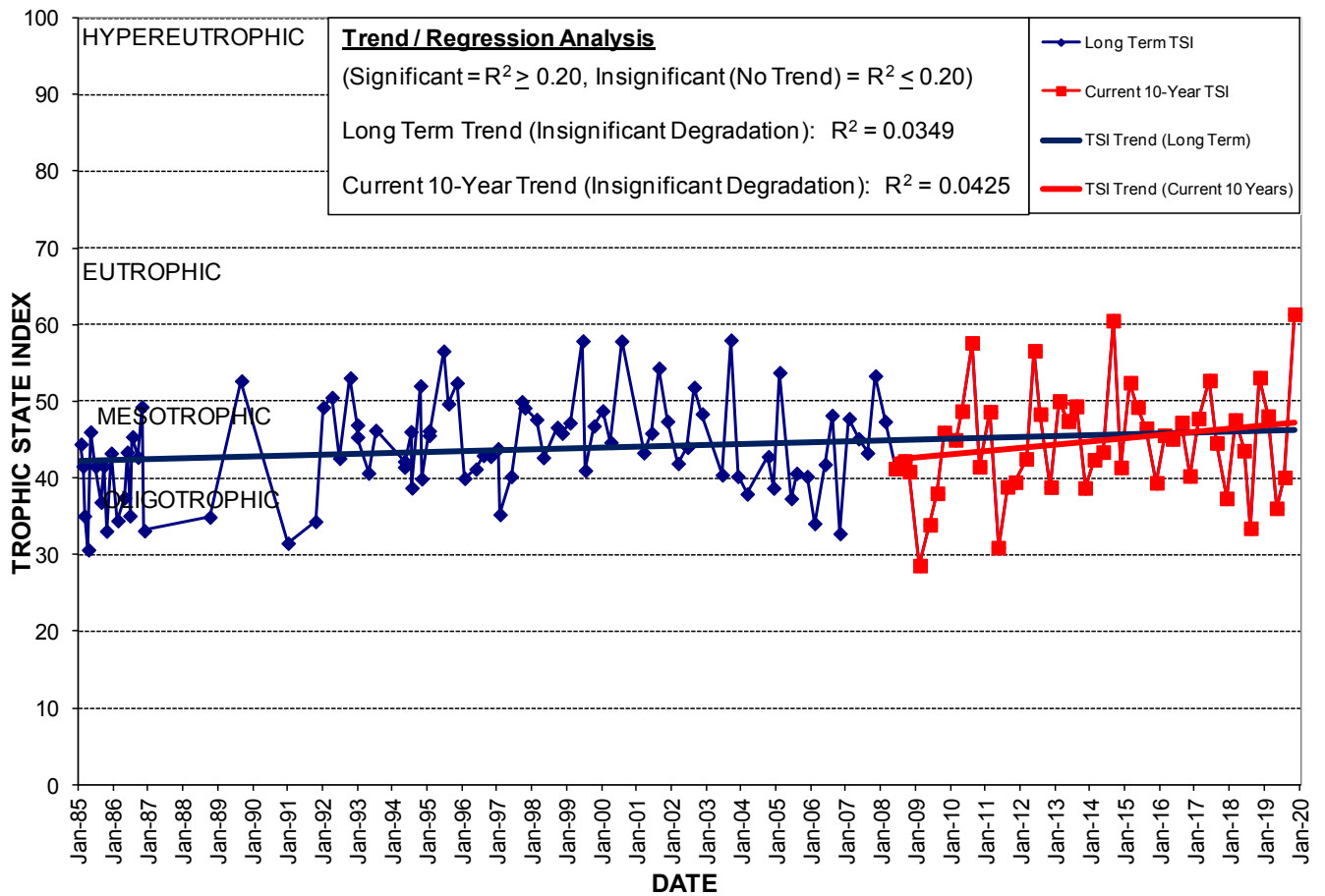
# LAKE CAY DEE NORTH

Lake Origin\*: **Natural**  
 Lake Surface Area\*: **11 acres \***  
 Lake Volume\*: **4,724,500 ft<sup>3</sup> \***  
 Shoreline Length\*: **3,710 ft \* (1,131 m)**  
 Mean Depth\*: **9.0 ft \* (2.7 m)**  
 Maximum Depth\*: **22.1 ft \* (6.7 m)**  
 Drain Wells\*: **1** Aeration\*: **Yes**  
 Grass Carp (*Ctenopharyngodon idella*)\*: **No**  
 \* Includes Lakes Cay Dee North and South

Location\*: Lat **N 28° 34' 57.6"** Long **W 81° 20' 38.4"**  
 Section **19** Township **22S** Range **30E**  
 Water Management District\*: **St. Johns River**  
 Drainage Code\*: **HB-34**  
 Drainage Basin Area\*: **53 acres**  
 Land Use\*: **Residential: 85% Commercial: 0%**  
**Industrial: 0% Highways: 0% Natural: 15%**  
 Limiting Nutrient: **Phosphorus**

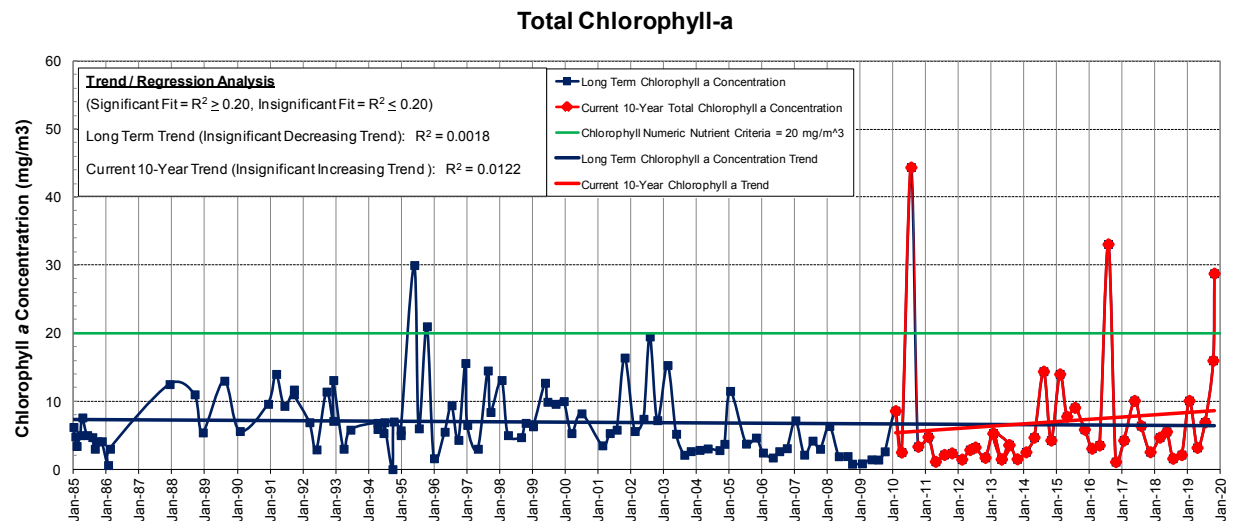
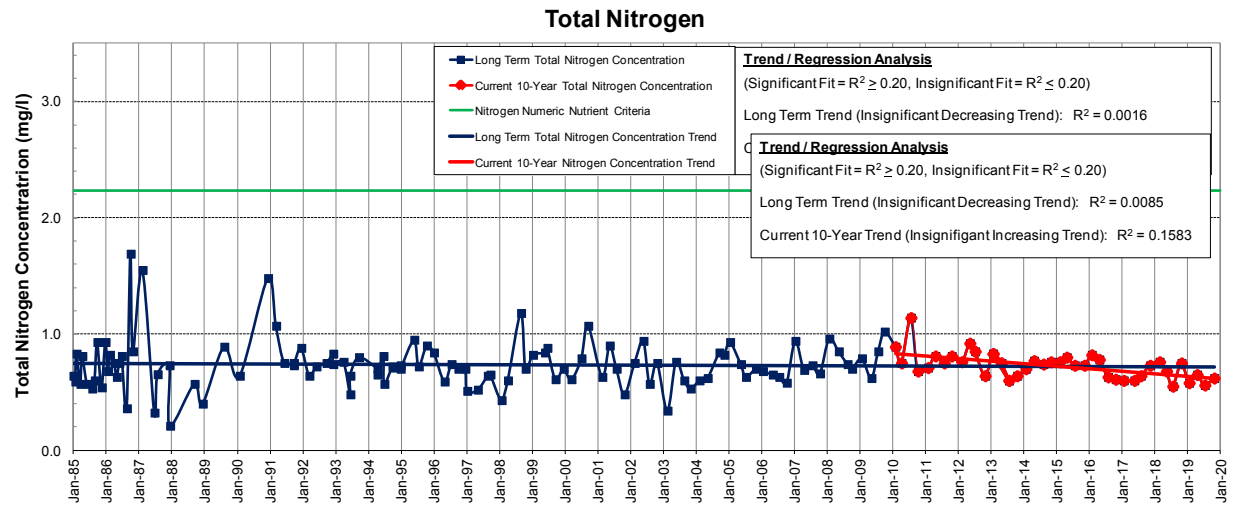
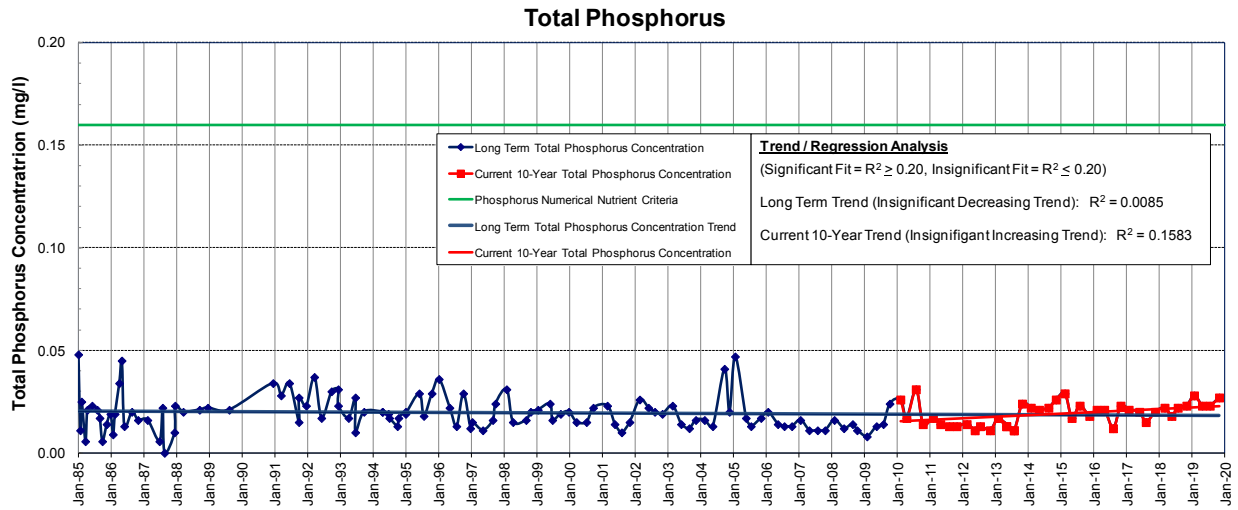
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 48			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.017	0.56	1.23	1.60	33
Maximum	0.043	0.79	1.81	47.50	61
Average	0.029	0.66	1.57	10.90	45

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Southeast of Falcon Dr. and northwest of Heron Dr.

# LAKE CAY DEE SOUTH NUTRIENT TRENDS



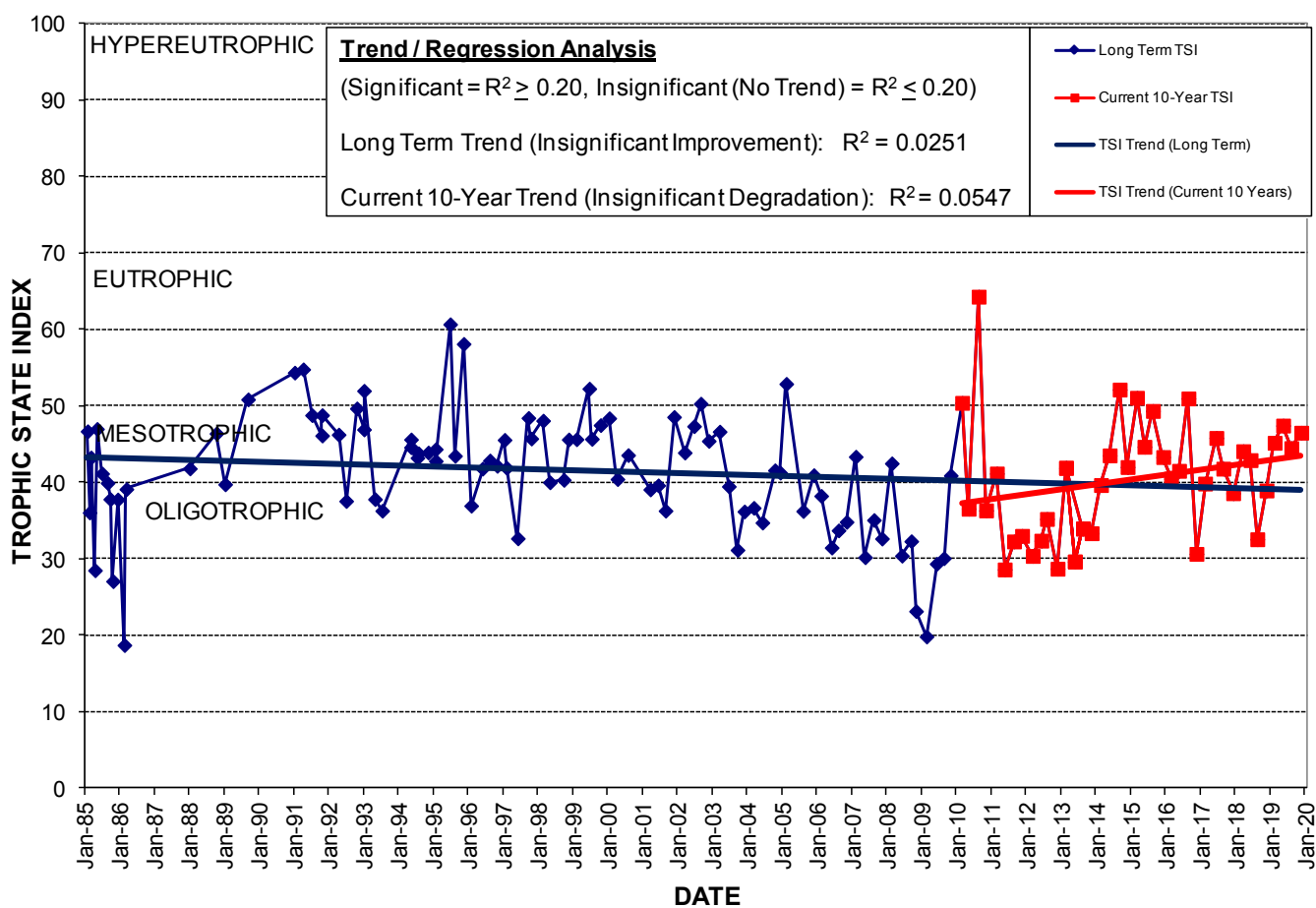
# LAKE CAY DEE SOUTH

Lake Origin\*: **Natural**  
 Lake Surface Area\*: **11 acres \***  
 Lake Volume\*: **4,724,500 ft<sup>3</sup> \***  
 Shoreline Length\*: **3,710 ft \* (1,131 m)**  
 Mean Depth\*: **9.0 ft \* (2.7 m)**  
 Maximum Depth\*: **22.1 ft \* (6.7 m)**  
 Drain Wells\*: **1** Aeration\*: **Yes**  
 Grass Carp (*Ctenopharyngodon idella*)\*: **No**  
 \* Includes Lakes Cay Dee North and South

Location\*: **Lat N 28° 34' 57.6" Long W 81° 20' 38.4"**  
 Section **19** Township **22S** Range **30E**  
 Water Management District\*: **St. Johns River**  
 Drainage Code\*: **HB-34**  
 Drainage Basin Area\*: **53 acres**  
 Land Use\*: **Residential: 85% Commercial: 0%**  
**Industrial: 0% Highways: 0% Natural: 15%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 47			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.015	0.55	1.34	1.60	33
Maximum	0.028	0.76	2.82	28.80	55
Average	0.022	0.64	1.80	7.88	42

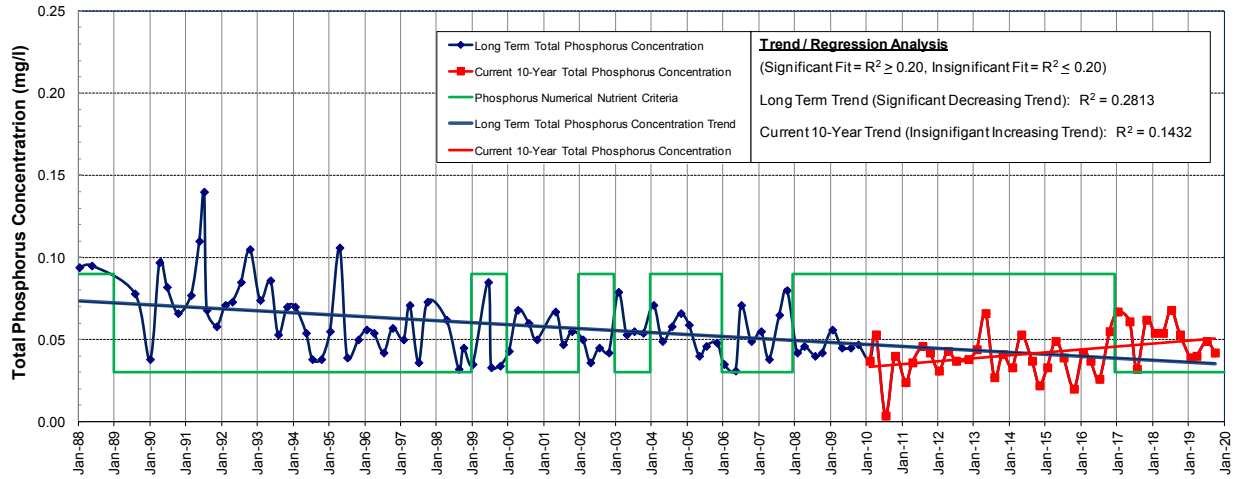
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



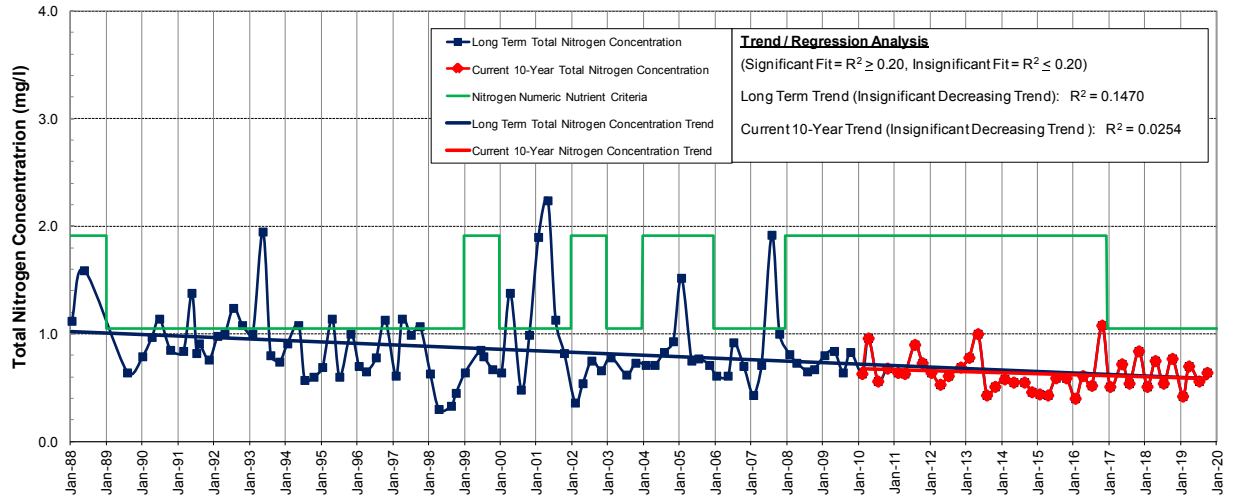
**Location:** Southeast of Falcon Dr. and northwest of Heron Dr.

# LAKE CHEROKEE NUTRIENT TRENDS

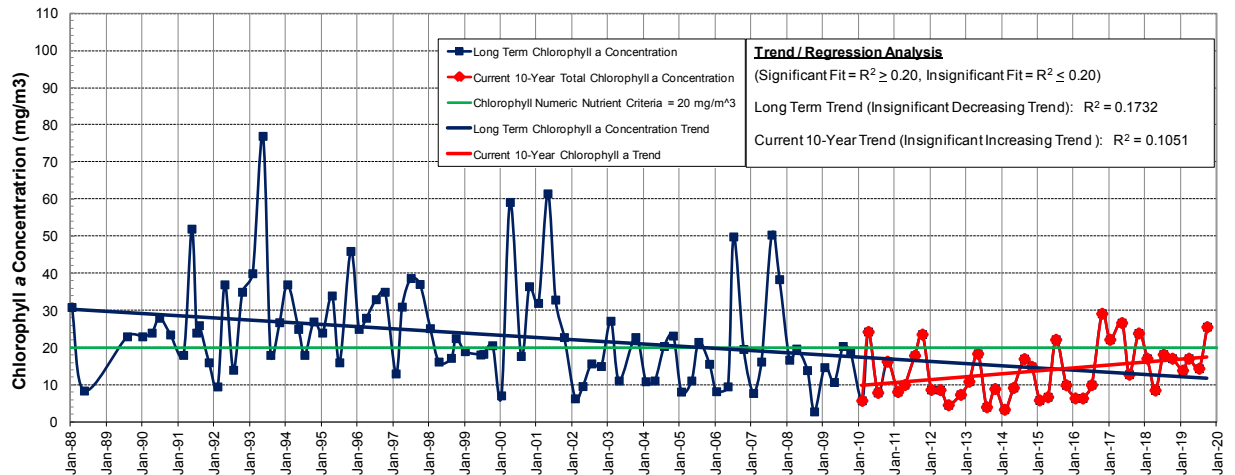
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a





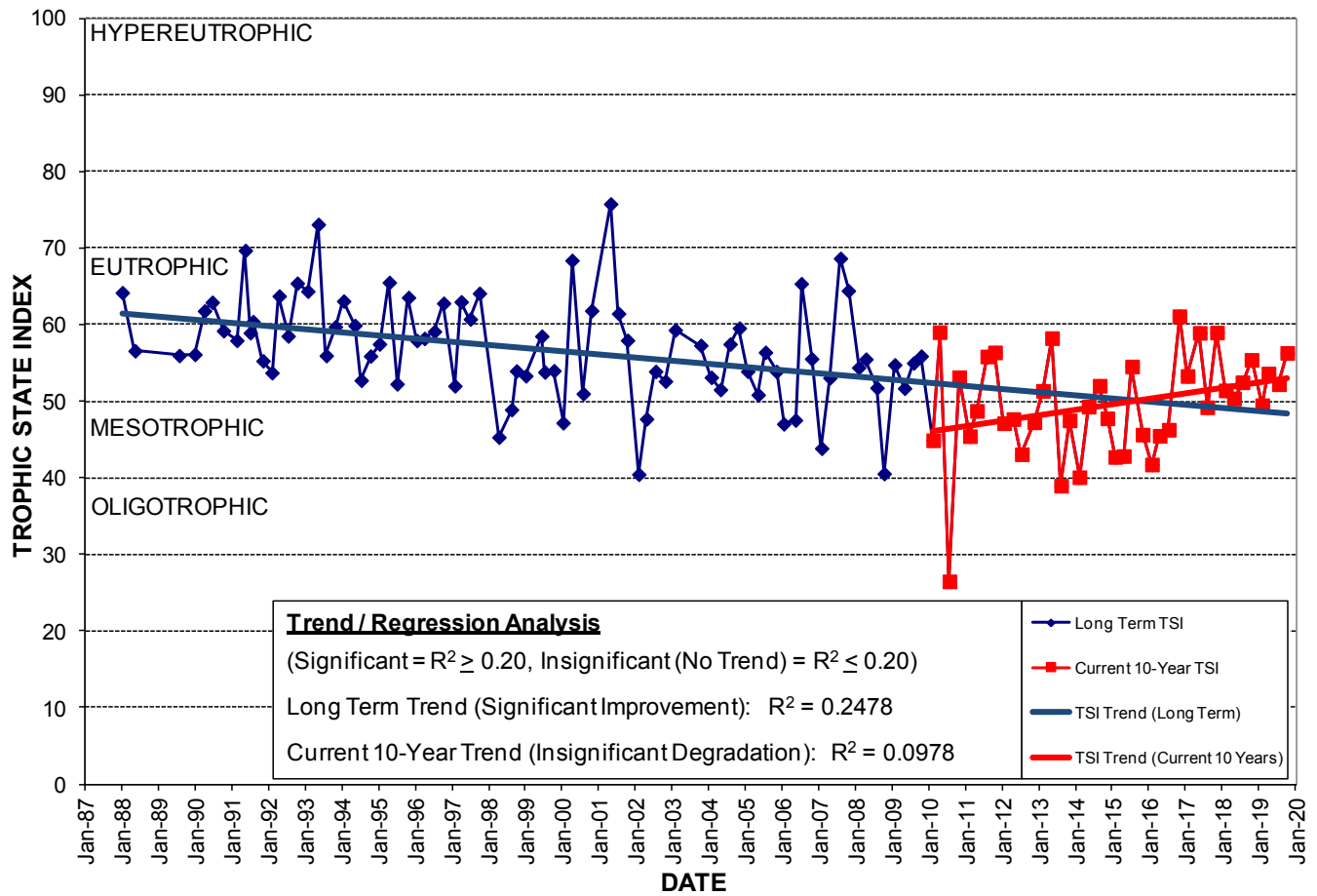
# LAKE CHEROKEE

Lake Origin: **Natural**  
 Lake Surface Area: **11 acres**  
 Lake Volume: **4,807,900 ft<sup>3</sup>**  
 Shoreline Length: **2,980 ft (908 m)**  
 Mean Depth: **8.5 ft (2.6 m)**  
 Maximum Depth: **22.4 ft (6.8 m)**  
 Drain Wells: **3** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 31' 58.8"** Long **W 81° 22' 16.0"**  
 Section **36** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-29**  
 Drainage Basin Area: **147 acres**  
 Land Use: **Residential: 53% Commercial: 31%**  
**Industrial: 0% Highways: 7% Natural: 9%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

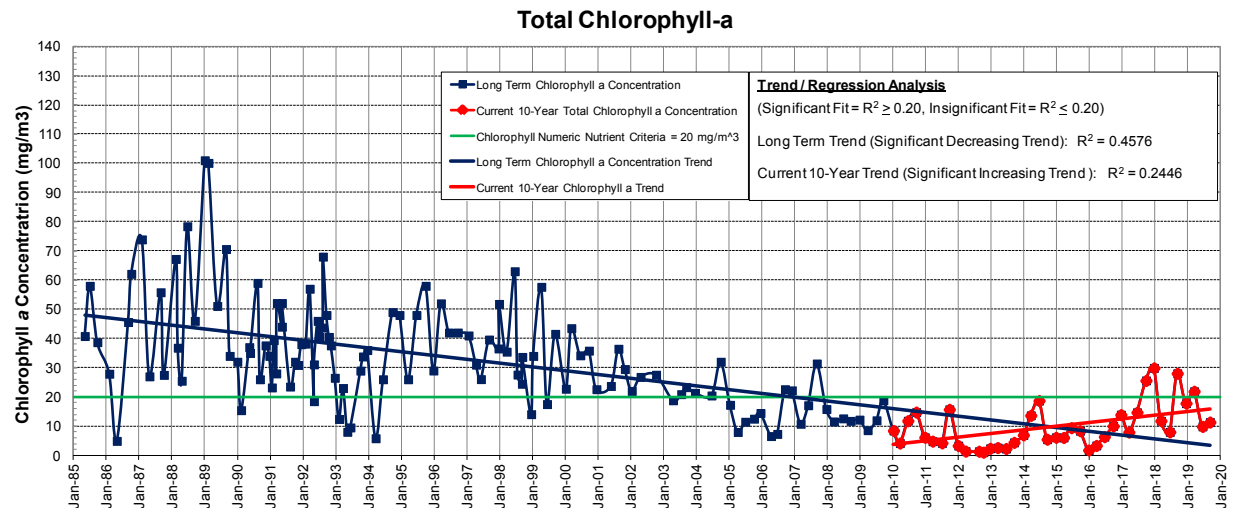
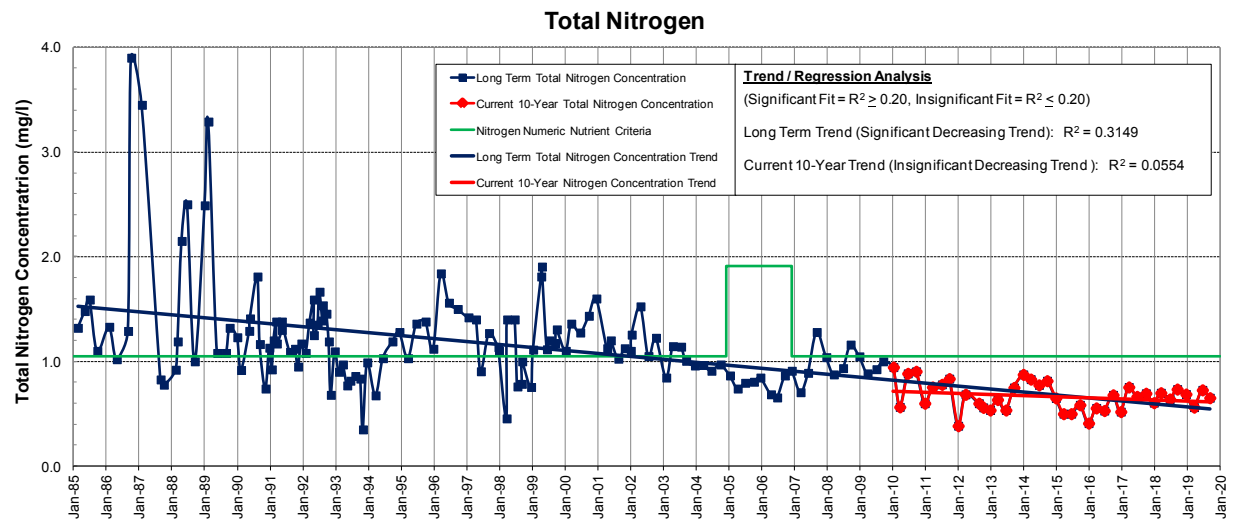
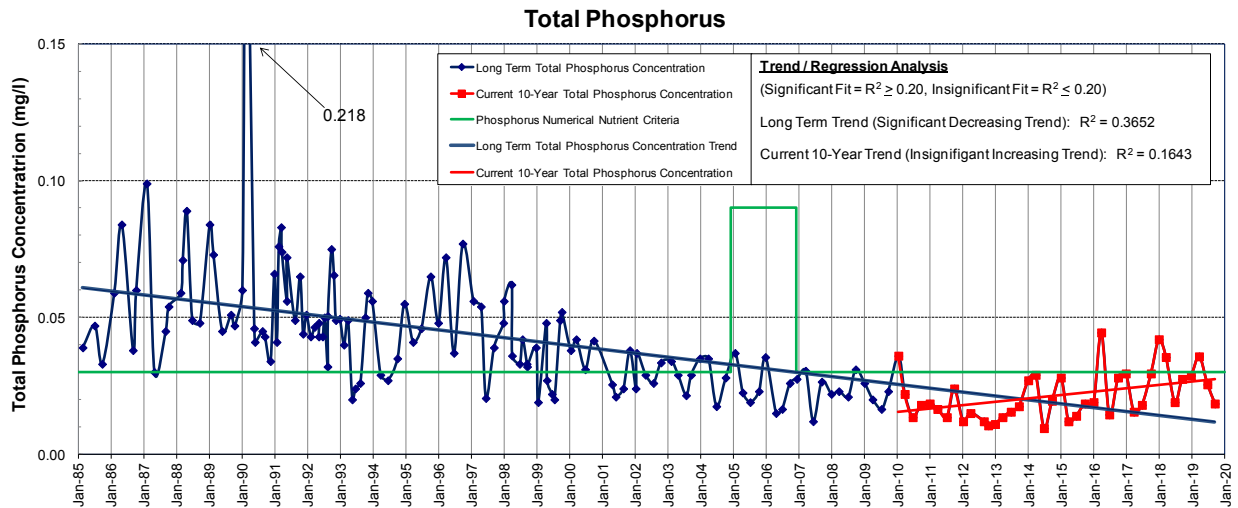
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 63			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.032	0.42	0.75	8.54	49
Maximum	0.068	0.84	1.35	26.70	59
Average	0.052	0.63	0.94	18.13	53

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** South of Osceola Ave. and Palmer St. intersection.

# CLEAR LAKE NUTRIENT TRENDS



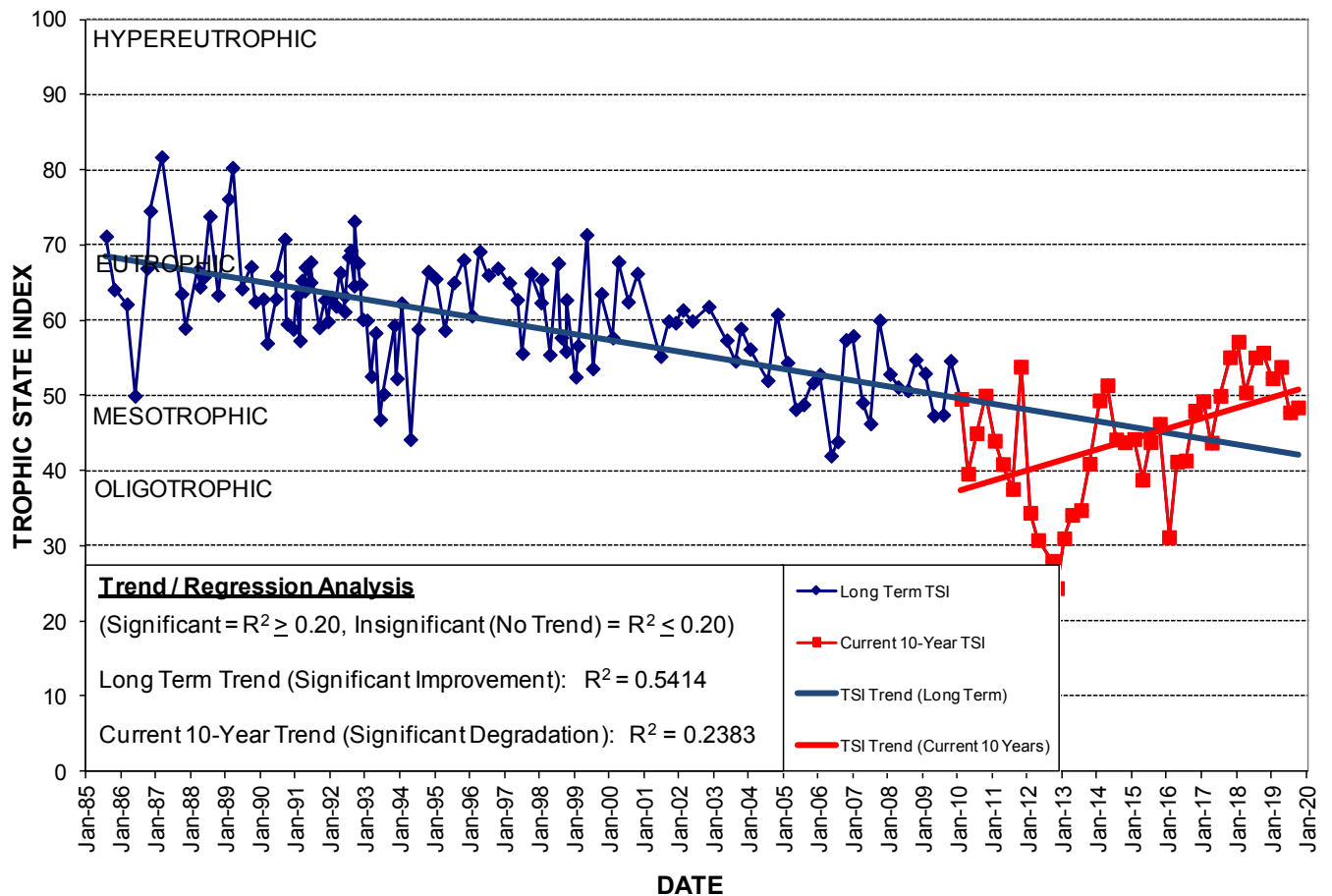
# CLEAR LAKE

Lake Origin: **Natural**  
 Lake Surface Area: **358 acres**  
 Lake Volume: **200,942,280 ft<sup>3</sup>**  
 Shoreline Length: **42,116 ft (12,837 m)**  
 Mean Depth: **12.9 ft (3.9 m)**  
 Maximum Depth: **25.0 ft (7.6 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 31' 23.5"** Long **W 81° 24' 32.8"**  
 Section **4** Township **23S** Range **29E**  
 Water Management District: **South Florida**  
 Drainage Code: **SC-10**  
 Drainage Basin Area: **1,409 acres**  
 Land Use: **Residential: 42% Commercial: 26%**  
**Industrial: 2% Highways: 6% Natural: 24%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 59			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.016	0.52	0.64	7.91	44
Maximum	0.042	0.76	1.51	29.90	57
Average	0.027	0.66	1.10	16.73	51

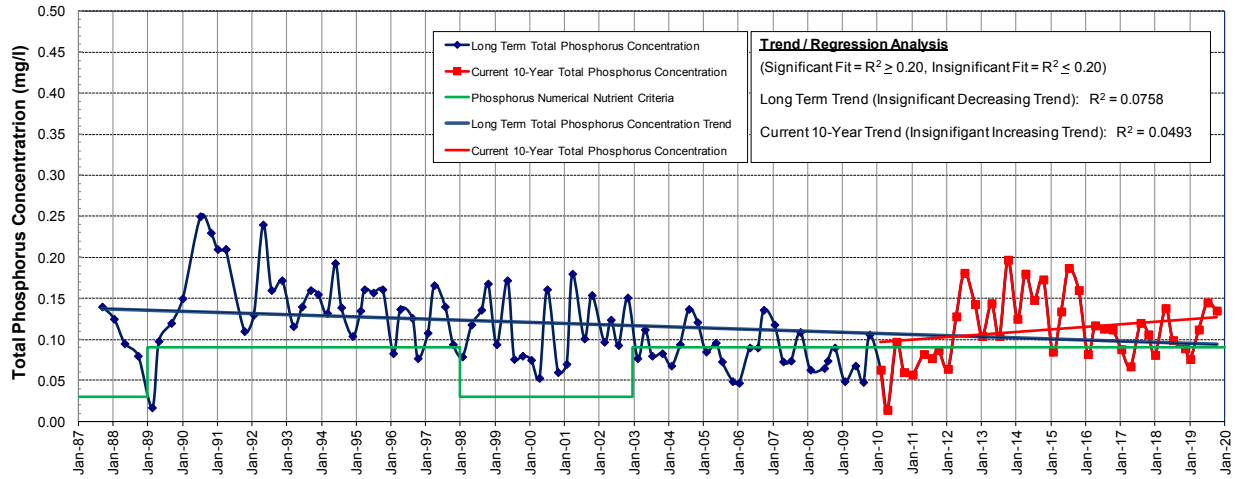
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



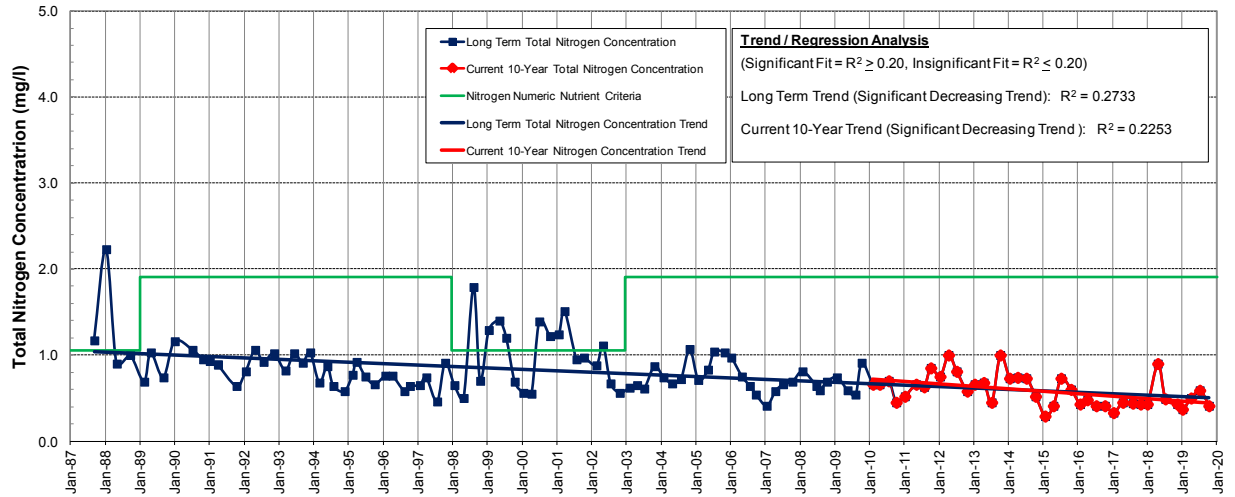
**Location:** Just south of the Gore St. and Tampa Ave. intersection.

# LAKE COMO NUTRIENT TRENDS

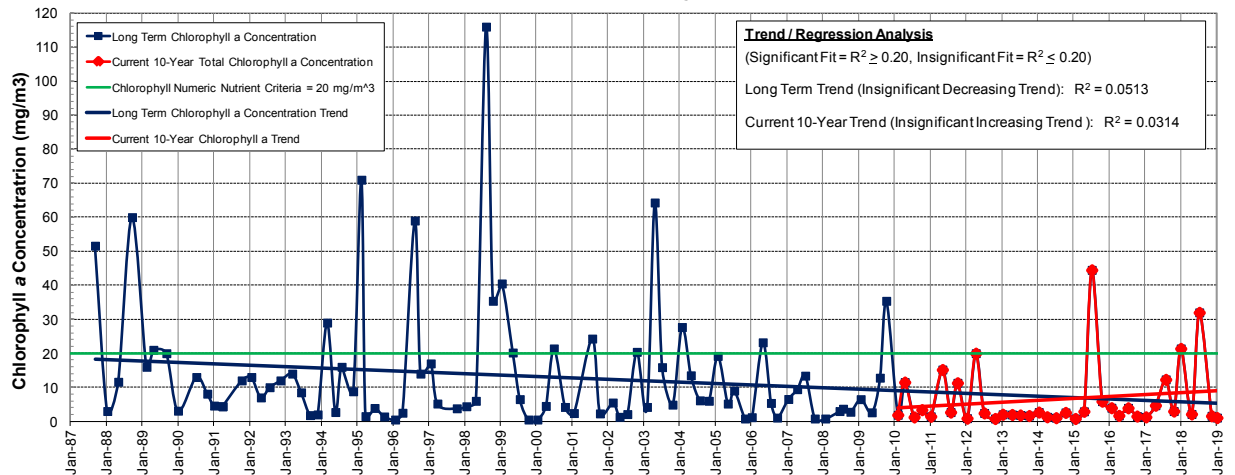
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



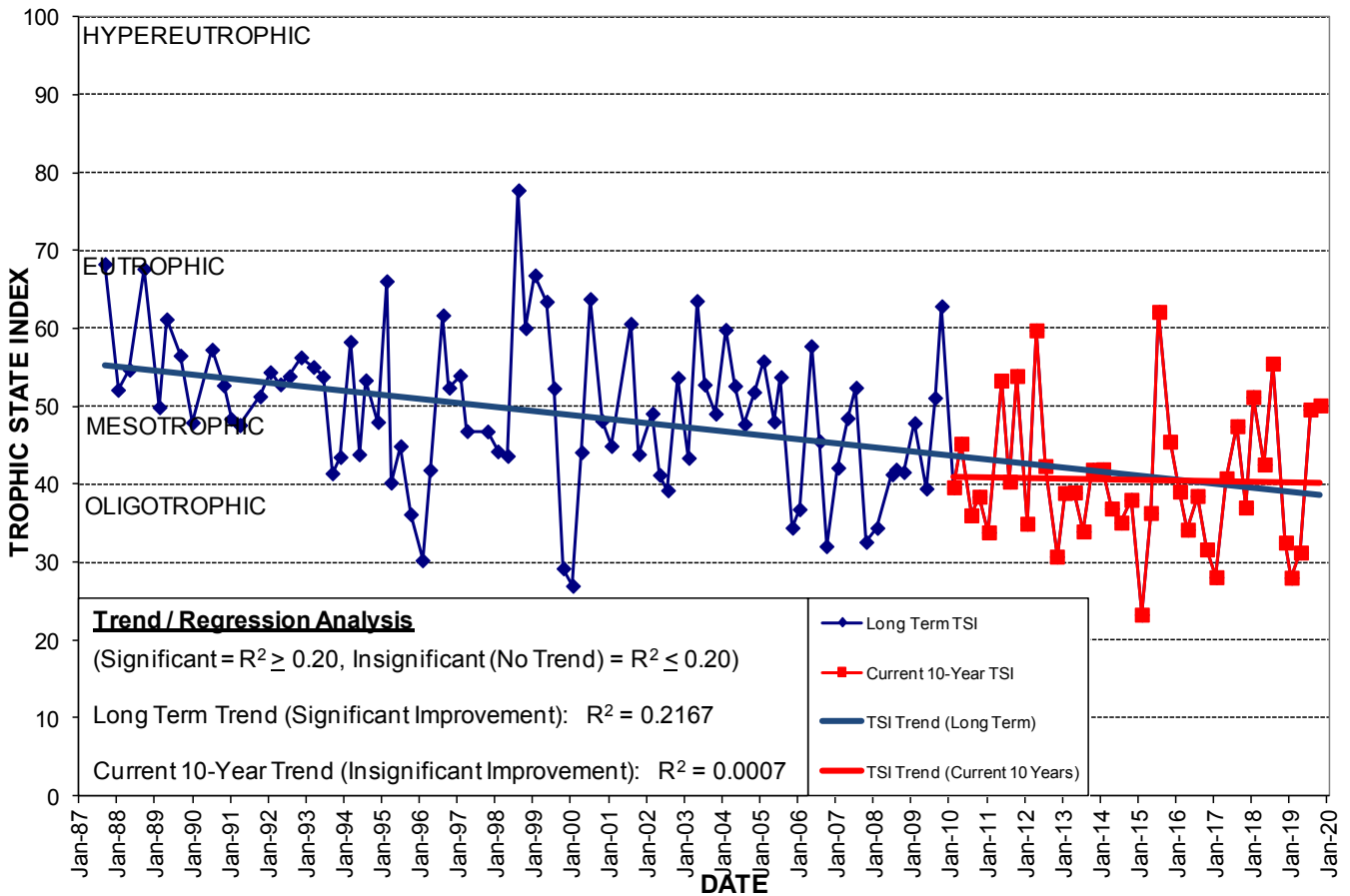
# LAKE COMO

Lake Origin: **Natural**  
 Lake Surface Area: **2 acres**  
 Lake Volume: **1,026,000 ft<sup>3</sup>**  
 Shoreline Length: **1,053 ft (321 m)**  
 Mean Depth: **13.5 ft (4.1 m)**  
 Maximum Depth: **24.0 ft (7.3 m)**  
 Drain Wells: **1** Aeration: **Yes** (installed 1/87)  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 32' 09.2"** Long **W 81° 21' 07.2"**  
 Section **31** Township **22S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-14**  
 Drainage Basin Area: **129 acres**  
 Land Use: **Residential: 87% Commercial: 5%**  
**Industrial: 0% Highways: 6% Natural: 2%**  
 Limiting Nutrient: **Nitrogen**

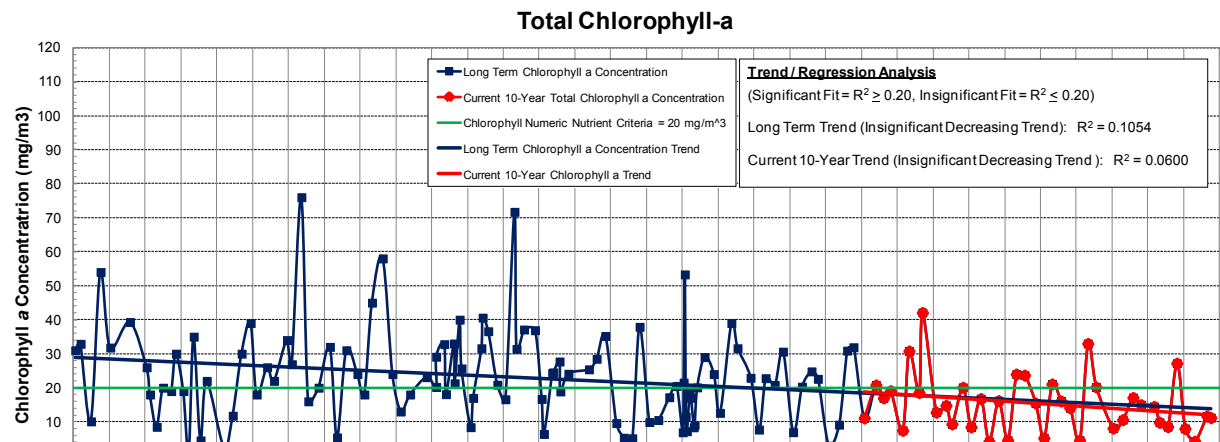
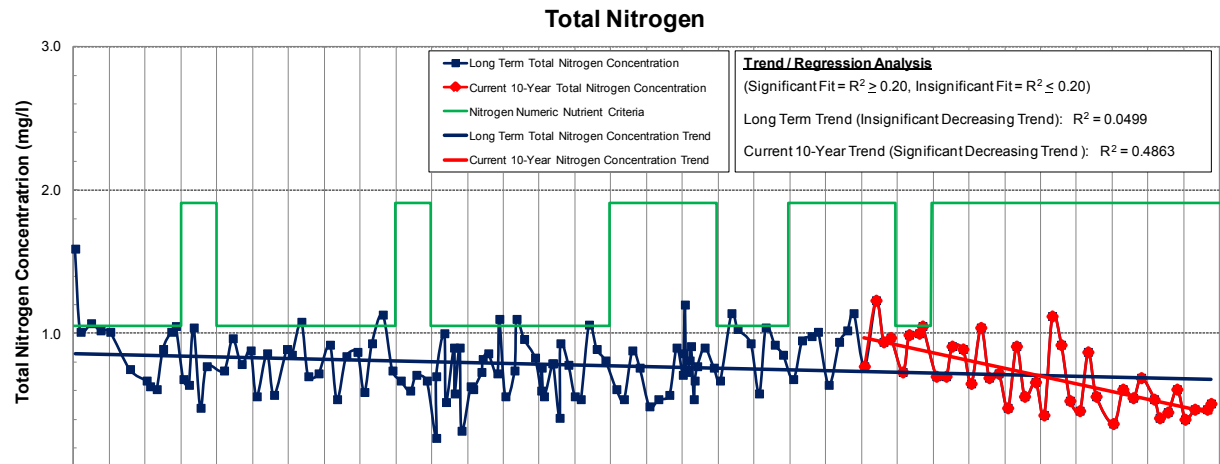
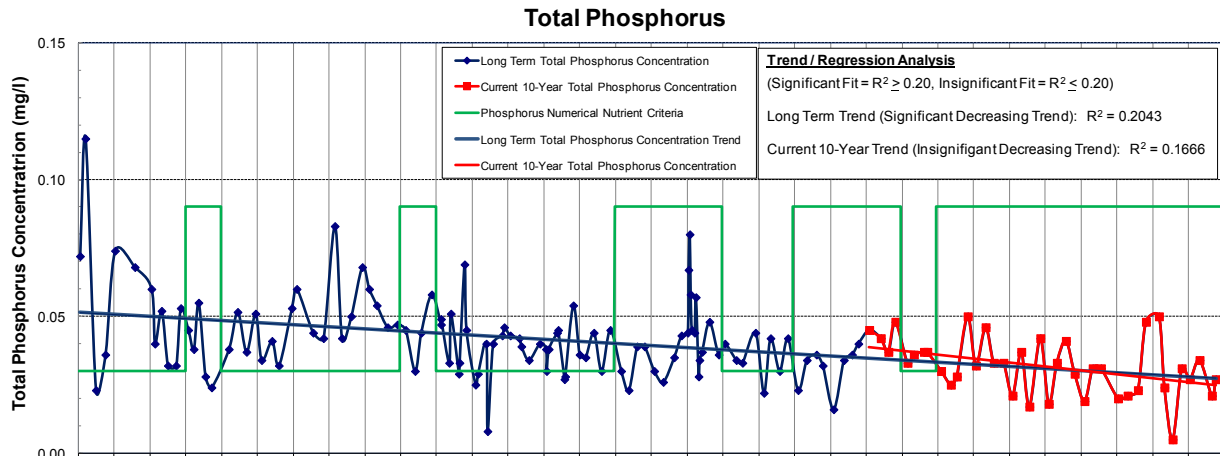
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 22			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.067	0.33	1.75	1.07	28
Maximum	0.145	0.90	3.55	32.00	56
Average	0.105	0.48	2.62	9.25	41

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Just south of the Bumby Ave. and Anderson St. intersection.

# LAKE CONCORD NUTRIENT TRENDS



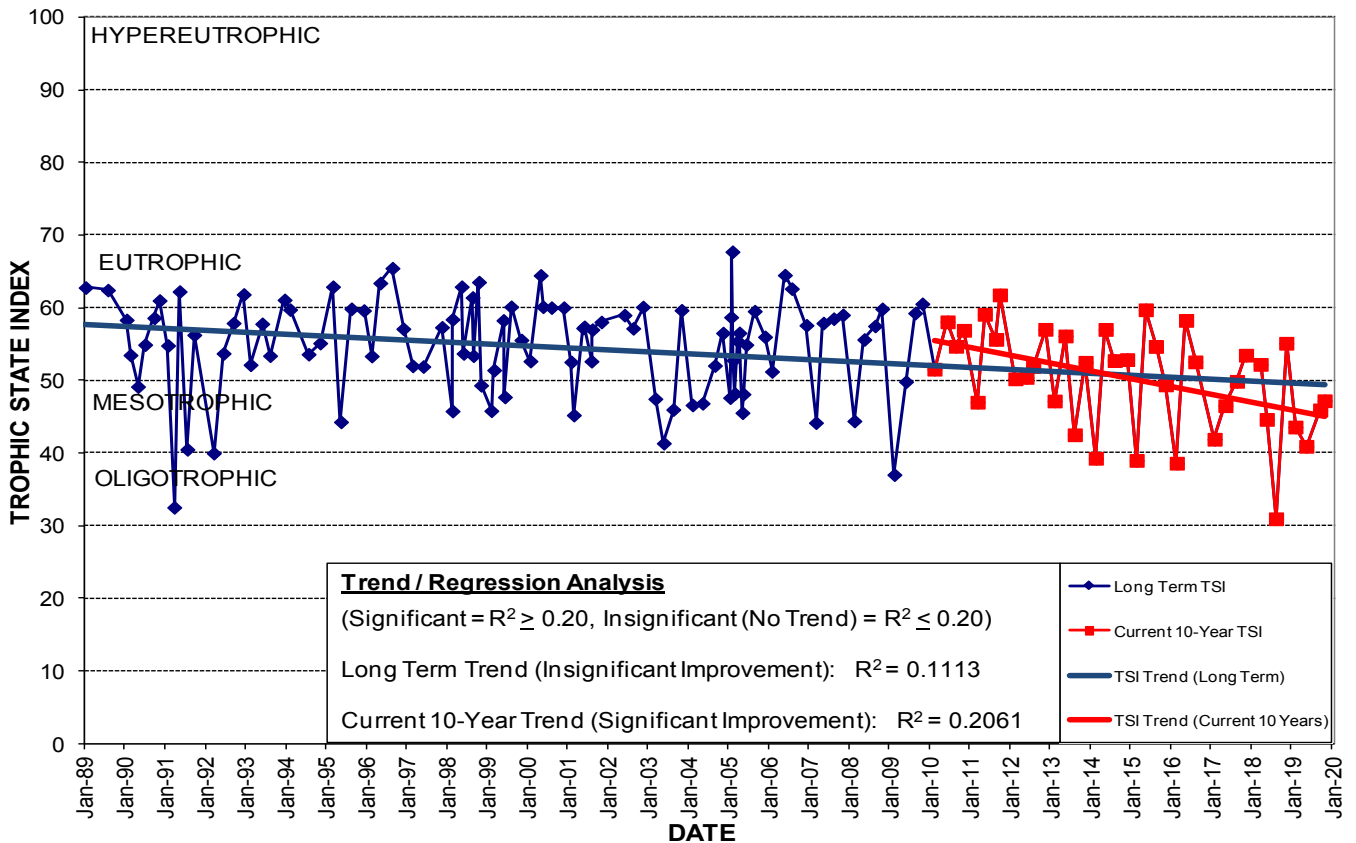
# LAKE CONCORD

Lake Origin: **Natural**  
 Lake Surface Area: **65 acres**  
 Lake Volume: **38,718,000 ft<sup>3</sup>**  
 Shoreline Length: **7,269 ft (2,216 m)**  
 Mean Depth: **13.6 ft (4.1 m)**  
 Maximum Depth: **39.0 ft (11.9 m)**  
 Drain Wells: **1** Aeration: **Yes** (installed 11/95)  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 33' 24.1"** Long **W 81° 23' 07.1"**  
 Section **23** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **HB-26**  
 Drainage Basin Area: **359 acres**  
 Land Use: **Residential: 77% Commercial: 14%**  
**Industrial: 0% Highways: 0% Natural: 9%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 38			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.005	0.37	0.79	4.27	31
Maximum	0.050	0.69	1.71	27.20	55
Average	0.028	0.51	1.18	12.17	46

**Long-Term Trophic State Index Values and Linear Regression Trend Line**

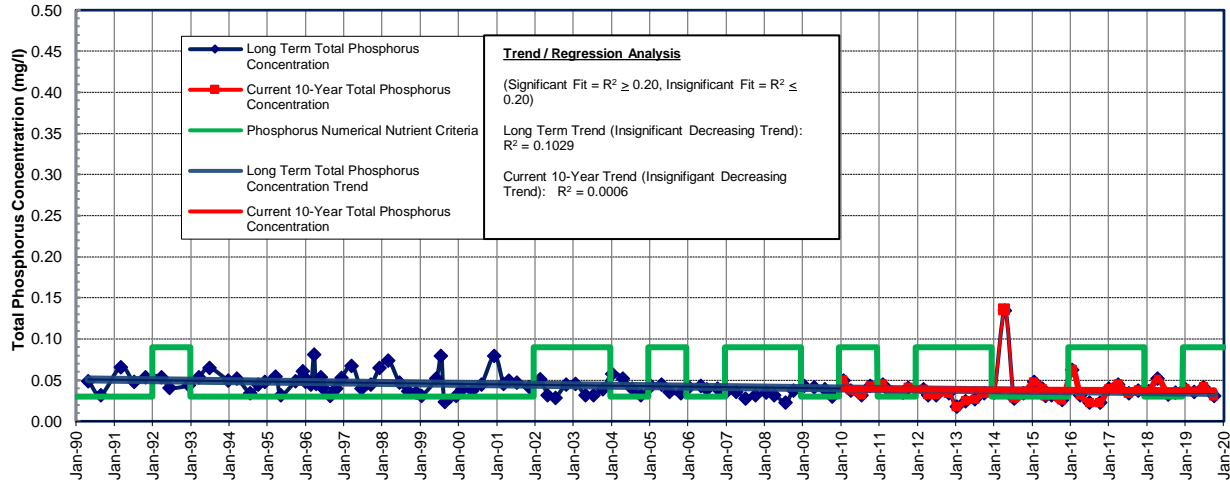


**Location:** Between I-4 and Edgewater Dr., north of Colonial Dr. in College Park.

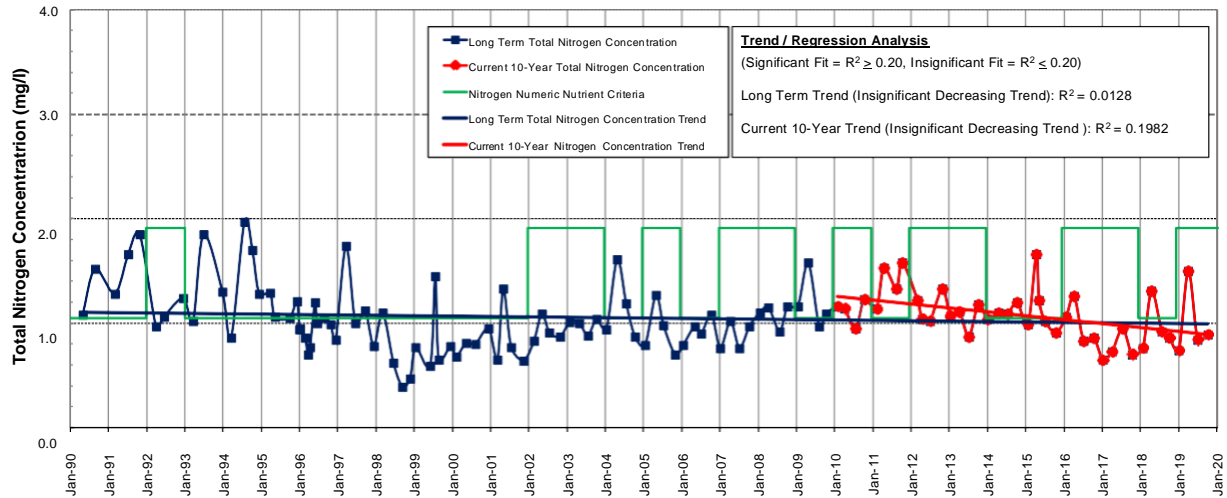


# LAKE COPELAND NUTRIENT TRENDS

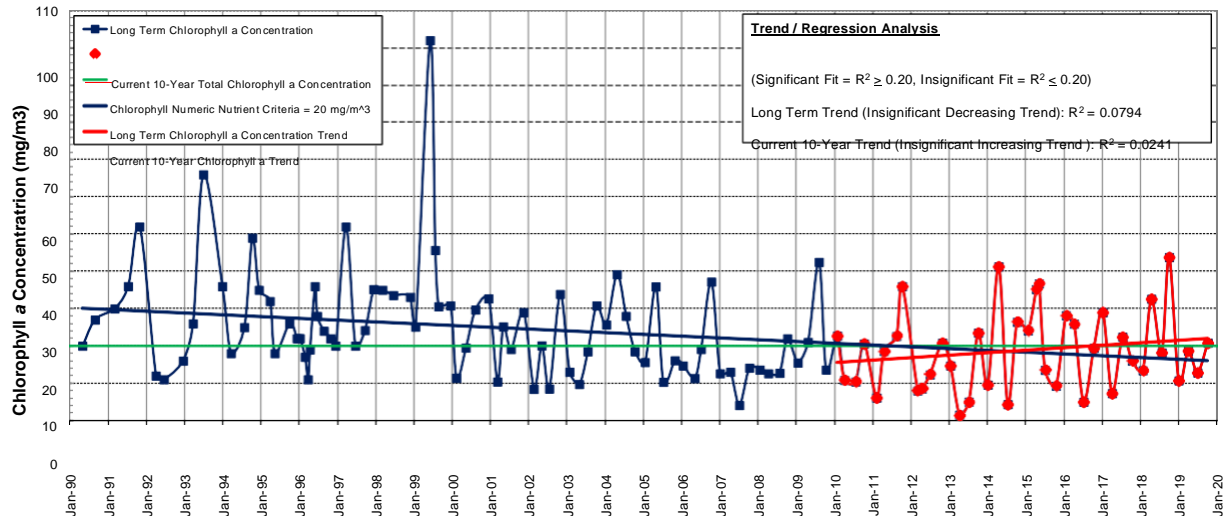
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a





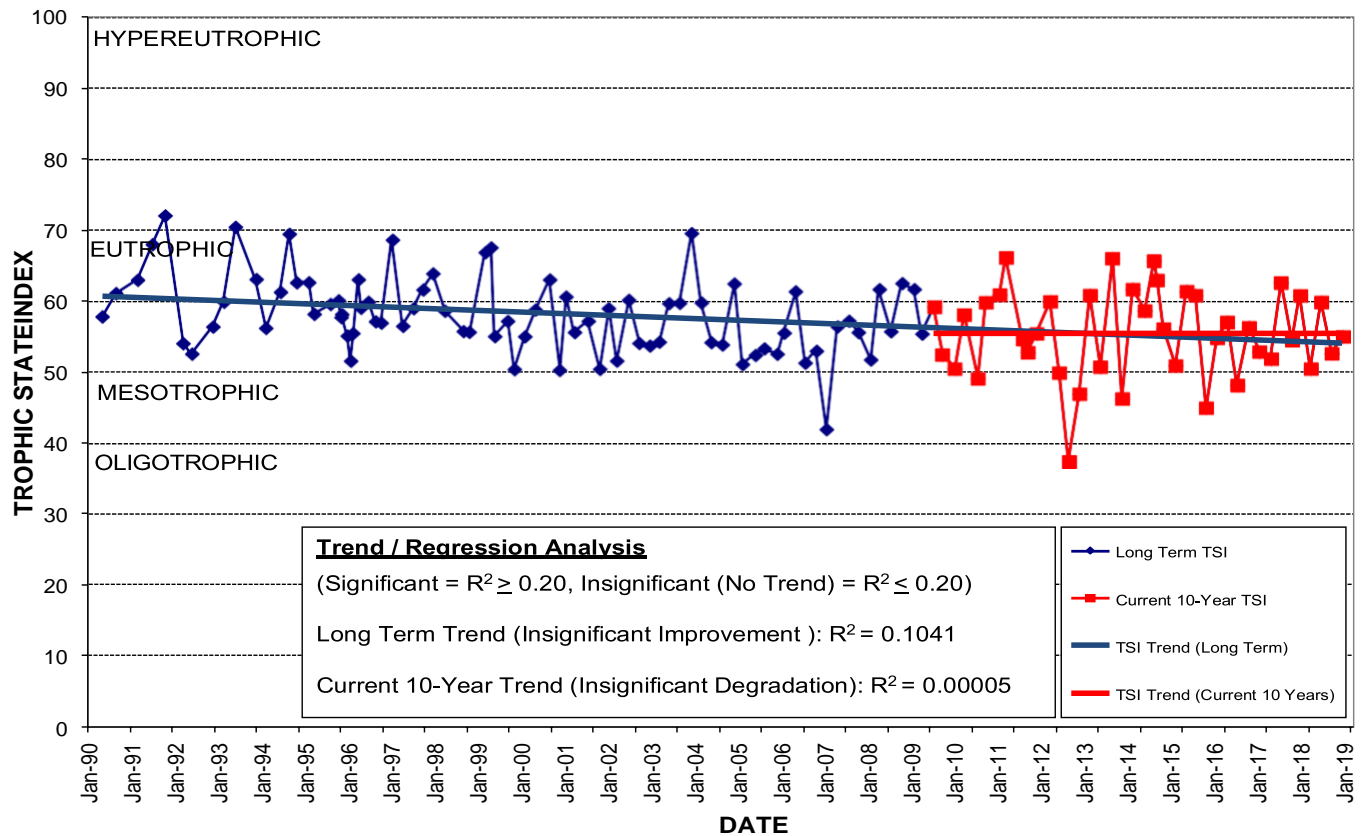
# LAKE COPELAND

Lake Origin: **Natural**  
 Lake Surface Area: **14 acres**  
 Lake Volume: **5,661,200 ft<sup>3</sup>**  
 Shoreline Length: **2,450 ft (747 m)**  
 Mean Depth: **8.7 ft (2.7 m)**  
 Maximum Depth: **16.0 ft (4.9 m)**  
 Drain Wells: **1**    Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28 ° 31' 39.0"** Long **W 81 ° 22' 28.9"**  
 Section **36** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-31**  
 Drainage Basin Area: **46 acres**  
 Land Use: **Residential: 62% Commercial: 7%**  
           **Industrial: 0% Highways: 0% Natural: 31%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

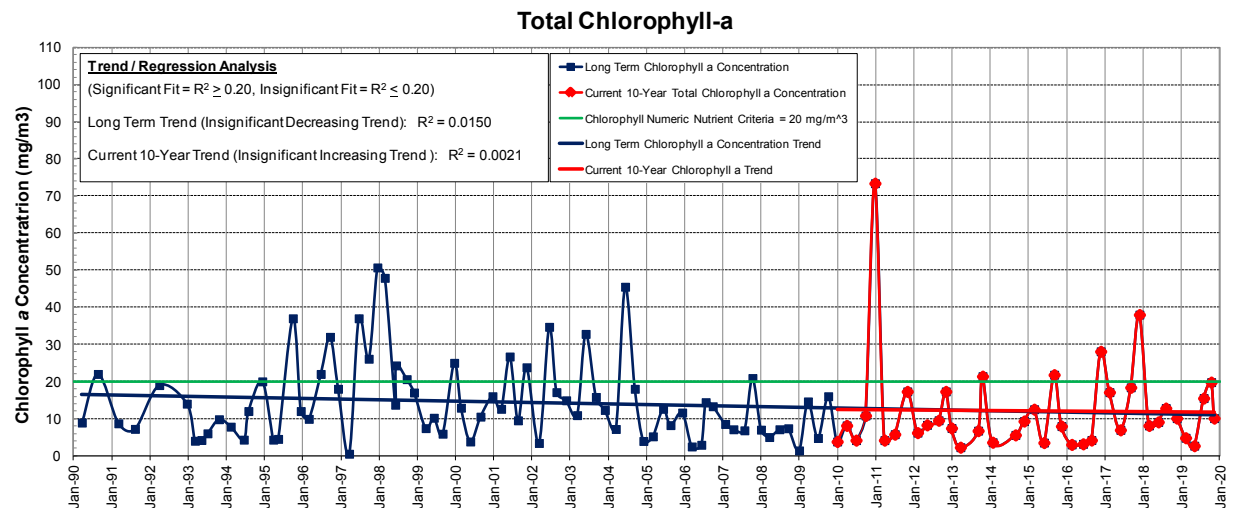
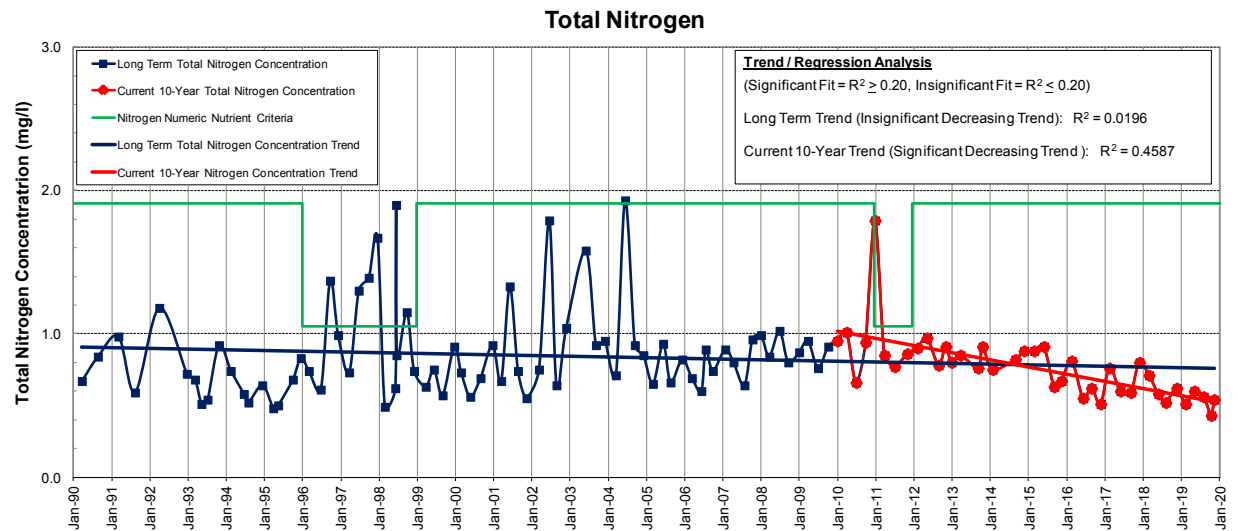
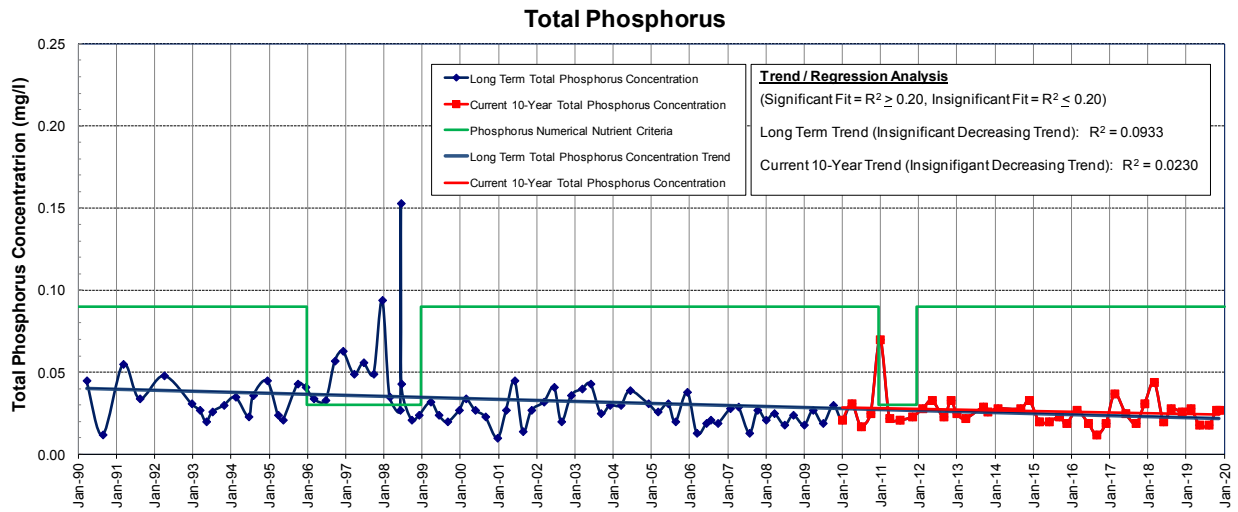
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 70			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.031	0.65	0.51	7.26	48
Maximum	0.052	1.50	1.97	43.80	63
Average	0.039	0.90	1.02	20.47	55

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Just east of Orange Ave. across from Orlando Regional Hospital.

# LAKE DANIEL NUTRIENT TRENDS



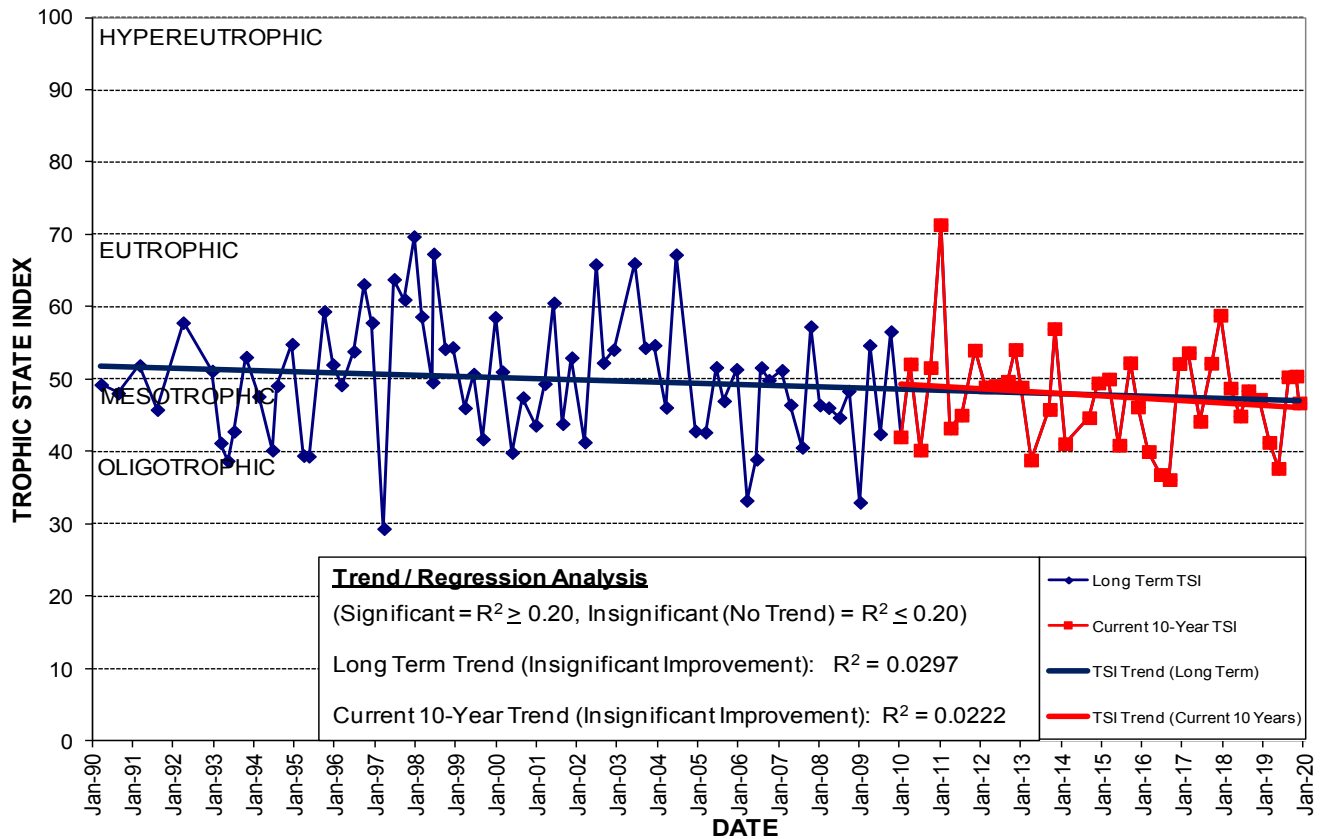
# LAKE DANIEL

Lake Origin: **Natural**  
 Lake Surface Area: **8 acres**  
 Lake Volume: **3,900,000 ft<sup>3</sup>**  
 Shoreline Length: **2,194 ft (669 m)**  
 Mean Depth: **11.7 ft (3.6 m)**  
 Maximum Depth: **18.0 ft (5.5 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 34' 55.6"** Long **W 81° 24' 04.3"**  
 Section **10** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LW-09**  
 Drainage Basin Area: **48 acres**  
 Land Use: **Residential: 71% Commercial: 13%**  
**Industrial: 0% Highways: 0% Natural: 16%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

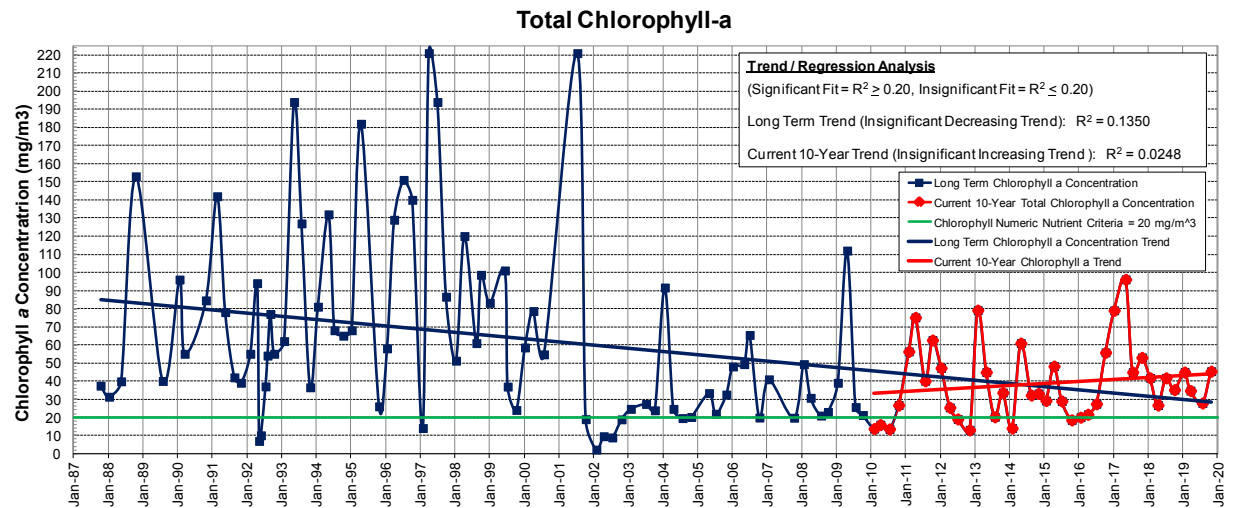
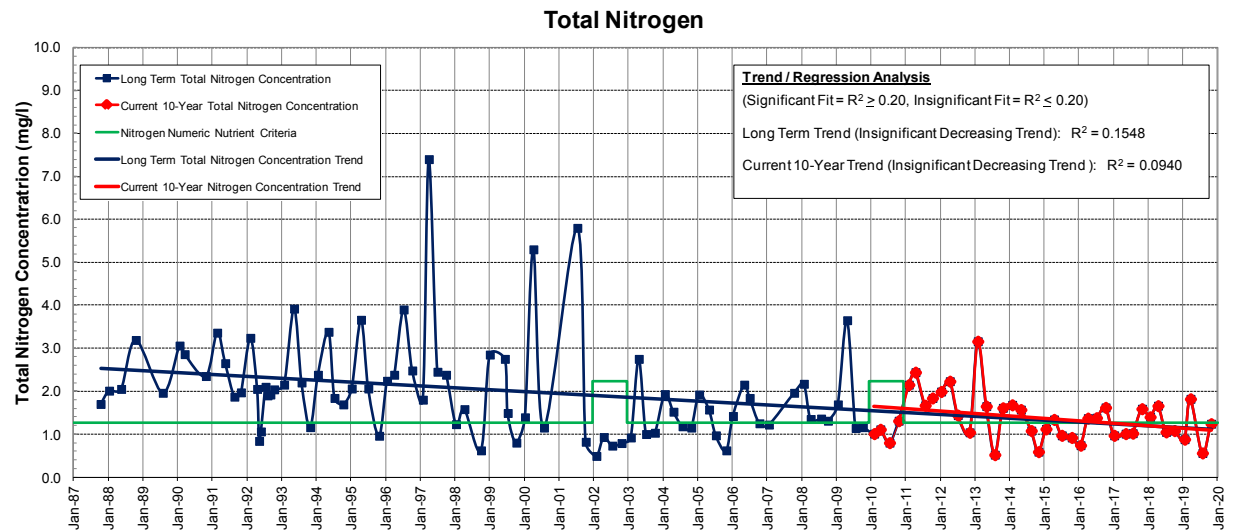
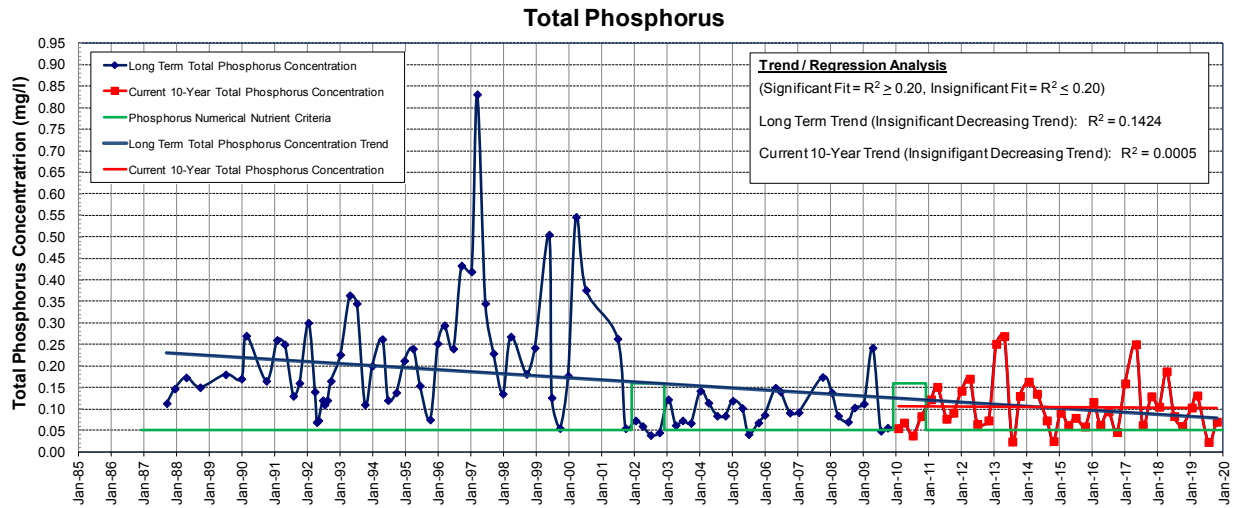
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 41			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.018	0.43	0.81	2.67	38
Maximum	0.044	0.80	2.37	38.00	59
Average	0.027	0.60	1.62	13.34	48

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** North of Maury Rd. between Interlaken Rd. and Wilder Ln. in the Palomar neighborhood.

# LAKE DAVIS NUTRIENT TRENDS



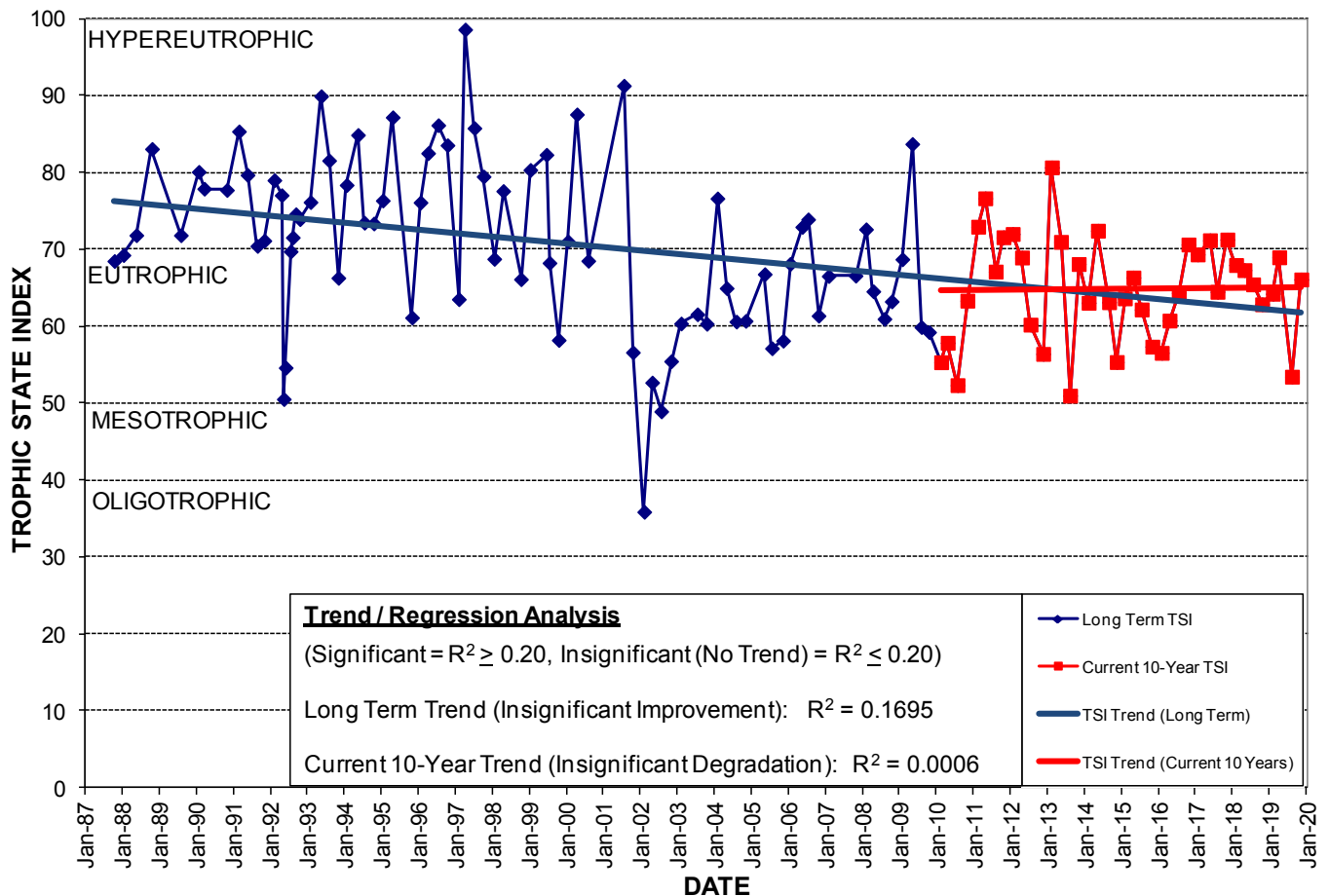
# LAKE DAVIS

Lake Origin: **Natural**  
 Lake Surface Area: **17 acres**  
 Lake Volume: **4,603,127 ft<sup>3</sup>**  
 Shoreline Length: **4,304 ft (1,312 m)**  
 Mean Depth: **6.2 ft (1.9 m)**  
 Maximum Depth:  
 Drain Wells: **1** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 31' 52.7"** Long **W 81° 22' 00.5"**  
 Section **36** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-28**  
 Drainage Basin Area: **117 acres**  
 Land Use: **Residential: 81% Commercial: 2%**  
**Industrial: 0% Highways: 0% Natural: 17%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

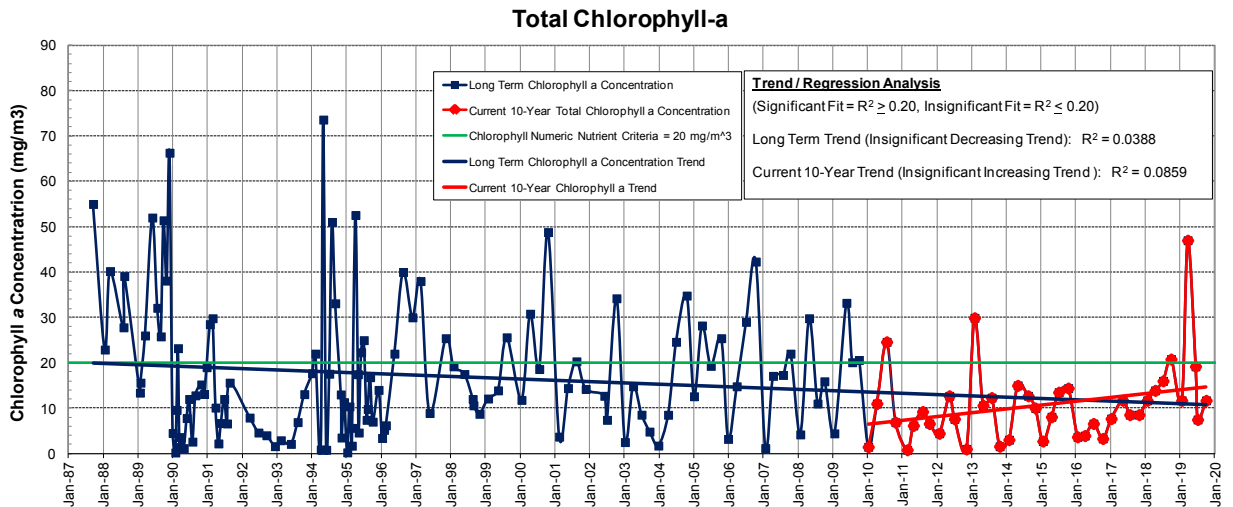
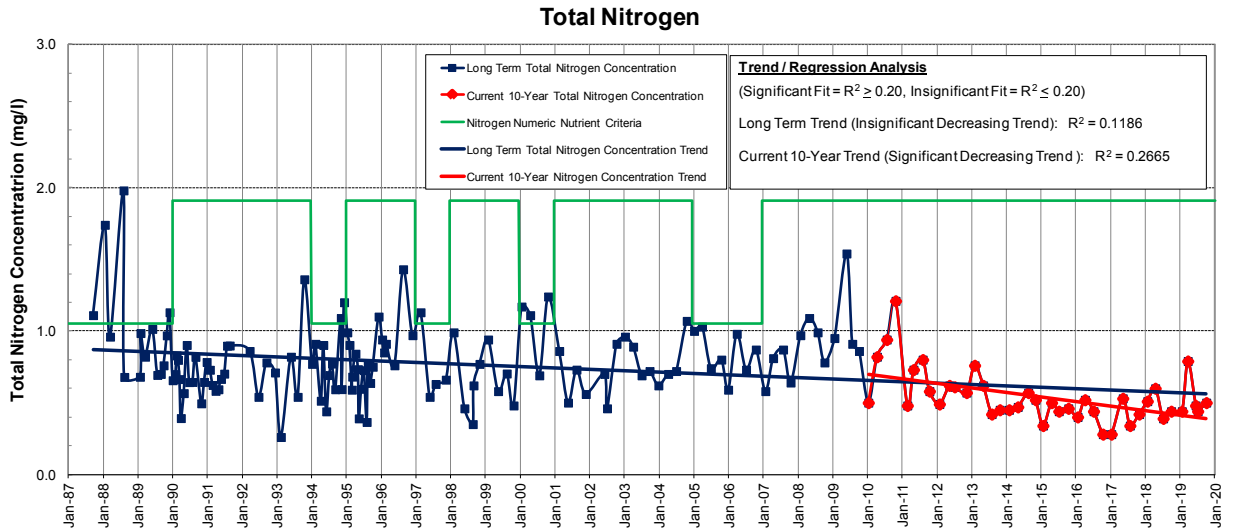
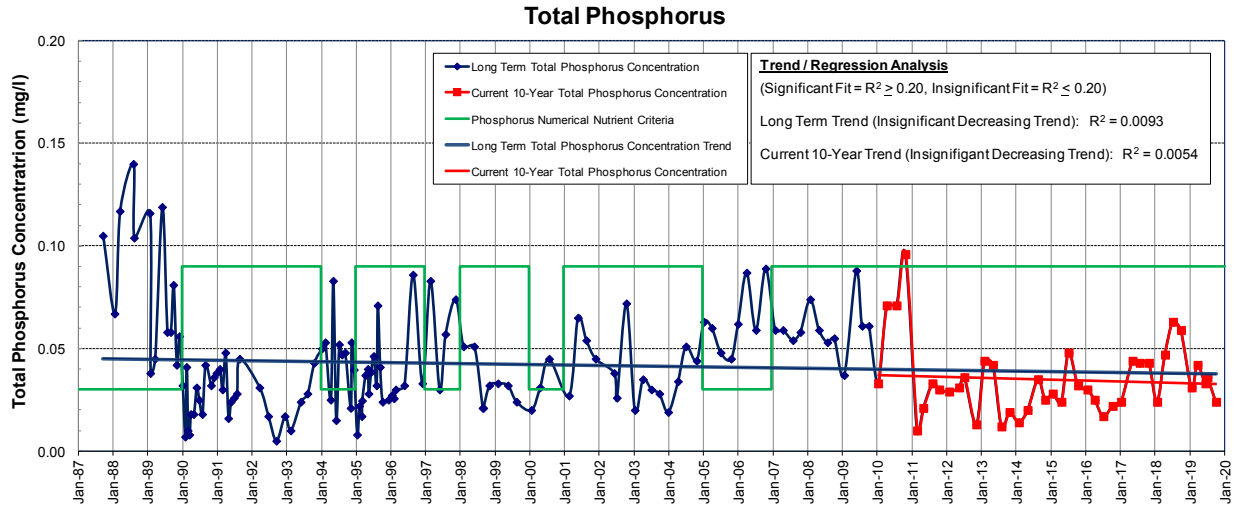
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 89			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.023	0.56	0.30	26.70	53
Maximum	0.250	1.82	0.63	96.10	71
Average	0.114	1.19	0.47	47.59	66

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** East side of Summerlin Ave., south of Anderson St.

# LAKE DOT NUTRIENT TRENDS



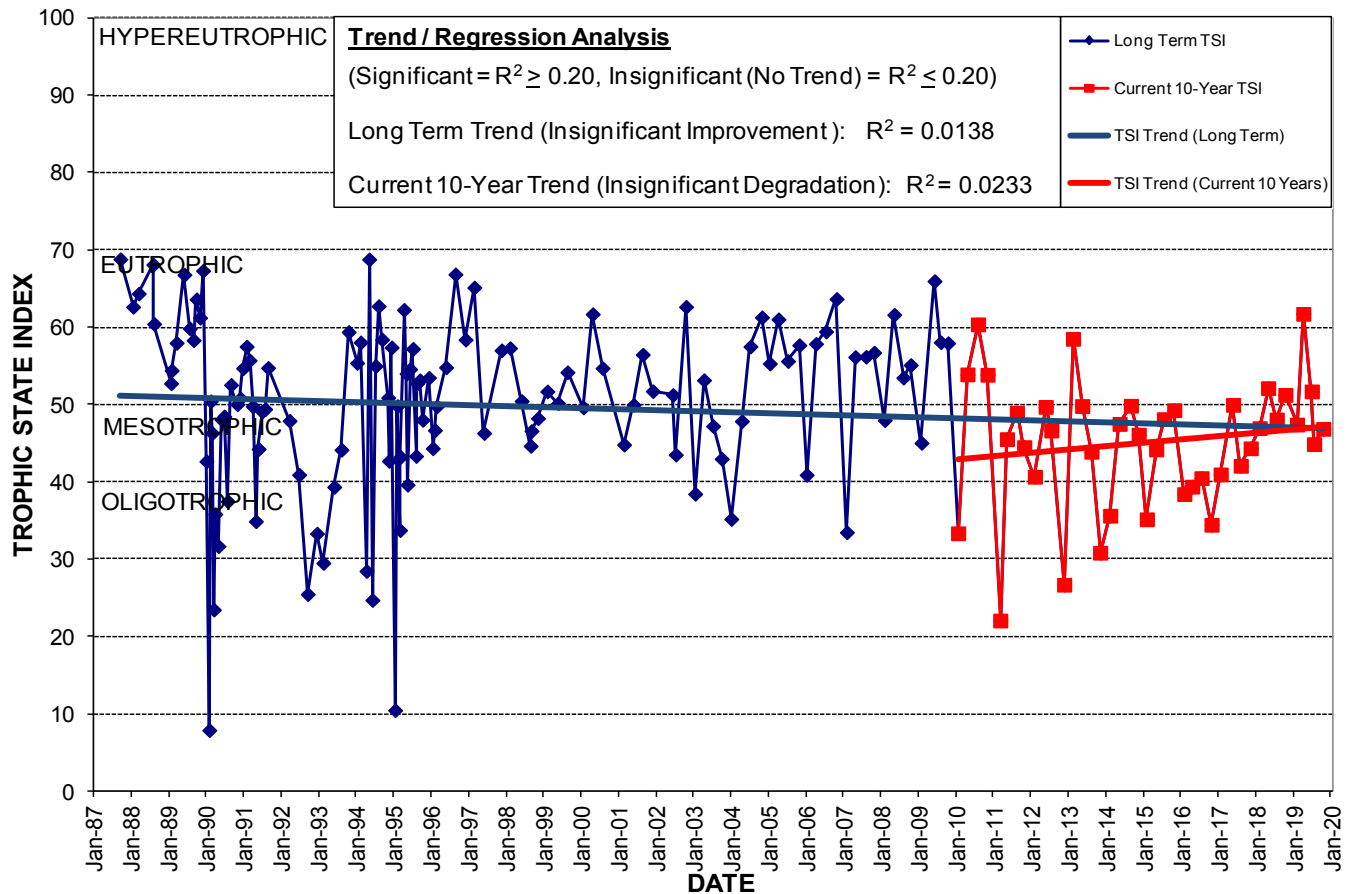
# LAKE DOT

Lake Origin: **Natural**  
 Lake Surface Area: **6 acres**  
 Lake Volume: **2,200,000 ft<sup>3</sup>**  
 Shoreline Length: **1,770 ft (539 m)**  
 Mean Depth: **9.1 ft (2.8 m)**  
 Maximum Depth: **17.0 ft (5.2 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 33' 08.2"** Long **W 81° 23' 12.4"**  
 Section **26** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **HB-29**  
 Drainage Basin Area: **313 acres**  
 Land Use: **Residential: 43% Commercial: 39%**  
**Industrial: 1% Highways: 2% Natural: 15%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 57			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.024	0.28	0.62	7.48	41
Maximum	0.063	0.79	3.08	47.00	62
Average	0.039	0.47	1.65	15.07	48

**Long-Term Trophic State Index Values and Linear Regression Trend Line**

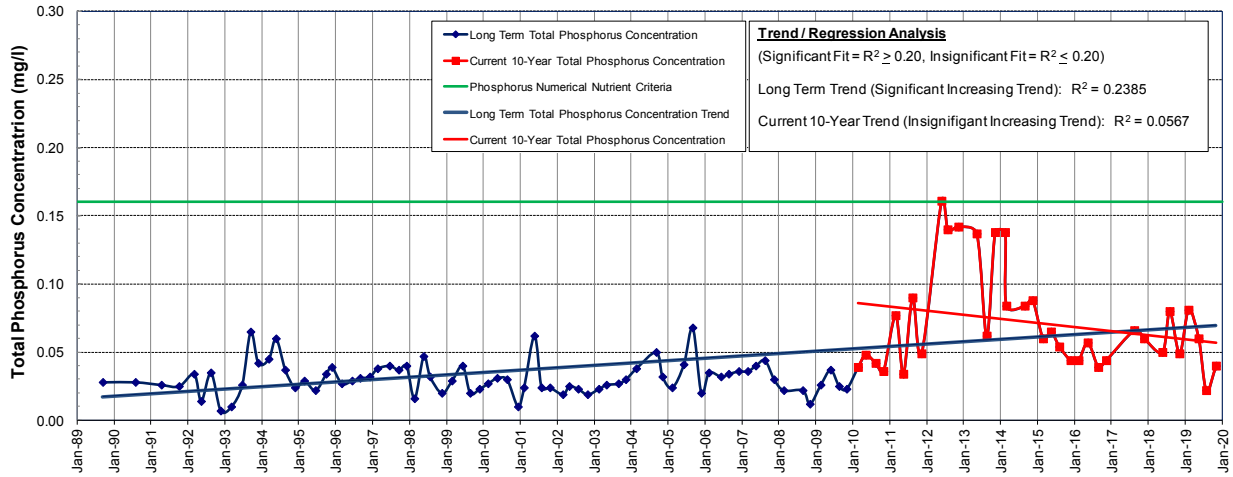


**Location:** On the south side of Colonial Dr., just north of the Creative Village.

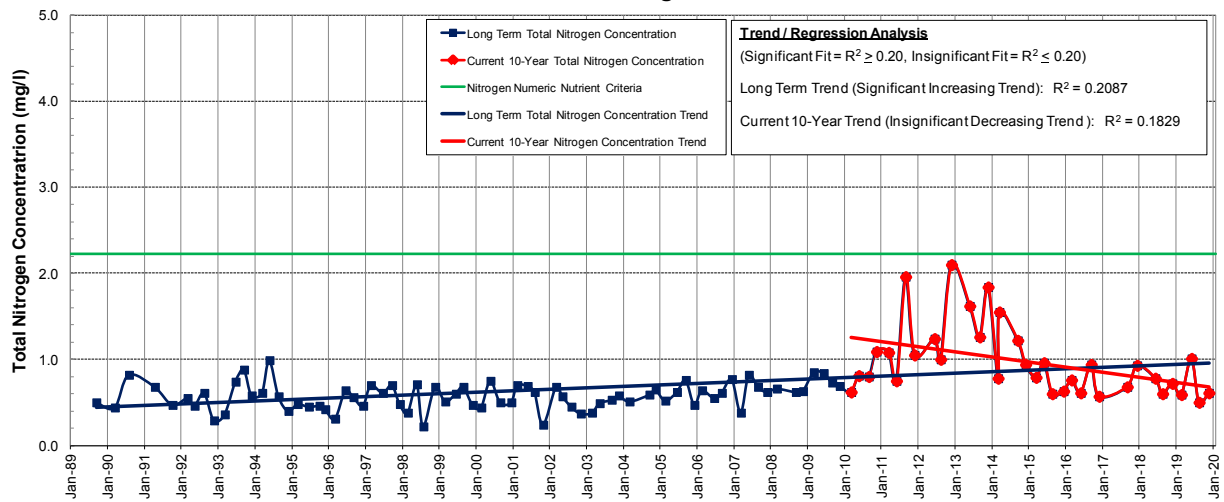


# LAKE DOVER NUTRIENT TRENDS

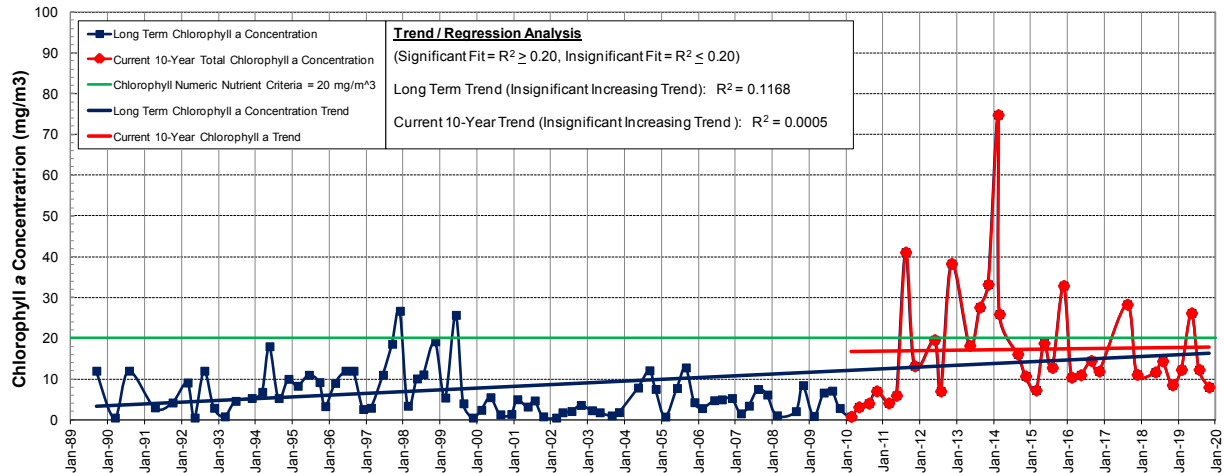
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a





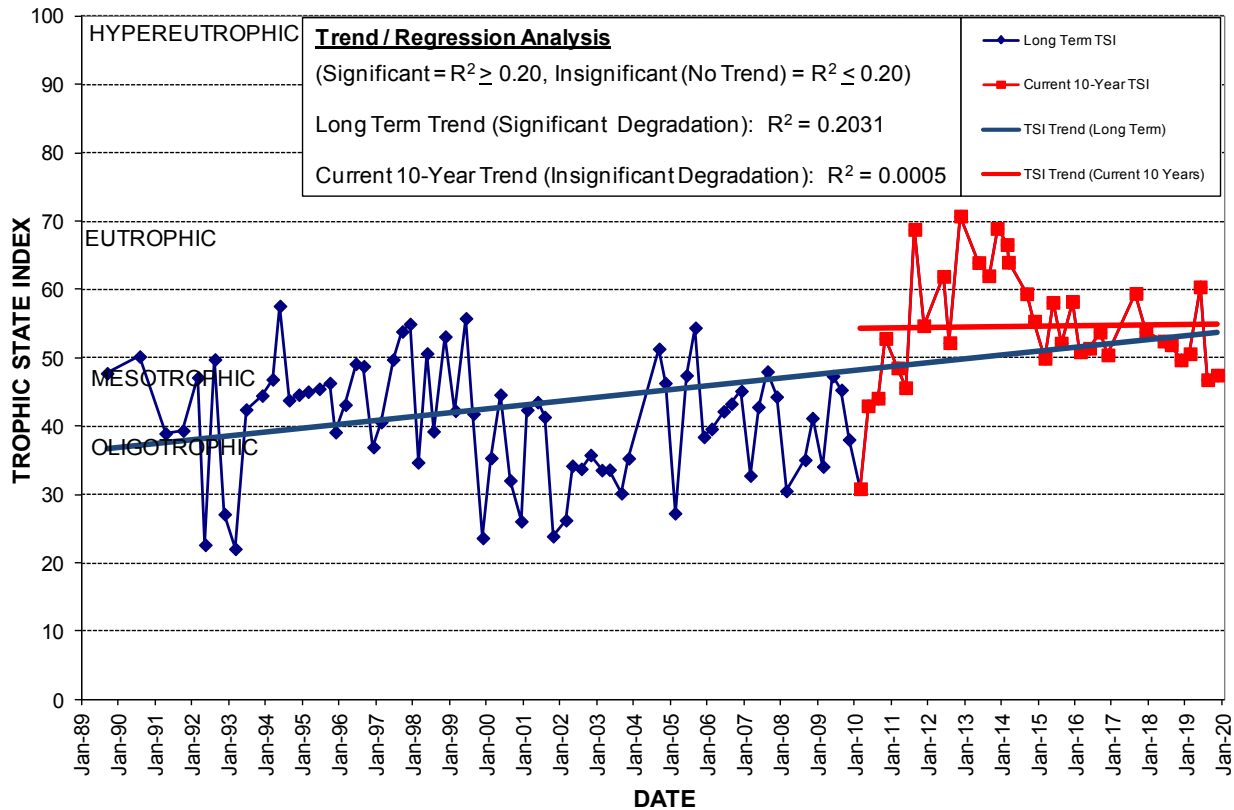
# LAKE DOVER

Lake Origin: **Excavation**  
 Lake Surface Area: **2 acres**  
 Lake Volume: **229,484 ft<sup>3</sup>**  
 Shoreline Length: **1,490 ft (454 m)**  
 Mean Depth: **2.7 ft (0.8 m)**  
 Maximum Depth: **5.6 ft (1.7 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 31' 57.0"** Long **W 81° 19' 18.8"**  
 Section **33** Township **22S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LE-36**  
 Drainage Basin Area: **80 acres**  
 Land Use: **Residential: 92%** **Commercial: 6%**  
**Industrial: 0%** **Highways: 0%** **Natural: 3%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 61			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.022	0.50	0.28	8.01	47
Maximum	0.081	1.01	0.98	28.30	60
Average	0.056	0.71	0.68	14.76	53

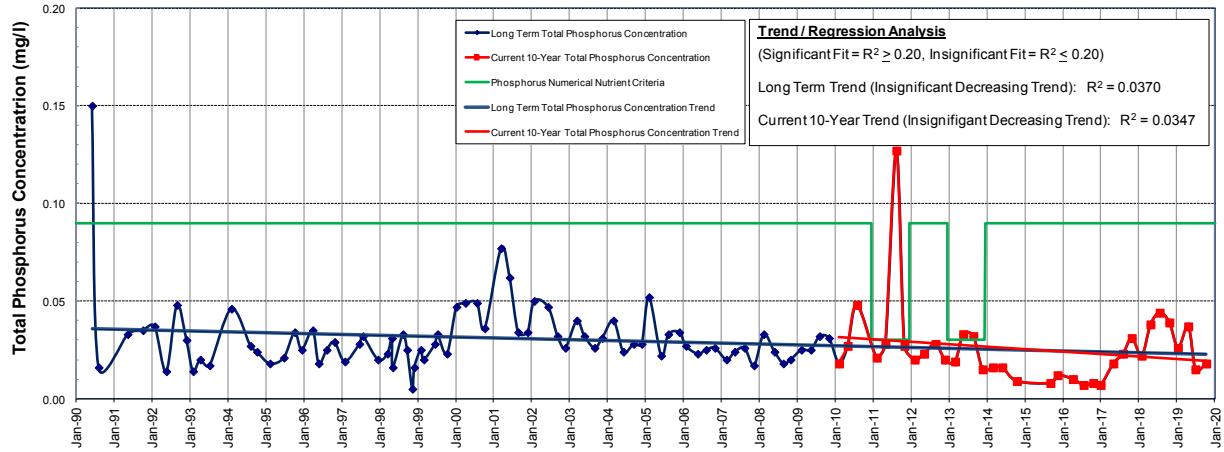
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



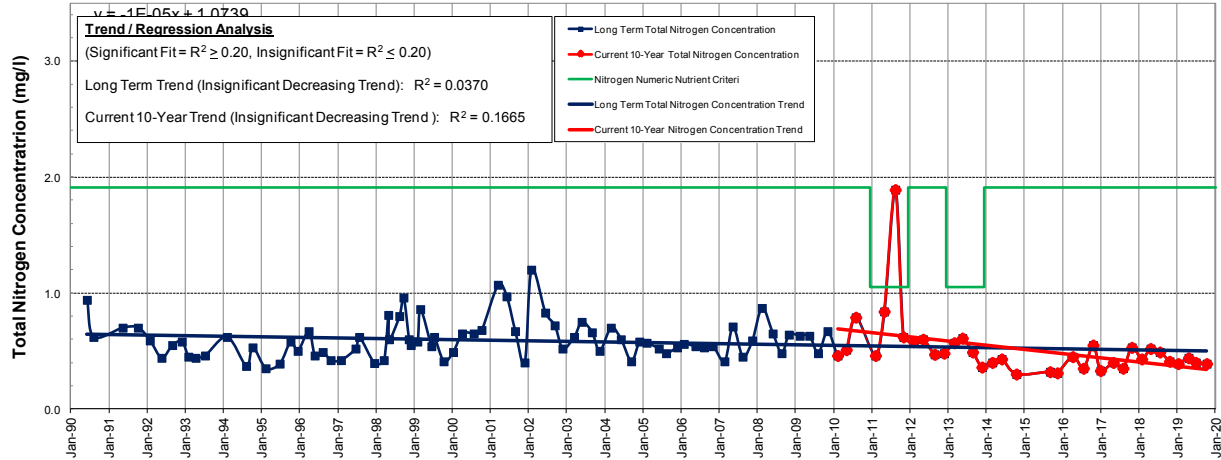
**Location:** In the Dover Shores neighborhood at the south end of Wavecrest Dr., west of Stony Creek Ct.

# LAKE DRUID NUTRIENT TRENDS

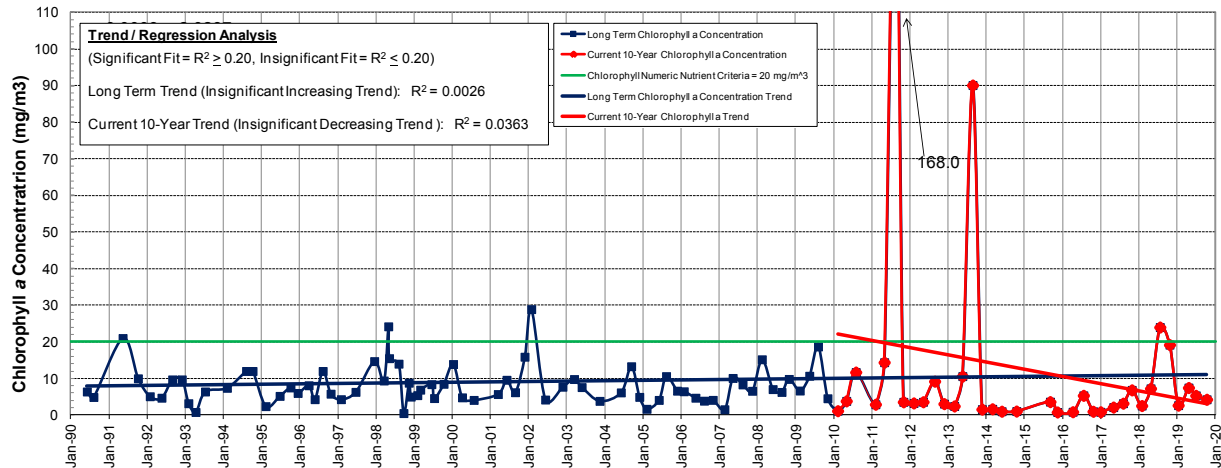
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



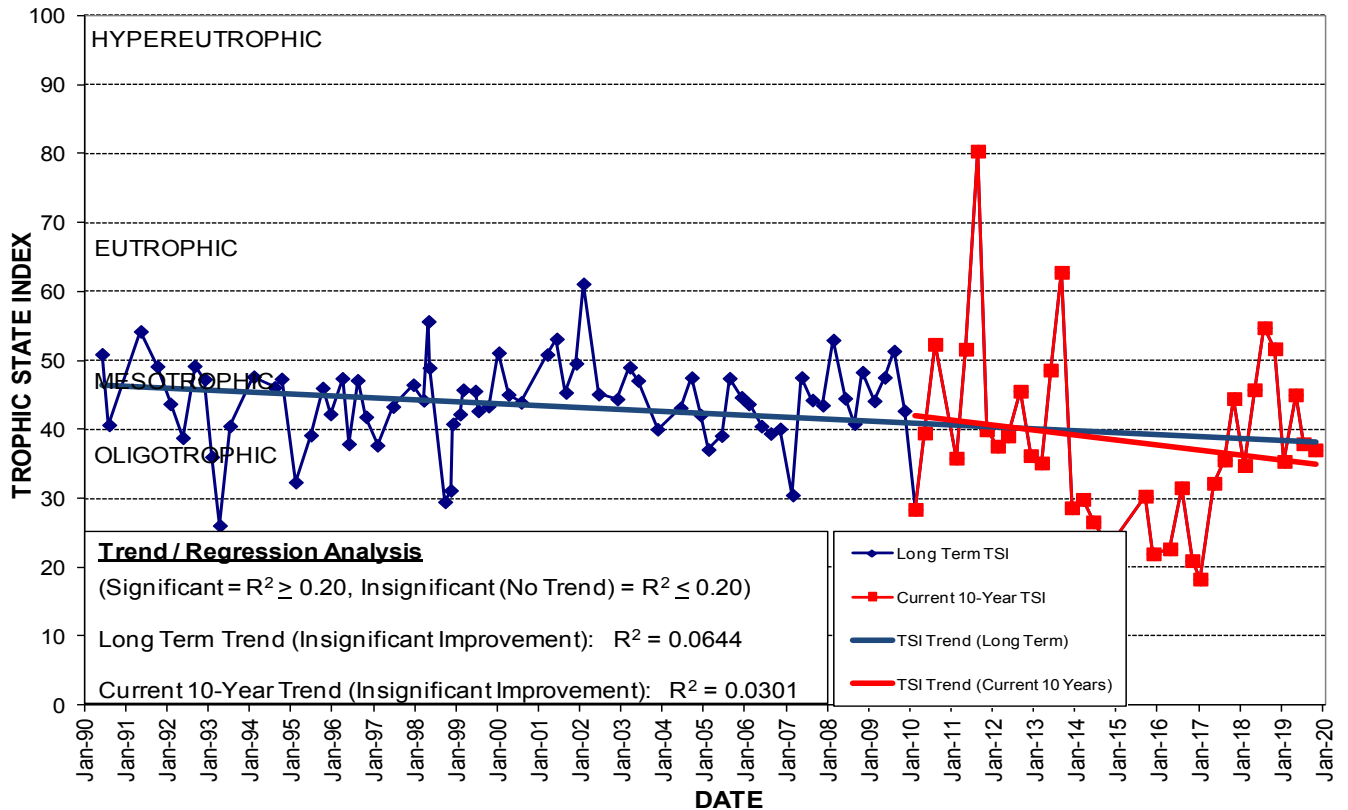
# LAKE DRUID

Lake Origin: **Natural**  
 Lake Surface Area: **17 acres**  
 Lake Volume: **5,600,000 ft<sup>3</sup>**  
 Shoreline Length: **3,848 ft (1,173 m)**  
 Mean Depth: **7.6 ft (2.3 m)**  
 Maximum Depth: **14.0 ft (4.3 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 33' 37.4"** Long **W 81° 20' 59.3"**  
 Section **19** Township **22S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **HB-33**  
 Drainage Basin Area: **174 acres**  
 Land Use: **Residential: 54% Commercial: 25%**  
**Industrial: 0% Highways: 0% Natural: 22%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

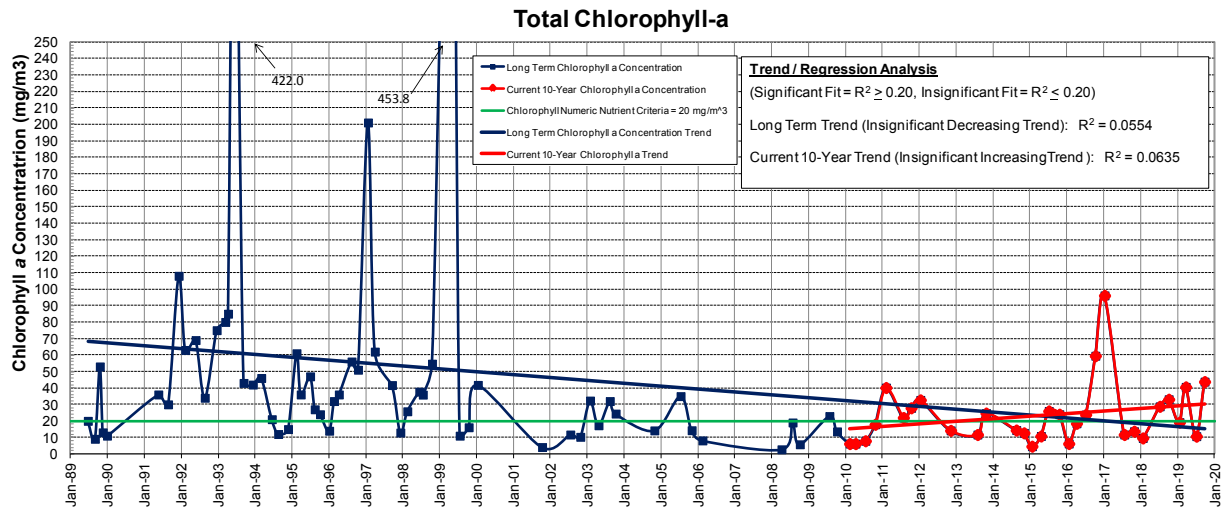
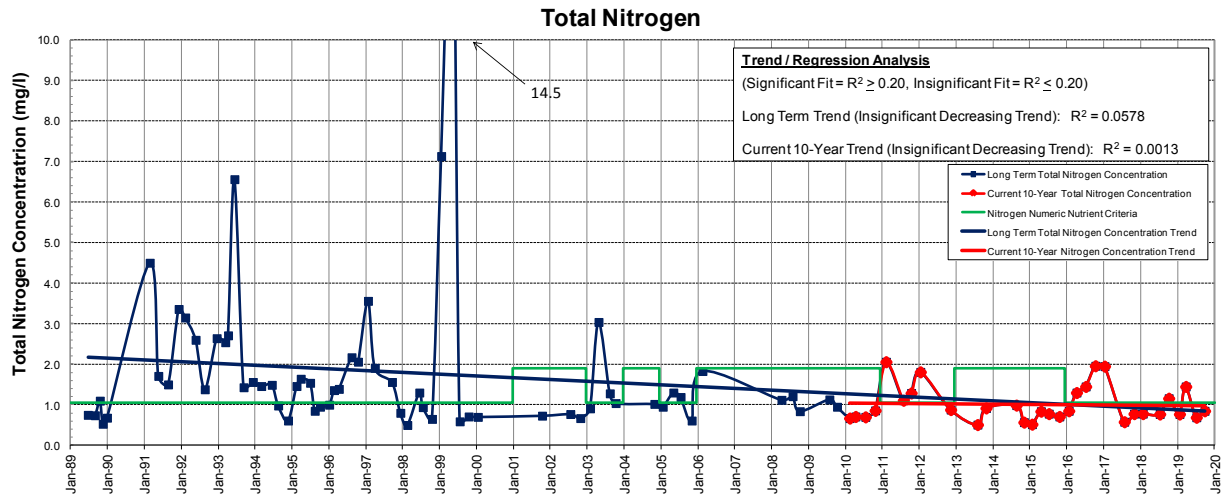
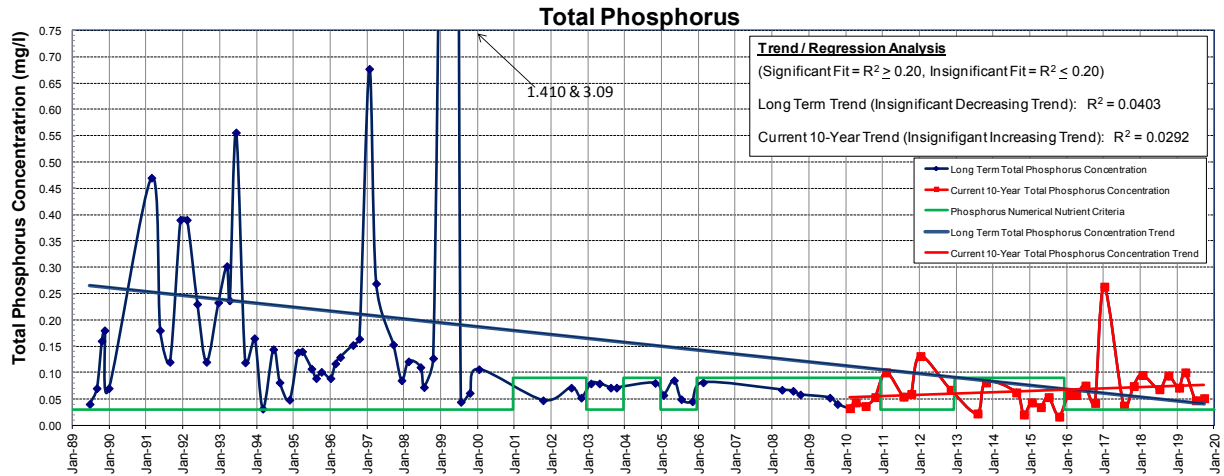
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 19			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.007	0.33	1.29	0.85	18
Maximum	0.044	0.53	3.52	24.00	55
Average	0.027	0.42	2.08	7.15	39

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** East of Bumby Ave. between Chelsea St. and Weber St. in the Audubon Park neighborhood.

# LAKE EMERALD



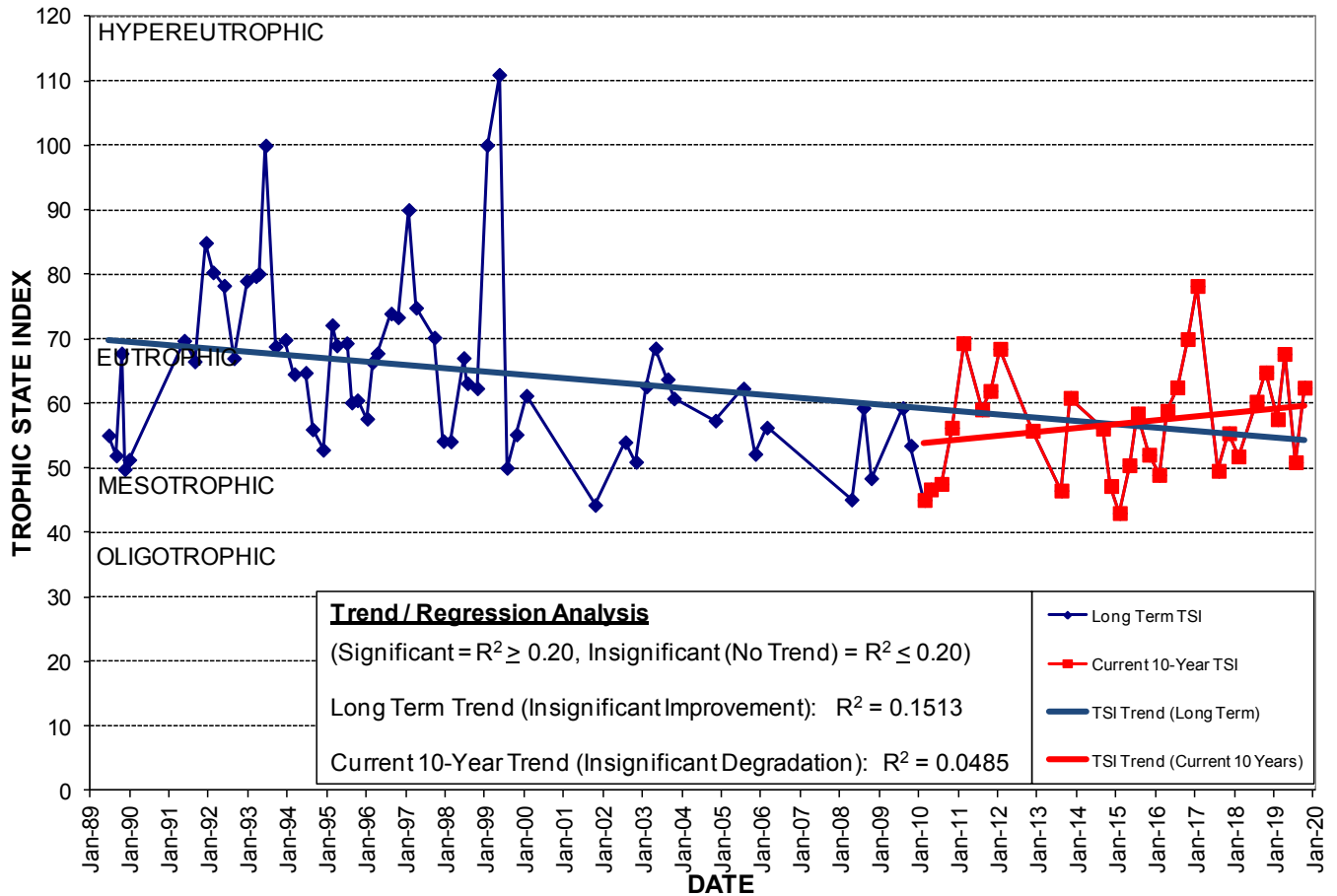
# LAKE EMERALD

Lake Origin: **Natural**  
 Lake Surface Area: **3 acres**  
 Lake Volume: **701,017 ft<sup>3</sup>**  
 Shoreline Length: **1,484 ft (452 m)**  
 Mean Depth: **6.1 ft (1.9 m)**  
 Maximum Depth: **11.5 ft (3.5 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 36° 31' 47.6"** Long **W 81° 21' 47.5"**  
 Section **36** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-24**  
 Drainage Basin Area: **27 acres**  
 Land Use: **Residential: 91% Commercial: 0%**  
**Industrial: 0% Highways: 0% Natural: 9%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

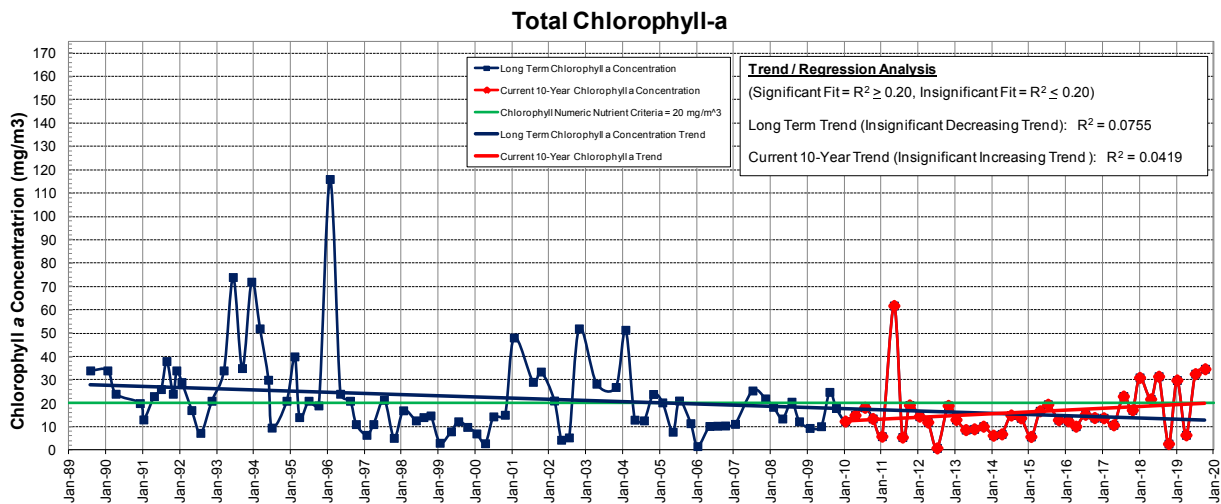
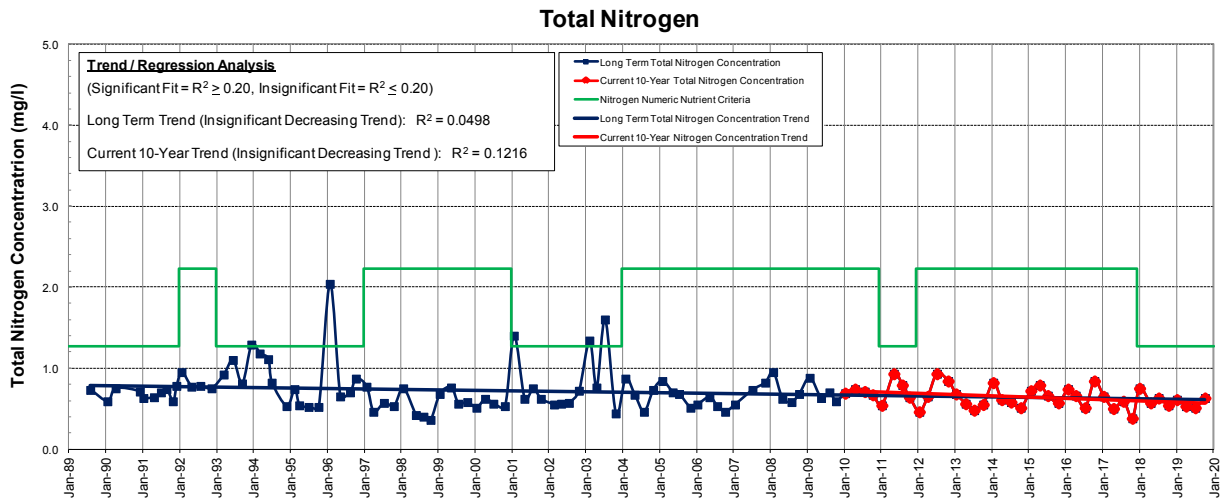
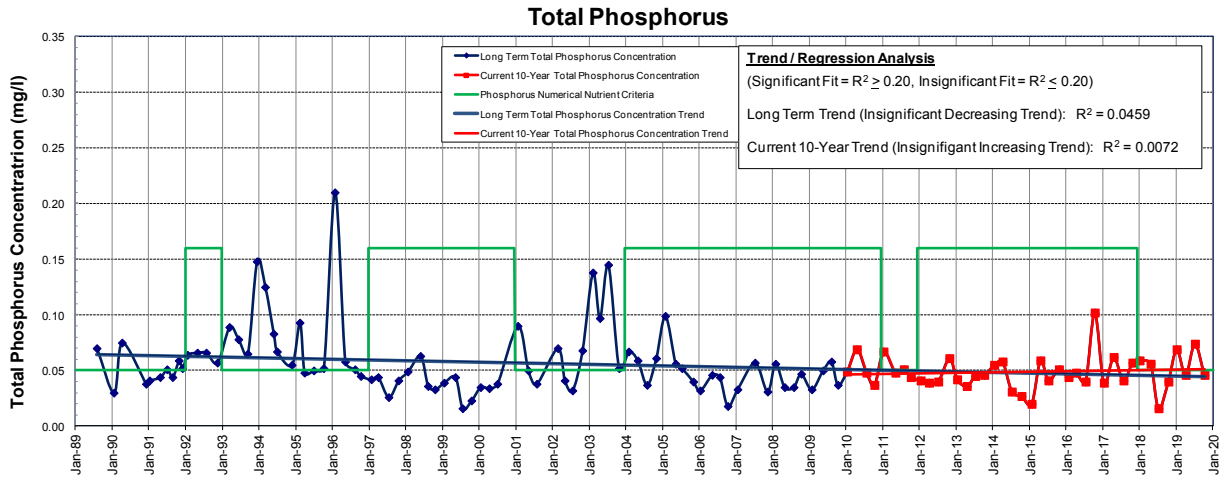
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 83			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.037	0.58	0.45	9.61	50
Maximum	0.263	1.95	1.00	96.10	78
Average	0.090	0.98	0.75	30.73	60

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Just south of Gore St. and east of Mills Ave.

# LAKE EOLA NUTRIENT TRENDS



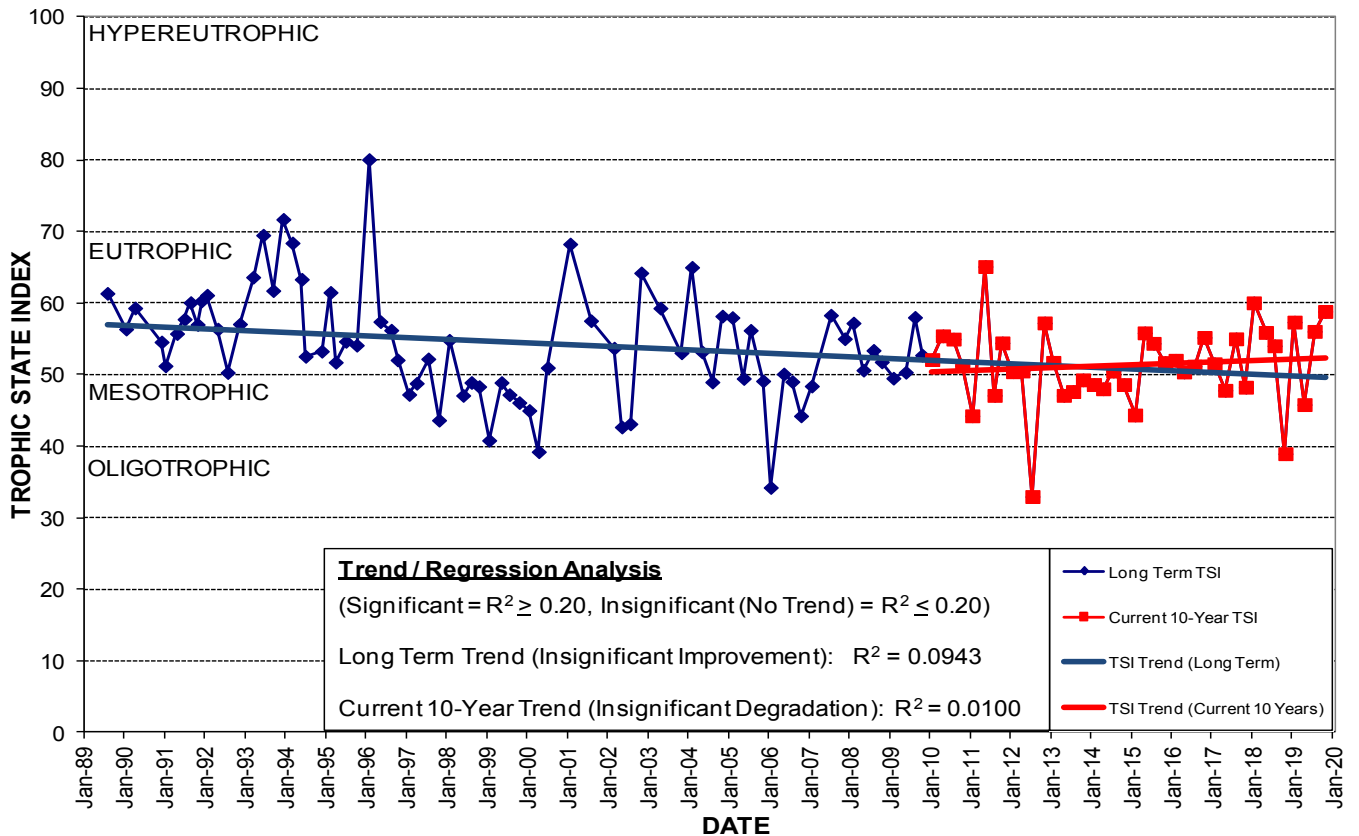
# LAKE EOLA

Lake Origin: **Natural**  
 Lake Surface Area: **28 acres**  
 Lake Volume: **13,876,400 ft<sup>3</sup>**  
 Shoreline Length: **4,493 ft (1,369 m)**  
 Mean Depth: **11.4 ft (3.5 m)**  
 Maximum Depth: **23.7 ft (7.2 m)**  
 Drain Wells: **3** Aeration: **Yes** (installed)  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 32' 39.1"** Long **W 81° 22' 21.4"**  
 Section **25** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-09**  
 Drainage Basin Area: **331 acres**  
 Land Use: **Residential: 30% Commercial: 60%**  
**Industrial: 0% Highways: 1% Natural: 8%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 71			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.016	0.38	0.71	2.67	39
Maximum	0.074	0.75	1.66	34.70	60
Average	0.050	0.57	1.14	21.26	52

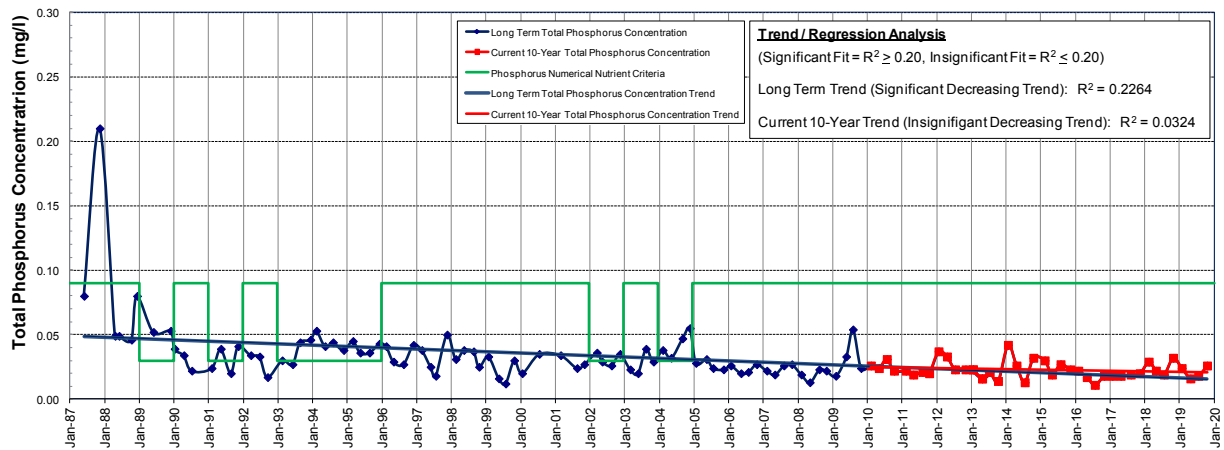
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



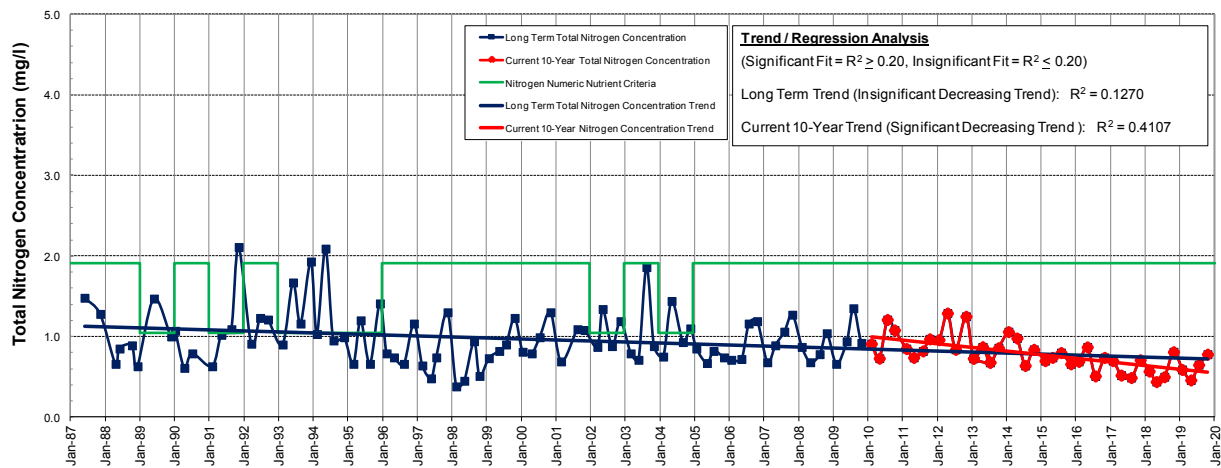
**Location:** Landmark downtown lake that is bordered by Robinson St. to the north, Central Blvd. to the south, and Rosalind Ave. to the west.

# LAKE ESTELLE EAST NUTRIENT TRENDS

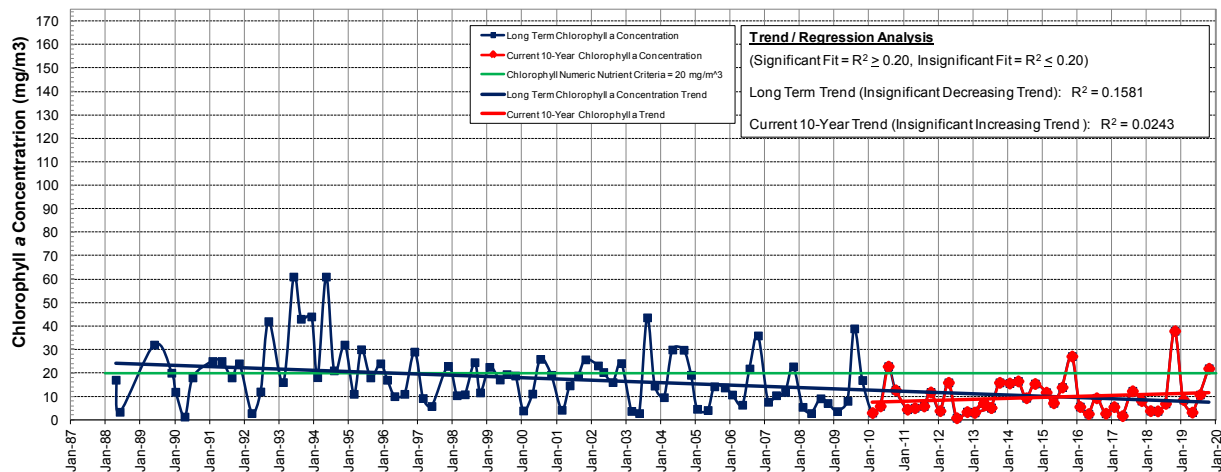
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a





# LAKE ESTELLE EAST

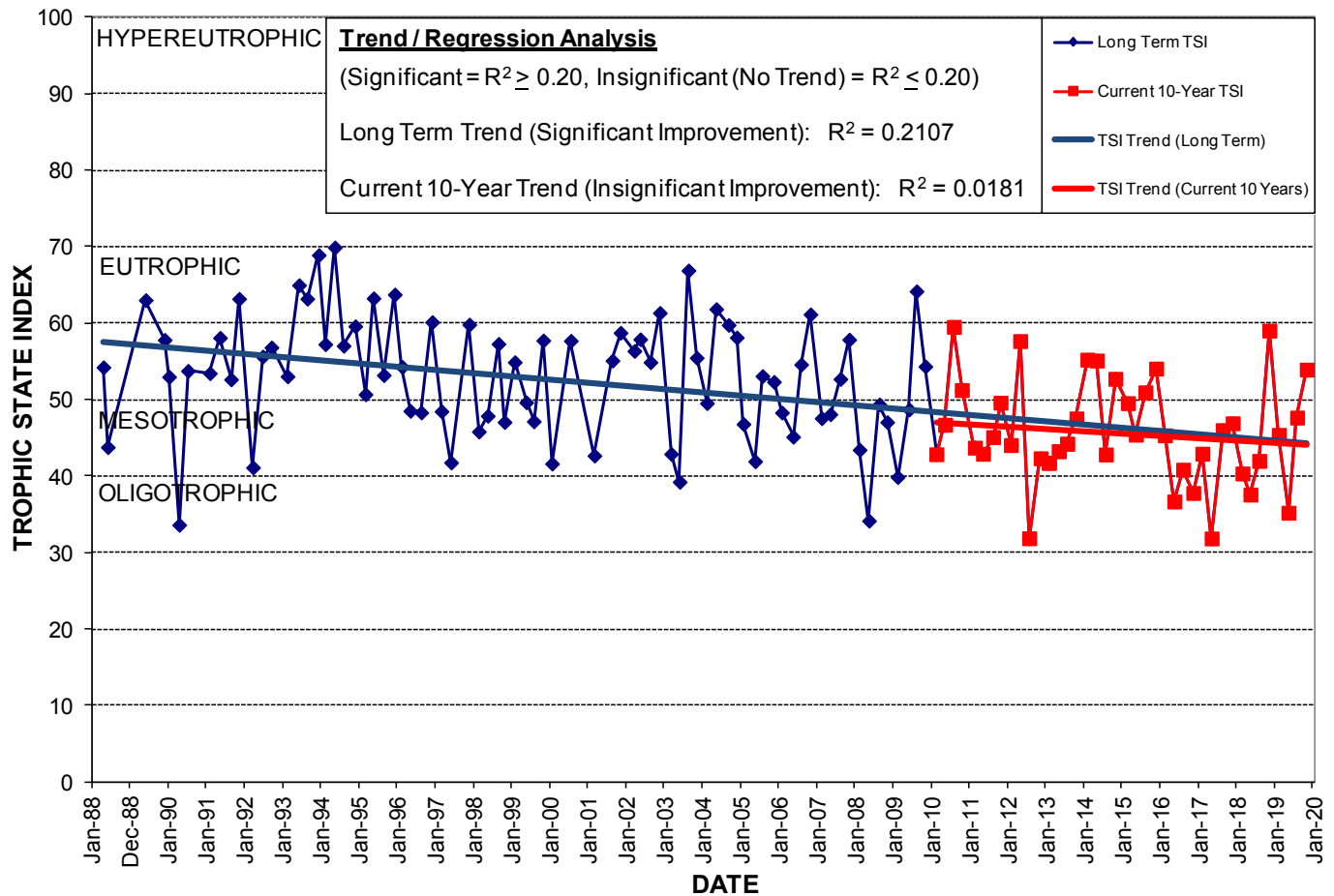
Lake Origin: **Natural**  
 Lake Surface Area: **23 acres**  
 Lake Volume: **15,694,800 ft<sup>3</sup>**  
 Shoreline Length: **5,015 ft (1,529 m)**  
 Mean Depth: **15.6 ft (4.8 m)**  
 Maximum Depth: **33.6 ft (10.2 m)**  
 Drain Wells: **1**    Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 34' 26.9"** Long **W 81° 21' 47.0"**  
 Section **13** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code\*: **HB-22**  
 Drainage Basin Area\*: **170 acres**  
 Land Use\*: **Residential: 68% Commercial: 22%**  
**Industrial: 0% Highways: 5% Natural: 4%**  
 Limiting Nutrient: **Phosphorus**

\* Basin information includes Lakes Estelle East and West

2017 - 2019 Water Quality Data		2016 TSI Ranking (out of 94 lakes): 43			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.016	0.44	0.58	1.71	32
Maximum	0.032	0.81	3.34	37.90	59
Average	0.022	0.60	2.02	10.37	44

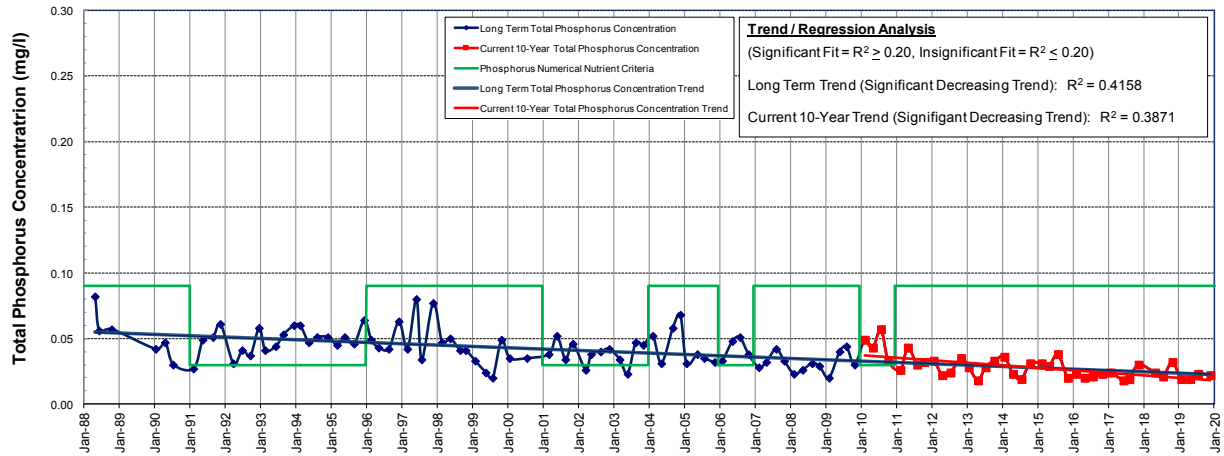
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



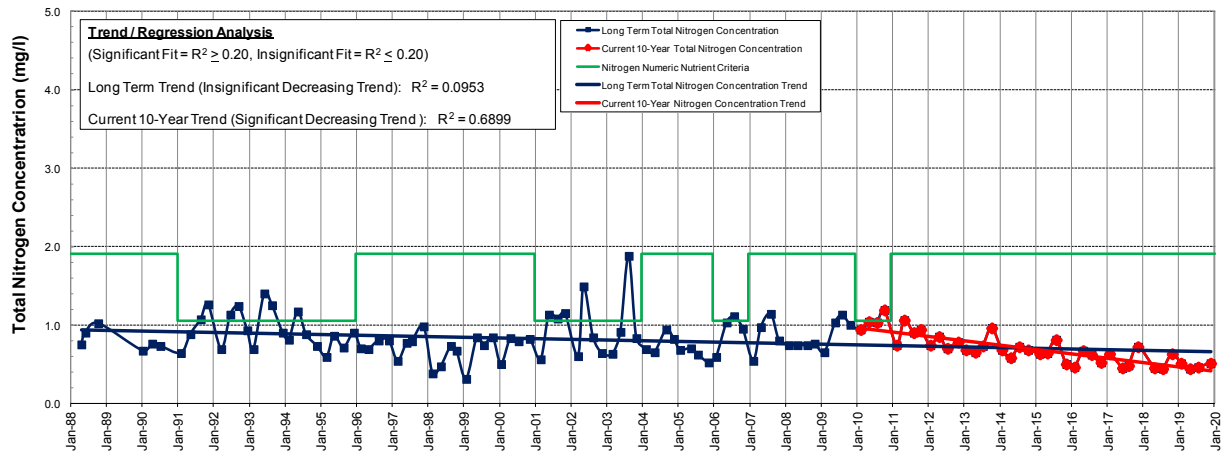
**Location:** Split by Mills Ave. (US 17-92) between Rollins St. and Dorchester St., adjacent to (east of) Florida Hospital.

# LAKE ESTELLE WEST NUTRIENT TRENDS

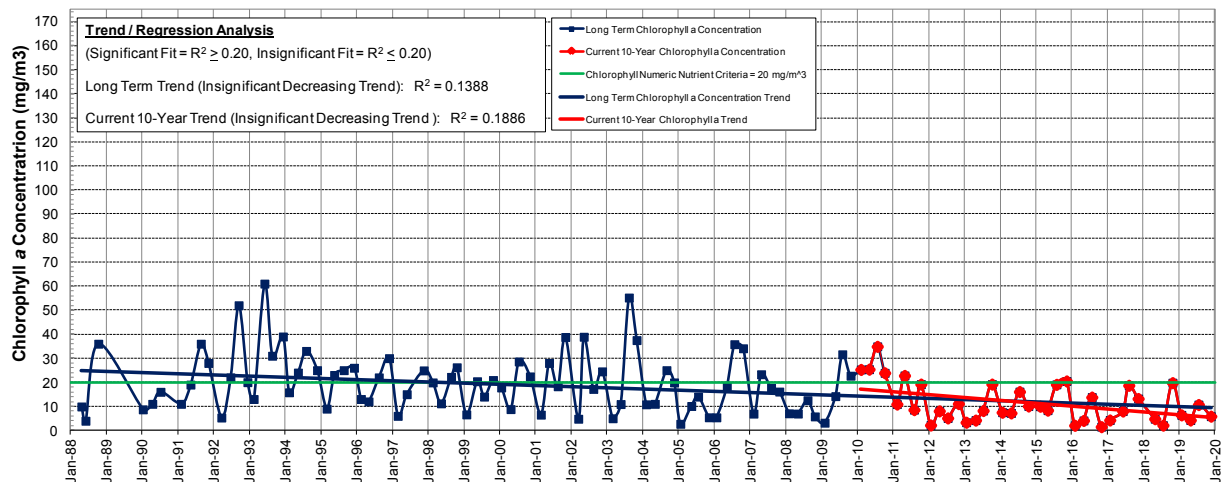
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a

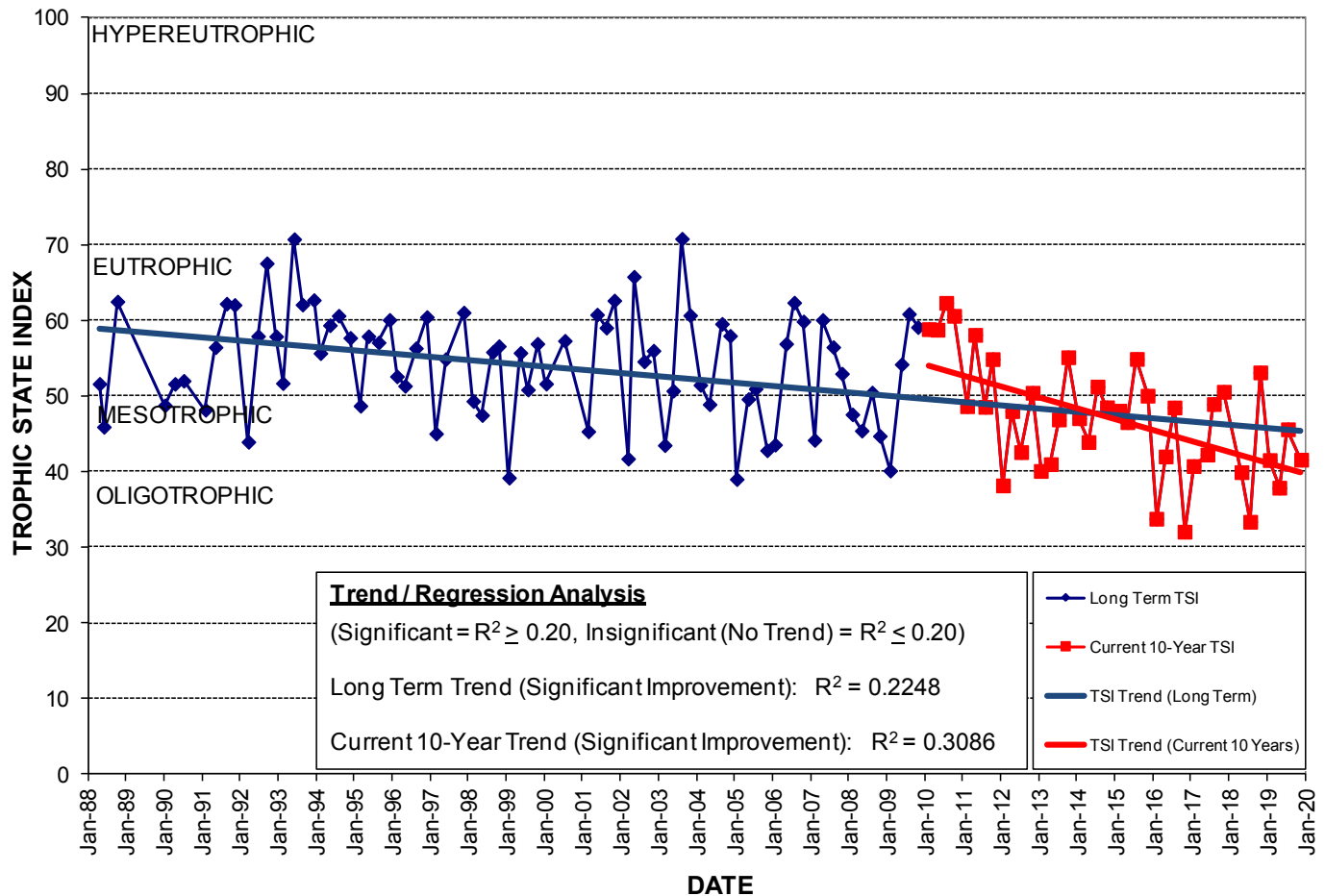


# LAKE ESTELLE WEST

Lake Origin: <b>Natural</b> Lake Surface Area: <b>24 acres</b> Lake Volume: <b>12,077,500 ft<sup>3</sup></b> Shoreline Length: <b>4,960 ft (1,511 m)</b> Mean Depth: <b>11.4 ft (3.5 m)</b> Maximum Depth: <b>23.7 ft (7.2 m)</b> Drain Wells: <b>1</b> Aeration: <b>No</b>	Location: Lat <b>N 28° 34' 29.6"</b> Long <b>W 81° 22' 01.2"</b> Section <b>13</b> Township <b>22S</b> Range <b>29E</b> Water Management District: <b>St. Johns River</b> Drainage Code*: <b>HB-22</b> Drainage Basin Area*: <b>170 acres</b> Land Use*: <b>Residential: 68% Commercial: 22%</b> <b>Industrial: 0% Highways: 5% Natural: 4%</b> Grass Carp ( <i>Ctenopharyngodon idella</i> ): <b>Yes</b> Limiting Nutrient: <b>Balanced for Nitrogen and Phosphorus</b> * Basin information includes Lakes Estelle East and West
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2017 - 2019 Water Quality Data	2016 TSI Ranking (out of 94 lakes): 29				
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.018	0.44	0.64	2.14	33
Maximum	0.032	0.72	3.51	19.80	53
Average	0.023	0.52	1.96	8.93	43

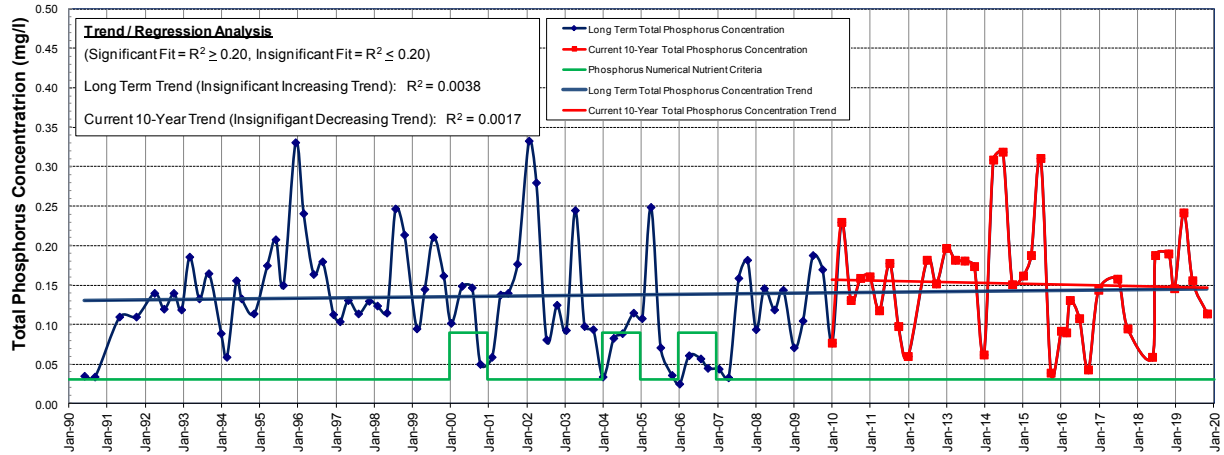
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



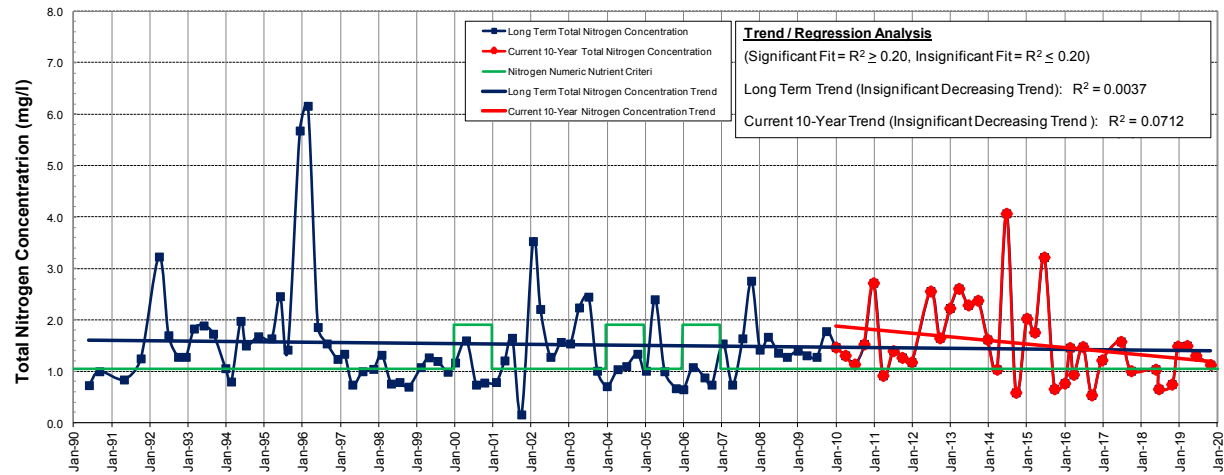
**Location:** Split by Mills Ave. (US 17-92) between Rollins St. and Dorchester St., adjacent to (east of) Florida Hospital.

# LAKE FAIRHOPE NUTRIENT TRENDS

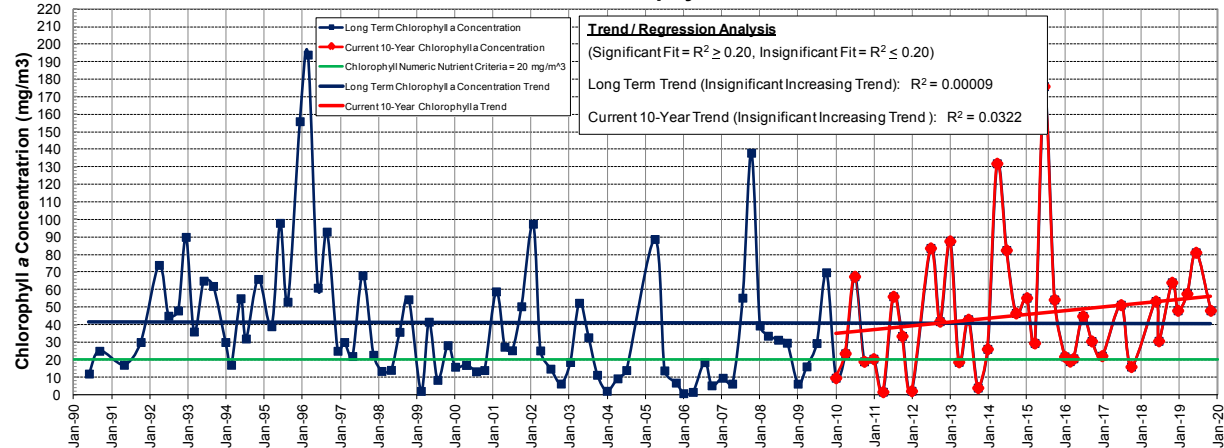
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a

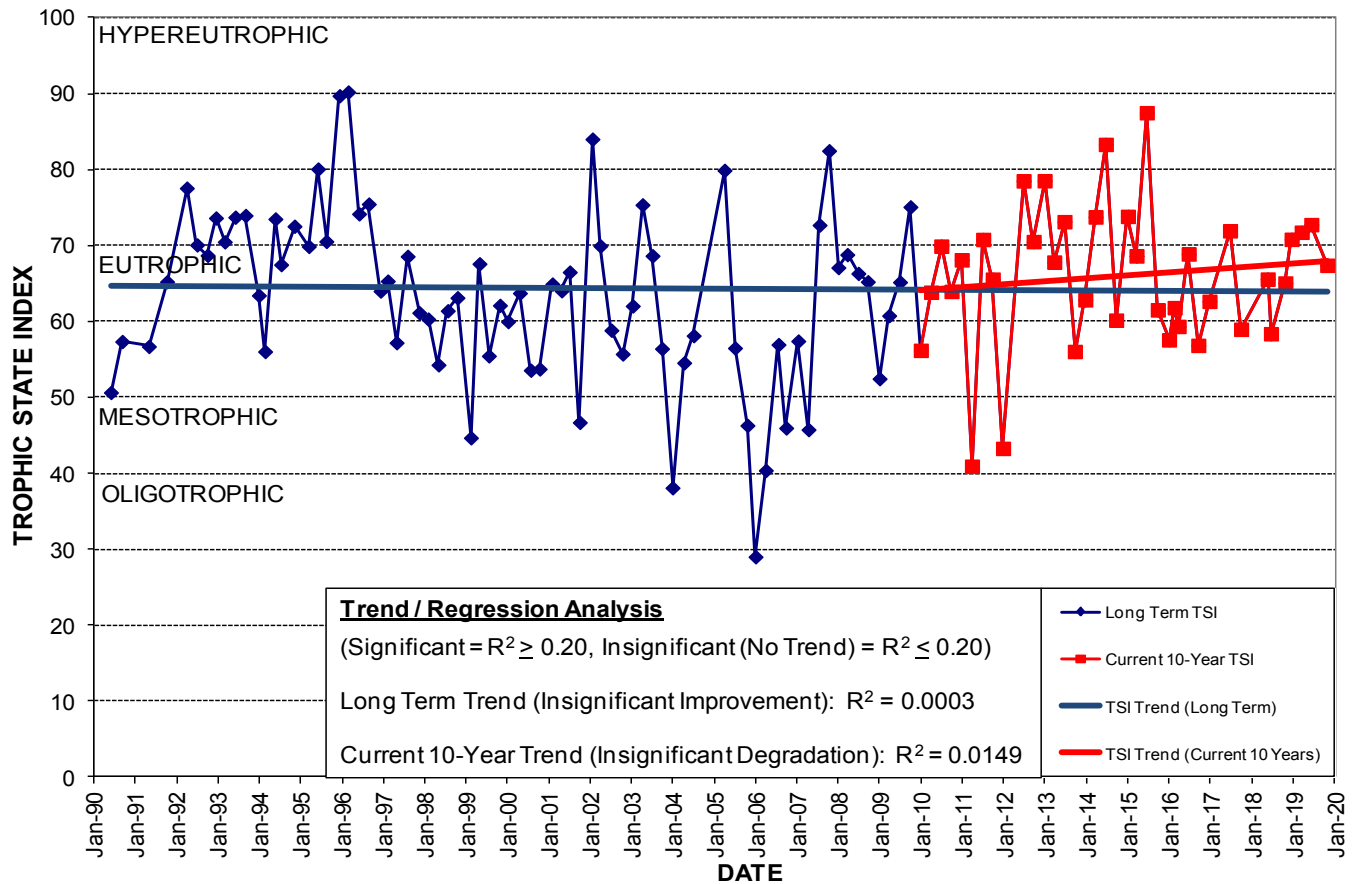


# LAKE FAIRHOPE

Lake Origin: <b>Natural</b> Lake Surface Area: <b>1 acre</b> Lake Volume: <b>115,600 ft<sup>3</sup></b> Shoreline Length: <b>935 ft (285 m)</b> Mean Depth: <b>2.4 ft (0.7 m)</b> Maximum Depth: <b>4.1 ft (1.2 m)</b> Drain Wells: <b>No</b> Aeration: <b>No</b> Grass Carp ( <i>Ctenopharyngodon idella</i> ): <b>Yes</b>	Location: Lat <b>N 28° 35' 03.1"</b> Long <b>W 81° 23' 37.3"</b> Section <b>11</b> Township <b>22S</b> Range <b>29E</b> Water Management District: <b>St. Johns River</b> Drainage Code: <b>LW-07</b> Drainage Basin Area: <b>15 acres</b> Land Use: <b>Residential: 62%</b> <b>Commercial: 23%</b> <b>Industrial: 0%</b> <b>Highways: 0%</b> <b>Natural: 15%</b> Limiting Nutrient: <b>Balanced for Nitrogen and Phosphorus</b>
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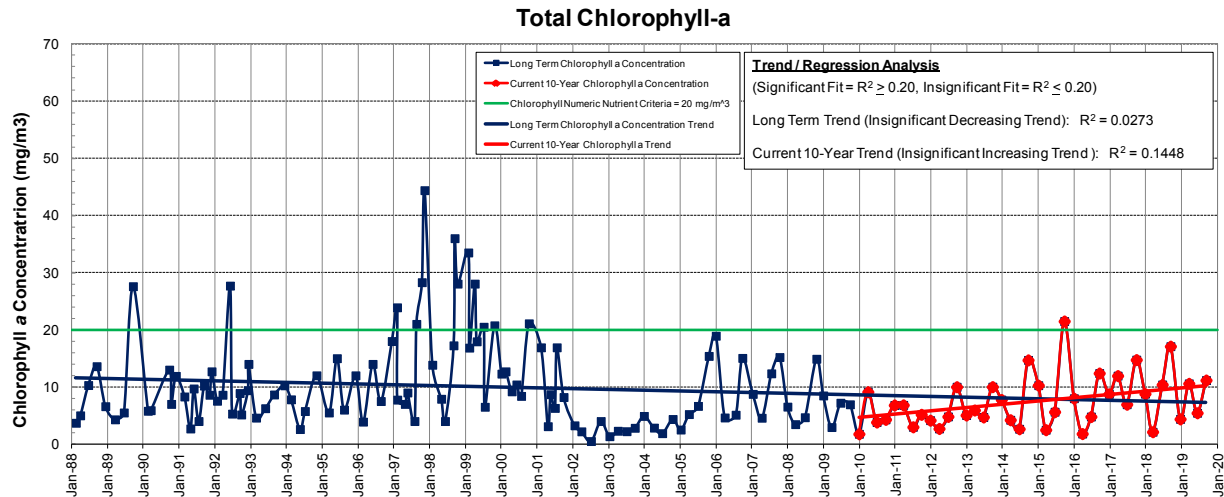
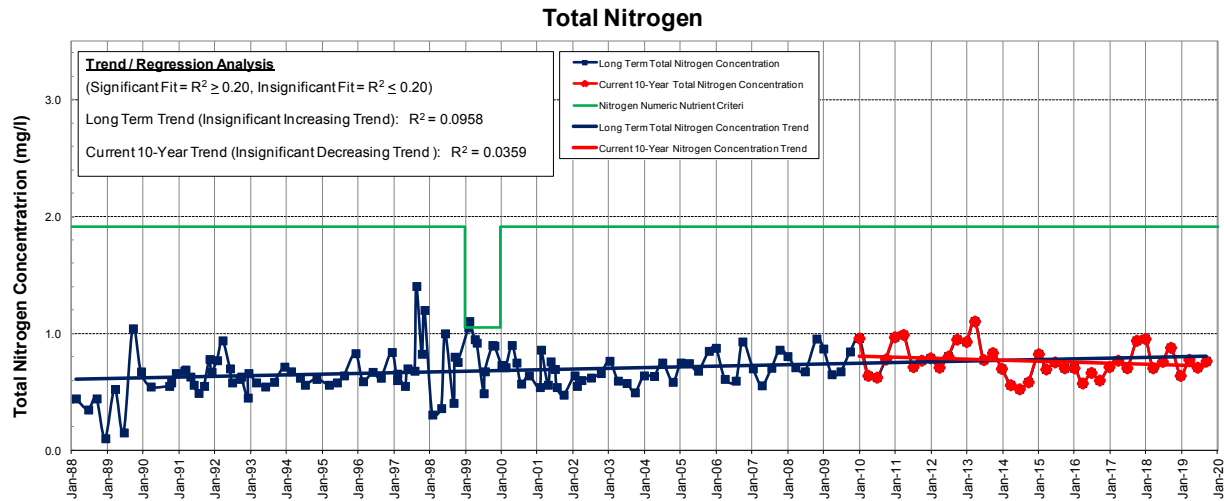
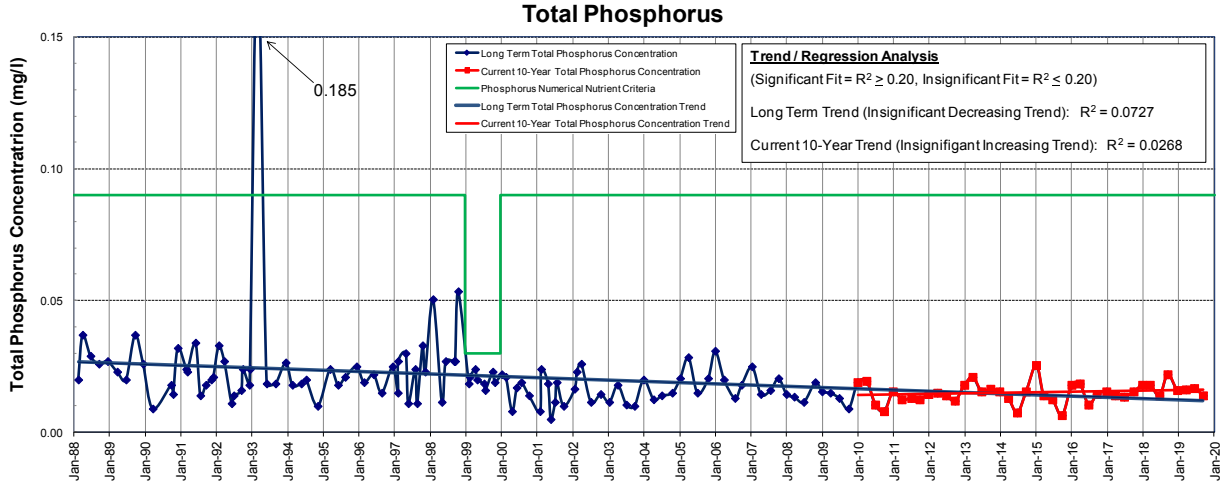
2017 - 2019 Water Quality Data	TSI Ranking (out of 94 lakes): 92				
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.059	0.66	0.23	16.00	58
Maximum	0.242	1.58	0.56	81.20	73
Average	0.149	1.17	0.41	47.28	67

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Approximately 0.1 miles northwest of the Maury Rd. and Edgewater Dr. intersection in the Palomar neighborhood.

# LAKE FAIRVIEW NUTRIENT TRENDS



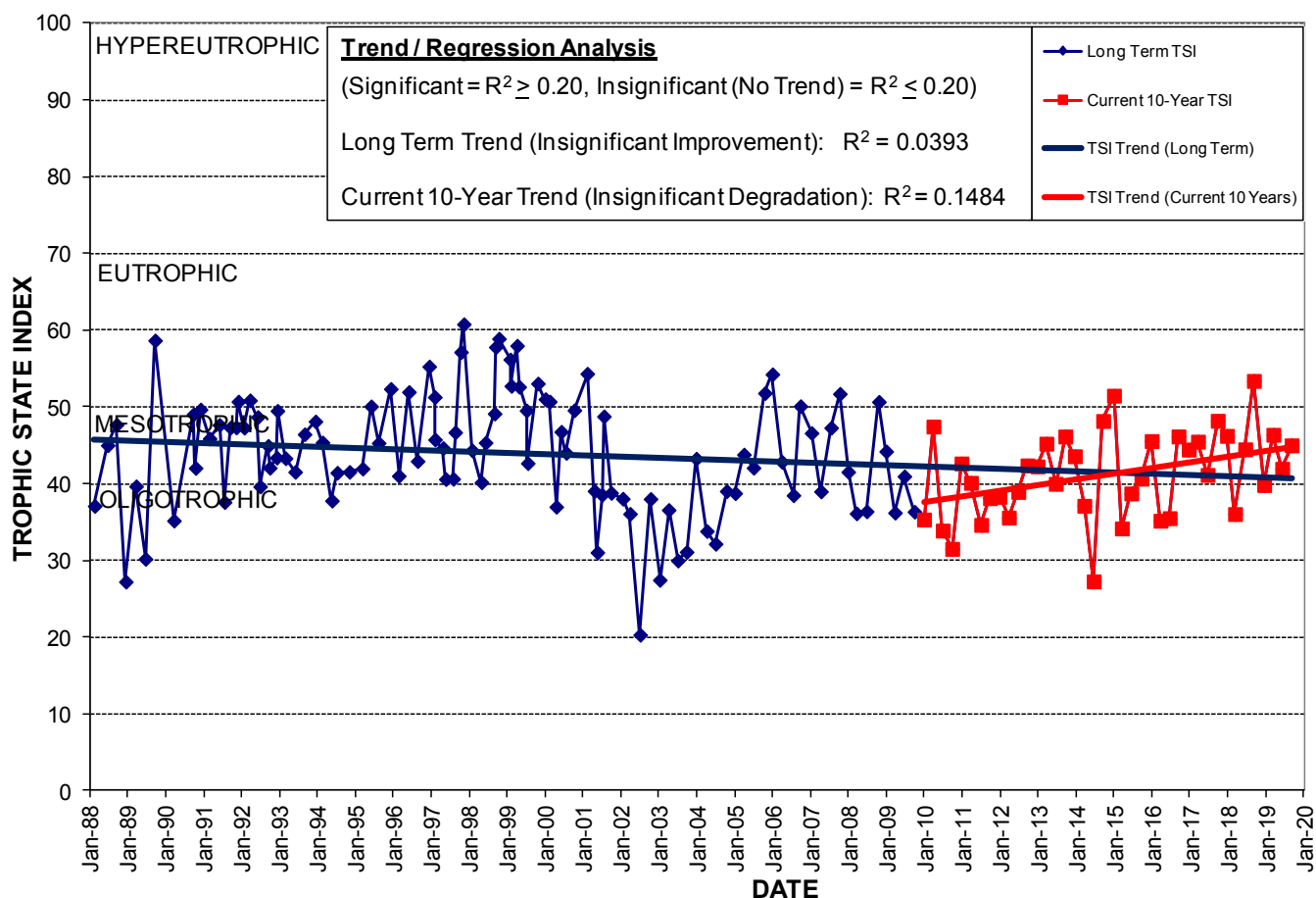
# LAKE FAIRVIEW

Lake Origin: **Natural**  
 Lake Surface Area: **397 acres**  
 Lake Volume: **205,000,000 ft<sup>3</sup>**  
 Shoreline Length: **28,612 ft (8,721 m)**  
 Mean Depth: **11.8 ft (3.6 m)**  
 Maximum Depth: **31.0 ft (9.4 m)**  
 Drain Wells: **1** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 35' 49.2"** Long **W 81° 24' 18.4"**  
 Section **10** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LW-04**  
 Drainage Basin Area: **486 acres**  
 Land Use: **Residential: 38% Commercial: 46%**  
**Industrial: 0% Highways: 2% Natural: 13%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 42			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.014	0.57	0.88	2.14	36
Maximum	0.022	0.96	2.27	17.10	53
Average	0.016	0.74	1.60	9.83	45

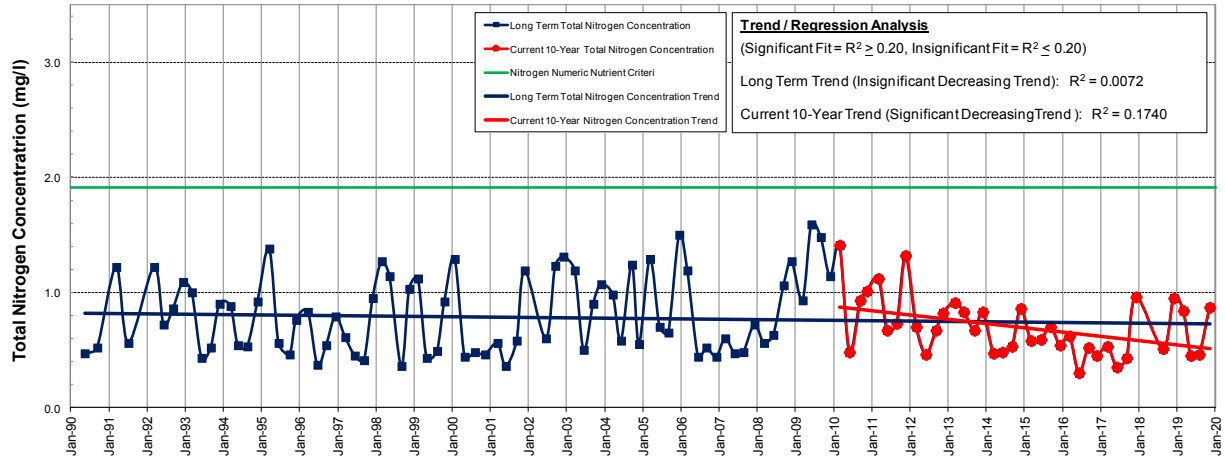
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



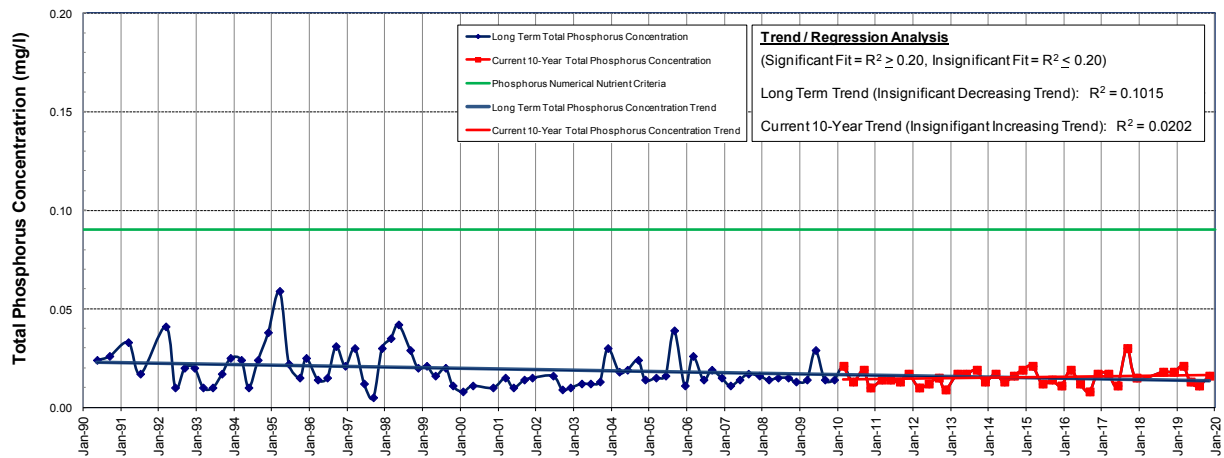
**Location:** Bordered by Lee Rd. (on the north), Orange Blossom Trail – US 441 (on the west) and Edgewater Dr. (on parts of the east).

# LAKE FARRAR NUTRIENT TRENDS

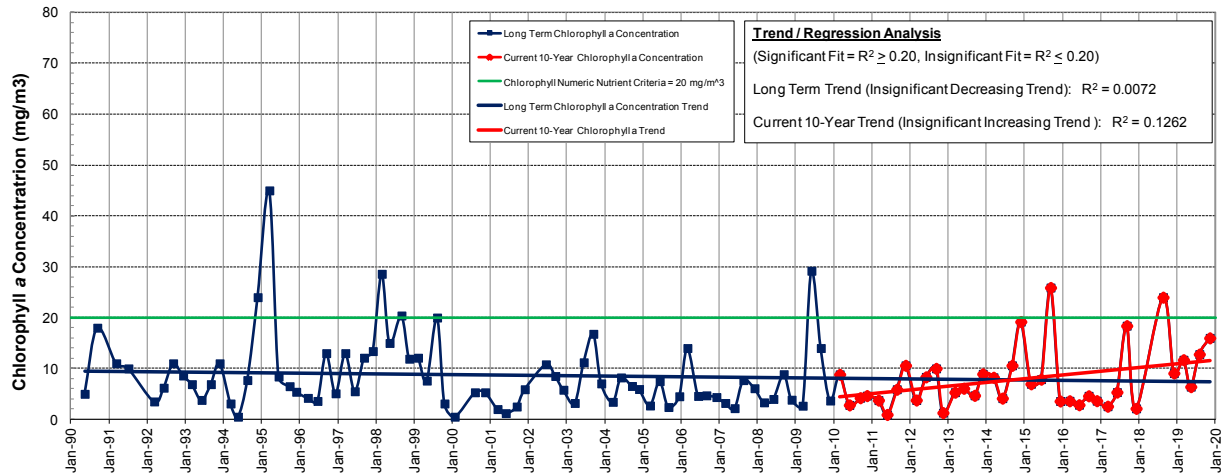
## Total Nitrogen



## Total Phosphorus



## Total Chlorophyll-a





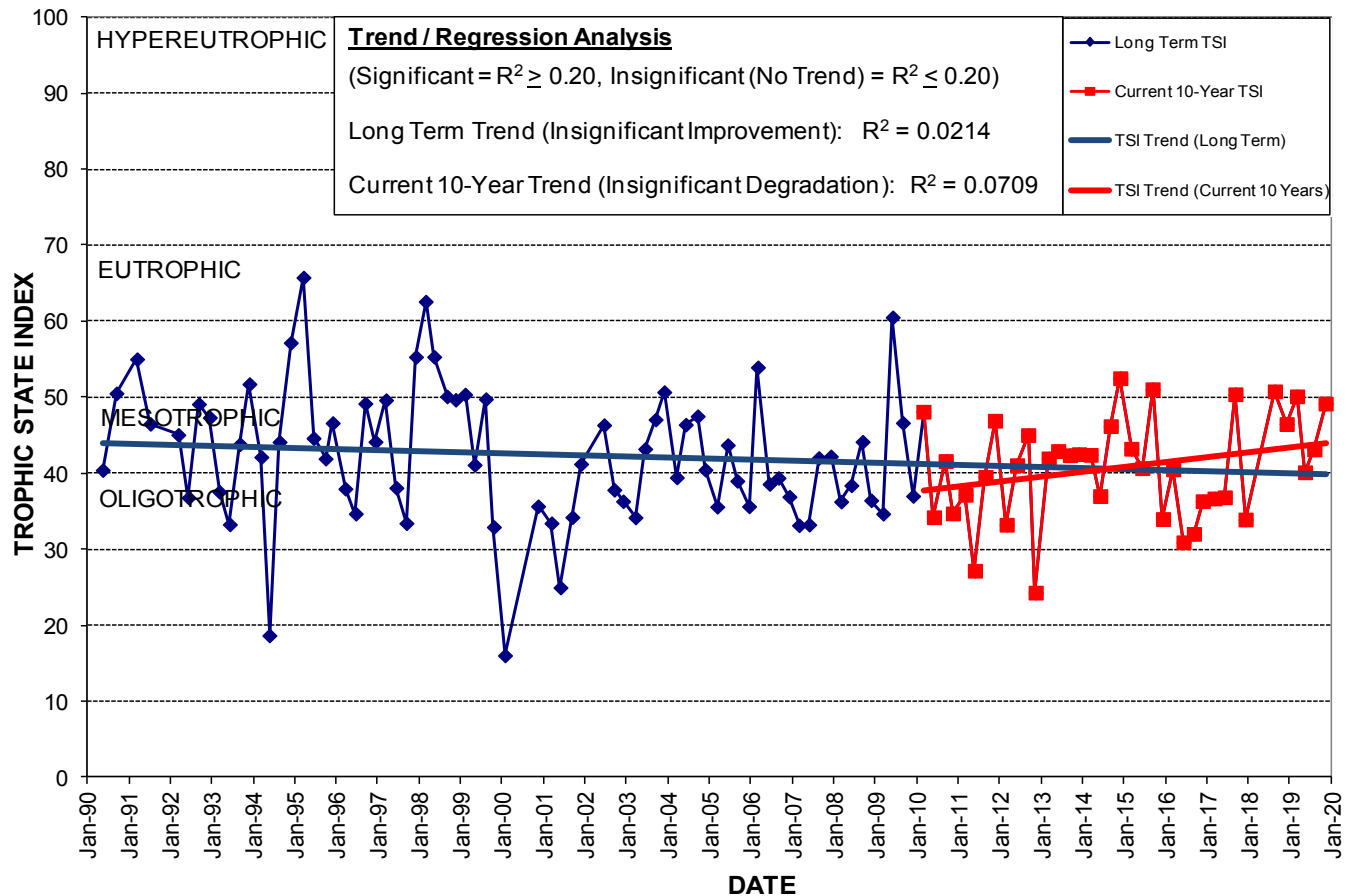
# LAKE FARRAR

Lake Origin: **Natural**  
 Lake Surface Area: **8 acres**  
 Lake Volume: **3,800,000 ft<sup>3</sup>**  
 Shoreline Length: **2,344 ft (714 m)**  
 Mean Depth: **10.8 ft (3.3 m)**  
 Maximum Depth: **25.0 ft (7.6 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat N 28° 30' 29.9" Long W 81° 19' 14.9"  
 Section **9** Township **23S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-38, LE-01K**  
 Drainage Basin Area: **511 acres \*combined**  
 Land Use: **Residential: 42% Commercial: 23%**  
**Industrial: 1% Highways: 5% Natural: 30%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 44			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.011	0.35	1.31	2.14	34
Maximum	0.030	0.96	2.57	24.00	51
Average	0.017	0.64	1.96	10.84	44

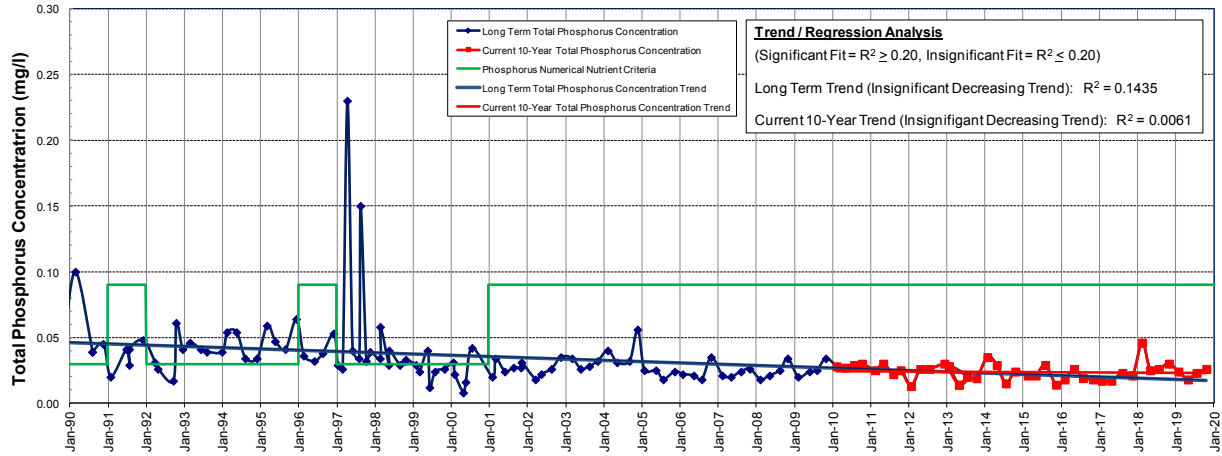
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



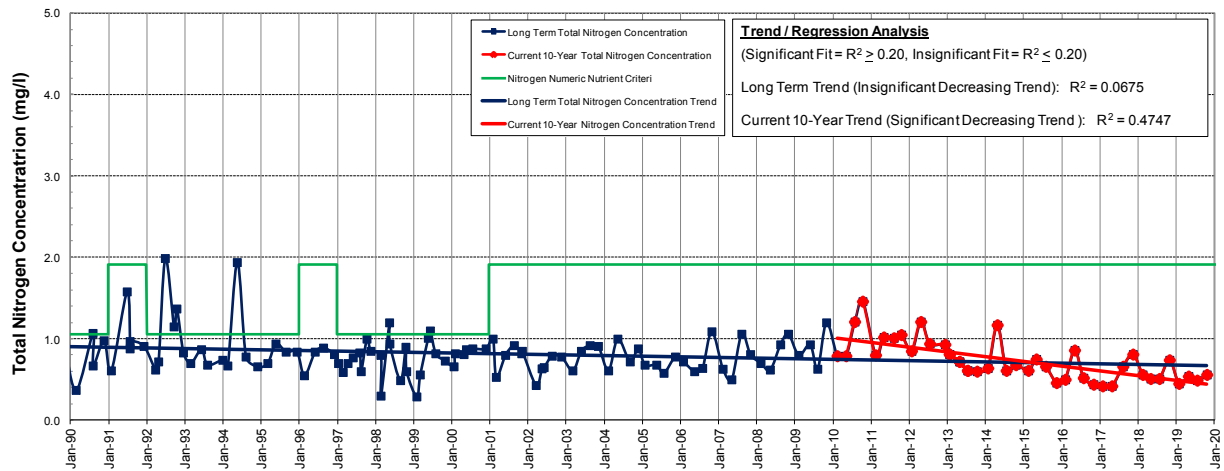
**Location:** North of Ashford Blvd. between Windy Wood Dr. and Chatsworth Ln. in the Bryn Mawr Neighborhood.

# LAKE FORMOSA NUTRIENT TRENDS

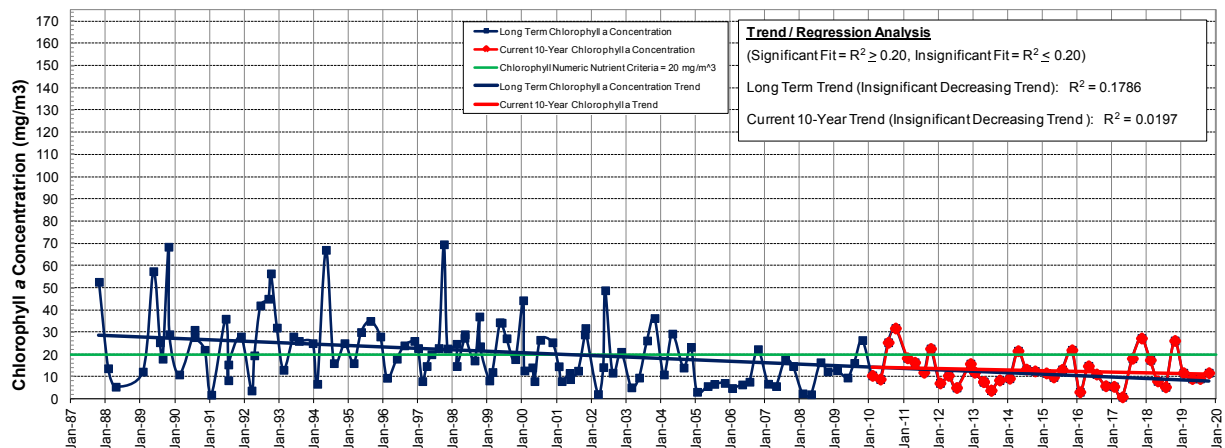
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



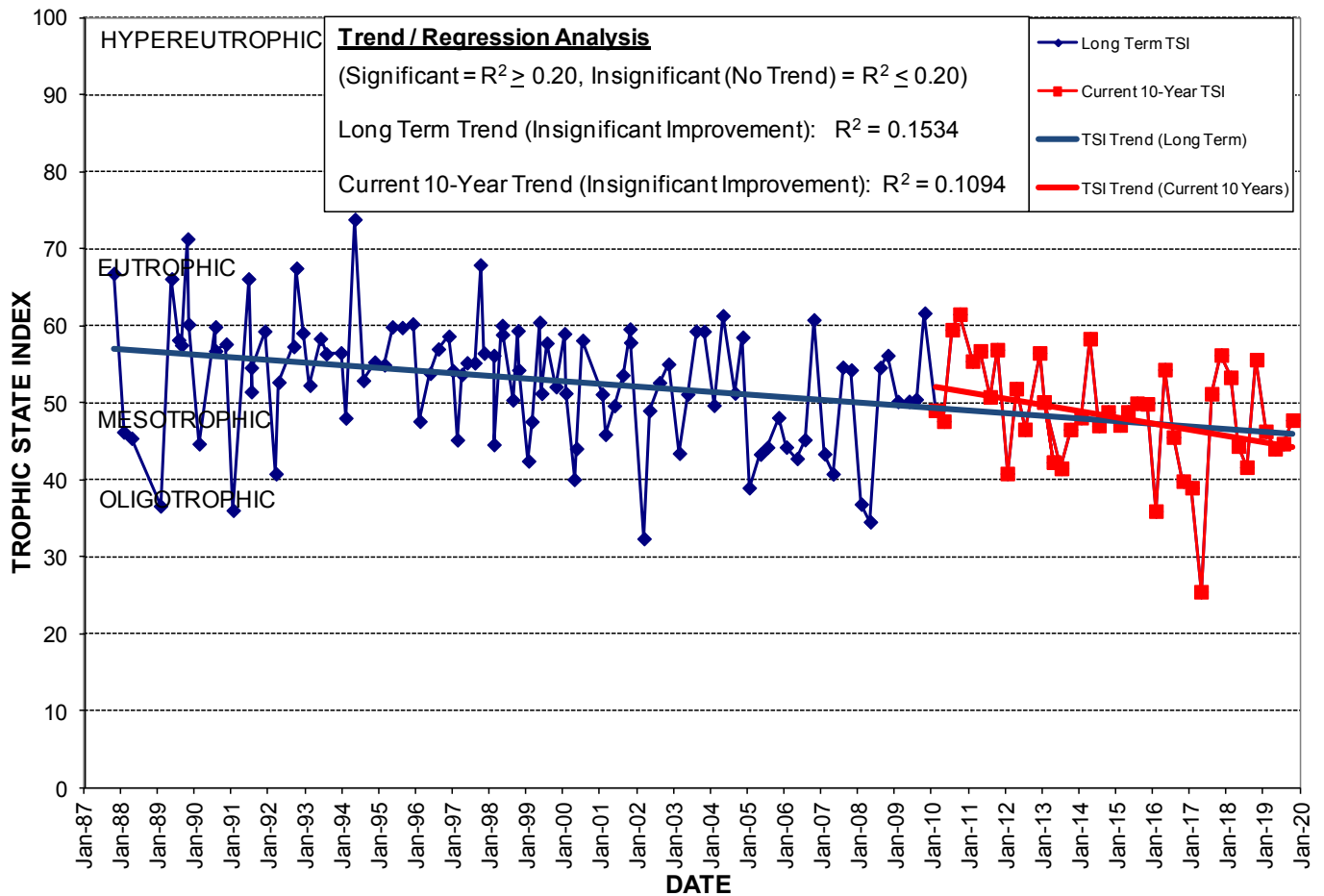
# LAKE FORMOSA

Lake Origin: **Natural**  
 Lake Surface Area: **33 acres**  
 Lake Volume: **19,700,000 ft<sup>3</sup>**  
 Shoreline Length: **7,029 ft (2,142 m)**  
 Mean Depth: **13.7 ft (4.2 m)**  
 Maximum Depth: **20.0 ft (6.1 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 34' 07.3"** Long **W 81° 22' 02.6"**  
 Section **13** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **HB-24**  
 Drainage Basin Area: **190 acres**  
 Land Use: **Residential: 46% Commercial: 28%**  
**Industrial: 1% Highways: 8% Natural: 18%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

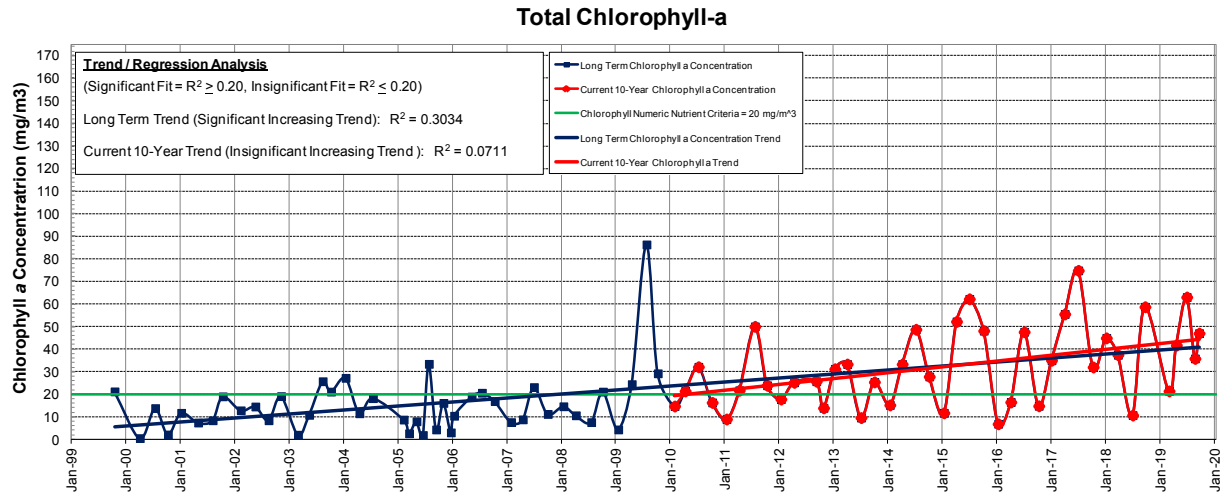
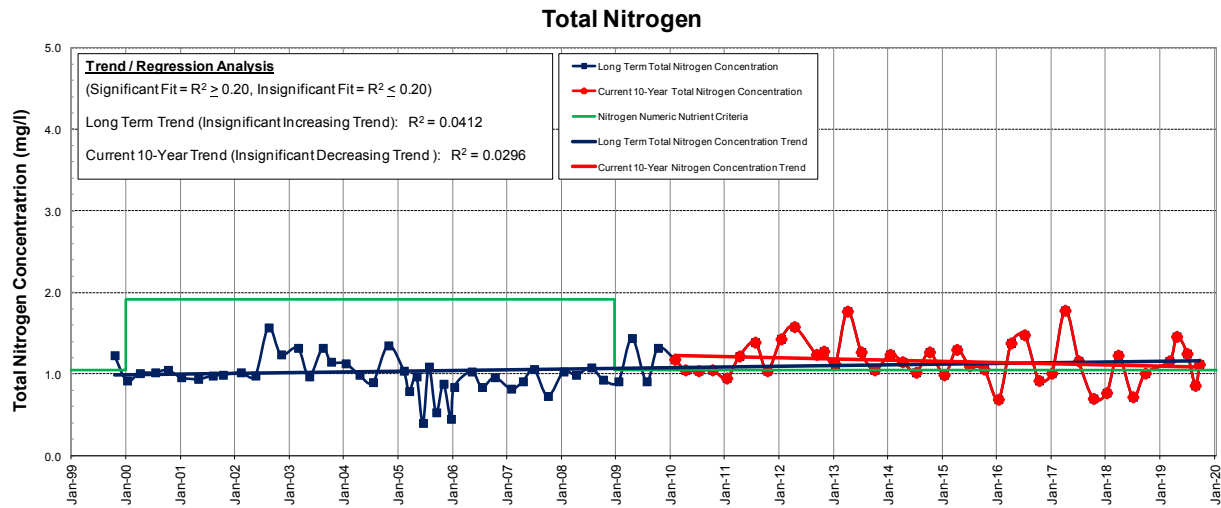
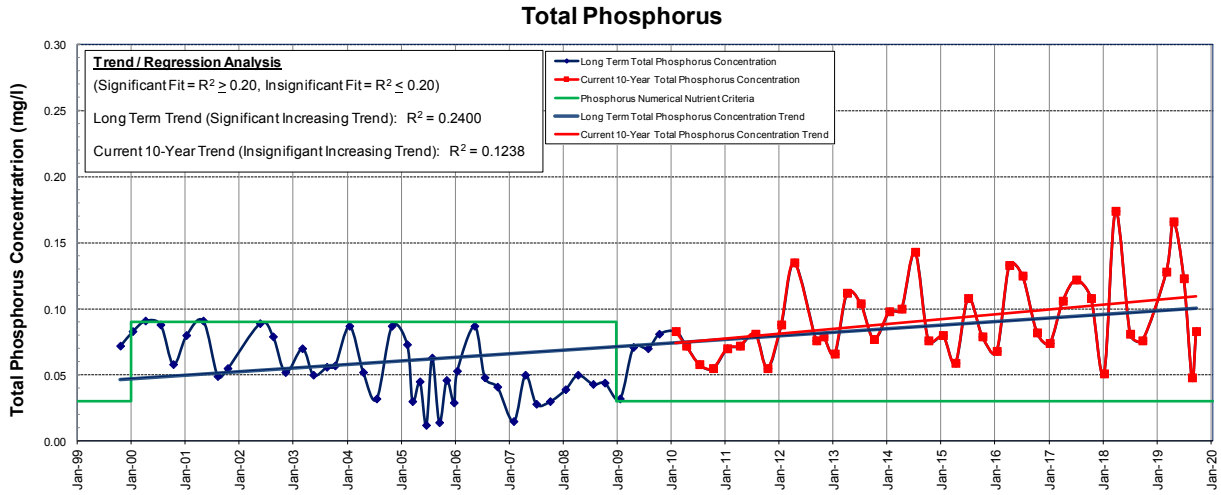
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 45			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.017	0.42	0.79	0.85	26
Maximum	0.046	0.81	3.12	27.30	56
Average	0.025	0.56	1.57	12.54	46

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** East of Alden Rd. between North Formosa Dr. and South Formosa Dr.

# LAKE FRAN NUTRIENT TRENDS



# LAKE FRAN

Lake Origin: **Excavation**

Lake Surface Area: **70 acres**

Lake Volume: **No Data**

Shoreline Length: **14,097 ft (4,297 m)**

Mean Depth: **9.0 ft (2.8 m)**

Maximum Depth: **10.2 ft (3.1 m)**

Drain Wells: **No** Aeration: **No**

Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 31' 19.6"** Long **W 81° 26' 42.7"**

Section **6** Township **23N** Range **29E**

Water Management District: **South Florida**

Drainage Code: **SC-01B**

Drainage Basin Area: **1,612 acres**

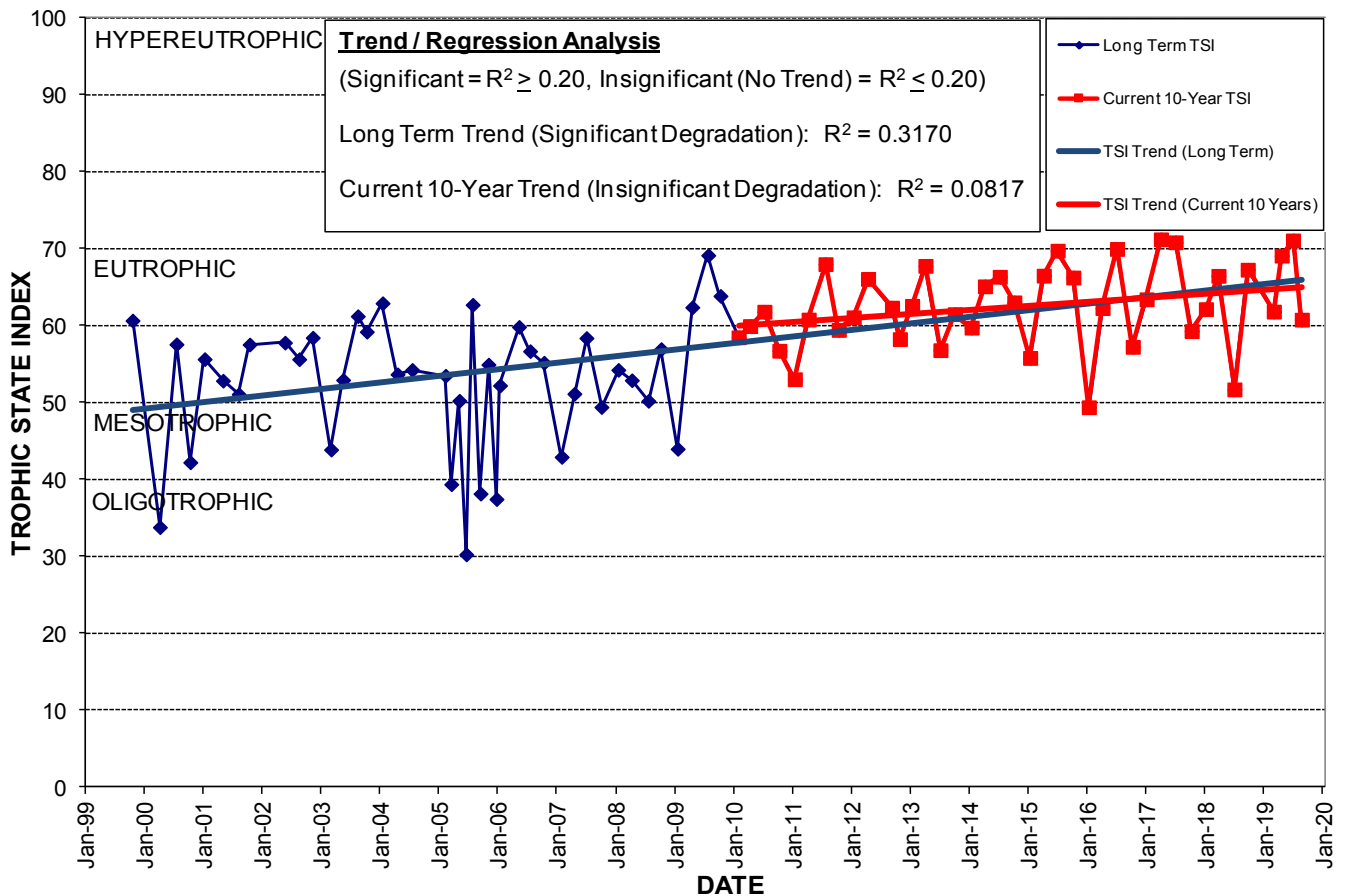
Land Use: **Residential: 40% Commercial: 16%**

**Industrial: 3% Highways: 0% Natural: 40%**

Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 91			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.048	0.70	0.48	10.70	52
Maximum	0.174	1.78	4.47	74.80	71
Average	0.103	1.10	0.98	42.92	65

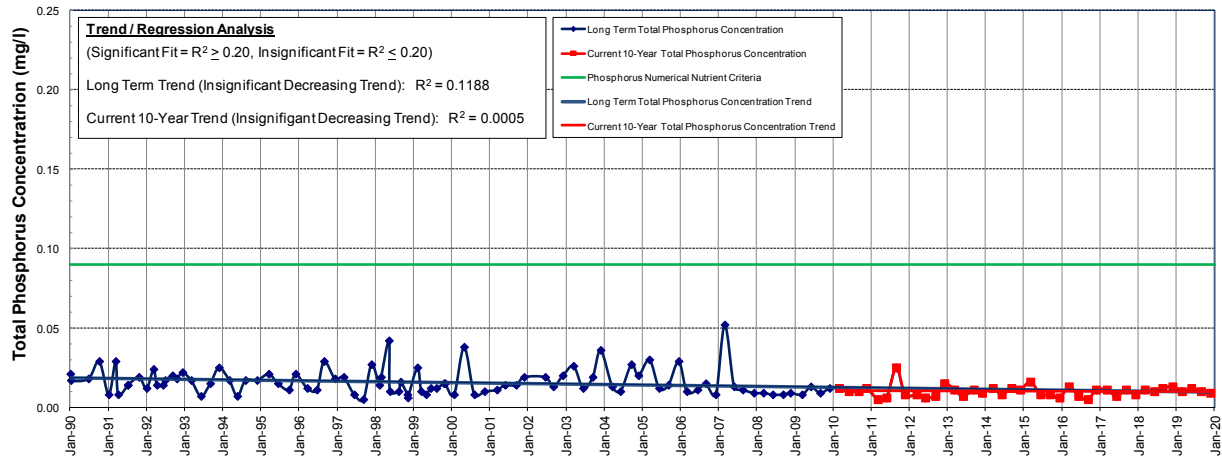
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



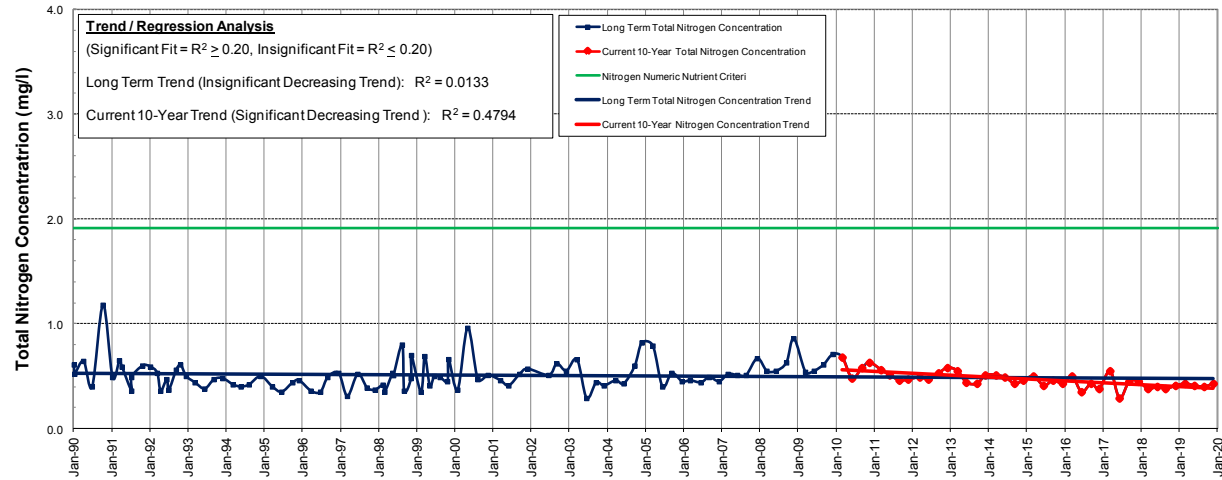
**Location:** South of Lescot Ln. in the Malibu Groves Neighborhood (off of Raleigh St. between Kirkman Rd. and Willie Mays Pkwy.)

# LAKE FREDRICA NUTRIENT TRENDS

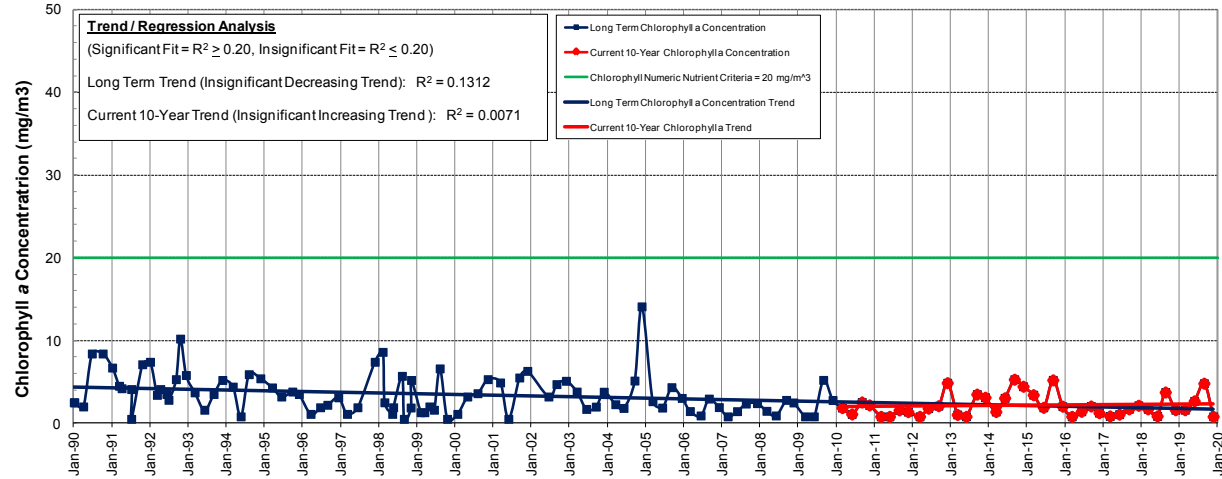
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



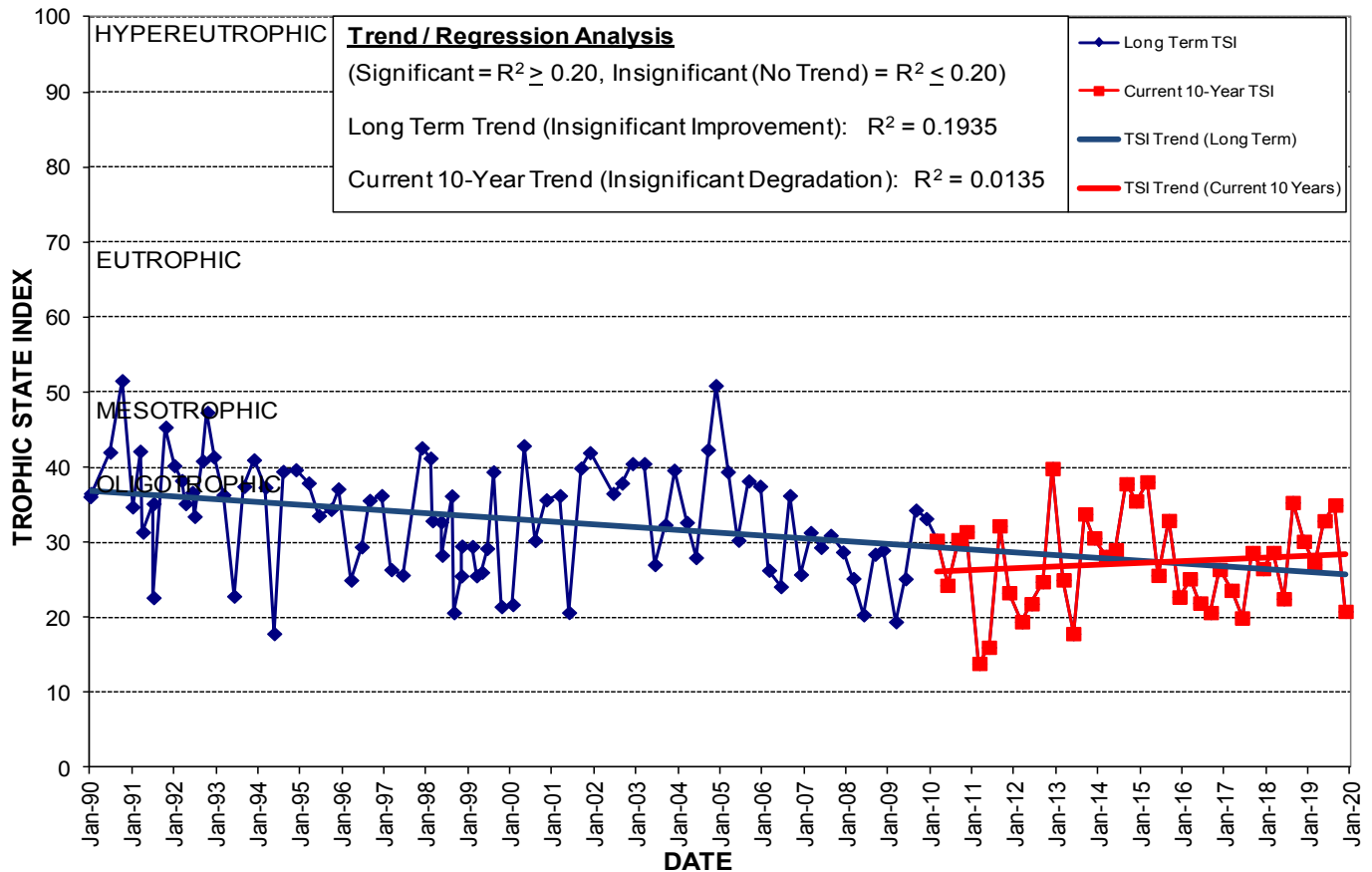
# LAKE FREDRICA

Lake Origin: **Natural**  
 Lake Surface Area: **65 acres**  
 Lake Volume: **34,600,000 ft<sup>3</sup>**  
 Shoreline Length: **6,229 ft (1,899 m)**  
 Mean Depth: **12.2 ft (3.7 m)**  
 Maximum Depth: **29.0 ft (8.8 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 30' 30.2"** Long **W 81° 18' 25.9"**  
 Section **10** Township **23S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LE-39**  
 Drainage Basin Area: **181 acres**  
 Land Use: **Residential: 0% Commercial: 8%**  
**Industrial: 0% Highways: 2% Natural: 90%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 4			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.007	0.29	1.04	0.80	20
Maximum	0.013	0.55	5.48	4.81	35
Average	0.010	0.42	4.08	1.96	28

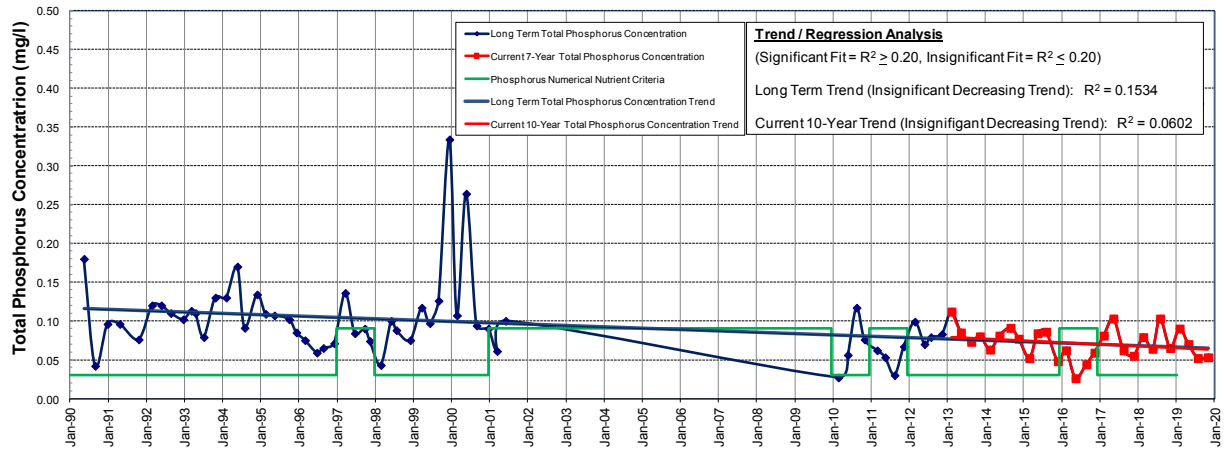
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



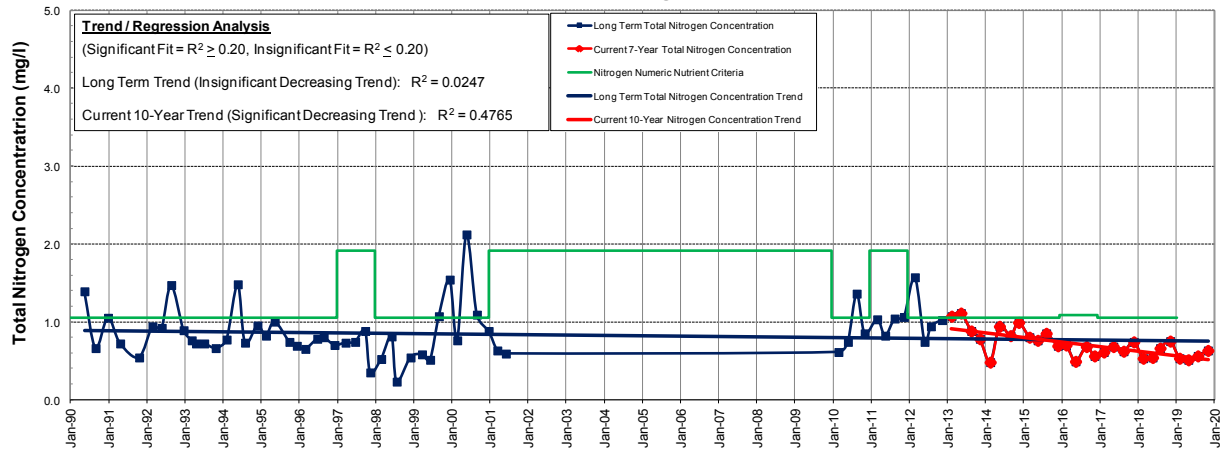
**Location:** Adjacent to S Semoran Bv – SR 436. (on the east side) between Lake Margaret Dr. and Michigan Ave.

# LAKE G NUTRIENT TRENDS

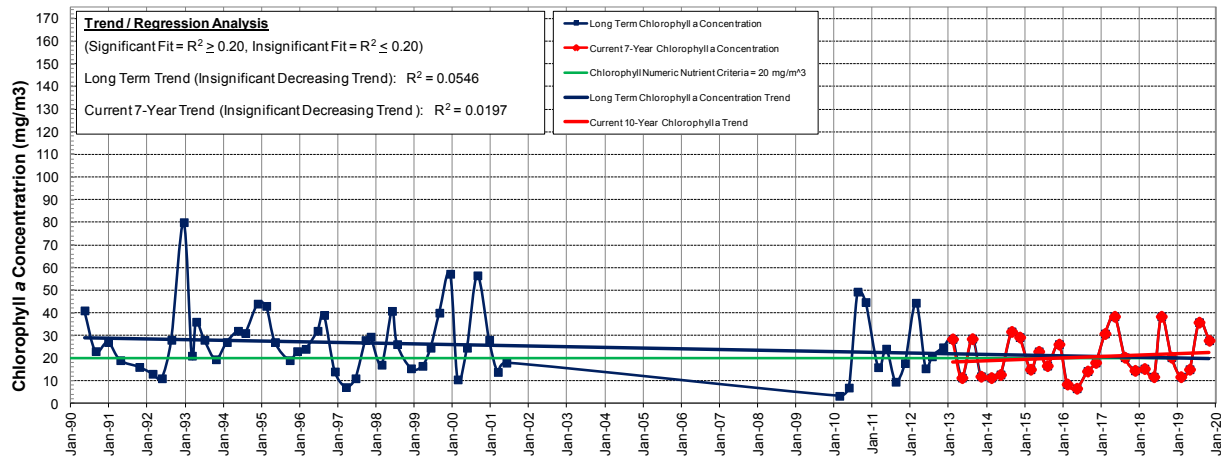
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a





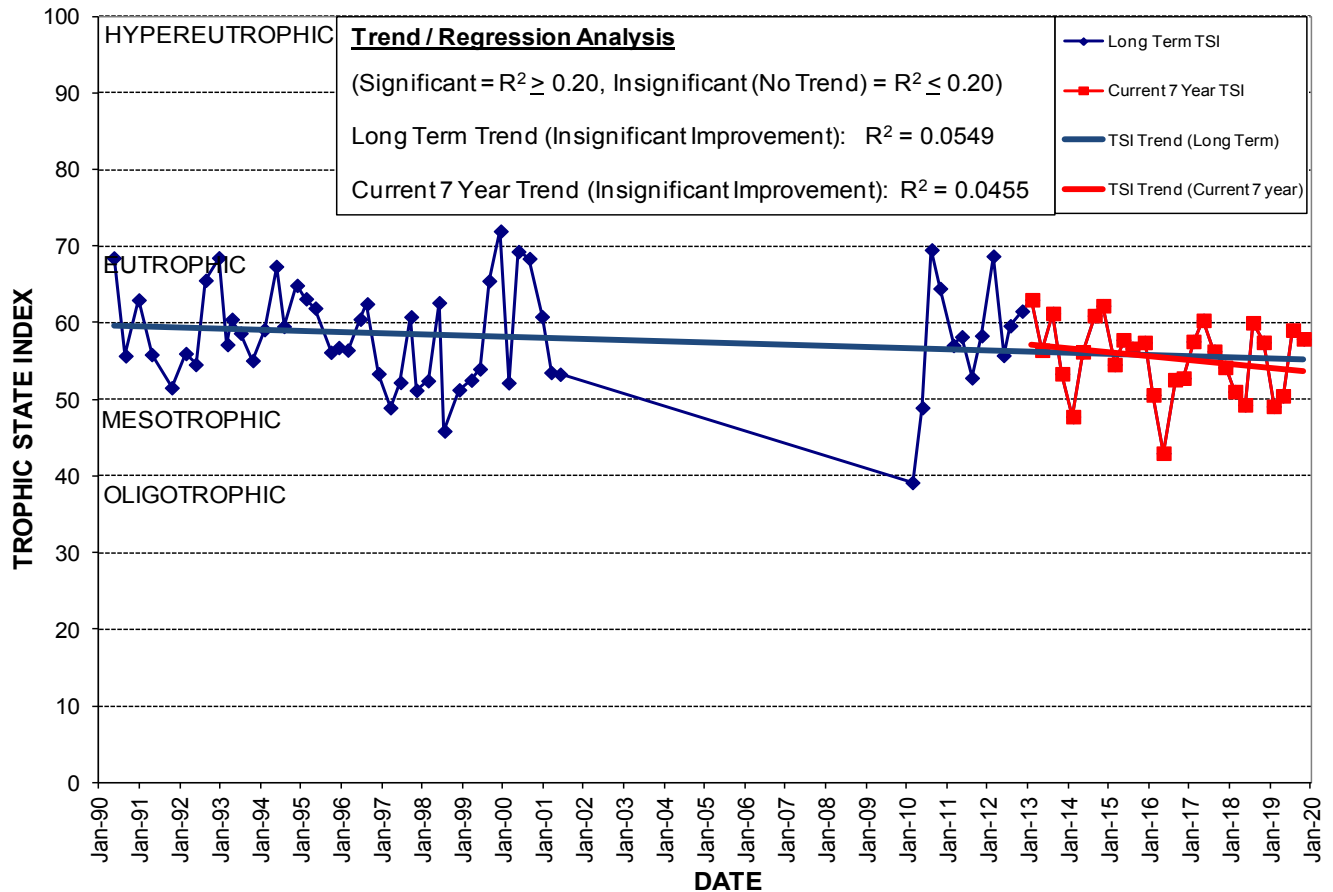
# LAKE G

Lake Origin: **Excavation**  
 Lake Surface Area: **6 acres**  
 Lake Volume: **No Data**  
 Shoreline Length: **2,018 ft (615 m)**  
 Mean Depth: **No Data**  
 Maximum Depth: **No Data**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 31' 31.0"** Long **W 81° 17' 54.8"**  
 Section **34** Township **22S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LE-01G**  
 Drainage Basin Area: **766 acres**  
 Land Use: **Residential: 56% Commercial: 23%**  
**Industrial: 0% Highways: 1% Natural: 20%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 67			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.052	0.51	0.28	11.70	49
Maximum	0.103	0.75	1.25	38.40	60
Average	0.073	0.61	0.80	23.33	55

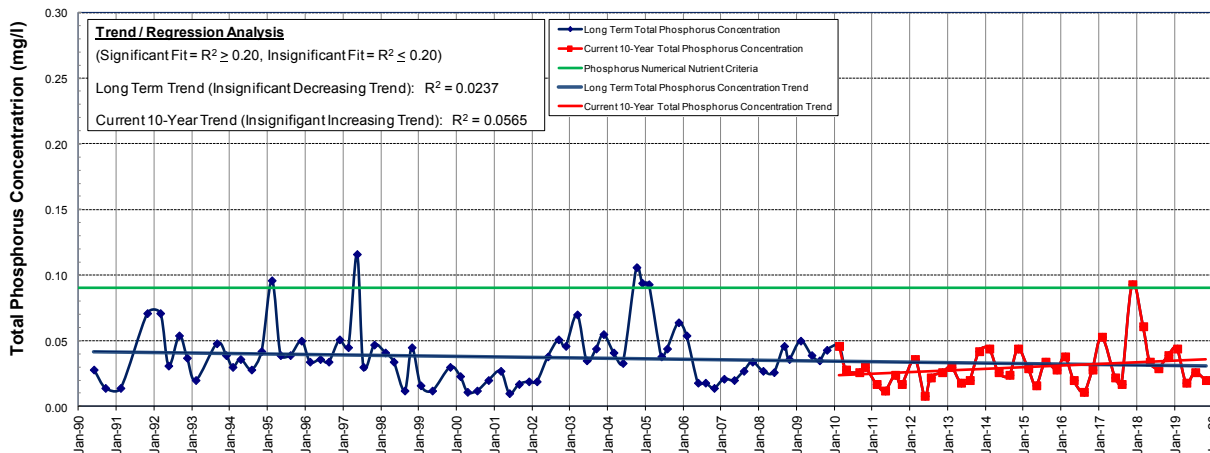
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



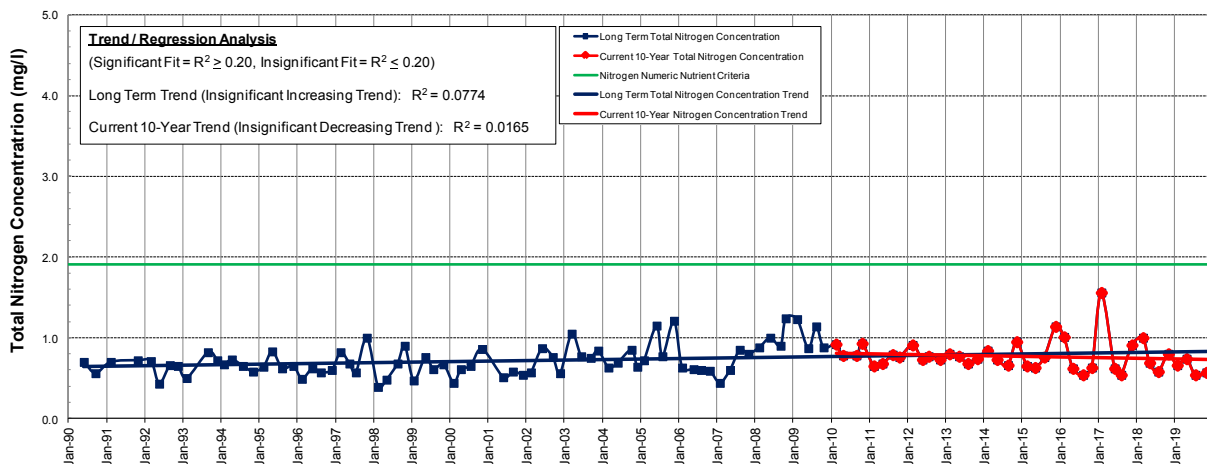
**Location:** Off S. Alder Ave. in the Leroy Hoequist Park, northwest of Curry Ford Rd. and S. Oxalis Ave.

# LAKE GEAR NUTRIENT TRENDS

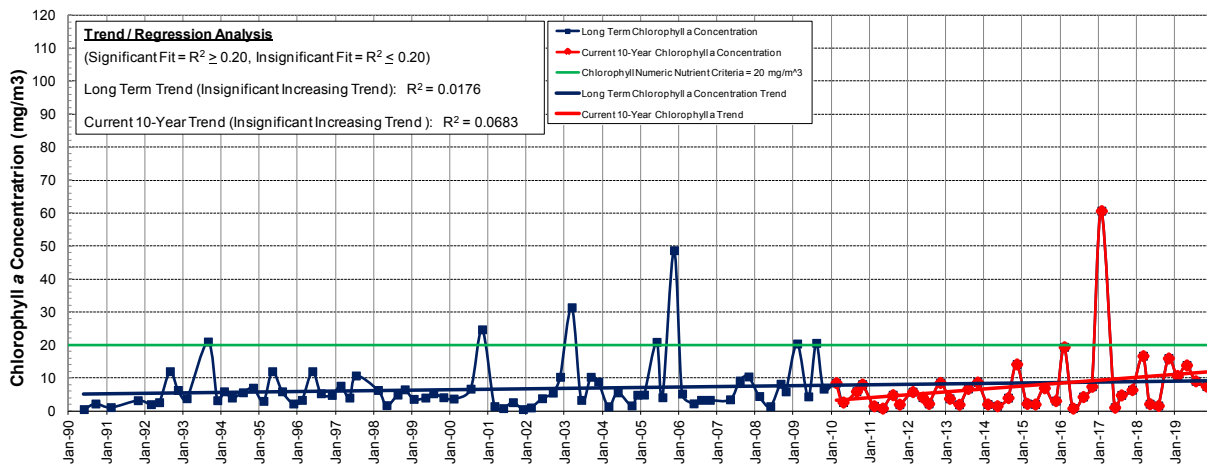
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



# LAKE GEAR

Lake Origin: **Excavation**

Lake Surface Area: **7 acres**

Lake Volume: **5,400,000 ft<sup>3</sup>**

Shoreline Length: **2,383 ft (726 m)**

Mean Depth: **19.9 ft (6.1 m)**

Maximum Depth: **22.0 ft (6.7 m)**

Drain Wells: **1** Aeration: **No**

Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 33' 23.0"** Long **W 81° 19' 49.4"**

Section **20** Township **22S** Range **30E**

Water Management District: **St. Johns River**

Drainage Code: **ORL-07**

Drainage Basin Area: **42 acres**

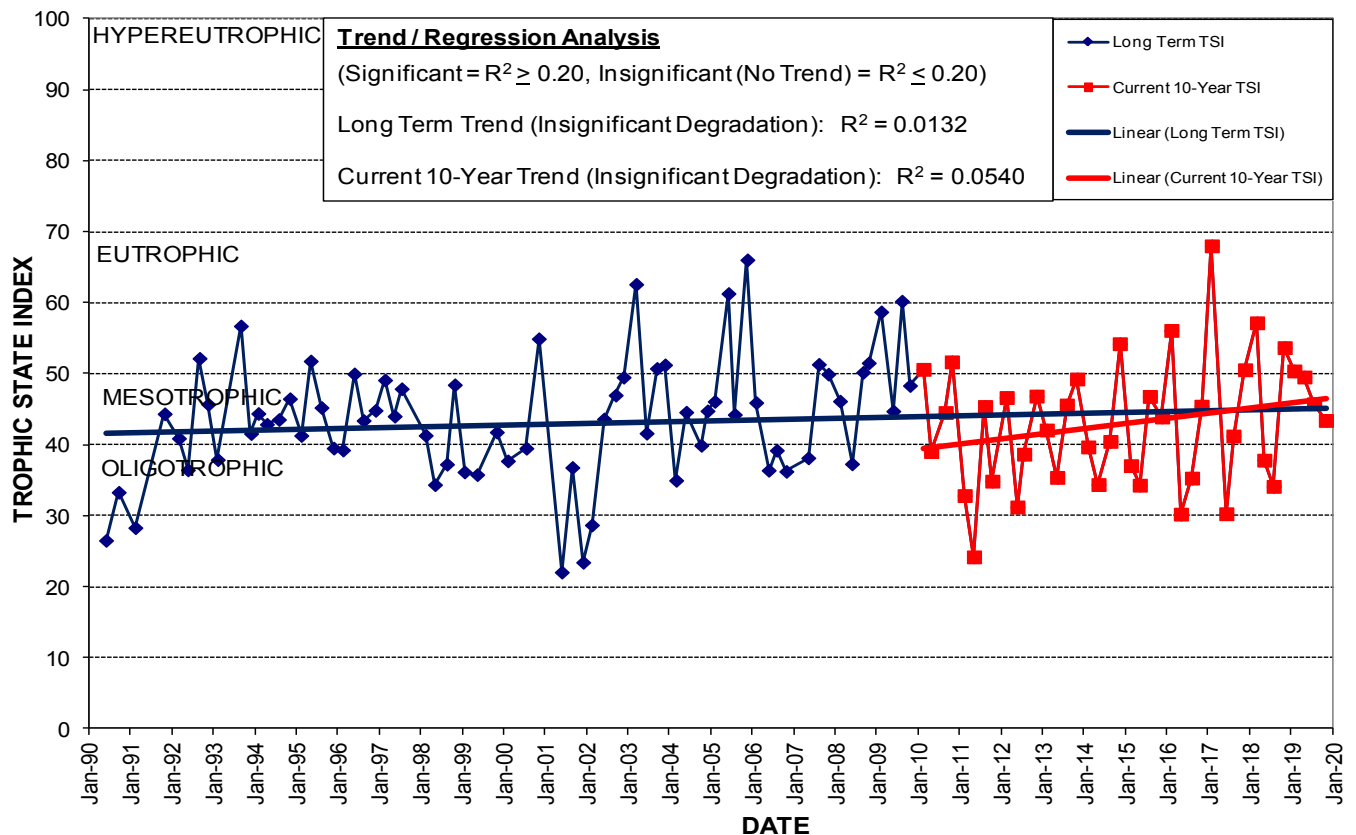
Land Use: **Residential: 22% Commercial: 58%**

**Industrial: 0% Highways: 0% Natural: 20%**

Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

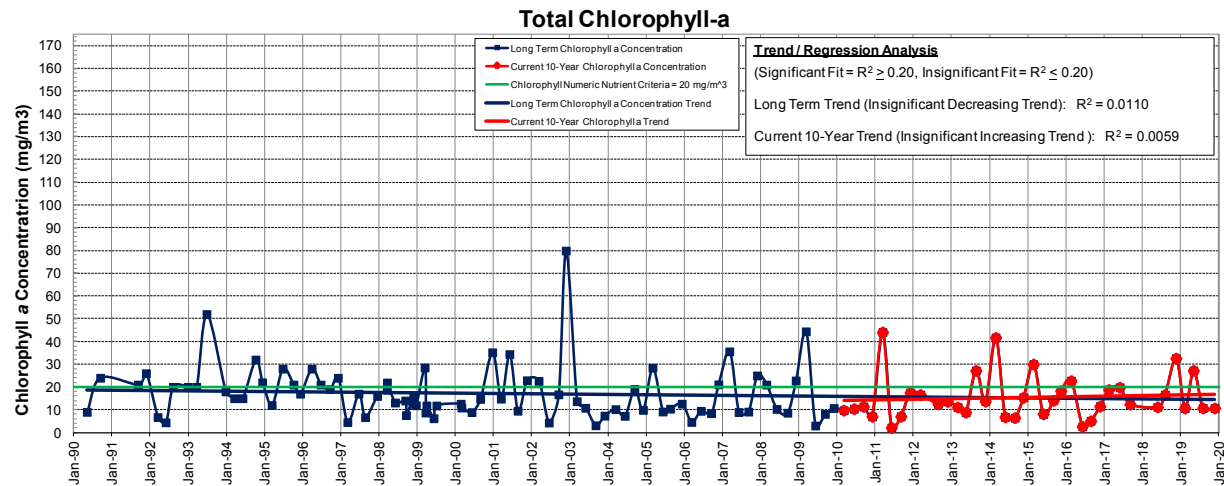
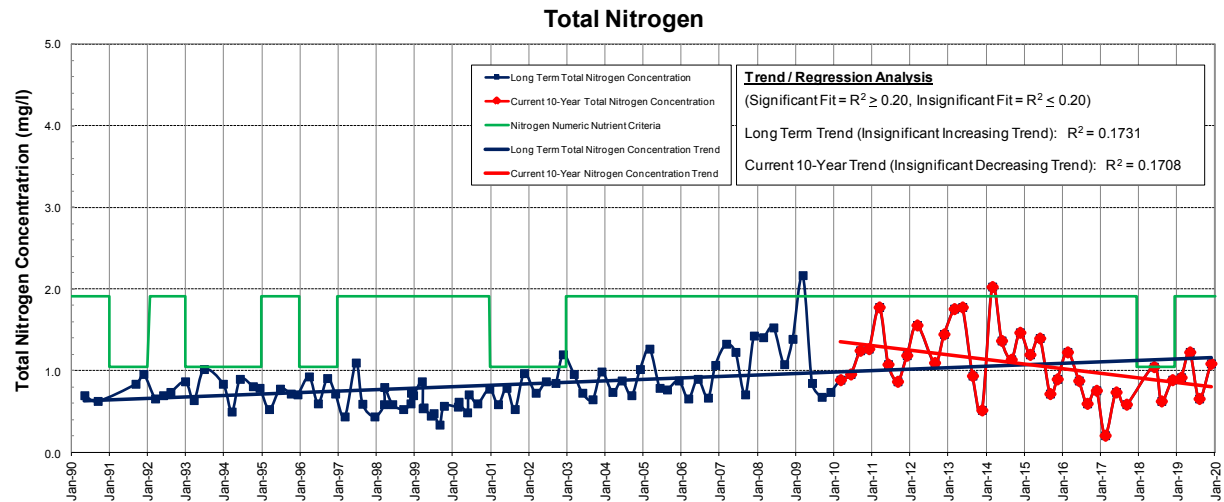
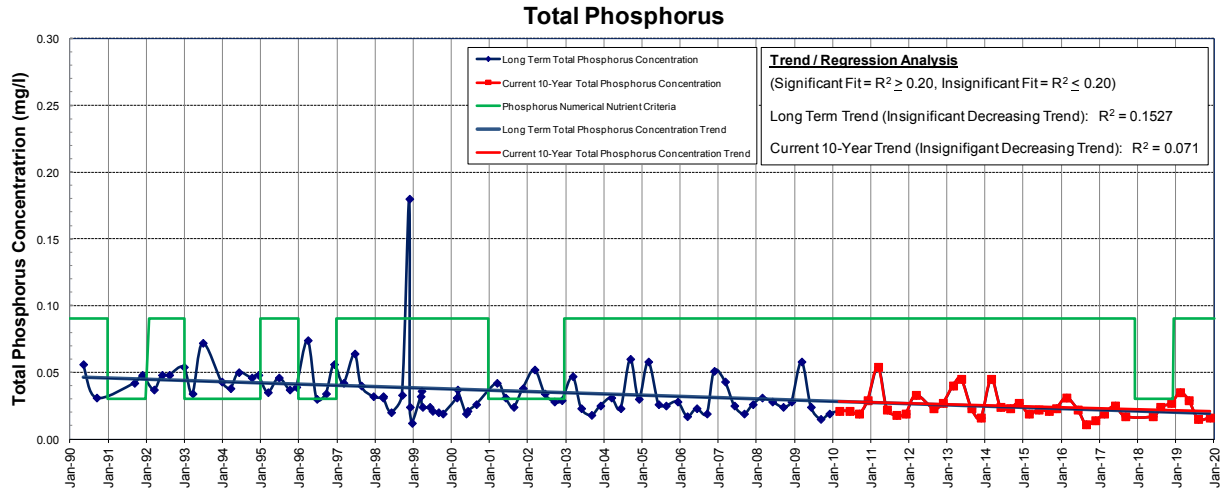
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 50			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.017	0.54	0.39	1.07	30
Maximum	0.093	1.56	4.45	60.70	68
Average	0.038	0.77	2.05	12.55	47

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Approximately 0.2 miles east of Bennet Rd., just north of E Colonial Dr.

# LAKE GEM MARY NUTRIENT TRENDS



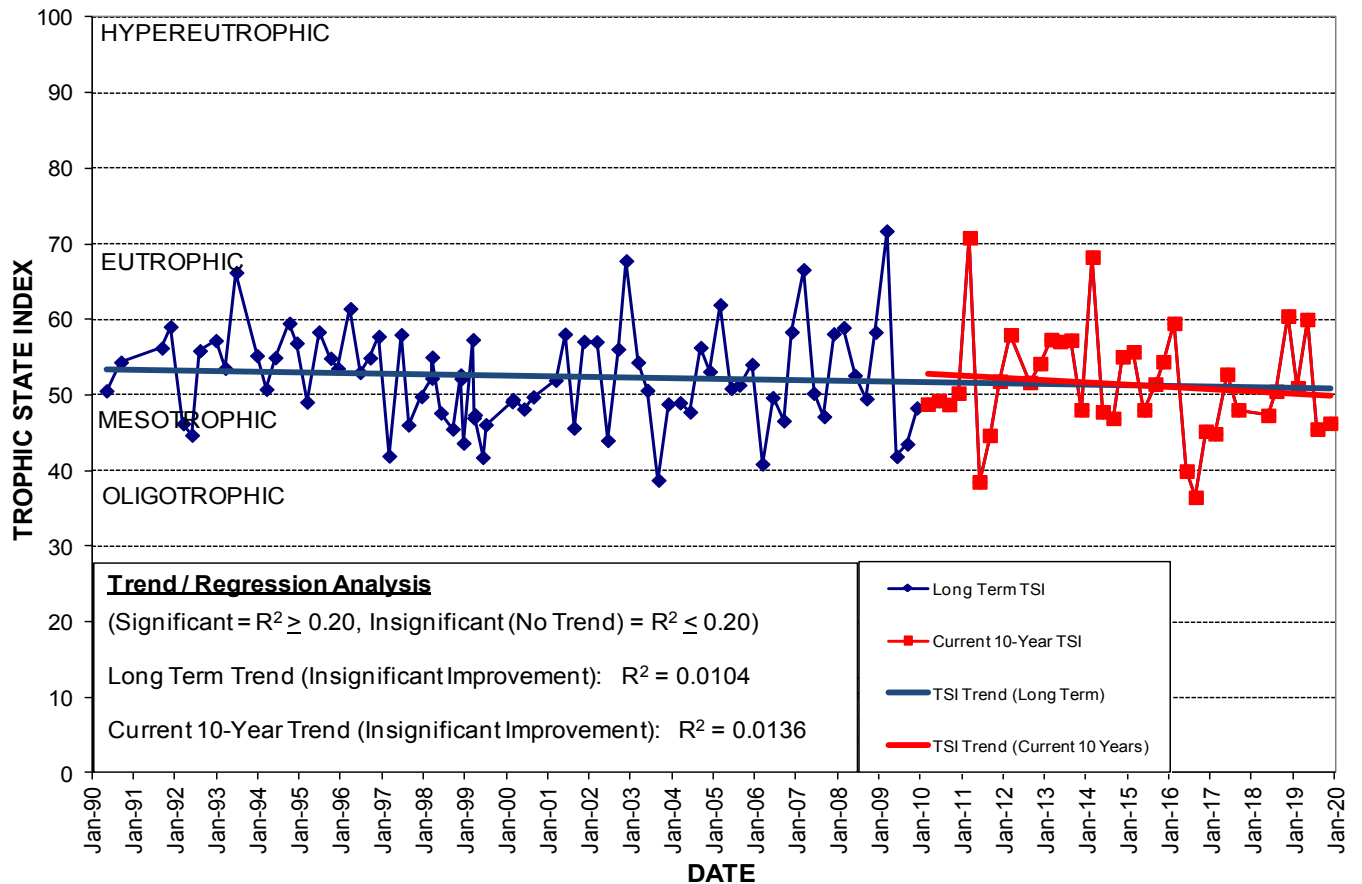
# LAKE GEM MARY

Lake Origin: **Natural**  
 Lake Surface Area: **14 acres**  
 Lake Volume: **10,750,200 ft<sup>3</sup>**  
 Shoreline Length: **2,800 ft (853 m)**  
 Mean Depth: **17.9 ft (5.5 m)**  
 Maximum Depth: **33.5 ft (10.2 m)**  
 Drain Wells: **1**    Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 29' 43.4"** Long **W 81° 21' 55.8"**  
 Section **12** Township **23S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **BC-20**  
 Drainage Basin Area: **13 acres**  
 Land Use: **Residential: 2% Commercial: 61%**  
**Industrial: 11% Highways: 0% Natural: 25%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 60			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.015	0.21	0.47	10.70	45
Maximum	0.035	1.23	1.63	32.60	60
Average	0.022	0.80	1.04	17.07	51

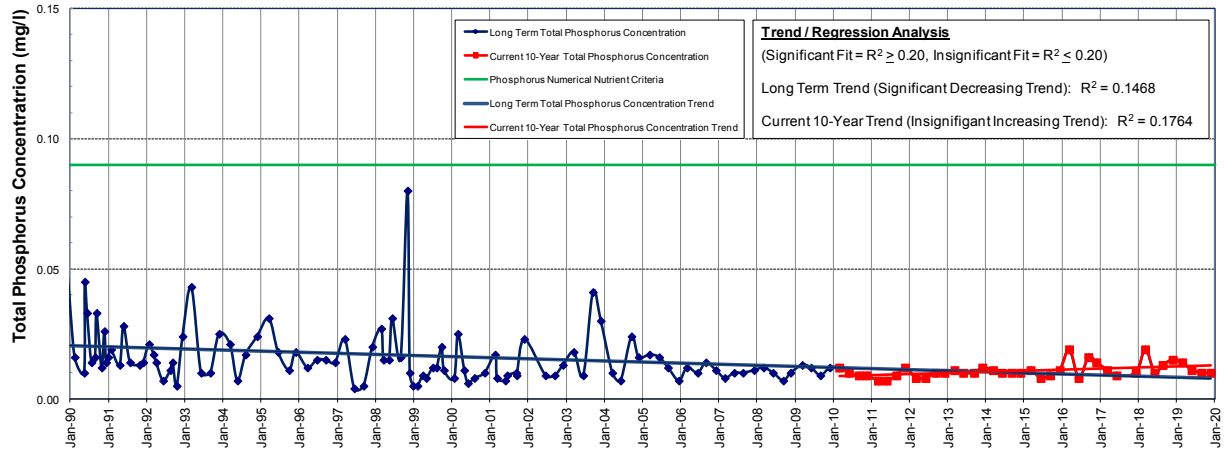
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



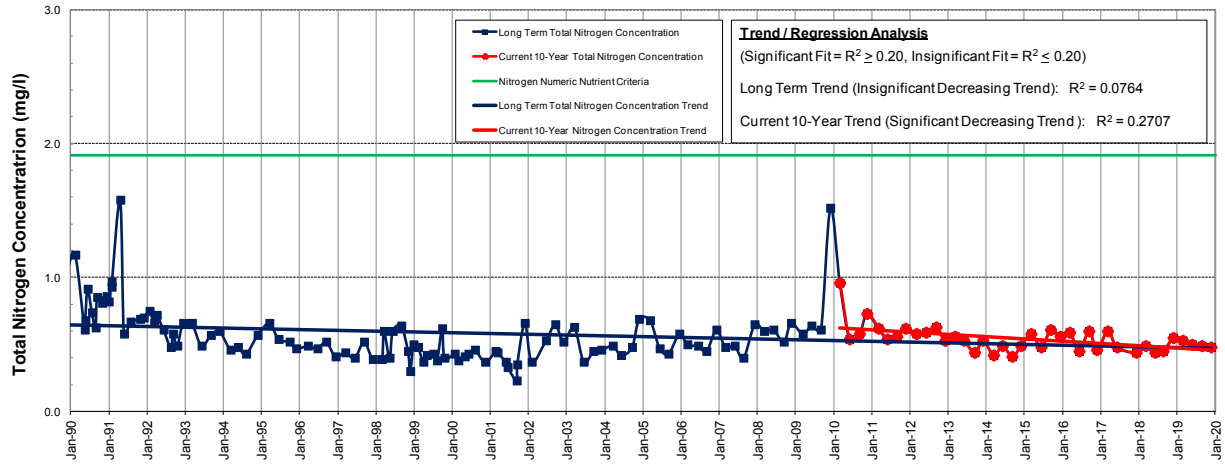
**Location:** Just north of Gatlin Rd. between Summerlin Ave. and Lake Gem Circle.

# LAKE GEORGE NUTRIENT TRENDS

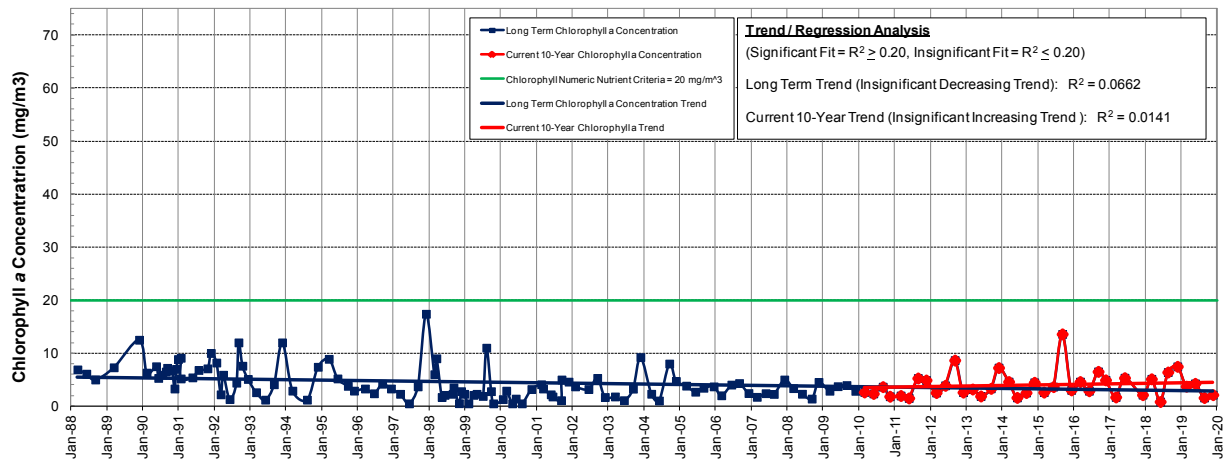
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



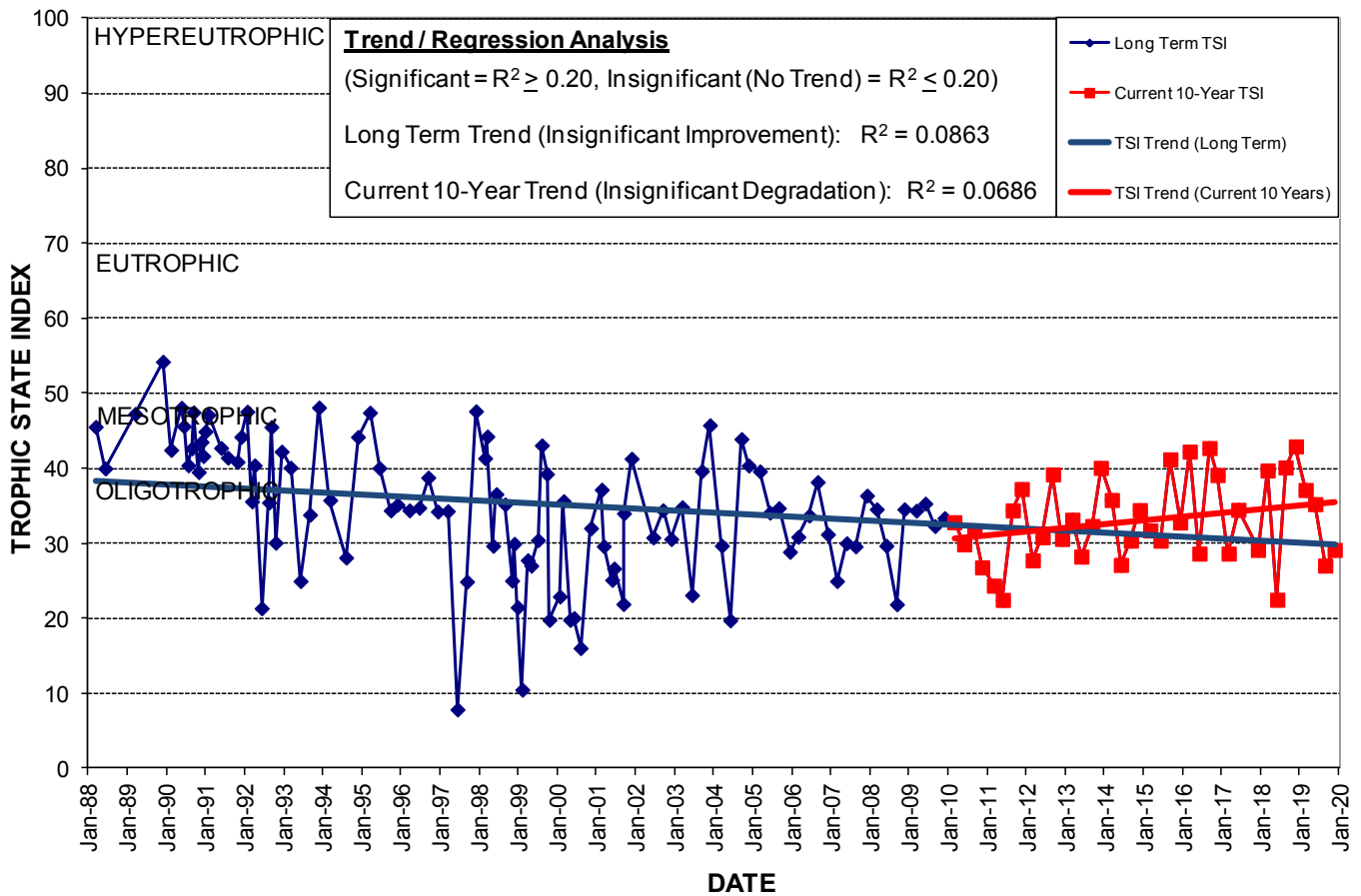
# LAKE GEORGE

Lake Origin: **Natural**  
 Lake Surface Area: **73 acres**  
 Lake Volume: **40,000,000 ft<sup>3</sup>**  
 Shoreline Length: **8,113 ft (2,473 m)**  
 Mean Depth: **12.6 ft (3.8 m)**  
 Maximum Depth: **30.0 ft (9.1 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 30' 02.5"** Long **W 81° 19' 04.4"**  
 Section **9** Township **23S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-37**  
 Drainage Basin Area: **183 acres**  
 Land Use: **Residential: 48%** **Commercial: 11%**  
**Industrial: 0%** **Highways: 0%** **Natural: 41%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 6			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.009	0.44	1.73	0.85	23
Maximum	0.019	0.60	3.28	7.48	43
Average	0.012	0.50	2.38	3.71	33

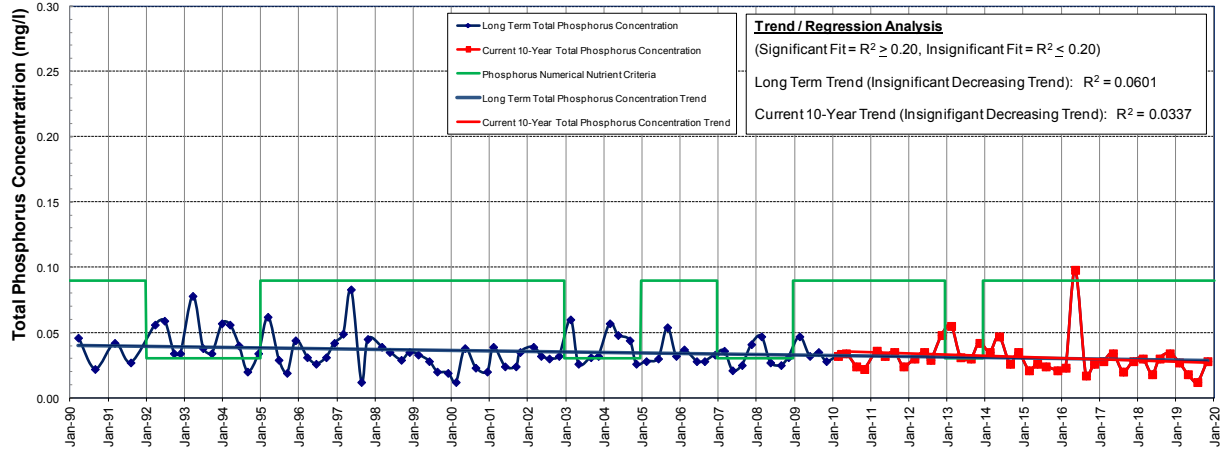
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



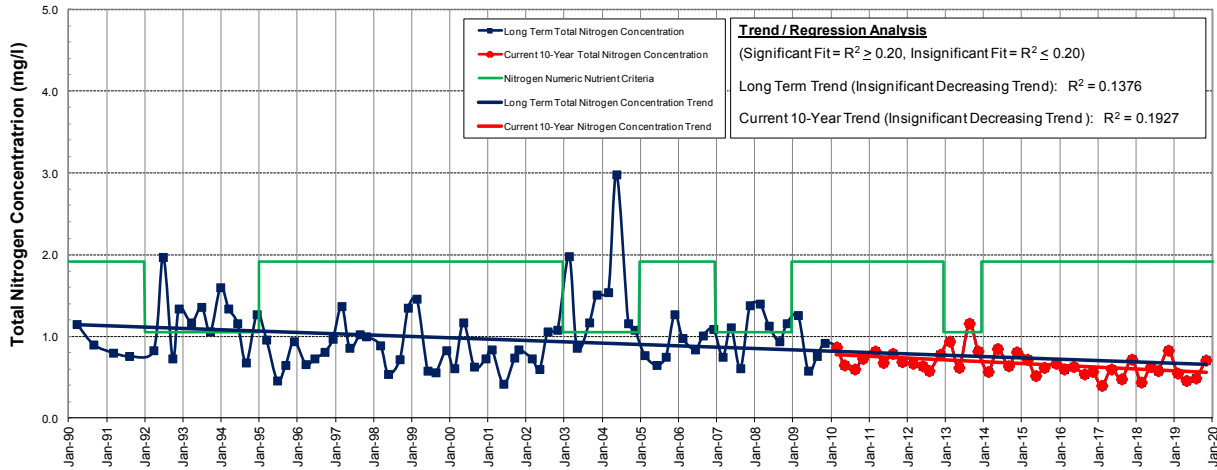
**Location:** West of Dixie Belle Dr. between Lake Margaret Dr. and Gatlin Ave.

# LAKE GILES NUTRIENT TRENDS

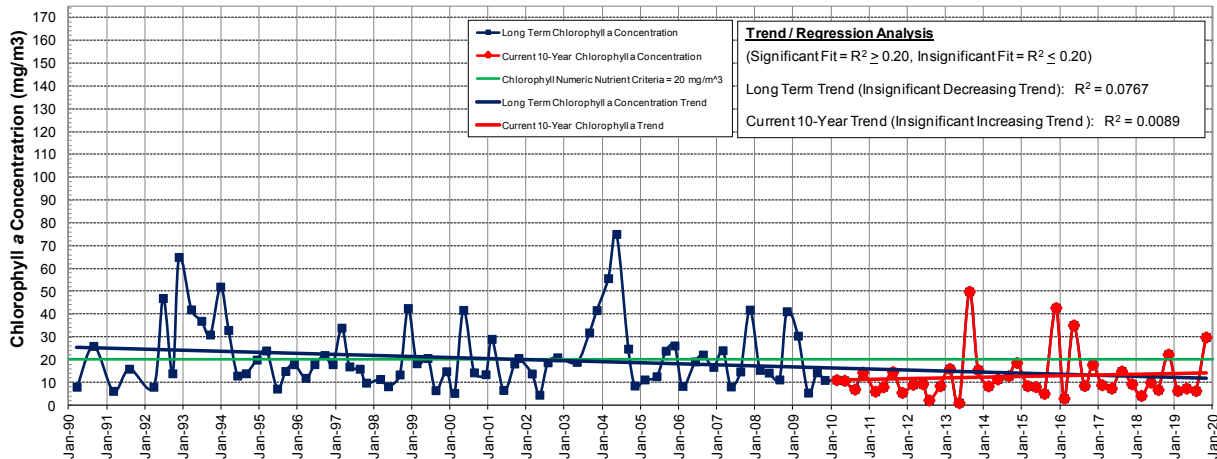
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a





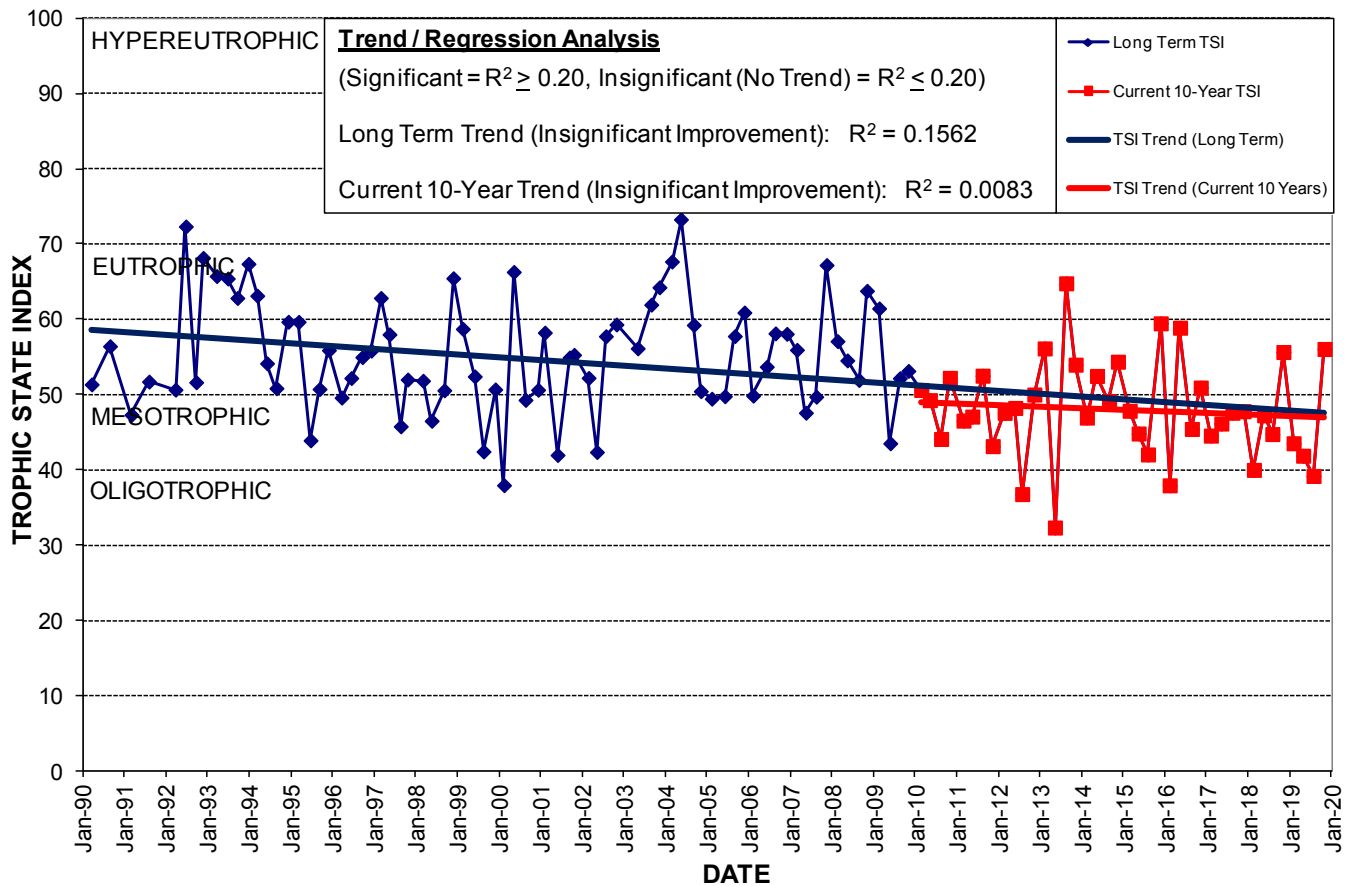
# Lake Giles

Lake Origin: **Natural**  
 Lake Surface Area: **29 acres**  
 Lake Volume: **22,214,376 ft<sup>3</sup>**  
 Shoreline Length: **4,163 ft (1,269 m)**  
 Mean Depth: **17.8 ft (5.4 m)**  
 Maximum Depth: **36.6 ft (11.2 m)**  
 Drain Wells: **1** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 31' 48.4"** Long **W 81° 20' 03.1"**  
 Section **32** Township **22S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-21**  
 Drainage Basin Area: **272 acres**  
 Land Use: **Residential: 86% Commercial: 3%**  
**Industrial: 0% Highways: 0% Natural: 10%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 40			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.012	0.40	1.13	4.27	39
Maximum	0.034	0.83	2.05	29.90	56
Average	0.026	0.57	1.54	11.22	46

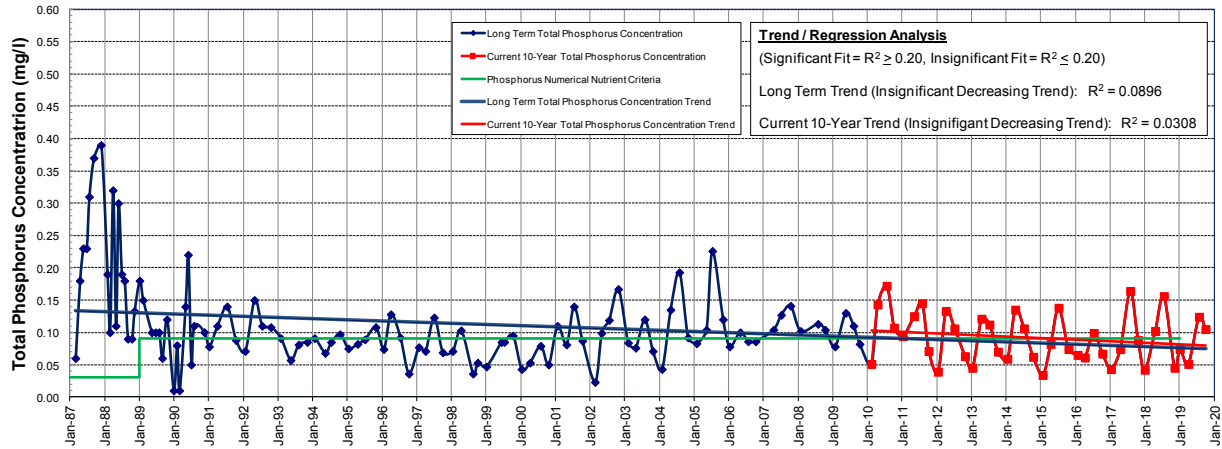
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



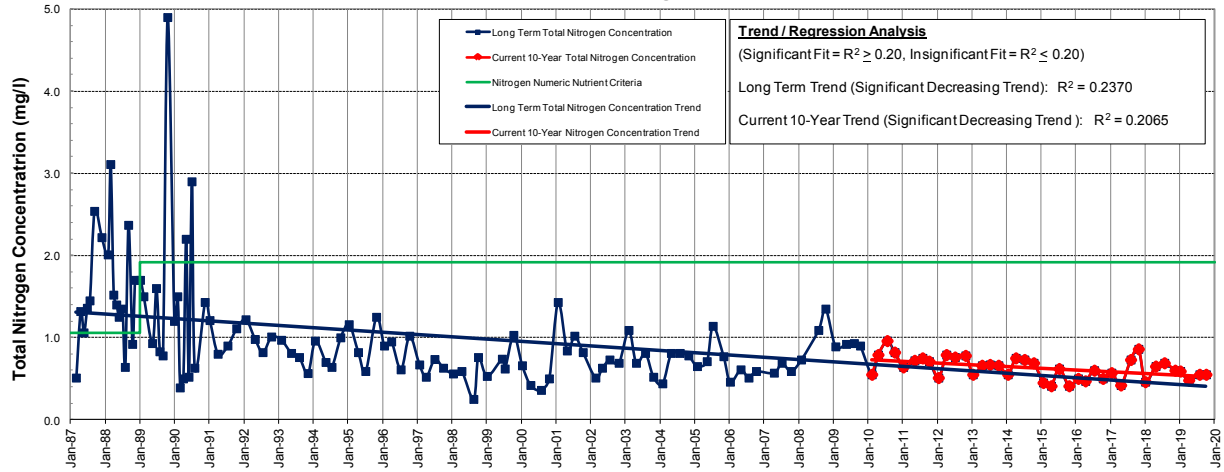
**Location:** West of Dixie Belle Dr. between Lake Margaret Dr. and Gatlin Ave.

# LAKE GREENWOOD NUTRIENT TRENDS

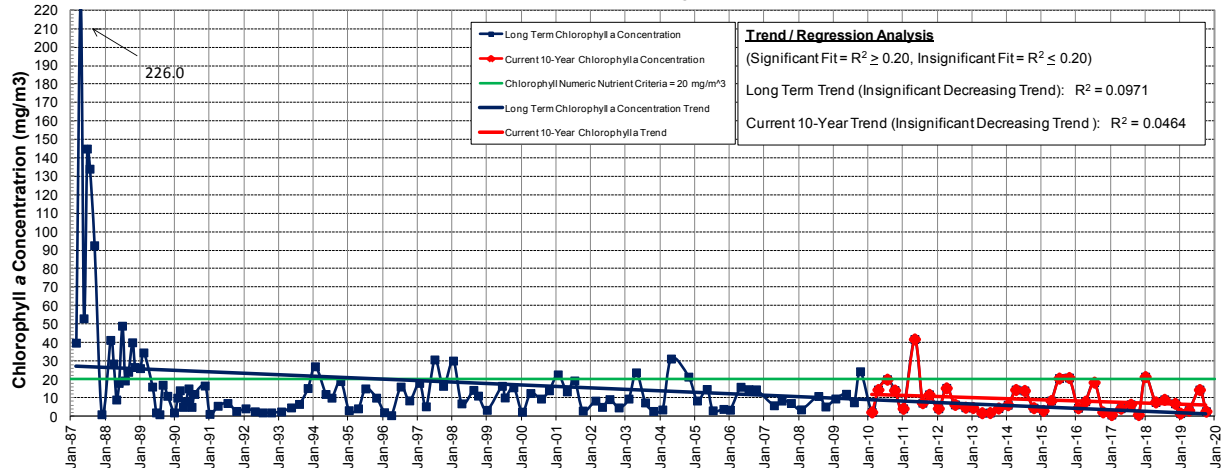
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



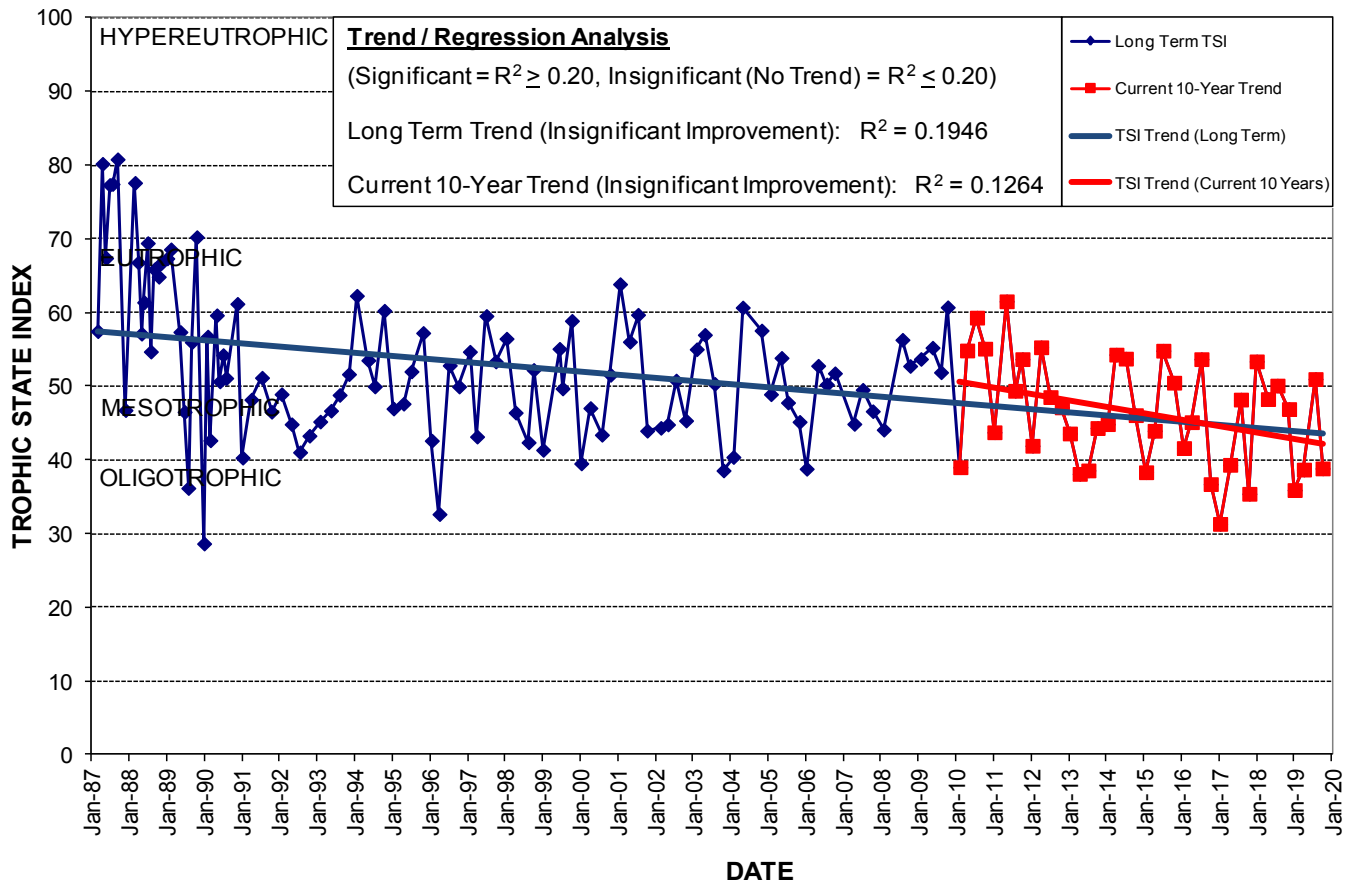
# LAKE GREENWOOD

Lake Origin: **Natural**  
 Lake Surface Area: **5 acres**  
 Lake Volume: **2,700,000 ft<sup>3</sup>**  
 Shoreline Length: **3,441 ft (1,049 m)**  
 Mean Depth: **13.9 ft (4.2 m)**  
 Maximum Depth: **17.0 ft (5.2 m)**  
 Drain Wells: **5** Aeration: **Yes** (installed 10/88)  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 32' 02.8"** Long **W 81° 21' 36.0"**  
 Section **36** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-13**  
 Drainage Basin Area: **530 acres**  
 Land Use: **Residential: 69%** **Commercial: 18%**  
**Industrial: 0%** **Highways: 7%** **Natural: 6%**  
 Limiting Nutrient: **Nitrogen**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 27			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.042	0.42	1.18	0.85	31
Maximum	0.164	0.86	2.21	21.40	53
Average	0.089	0.60	1.78	6.61	43

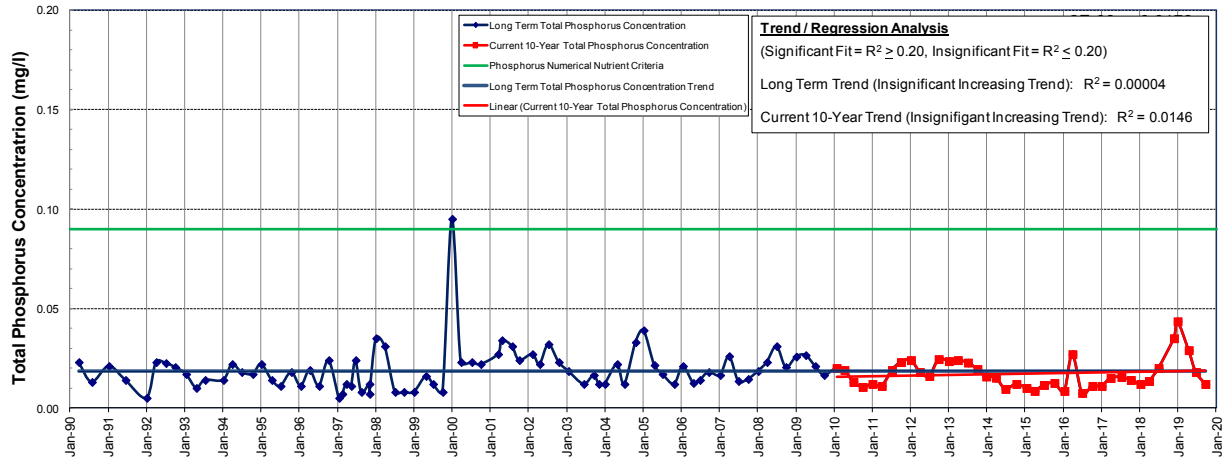
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



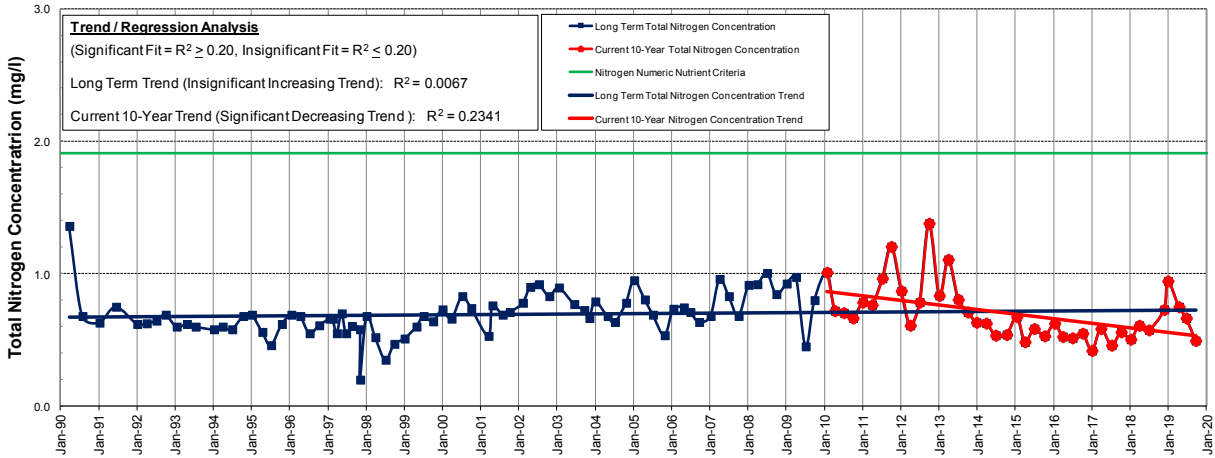
**Location:** Approximately 0.2 miles east of Bennet Rd., just north of E Colonial Dr.

# LAKE HIAWASSEE NUTRIENT TRENDS

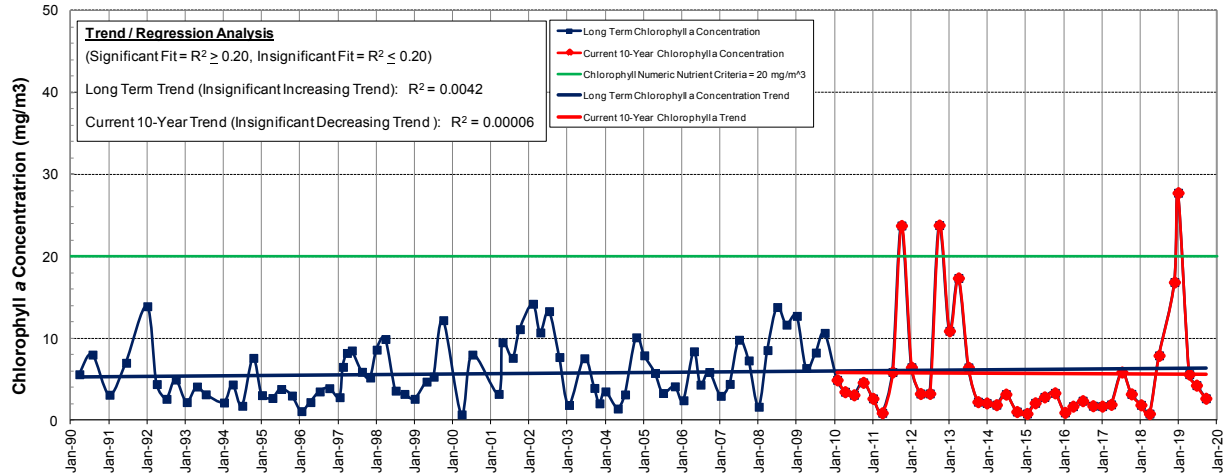
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



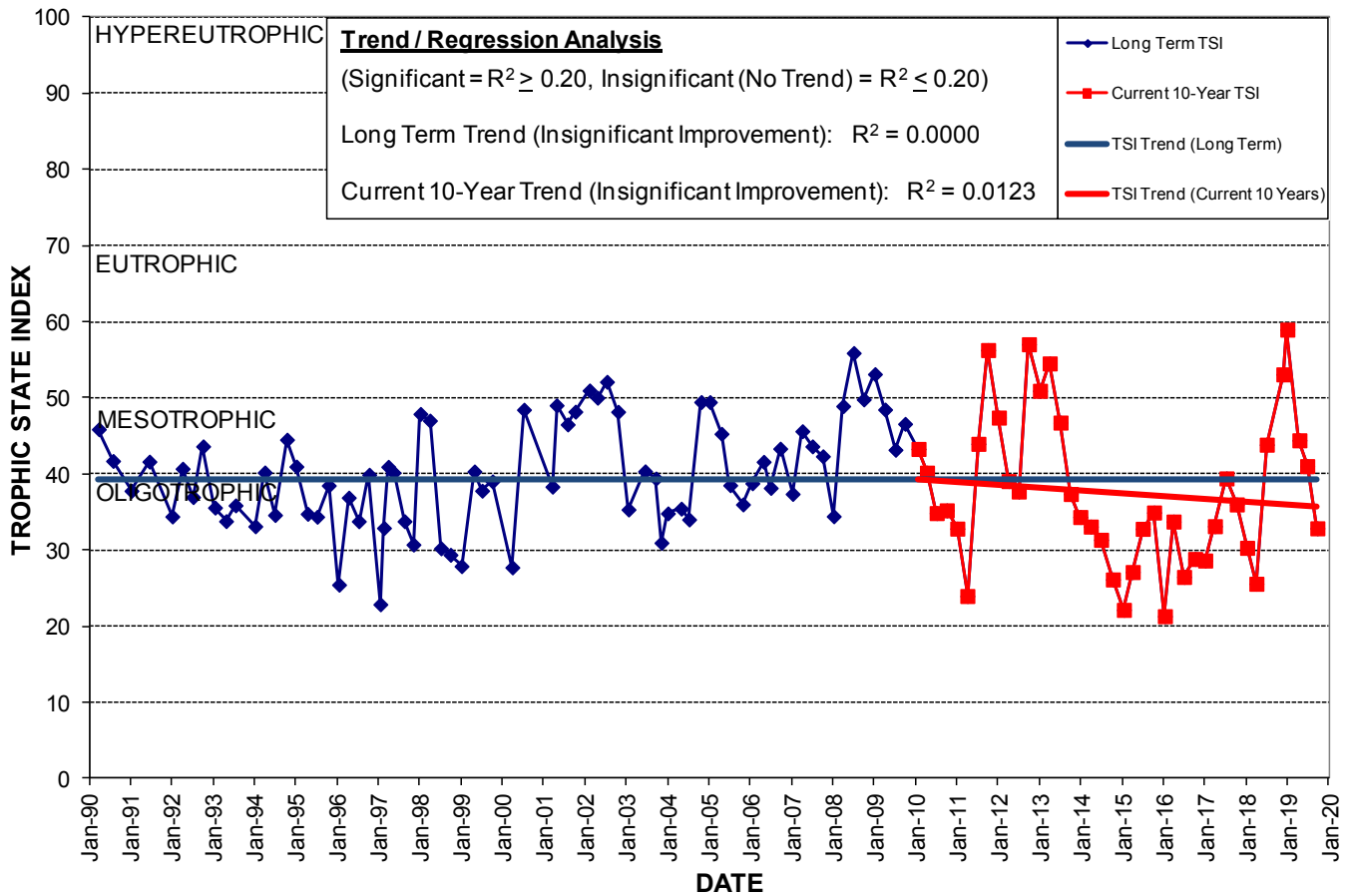
# LAKE HIAWASSEE

Lake Origin: **Natural**  
 Lake Surface Area: **170 acres**  
 Lake Volume: **60,800,000 ft<sup>3</sup>**  
 Shoreline Length: **19,100 ft (5,822 m)**  
 Mean Depth: **8.2 ft (2.5 m)**  
 Maximum Depth: **20.0 ft (6.1 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 31' 45.8"** Long **W 81° 28' 58.8"**  
 Section **35** Township **22S** Range **28E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **SC-25**  
 Drainage Basin Area: **194**  
 Land Use: **Residential: 49%** **Commercial: 22%**  
**Industrial: 0%** **Highways: 11%** **Natural: 17%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 37			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.011	0.42	1.15	0.80	26
Maximum	0.044	0.95	3.78	27.75	59
Average	0.020	0.61	2.55	6.70	45

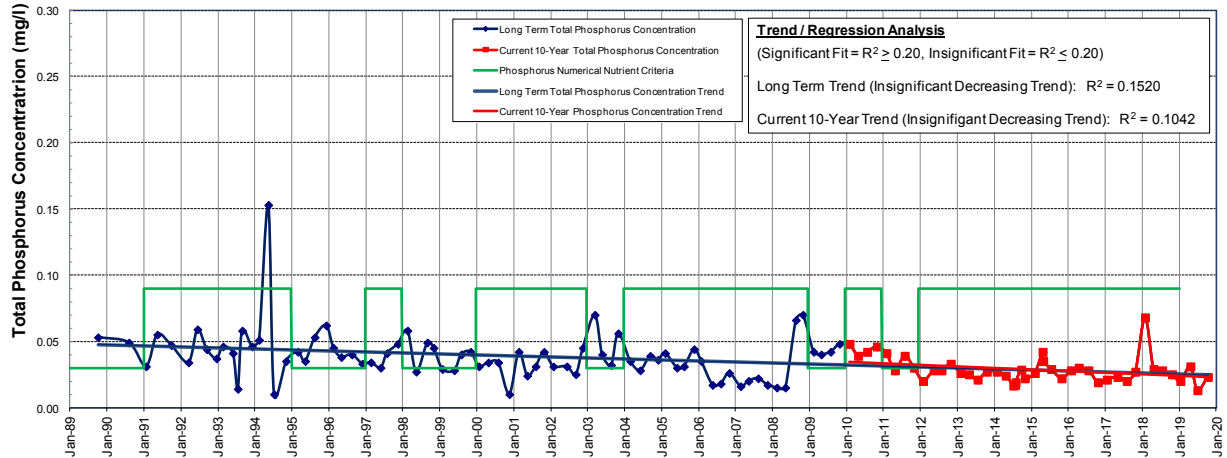
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



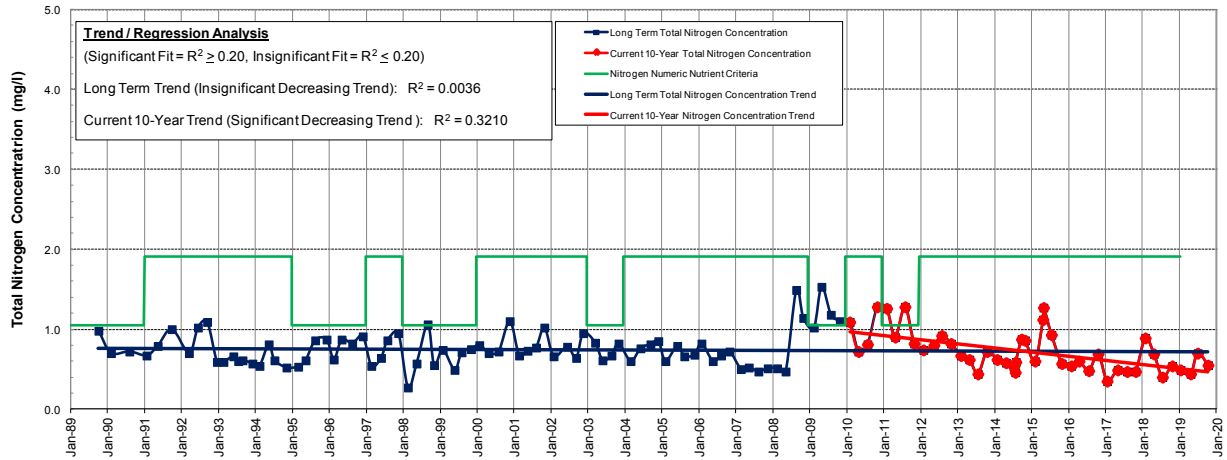
**Location:** Just south of the Bumby Ave. and Anderson St. intersection.

# LAKE HIGHLAND NUTRIENT TRENDS

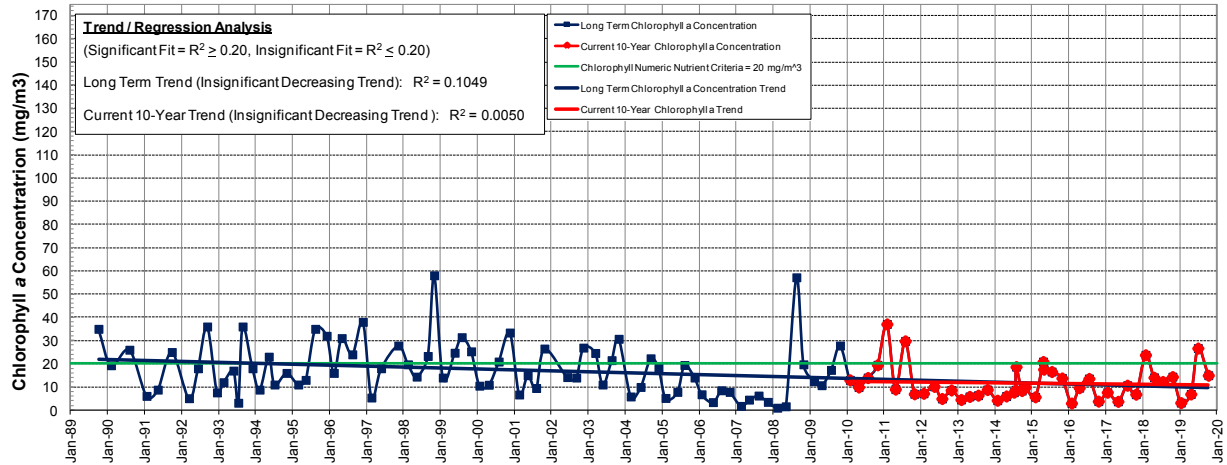
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



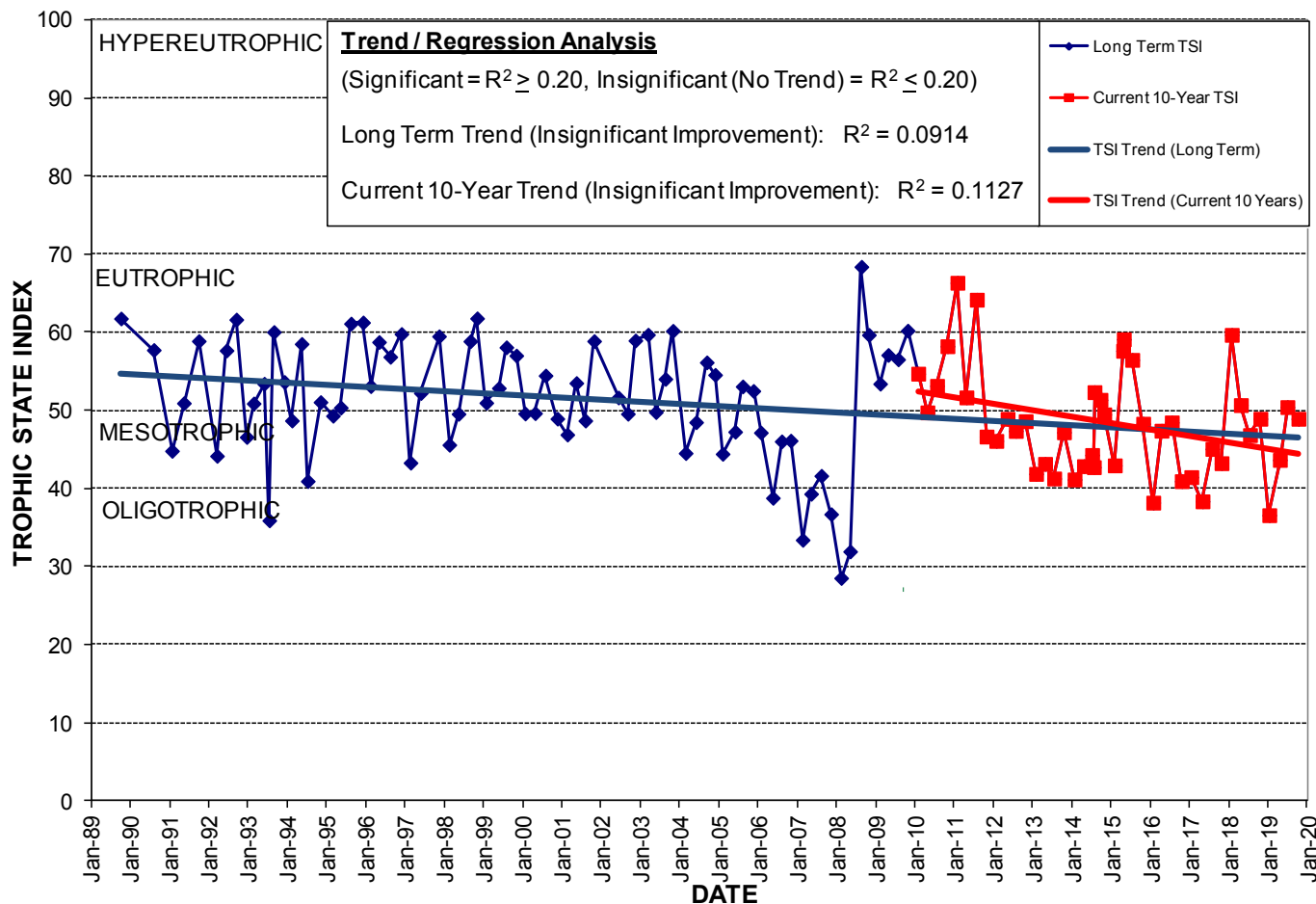
# LAKE HIGHLAND

Lake Origin: **Natural**  
 Lake Surface Area: **33 acres**  
 Lake Volume: **13,500,000 ft<sup>3</sup>**  
 Shoreline Length: **5,462 ft (1,665 m)**  
 Mean Depth: **9.4 ft (2.9 m)**  
 Maximum Depth: **17.0 ft (5.2 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 33' 37.4"** Long **W 81° 22' 16.3"**  
 Section **24** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **HB-30**  
 Drainage Basin Area: **244 acres**  
 Land Use: **Residential: 47%** **Commercial: 37%**  
**Industrial: 0%** **Highways: 0%** **Natural: 16%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

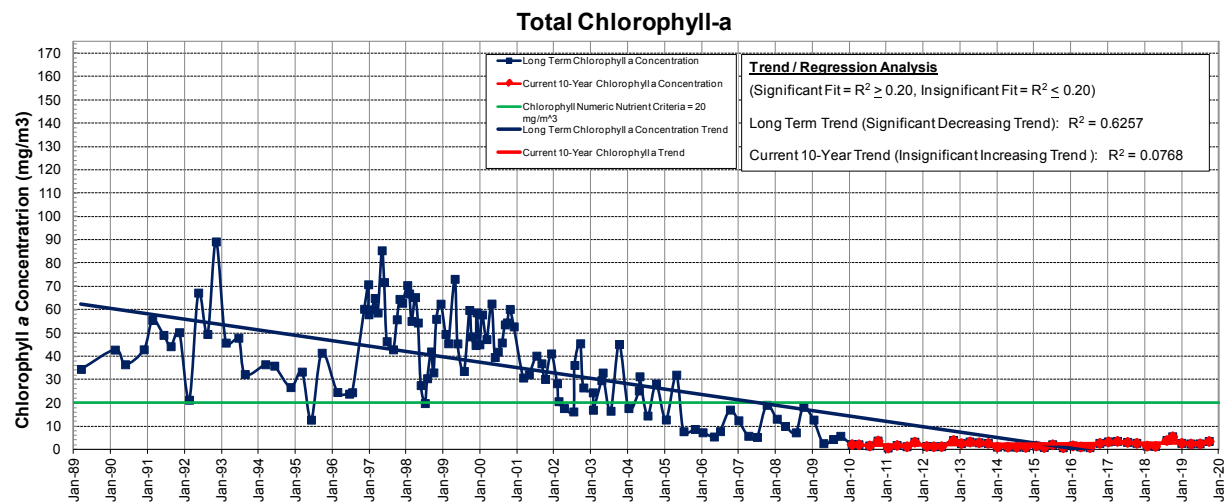
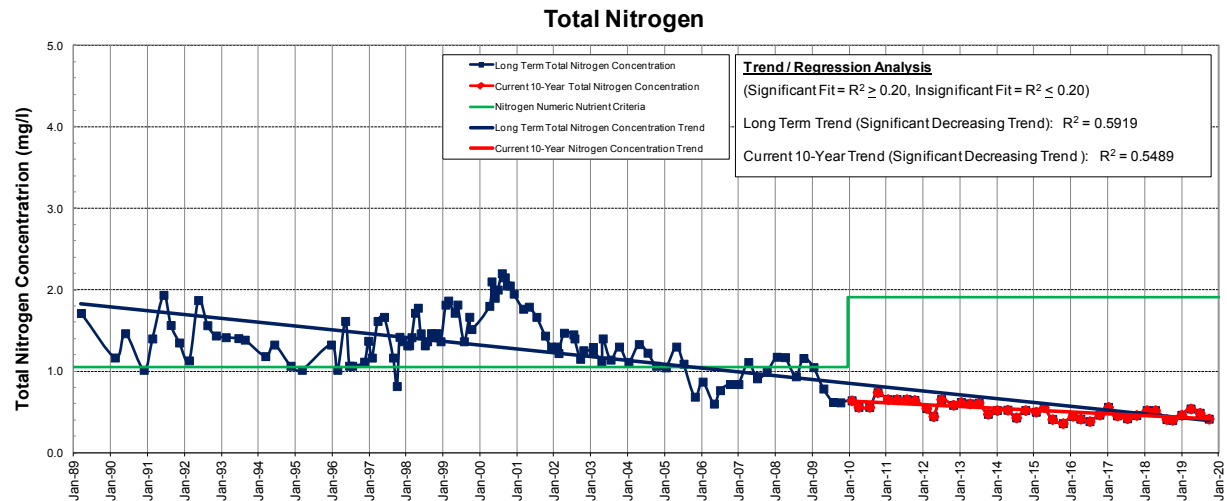
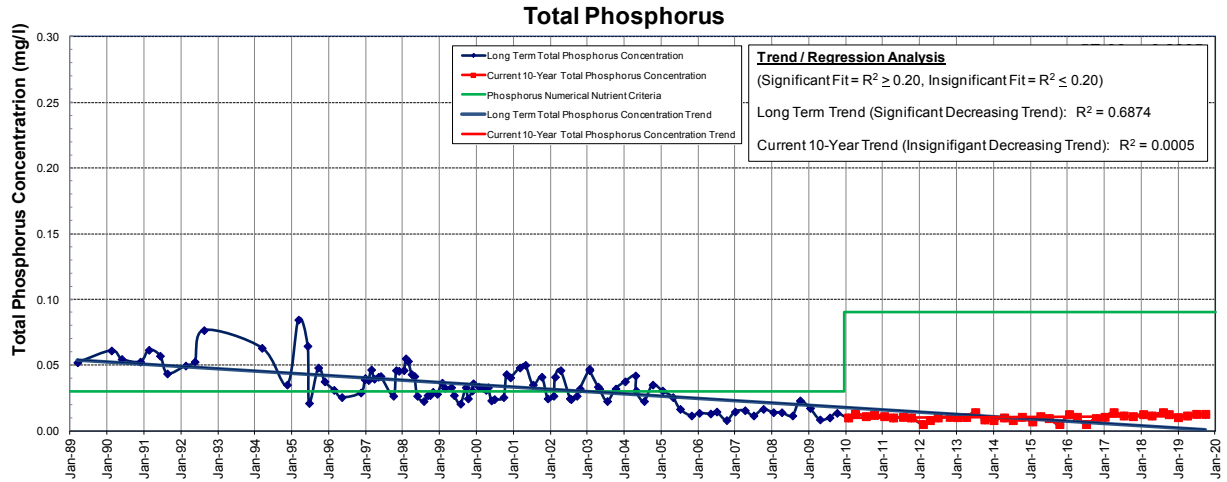
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 39			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.013	0.35	0.87	3.20	37
Maximum	0.068	0.89	2.68	26.70	60
Average	0.027	0.54	1.82	12.12	46

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Northeast of Turkey Lake Rd. and Vineland Rd. intersection.

# LAKE HOLDEN NUTRIENT TRENDS





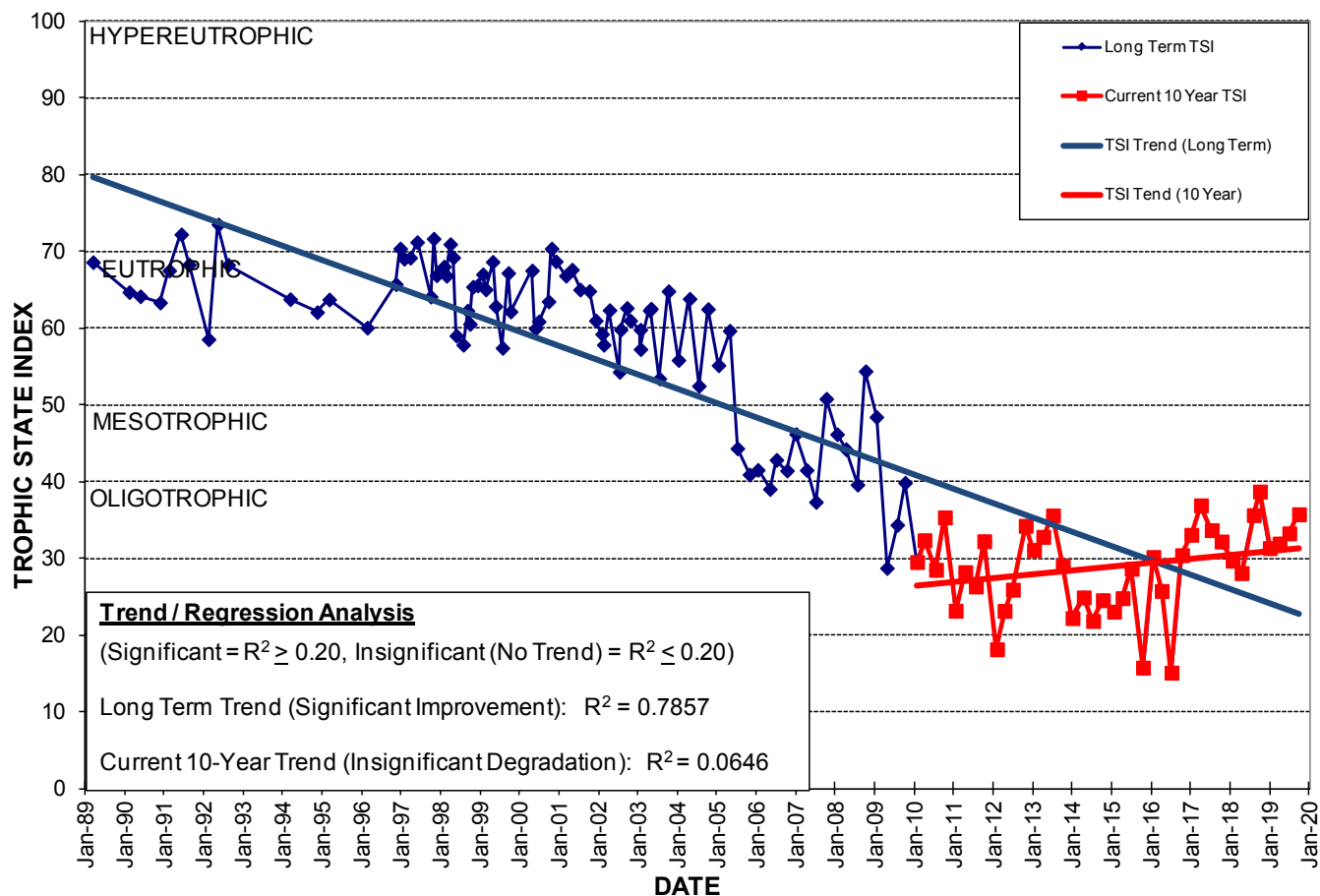
# LAKE HOLDEN

Lake Origin: **Natural**  
 Lake Surface Area: **263 acres**  
 Lake Volume: **147,380,800 ft<sup>3</sup>**  
 Shoreline Length: **55,650 ft (16,967 m)**  
 Mean Depth: **12.9 ft (3.9 m)**  
 Maximum Depth: **30 ft (9.1 m)**  
 Drain Wells: **1** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 30' 28.4"** Long **W 81° 23' 12.1"**  
 Section **11** Township **23N** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-49**  
 Drainage Basin Area: **364 acres**  
 Land Use: **Residential: 12% Commercial: 32%**  
**Industrial: 40% Highways: 7% Natural: 8%**  
 Limiting Nutrient: **Phosphorus**

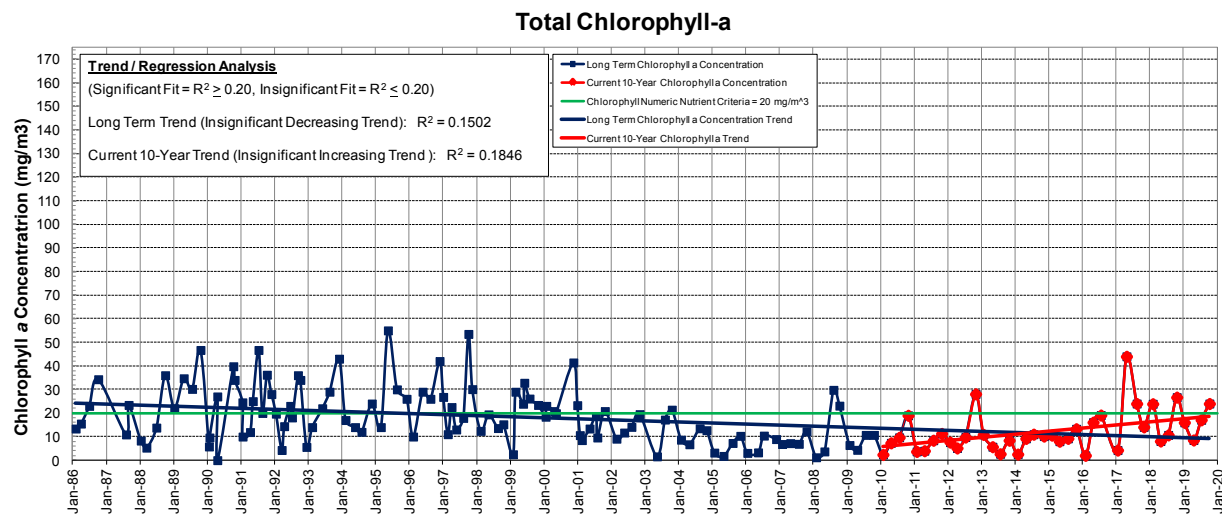
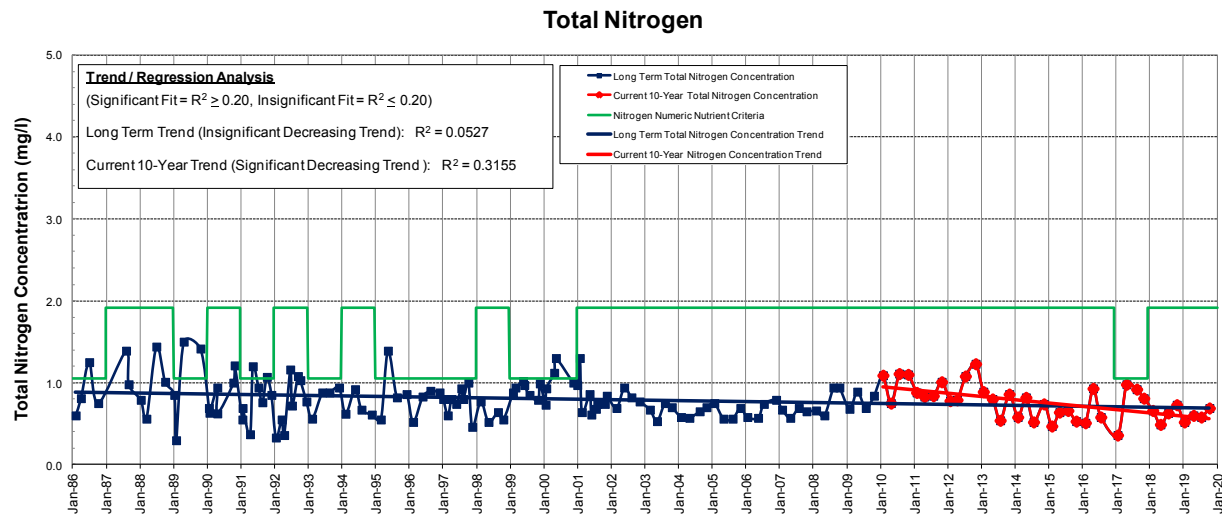
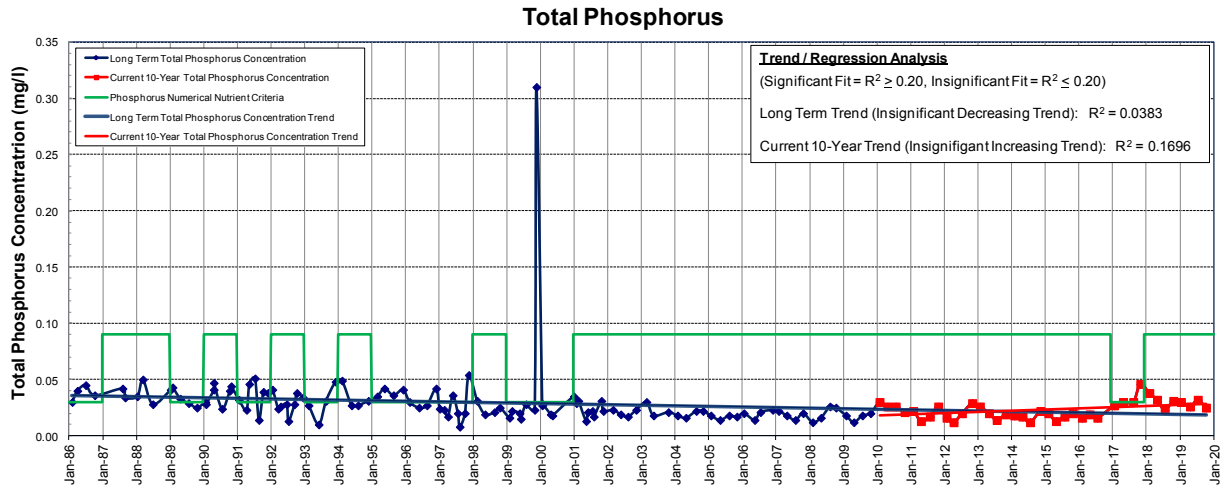
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 8			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.010	0.40	1.54	1.47	28
Maximum	0.014	0.56	4.00	5.61	39
Average	0.012	0.47	2.86	3.10	33

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** South of W. Michigan St., North of Gatlin Ave., east of S. Orange Blossom Trl.

# LAKE IVANHOE EAST NUTRIENT TRENDS



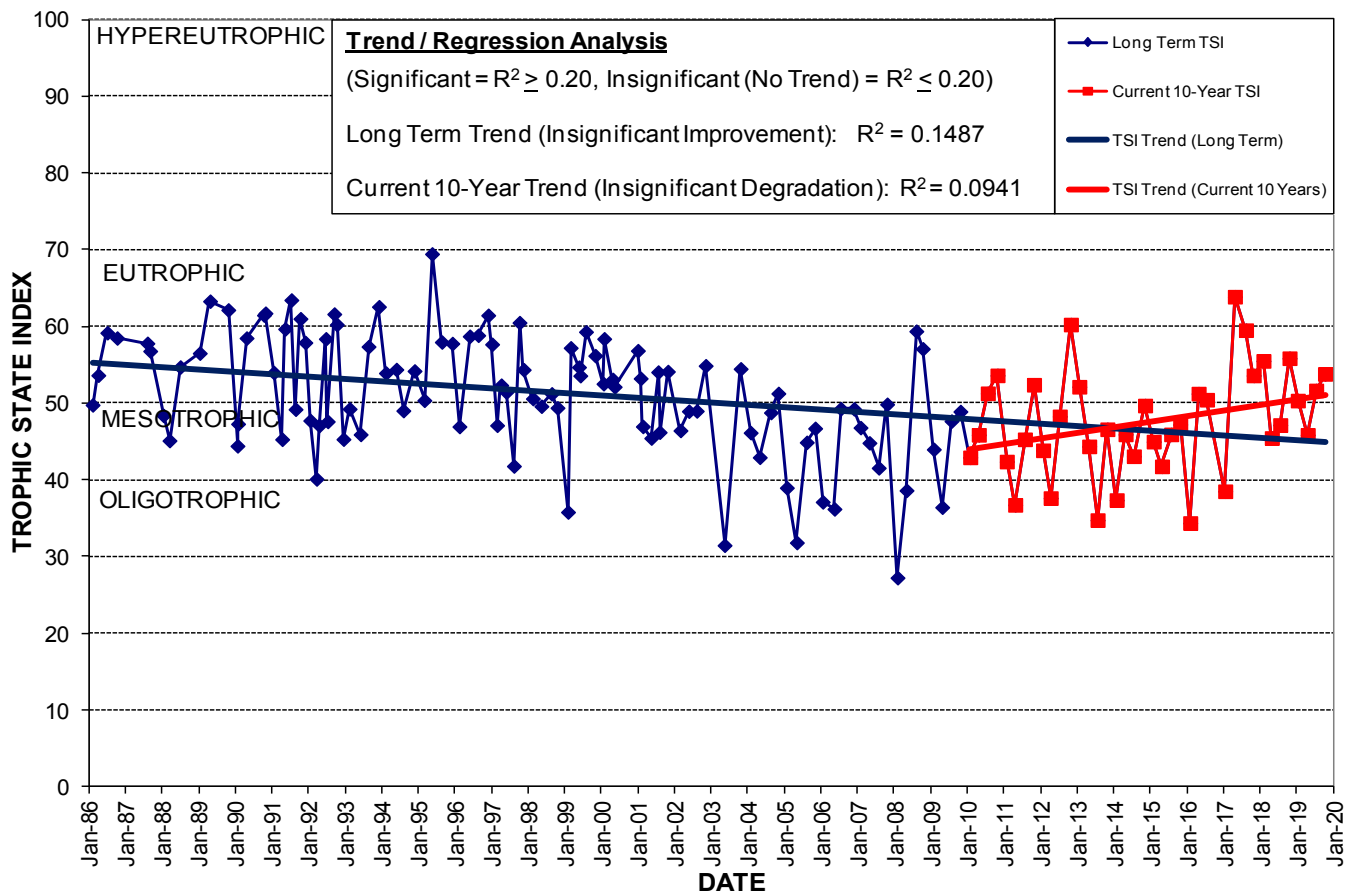
# LAKE IVANHOE EAST

Lake Origin: **Natural**  
 Lake Surface Area: **45 acres**  
 Lake Volume: **30,005,000 ft<sup>3</sup>**  
 Shoreline Length: **5,969 ft (1,819 m)**  
 Mean Depth: **15.2 ft (4.6 m)**  
 Maximum Depth: **27.1 ft (8.3 m)**  
 Drain Wells: **1**    Aeration: **Yes**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 33' 46.1"** Long **W 81° 22' 31.8"**  
 Section **23** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **HB-25**  
 Drainage Basin Area: **716 acres**  
 Land Use: **Residential: 21%**    **Commercial: 45%**  
**Industrial: 0%**    **Highways: 14%**    **Natural: 20%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 58			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.023	0.36	0.53	4.27	39
Maximum	0.046	0.98	2.18	44.00	64
Average	0.031	0.66	1.18	18.45	52

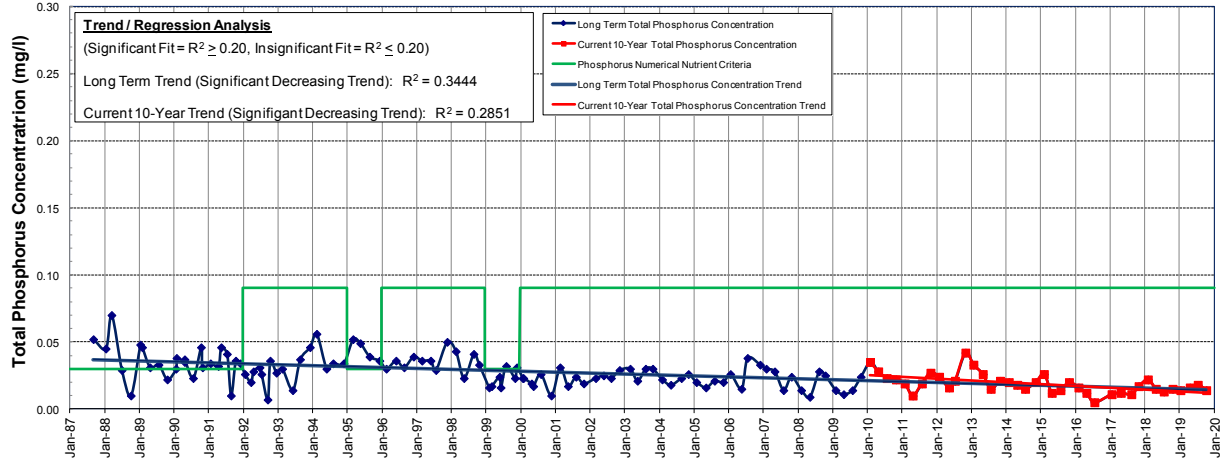
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



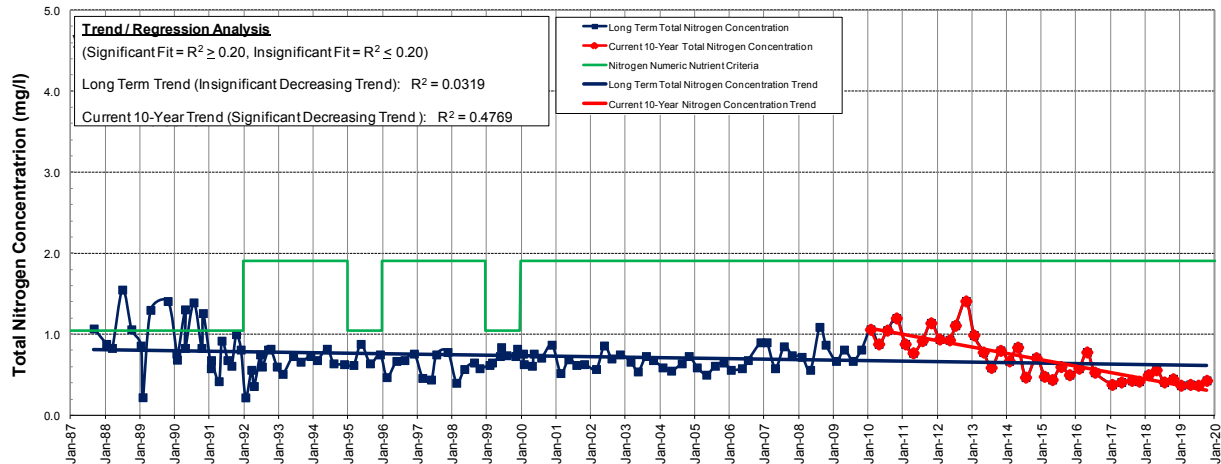
**Location:** Split by I-4 north of Colonial Dr. and south of Princeton Ave. and adjacent to Orange Ave.

# LAKE IVANHOE MIDDLE NUTRIENT TRENDS

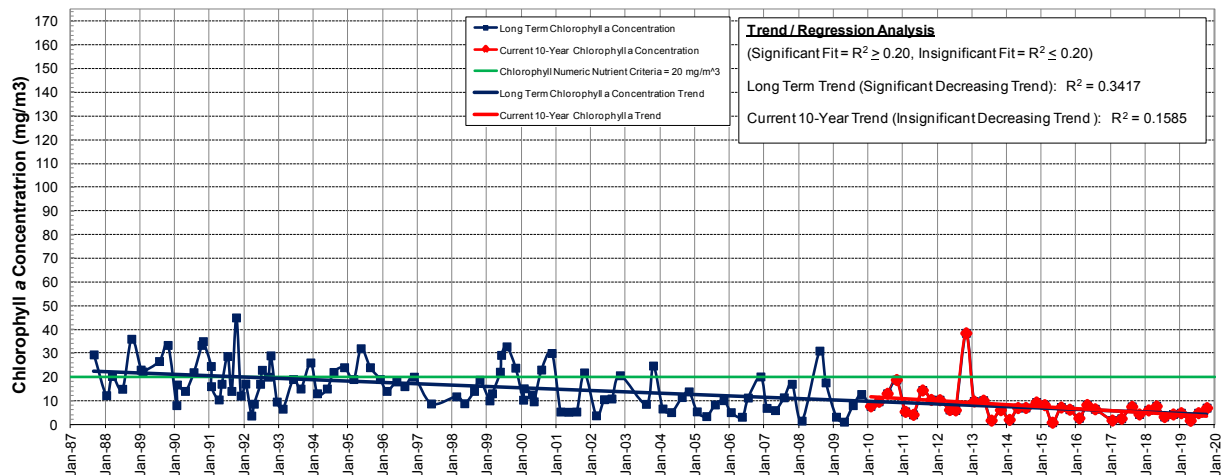
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



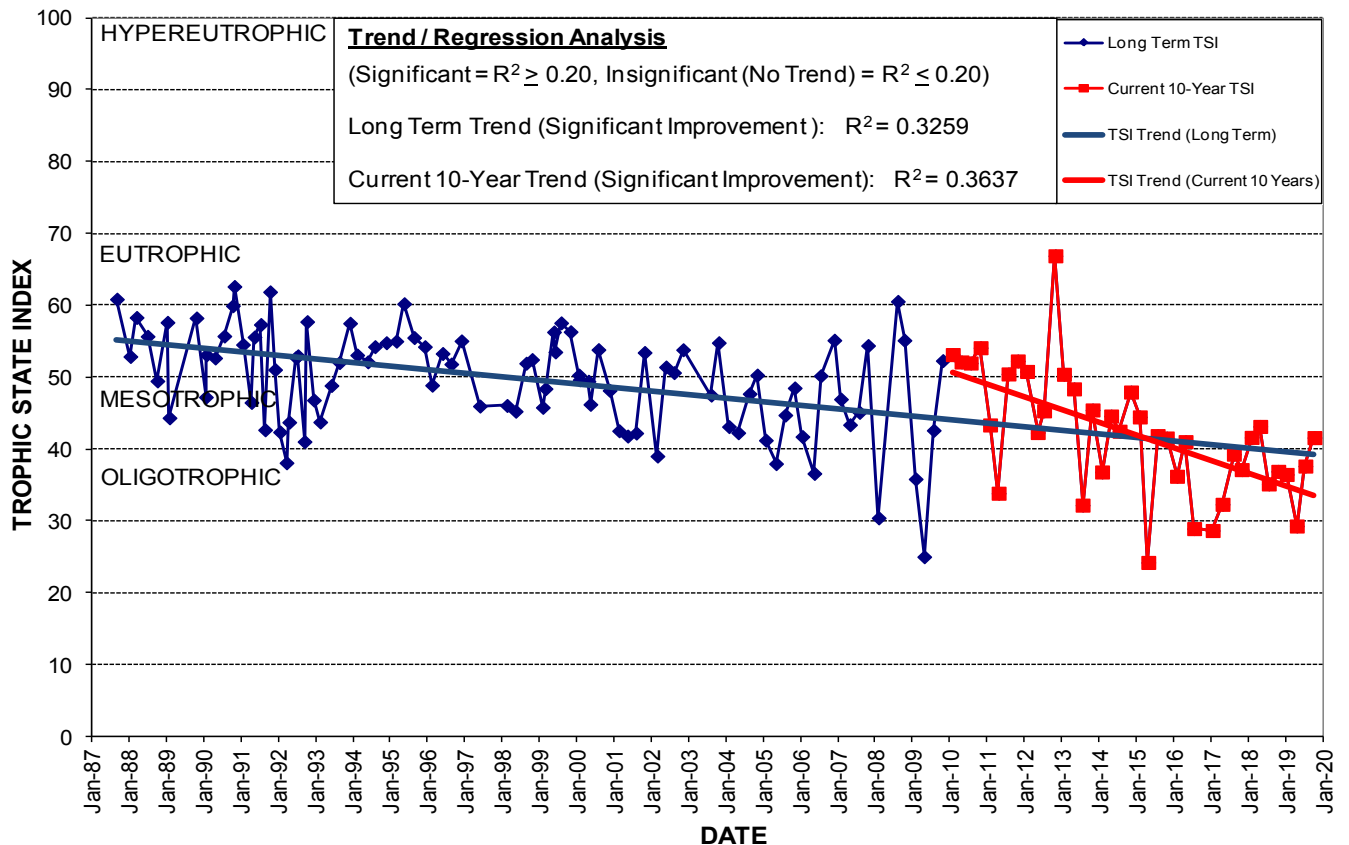
# LAKE IVANHOE MIDDLE

Lake Origin: **Natural**  
 Lake Surface Area: **67 acres**  
 Lake Volume: **48,643,700 ft<sup>3</sup>**  
 Shoreline Length: **9,976 ft (3,040 m)**  
 Mean Depth: **16.6 ft (5.1 m)**  
 Maximum Depth: **31.4 ft (9.6 m)**  
 Drain Wells: **1**    Aeration: **Yes** (installed 6/92)  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 33' 55.4"** Long **W 81° 22' 55.6"**  
 Section **23** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **HB-25**  
 Drainage Basin Area: **716 acres**  
 Land Use: **Residential: 21% Commercial: 45%**  
**Industrial: 0% Highways: 14% Natural: 20%**  
 Limiting Nutrient: **Phosphorus**

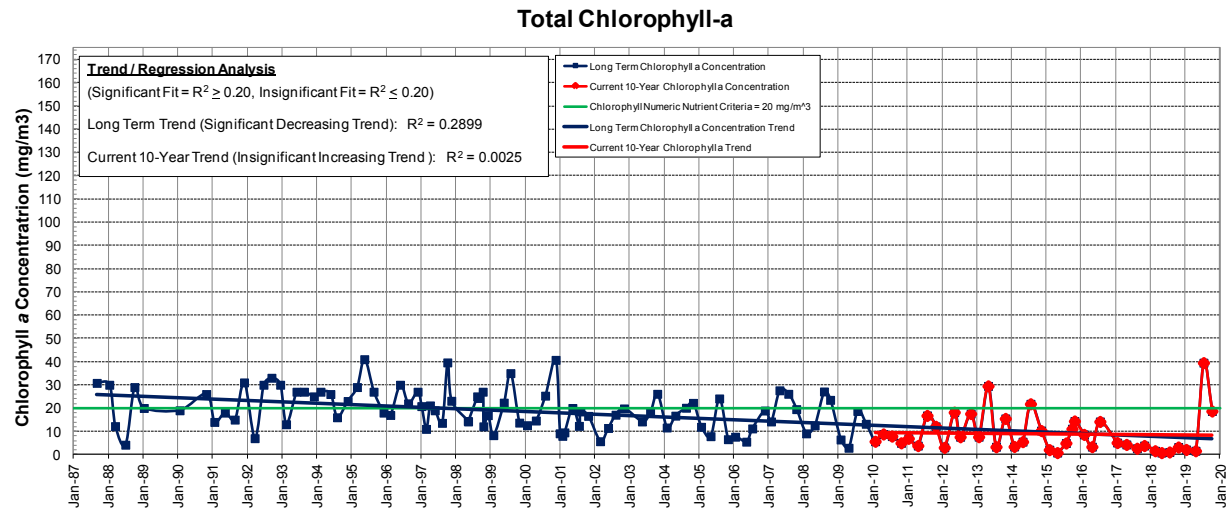
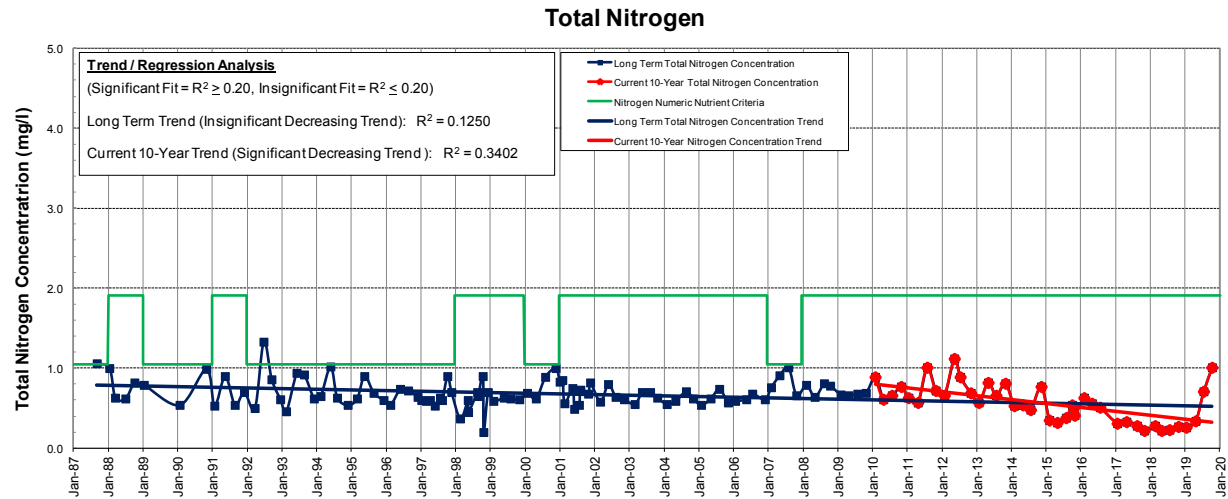
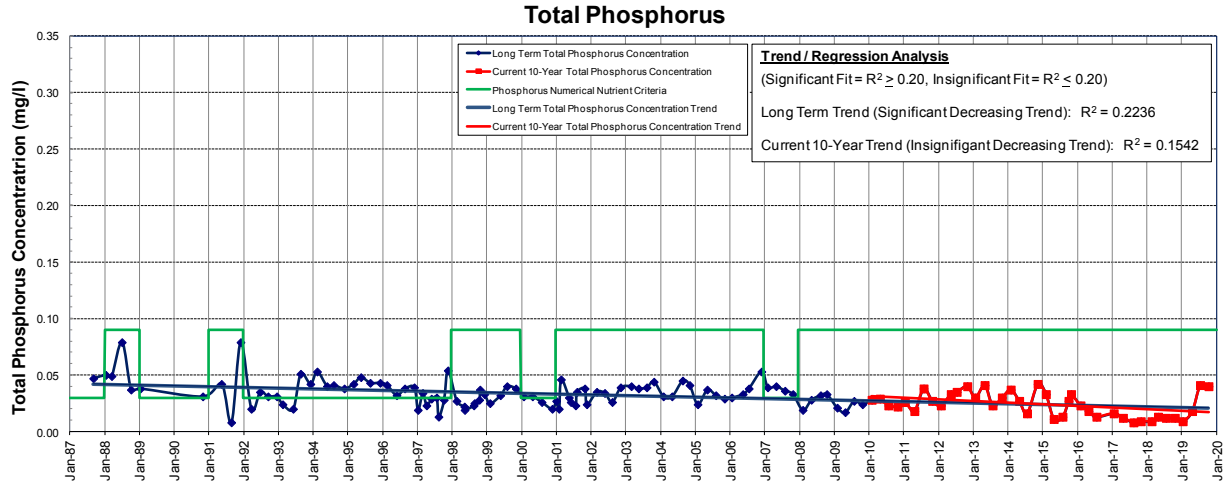
2017 - 2019 Water Quality Data	TSI Ranking (out of 94 lakes): 13				
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.011	0.37	1.06	1.60	29
Maximum	0.022	0.56	3.65	7.69	43
Average	0.015	0.43	2.49	4.60	37

**Long-term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Split by I-4 north of Colonial Dr. and south of Princeton Ave. and adjacent to Orange Ave.

# LAKE IVANHOE WEST NUTRIENT TRENDS

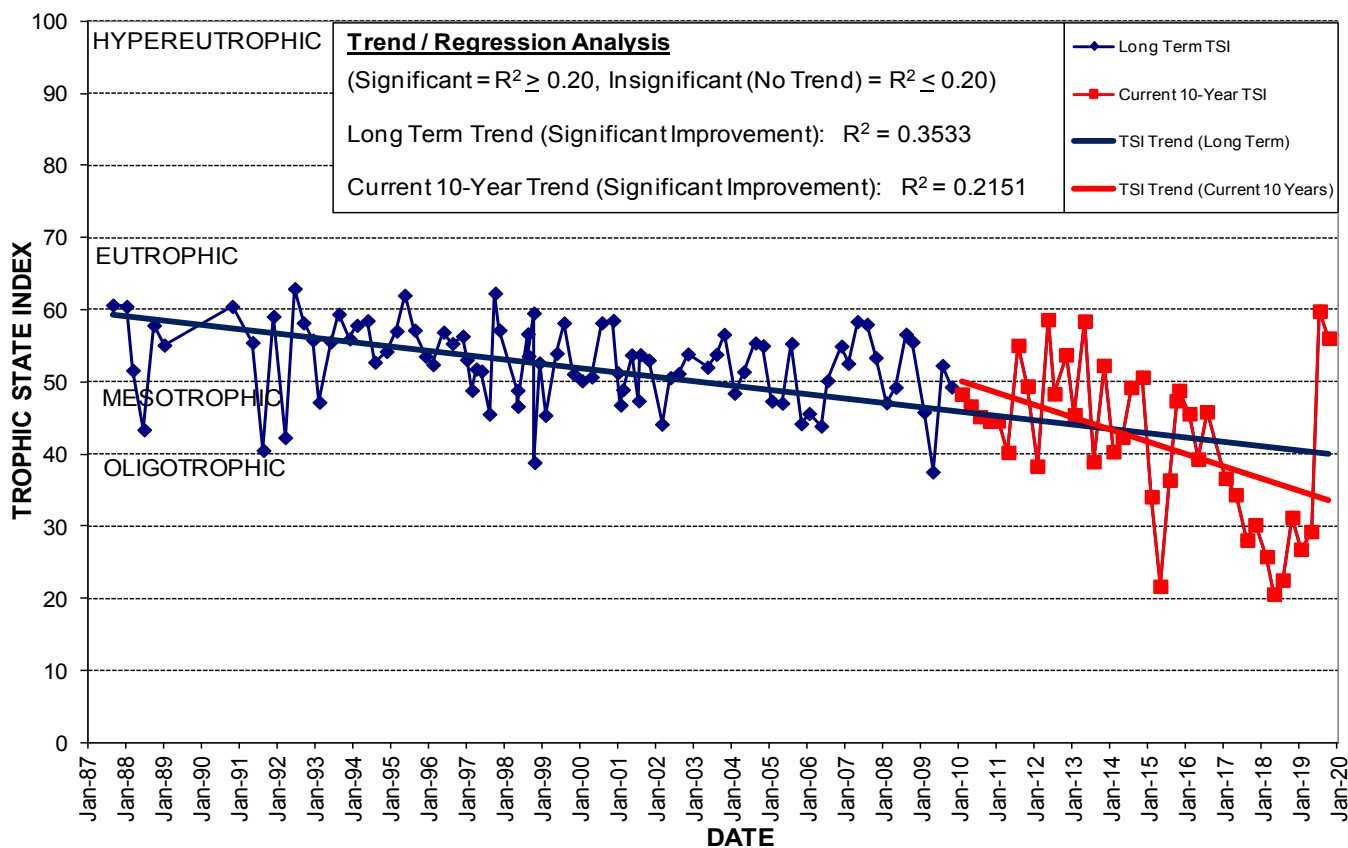


# LAKE IVANHOE WEST

Lake Origin: <b>Natural</b> Lake Surface Area: <b>14 acres</b> Lake Volume: <b>11,619,000 ft<sup>3</sup></b> Shoreline Length: <b>3,002 ft (915 m)</b> Mean Depth: <b>19.1 ft (5.8 m)</b> Maximum Depth: <b>27.8 ft (8.5 m)</b> Drain Wells: <b>1 *</b> Aeration: <b>Yes</b> (installed 11/86) Grass Carp ( <i>Ctenopharyngodon idella</i> ): <b>Yes</b>	Location: Lat <b>N 28° 34' 00.5"</b> Long <b>W 81° 23' 07.1"</b> Section <b>23</b> Township <b>22S</b> Range <b>29E</b> Water Management District: <b>St. Johns River</b> Drainage Code: <b>HB-25</b> Drainage Basin Area: <b>716 acres *</b> Land Use: <b>Residential: 21% Commercial: 45%</b> <b>Industrial: 0% Highways: 14% Natural: 20%</b> Limiting Nutrient: <b>Balanced for Nitrogen and Phosphorus</b>
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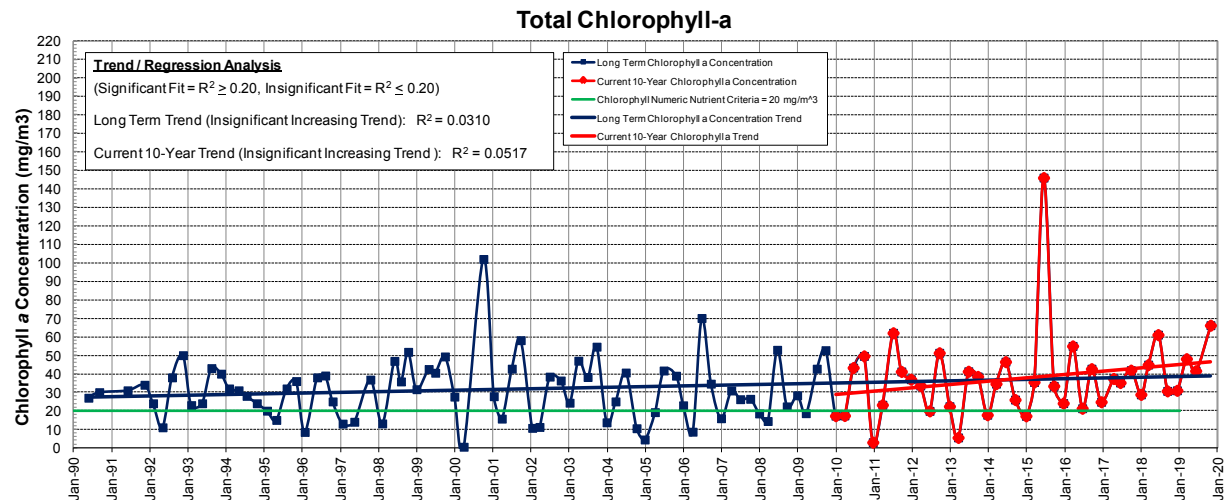
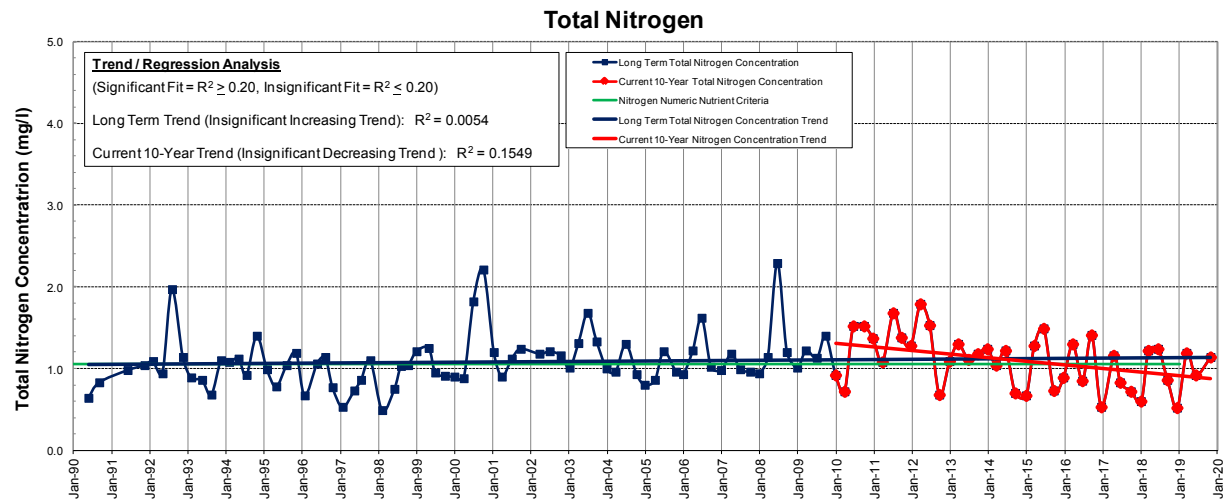
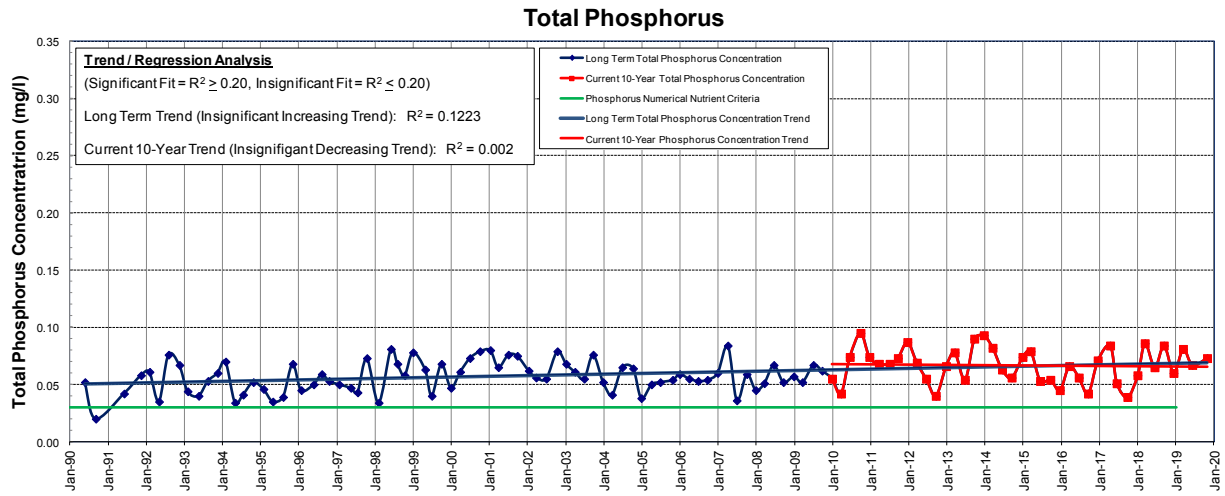
2017 - 2019 Water Quality Data	TSI Ranking (out of 94 lakes): 33				
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.008	0.22	0.83	0.80	21
Maximum	0.041	1.01	6.83	39.50	60
Average	0.017	0.37	3.27	7.05	33

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Split by I-4 north of Colonial Dr. and south of Princeton Ave. and adjacent to Orange Ave.

# LAKE KASEY NUTRIENT TRENDS





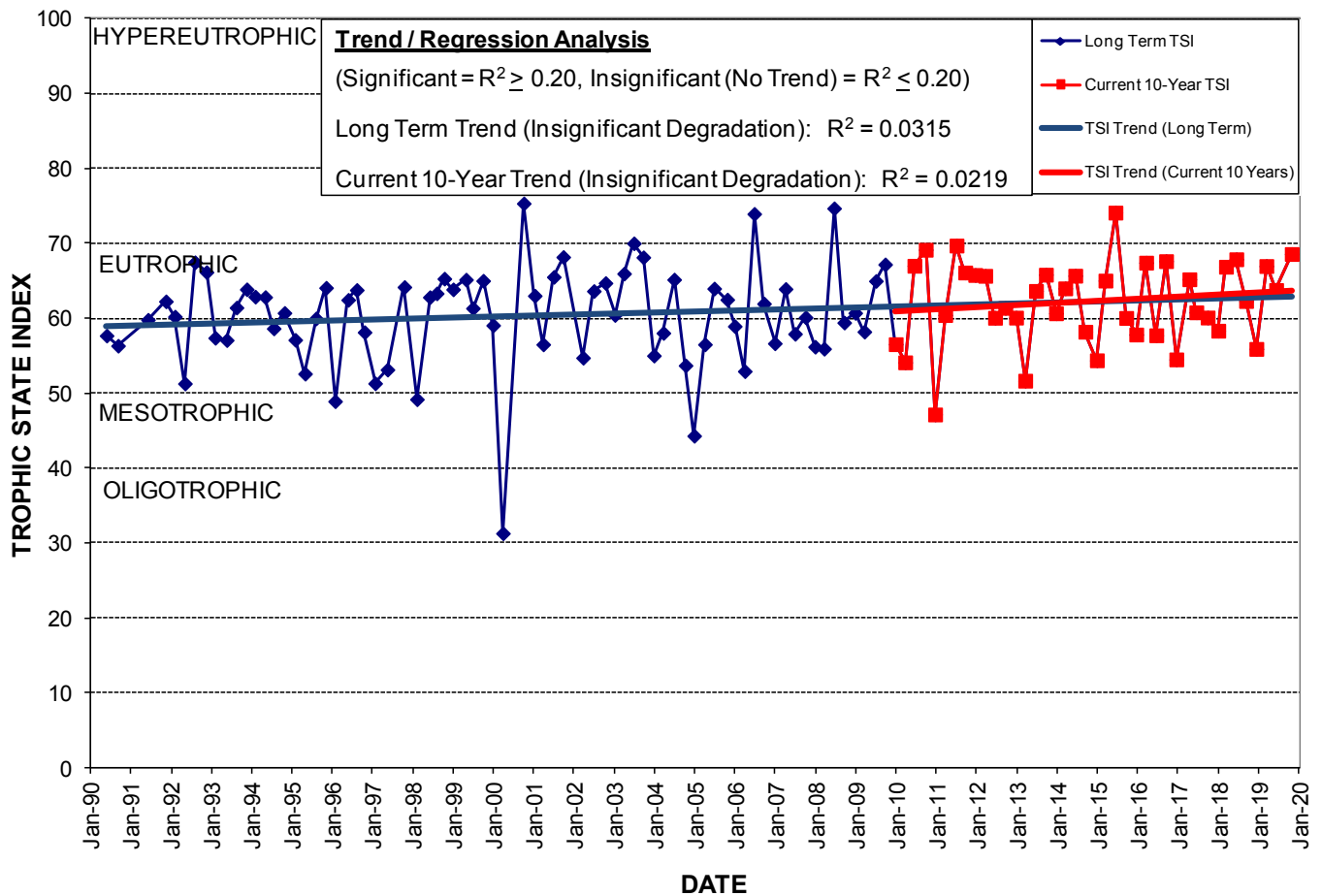
# LAKE KASEY

Lake Origin: **Excavation**  
 Lake Surface Area: **4 acres**  
 Lake Volume: **1,441,476 ft<sup>3</sup>**  
 Shoreline Length: **1,495 ft (456 m)**  
 Mean Depth: **9.0 ft (2.7 m)**  
 Maximum Depth: **13.1 ft (4.0 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 35' 56.8"** Long **W 81° 26' 35.5"**  
 Section **6** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LW-14**  
 Drainage Basin Area: **74 acres**  
 Land Use: **Residential: 12% Commercial: 38%**  
**Industrial: 5% Highways: 6% Natural: 39%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

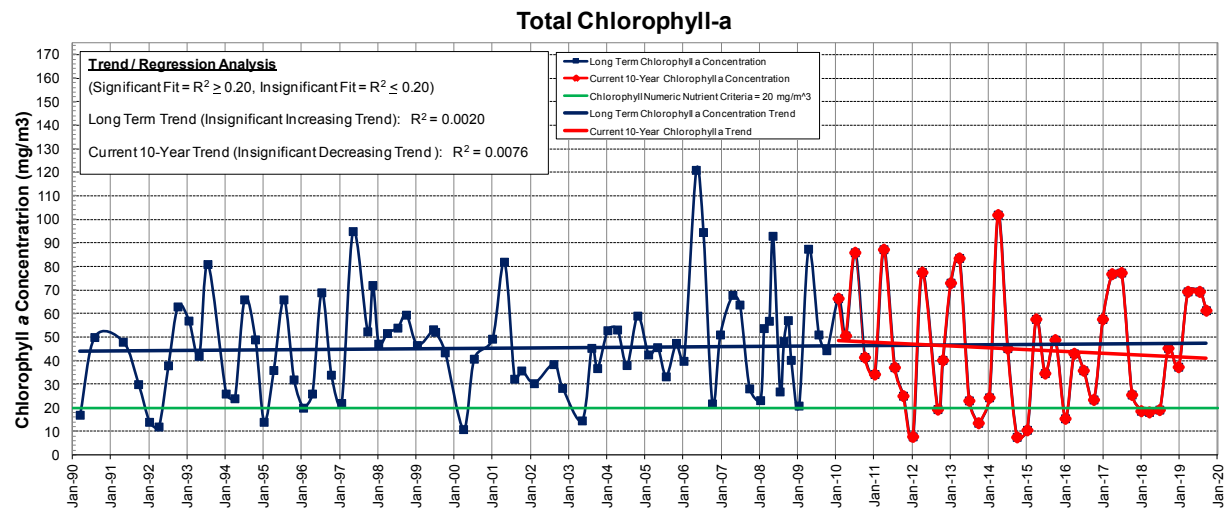
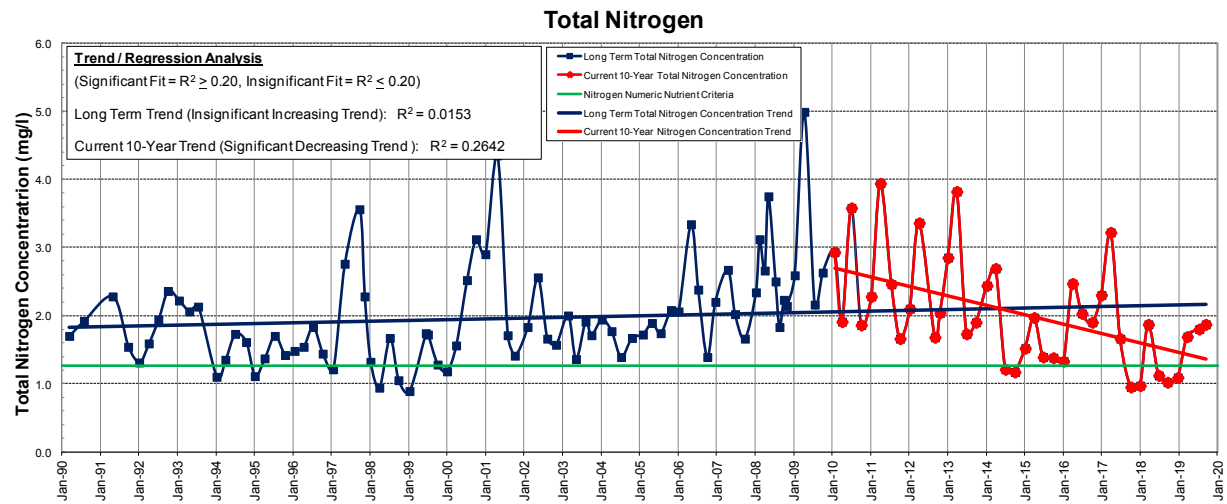
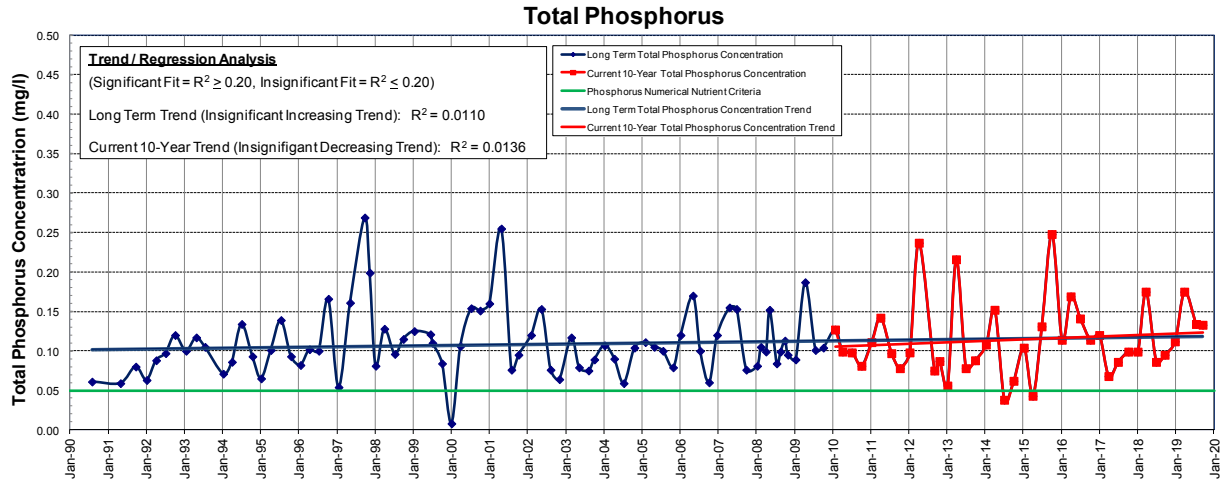
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 90			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.039	0.52	0.53	24.80	55
Maximum	0.086	1.24	1.00	66.20	69
Average	0.068	0.91	0.73	40.98	63

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** In the Signal Hill neighborhood, bordered by Lighthouse Circle, east of Signal Hill Rd.

# LAKE KOZART NUTRIENT TRENDS



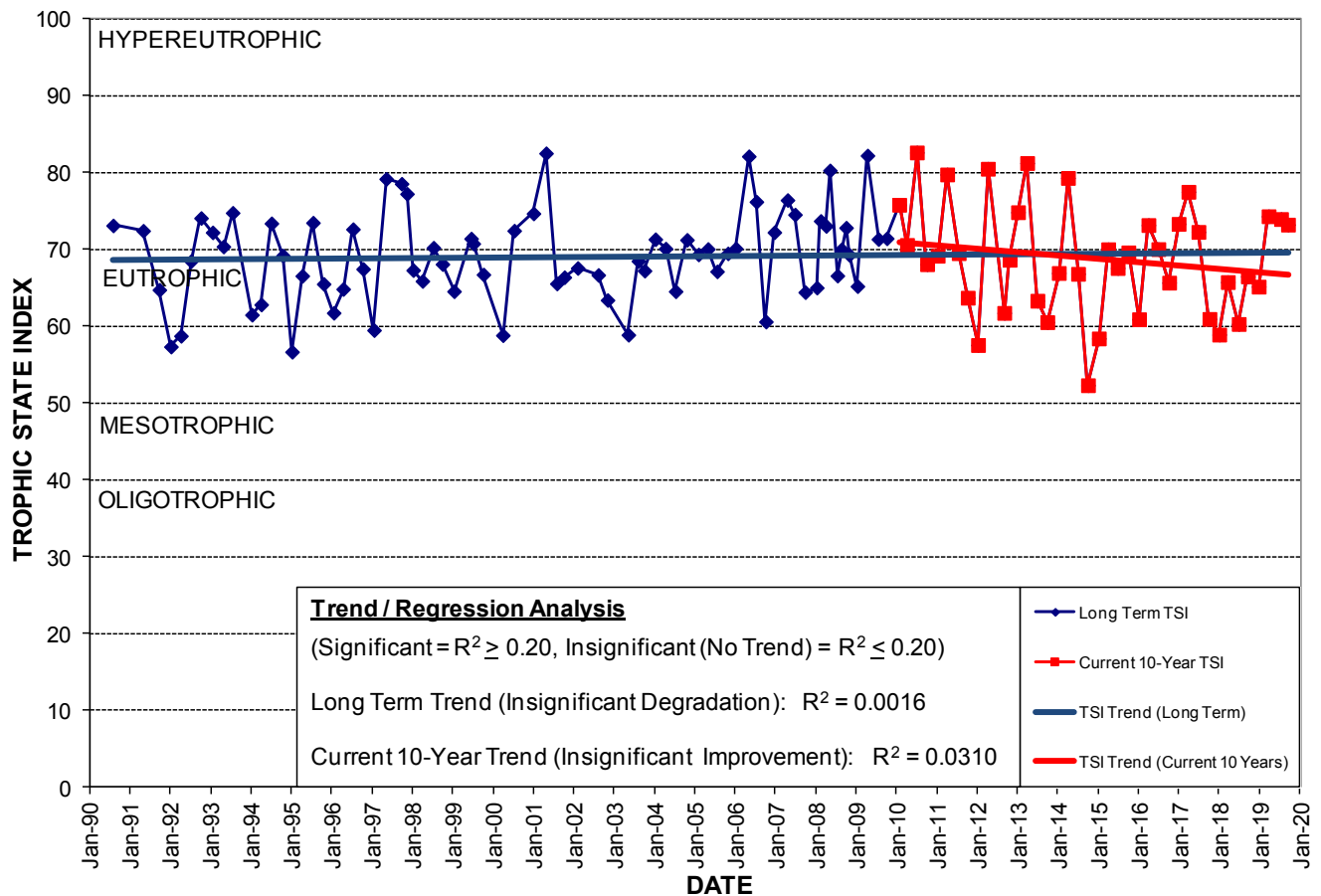
# LAKE KOZART

Lake Origin: **Excavation**  
 Lake Surface Area: **7 acres**  
 Lake Volume: **1,378,000 ft<sup>3</sup>**  
 Shoreline Length: **7,179 ft (2,188 m)**  
 Mean Depth: **4.3 ft (1.3 m)**  
 Maximum Depth: **5.9 ft (1.8 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 31' 32.5"** Long **W 81° 26' 19.7"**  
 Section **32** Township **22S** Range **29E**  
 Water Management District: **South Florida**  
 Drainage Code: **SC-15**  
 Drainage Basin Area: **57 acres**  
 Land Use: **Residential: 51% Commercial: 25%**  
**Industrial: 0% Highways: 0% Natural: 24%**  
 Limiting Nutrient: **Nitrogen**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 93			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.068	0.95	0.13	18.20	59
Maximum	0.175	3.22	0.75	77.40	78
Average	0.115	1.63	0.43	48.06	69

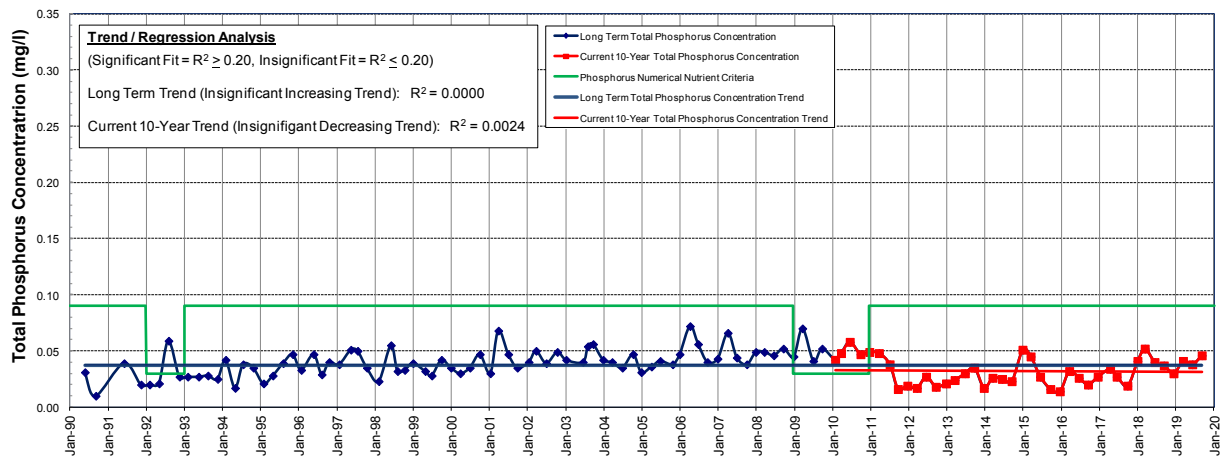
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



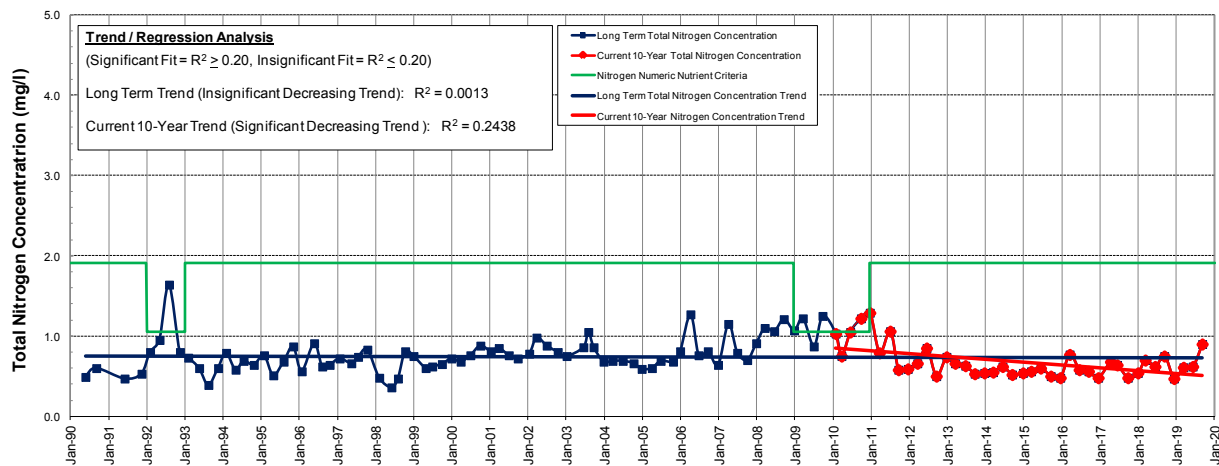
**Location:** Just south of Raleigh St. in Carver Shores near Carver Middle School.

# LAKE KRISTY NUTRIENT TRENDS

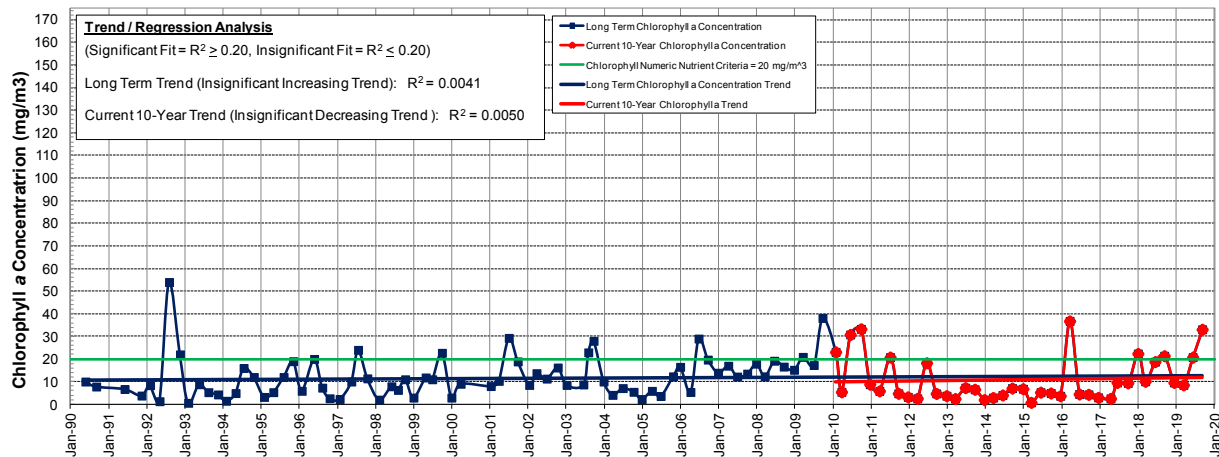
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



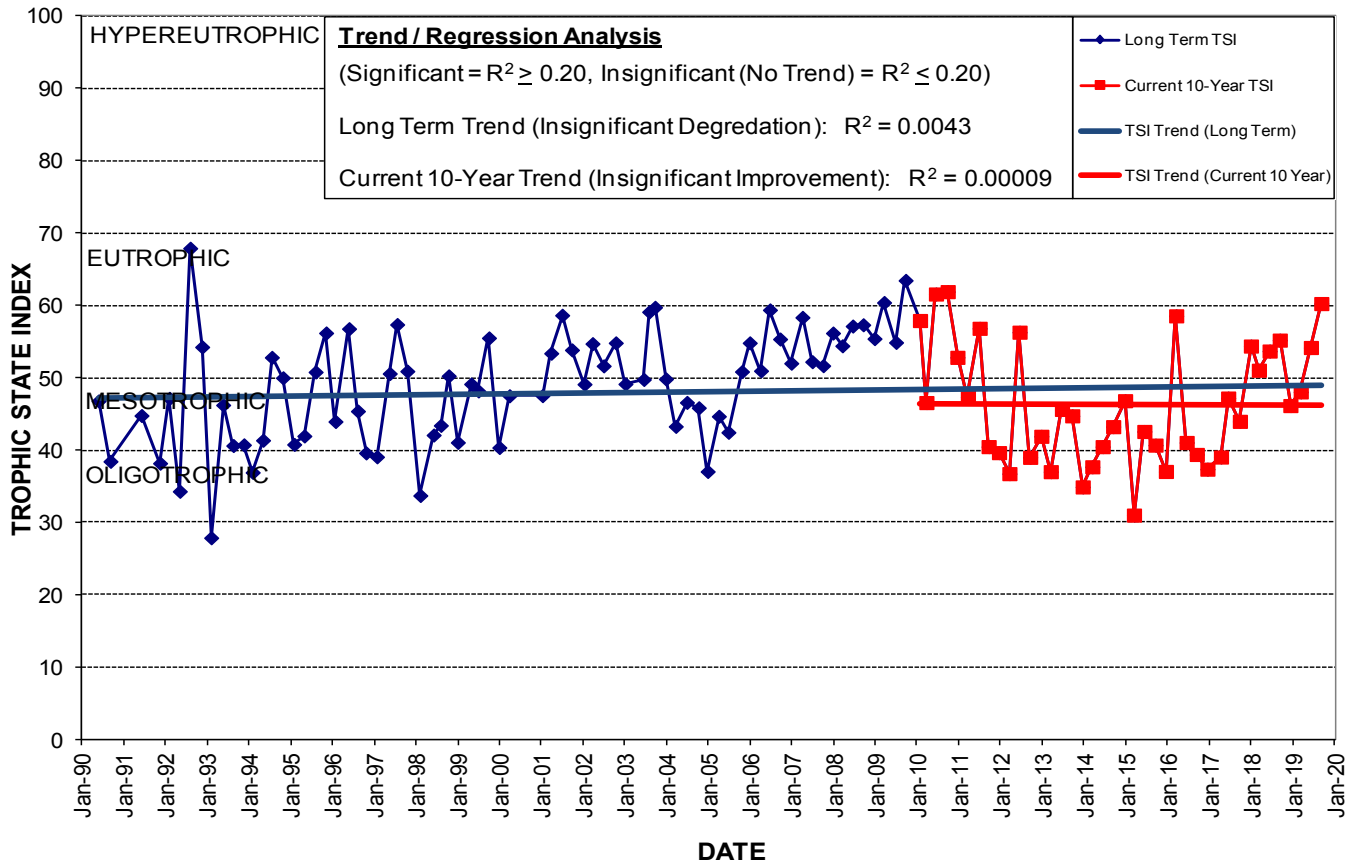
# LAKE KRISTY

Lake Origin: **Excavation**  
 Lake Surface Area: **4 acres**  
 Lake Volume: **1,781,600 ft<sup>3</sup>**  
 Shoreline Length: **1,845 ft (562 m)**  
 Mean Depth: **10.0 ft (3.0 m)**  
 Maximum Depth: **41.0 ft (12.5 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 35' 51.0"** Long **W 81° 26' 49.6"**  
 Section **6** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LW-13**  
 Drainage Basin Area: **67 acres**  
 Land Use: **Residential: 95%** **Commercial: 0%**  
**Industrial: 0%** **Highways: 0%** **Natural: 5%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

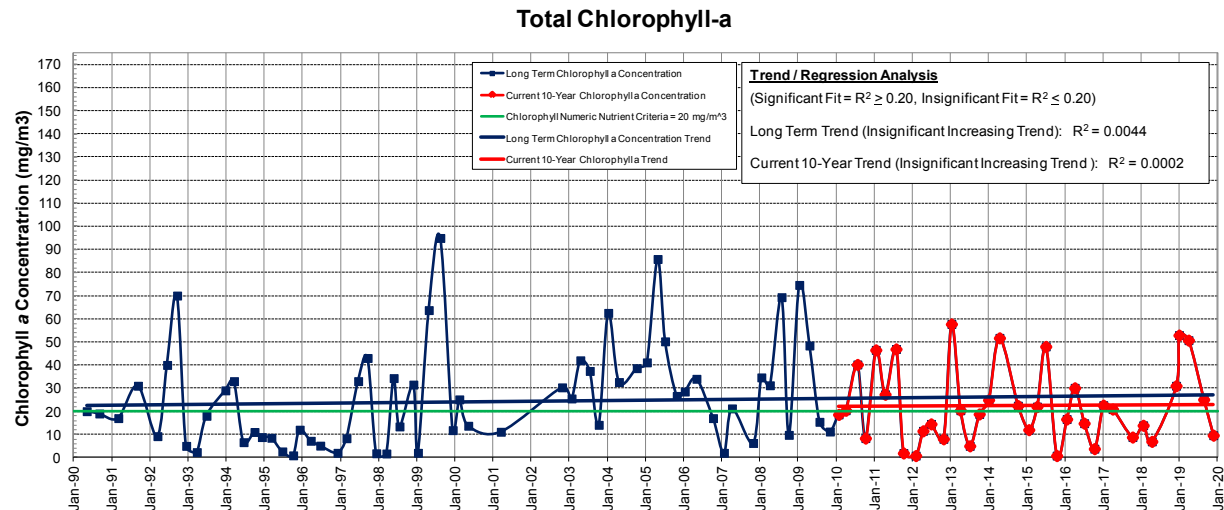
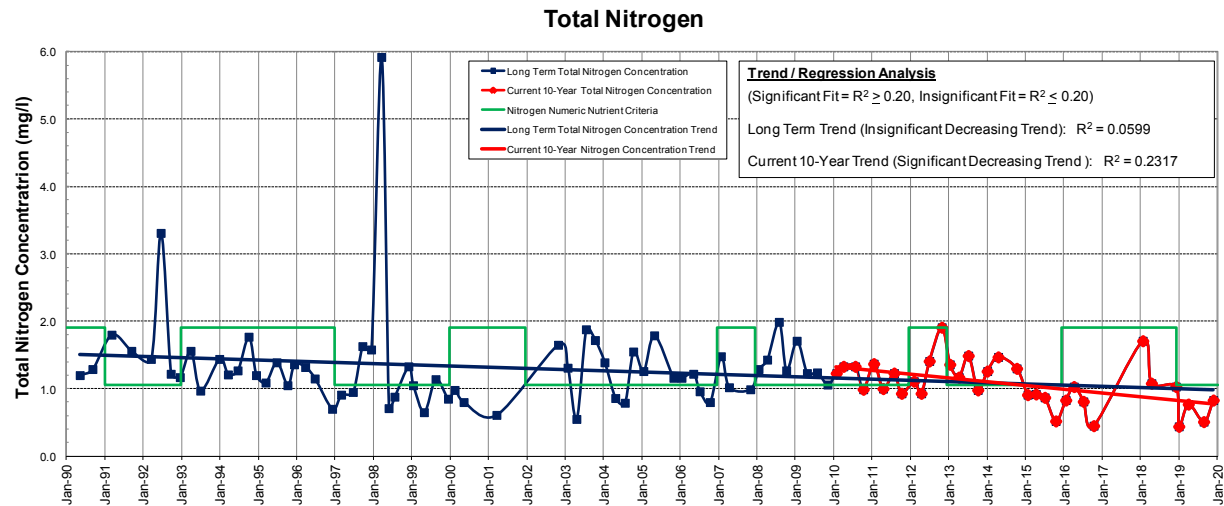
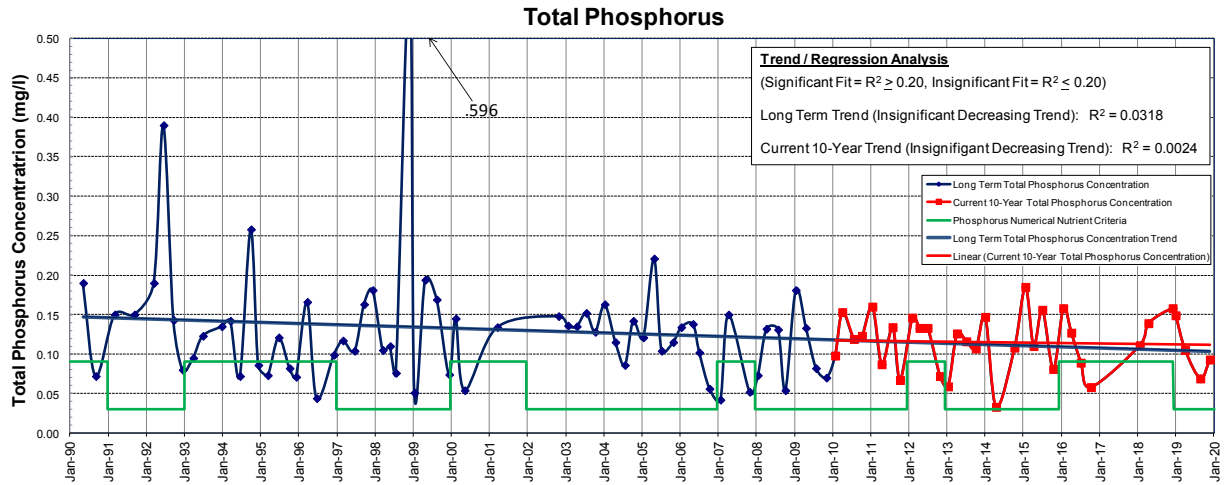
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 62			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.019	0.47	0.93	2.56	37
Maximum	0.052	0.90	2.67	33.10	60
Average	0.036	0.62	1.82	14.11	49

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** In the Signal Hill neighborhood north of North Ln. and northwest of Watch Hill Rd. (north end).

# LAKE OF THE WOODS NUTRIENT TRENDS



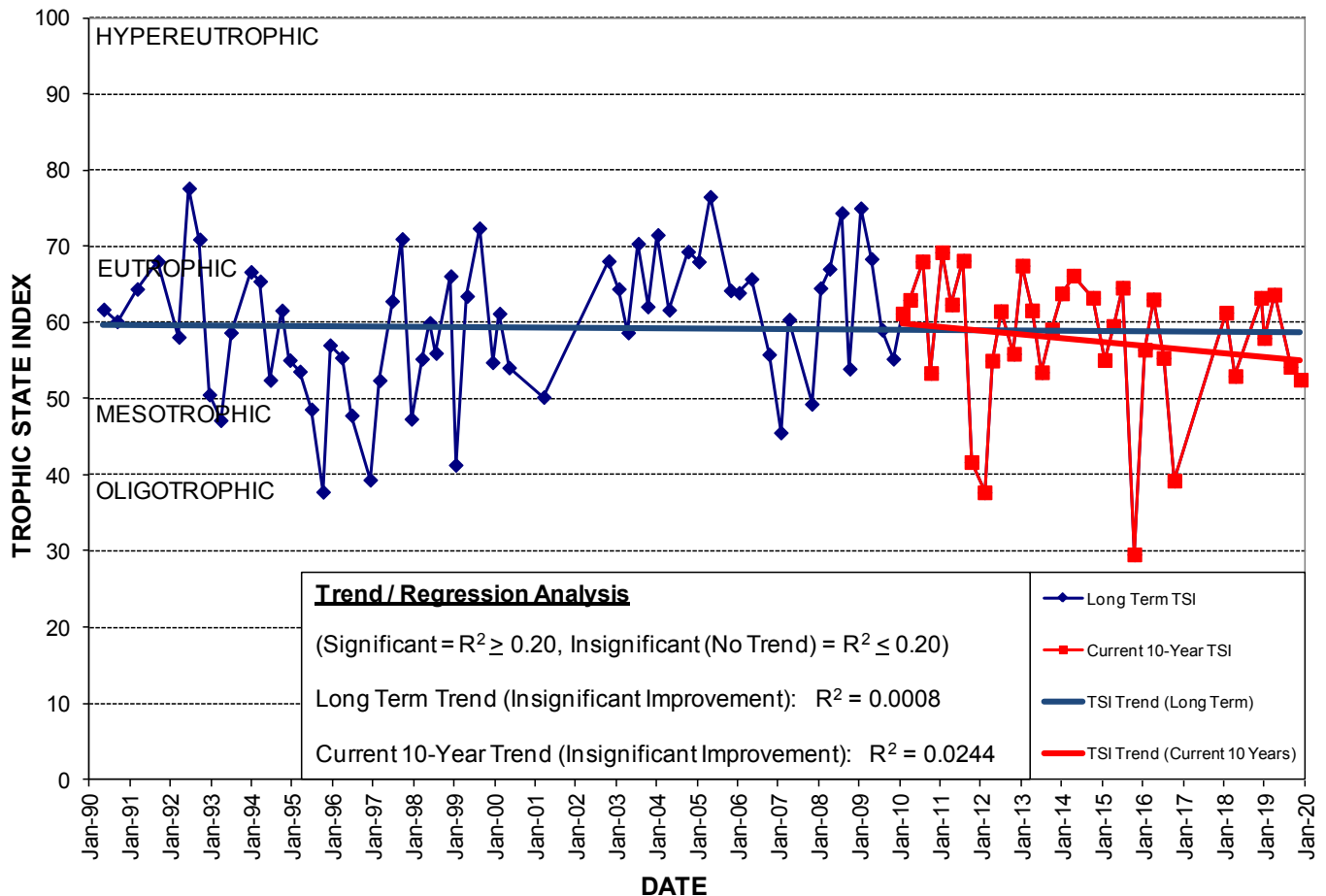
# LAKE OF THE WOODS

Lake Origin: **Natural**  
 Lake Surface Area: **4 acres**  
 Lake Volume: **420,600 ft<sup>3</sup>**  
 Shoreline Length: **1,930 ft (588 m)**  
 Mean Depth: **2.3 ft (0.7 m)**  
 Maximum Depth: **6.4 ft (2.0 m)**  
 Drain Wells: **4** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 31' 45.5"** Long **W 81° 22' 47.6"**  
 Section **35** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-34**  
 Drainage Basin Area: **155 acres**  
 Land Use: **Residential: 1%** **Commercial: 43%**  
**Industrial: 42%** **Highways: 11%** **Natural: 3%**  
 Limiting Nutrient: **Nitrogen**

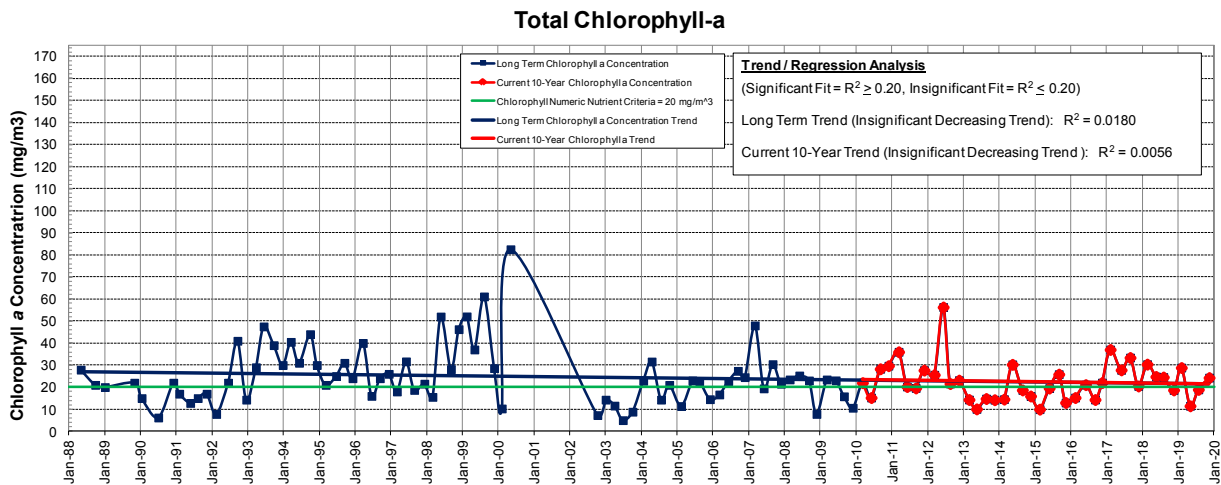
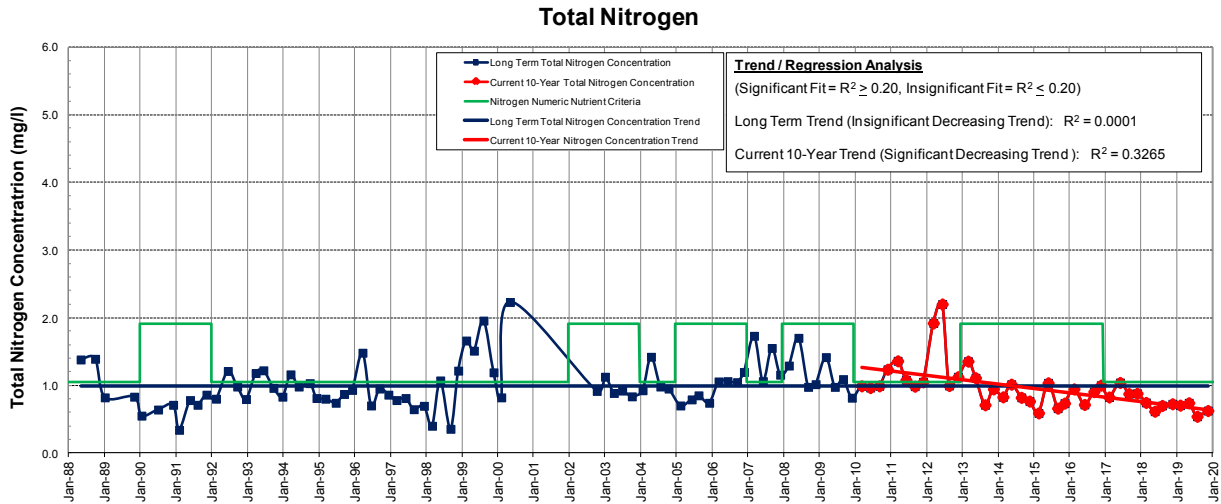
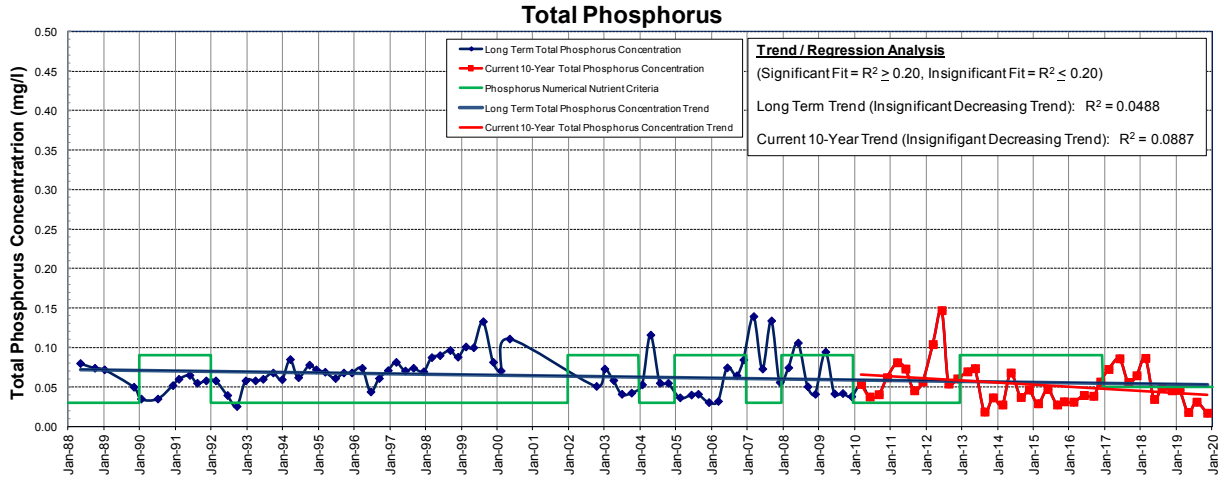
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 77			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.069	0.44	0.24	6.94	53
Maximum	0.158	1.71	0.67	52.90	64
Average	0.117	0.88	0.42	24.25	58

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** North of Columbia St. between Lucerne Terrace and Silver Ct. (west of Orange Ave.).

# LAKE LANCASTER NUTRIENT TRENDS



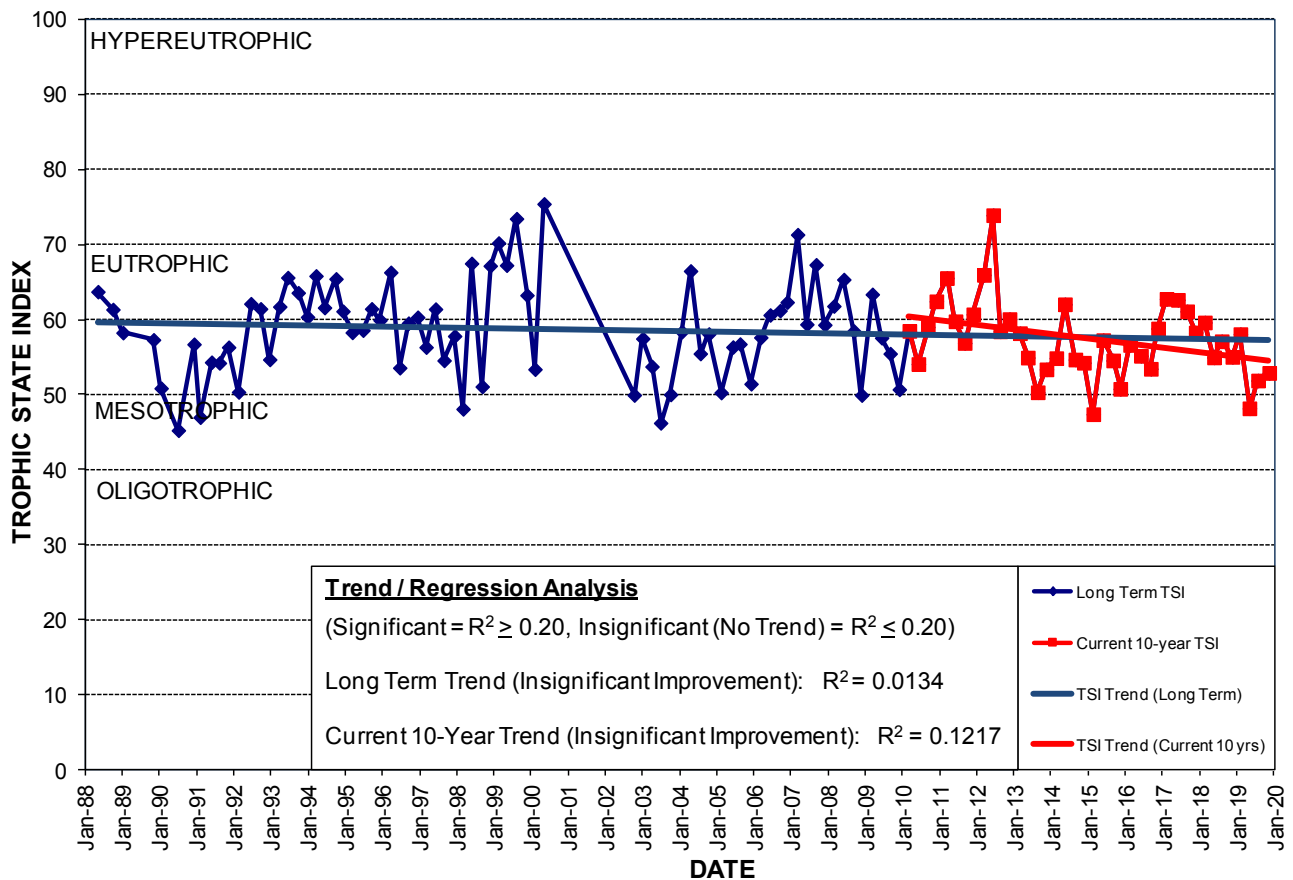


# LAKE LANCASTER

Lake Origin: <b>Natural</b> Lake Surface Area: <b>43 acres</b> Lake Volume: <b>10,000,000 ft<sup>3</sup></b> Shoreline Length: <b>11,546 ft (3,519 m)</b> Mean Depth: <b>5.4 ft (1.6 m)</b> Maximum Depth: <b>23.0 ft (7.0 m)</b> Drain Wells: <b>1</b> Aeration: <b>No</b> Grass Carp ( <i>Ctenopharyngodon idella</i> ): <b>Yes</b>	Location: Lat <b>N 28° 31' 33.2"</b> Long <b>W 81° 21' 47.2"</b> Section <b>36</b> Township <b>22S</b> Range <b>29E</b> Water Management District: <b>St. Johns River</b> Drainage Code: <b>ORL-19</b> Drainage Basin Area: <b>323 acres</b> Land Use: <b>Residential: 84%</b> <b>Commercial: 3%</b> <b>Industrial: 0%</b> <b>Highways: 0%</b> <b>Natural: 12%</b> Limiting Nutrient: <b>Balanced for Nitrogen and Phosphorus</b>
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2017 - 2019 Water Quality Data	TSI Ranking (out of 94 lakes): 73				
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.017	0.54	0.48	11.50	53
Maximum	0.087	1.04	1.06	37.05	63
Average	0.050	0.75	0.81	25.28	58

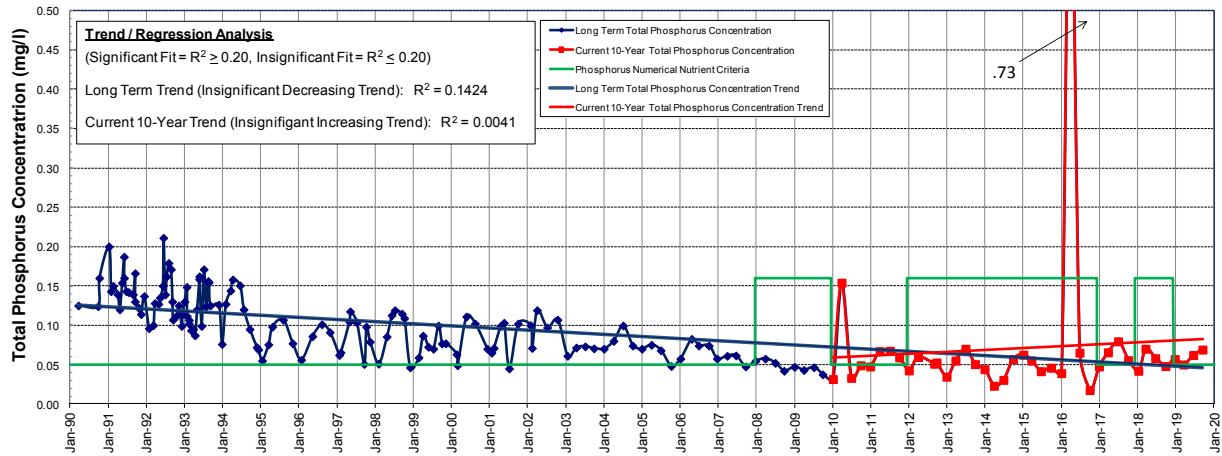
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



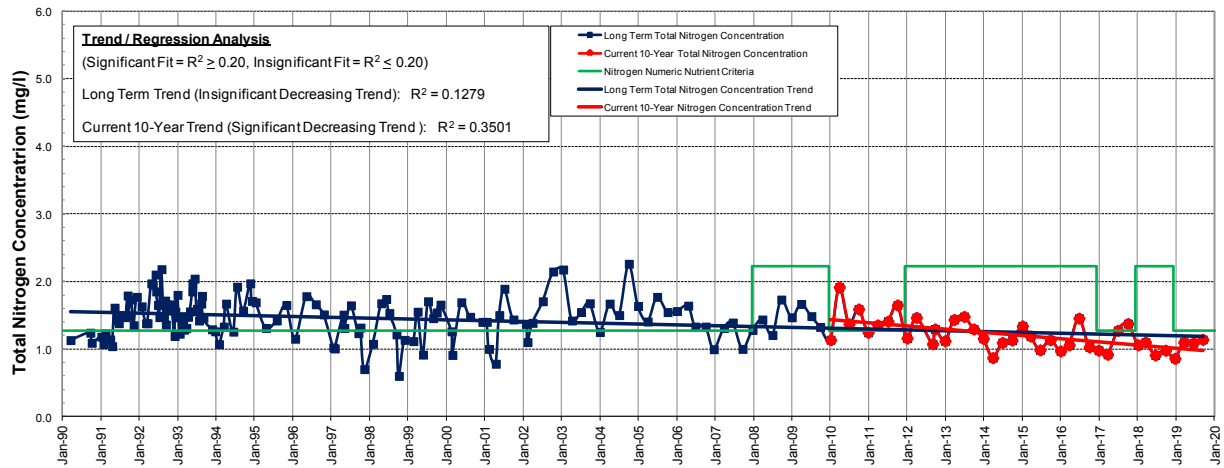
**Location:** South of Briercliff Dr. between Summerlin Ave. and Fern Creek Ave.

# LAKE LAWNE NUTRIENT TRENDS

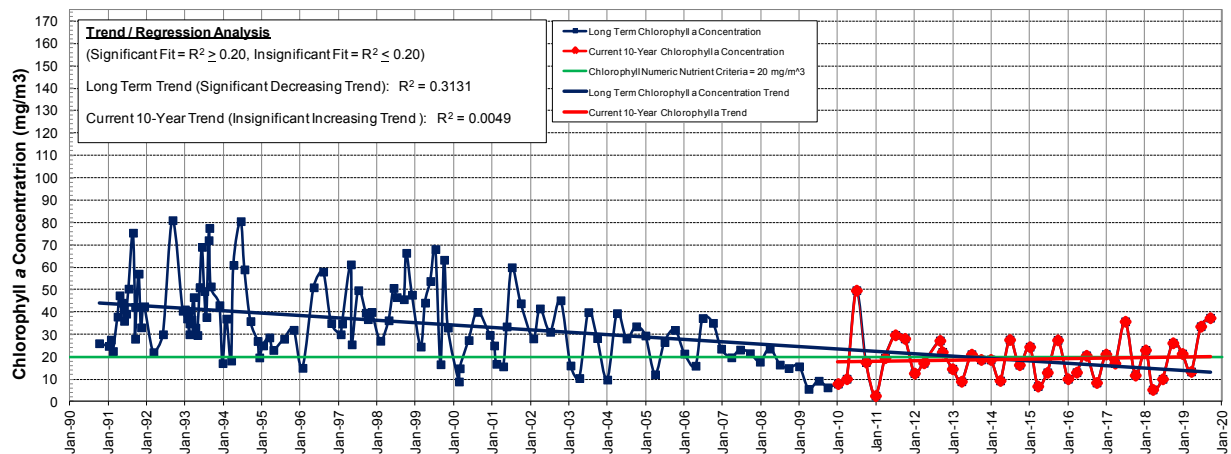
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



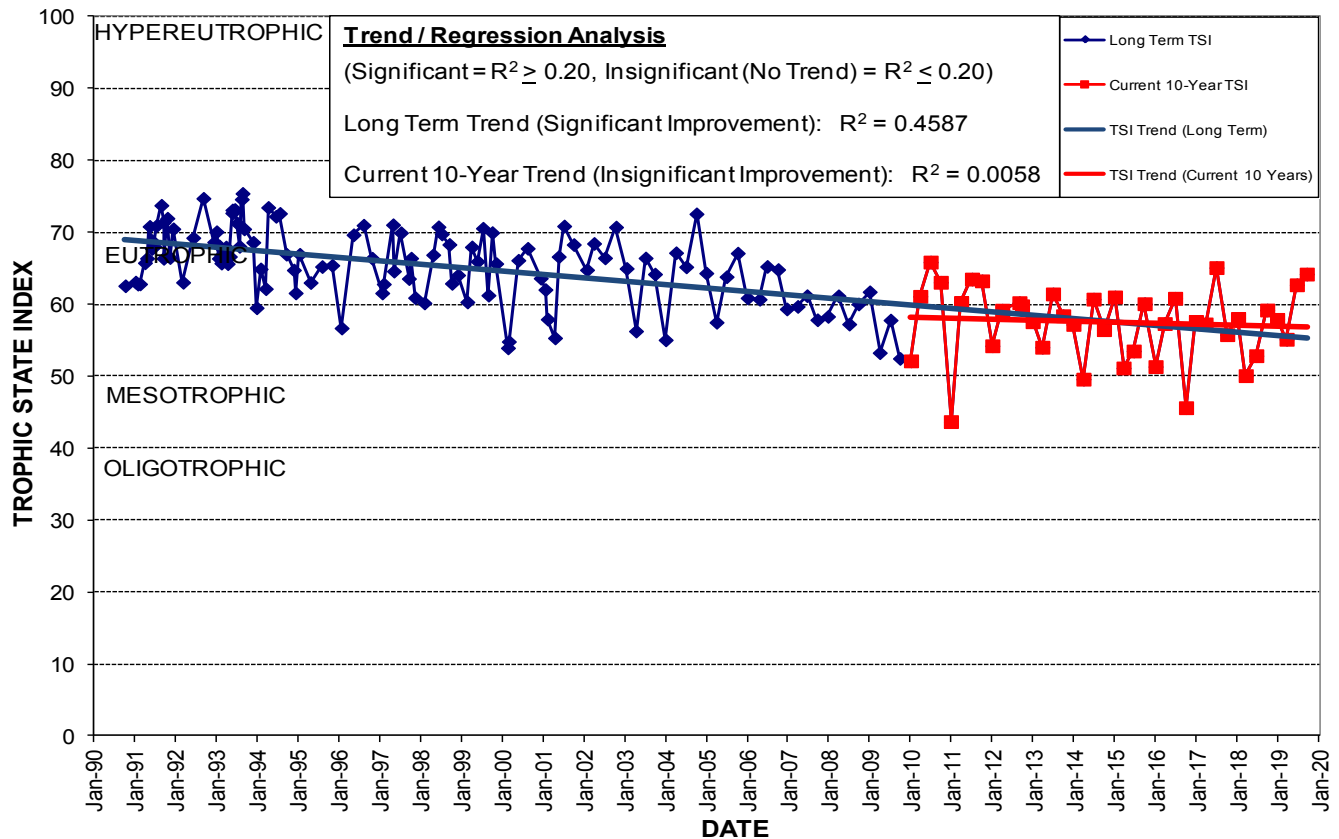
# LAKE LAWNE

Lake Origin: **Natural**  
 Lake Surface Area: **146 acres**  
 Lake Volume: **39,917,900 ft<sup>3</sup>**  
 Shoreline Length: **16,020 ft (4,883 m)**  
 Mean Depth: **6.3 ft (1.9 m)**  
 Maximum Depth: **24.8 ft (7.6 m)**  
 Drain Wells: **1**    Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 34' 00.8"** Long **W 81° 26' 16.8"**  
 Section **20** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LW-15**  
 Drainage Basin Area: **1,888 acres**  
 Land Use: **Residential: 4% Commercial: 96%**  
**Industrial: 0% Highways: 0% Natural: 0%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 84			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.042	0.86	0.53	5.34	50
Maximum	0.080	1.38	1.69	37.40	65
Average	0.060	1.05	0.86	21.35	58

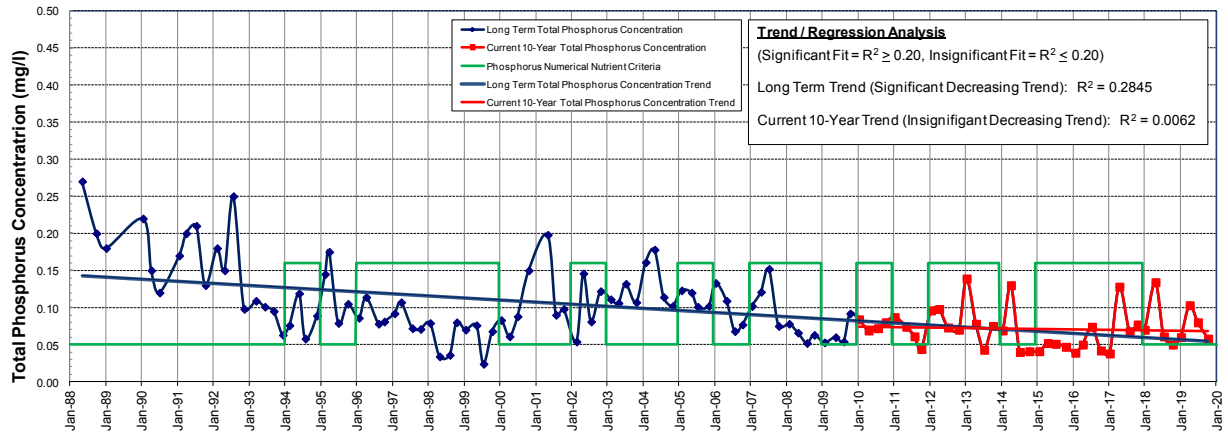
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



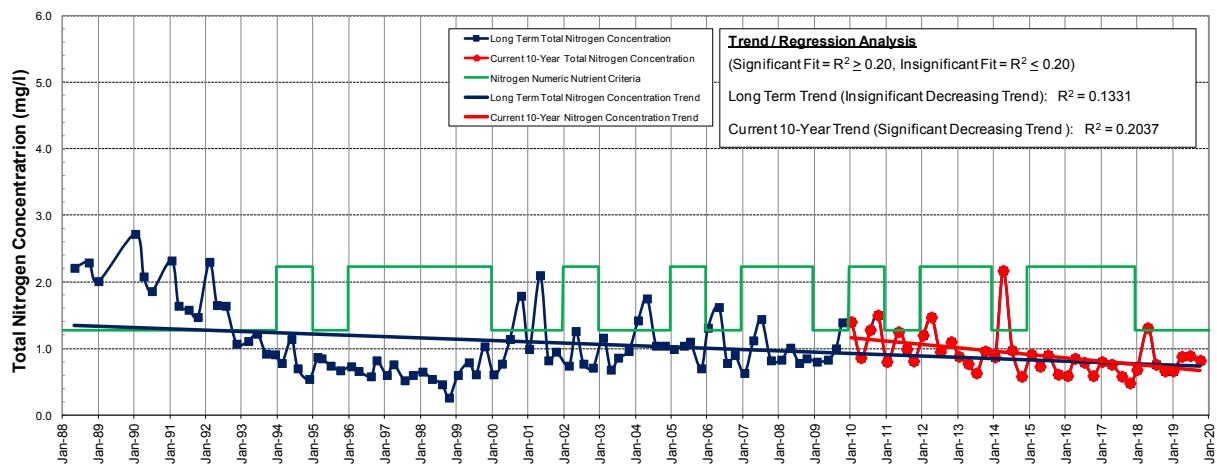
**Location:** In Gordon Barnett Park near the Central Florida Fairgrounds on W. Colonial Dr. just west of Mercy Dr.

# LAKE LAWSONA NUTRIENT TRENDS

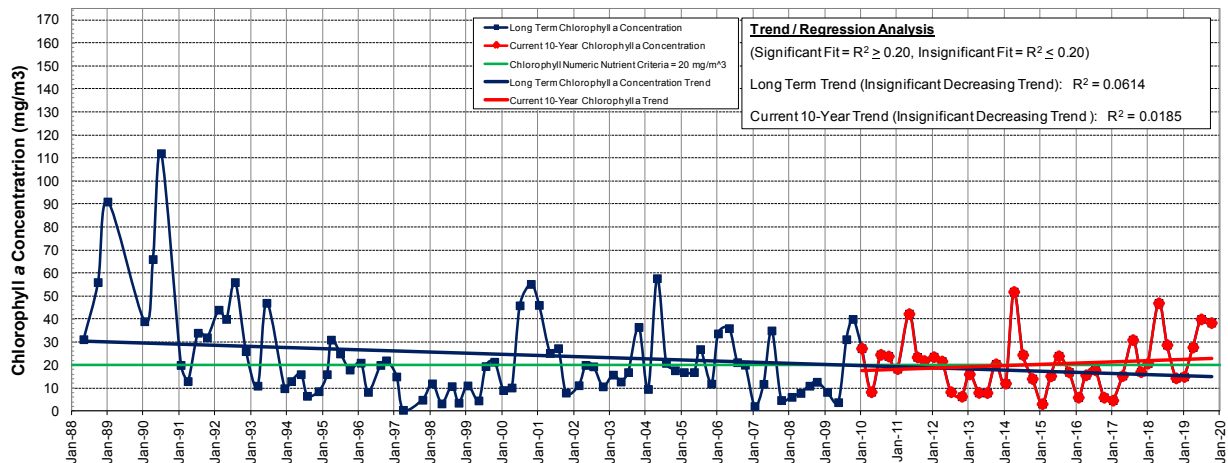
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



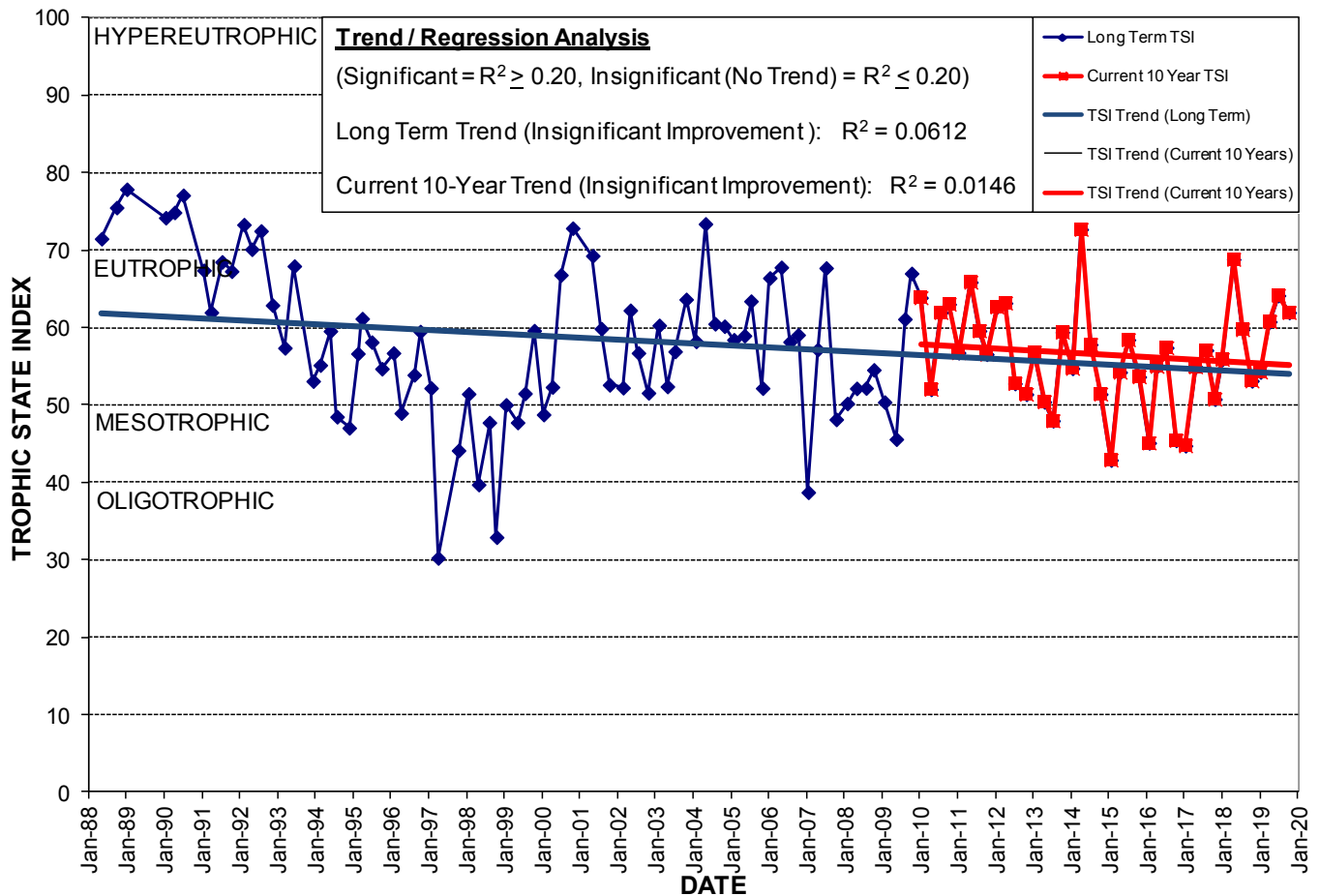
# LAKE LAWSONA

Lake Origin: **Natural**  
 Lake Surface Area: **9 acres**  
 Lake Volume: **2,660,627 ft<sup>3</sup>**  
 Shoreline Length: **2,567 ft (782 m)**  
 Mean Depth: **7.1 ft (2.2 m)**  
 Maximum Depth: **13.9 ft (4.2 m)**  
 Drain Wells: **1** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 32' 27.6"** Long **W 81° 21' 52.2"**  
 Section **25** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-26**  
 Drainage Basin Area: **118 acres**  
 Land Use: **Residential: 63%** **Commercial: 29%**  
**Industrial: 0%** **Highways: 2%** **Natural: 7%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 85			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.038	0.48	0.50	4.70	45
Maximum	0.134	1.31	1.15	47.00	69
Average	0.077	0.77	0.75	25.03	57

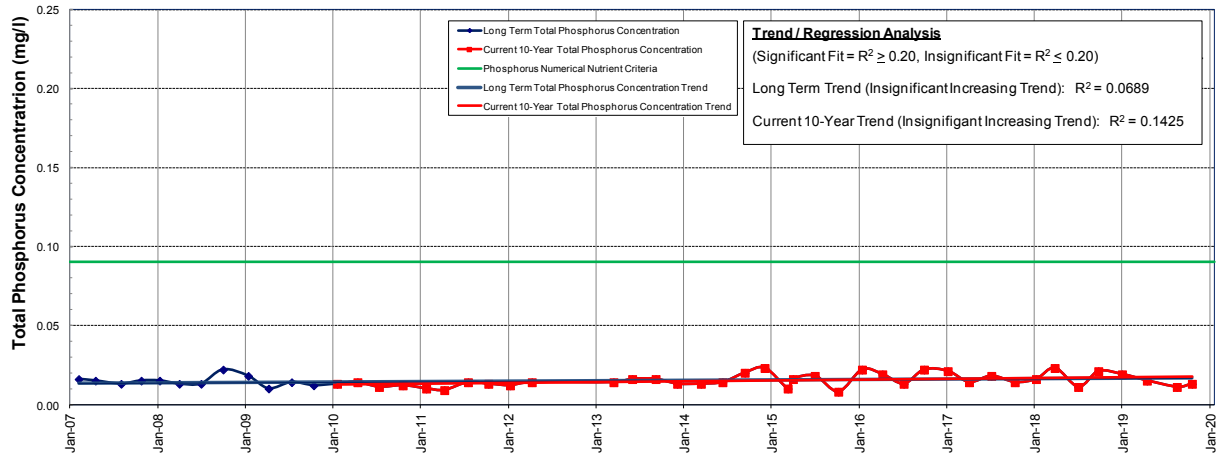
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



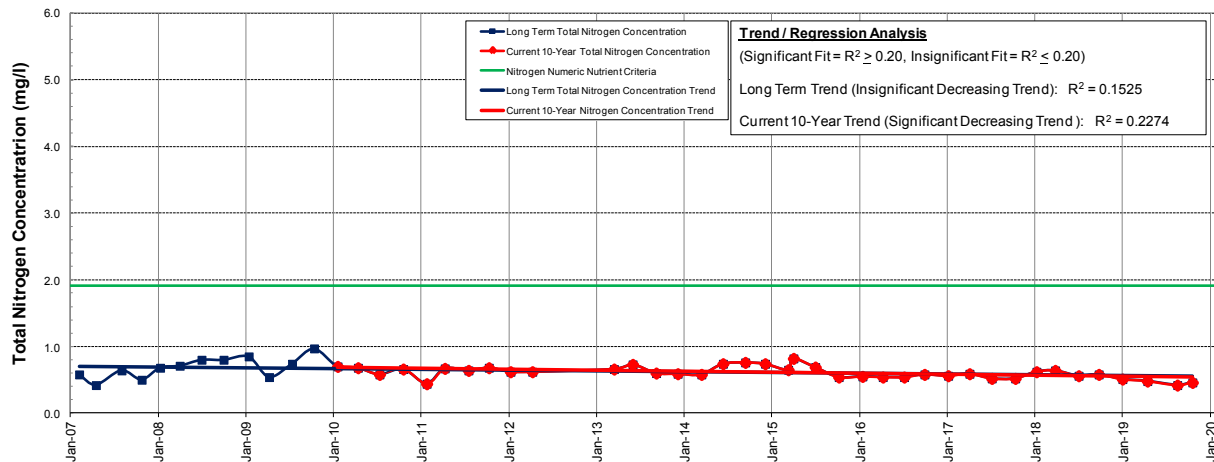
**Location:** South of Central Blvd. between Thornton Ave. and Brown Ave.

# LITTLE LAKE FAIRVIEW NUTRIENT TRENDS

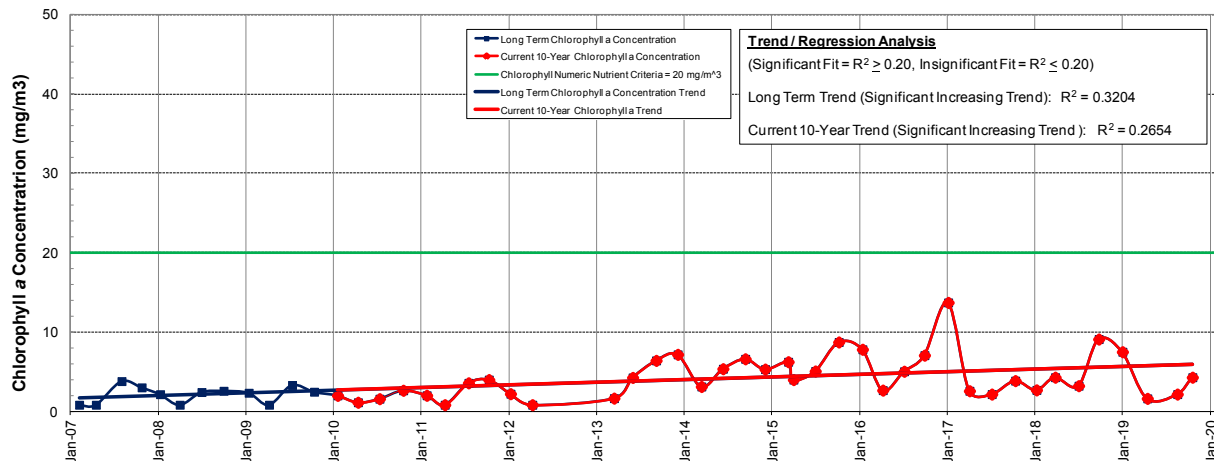
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a

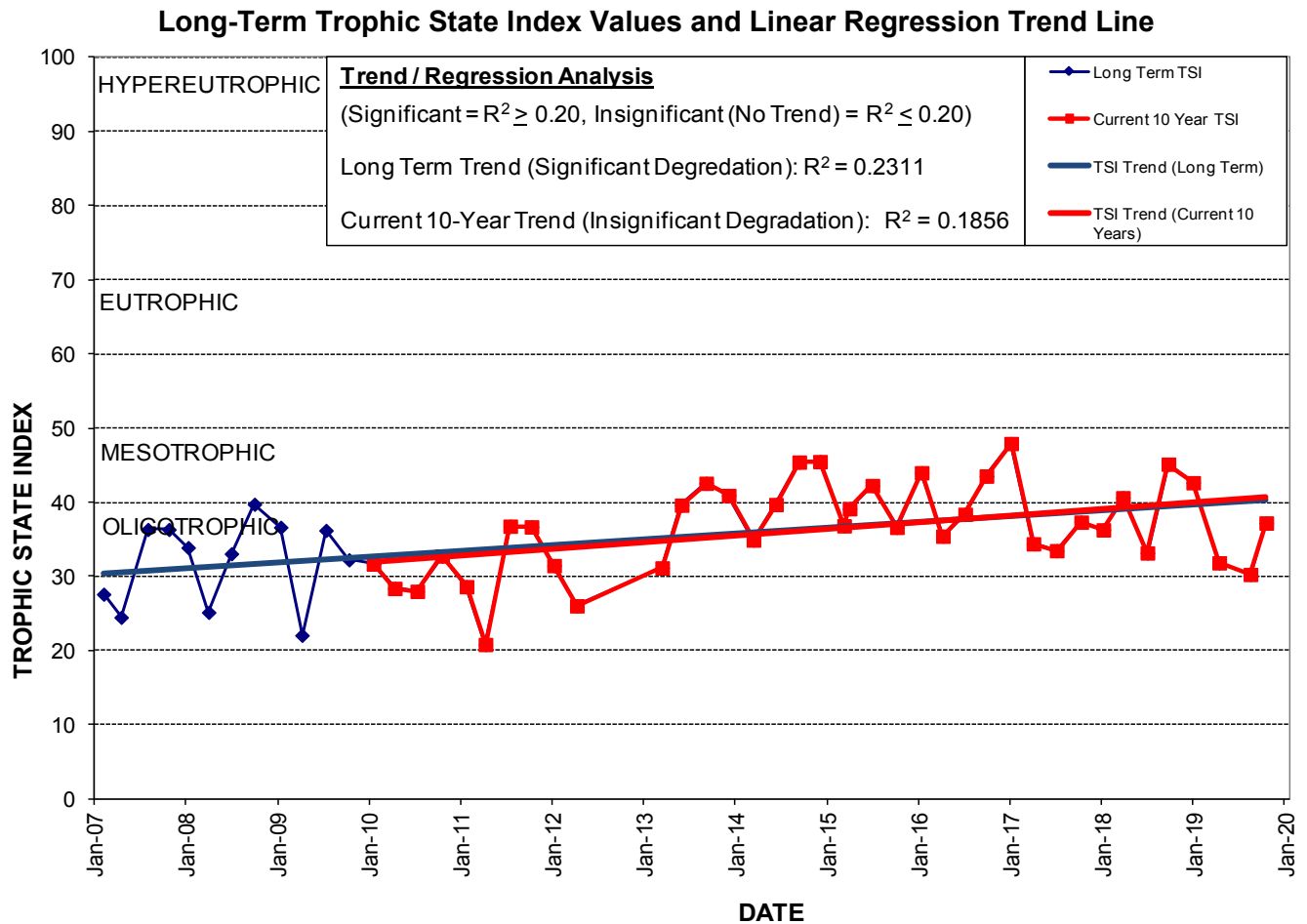


# LITTLE LAKE FAIRVIEW

Lake Origin: **Natural**  
 Lake Surface Area: **80 acres**  
 Lake Volume: **No Data**  
 Shoreline Length: **9,442 ft (2,878 m)**  
 Mean Depth: **No Data**  
 Maximum Depth: **43.0 ft (13.1 m)**  
 Drain Wells: **1**      Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 35' 29.0"** Long **W 81° 23' 19.0"**  
 Section **11** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LW-05**  
 Drainage Basin Area: **366 acres**  
 Land Use: **Residential: 80% Commercial: 11%**  
**Industrial: 0% Highways: 0% Natural: 9%**  
 Limiting Nutrient: **Phosphorus**

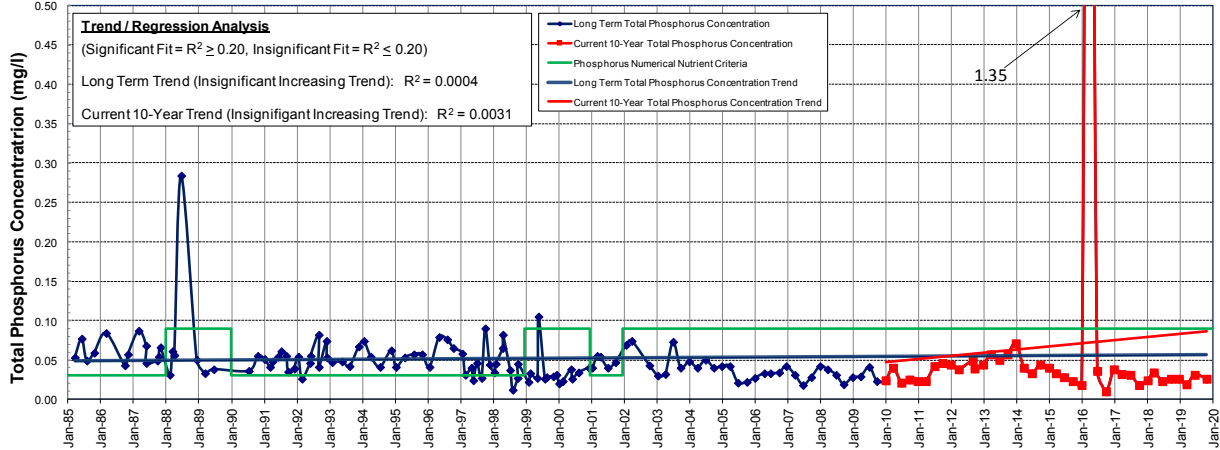
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 12			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.011	0.42	1.44	1.60	30
Maximum	0.023	0.64	3.61	13.70	48
Average	0.016	0.54	2.57	4.75	38



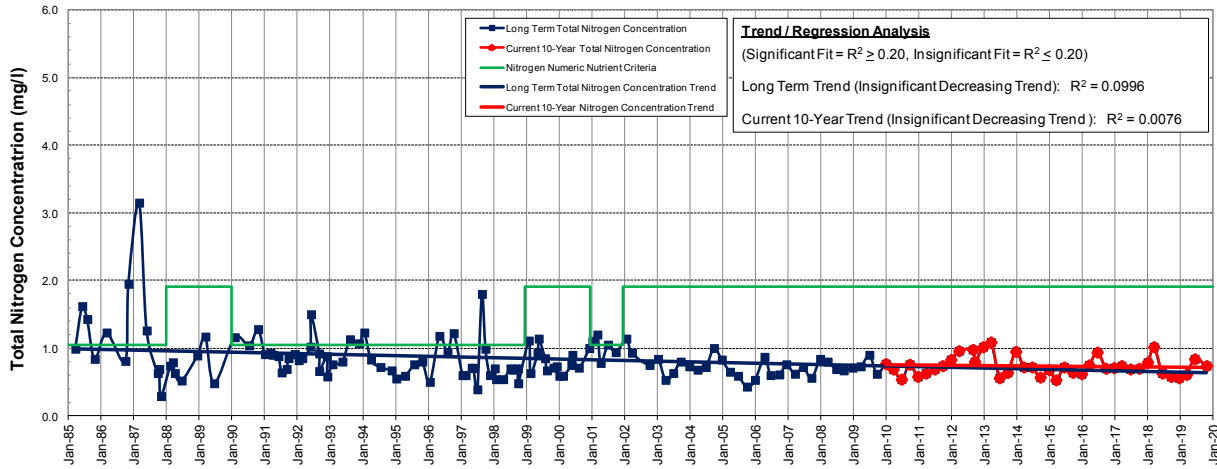
**Location:** Between W. Fairbanks Ave. and Par St. and between Edgewater Dr. and Interstate 4. Private lake access is at the end of Cocoa Ln. off Greens Ave. in the Dubsread Neighborhood.

# LAKE LORNA DOONE NUTRIENT TRENDS

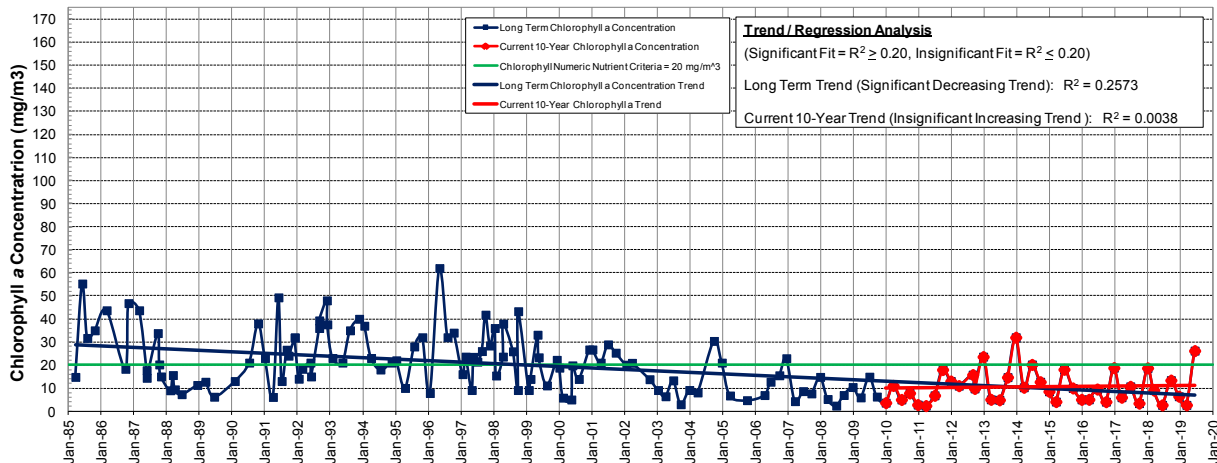
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a





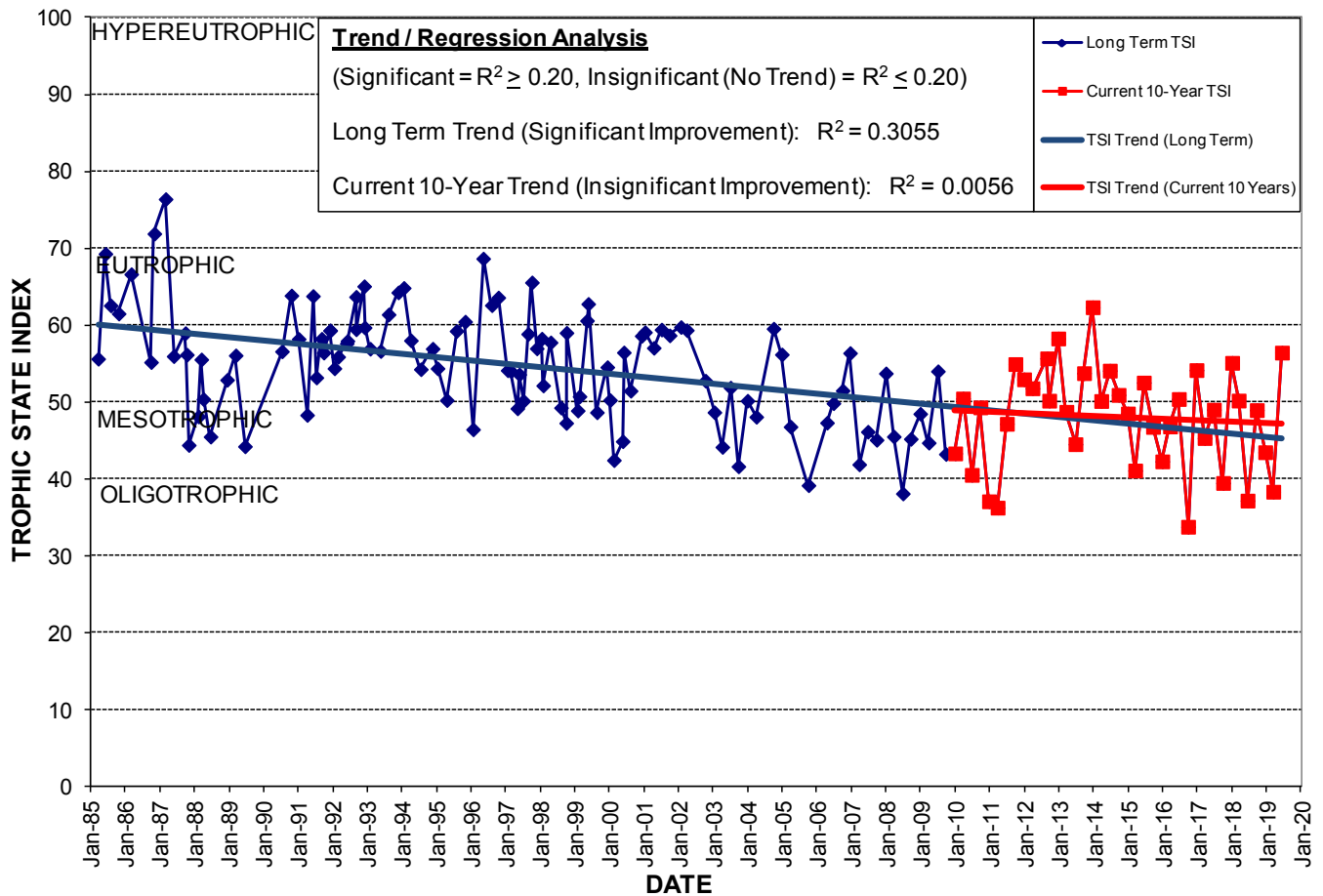
# LAKE LORNA DOONE

Lake Origin: **Natural**  
 Lake Surface Area: **15 acres**  
 Lake Volume: **9,200,000 ft<sup>3</sup>**  
 Shoreline Length: **2,962 ft (903 m)**  
 Mean Depth: **14.2 ft (4.3 m)**  
 Maximum Depth: **29.0 ft (8.8 m)**  
 Drain Wells: **1** Aeration: **Yes** (installed 9/78)  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 32' 29.4"** Long **W 81° 24' 10.4"**  
 Section **27** Township **22S** Range **29E**  
 Water Management District: **South Florida**  
 Drainage Code: **SC-13**  
 Drainage Basin Area: **111 acres**  
 Land Use: **Residential: 15% Commercial: 55%**  
**Industrial: 15% Highways: 0% Natural: 14%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

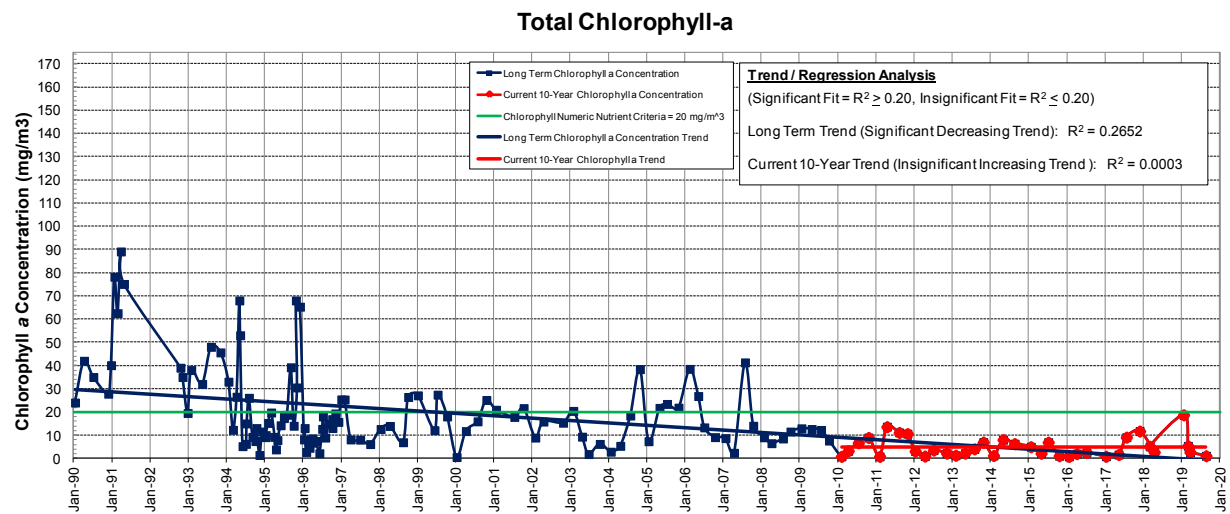
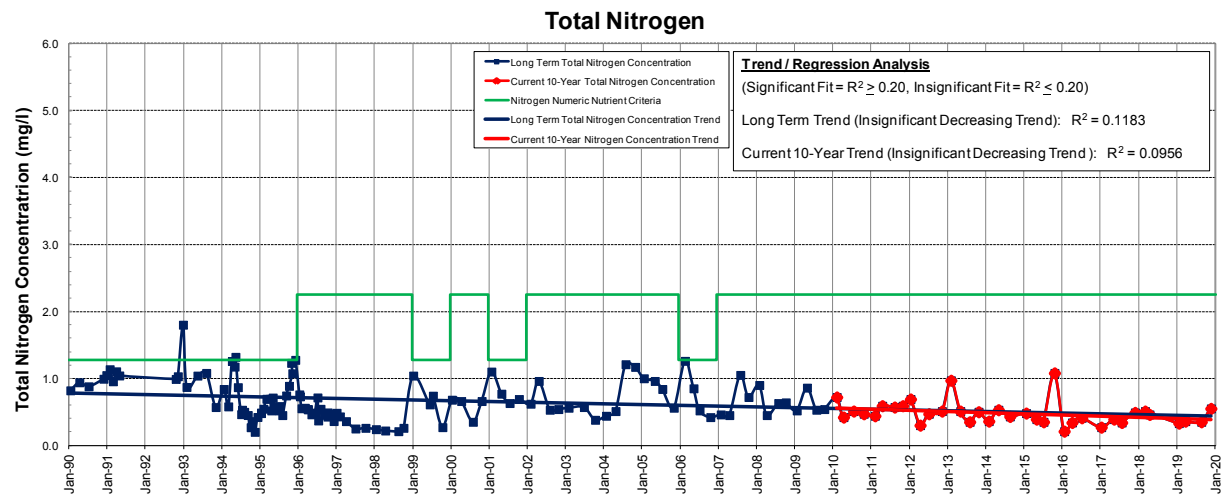
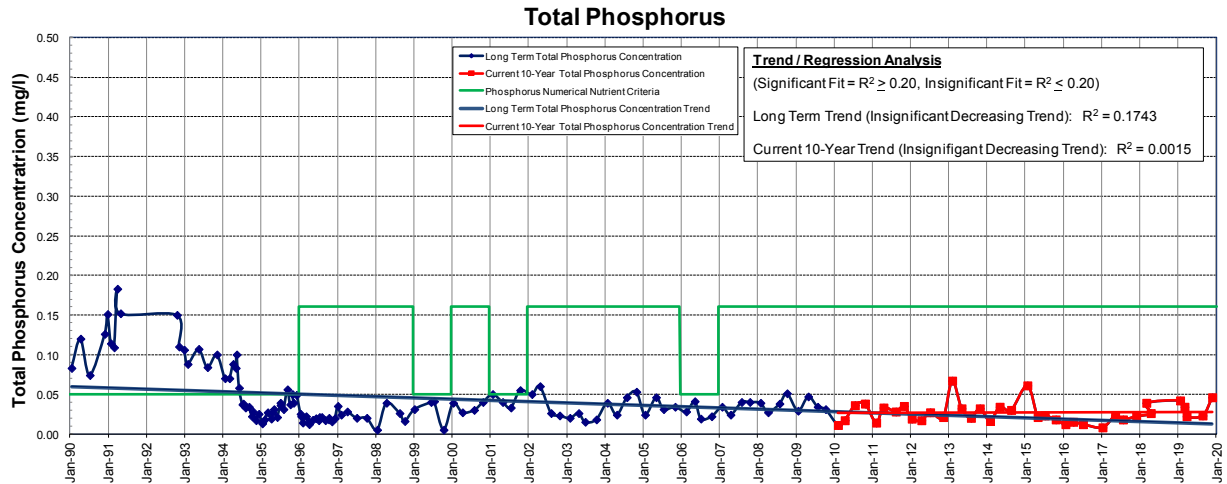
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 46			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.018	0.56	1.22	2.67	37
Maximum	0.038	1.02	4.00	26.20	56
Average	0.027	0.72	2.28	10.73	47

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Bordered by Central Blvd. to the north, Church St. to the south, Tampa Ave. to the west and Rio Grande Ave. to the east, just north of the Citrus Bowl.

# LAKE LUCERNE EAST NUTRIENT TRENDS

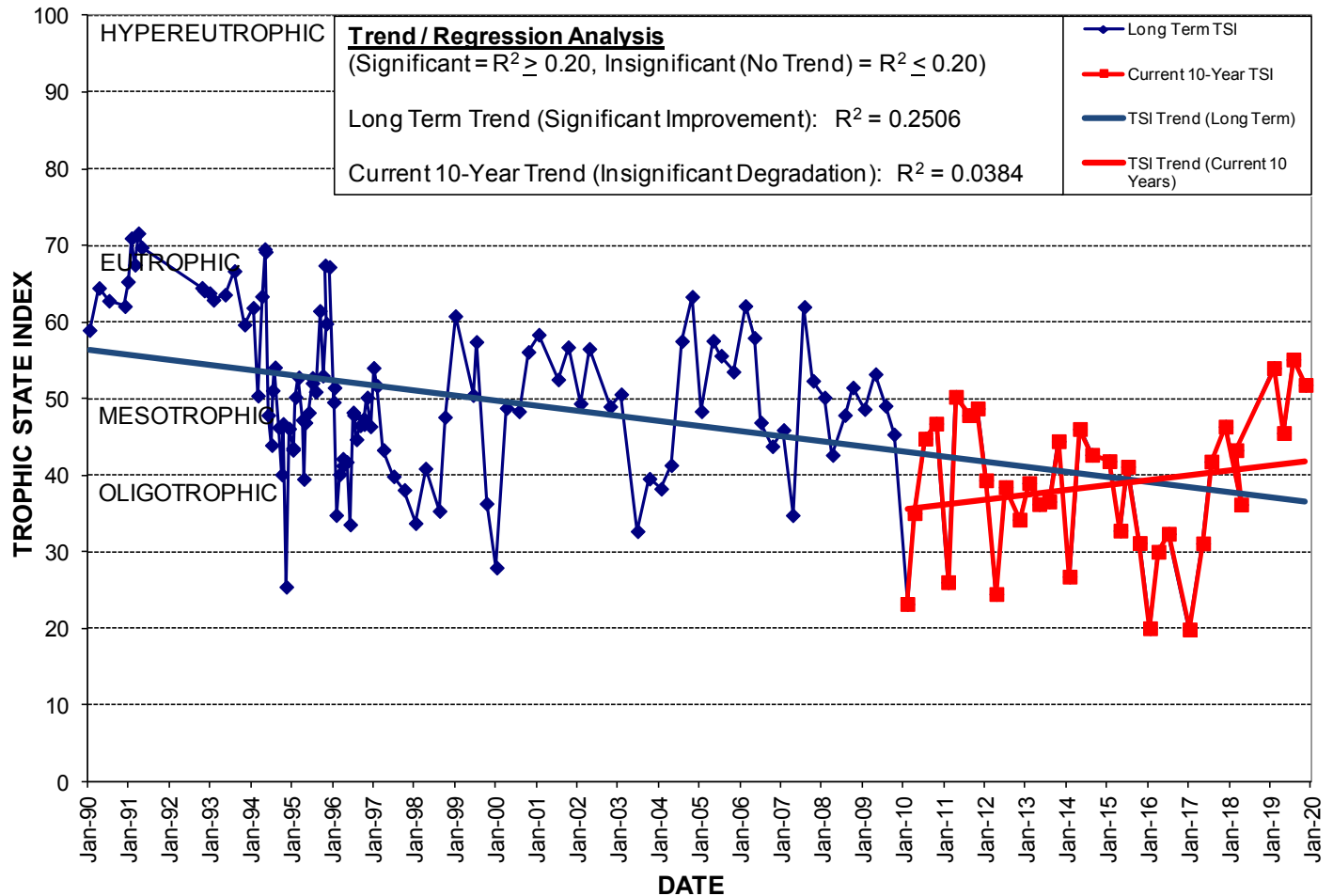


# LAKE LUCERNE EAST

Lake Origin: <b>Natural</b> Lake Surface Area: <b>7 acres</b> Lake Volume: <b>2,146,900 ft<sup>3</sup></b> Shoreline Length: <b>2,343 ft (714 m)</b> Mean Depth: <b>7.6 ft (2.3 m)</b> Maximum Depth: <b>15.6 ft (4.8 m)</b> Drain Wells: <b>1</b> Aeration: <b>Yes</b> (installed 10/86) Grass Carp ( <i>Ctenopharyngodon idella</i> ): <b>Yes</b>	Location: Lat <b>N 28° 32' 05.6"</b> Long <b>W 81° 22' 34.3"</b> Section <b>35</b> Township <b>22S</b> Range <b>29E</b> Water Management District: <b>St. Johns River</b> Drainage Code: <b>ORL-30</b> Drainage Basin Area: <b>265 acres</b> Land Use: <b>Residential: 5% Commercial: 56%</b> <b>Industrial: 6% Highways: 26% Natural: 7%</b> Limiting Nutrient: <b>Balanced for Nitrogen and Phosphorus</b>
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2017 - 2019 Water Quality Data	TSI Ranking (out of 94 lakes): 25				
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.008	0.27	1.06	0.85	20
Maximum	0.046	0.55	3.46	20.30	54
Average	0.028	0.40	2.85	7.19	39

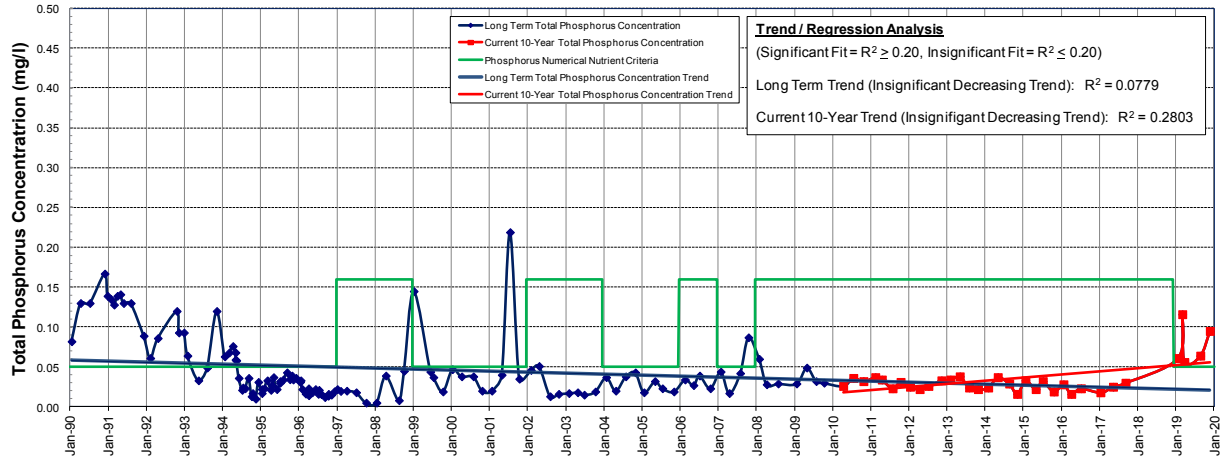
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



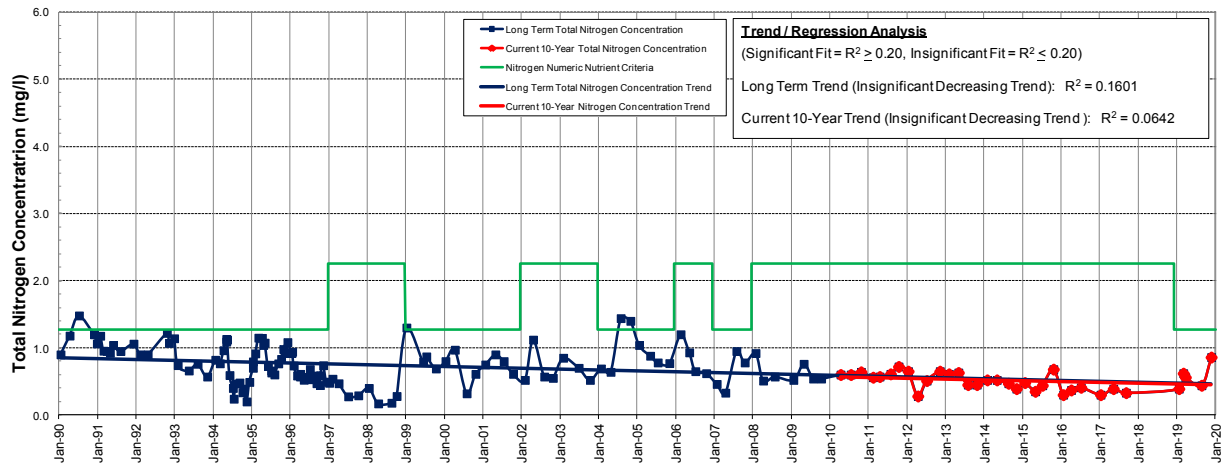
**Location:** Split by Orange Ave. just South of SR 408 (East/West Expressway).

# LAKE LUCERNE WEST NUTRIENT TRENDS

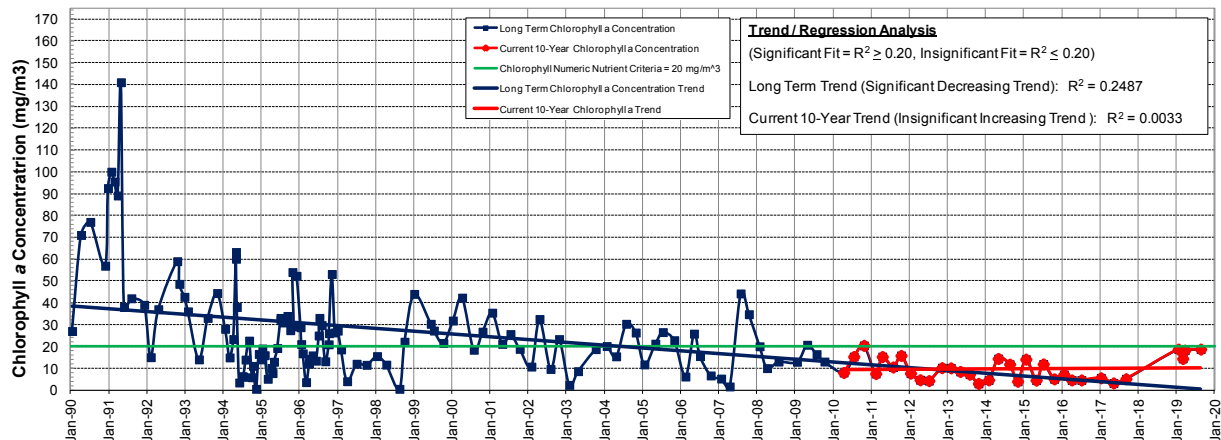
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



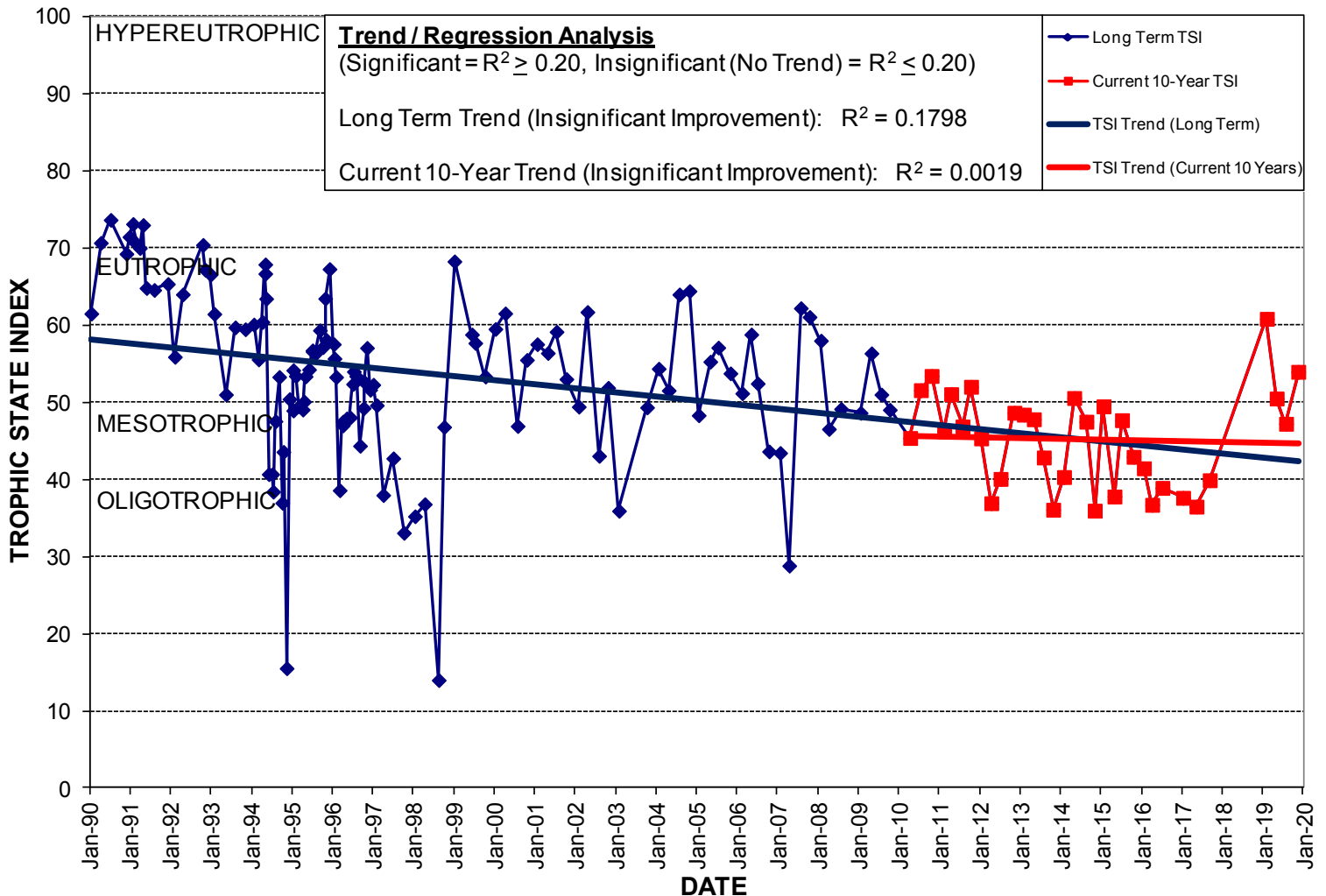
# LAKE LUCERNE WEST

Lake Origin: **Natural**  
 Lake Surface Area: **12 acres**  
 Lake Volume: **6,049,800 ft<sup>3</sup>**  
 Shoreline Length: **2,888 ft (880 m)**  
 Mean Depth: **11.7 ft (3.6 m)**  
 Maximum Depth: **19.9 ft (6.1 m)**  
 Drain Wells: **1** Aeration: **Yes** (installed 10/86)  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**  
 \*No data for 2018 due to construction around lake

Location: Lat **N 28° 32' 06.4"** Long **W 81° 22' 41.9"**  
 Section **35**, Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-30**  
 Drainage Basin Area: **265 acres**  
 Land Use: **Residential: 5%** **Commercial: 56%**  
**Industrial: 6%** **Highways: 26%** **Natural: 7%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

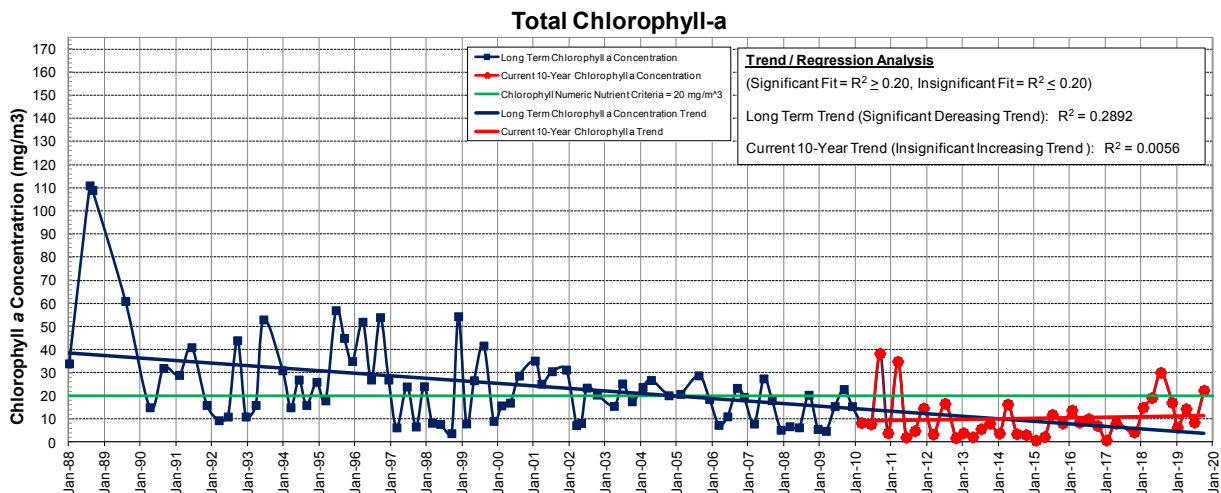
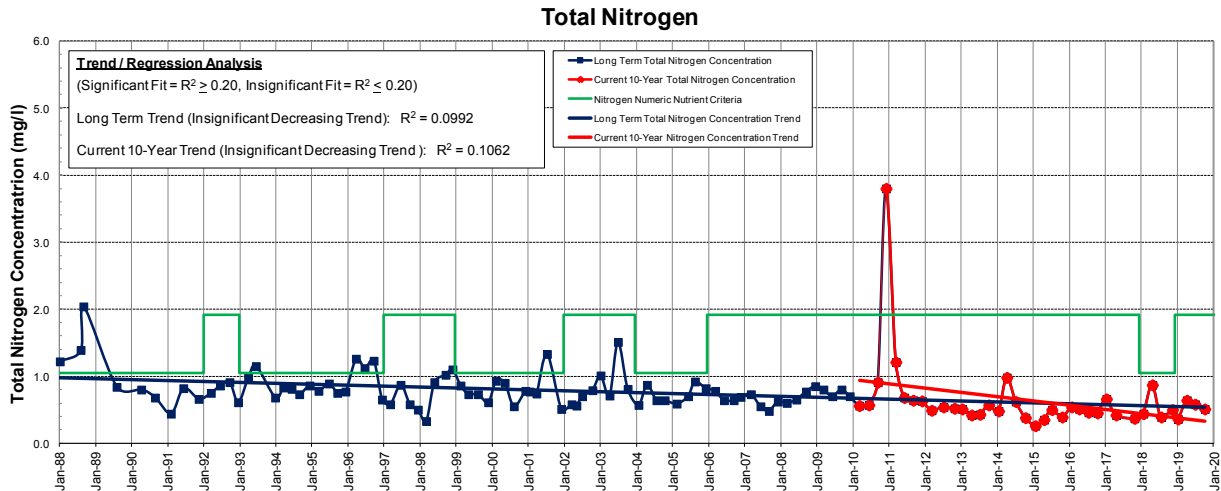
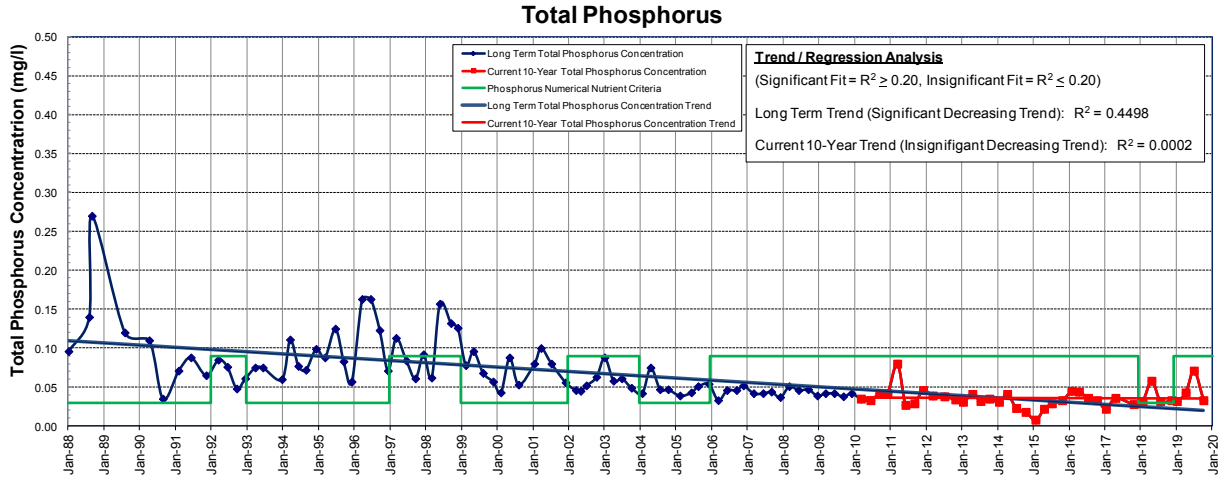
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 68			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.016	0.30	0.43	3.20	36
Maximum	0.116	0.86	2.11	49.10	65
Average	0.048	0.45	1.25	13.57	46

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Split by Orange Ave. just south of SR 408 (East/West Expressway).

# LAKE LURNA NUTRIENT TRENDS



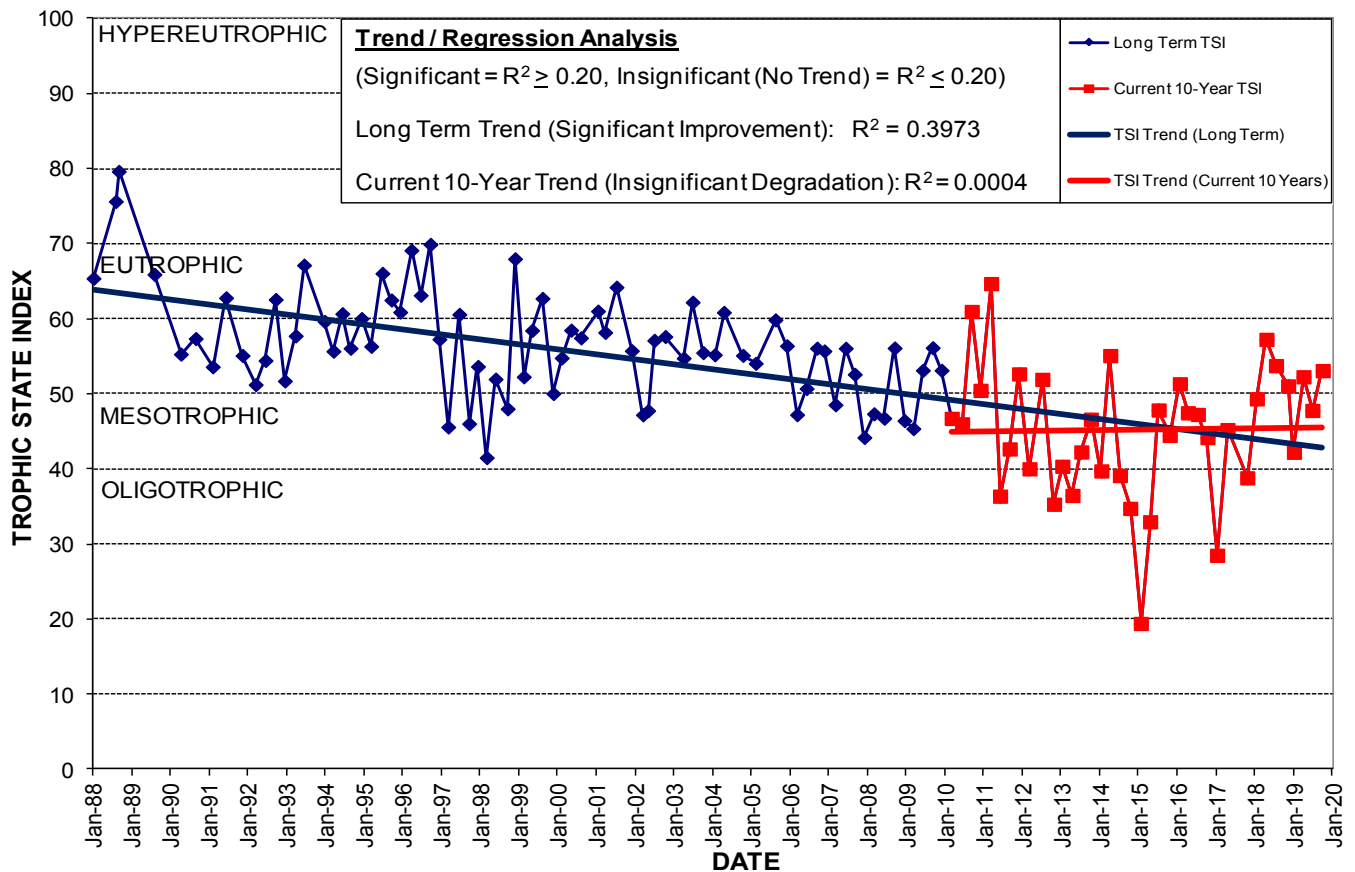
# LAKE LURNA

Lake Origin: **Natural**  
 Lake Surface Area: **8 acres**  
 Lake Volume: **3,784,200 ft<sup>3</sup>**  
 Shoreline Length: **2,314 ft (705 m)**  
 Mean Depth: **11.0 ft (3.4 m)**  
 Maximum Depth: **24.6 ft (7.5 m)**  
 Drain Wells: **2** Aeration: **Yes** (installed 3/90)  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 31' 21.7"** Long **W 81° 22' 28.2"**  
 Section **1** Township **23S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-32**  
 Drainage Basin Area: **121 acres**  
 Land Use: **Residential: 39%** **Commercial: 49%**  
**Industrial: 0%** **Highways: 5%** **Natural: 7%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 54			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.022	0.36	1.12	0.80	29
Maximum	0.071	0.87	2.76	30.10	57
Average	0.039	0.51	1.68	13.30	47

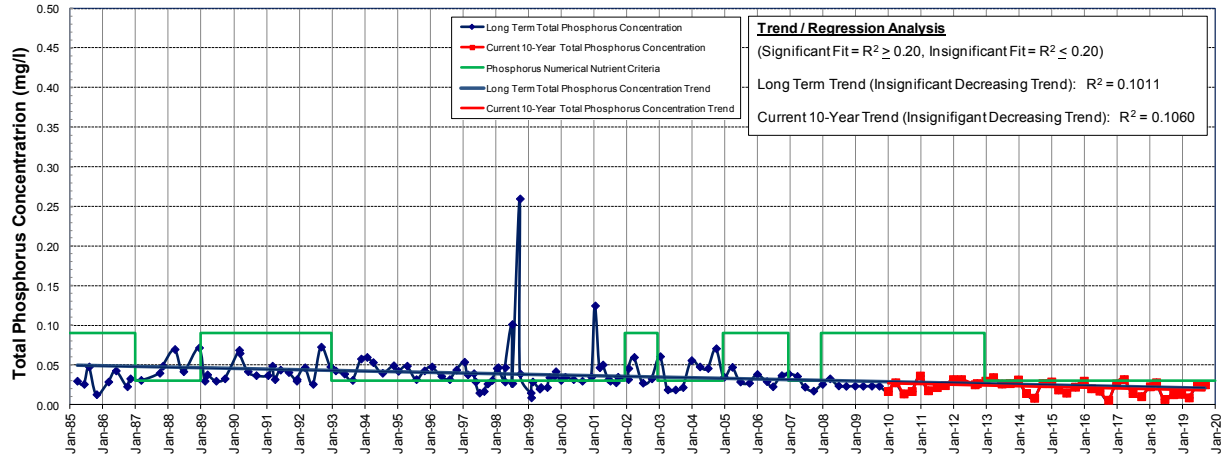
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



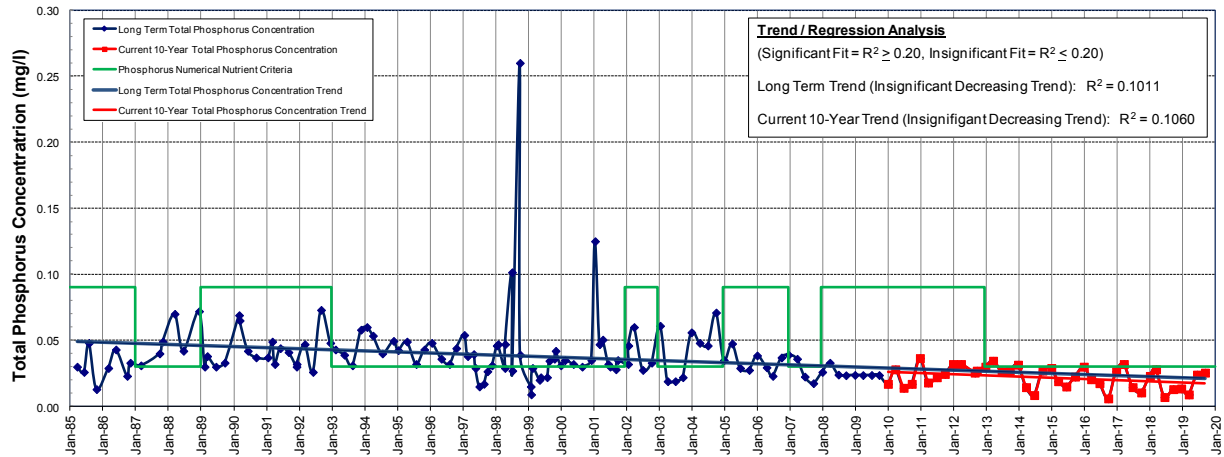
**Location:** South of Miller St. between Orange Ave. and Delaney Ave.

# LAKE MANN NUTRIENT TRENDS

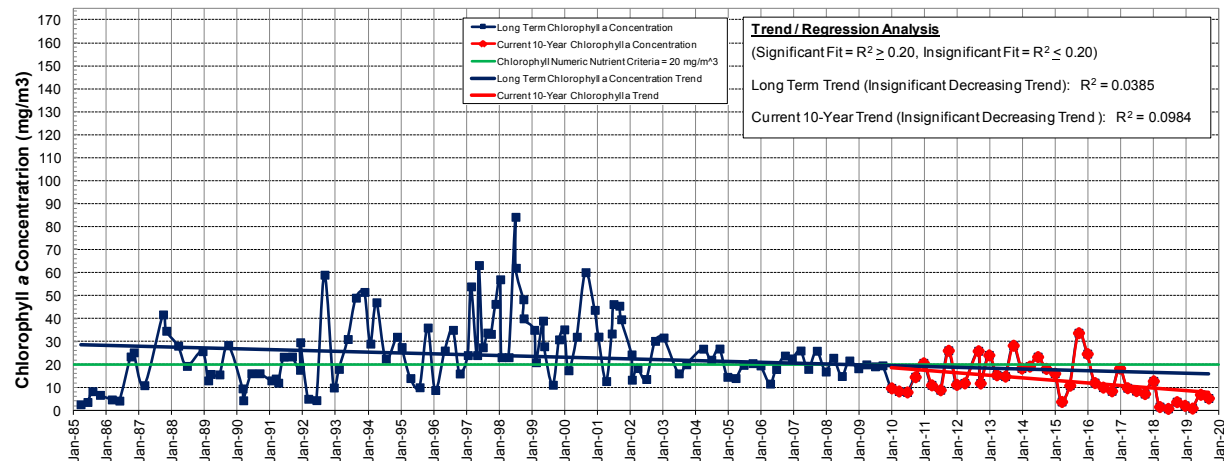
## Total Phosphorus



## Total Phosphorus



## Total Chlorophyll-a





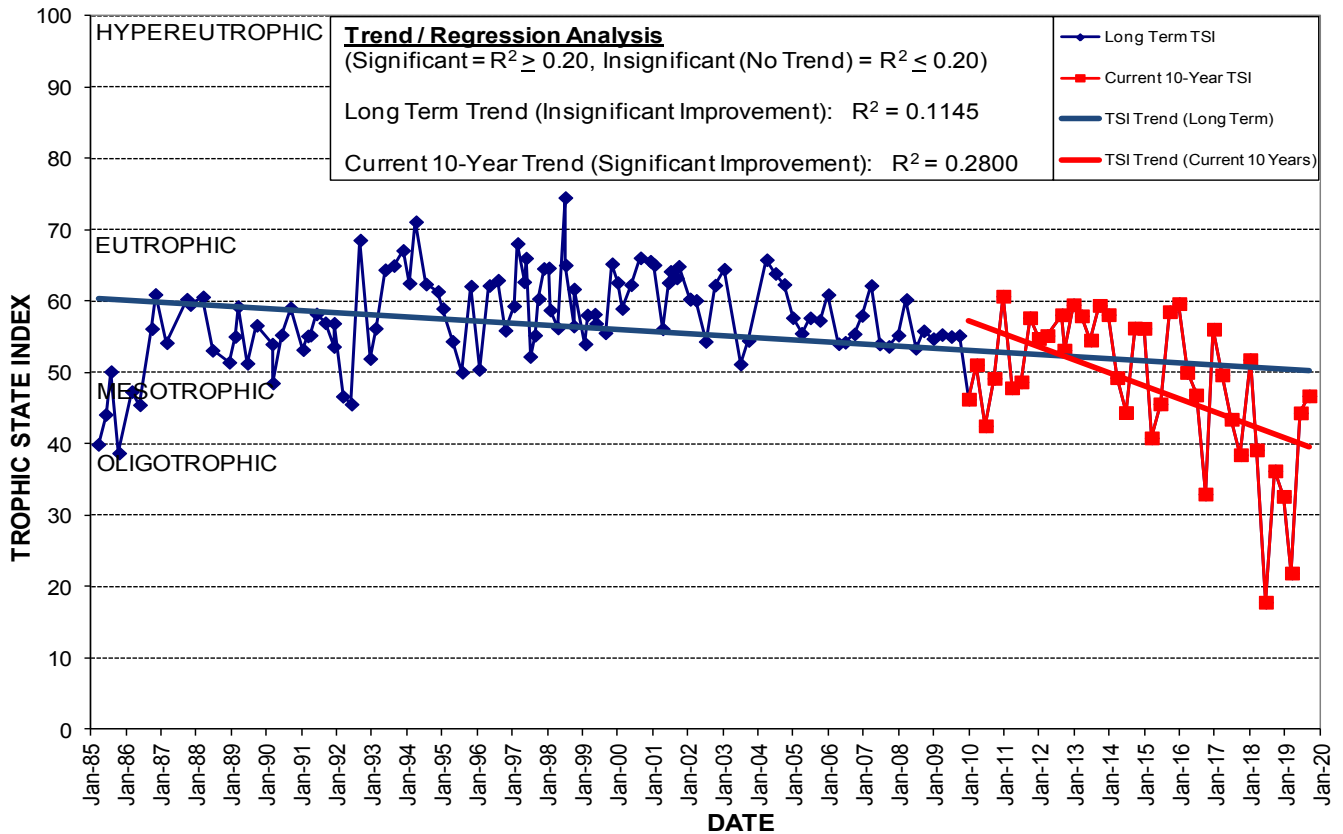
# LAKE MANN

Lake Origin: **Natural**  
 Lake Surface Area: **267 acres**  
 Lake Volume: **122,258,500 ft<sup>3</sup>**  
 Shoreline Length: **16,491 ft (5,026 m)**  
 Mean Depth: **10.5 ft (3.2 m)**  
 Maximum Depth: **26.1 ft (8.0 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 32' 20.8"** Long **W 81° 25' 30.4"**  
 Section **32** Township **22S** Range **29E**  
 Water Management District: **South Florida**  
 Drainage Code: **SC-16**  
 Drainage Basin Area: **799 acres**  
 Land Use: **Residential: 51%** **Commercial: 19%**  
**Industrial: 2%** **Highways: 1%** **Natural: 28%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 14			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.007	0.51	0.62	0.80	18
Maximum	0.032	1.25	2.66	18.35	56
Average	0.019	0.78	1.61	6.52	40

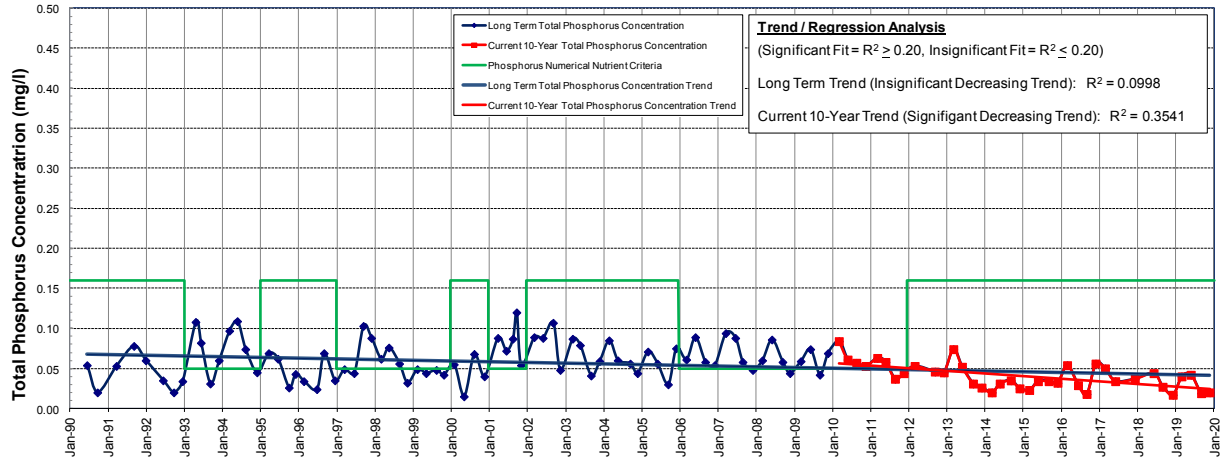
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



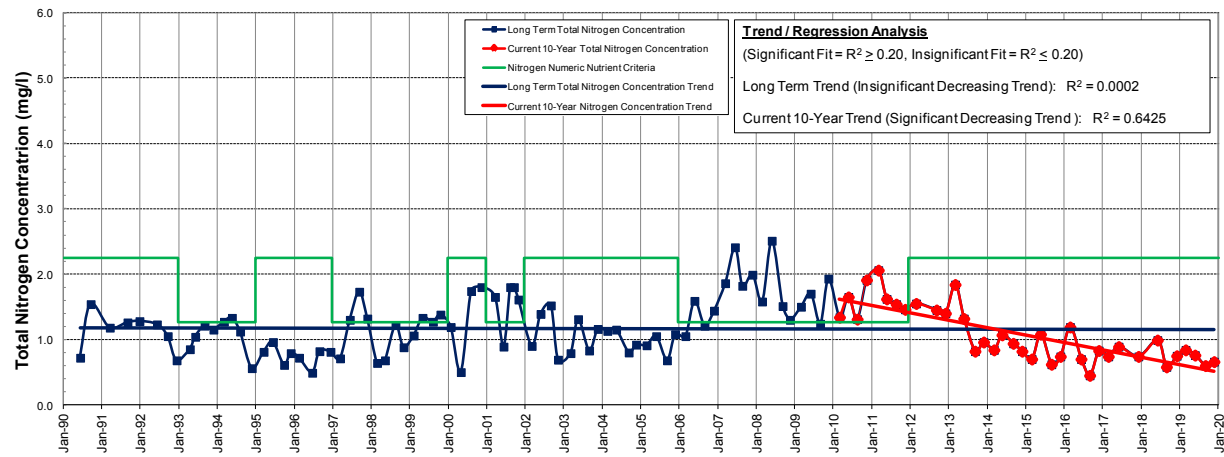
**Location:** North of Lenox Blvd. between Ivey Ln. and Domino Dr.

# LAKE MARE PRAIRIE NUTRIENT TRENDS

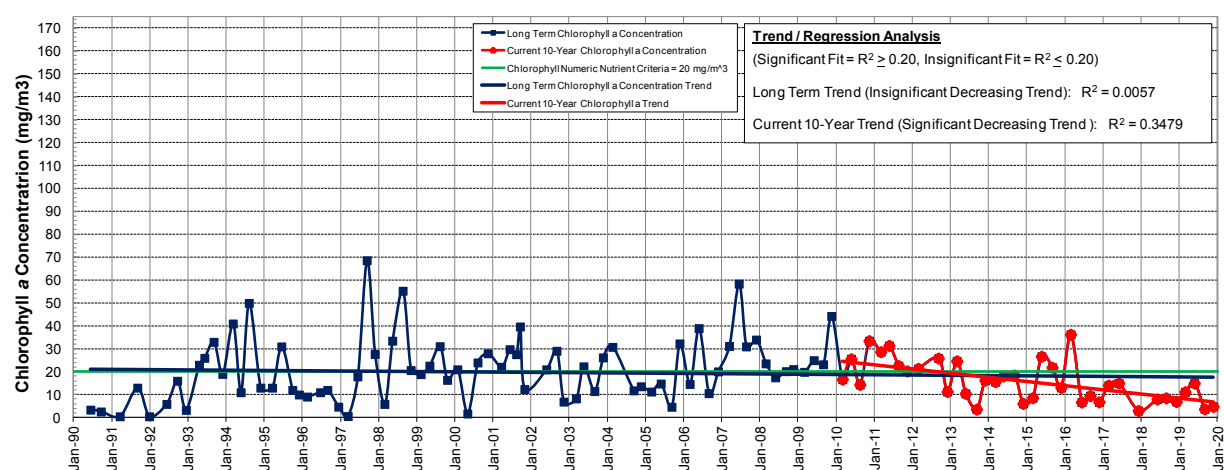
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



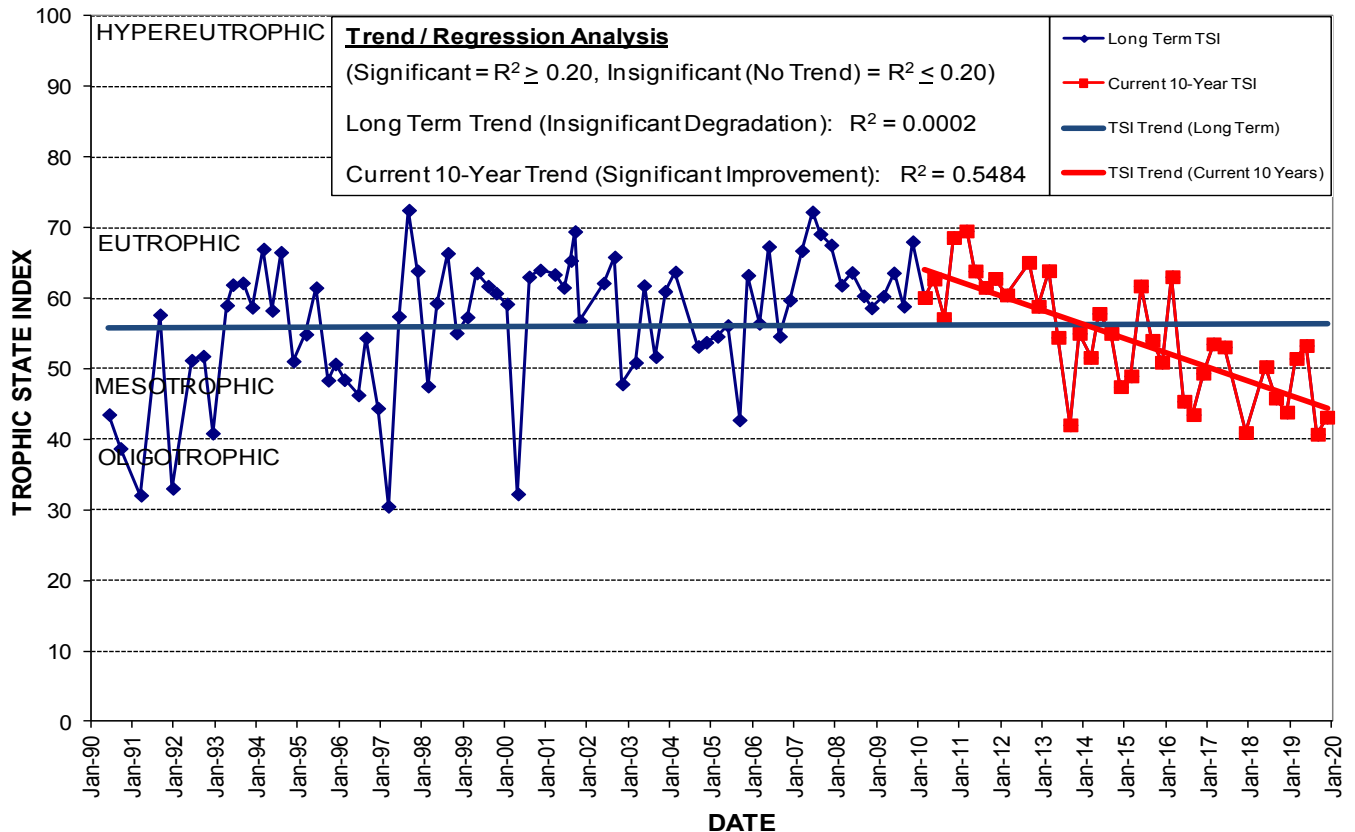
# LAKE MARE PRAIRIE

Lake Origin: **Natural**  
 Lake Surface Area: **118 acres**  
 Lake Volume: **31,032,400 ft<sup>3</sup>**  
 Shoreline Length: **12,131 ft (3,698 m)**  
 Mean Depth: **6.0 ft (1.8 m)**  
 Maximum Depth: **10.9 ft (3.3 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 27' 34.9"** Long **W 81° 19' 23.7"**  
 Section **23** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **BC-02**  
 Drainage Basin Area: **1,186 acres**  
 Land Use: **Residential: 49%** **Commercial: 0%**  
**Industrial: 1%** **Highways: 0%** **Natural: 50%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

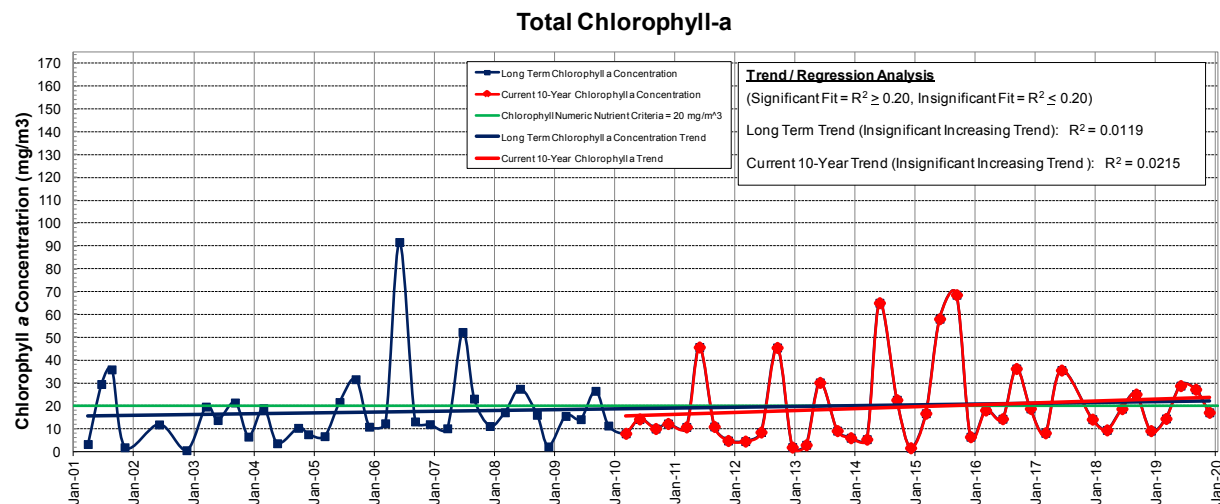
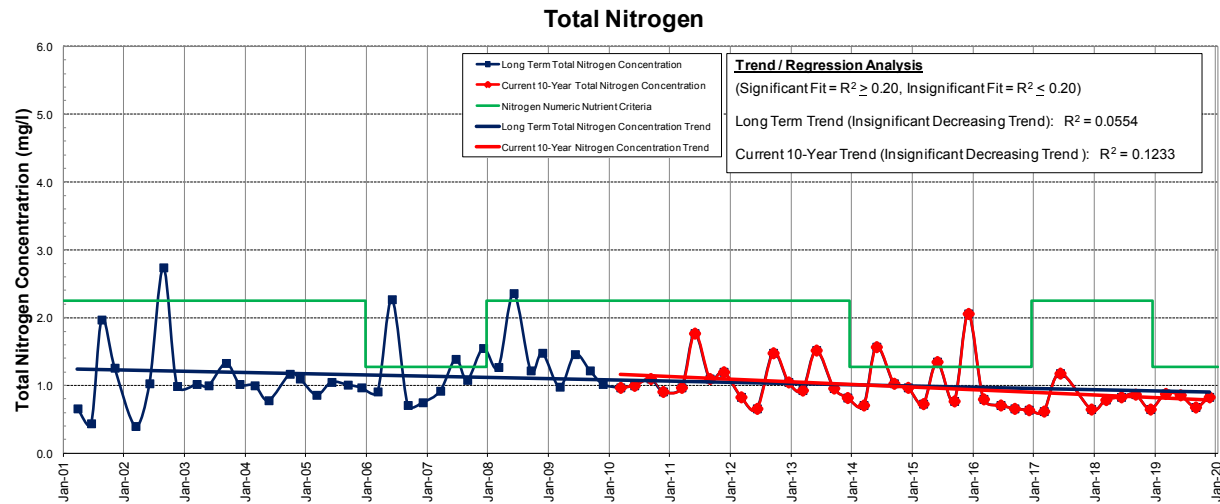
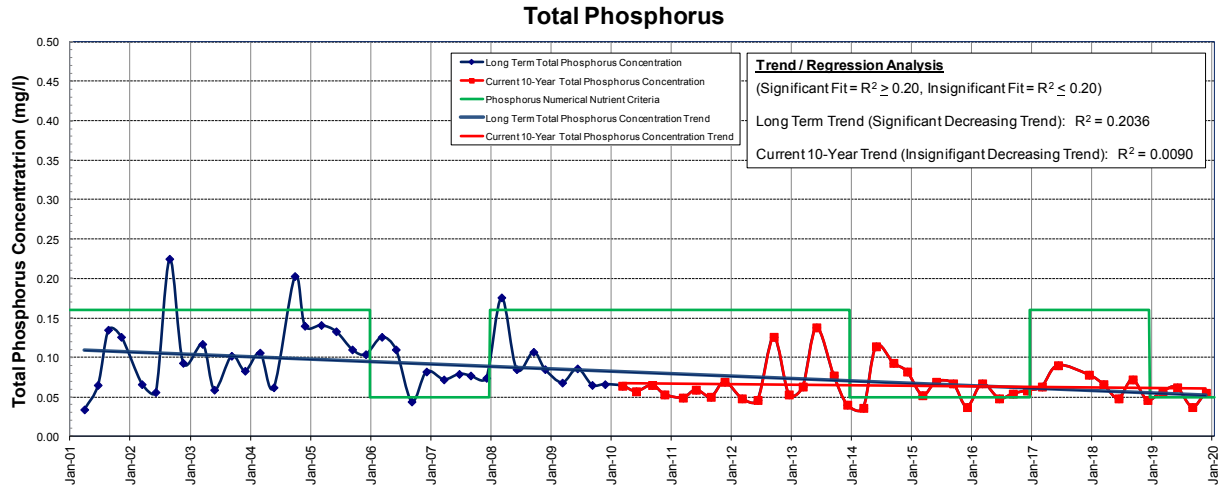
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 49			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.017	0.58	1.18	2.99	41
Maximum	0.050	0.99	2.10	15.00	54
Average	0.033	0.76	1.53	9.03	48

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Just east of Conway Rd. approximately 0.5 miles south of Butler National Dr. north-northeast of Orlando International Airport.

# LAKE MICHELLE NUTRIENT TRENDS



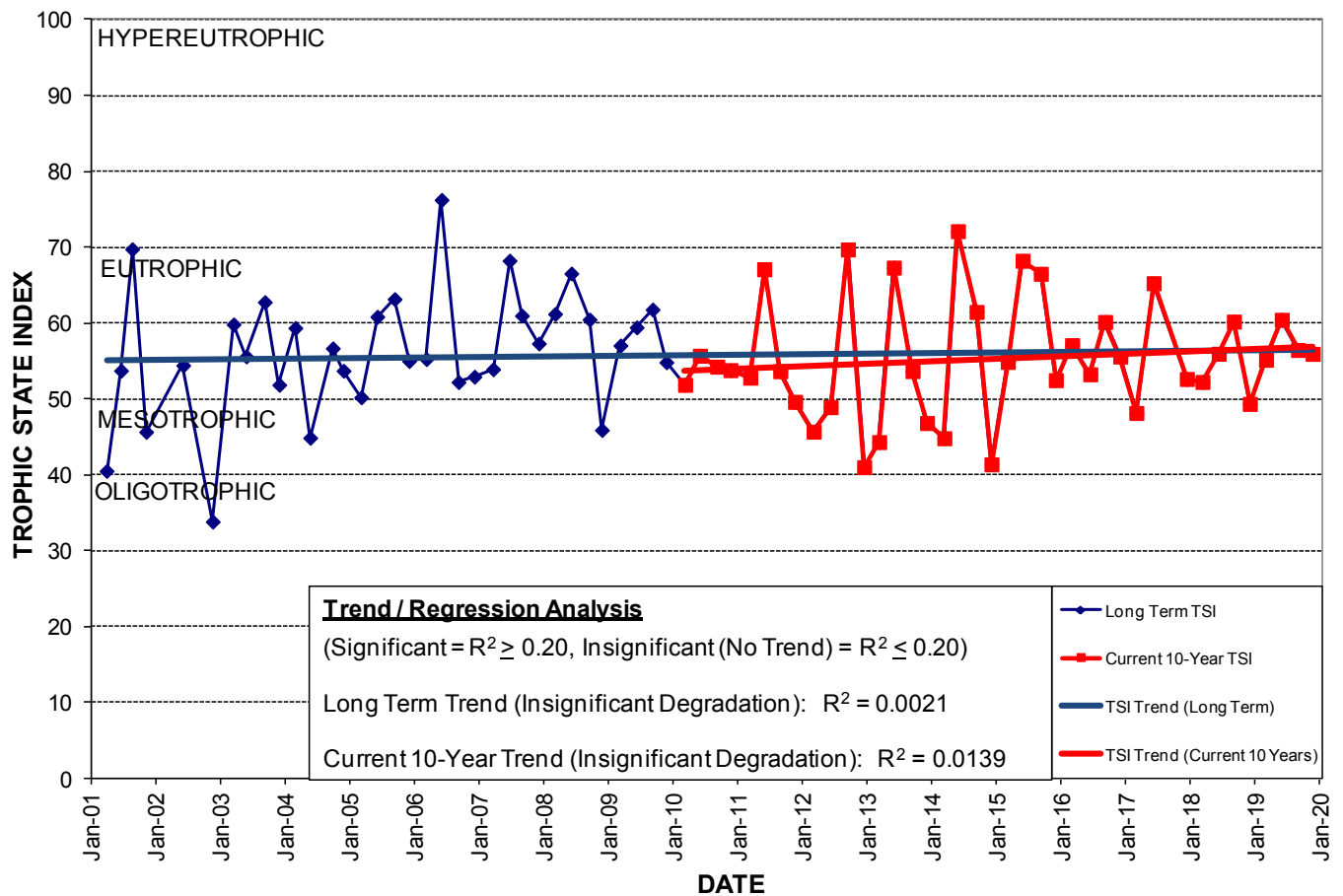
# LAKE MICHELLE

Lake Origin: **Natural**  
 Lake Surface Area: **16 acres**  
 Lake Volume: **No Data**  
 Shoreline Length: **5,704 ft (1,739 m)**  
 Mean Depth: **10.7 ft (3.3 m)**  
 Maximum Depth: **12.8 ft (3.9 m)**  
 Drain Wells: **No**      Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No Data**

Location: Lat **N 28° 27' 26.3"** Long **W 81° 18' 07.2"**  
 Section **27** Township **23S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **BC-01C**  
 Drainage Basin Area: **1,009 acres**  
 Land Use: **Residential: 3% Commercial: 14%**  
**Industrial: 2% Highways: 3% Natural: 78%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 76			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.037	0.62	0.29	8.12	48
Maximum	0.090	1.18	1.28	35.60	65
Average	0.061	0.80	0.98	18.87	56

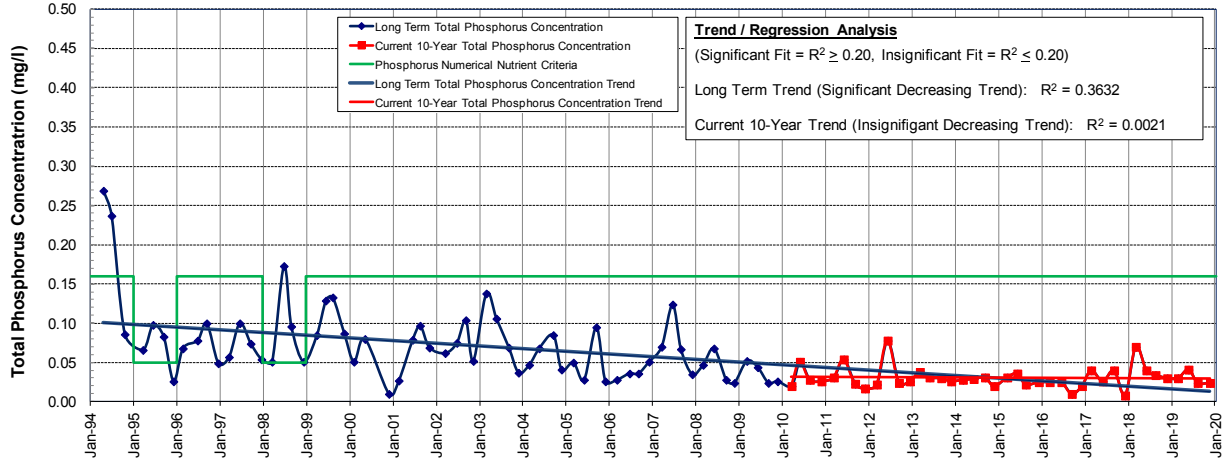
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



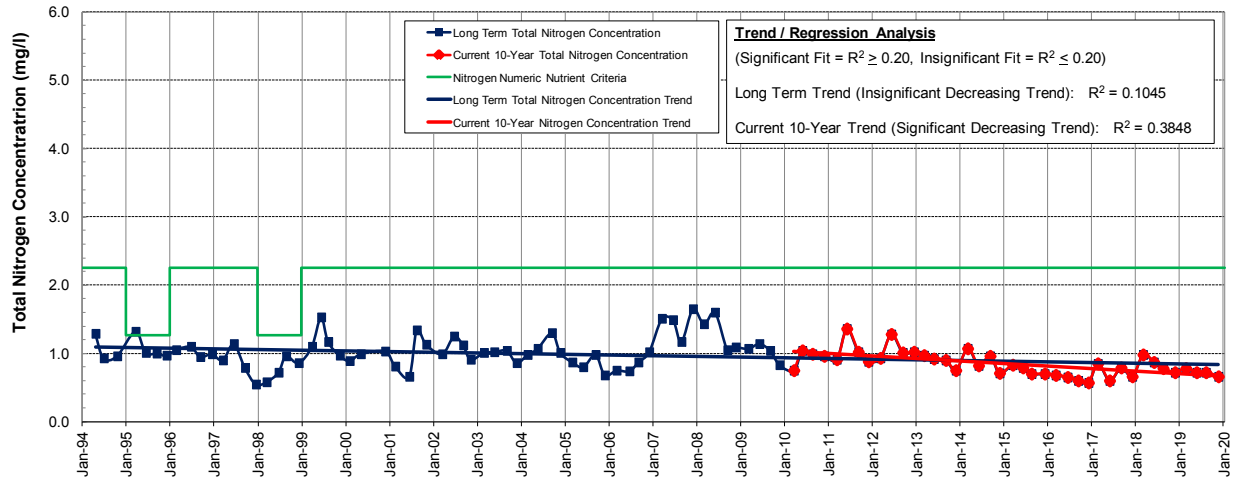
**Location:** East of T.G. Lee Blvd., north of SR 528 (Beeline), east of SR 436 (Semoran Blvd.).

# MUD LAKE NUTRIENT TRENDS

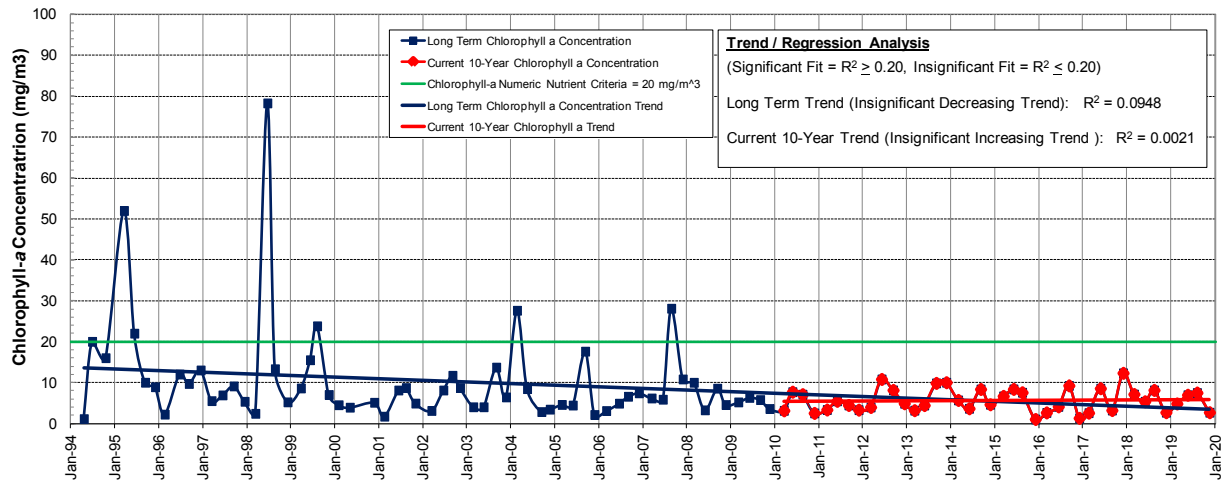
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



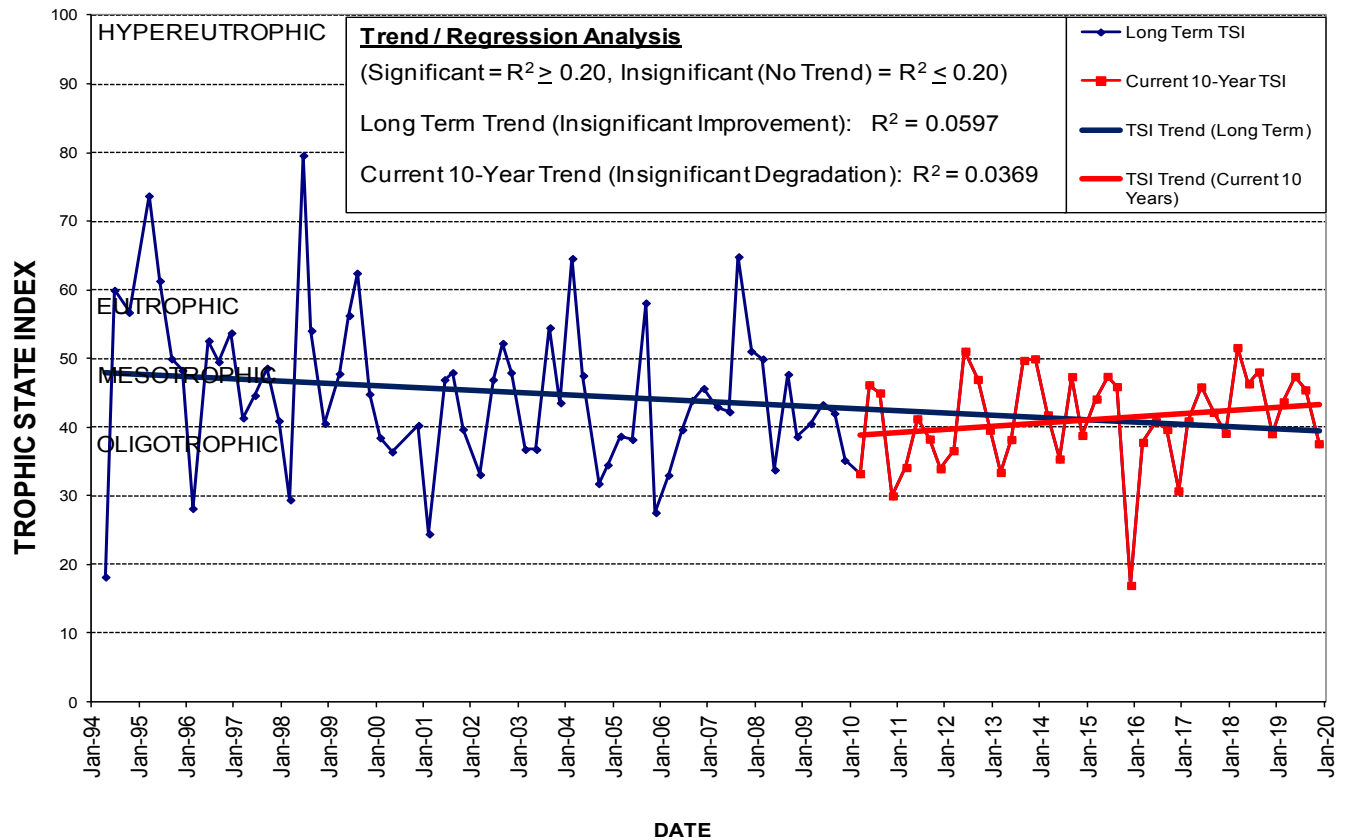
# MUD LAKE

Lake Origin: **Natural**  
 Lake Surface Area: **244 acres**  
 Lake Volume: **75,129,300 ft<sup>3</sup>**  
 Shoreline Length: **12,563 ft (3,829 m)**  
 Mean Depth: **7.1 ft (2.2 m)**  
 Maximum Depth: **9.6 ft (2.9 m)**  
 Drain Wells: **No**    Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**  
 \*Weighted Average

Location: Lat **N 28° 23' 21.1"** Long **W 81° 17' 26.9"**  
 Section **23** Township **24S** Range **30E**  
 Water Management District: **South Florida**  
 Drainage Code: **BC-05G, BC-05GGOAA**  
 Drainage Basin Area: **2794 acres \*Combined**  
 Land Use: **Residential: 2%    Commercial: 5%**  
**Industrial: 1%    Highways: 4%    Natural: 87%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 35			
	Total Phosphorus (mg/L)	Total Nitrogen (mg/L)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.008	0.60	0.30	2.56	38
Maximum	0.070	0.98	1.63	12.30	52
Average	0.034	0.76	0.84	5.98	44

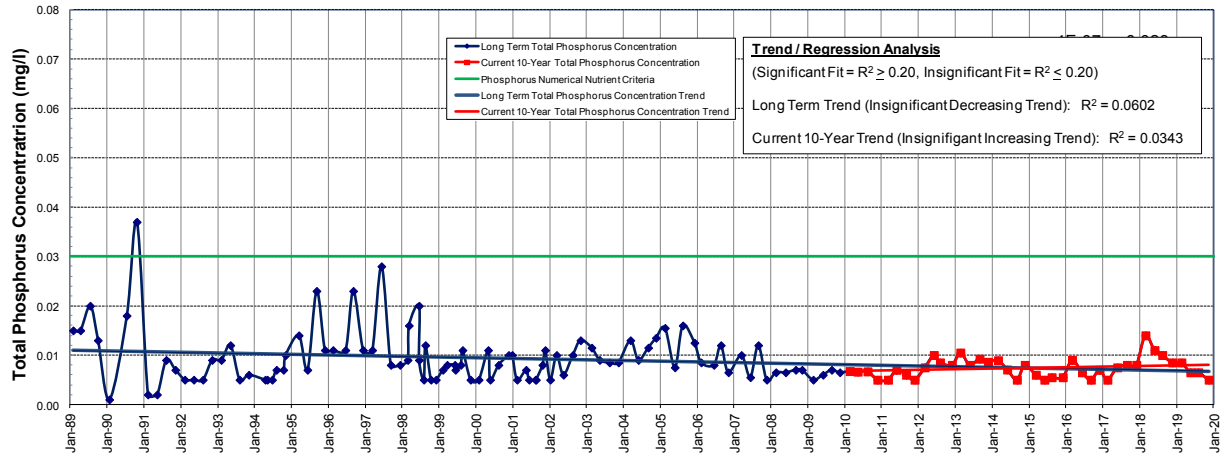
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



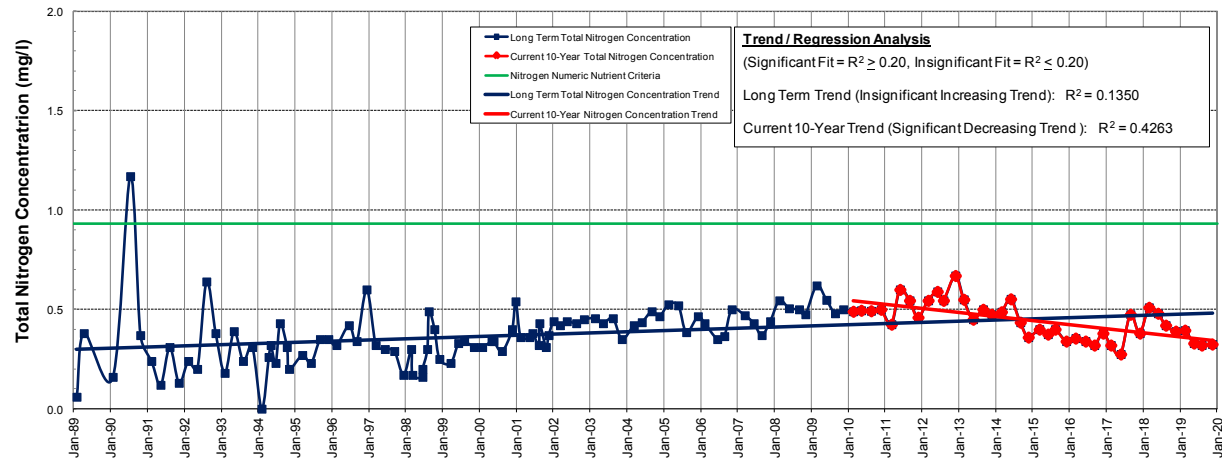
**Location:** In the southern portion of the Orlando International Airport property.

# LAKE NONA NUTRIENT TRENDS

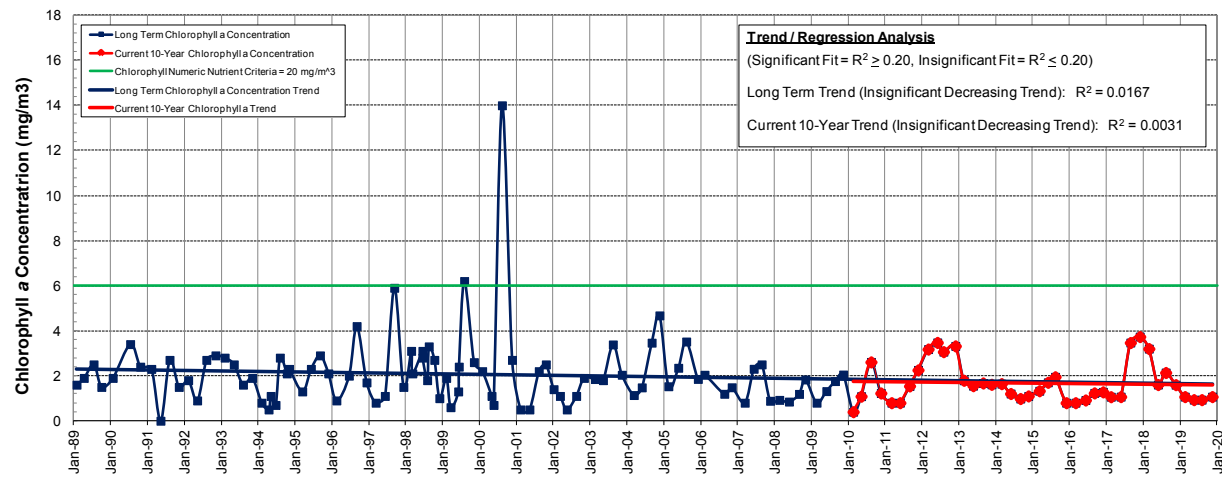
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a





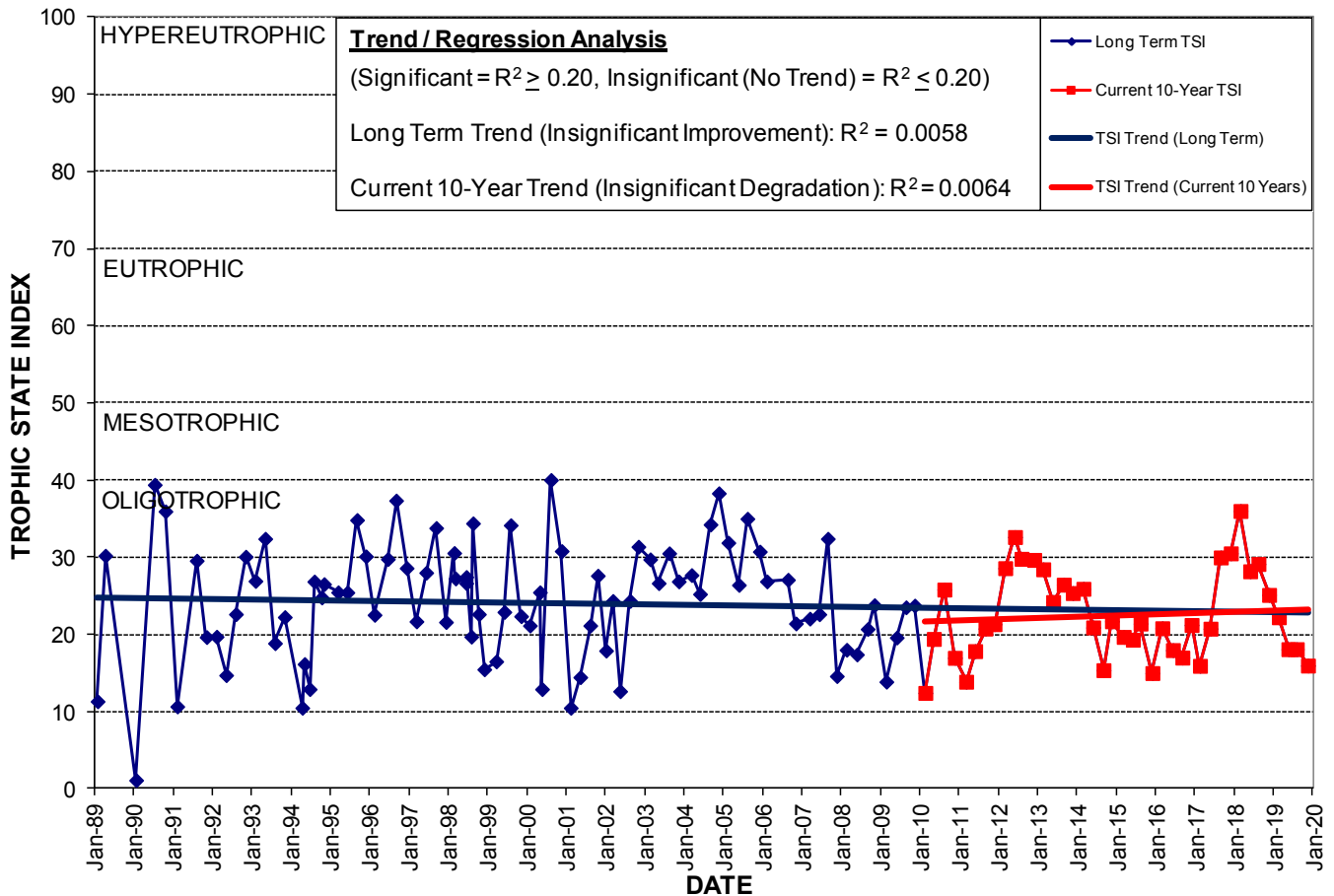
# LAKE NONA

Lake Origin: **Natural**  
 Lake Surface Area: **584 acres**  
 Lake Volume: **346,584,421 ft<sup>3</sup>**  
 Shoreline Length: **18,590 ft (5,666 m)**  
 Mean Depth: **13.6 ft (4.1 m)**  
 Maximum Depth: **31.9 ft (9.7 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 24' 45.0"** Long **W 81° 16' 15.6"**  
 Section **12** Township **24S** Range **30E**  
 Water Management District: **South Florida**  
 Drainage Code: **BC-05E**  
 Drainage Basin Area: **1,416 acres**  
 Land Use: **Residential: 24%** **Commercial: 6%**  
**Industrial: 0%** **Highways: 5%** **Natural: 65%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 1			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.005	0.28	1.36	0.94	16
Maximum	0.014	0.51	3.58	3.74	36
Average	0.008	0.39	2.47	1.83	24

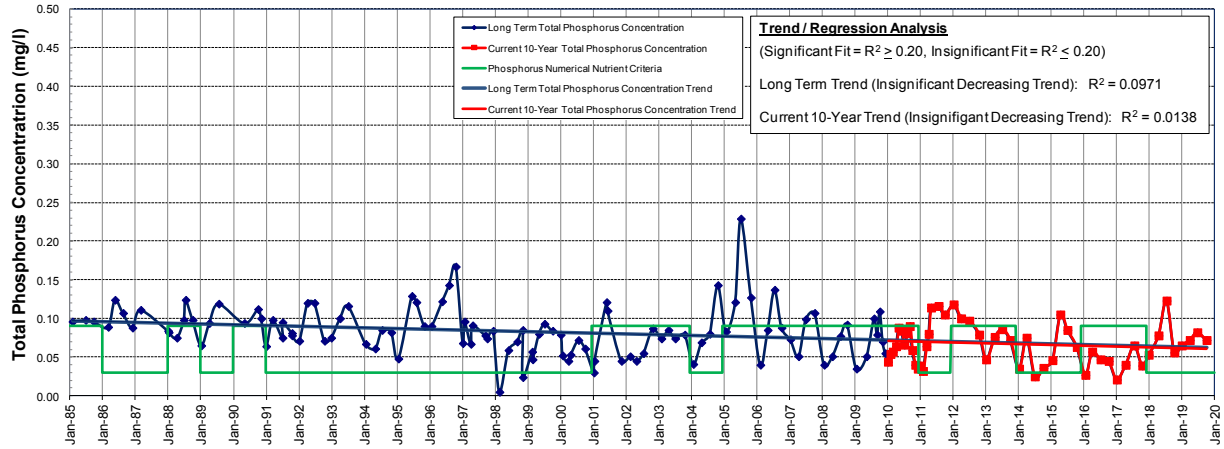
**Long-term Trophic State Index Values and Linear Regression Trend Line**



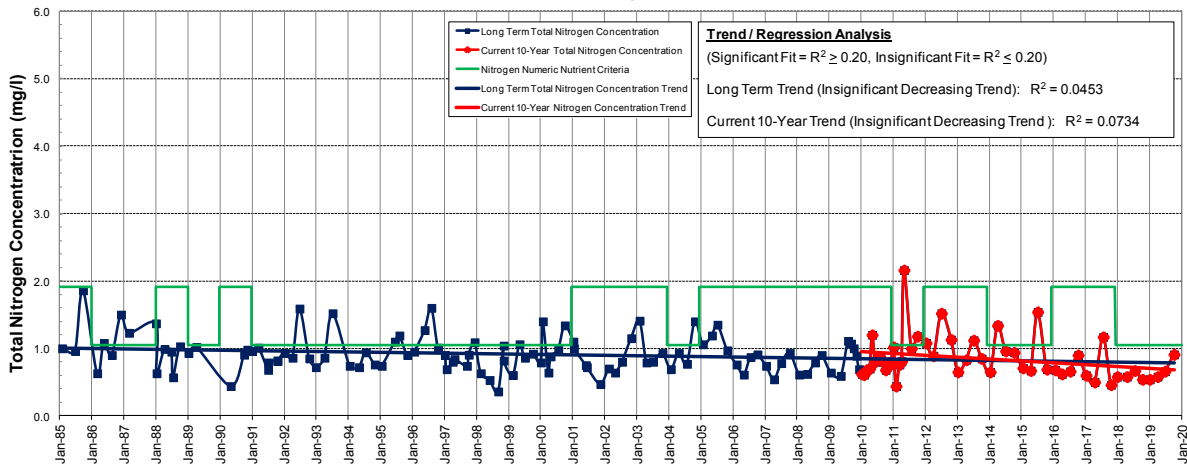
**Location:** Near the Orlando International Airport off Narcossee Rd. in the Lake Nona Estates Community and Country Club.

# LAKE OLIVE NUTRIENT TRENDS

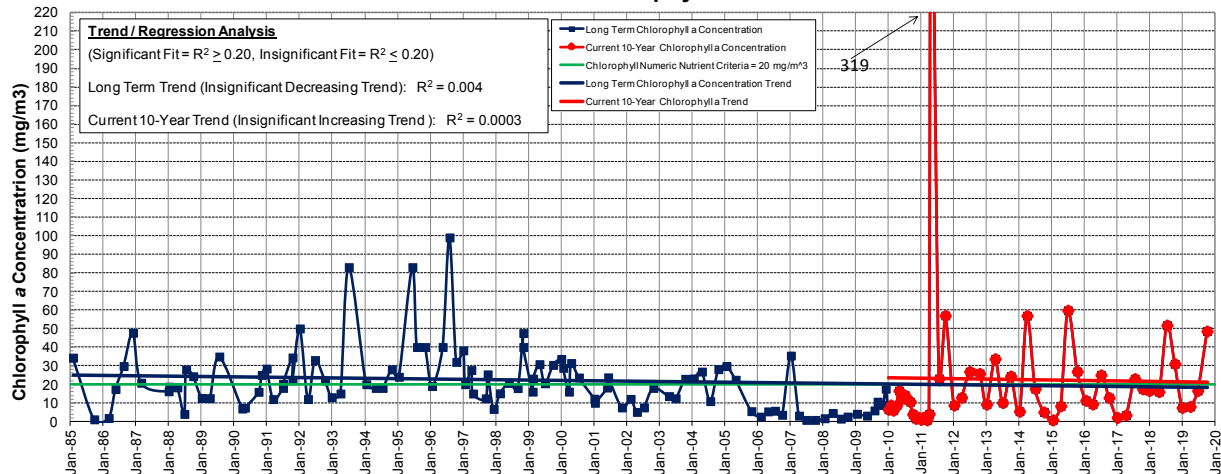
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



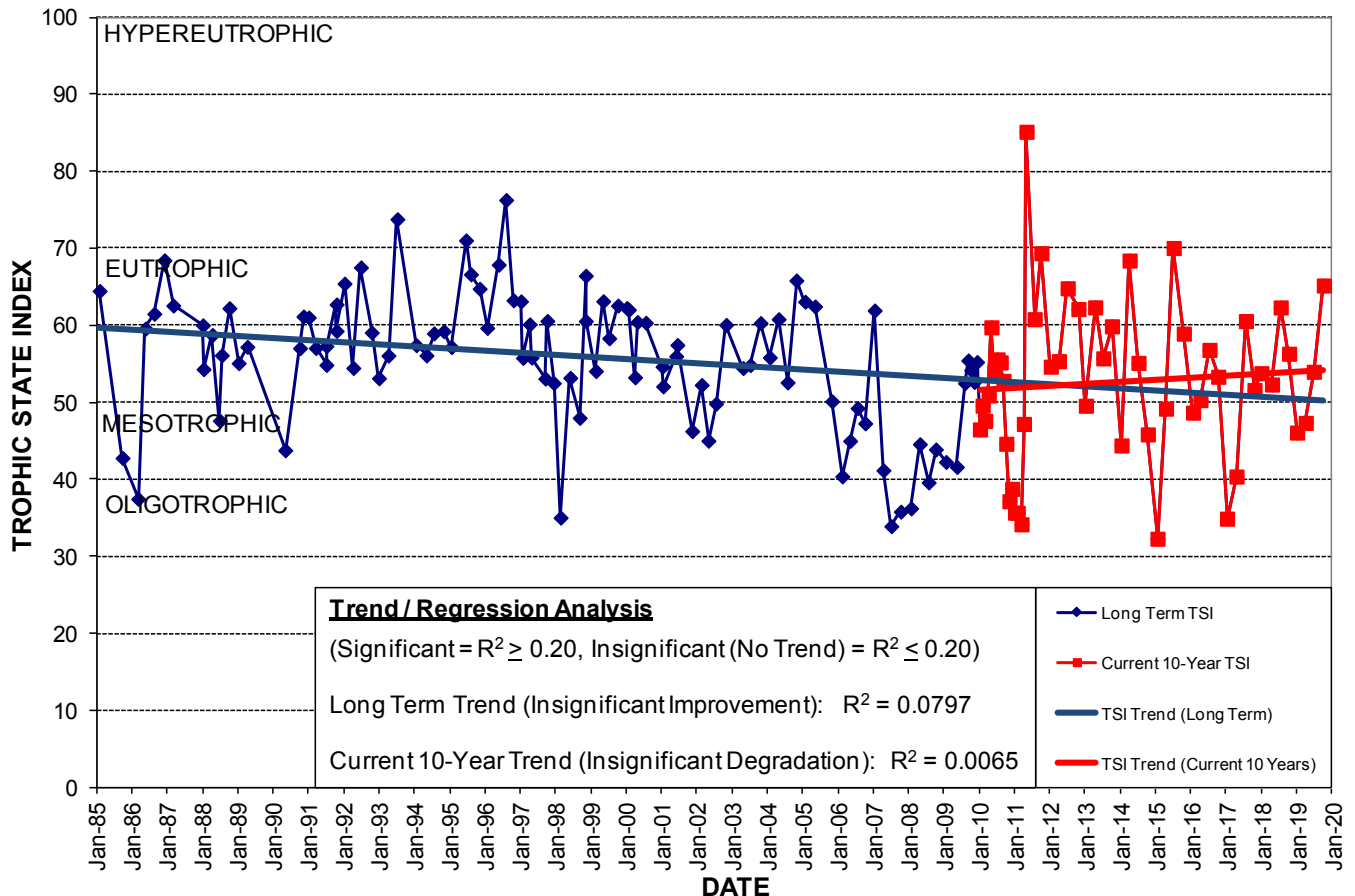
# LAKE OLIVE

Lake Origin: **Natural**  
 Lake Surface Area: **4 acres**  
 Lake Volume: **1,578,500 ft<sup>3</sup>**  
 Shoreline Length: **1,462 ft (446 m)**  
 Mean Depth: **10.3 ft (3.1 m)**  
 Maximum Depth: **26.0 ft (7.9 m)**  
 Drain Wells: **1** Aeration: **Yes**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 32' 22.6"** Long **W 81° 22' 01.9"**  
 Section **25** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-27**  
 Drainage Basin Area: **59 acres**  
 Land Use: **Residential: 62%** **Commercial: 28%**  
**Industrial: 0%** **Highways: 0%** **Natural: 10%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 65			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.021	0.46	0.75	2.14	35
Maximum	0.123	1.17	1.88	51.80	65
Average	0.064	0.65	1.11	20.18	52

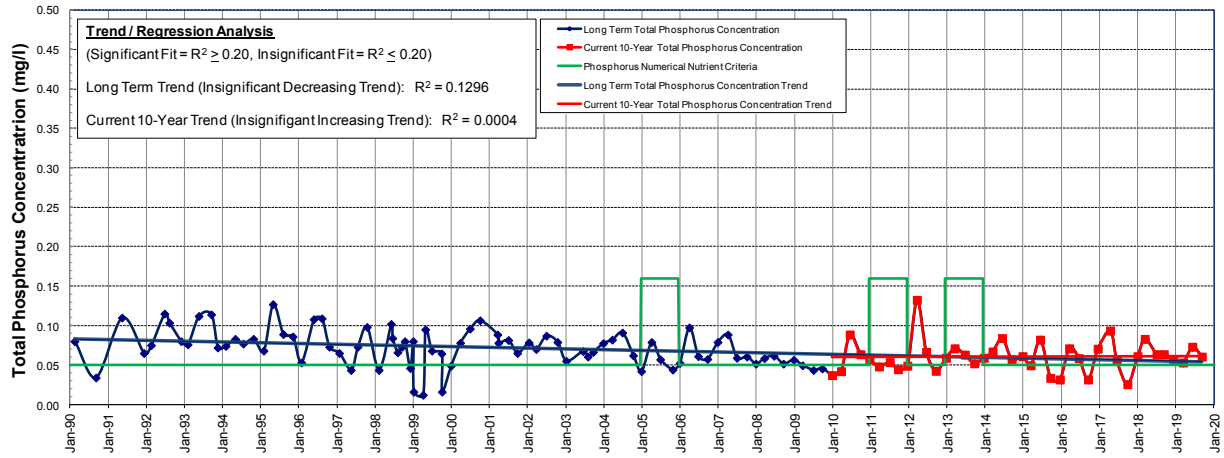
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



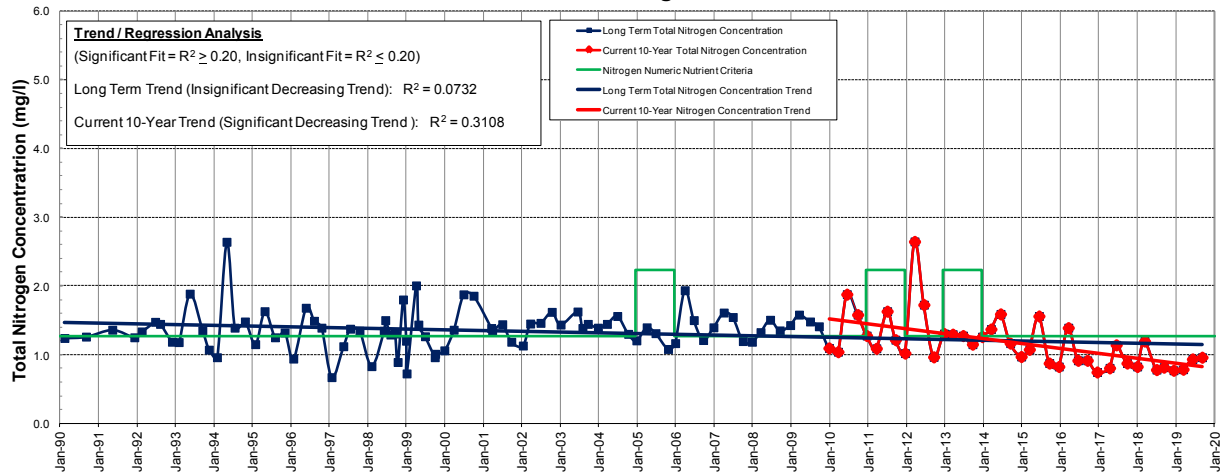
**Location:** Approximately 0.1 miles northeast of the South St. and the Summerlin Ave. intersection. An experimental aeration device was installed in August 2009 and operated throughout 2010.

# LAKE ORLANDO NUTRIENT TRENDS

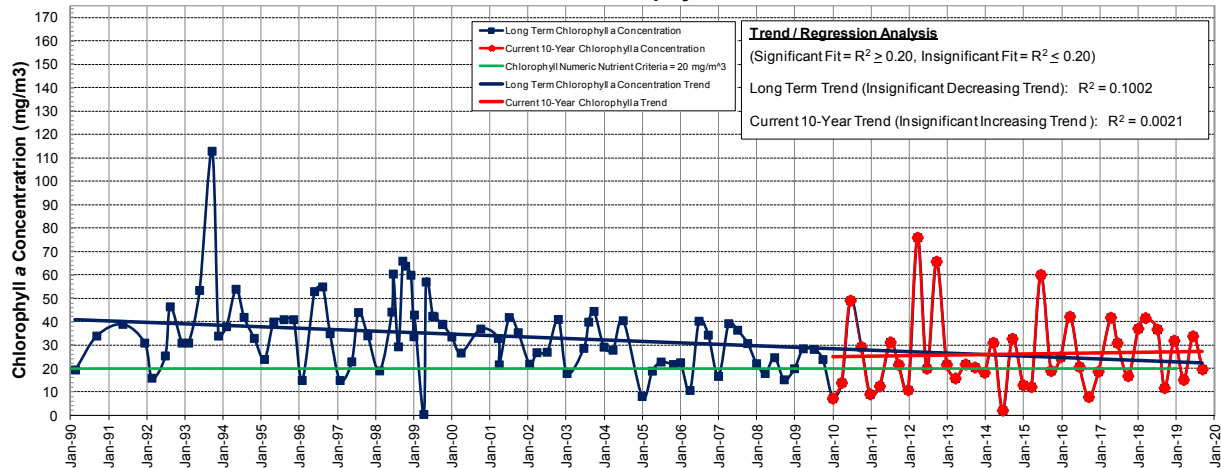
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



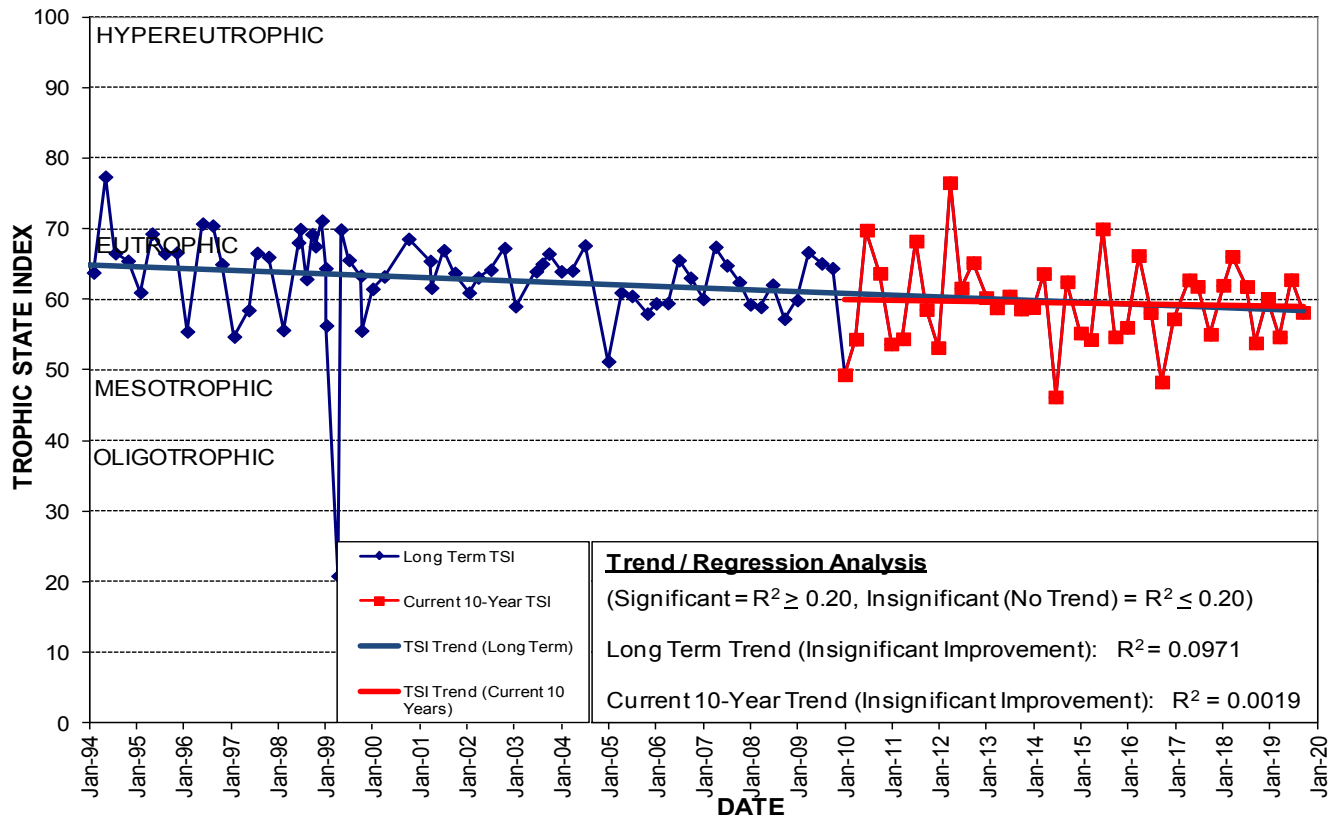
# LAKE ORLANDO

Lake Origin: **Natural**  
 Lake Surface Area: **170 acres**  
 Lake Volume: **41,000,000 ft<sup>3</sup>**  
 Shoreline Length: **17,884 ft (5,451 m)**  
 Mean Depth: **5.5 ft (1.7 m)**  
 Maximum Depth: **11.0 ft (3.4 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 35' 47.8"** Long **W 81° 25' 59.9"**  
 Section **5** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LW-02**  
 Drainage Basin Area: **1,561 acres**  
 Land Use: **Residential: 24%** **Commercial: 49%**  
**Industrial: 0%** **Highways: 0%** **Natural: 27%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 81			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.026	0.75	0.52	11.75	54
Maximum	0.094	1.20	1.11	41.85	66
Average	0.063	0.89	0.84	28.05	60

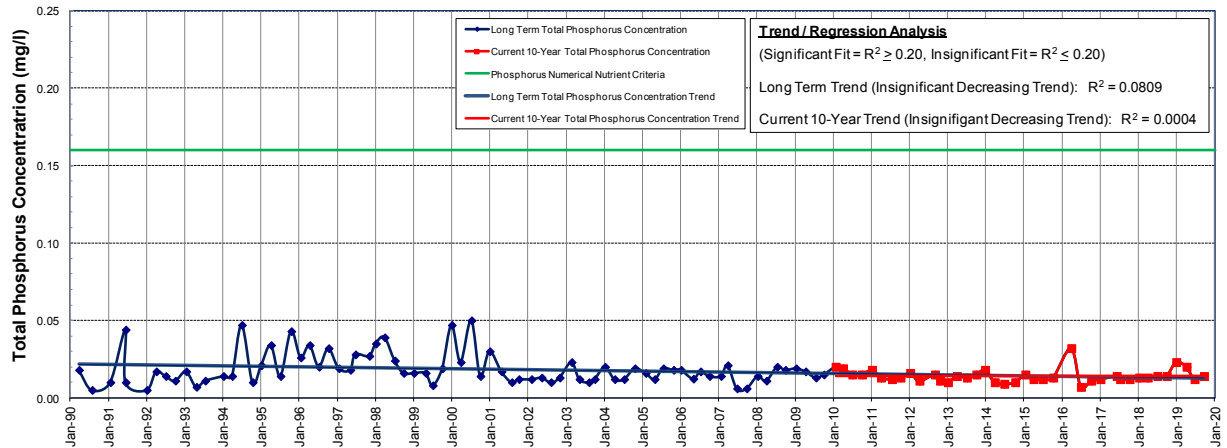
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



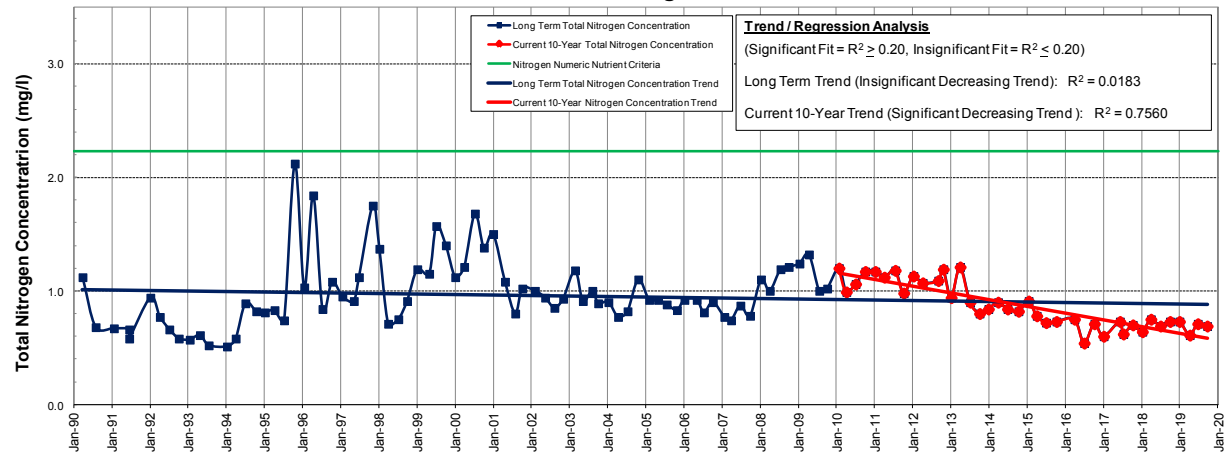
**Location:** In the Rosemont neighborhood north of the Lee Rd. and John Young Pkwy. intersection and west of N. Orange Blossom Trl. (SR 441).

# LAKE PAMELA NUTRIENT TRENDS

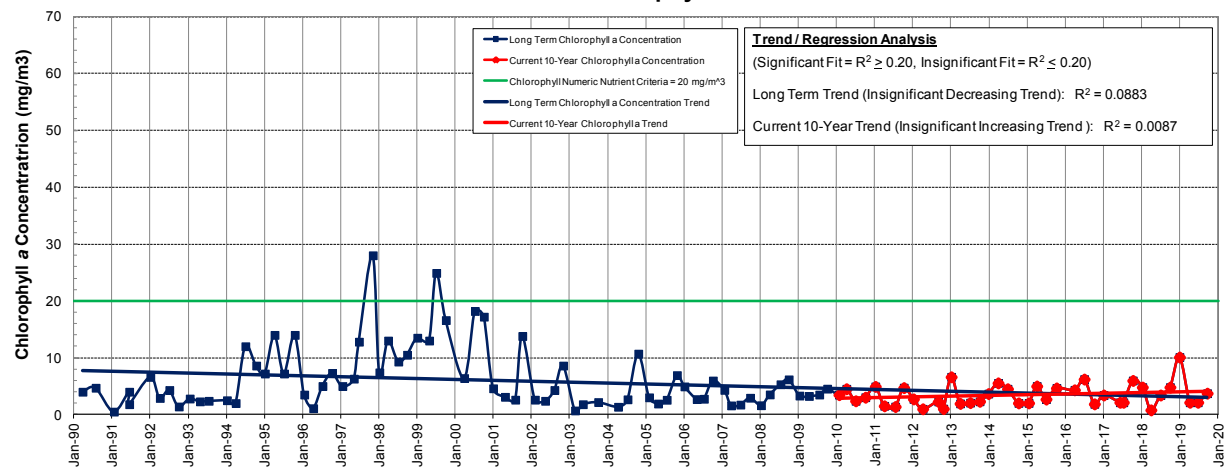
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



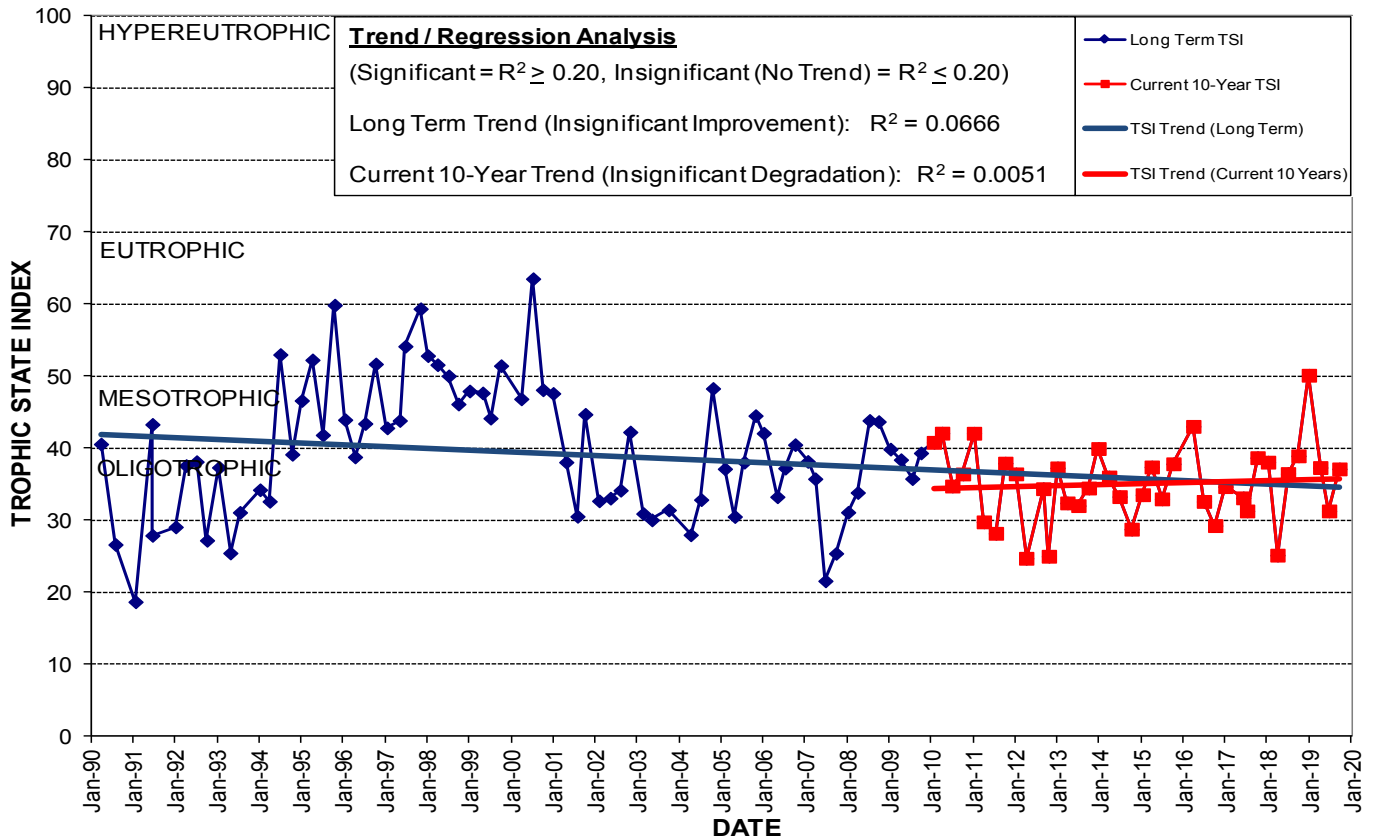
# LAKE PAMELA

Lake Origin: **Natural**  
 Lake Surface Area: **14 acres**  
 Lake Volume: **7,200,000 ft<sup>3</sup>**  
 Shoreline Length: **3,515 ft (1,071 m)**  
 Mean Depth: **11.8 ft (3.6 m)**  
 Maximum Depth: **21.0 ft (6.4 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 31' 14.2"** Long **W 81° 27' 45.0"**  
 Section **1** Township **23S** Range **28E**  
 Water Management District: **South Florida**  
 Drainage Code: **SC-01G**  
 Drainage Basin Area: **832 acres**  
 Land Use: **Residential: 42%** **Commercial: 26%**  
**Industrial: 0%** **Highways: 5%** **Natural: 27%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019	Water Quality Data		TSI Ranking (out of 94 lakes): 20		
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.012	0.61	0.49	0.80	25
Maximum	0.023	0.75	2.93	10.10	50
Average	0.015	0.69	1.81	4.01	36

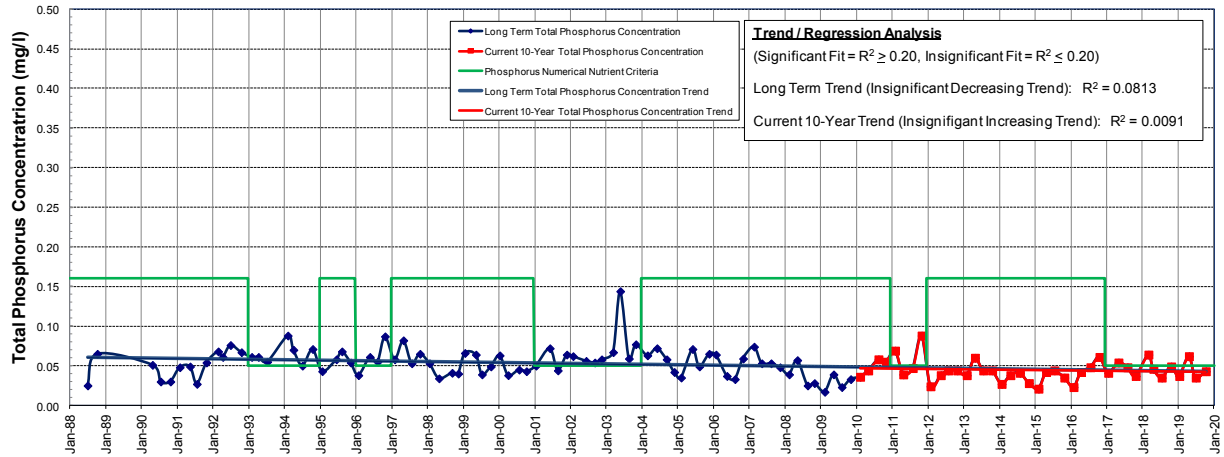
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



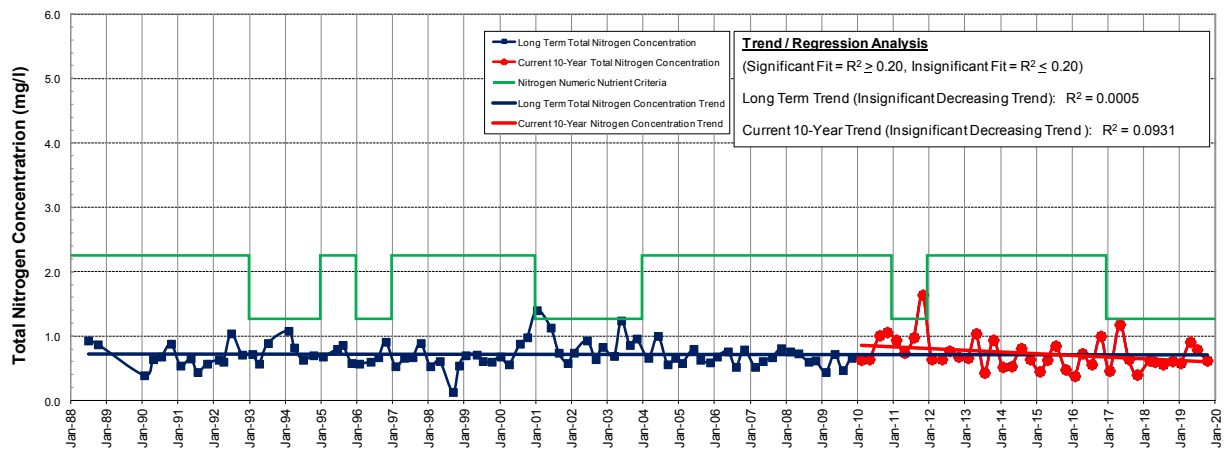
**Location:** Just west of Kirkman Rd. at the west campus of Valencia Community College.

# PARK LAKE NUTRIENT TRENDS

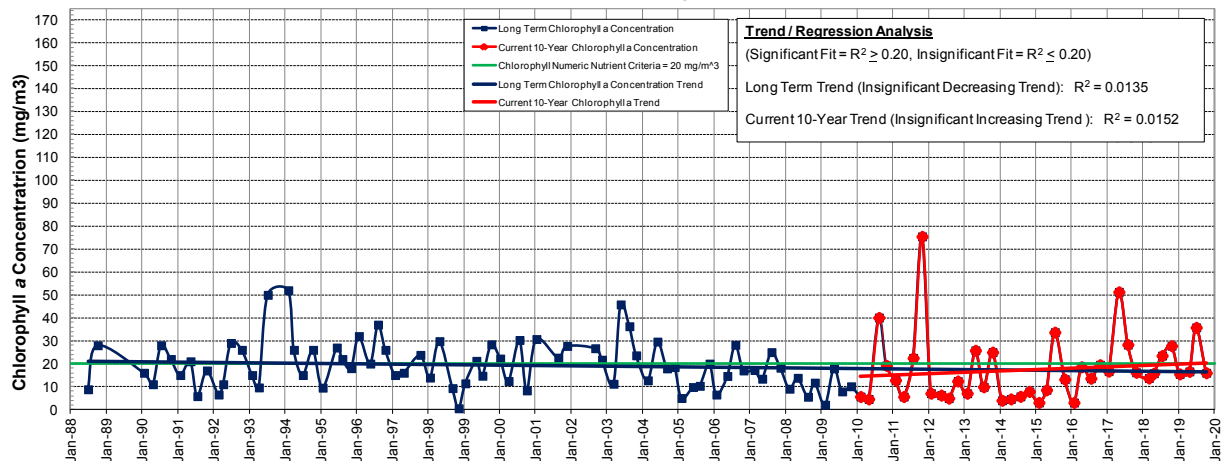
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a





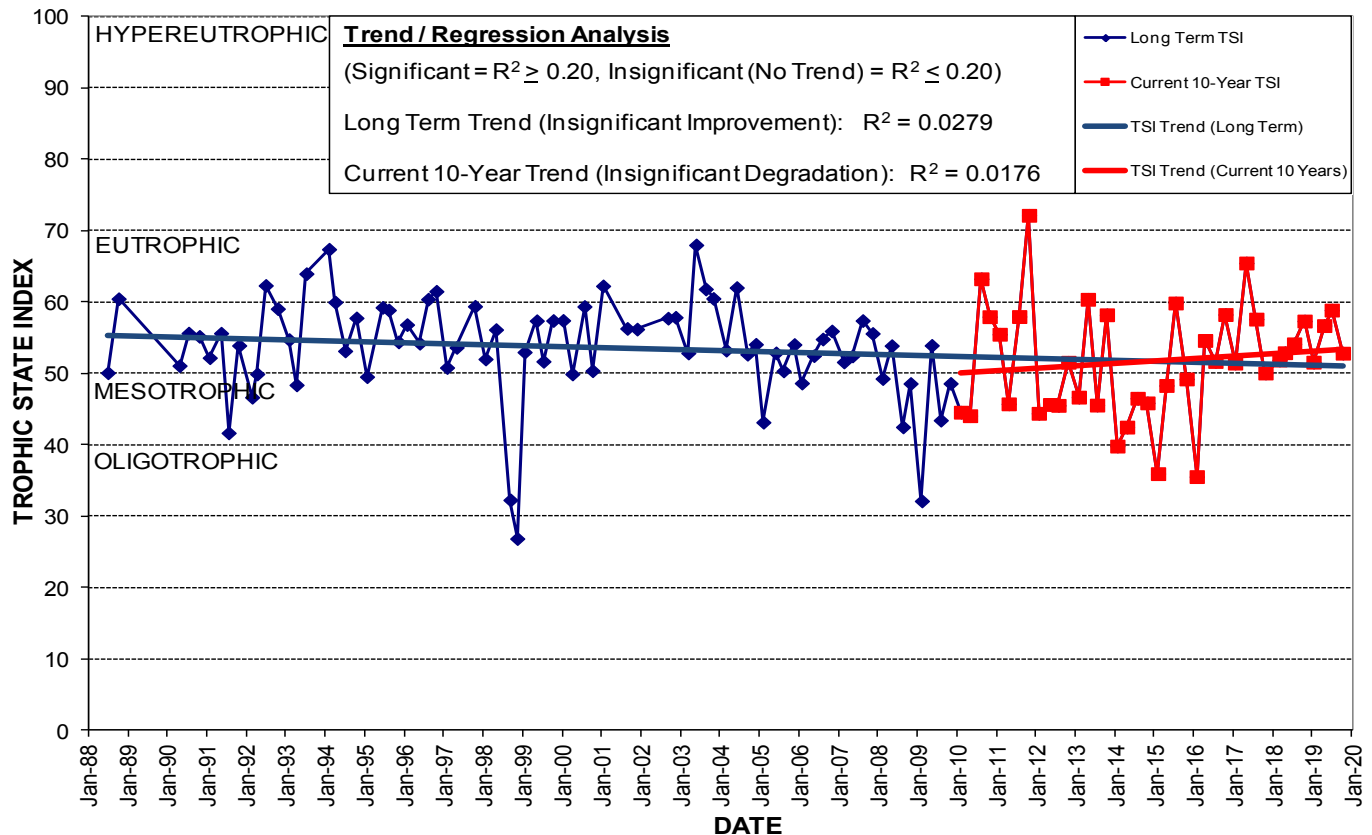
# PARK LAKE

Lake Origin: **Natural**  
 Lake Surface Area: **9 acres**  
 Lake Volume: **5,700,000 ft<sup>3</sup>**  
 Shoreline Length: **2,394 ft (730 m)**  
 Mean Depth: **14.2 ft (4.3 m)**  
 Maximum Depth: **28.0 ft (8.5 m)**  
 Drain Wells: **1** Aeration: **Yes** (installed 7/76)  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 33' 15.5"** Long **W 81° 22' 20.6"**  
 Section **24** Township **22S** Range **28E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-08**  
 Drainage Basin Area: **132 acres**  
 Land Use: **Residential: 40%** **Commercial: 47%**  
**Industrial: 0%** **Highways: 6%** **Natural: 8%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

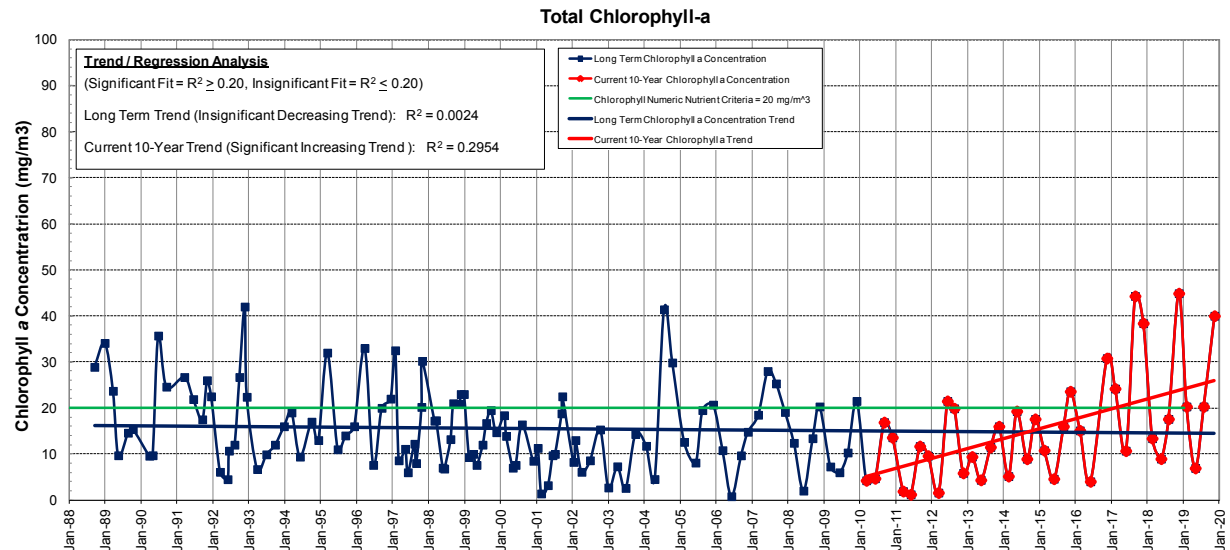
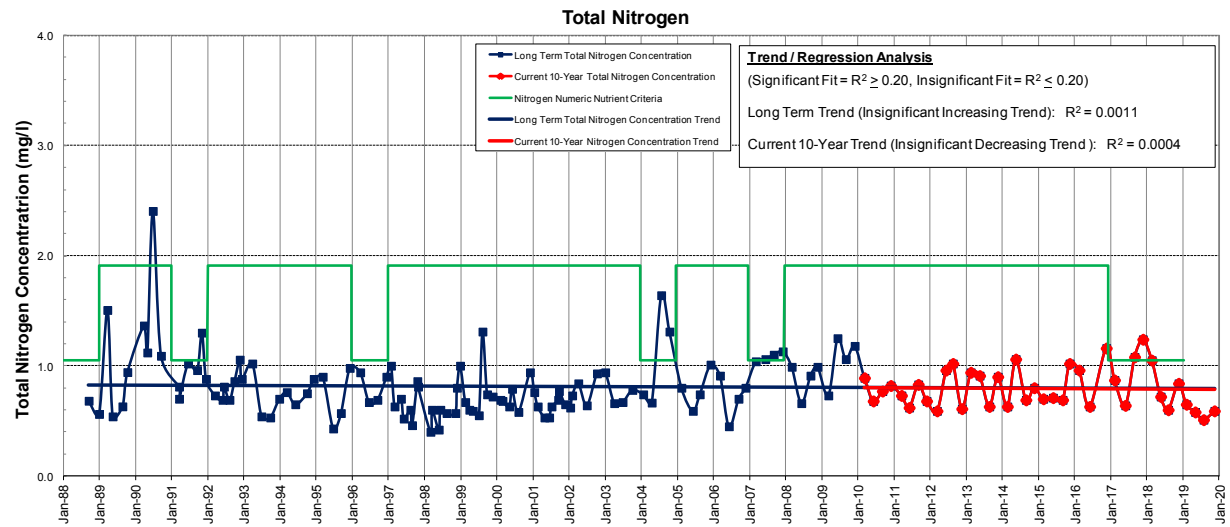
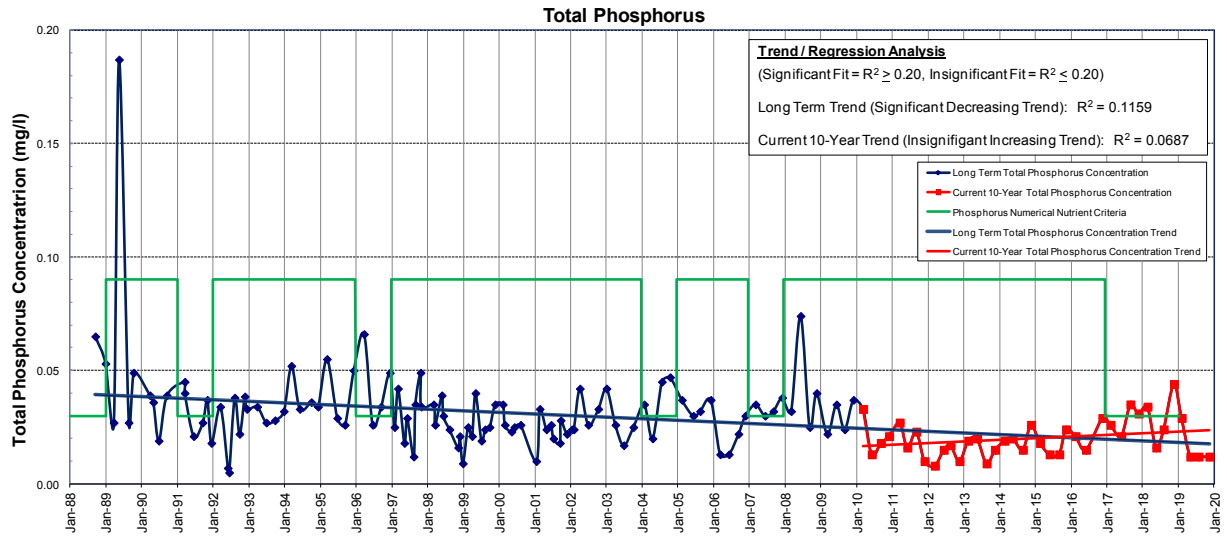
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 74			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.035	0.40	0.47	13.70	50
Maximum	0.064	1.18	1.82	51.30	66
Average	0.046	0.66	1.18	23.10	55

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Just north of Colonial Dr. between Highland Dr. and Park Lake Circle.

# LAKE PINELoch NUTRIENT TRENDS



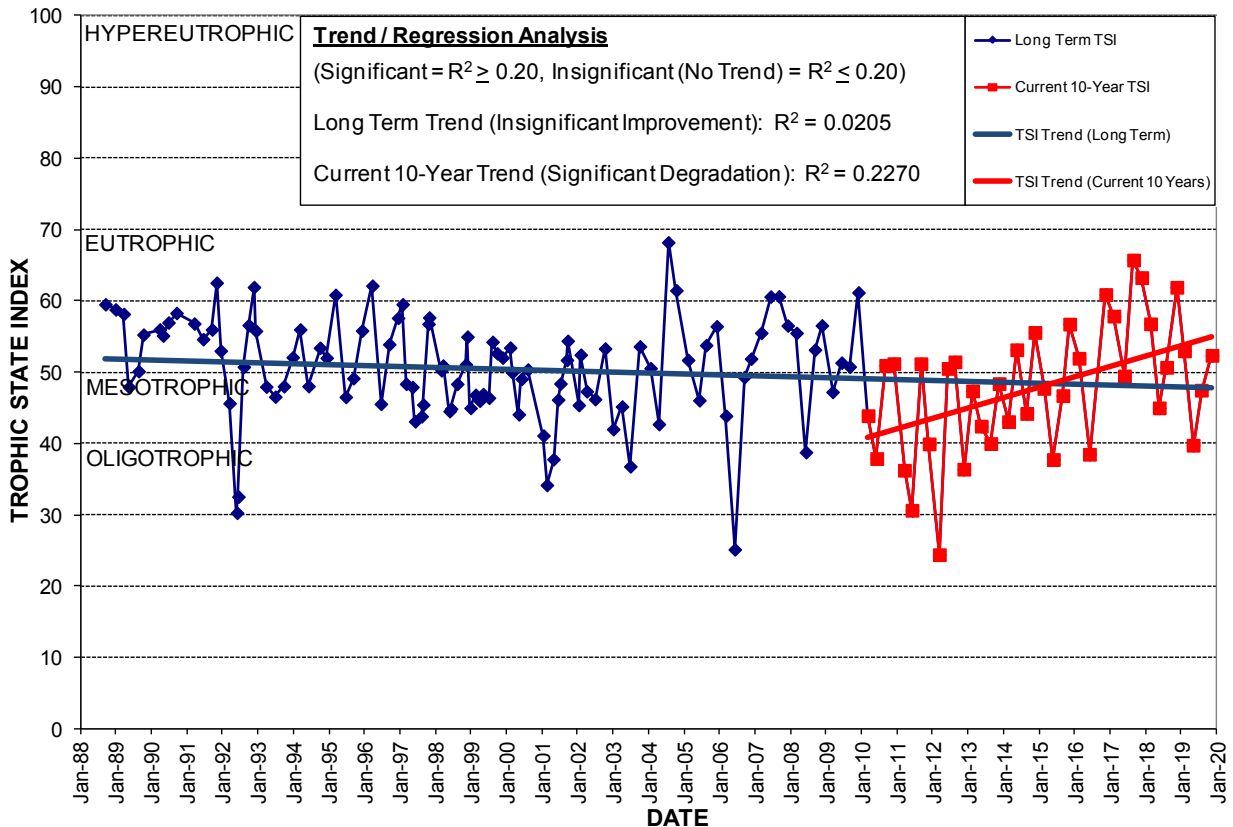
# LAKE PINELOCH

Lake Origin: **Natural**  
 Lake Surface Area: **63 acres**  
 Lake Volume: **40,924,300 ft<sup>3</sup>**  
 Shoreline Length: **7,174 ft (2187 m)**  
 Mean Depth: **15.0 ft (4.6 m)**  
 Maximum Depth: **37.0 ft (11.3 m)**  
 Drain Wells: **2** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 30' 29.2"** Long **W 81° 22' 05.5"**  
 Section **12** Township **23S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-47**  
 Drainage Basin Area: **337 acres**  
 Land Use: **Residential: 57%** **Commercial: 27%**  
**Industrial: 0%** **Highways: 5%** **Natural: 11%**  
 Limiting Nutrient: **Phosphorus**

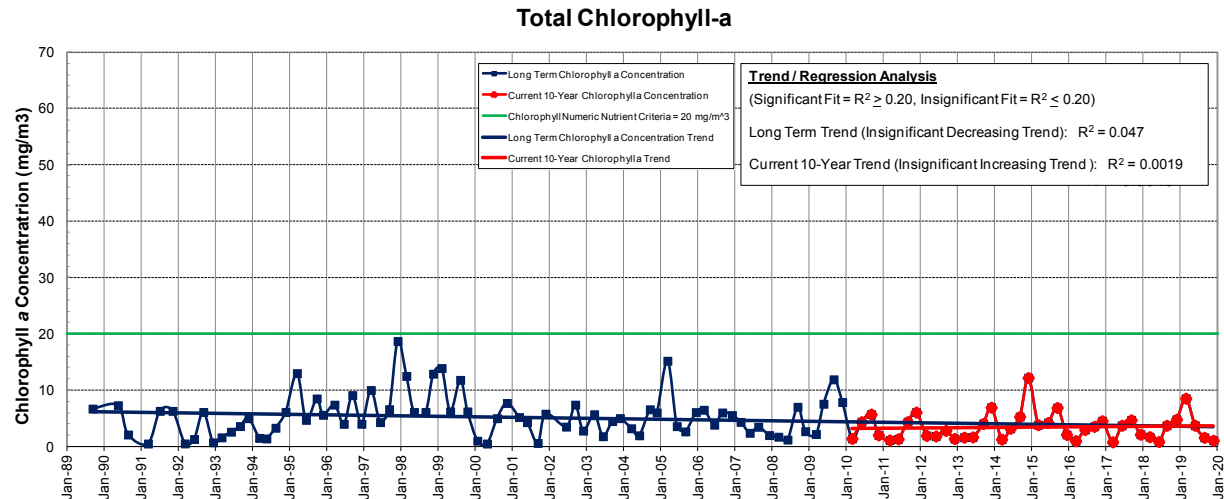
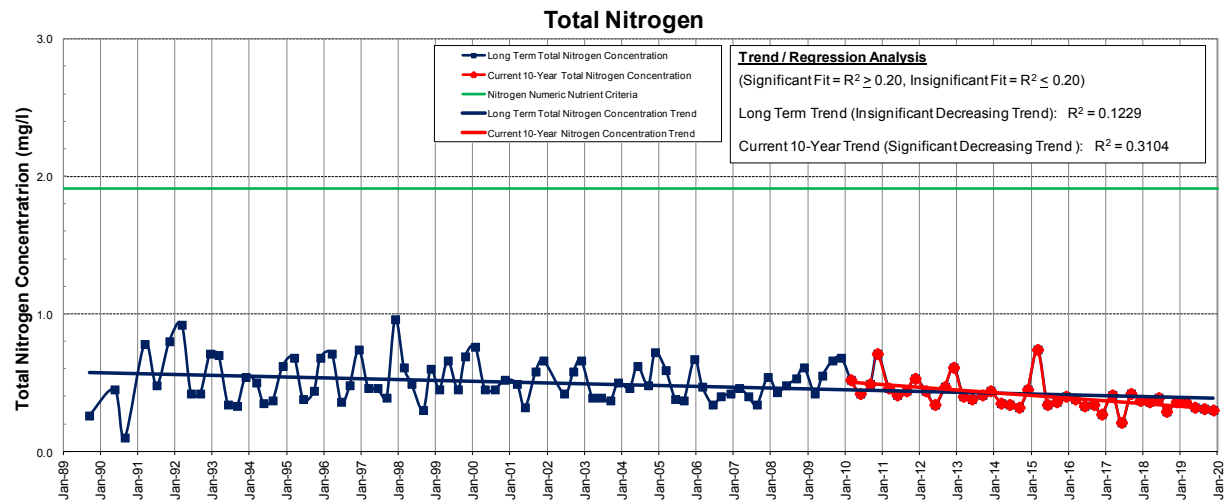
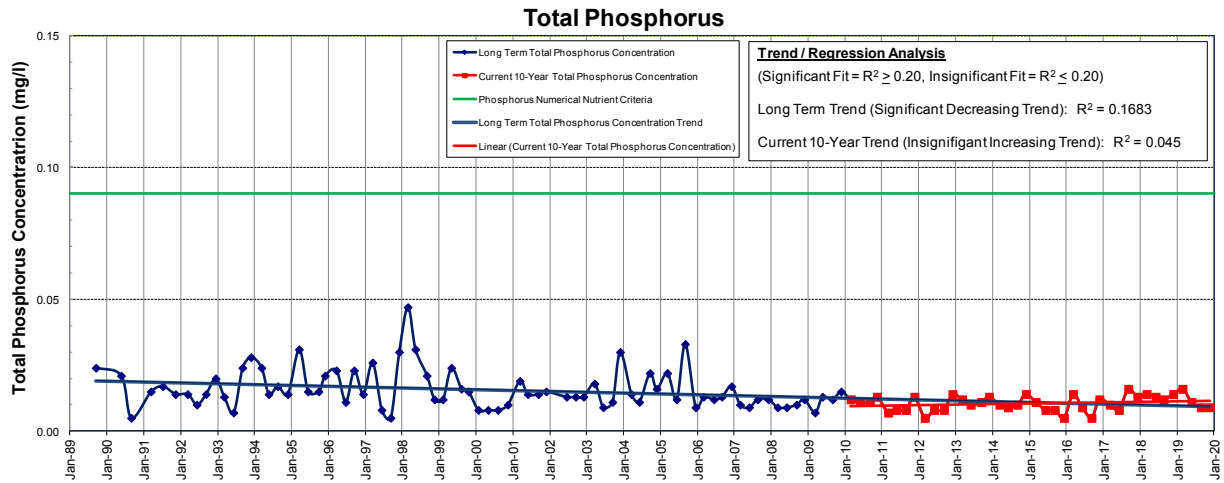
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 53			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.012	0.51	0.65	6.94	40
Maximum	0.044	1.24	1.46	44.90	66
Average	0.025	0.78	0.96	24.17	54

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** South of Michigan Ave. and east of Osceola Ave. between Pineloch Ave. and Topaz Wy.

# LAKE PORTER NUTRIENT TRENDS



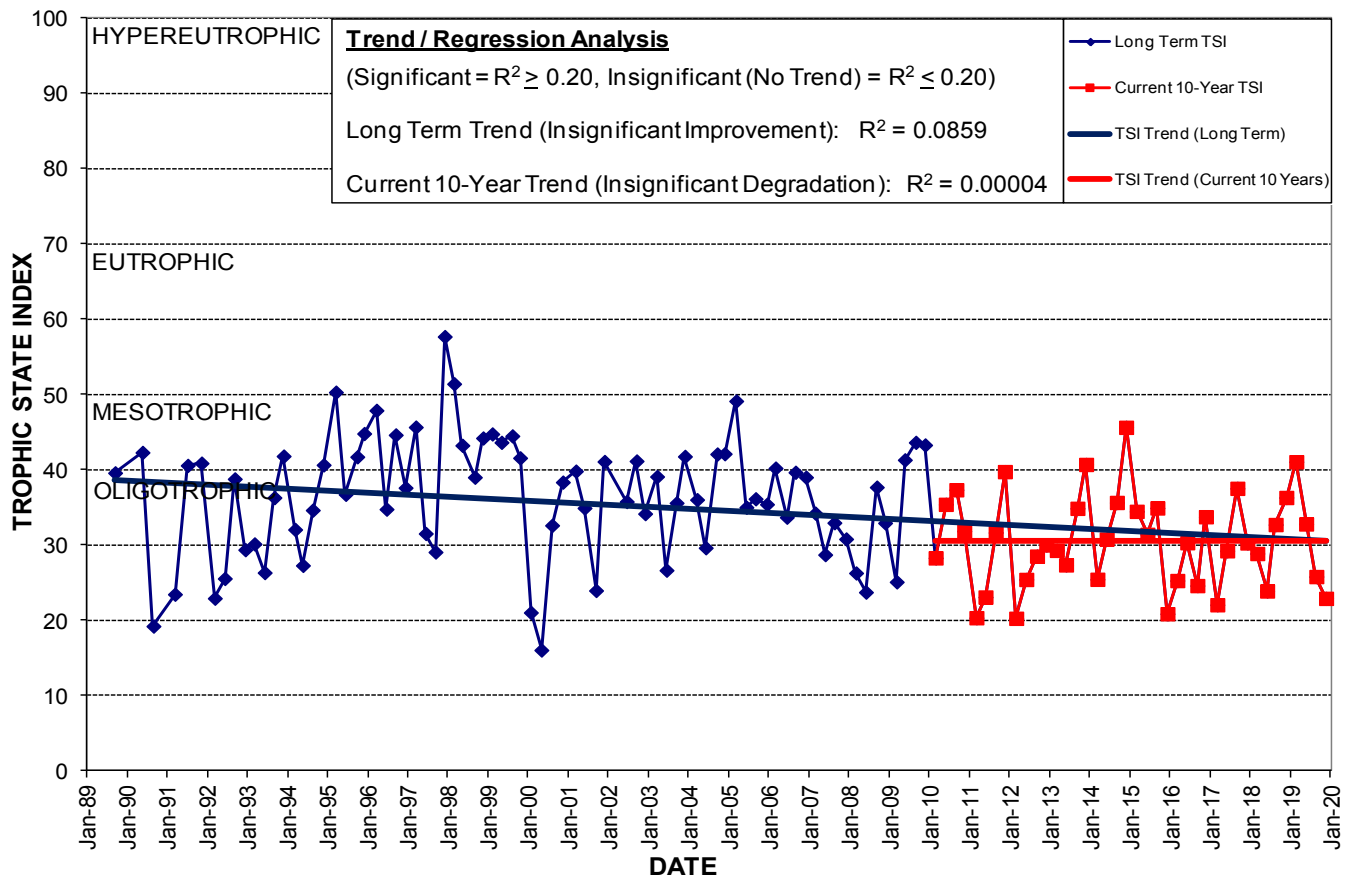
# LAKE PORTER

Lake Origin: **Natural**  
 Lake Surface Area: **34 acres**  
 Lake Volume: **20,000,000 ft<sup>3</sup>**  
 Shoreline Length: **5,200 ft (1,585 m)**  
 Mean Depth: **13.4 ft (4.1 m)**  
 Maximum Depth: **29.0 ft (8.8 m)**  
 Drain Wells: **1**    Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 30' 43.6"** Long **W 81° 19' 22.8"**  
 Section **4** Township **23S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-39**  
 Drainage Basin Area: **242 acres**  
 Land Use: **Residential: 82%**    **Commercial: 9%**  
**Industrial: 1%**    **Highways: 3%**    **Natural: 6%**  
 Limiting Nutrient: **Phosphorus**

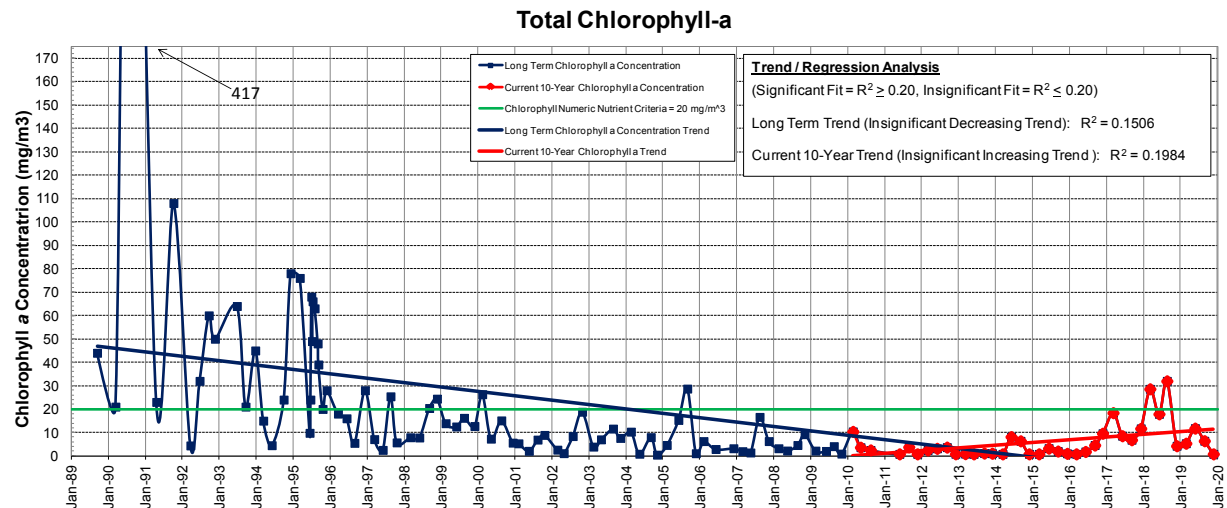
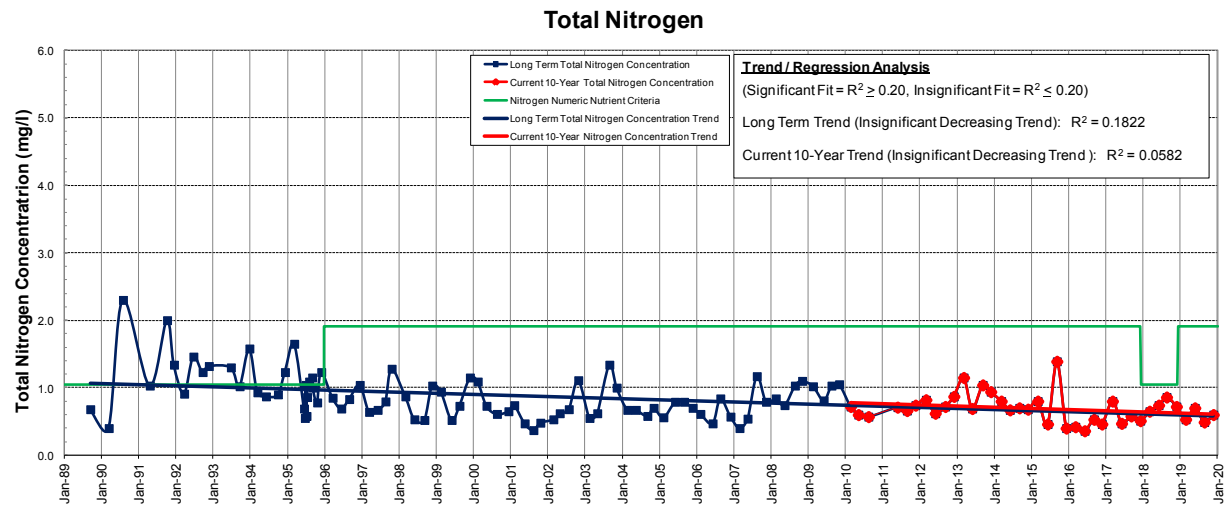
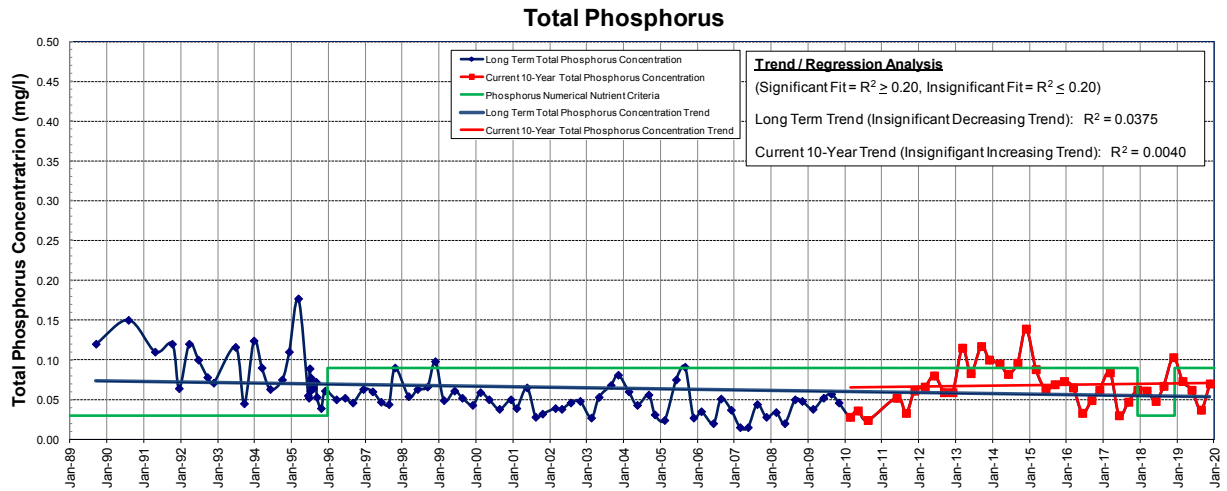
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 5			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.008	0.21	2.00	0.80	22
Maximum	0.016	0.42	4.85	8.54	41
Average	0.012	0.34	3.22	3.12	30

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Shared by Mariner's Village and Bryn Mawr neighborhoods east of Bridgehampton Ln., north of Tall Timbers Dr. and south of Mystic Cove Dr.

# LAKE RABAMA NUTRIENT TRENDS



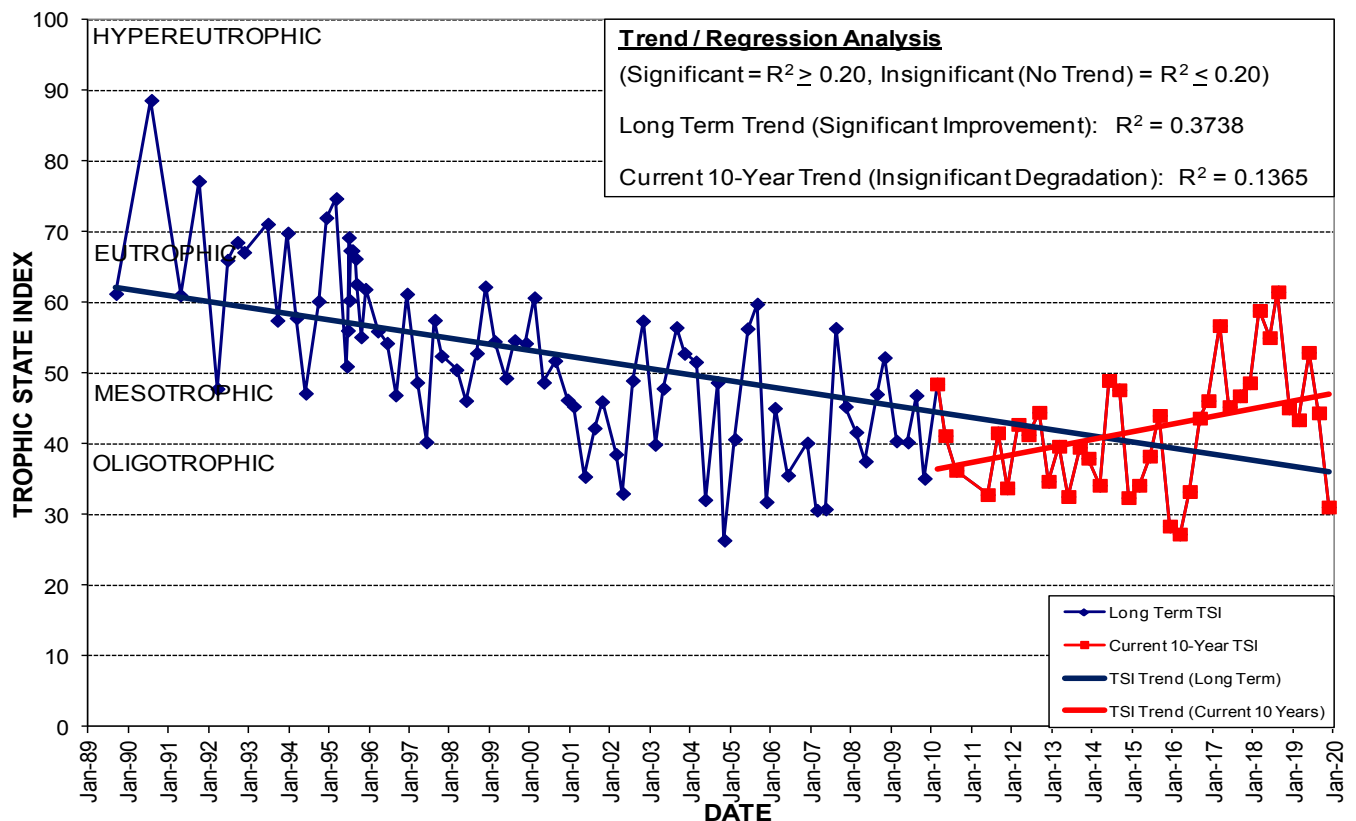
# LAKE RABAMA

Lake Origin: **Excavation**  
 Lake Surface Area: **6 acres**  
 Lake Volume: **1,036,800 ft<sup>3</sup>**  
 Shoreline Length: **2,051 ft (625 m)**  
 Mean Depth: **4.2 ft (1.3 m)**  
 Maximum Depth: **22.0 ft (6.7 m)**  
 Drain Wells: **1** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 31' 13.8"** Long **W 81° 19' 45.1"**  
 Section **5** Township **23S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-36**  
 Drainage Basin Area: **152 acres**  
 Land Use: **Residential: 78%** **Commercial: 17%**  
**Industrial: 0%** **Highways: 1%** **Natural: 4%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 32			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.030	0.47	1.10	0.80	31
Maximum	0.103	0.86	3.34	32.00	62
Average	0.062	0.64	1.92	12.72	49

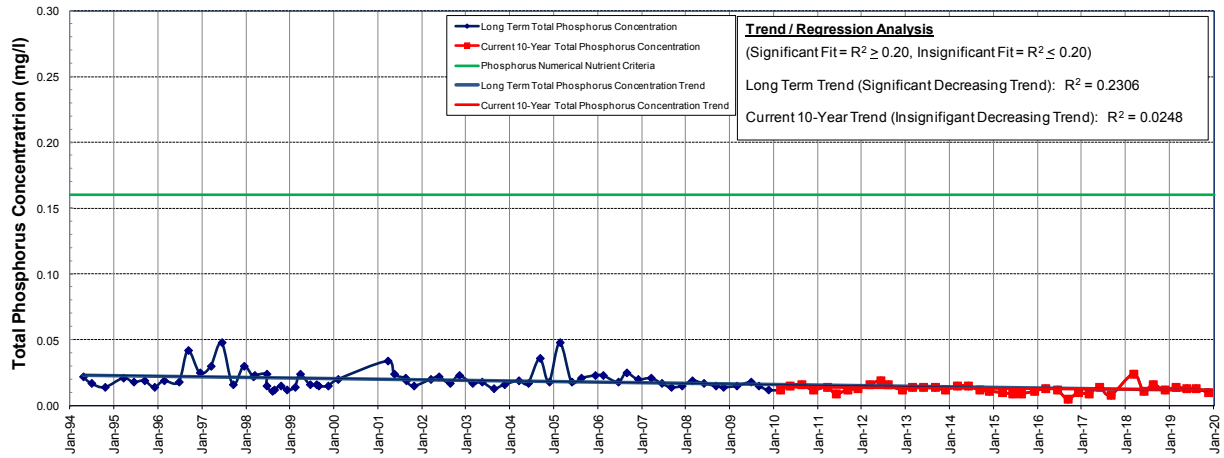
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



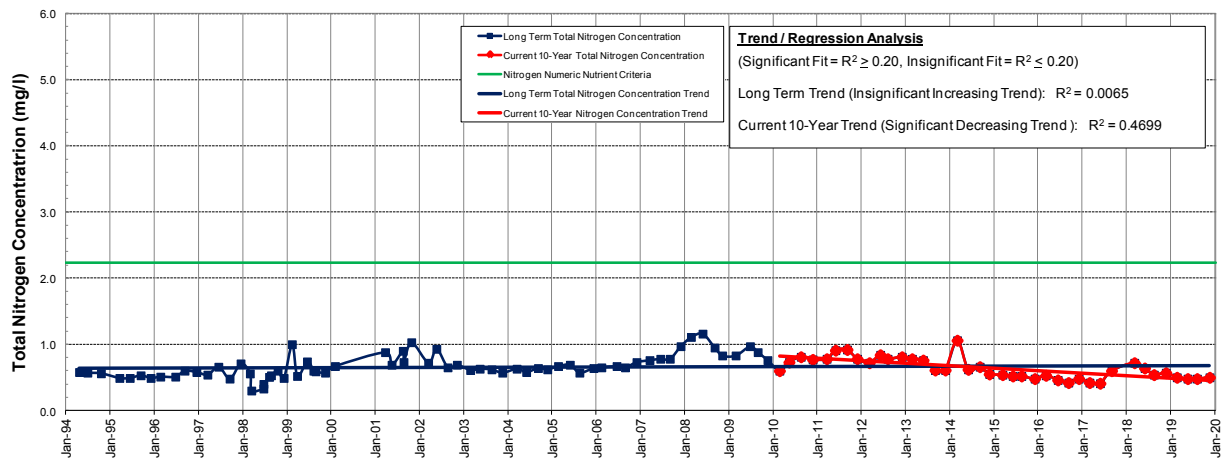
**Location:** Just east of Conway Rd. and south of Curry Ford Rd.

# RED LAKE NUTRIENT TRENDS

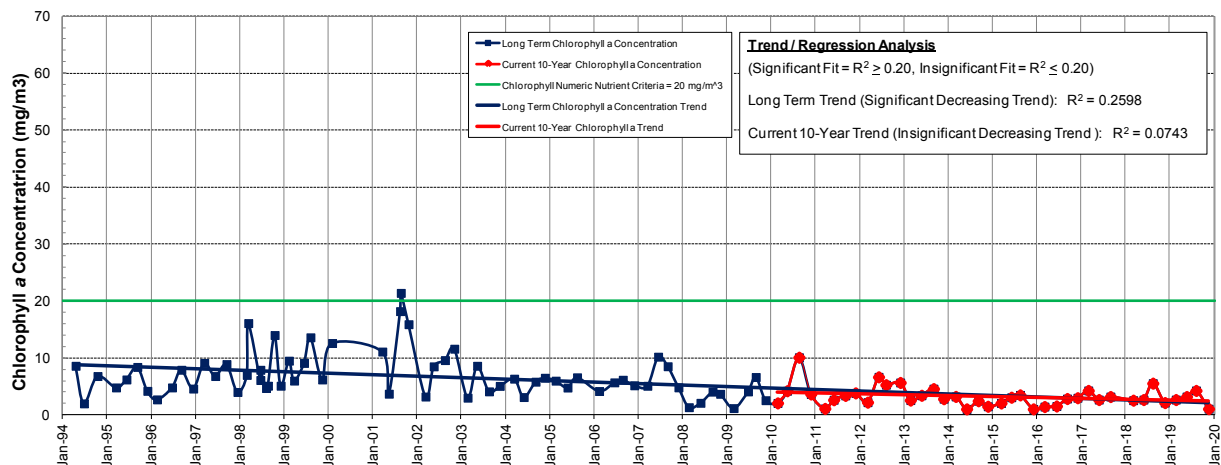
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a





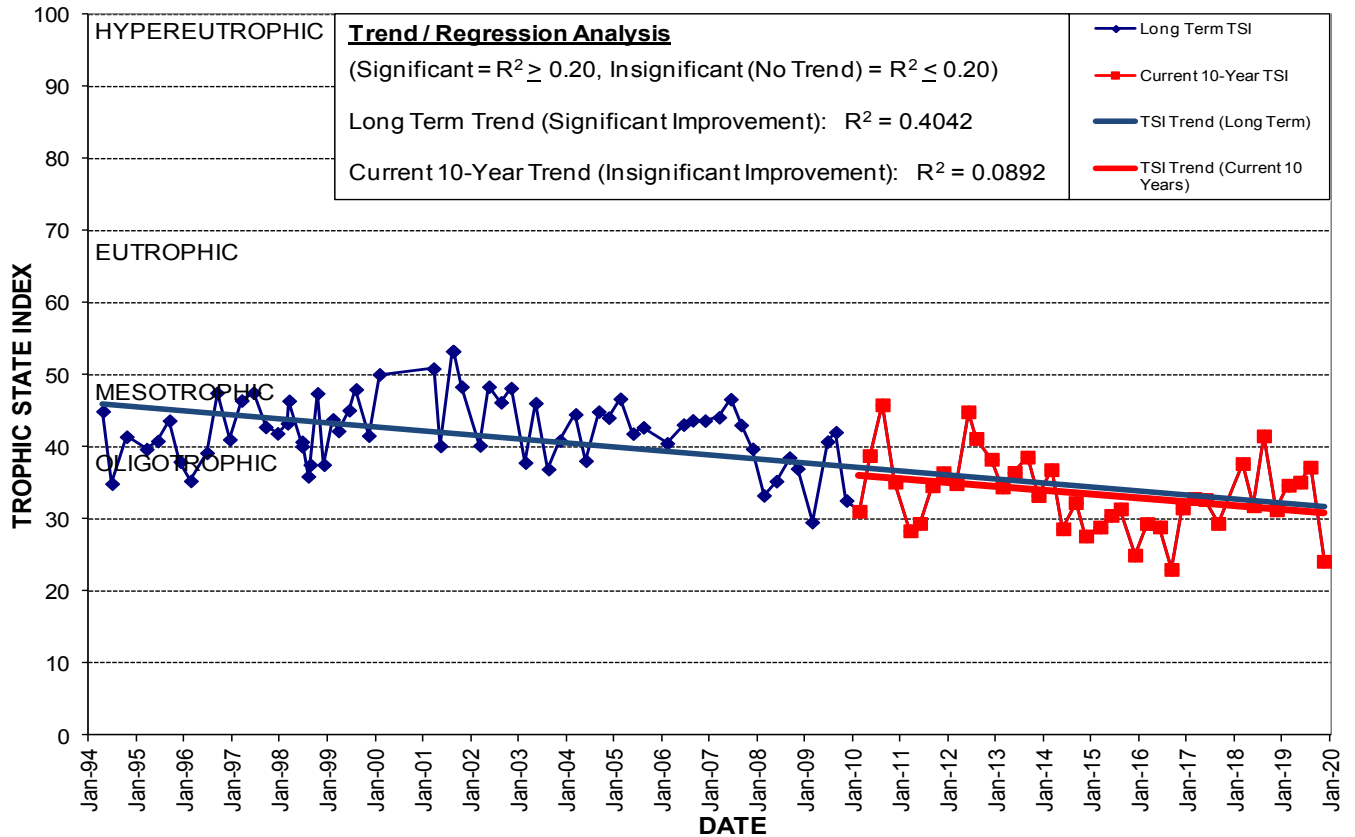
# RED LAKE

Lake Origin: **Natural**  
 Lake Surface Area: **123 acres**  
 Lake Volume: **61,287,400 ft<sup>3</sup>**  
 Shoreline Length: **10,071 ft (3,070 m)**  
 Mean Depth: **11.5 ft (3.5 m)**  
 Maximum Depth: **20.4 ft (6.2 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 24' 21.2"** Long **W 81° 15' 31.3"**  
 Section **18** Township **24S** Range **31E**  
 Water Management District: **South Florida**  
 Drainage Code: **BC-05F**  
 Drainage Basin Area: **695 acres**  
 Land Use: **Residential: 0% Commercial: 0%**  
**Industrial: 0% Highways: 20% Natural: 80%**  
 Limiting Nutrient: **Phosphorus**

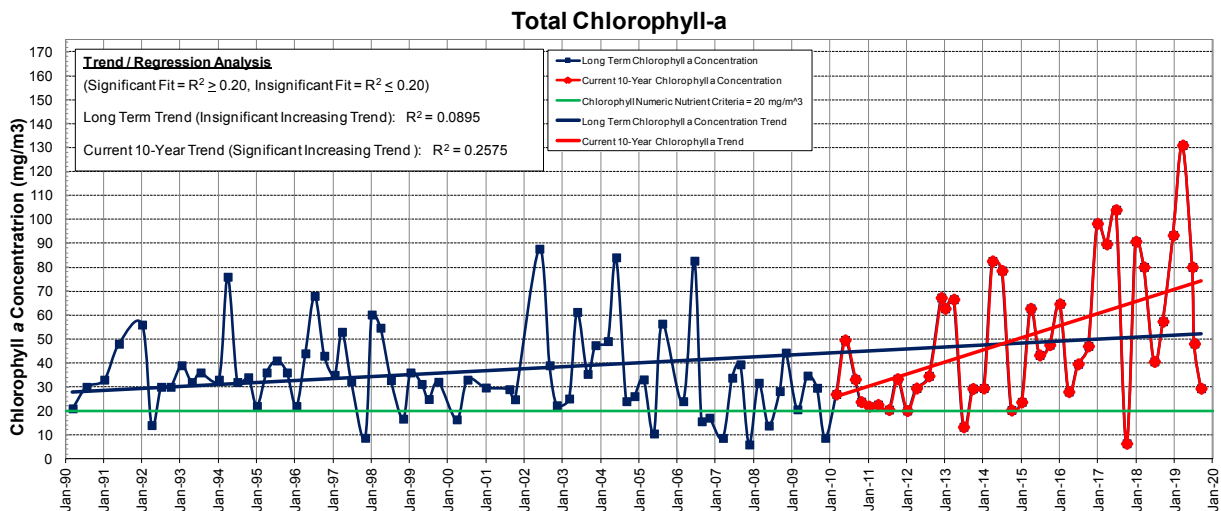
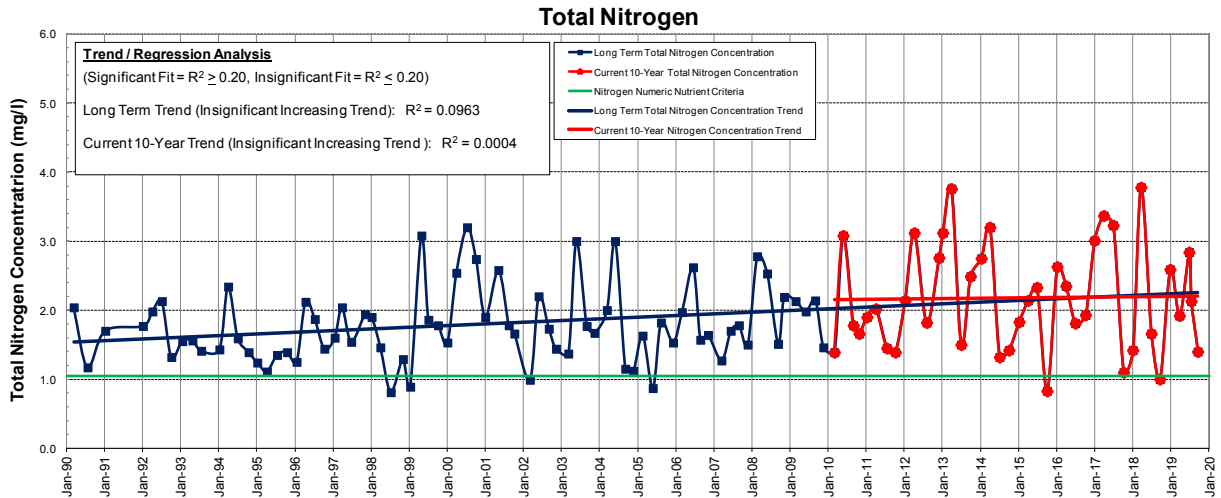
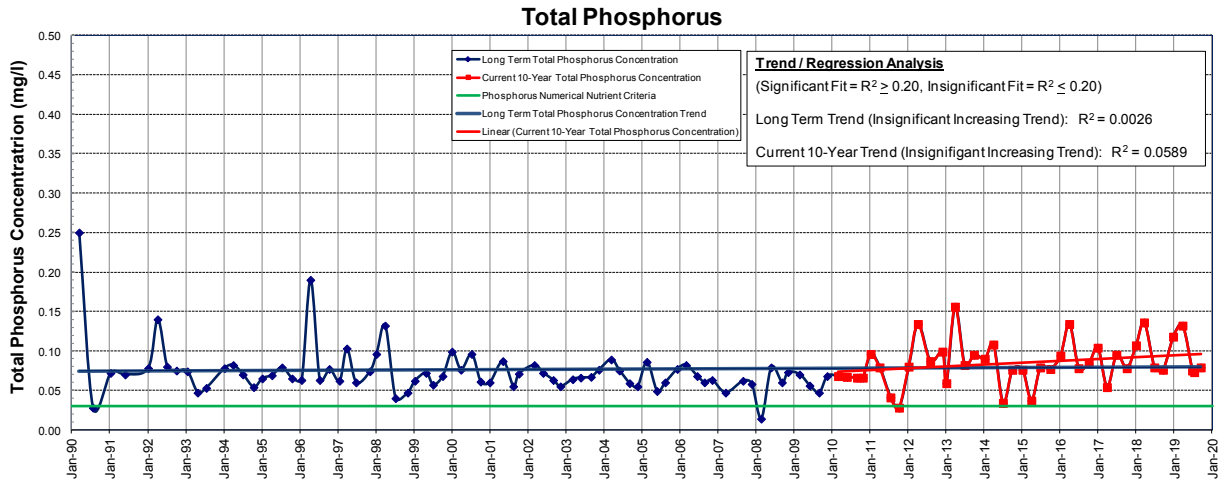
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 7			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.008	0.41	1.32	1.07	24
Maximum	0.024	0.72	2.53	5.55	42
Average	0.013	0.53	2.01	3.12	34

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Near the Orlando International Airport off Narcoossee Rd. in the Lake Nona Estates Community and connected to Lake Nona by a small canal.

# LAKE RICHMOND NUTRIENT TRENDS



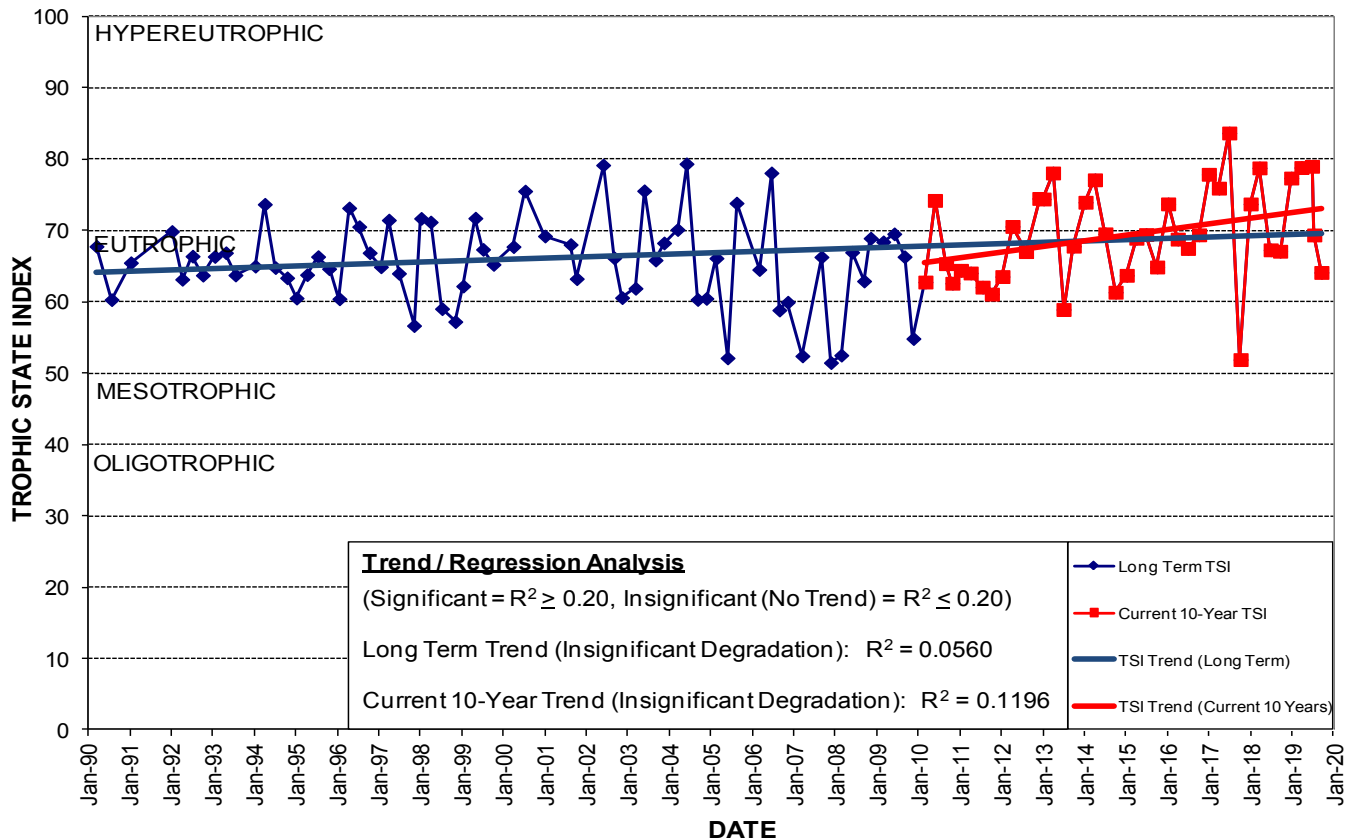
# LAKE RICHMOND

Lake Origin: **Excavation**  
 Lake Surface Area: **35 acres**  
 Lake Volume: **8,088,000 ft<sup>3</sup>**  
 Shoreline Length: **5,351 ft (1,631 m)**  
 Mean Depth: **5.3 ft (1.6 m)**  
 Maximum Depth: **13.2 ft (4.0 m)**  
 Drain Wells: **1** Aeration: **Yes**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 30' 42.5"** Long **W 81° 26' 02.8"**  
 Section **5** Township **23S** Range **29E**  
 Water Management District: **South Florida**  
 Drainage Code: **SC-09**  
 Drainage Basin Area: **172 acres**  
 Land Use: **Residential: 55%** **Commercial: 13%**  
**Industrial: 10%** **Highways: 0%** **Natural: 23%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

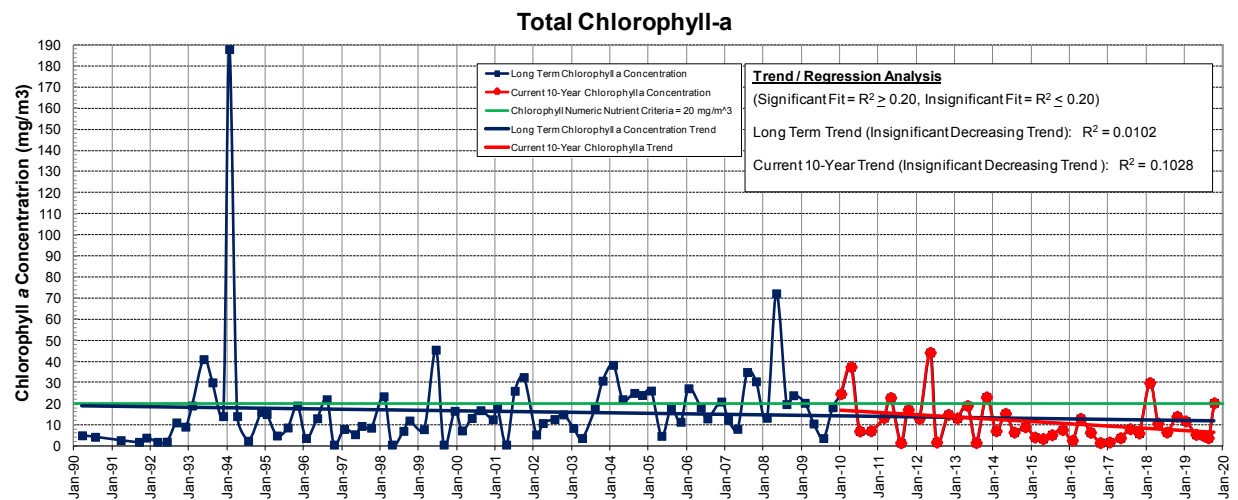
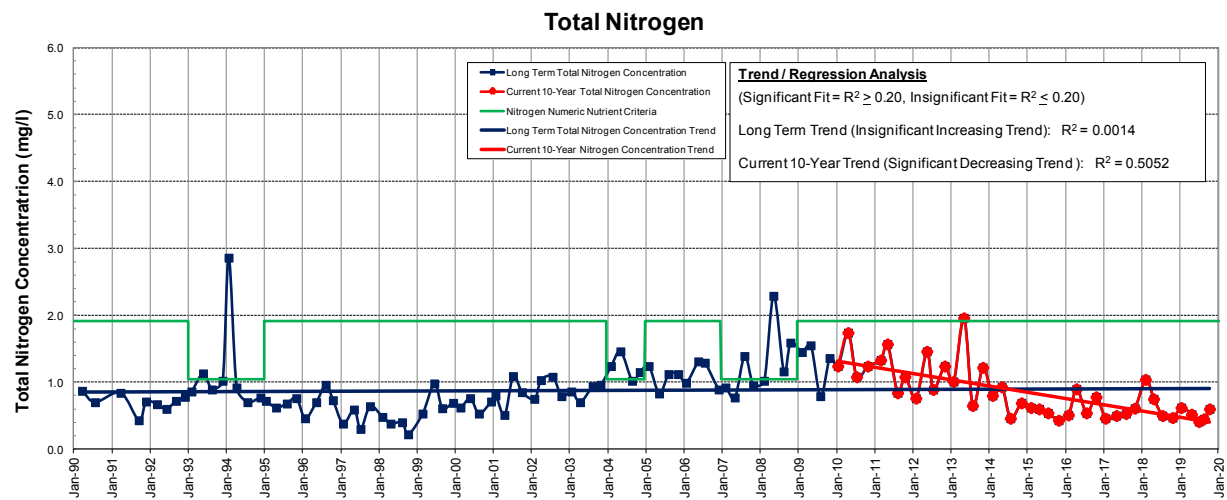
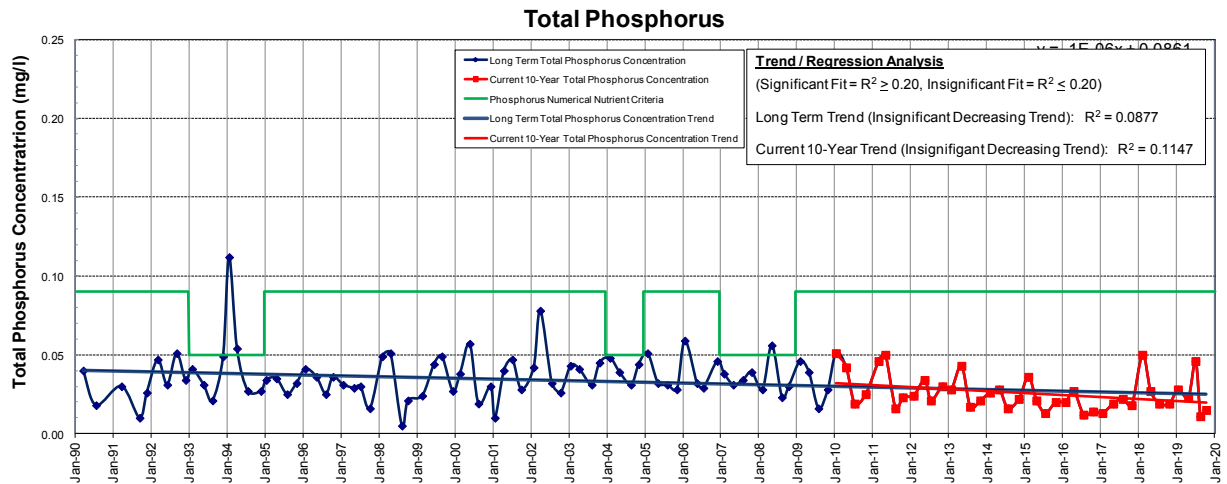
2017 - 2019 Water Quality Data	TSI Ranking (out of 94 lakes): 94				
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.054	1.00	0.10	6.41	52
Maximum	0.136	3.78	0.82	131.00	84
Average	0.093	2.27	0.35	73.02	73

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** In the Richmond Estates neighborhood south of Prince Hall Blvd. between Grandola Dr. and Lake Richmond Dr. in Prince Hall Park.

# ROCK LAKE NUTRIENT TRENDS



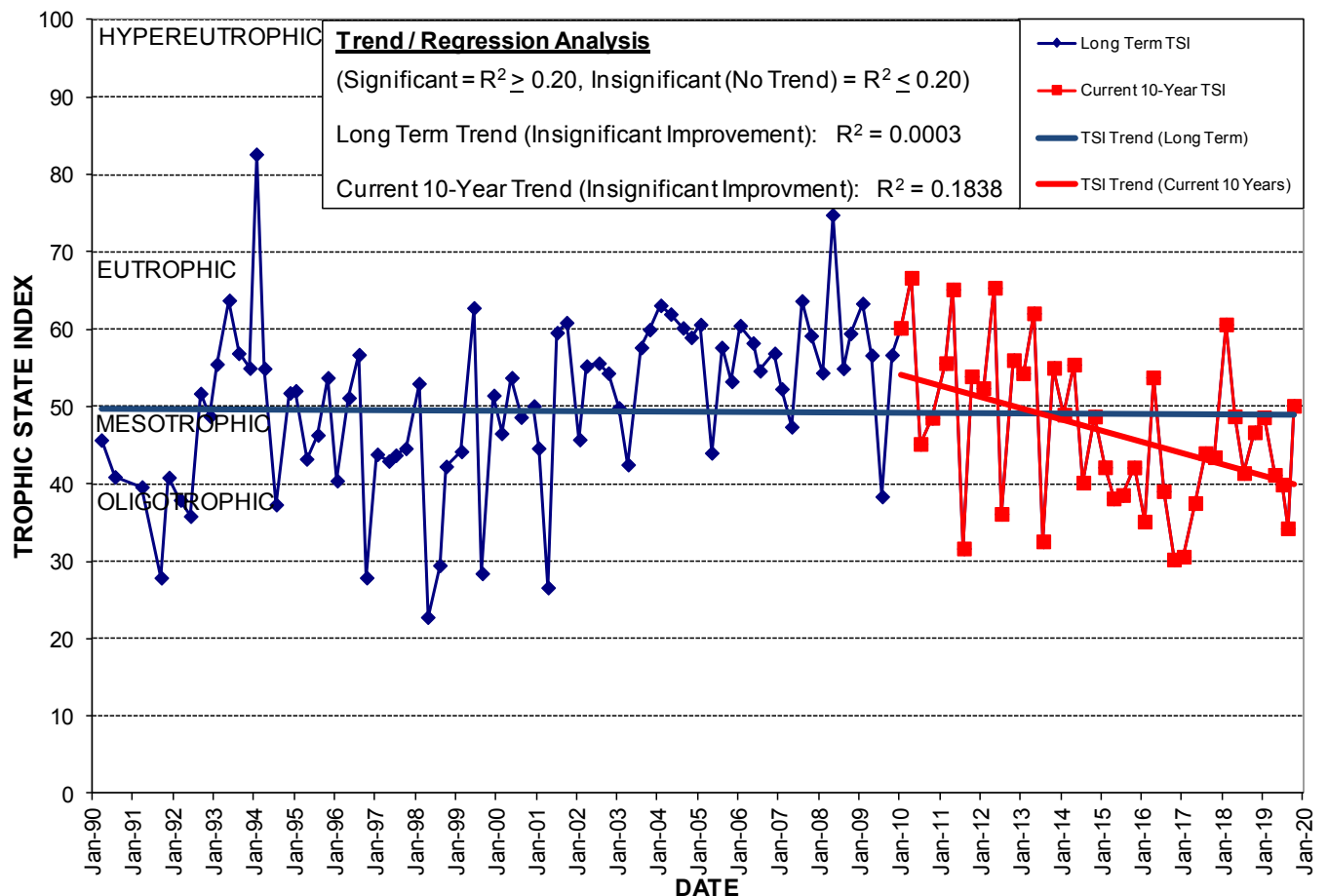
# ROCK LAKE

Lake Origin: **Natural**  
 Lake Surface Area: **44 acres**  
 Lake Volume: **33,950,300 ft<sup>3</sup>**  
 Shoreline Length: **5,674 ft (1,729 m)**  
 Mean Depth: **17.6 ft (5.4 m)**  
 Maximum Depth: **34.4 ft (10.5 m)**  
 Drain Wells: **Yes** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 32' 52.6"** Long **W 81° 24' 05.5"**  
 Section **27** Township **22S** Range **29E**  
 Water Management District: **South Florida**  
 Drainage Code: **ORL-12**  
 Drainage Basin Area: **211 acres**  
 Land Use: **Residential: 48%** **Commercial: 14%**  
**Industrial: 15%** **Highways: 0%** **Natural: 23%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		2016 TSI Ranking (out of 94 lakes): 31			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.011	0.41	0.64	1.71	31
Maximum	0.050	1.04	3.43	29.90	61
Average	0.024	0.57	1.80	9.71	44

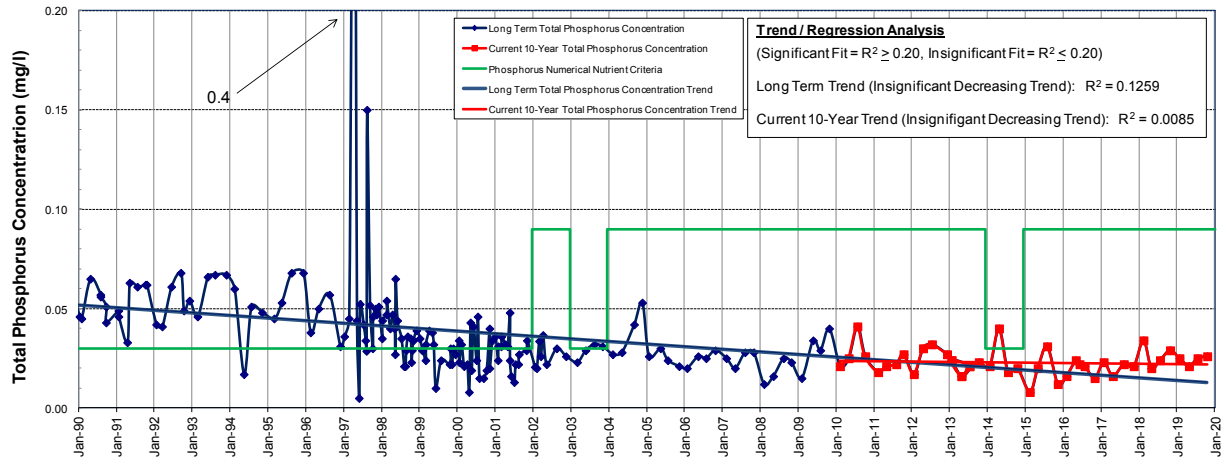
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



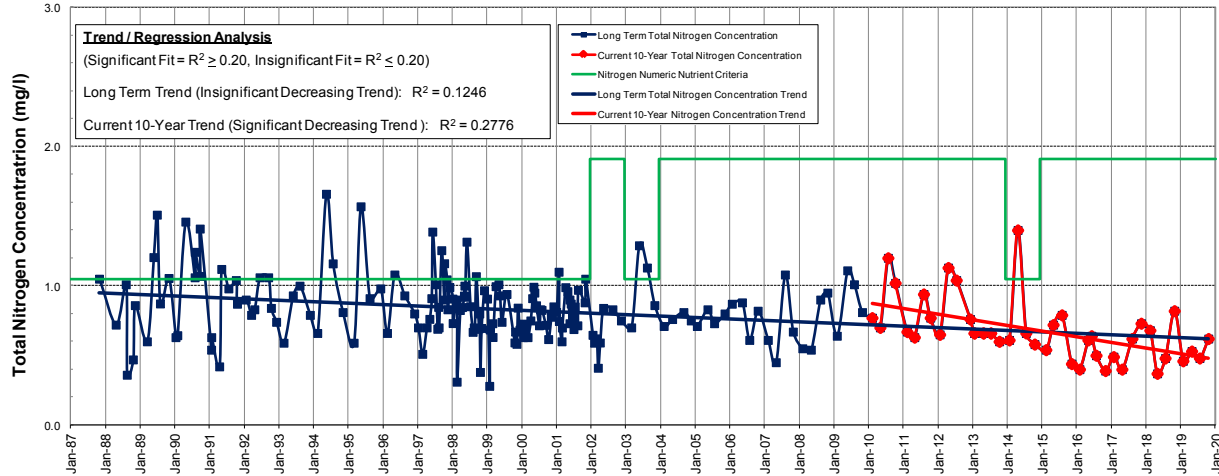
**Location:** Approximately 0.2 miles northwest of the Orange Blossom Trl. and Washington St. intersection.

# LAKE ROWENA NUTRIENT TRENDS

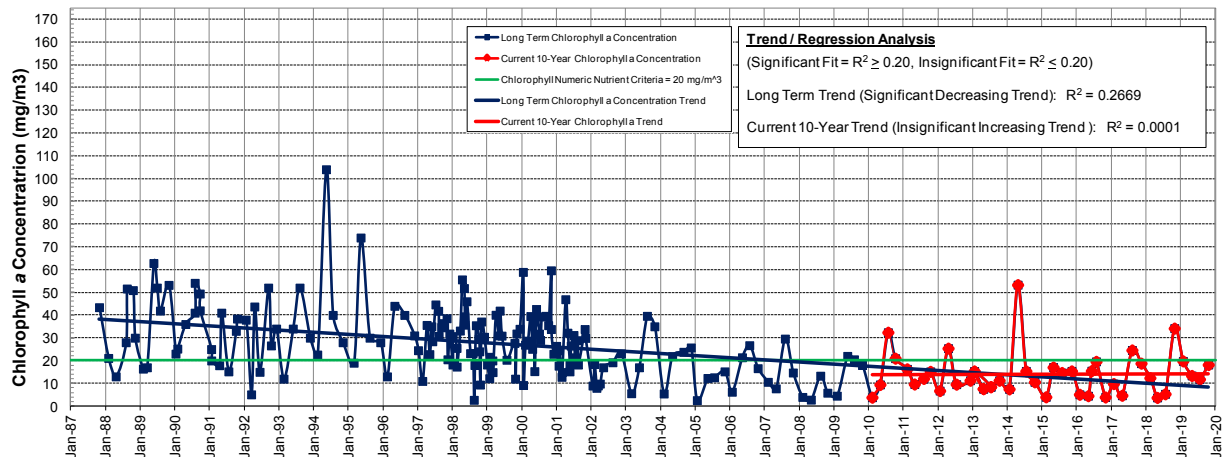
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



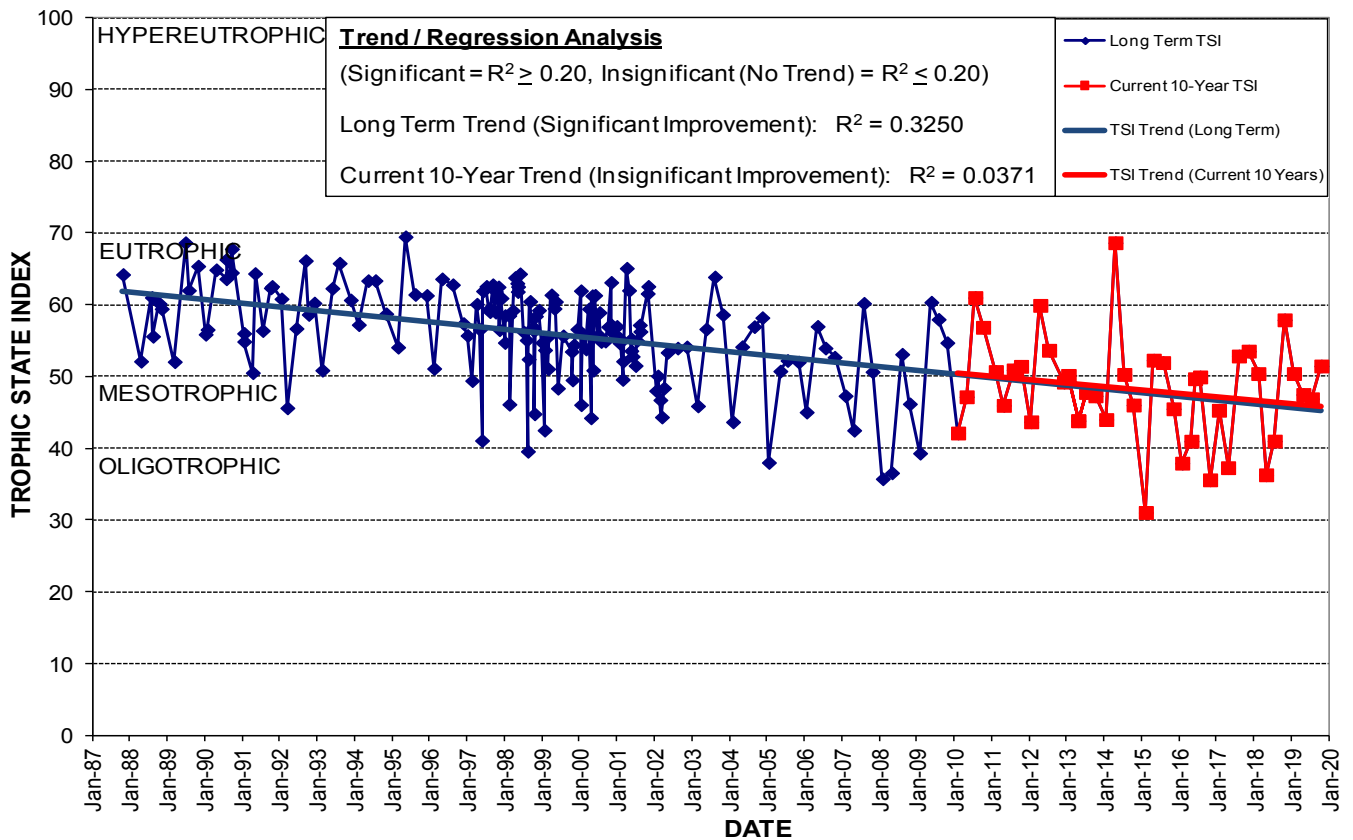
# LAKE ROWENA

Lake Origin: **Natural**  
 Lake Surface Area: **58 acres**  
 Lake Volume: **29,858,000 ft<sup>3</sup>**  
 Shoreline Length: **8,679 ft (2,645 m)**  
 Mean Depth: **11.8 ft (3.6 m)**  
 Maximum Depth: **34.1 ft (10.4m)**  
 Drain Wells: **No** Aeration: **Yes** (installed 4/89)  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 34' 17.4"** Long **W 81° 21' 27.0"**  
 Section **18** Township **22S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **HB-21**  
 Drainage Basin Area: **801 acres**  
 Land Use: **Residential: 42%** **Commercial: 24%**  
**Industrial: 0%** **Highways: 6%** **Natural: 28%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 56			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.016	0.37	0.84	3.74	36
Maximum	0.034	0.82	2.70	34.20	58
Average	0.024	0.56	1.34	14.73	48

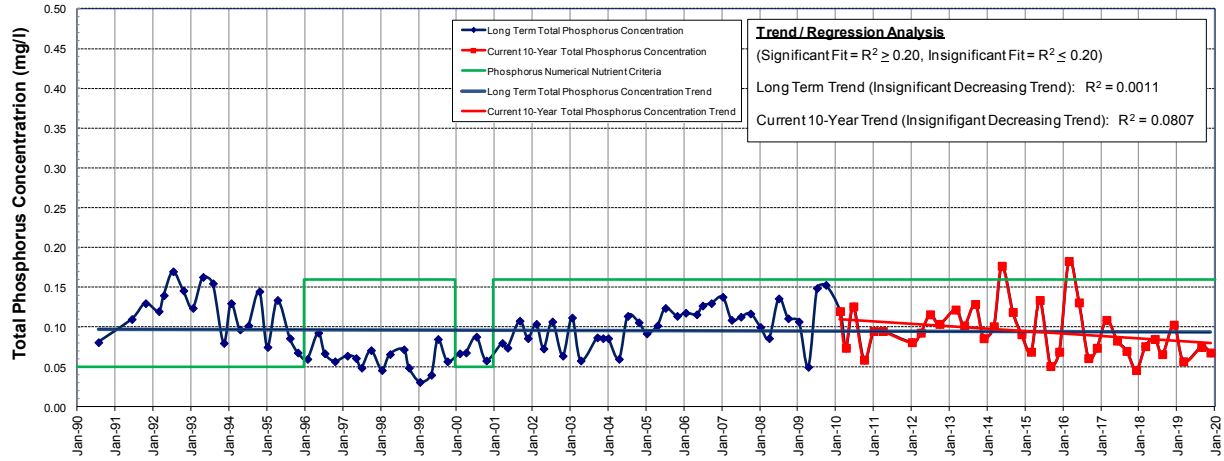
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



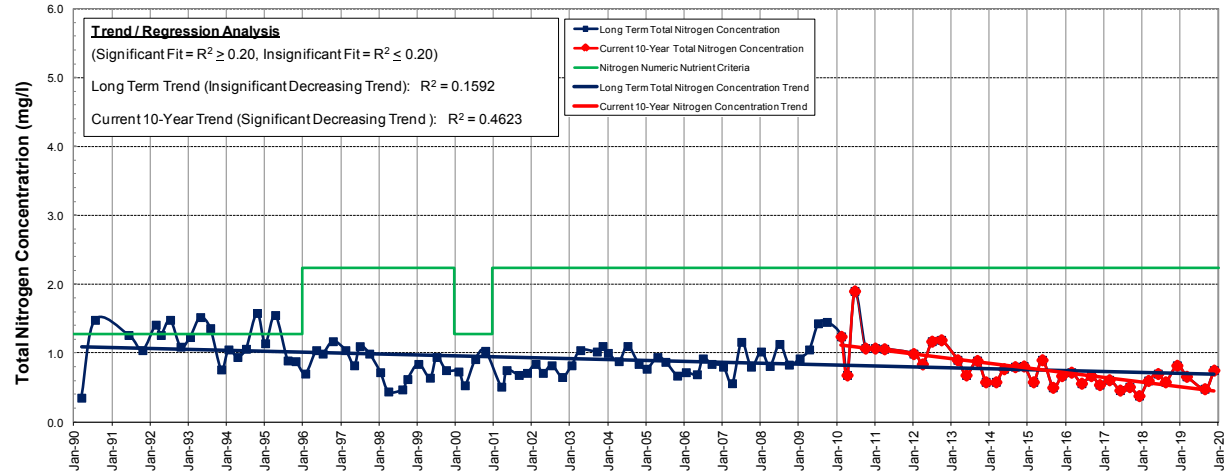
**Location:** Just east of Loch Haven Park (Mills Ave./US 17-92).

# LAKE SANDY NUTRIENT TRENDS

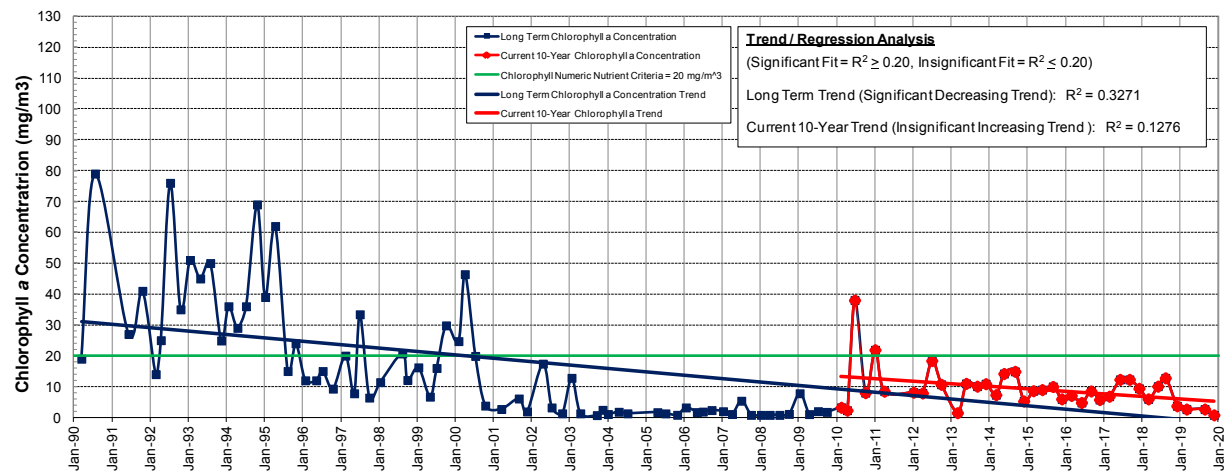
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a





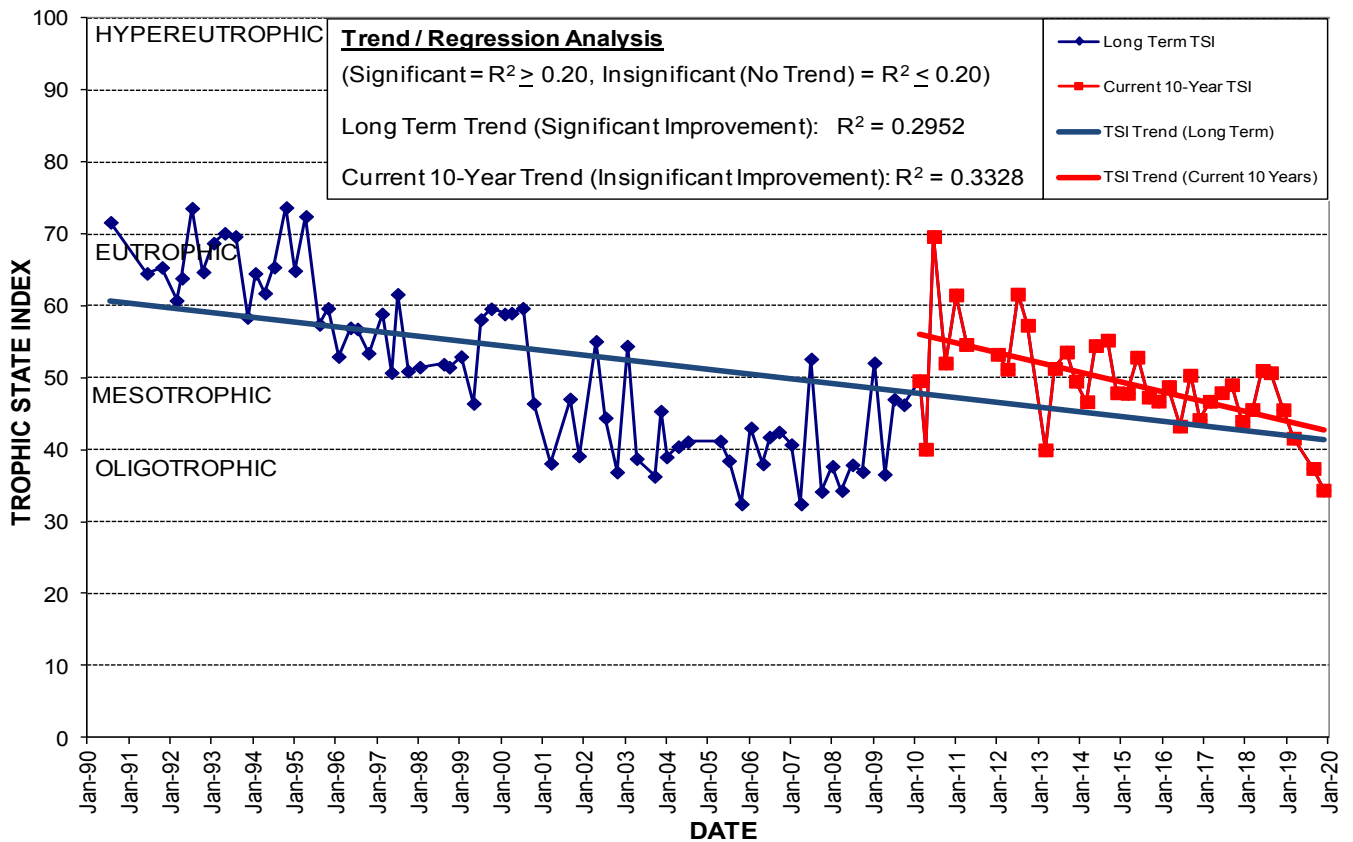
# LAKE SANDY

Lake Origin: **Natural**  
 Lake Surface Area: **24 acres**  
 Lake Volume: **8,870,800 ft<sup>3</sup>**  
 Shoreline Length: **4,041 ft (1,232 m)**  
 Mean Depth: **8.4 ft (2.6 m)**  
 Maximum Depth: **17.4 ft (5.3 m)**  
 Drain Wells: **1**    Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 27' 30.6"** Long **W 81° 27' 59.4"**  
 Section **25** Township **22S** Range **28E**  
 Water Management District: **South Florida**  
 Drainage Code: **SC-03**  
 Drainage Basin Area: **100 acres**  
 Land Use: **Residential: 0%**    **Commercial: 73%**  
**Industrial: 0%**    **Highways: 3%**    **Natural: 23%**  
 Limiting Nutrient: **Nitrogen**

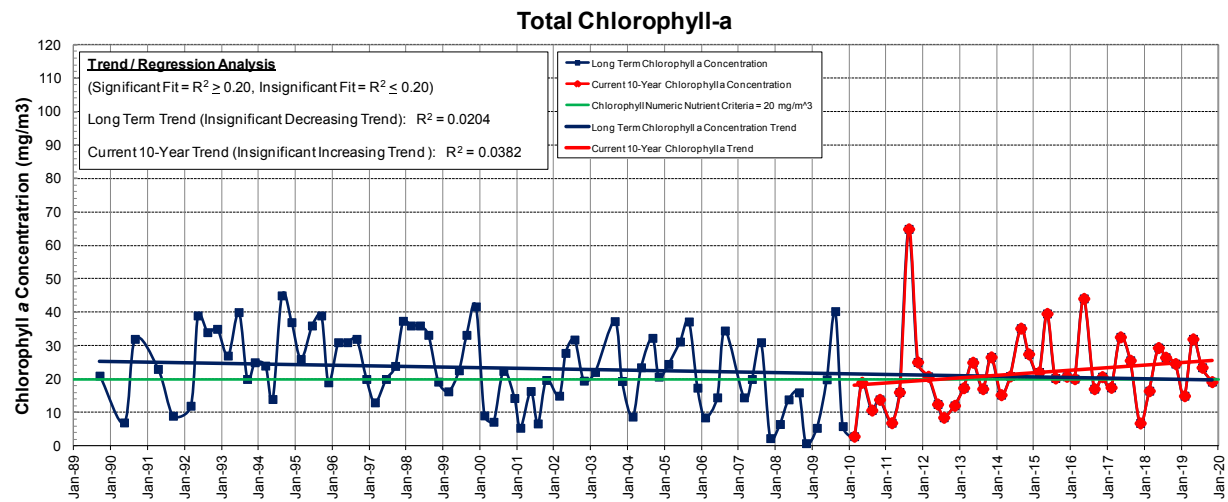
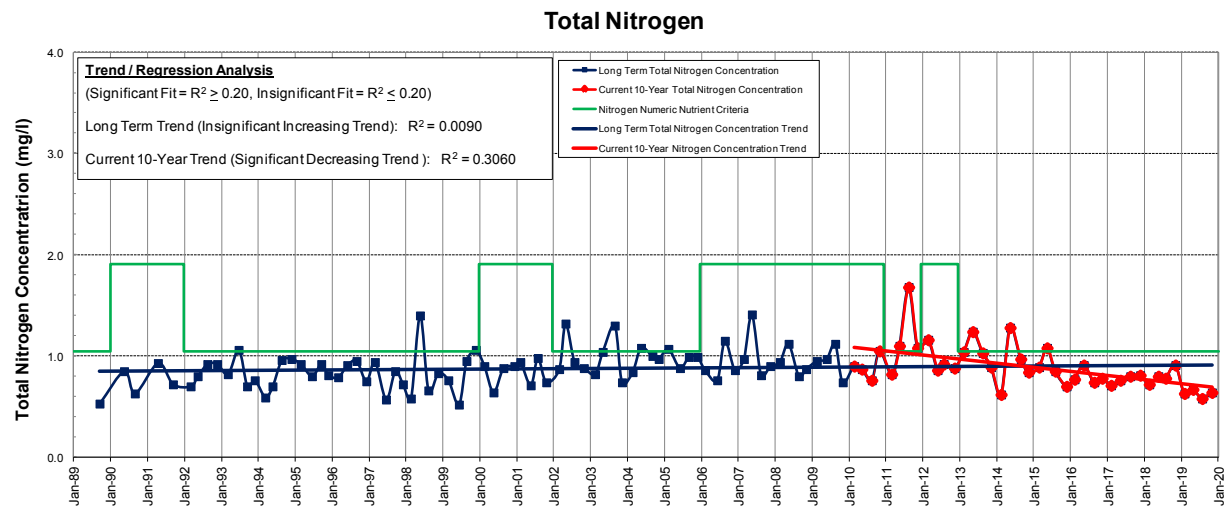
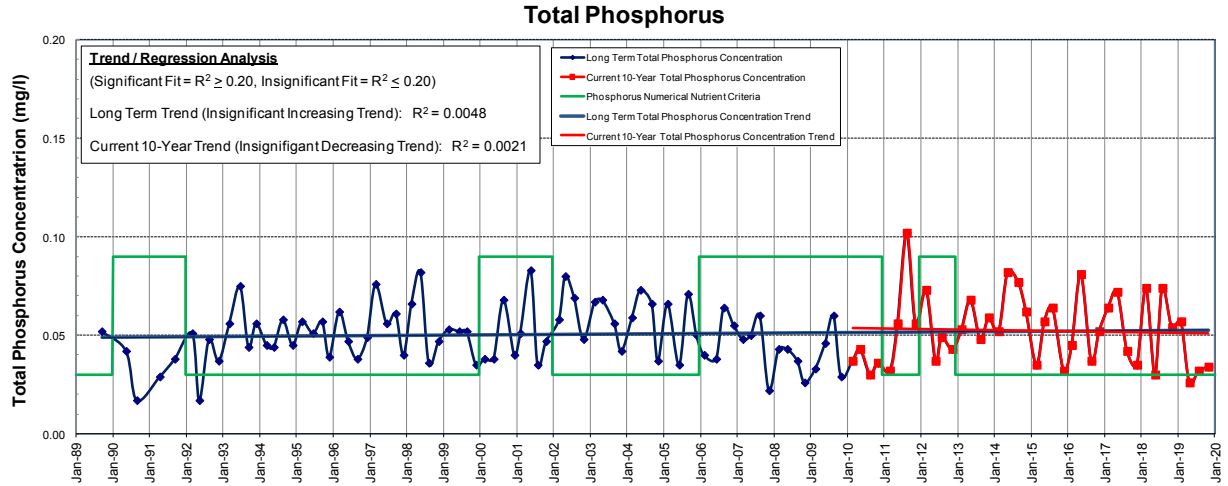
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 16			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.046	0.38	0.88	0.80	34
Maximum	0.109	0.82	3.51	12.80	51
Average	0.076	0.60	1.68	7.24	45

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Just west of Universal Blvd. between International Dr. and Carrier Dr.

# LAKE SANTIAGO NUTRIENT TRENDS



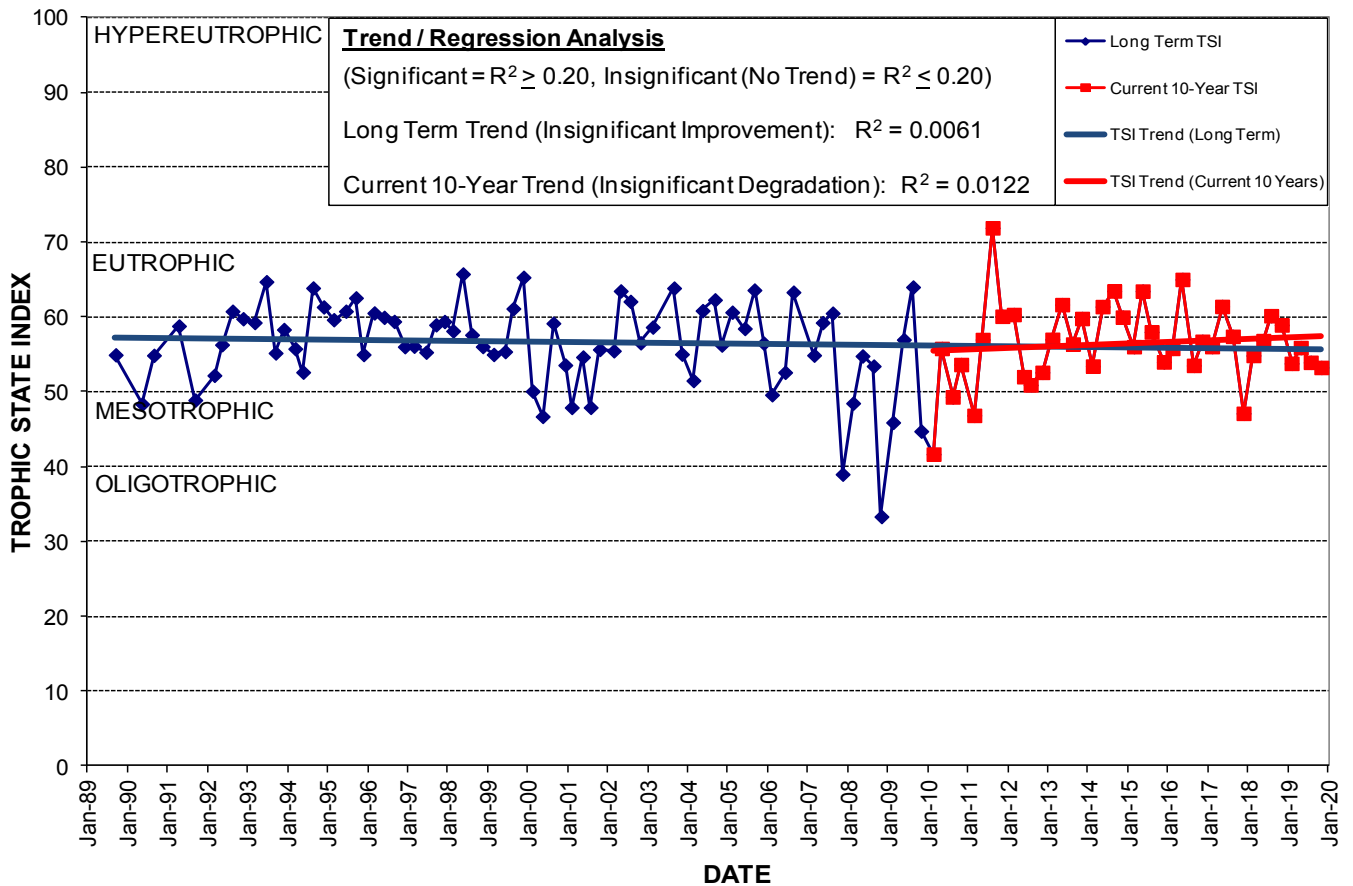
# LAKE SANTIAGO

Lake Origin: **Excavation**  
 Lake Surface Area: **5 acres**  
 Lake Volume: **880,000 ft<sup>3</sup>**  
 Shoreline Length: **2,665 ft (812 m)**  
 Mean Depth: **4.5 ft (1.4 m)**  
 Maximum Depth: **8.0 ft (2.4 m)**  
 Drain Wells: **1** Aeration: **Yes** (installed 4/92)  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 31' 59.5"** Long **W 81° 19' 05.2"**  
 Section **2** Township **25S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LE-35**  
 Drainage Basin Area: **249 acres**  
 Land Use: **Residential: 92%** **Commercial: 6%**  
**Industrial: 0%** **Highways: 0%** **Natural: 3%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

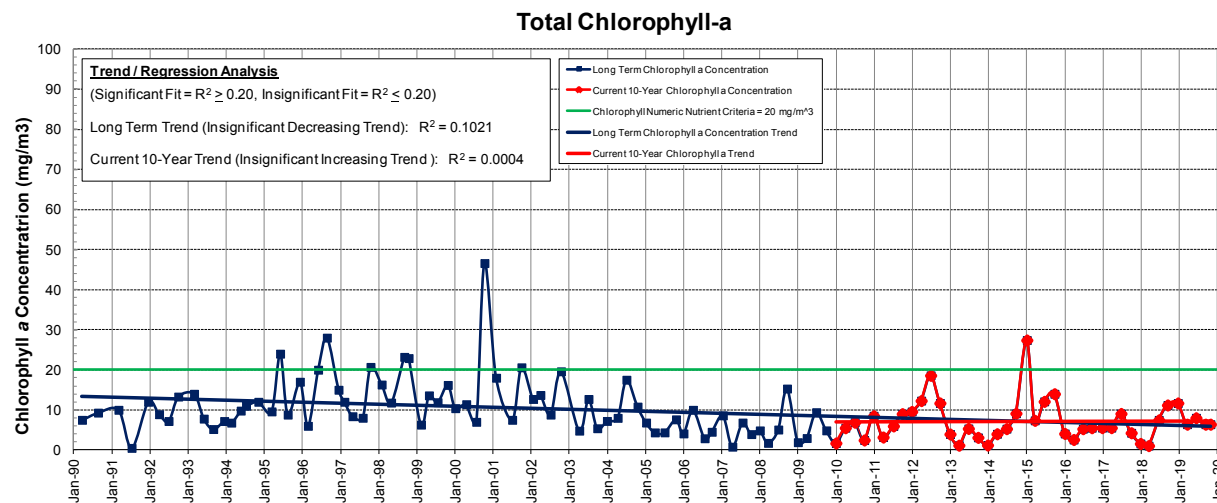
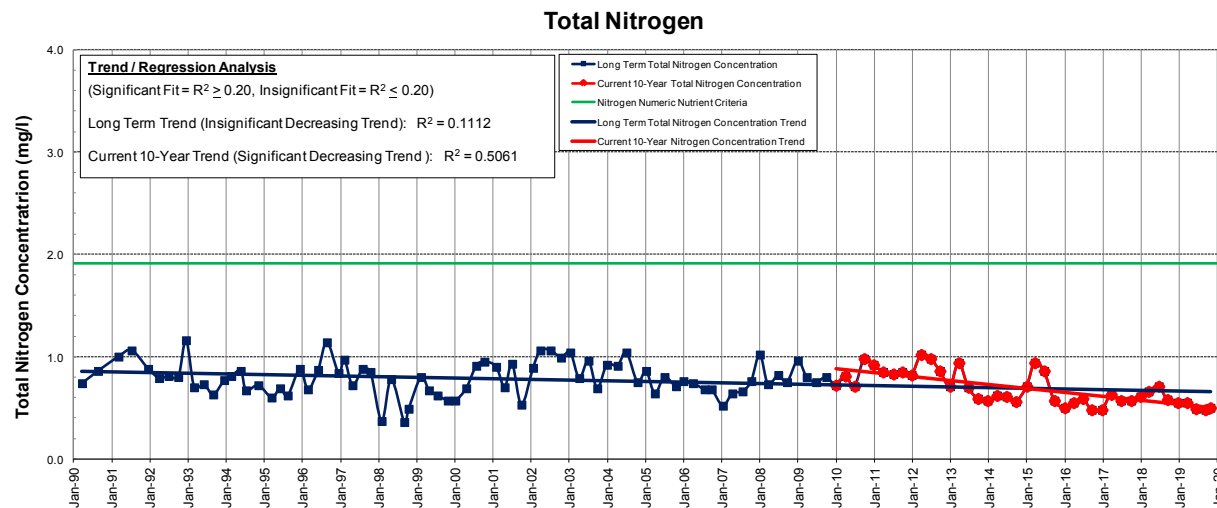
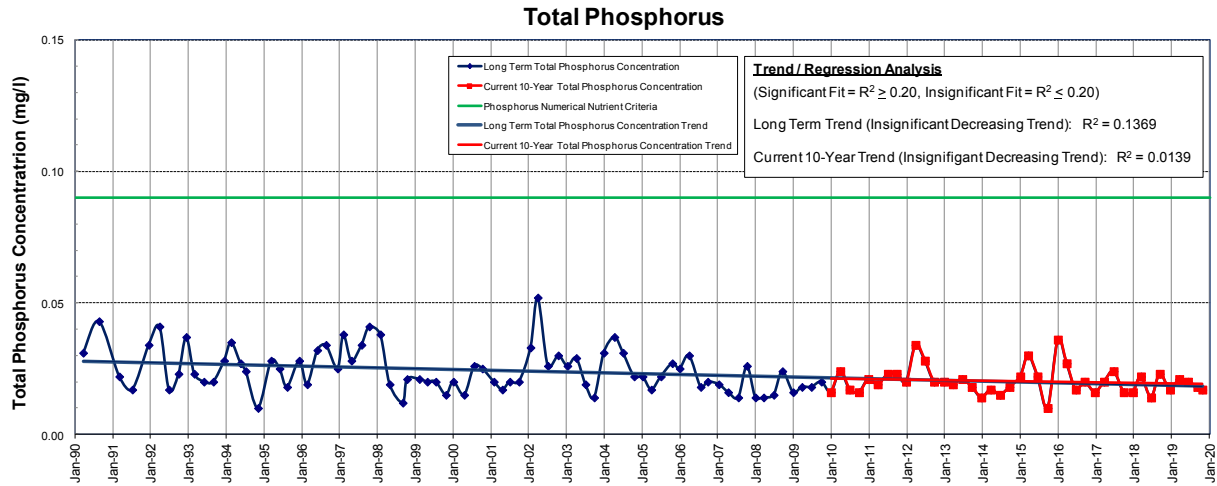
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 69			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.026	0.58	0.64	6.84	47
Maximum	0.074	0.91	1.24	32.60	61
Average	0.050	0.73	0.89	22.44	56

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** At the north end of Teatro Ct. in Demetree Park in the Monterey neighborhood.

# LAKE SARAH NUTRIENT TRENDS



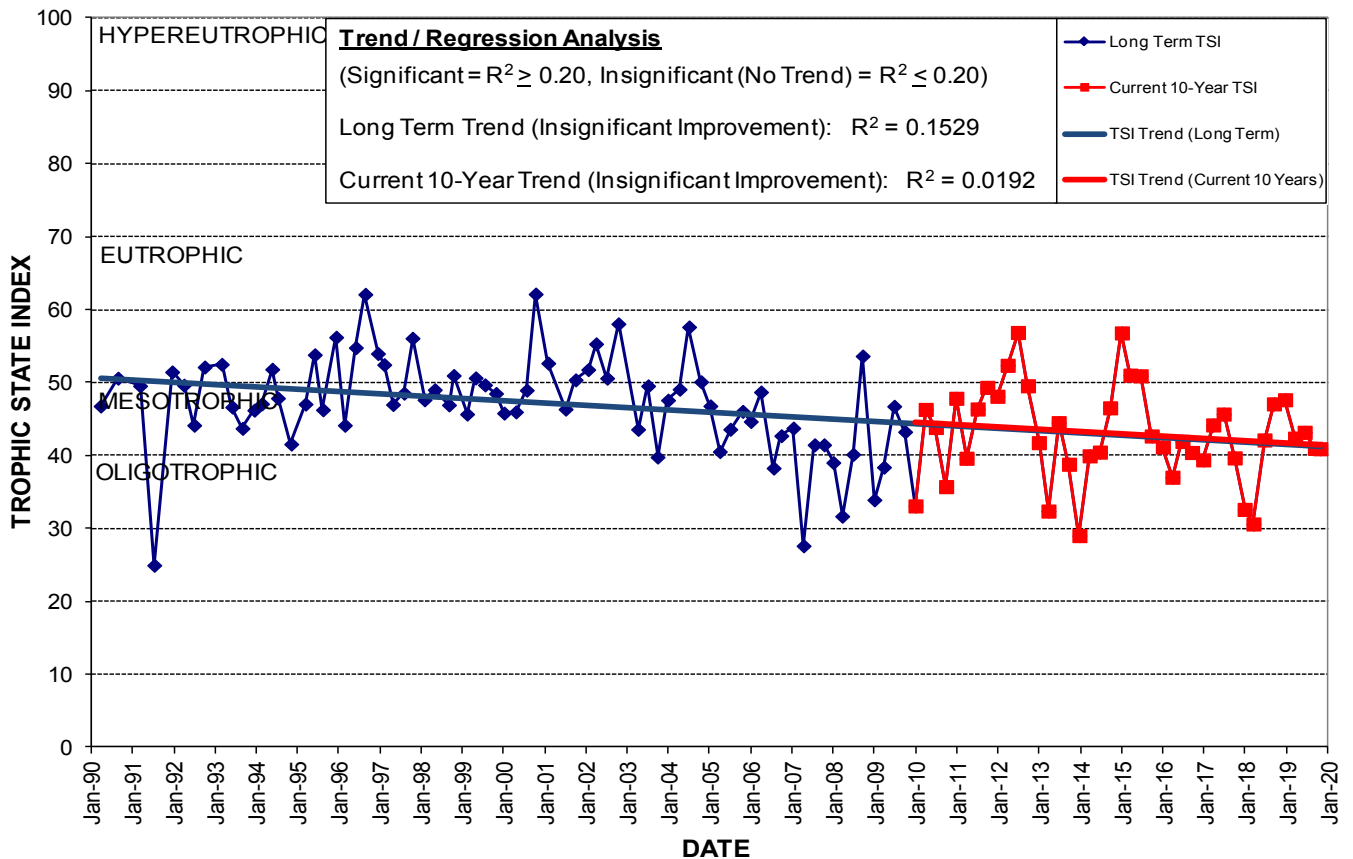
# LAKE SARAH

Lake Origin: **Natural**  
 Lake Surface Area: **13 acres**  
 Lake Volume: **4,181,000 ft<sup>3</sup>**  
 Shoreline Length: **2,812 ft (857 m)**  
 Mean Depth: **7.6 ft (2.3 m)**  
 Maximum Depth: **17.3 ft (5.3 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 35' 05.0"** Long **W 81° 24' 07.5"**  
 Section **10** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LW-08**  
 Drainage Basin Area: **12 acres**  
 Land Use: **Residential: 79%** **Commercial: 7%**  
**Industrial: 0%** **Highways: 0%** **Natural: 14%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

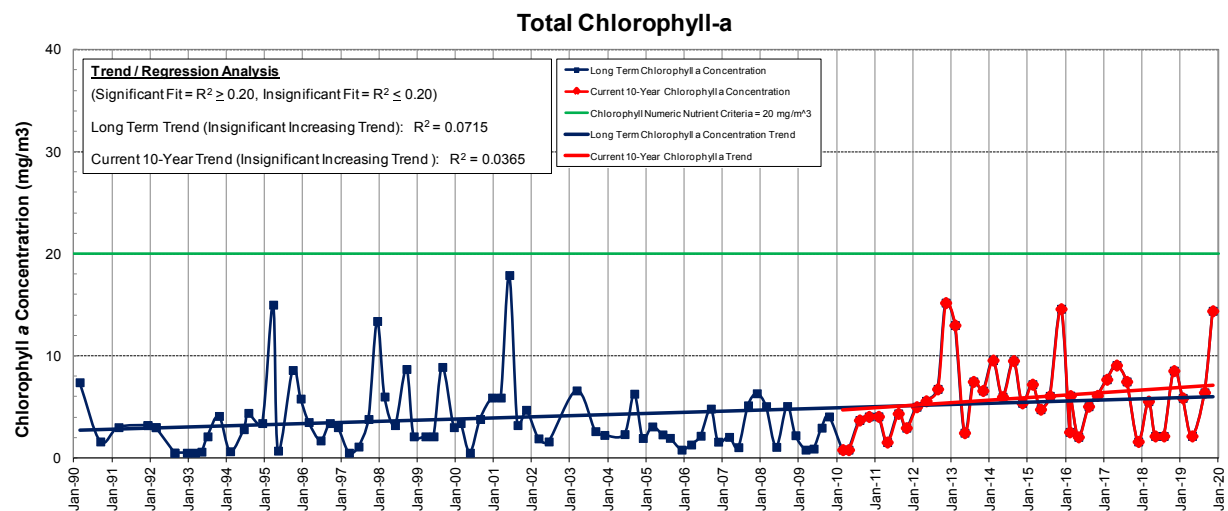
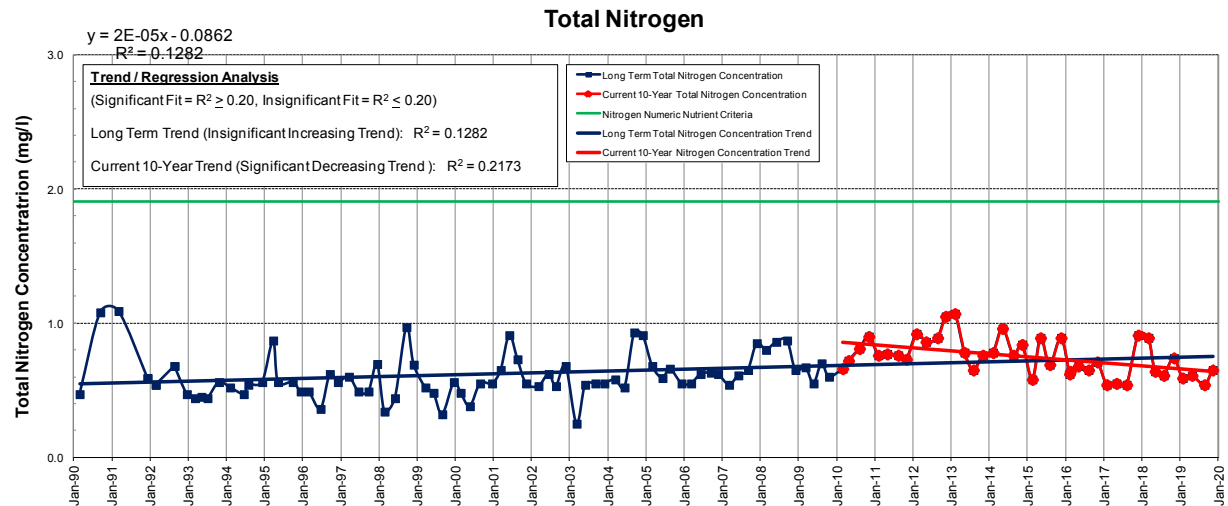
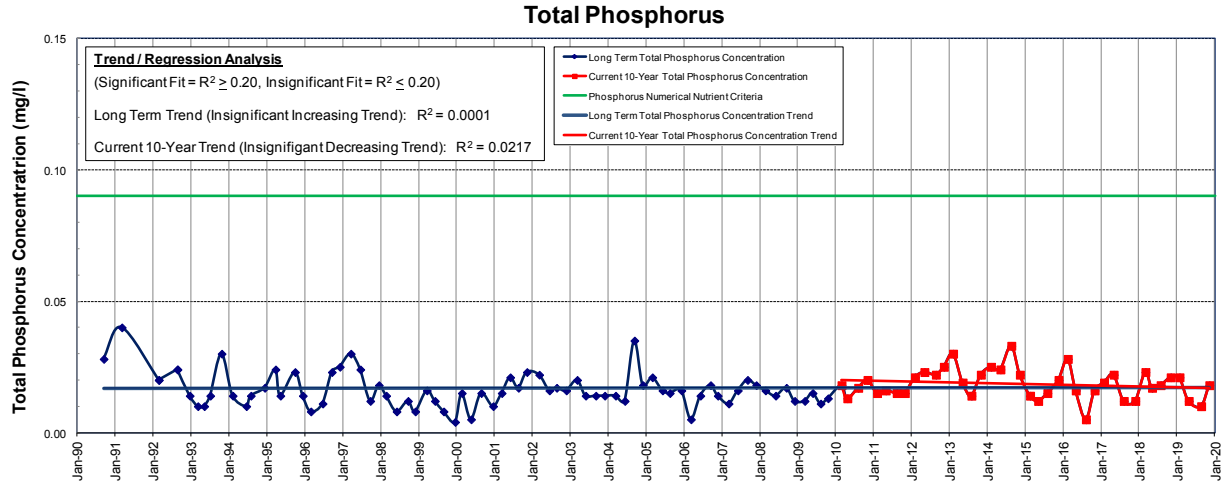
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 34			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.014	0.48	1.35	1.07	31
Maximum	0.024	0.71	3.19	11.70	48
Average	0.019	0.57	2.08	6.52	41

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** In the Palomar neighborhood between Interlaken Rd. and Lake Sarah Dr.

# LAKE SHANNON NUTRIENT TRENDS



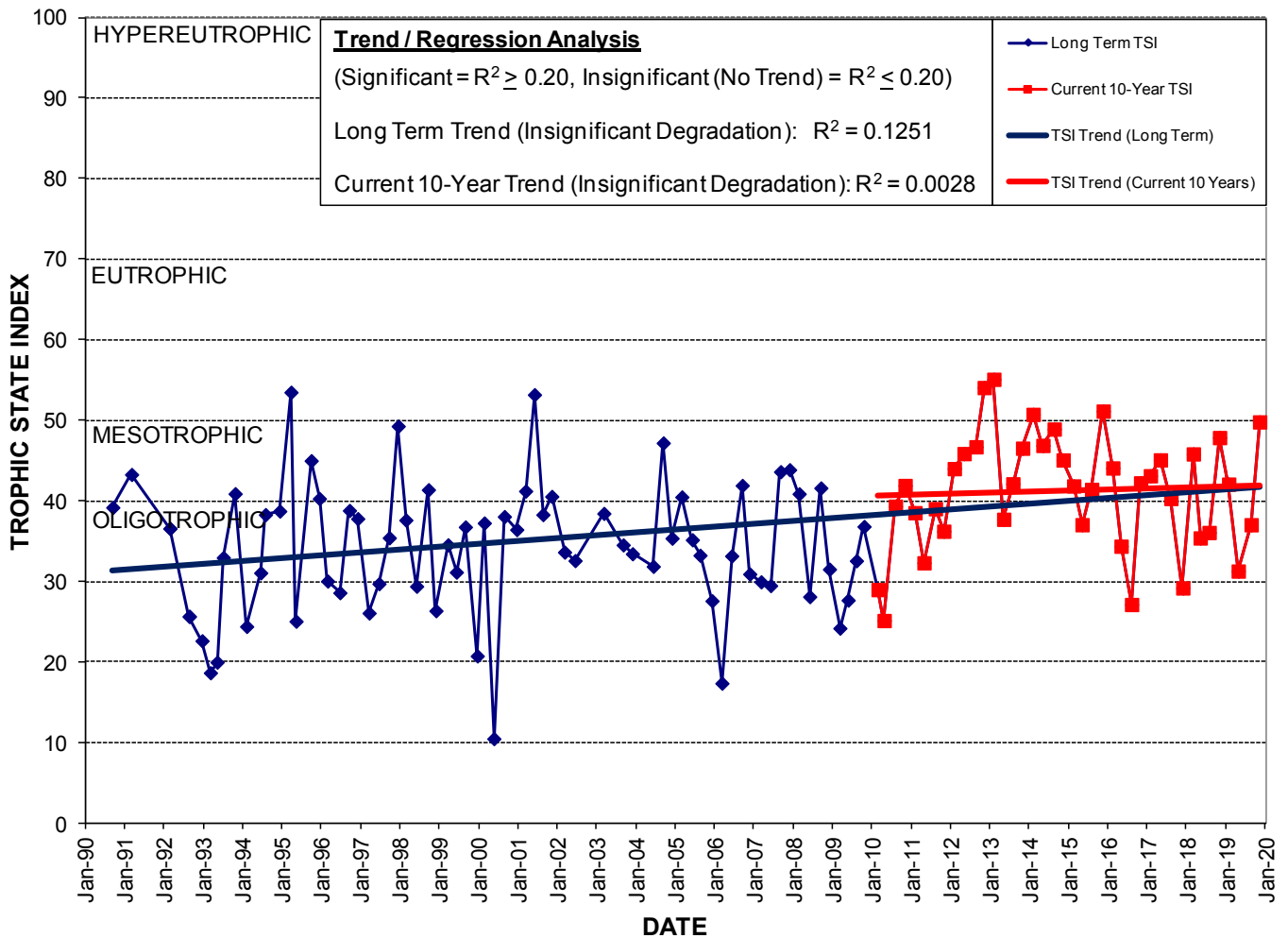
# LAKE SHANNON

Lake Origin: **Natural**  
 Lake Surface Area: **10 acres**  
 Lake Volume: **4,860,000 ft<sup>3</sup>**  
 Shoreline Length: **2,831 ft (863 m)**  
 Mean Depth: **11.2 ft (3.4 m)**  
 Maximum Depth: **19.0 ft (5.8 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 33' 53.3"** Long **W 81° 20' 28.3"**  
 Section **20** Township **22S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **HB-35**  
 Drainage Basin Area: **80 acres**  
 Land Use: **Residential: 3% Commercial: 91%**  
**Industrial: 1% Highways: 0% Natural: 5%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 23			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.010	0.54	0.92	1.60	29
Maximum	0.023	0.91	2.47	14.40	50
Average	0.017	0.65	1.57	6.09	40

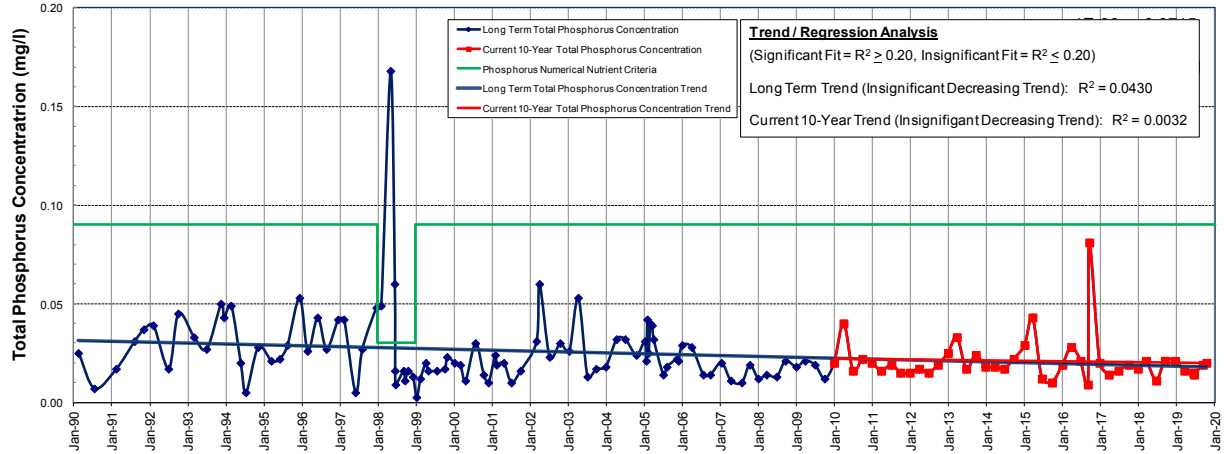
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



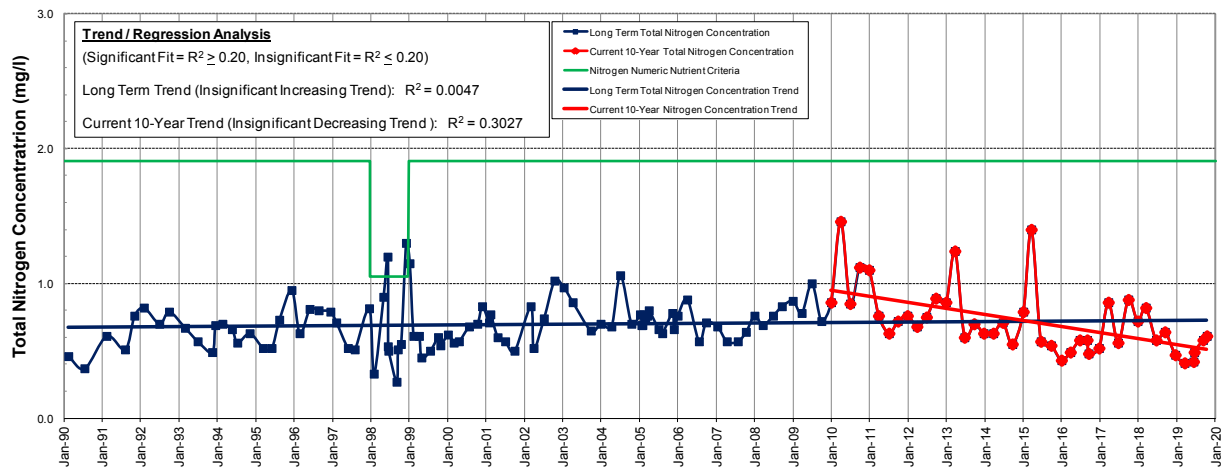
**Location:** In the Audubon Park neighborhood west of Tanager Dr. between Finch St. and Cardinal Rd.

# LAKE SILVER NUTRIENT TRENDS

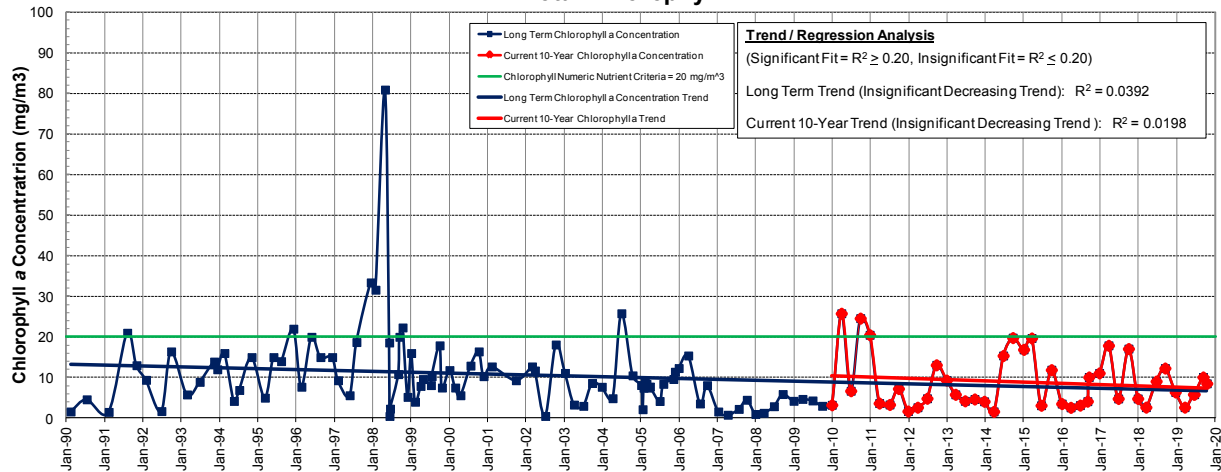
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll





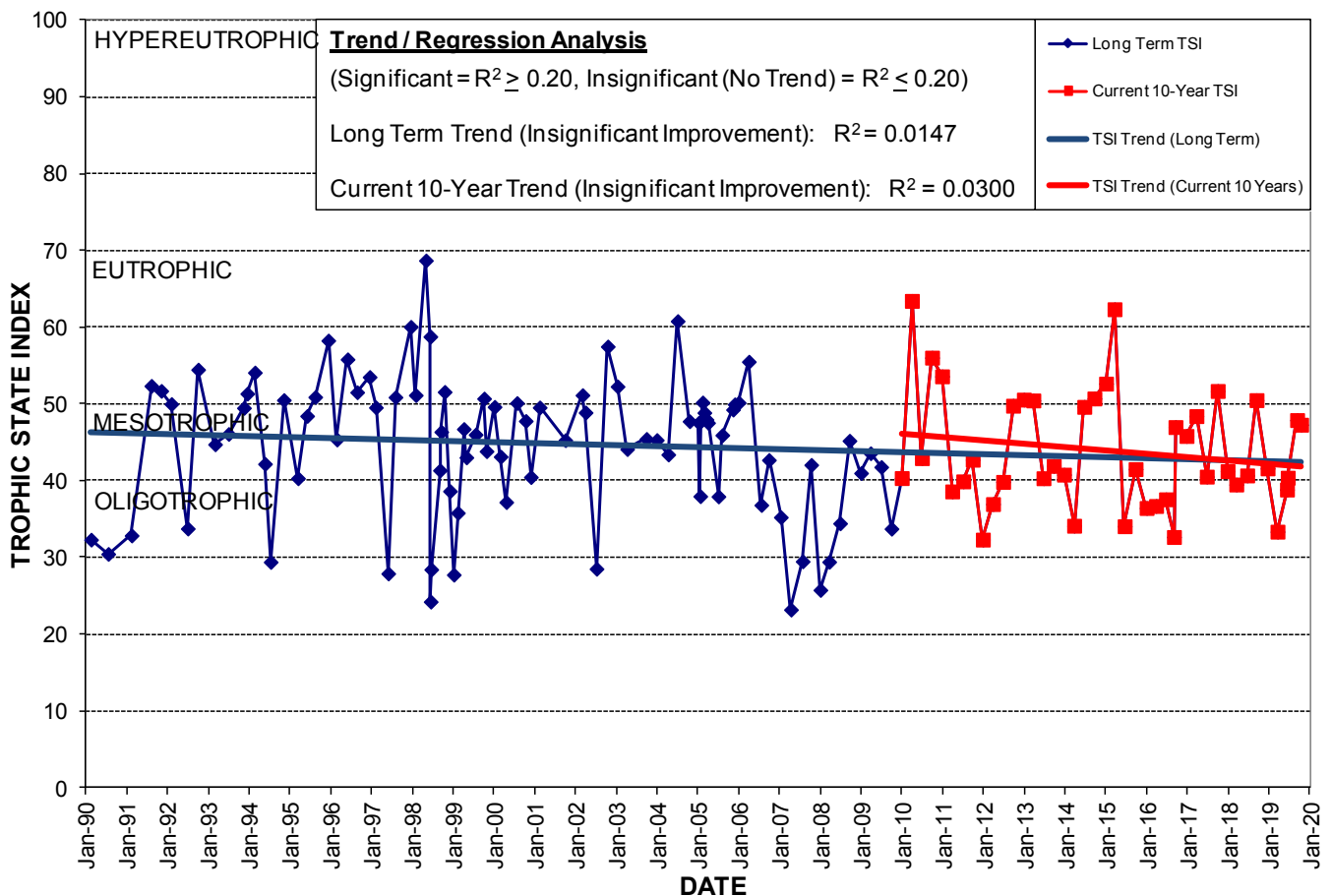
# LAKE SILVER

Lake Origin: **Natural**  
 Lake Surface Area: **70 acres**  
 Lake Volume: **48,000,000 ft<sup>3</sup>**  
 Shoreline Length: **6,997 ft (2,133 m)**  
 Mean Depth: **15.8 ft (4.8 m)**  
 Maximum Depth: **26.0 ft (7.9 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 34' 41.2"** Long **W 81° 23' 47.8"**  
 Section **15** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LW-10**  
 Drainage Basin Area: **441 acres**  
 Land Use: **Residential: 84% Commercial: 8%**  
**Industrial: 0% Highways: 0% Natural: 8%**  
 Limiting Nutrient: **Phosphorus**

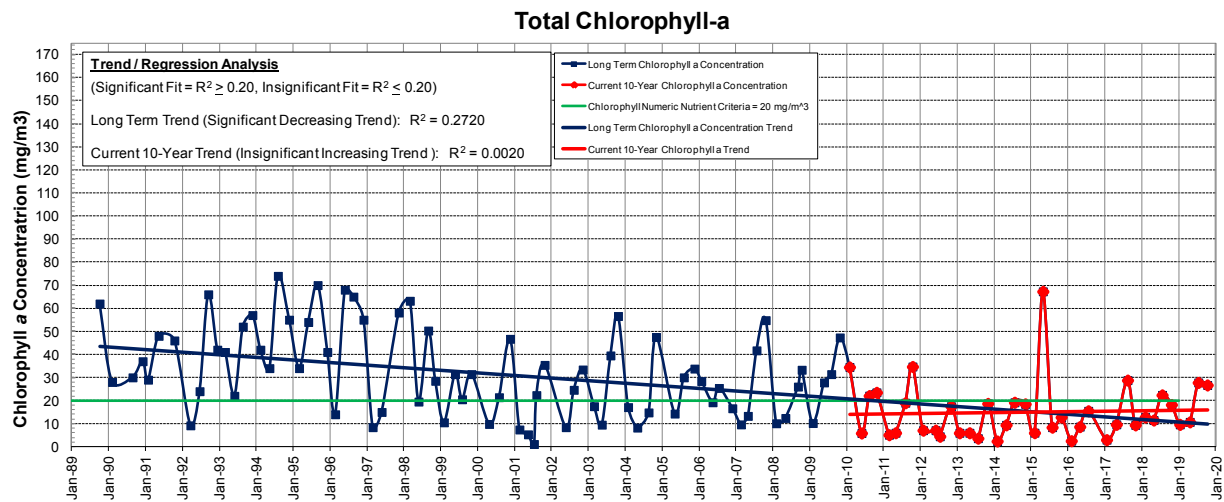
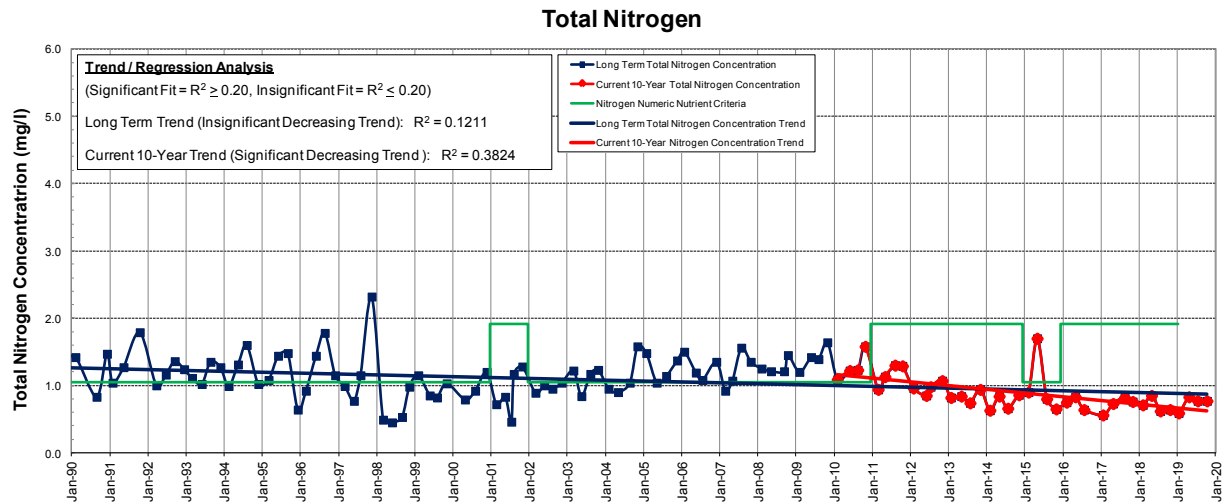
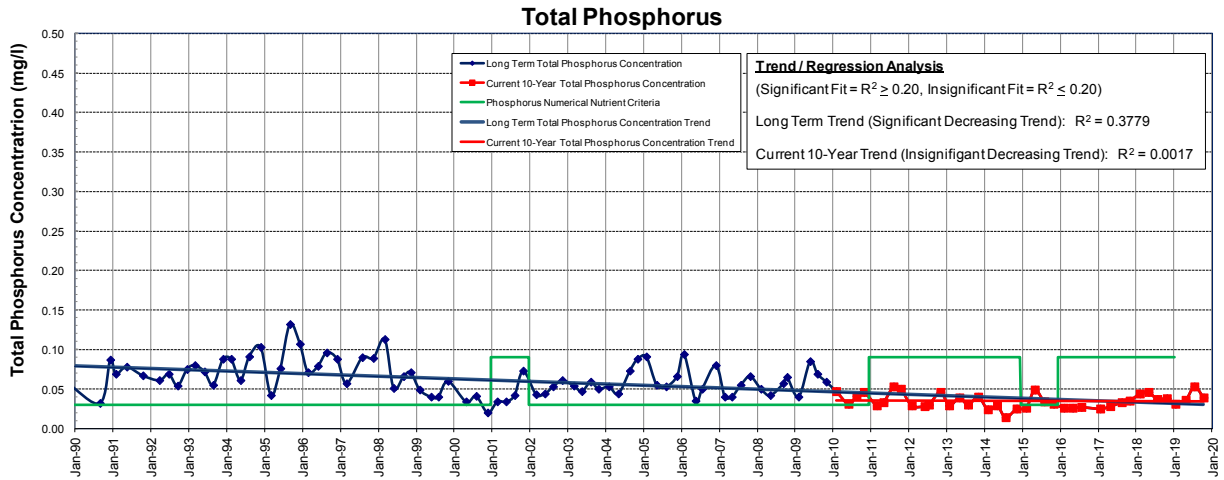
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 28			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.011	0.41	0.87	2.67	33
Maximum	0.021	0.88	3.21	17.90	52
Average	0.017	0.61	2.04	8.52	43

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** North of Bryn Mawr Ave. between Ardsley Dr. and Westmoreland Dr.

# SPRING LAKE NORTHWEST NUTRIENT TRENDS



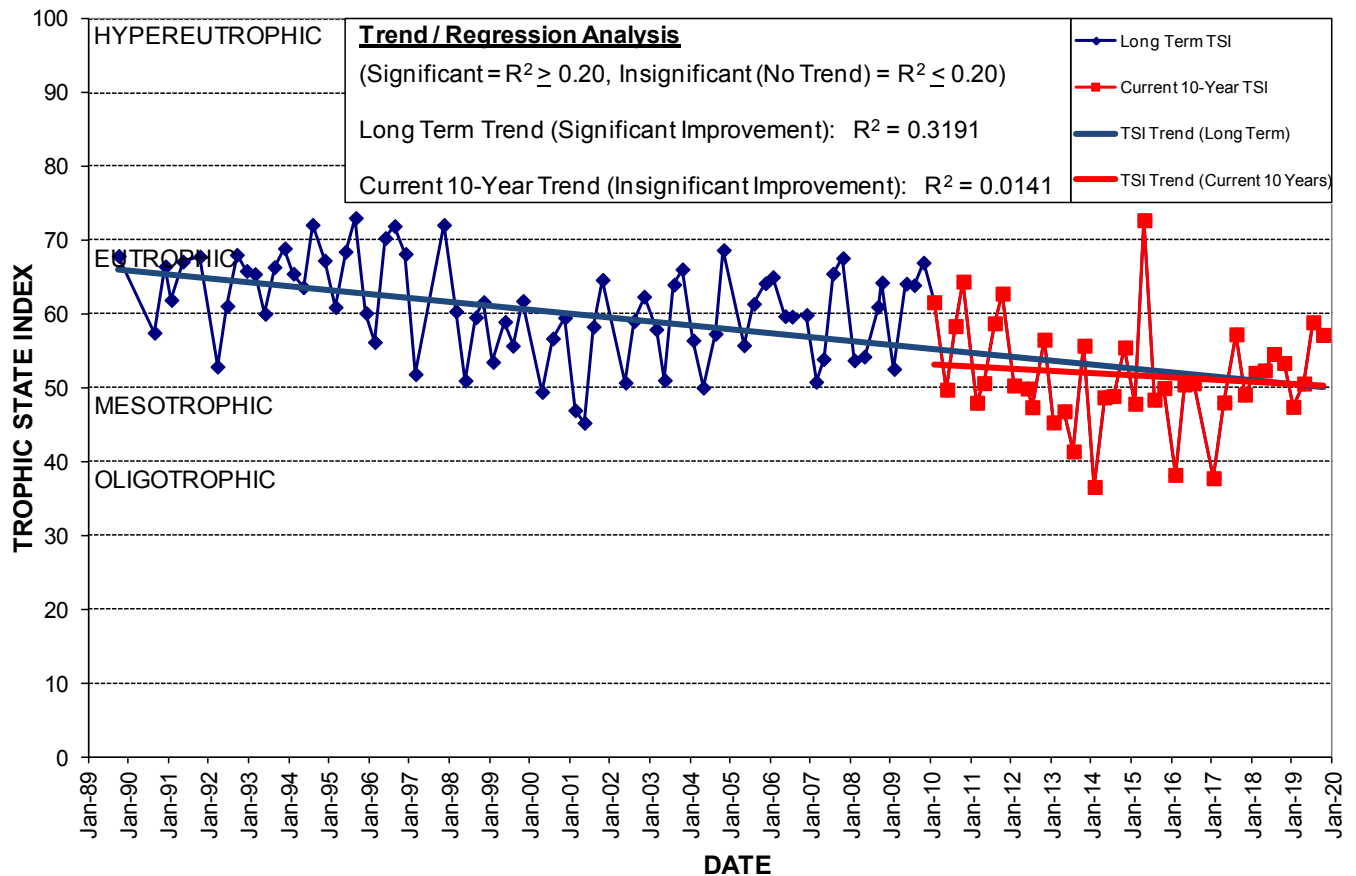
# SPRING LAKE NORTHWEST

Lake Origin: **Natural**  
 Lake Surface Area: **38 acres**  
 Lake Volume: **16,905,600 ft<sup>3</sup>**  
 Shoreline Length: **5,461 ft (1,665 m)**  
 Mean Depth: **10.1 ft (3.1 m)**  
 Maximum Depth: **19.6 ft (6.0 m)**  
 Drain Wells: **1** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 33' 22.7"** Long **W 81° 23' 58.6"**  
 Section **22** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **HB-28**  
 Drainage Basin Area: **504 acres**  
 Land Use: **Residential: 32% Commercial: 60%**  
**Industrial: 5% Highways: 0% Natural: 3%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

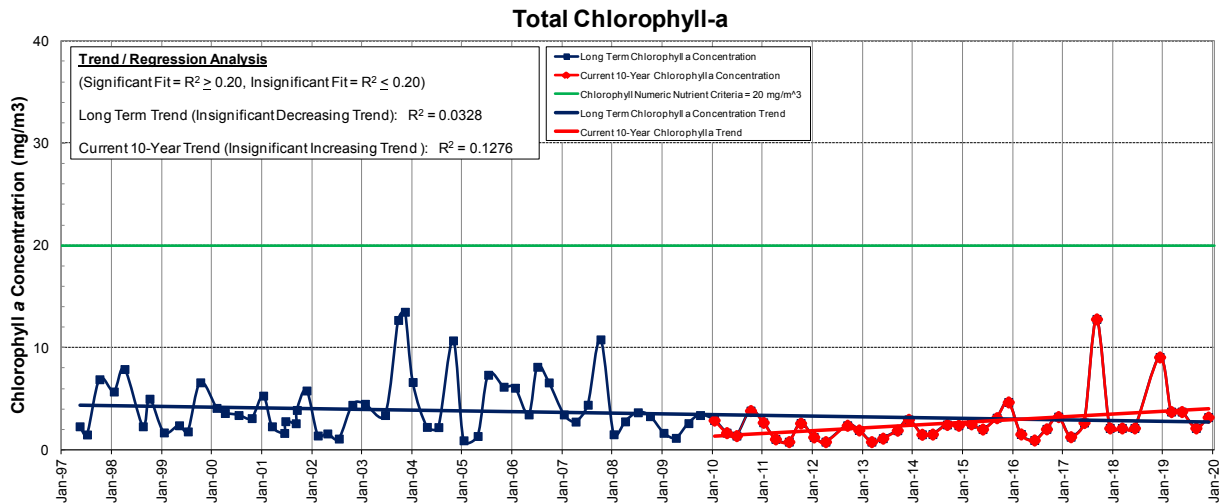
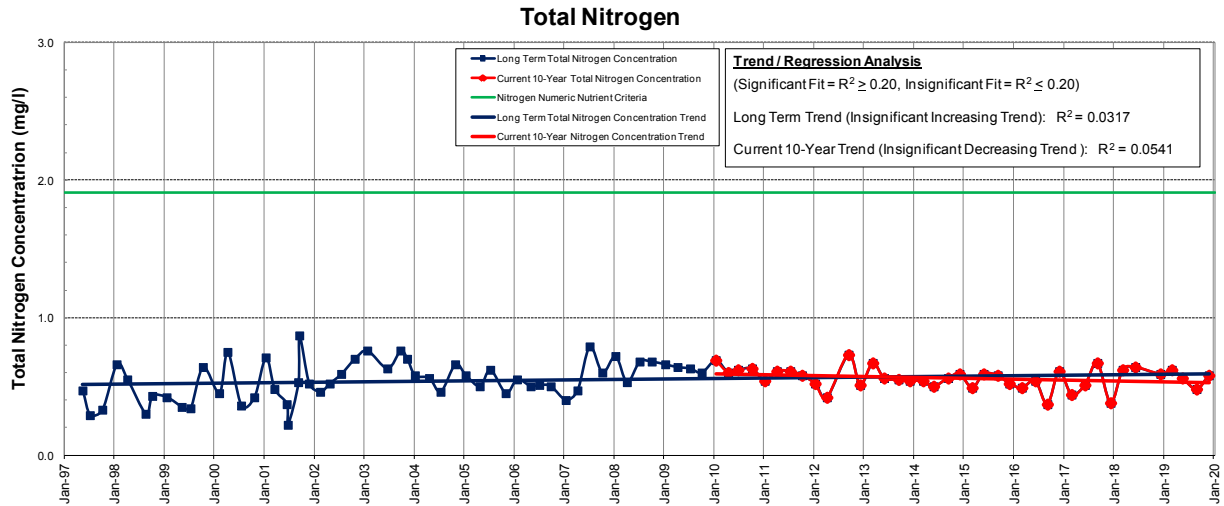
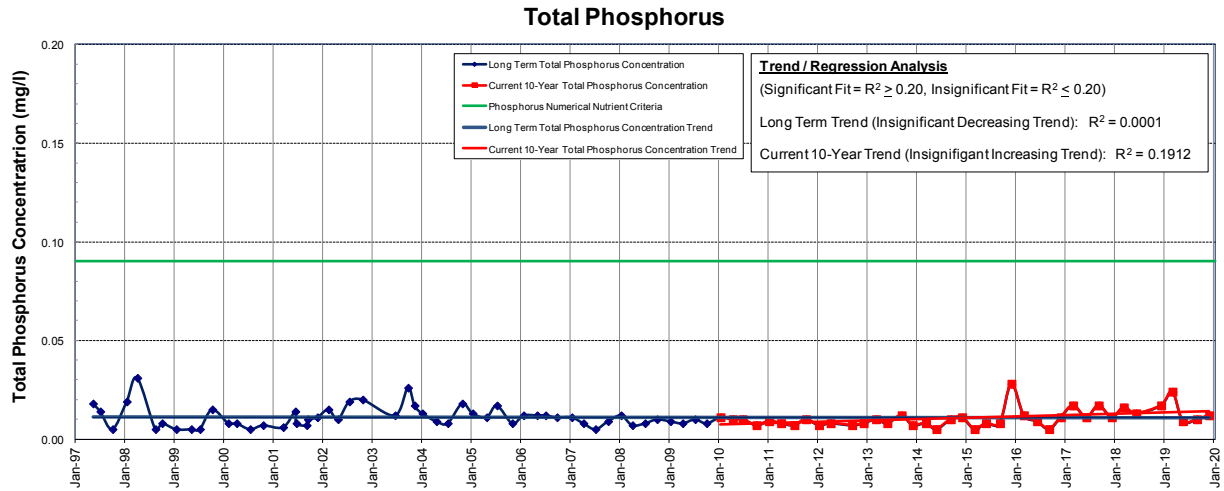
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 66			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.025	0.56	1.08	2.99	38
Maximum	0.053	0.85	2.36	28.80	59
Average	0.037	0.72	1.55	15.88	52

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** West of Orange Blossom Trl. (SR 441) between Country Club Rd. and Spring Lake Dr.

# SPRING LAKE SOUTHWEST NUTRIENT TRENDS



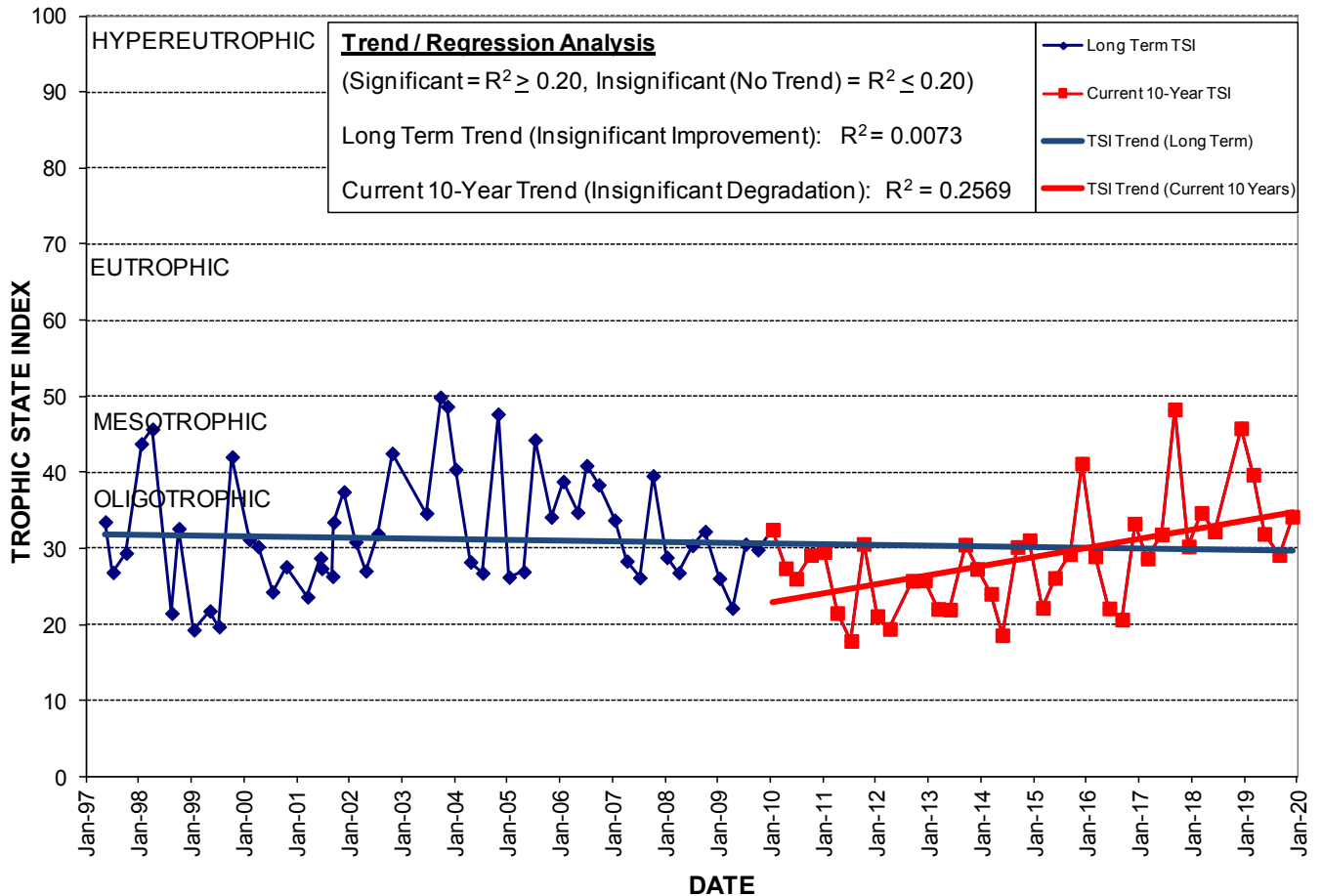
# SPRING LAKE SOUTHWEST

Lake Origin: **Natural**  
 Lake Surface Area: **112 acres**  
 Lake Volume: **88,735,000 ft<sup>3</sup>**  
 Shoreline Length: **8,700 ft (2,652 m)**  
 Mean Depth: **18.2 ft (5.5 m)**  
 Maximum Depth: **32.8 ft (10.0 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 27' 18.4"** Long **W 81° 28' 59.9"**  
 Section **26** Township **23S** Range **28E**  
 Water Management District: **South Florida**  
 Drainage Code: **SC-01E**  
 Drainage Basin Area: **739 acres**  
 Land Use: **Residential: 0%** **Commercial: 66%**  
**Industrial: 0%** **Highways: 12%** **Natural: 22%**  
 Limiting Nutrient: **Phosphorus**

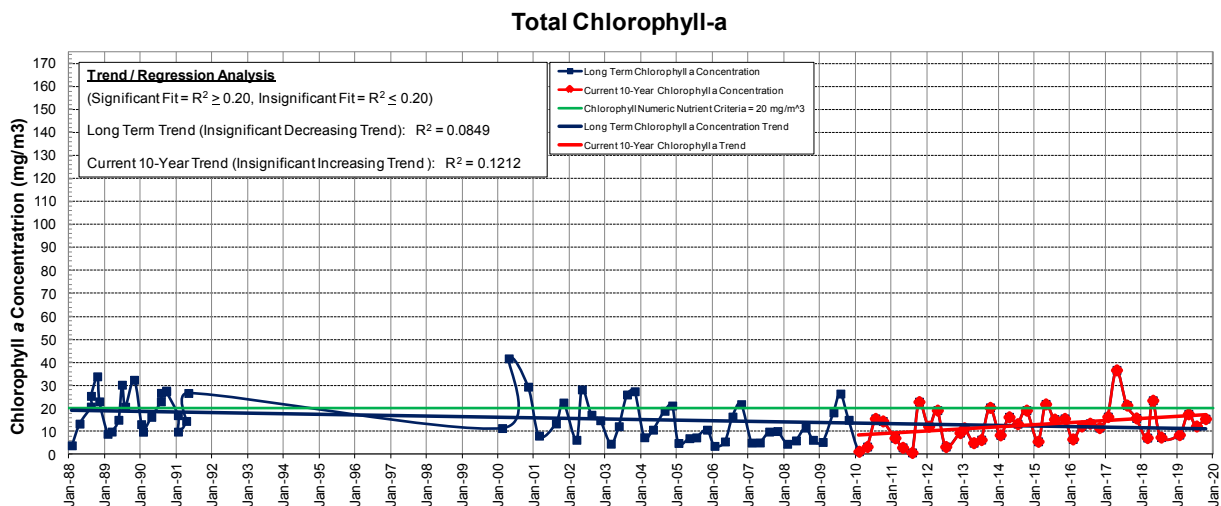
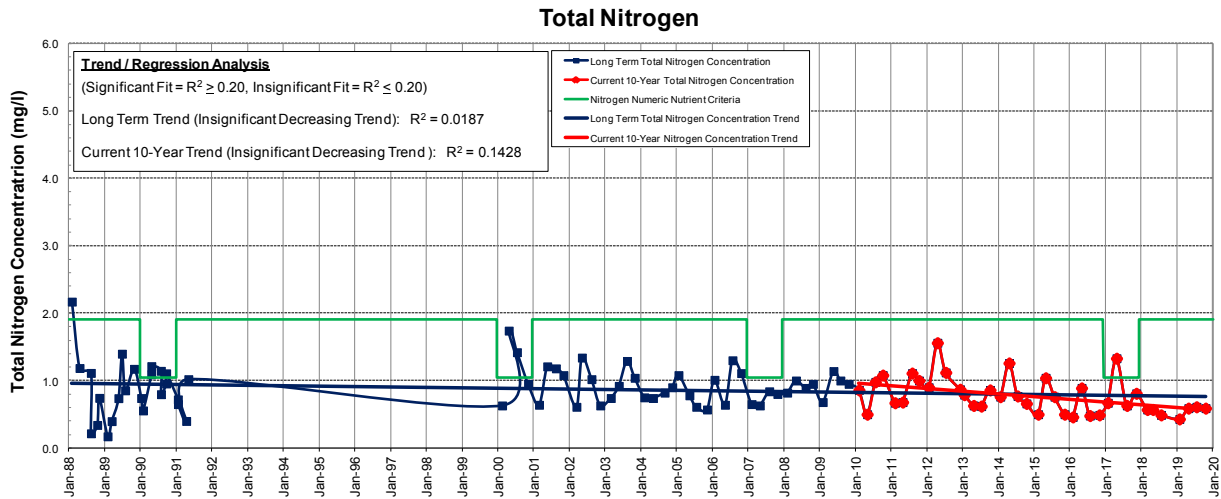
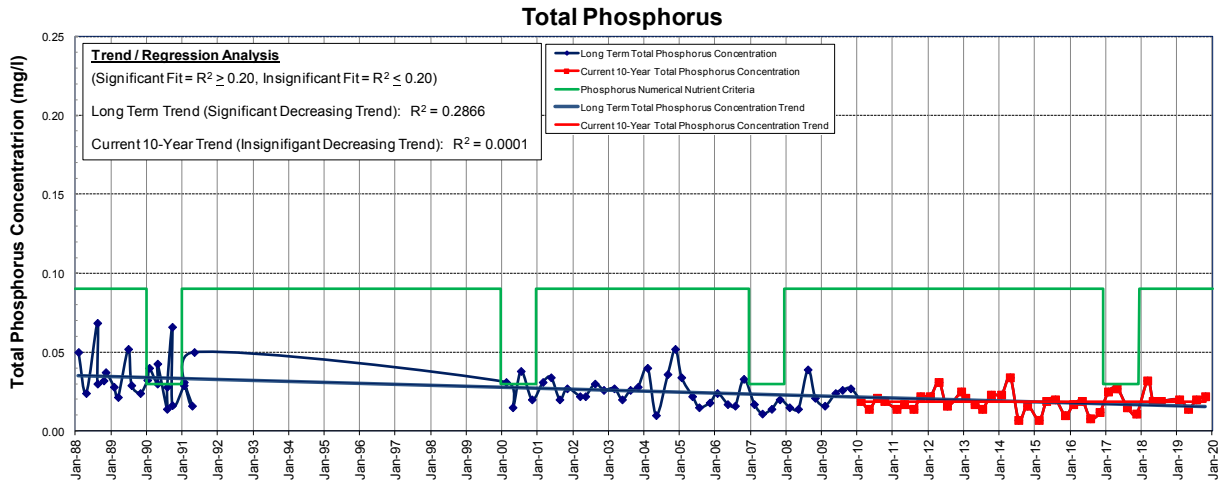
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 9			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.009	0.38	1.82	1.28	29
Maximum	0.024	0.67	3.51	12.80	48
Average	0.014	0.55	2.57	4.10	35

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** North of Sand Lake Rd. between Dr. Phillips Blvd. and Turkey Lake Rd.

# LAKE SUE NUTRIENT TRENDS



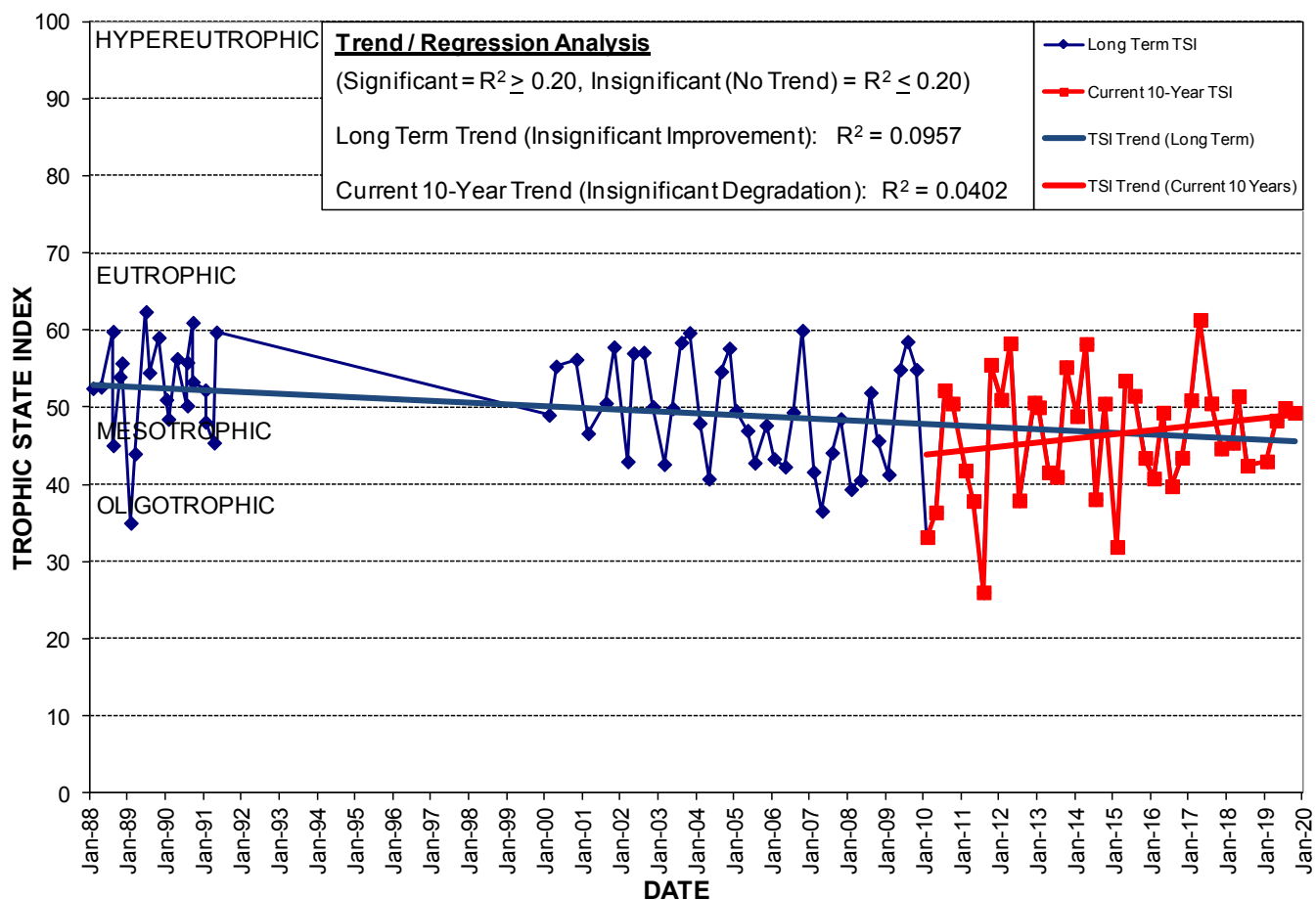
# LAKE SUE

Lake Origin: **Natural**  
 Lake Surface Area: **143 acres**  
 Lake Volume: **No Data**  
 Shoreline Length: **11,492 ft (3,503 m)**  
 Mean Depth: **14.8 ft (4.5 m)**  
 Maximum Depth: **15.3 ft (4.7 m)**  
 Drain Wells: **No**      Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 34' 39.0"** Long **W 81° 21' 15.5"**  
 Section **18** Township **22N** Range **30W**  
 Water Management District: **St. Johns River**  
 Drainage Code: **HB-20**  
 Drainage Basin Area: **119 acres**  
 Land Use: **Residential: 60%**    **Commercial: 30%**  
**Industrial: 0%**    **Highways: 5%**    **Natural: 5%**  
 Limiting Nutrient: **Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 51			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.011	0.43	0.42	7.26	42
Maximum	0.032	1.33	3.24	36.70	61
Average	0.020	0.66	1.12	16.59	49

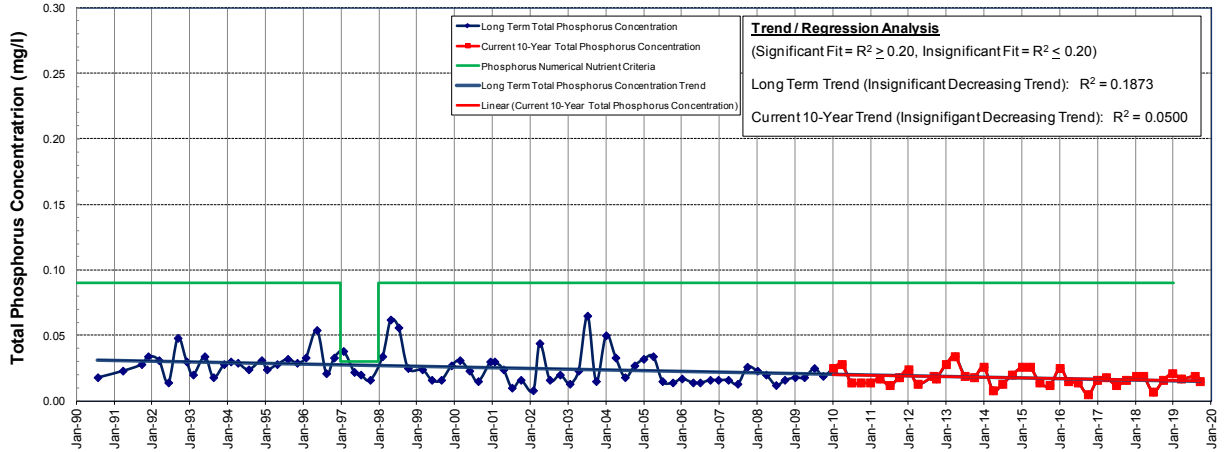
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



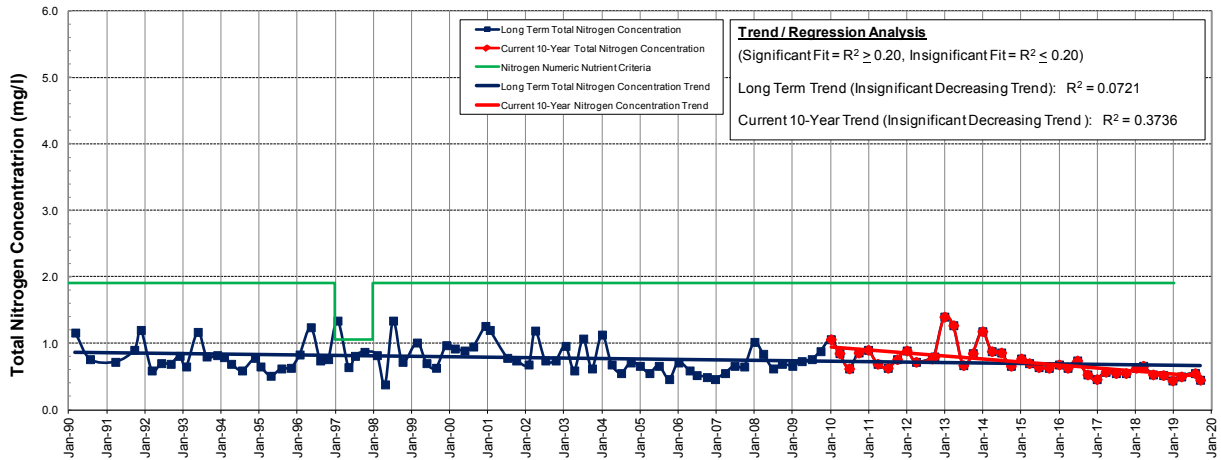
**Location:** Between Lake Shore Dr. and Fawsett Rd. near Loch Haven Park and Harry P. Leu Gardens.

# LAKE SUNSET NUTRIENT TRENDS

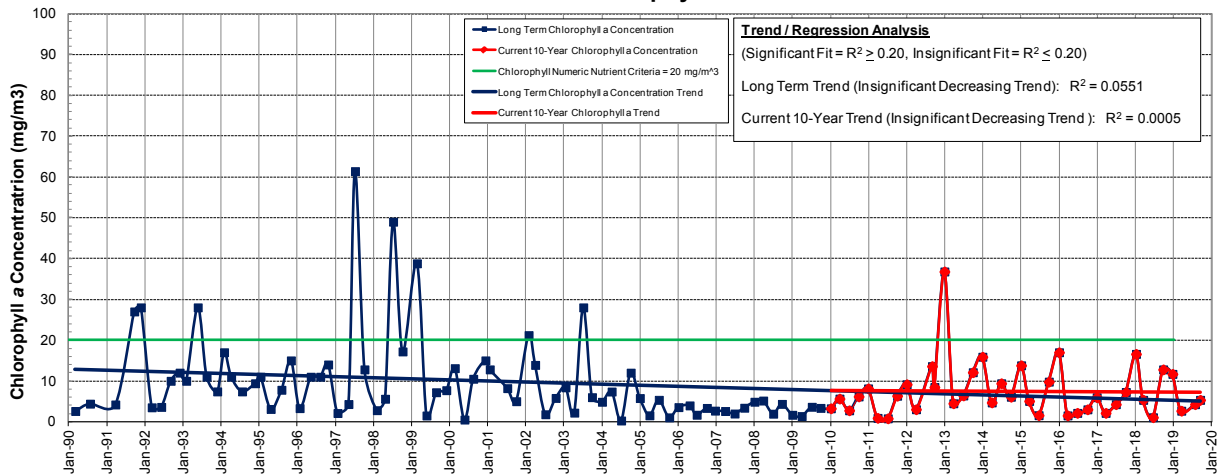
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a





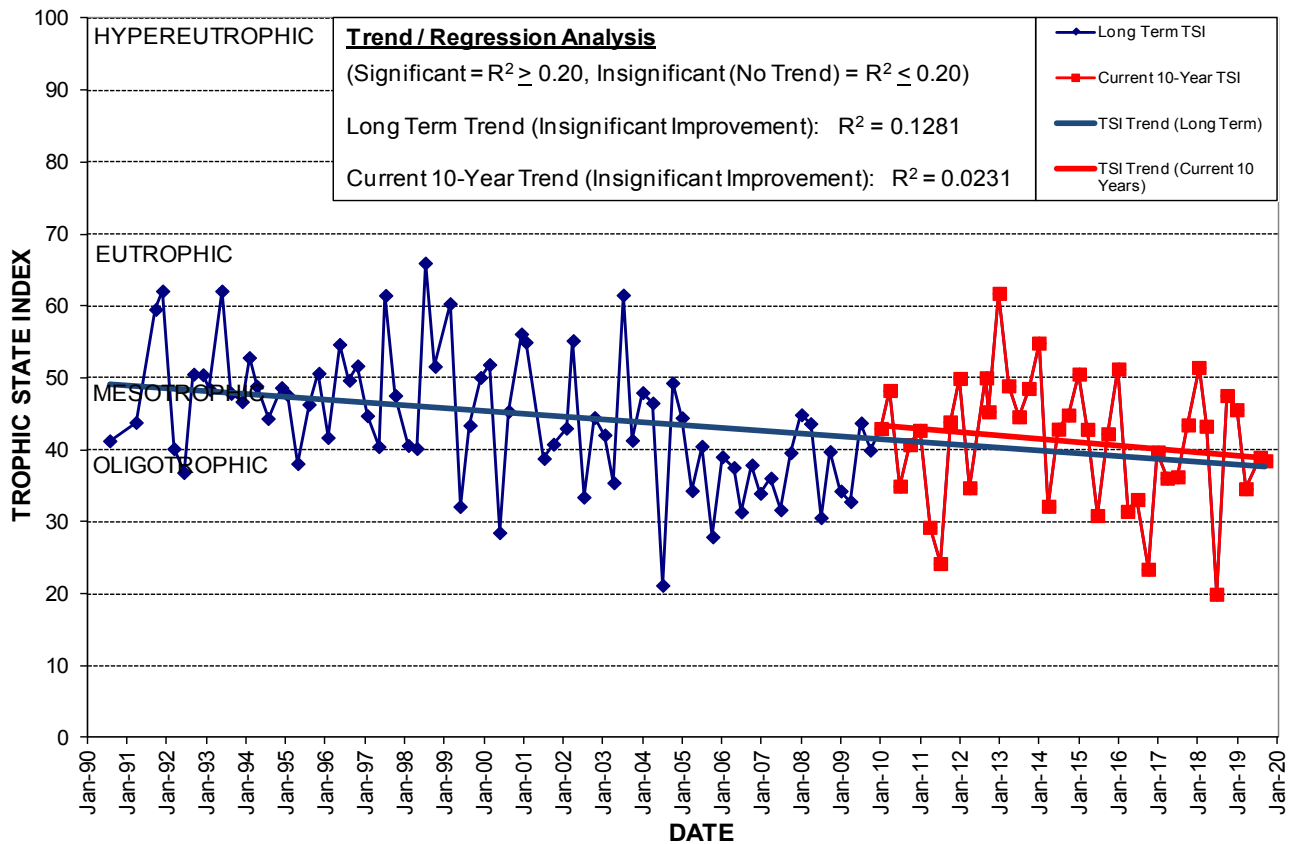
# LAKE SUNSET

Lake Origin: **Natural**  
 Lake Surface Area: **29 acres**  
 Lake Volume: **24,000,000 ft<sup>3</sup>**  
 Shoreline Length: **4,543 ft (1,385 m)**  
 Mean Depth: **19.2 ft (5.9 m)**  
 Maximum Depth: **32.0 ft (9.8 m)**  
 Drain Wells: **1** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 32' 11.0"** Long **W 81° 24' 41.0"**  
 Section **33** Township **22S** Range **29E**  
 Water Management District: **South Florida**  
 Drainage Code: **ORL-11**  
 Drainage Basin Area: **140 acres**  
 Land Use: **Residential: 58%** **Commercial: 3%**  
**Industrial: 3%** **Highways: 11%** **Natural: 25%**  
 Limiting Nutrient: **Phosphorus**

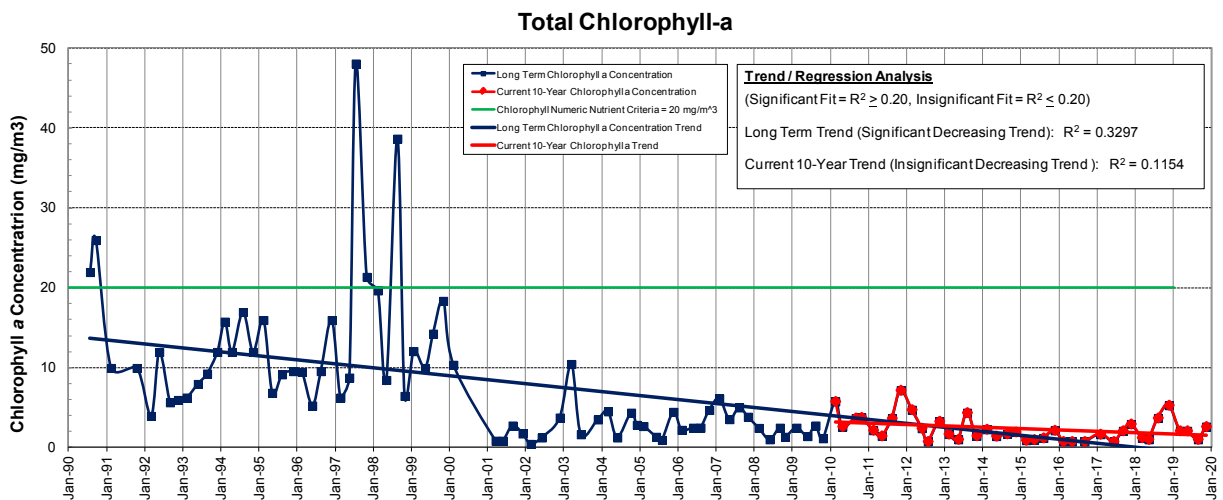
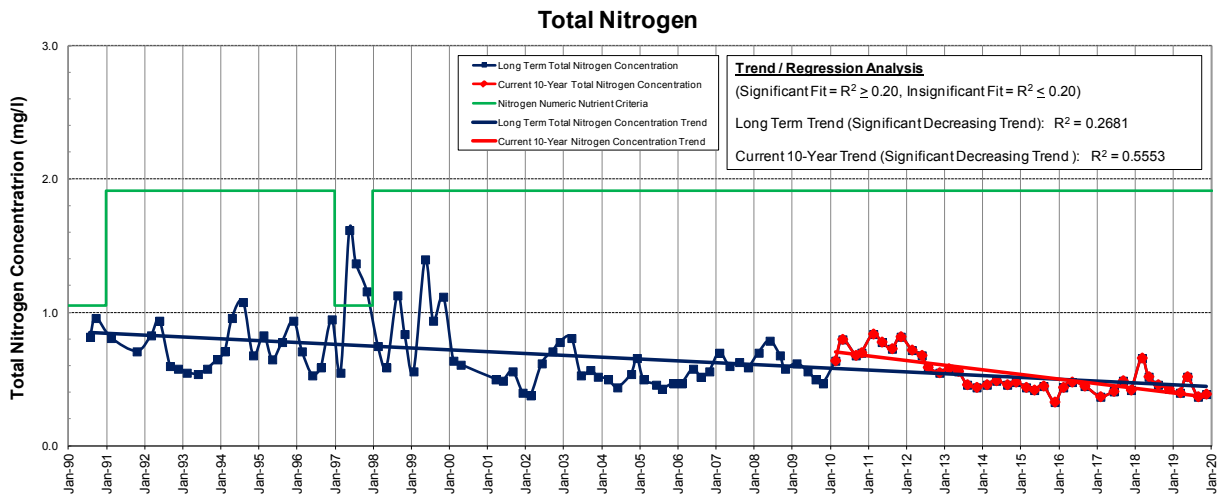
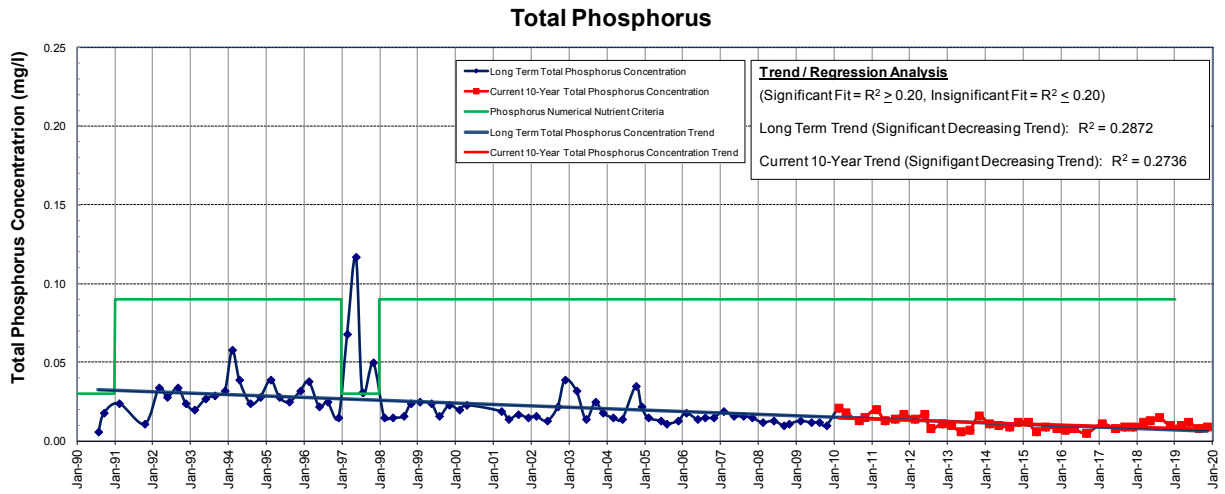
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 21			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.007	0.44	1.26	1.07	20
Maximum	0.021	0.66	3.69	16.60	51
Average	0.016	0.53	2.57	6.62	40

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** East of John Young Pkwy. between Church St. and Orange Center Blvd.

# LAKE SUSANNAH NUTRIENT TRENDS



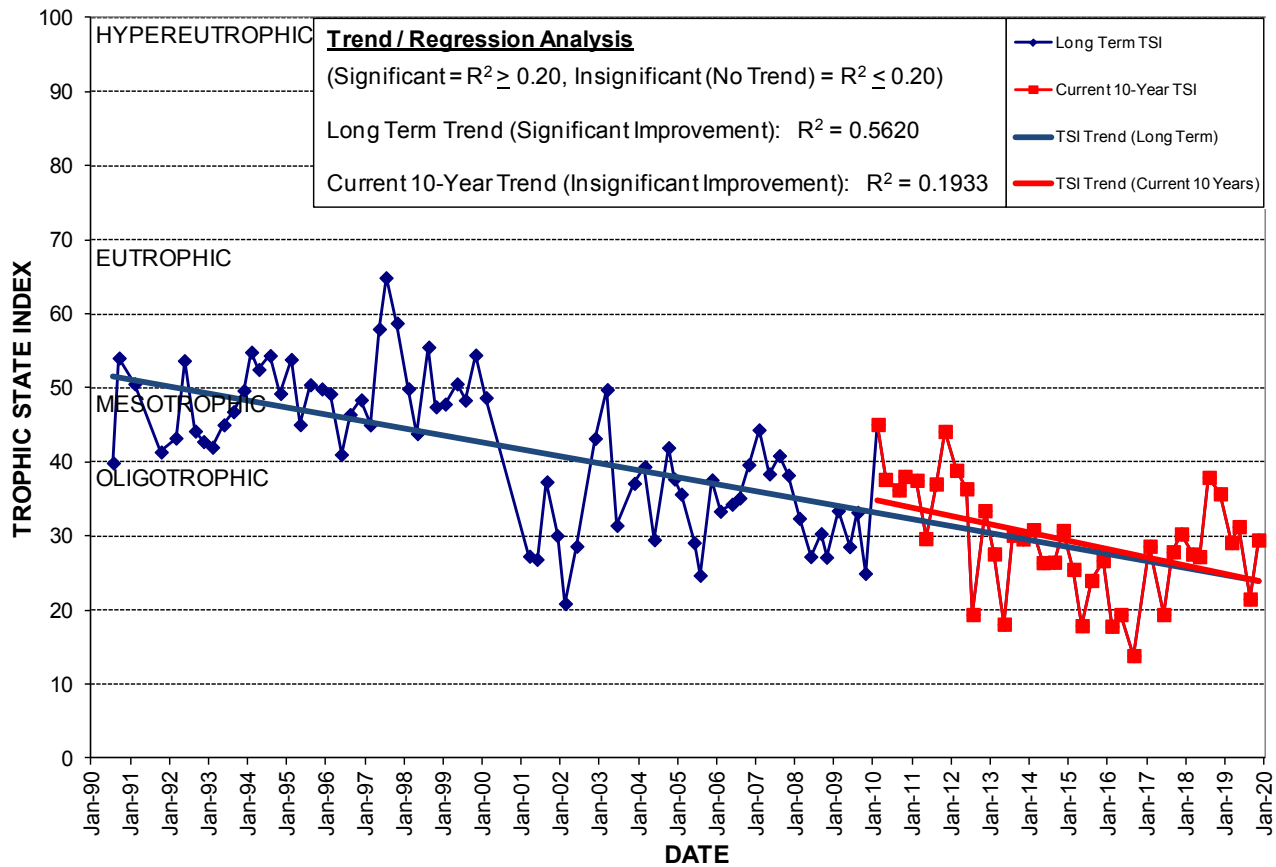
# LAKE SUSANNAH

Lake Origin: **Natural**  
 Lake Surface Area: **78 acres**  
 Lake Volume: **30,267,000 ft<sup>3</sup>**  
 Shoreline Length: **7,692 ft (7,692 m)**  
 Mean Depth: **10.0 ft (3.0 m)**  
 Maximum Depth: **16.0 ft (4.9 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 33' 45.0"** Long **W 81° 19' 21.0"**  
 Section **21** Township **22S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LE-03**  
 Drainage Basin Area: **177 acres**  
 Land Use: **Residential: 12%** **Commercial: 25%**  
**Industrial: 42%** **Highways: 7%** **Natural: 15%**  
 Limiting Nutrient: **Phosphorus**

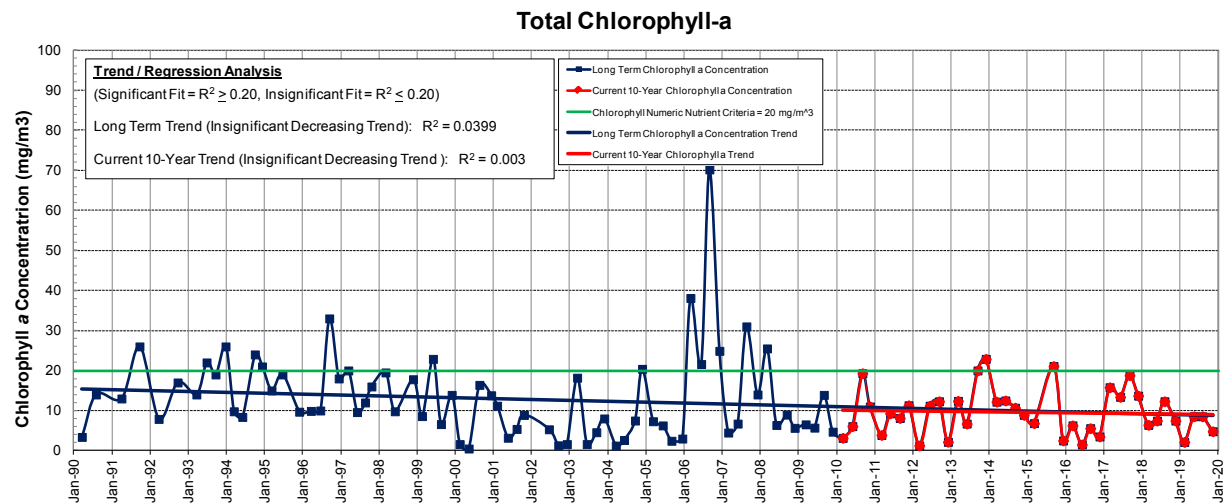
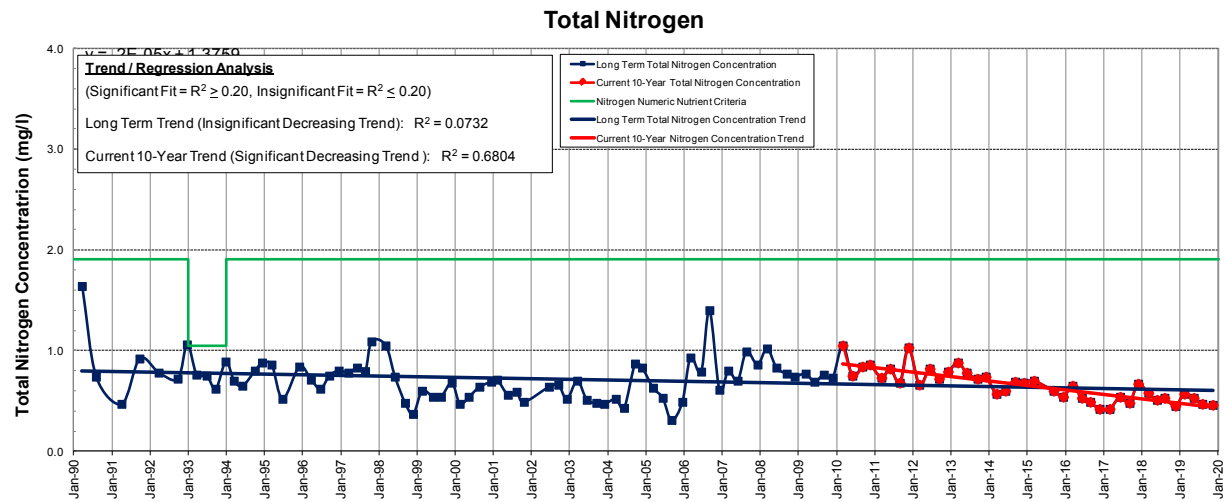
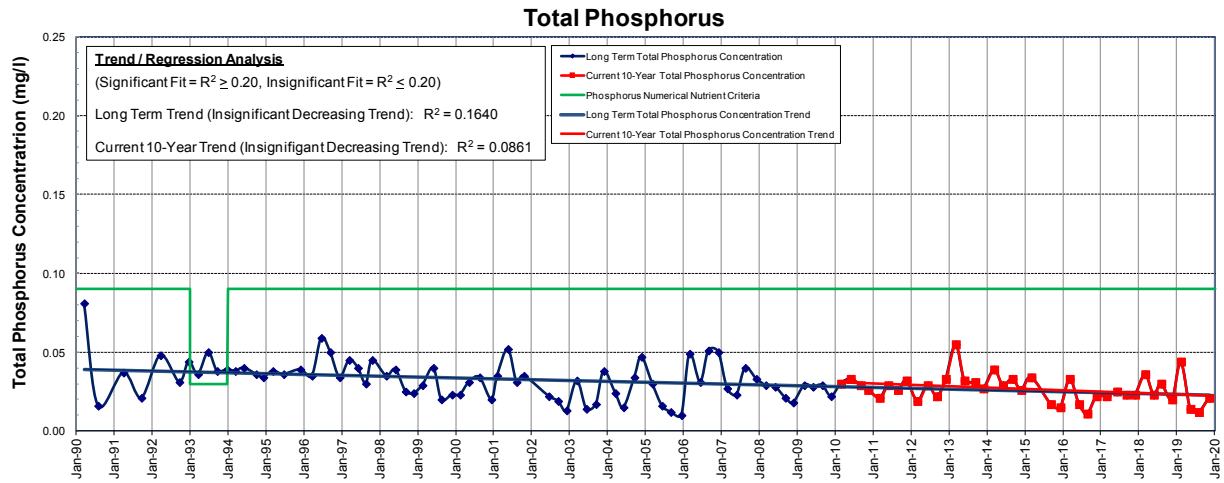
2017 - 2019 Water Quality Data		2016 TSI Ranking (out of 94 lakes): 3			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.008	0.37	1.02	0.80	19
Maximum	0.015	0.66	4.07	5.34	38
Average	0.011	0.45	2.93	2.26	29

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Mostly on the old Naval Training Center property, now known as Baldwin Park Neighborhood, northeast of the Beach Blvd. and Leahy Dr. intersection.

# LAKE TENNESSEE NUTRIENT TRENDS



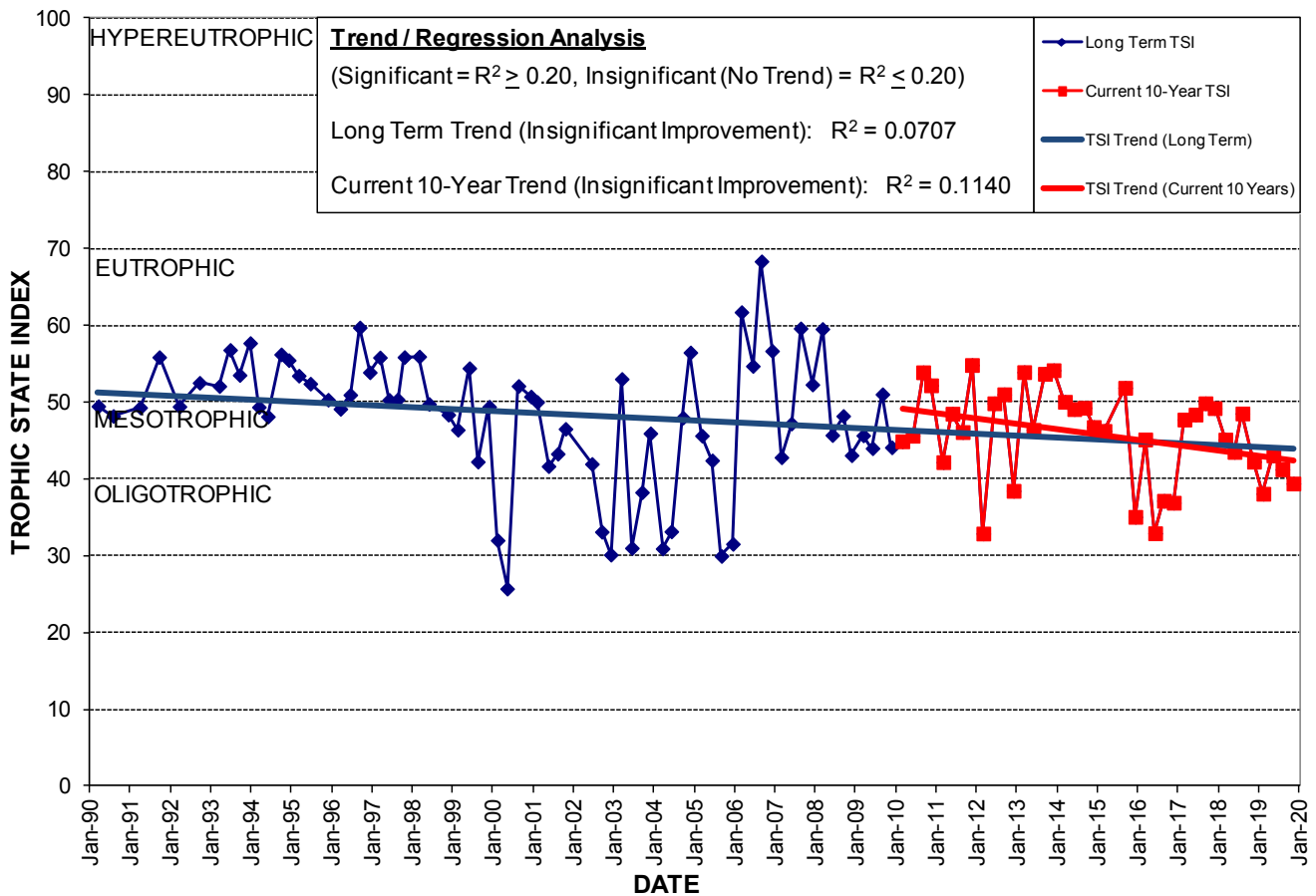
# LAKE TENNESSEE

Lake Origin: **Natural**  
 Lake Surface Area: **11 acres**  
 Lake Volume: **4,700,000 ft<sup>3</sup>**  
 Shoreline Length: **2,526 ft (770 m)**  
 Mean Depth: **10.2 ft (3.1 m)**  
 Maximum Depth: **18.0 ft (5.5 m)**  
 Drain Wells: **1** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 30' 37.1"** Long **W 81° 19' 55.6"**  
 Section **5** Township **23S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-41**  
 Drainage Basin Area: **89 acres**  
 Land Use: **Residential: 86%** **Commercial: 4%**  
**Industrial: 0%** **Highways: 1%** **Natural: 9%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

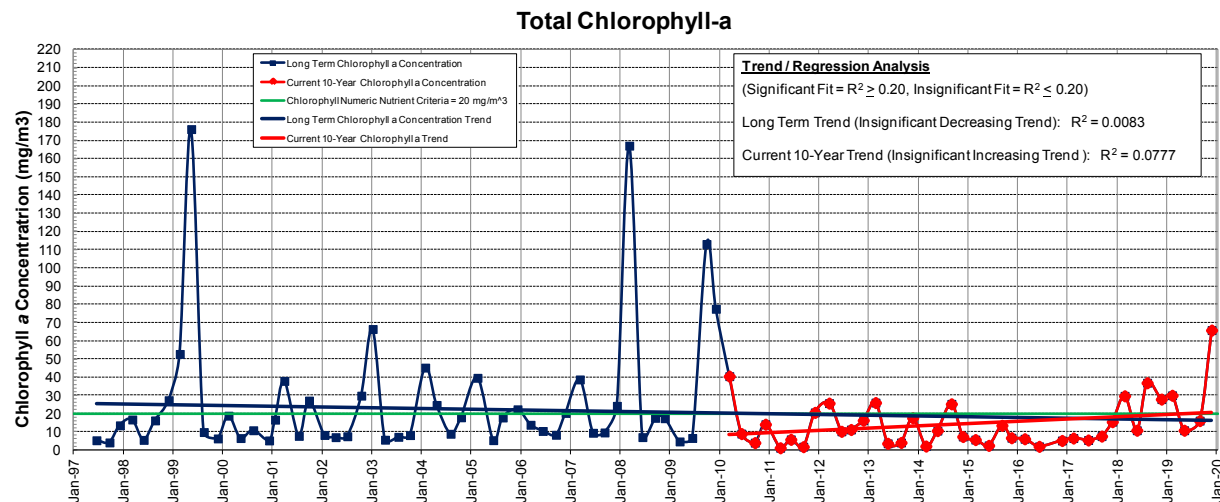
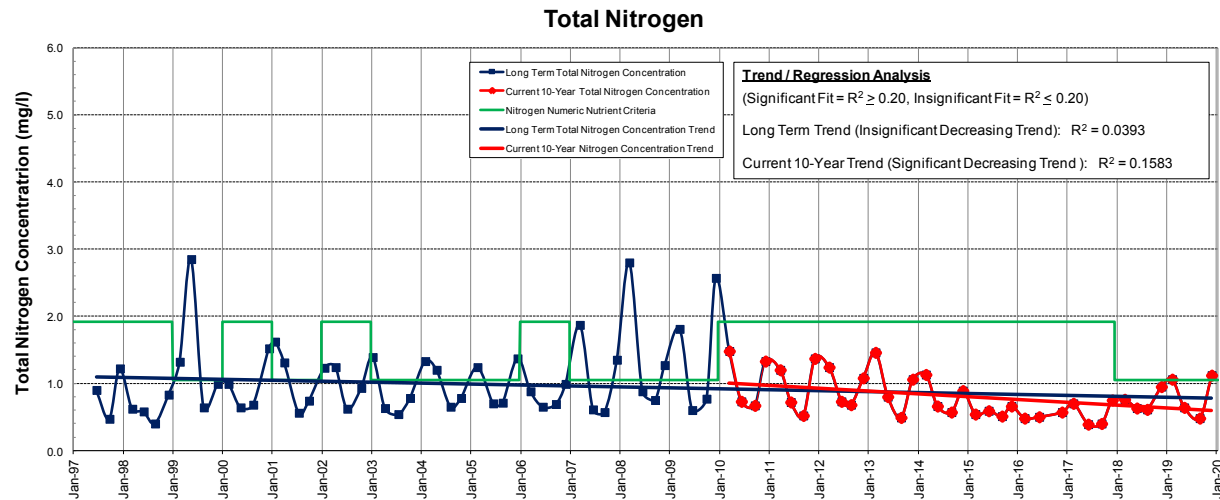
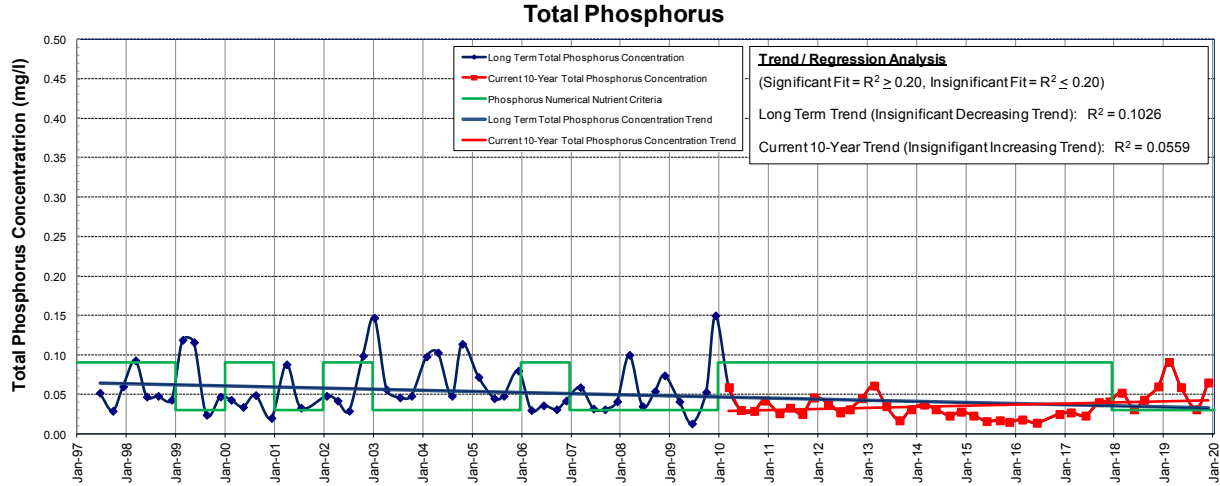
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 24			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.012	0.42	1.03	2.14	38
Maximum	0.044	0.67	2.74	18.80	50
Average	0.024	0.52	1.73	9.95	45

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Just west of Conway Rd., north of Lake Tennessee Dr.

# LAKE TERRACE NUTRIENT TRENDS



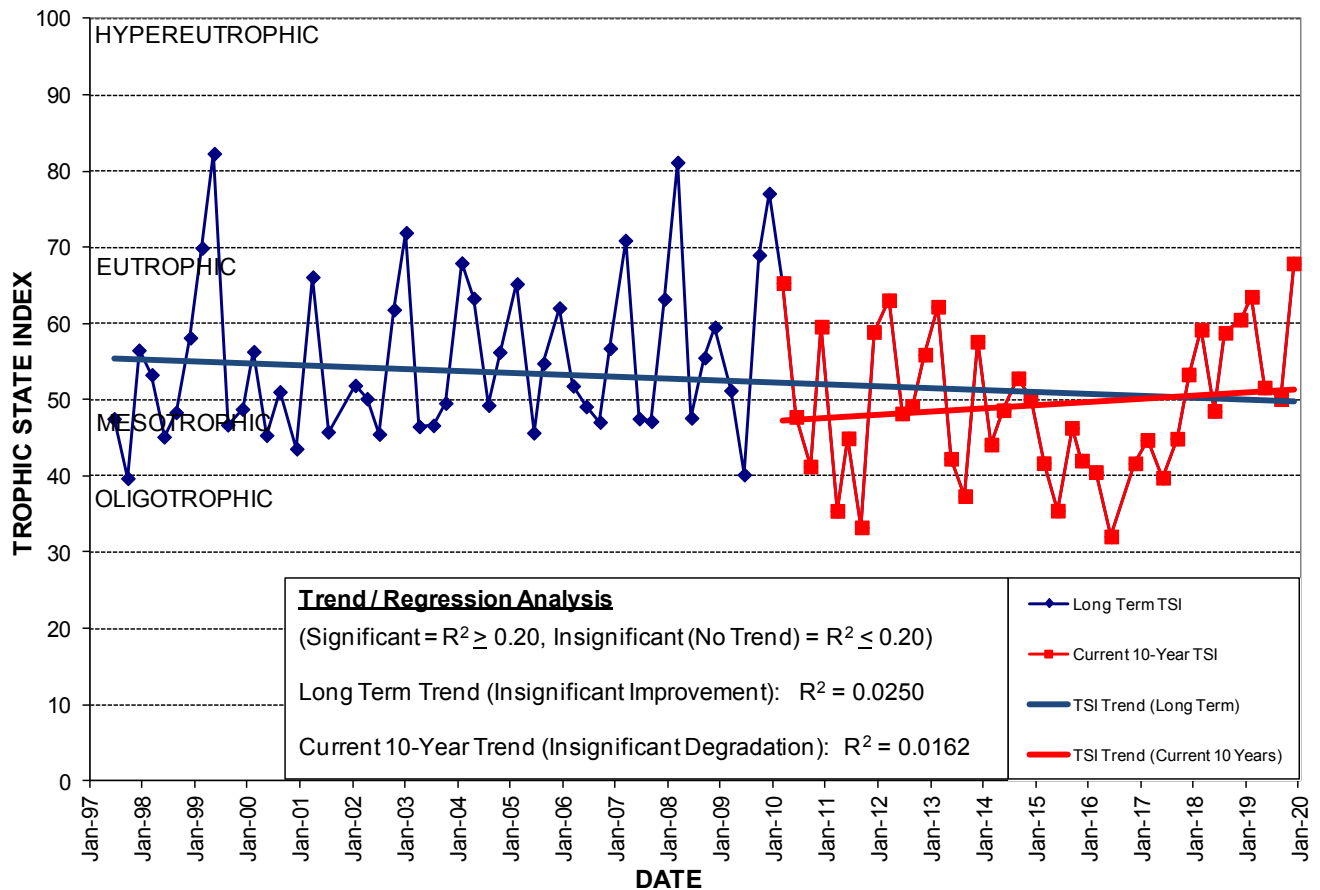
# LAKE TERRACE

Lake Origin: **Natural**  
 Lake Surface Area: **5 acres**  
 Lake Volume: **2,741,500 ft<sup>3</sup>**  
 Shoreline Length: **1,674 ft (510 m)**  
 Mean Depth: **12.9 ft (3.9 m)**  
 Maximum Depth: **17.4 ft (5.3 m)**  
 Drain Wells: **Yes**    Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 26° 31' 14.9"** Long **W 81° 20' 47.0"**  
 Section **6** Township **23S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-23**  
 Drainage Basin Area: **103 acres**  
 Land Use: **Residential: 89%**    **Commercial: 6%**  
**Industrial: 0%**    **Highways: 0%**    **Natural: 5%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 79			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.023	0.39	0.51	5.34	40
Maximum	0.091	1.12	2.62	65.70	68
Average	0.047	0.71	1.64	21.82	54

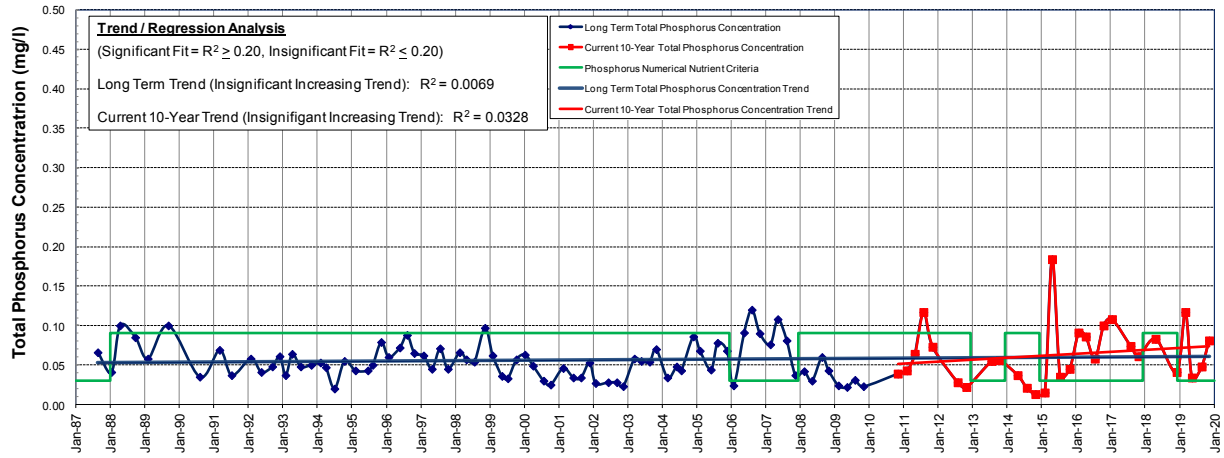
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



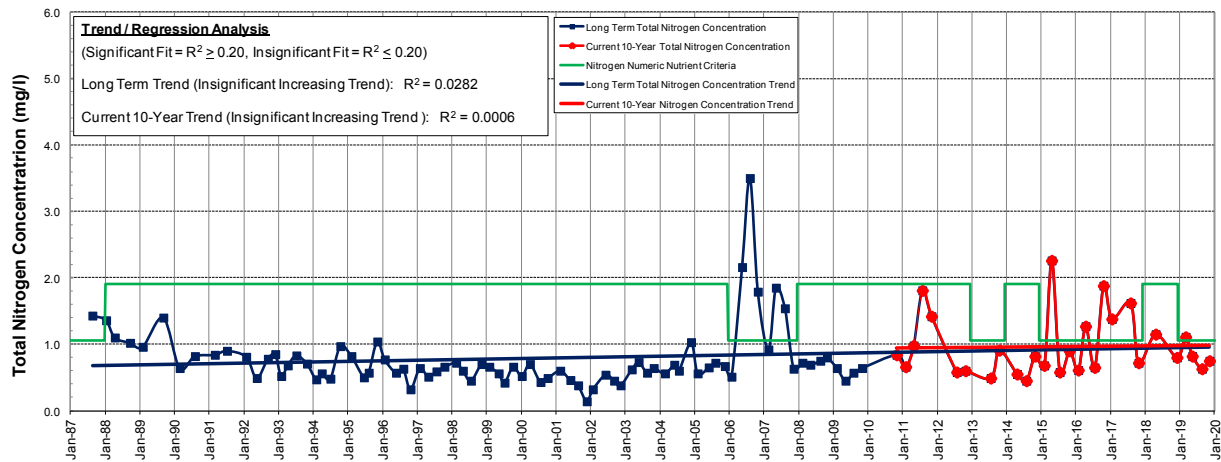
**Location:** Just northeast of the Peel Ave. and Kaley Ave. intersection in the Ashbury Park subdivision.

# LAKE THERESA NUTRIENT TRENDS

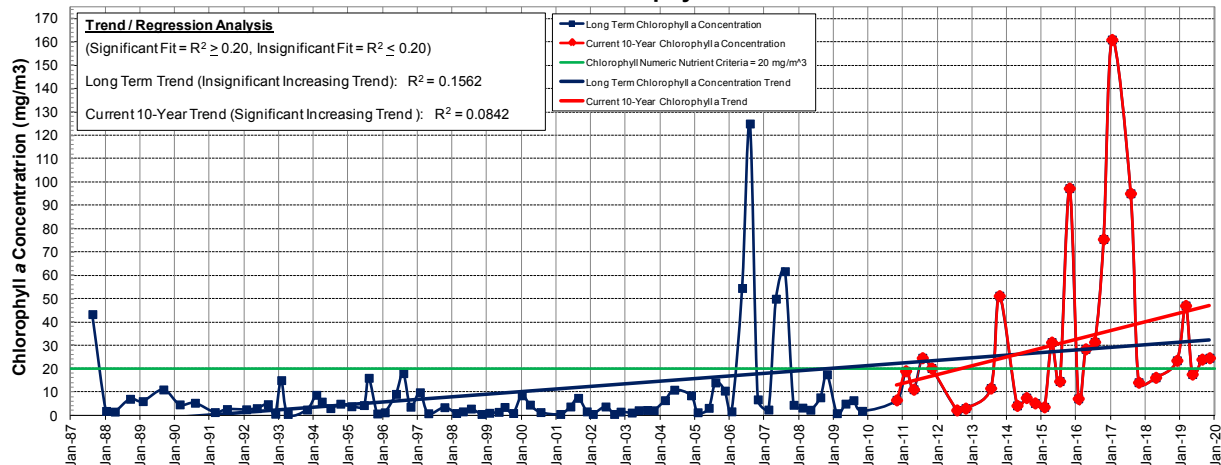
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a





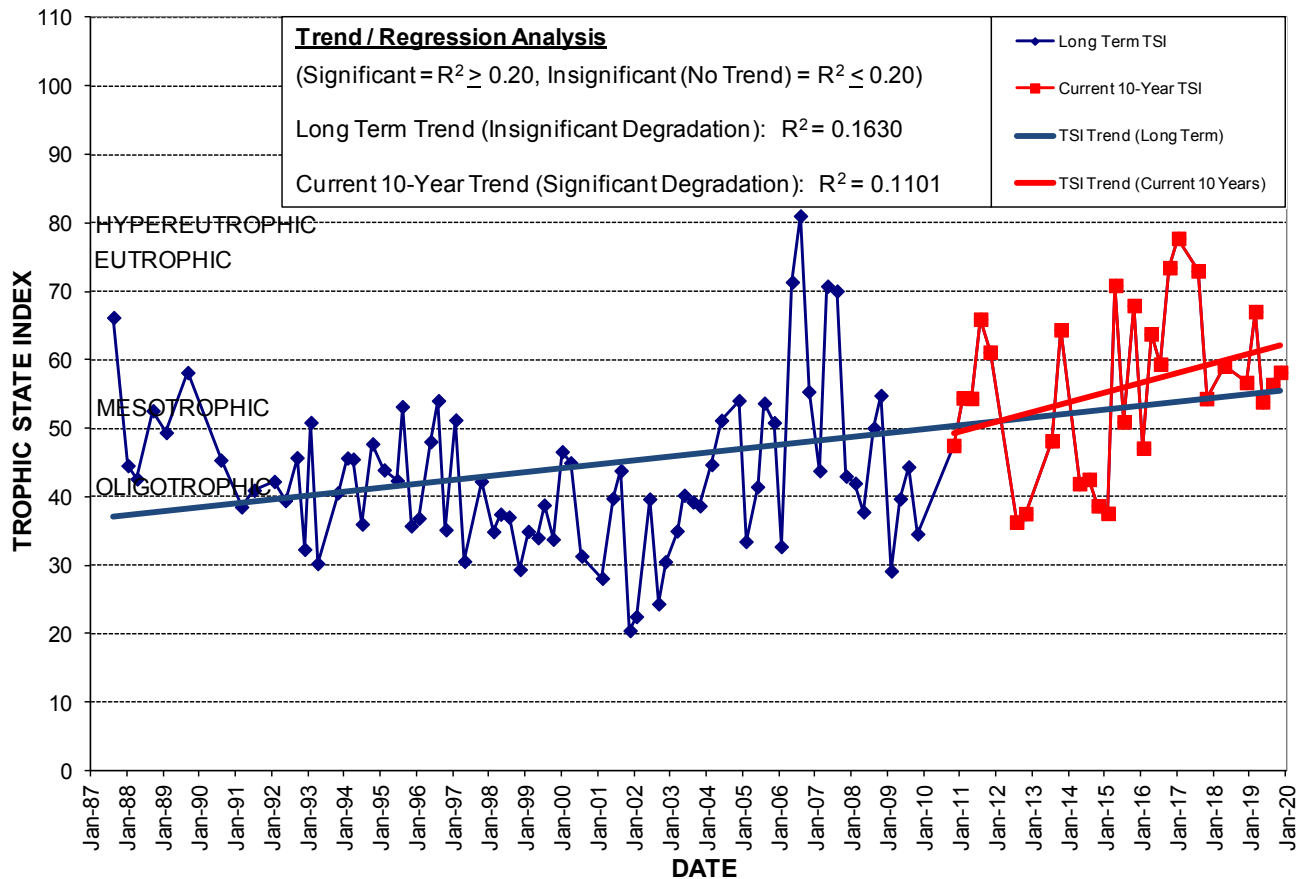
# LAKE THERESA

Lake Origin: **Natural**  
 Lake Surface Area: **1 acres**  
 Lake Volume: **205,200 ft<sup>3</sup>**  
 Shoreline Length: **843 ft (257 m)**  
 Mean Depth: **4.5 ft (1.4 m)**  
 Maximum Depth: **16.3 ft (5.0 m)**  
 Drain Wells: **1** Aeration: **Yes** (installed 10/86)  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 33' 38.9"** Long **W 81° 20' 20.8"**  
 Section **20** Township **22S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-02**  
 Drainage Basin Area: **19 acres**  
 Land Use: **Residential: 34%** **Commercial: 60%**  
**Industrial: 0%** **Highways: 0%** **Natural: 5%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 80			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.034	0.63	0.33	14.10	54
Maximum	0.117	1.62	1.17	161.00	78
Average	0.072	1.00	0.77	47.01	62

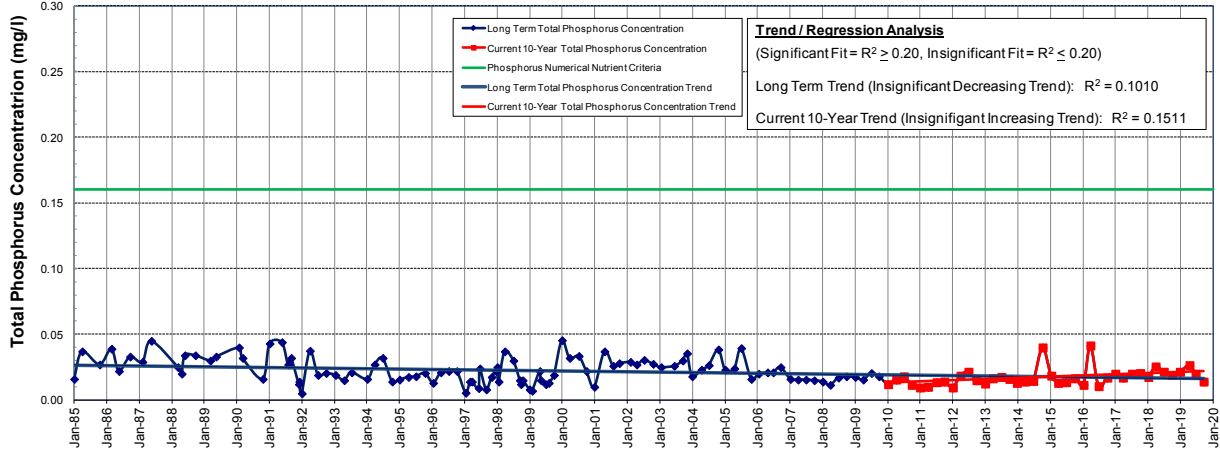
**Long-Term Trophic State Index Values and Linear Regression Trend Line**



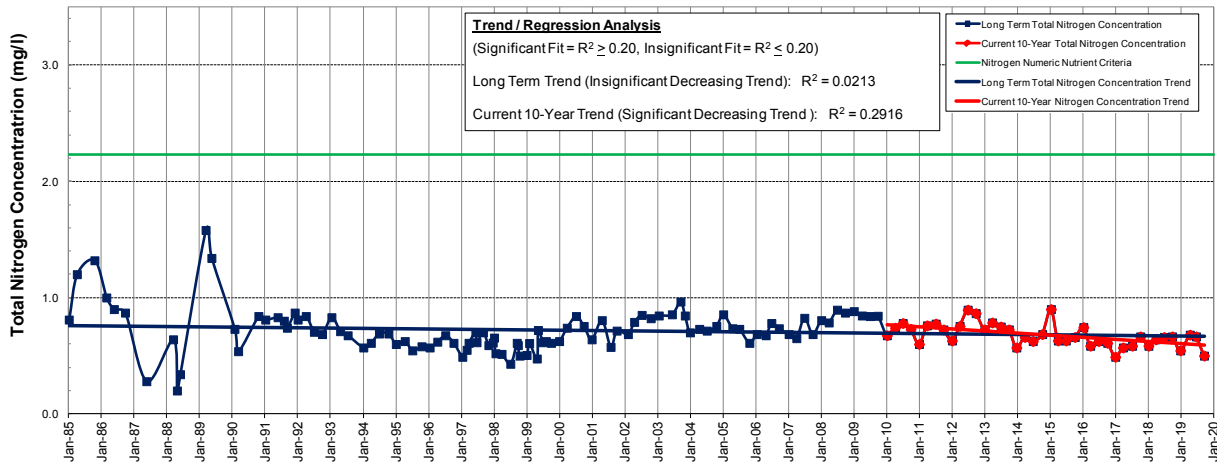
**Location:** Just east-northeast of the Lawton Rd. and McCroy Pl. intersection. North of the Orlando Fashion Square Mall.

# TURKEY LAKE NUTRIENT TRENDS

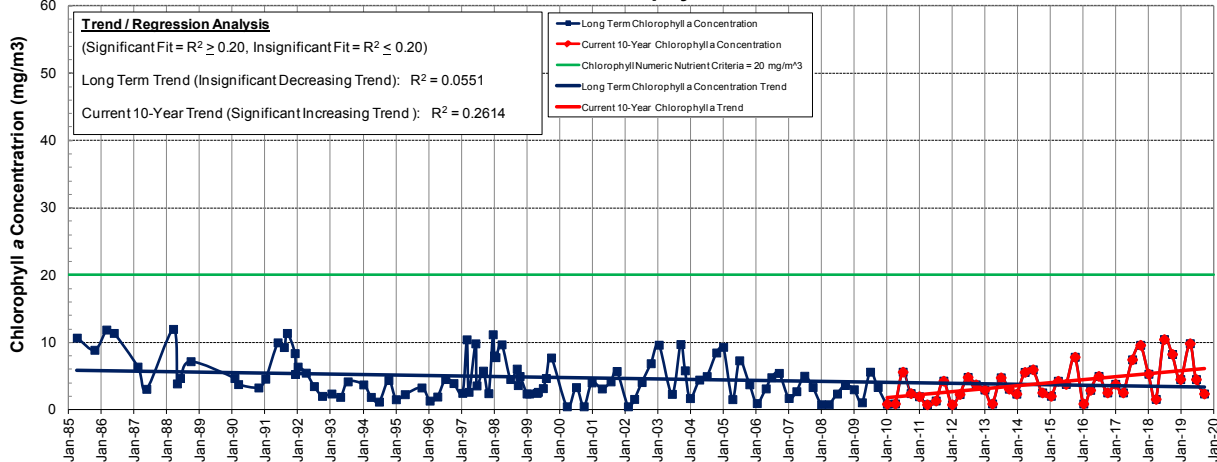
## Total Phosphorus



## Total Nitrogen



## Total Chlorophyll-a



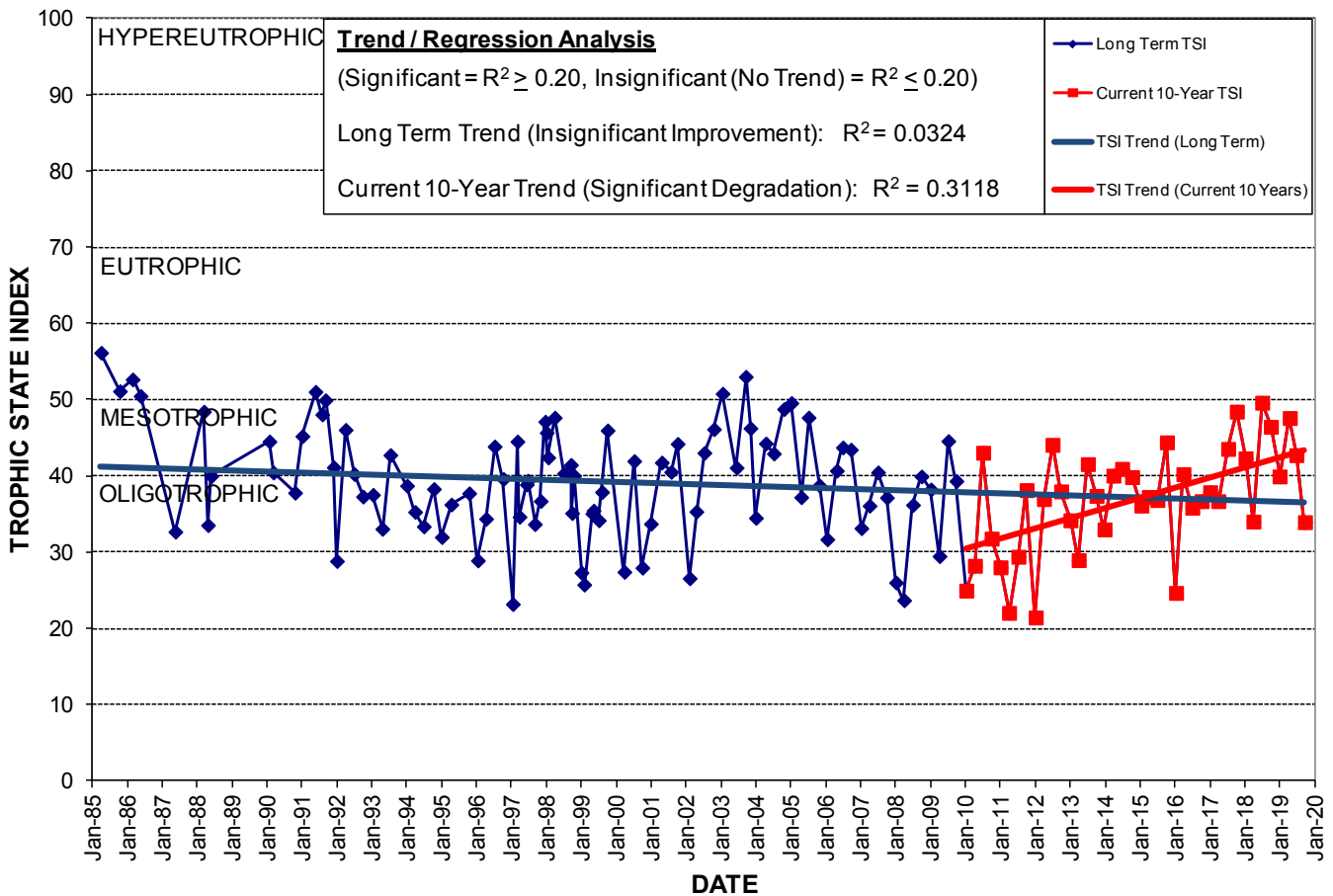
# TURKEY LAKE

Lake Origin: **Natural**  
 Lake Surface Area: **330 acres**  
 Lake Volume: **146,219,300 ft<sup>3</sup>**  
 Shoreline Length: **22,500 ft (6,858 m)**  
 Mean Depth: **10.2 ft (3.1 m)**  
 Maximum Depth: **17.5 ft (5.3 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 30' 29.9"** Long **W 81° 28' 40.4"**  
 Section **12** Township **23S** Range **28E**  
 Water Management District: **South Florida**  
 Drainage Code: **SC-05**  
 Drainage Basin Area: **1,636 acres**  
 Land Use: **Residential: 35%** **Commercial: 22%**  
**Industrial: 1%** **Highways: 5%** **Natural: 37%**  
 Limiting Nutrient: **Phosphorus**

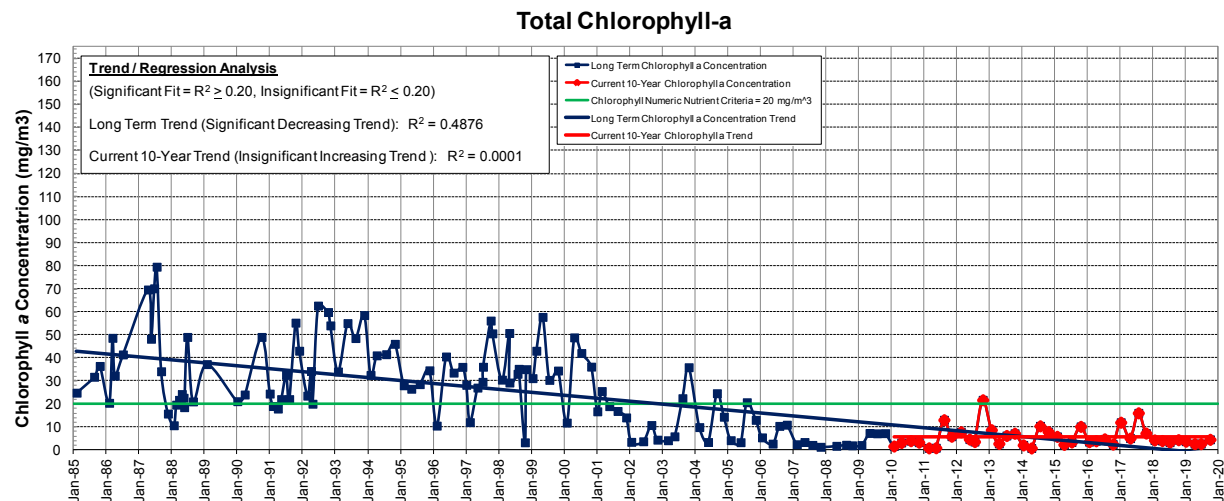
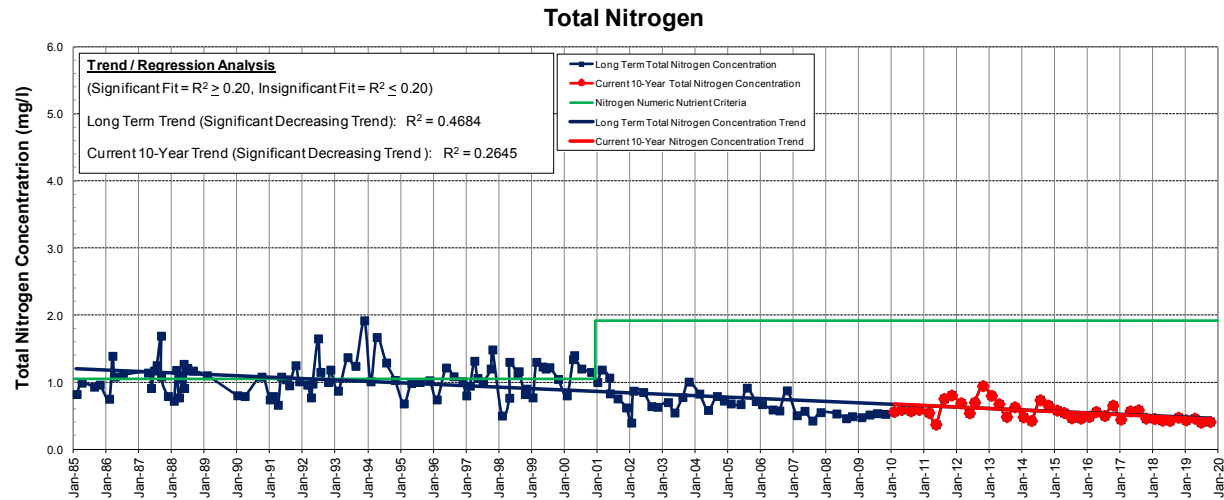
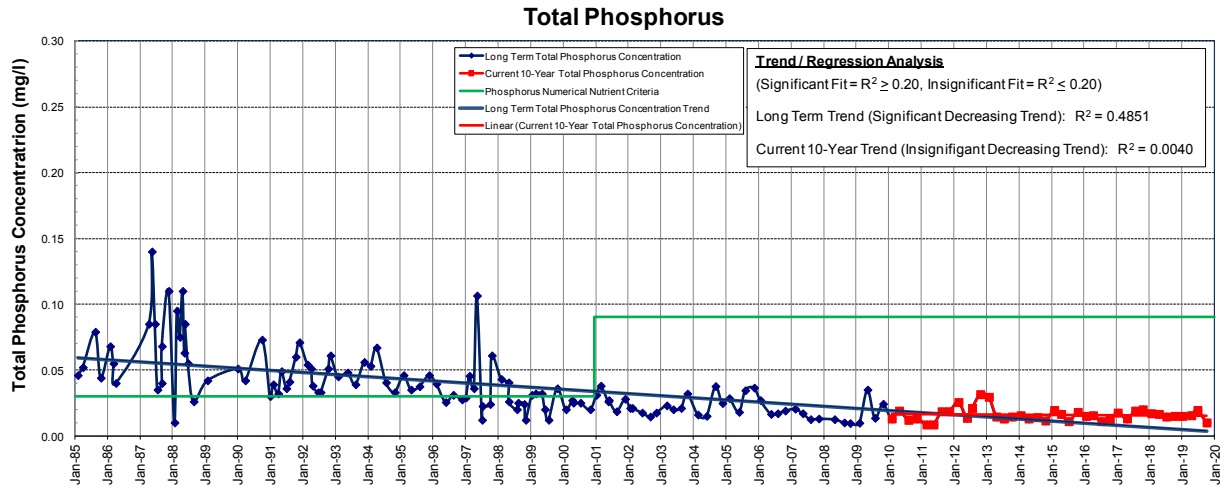
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 26			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.014	0.49	1.17	1.60	34
Maximum	0.027	0.68	3.44	10.49	50
Average	0.020	0.60	1.61	5.88	42

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** In Metro West, north of Conroy Rd. and west of Kirkman Rd.

# LAKE UNDERHILL NUTRIENT TRENDS



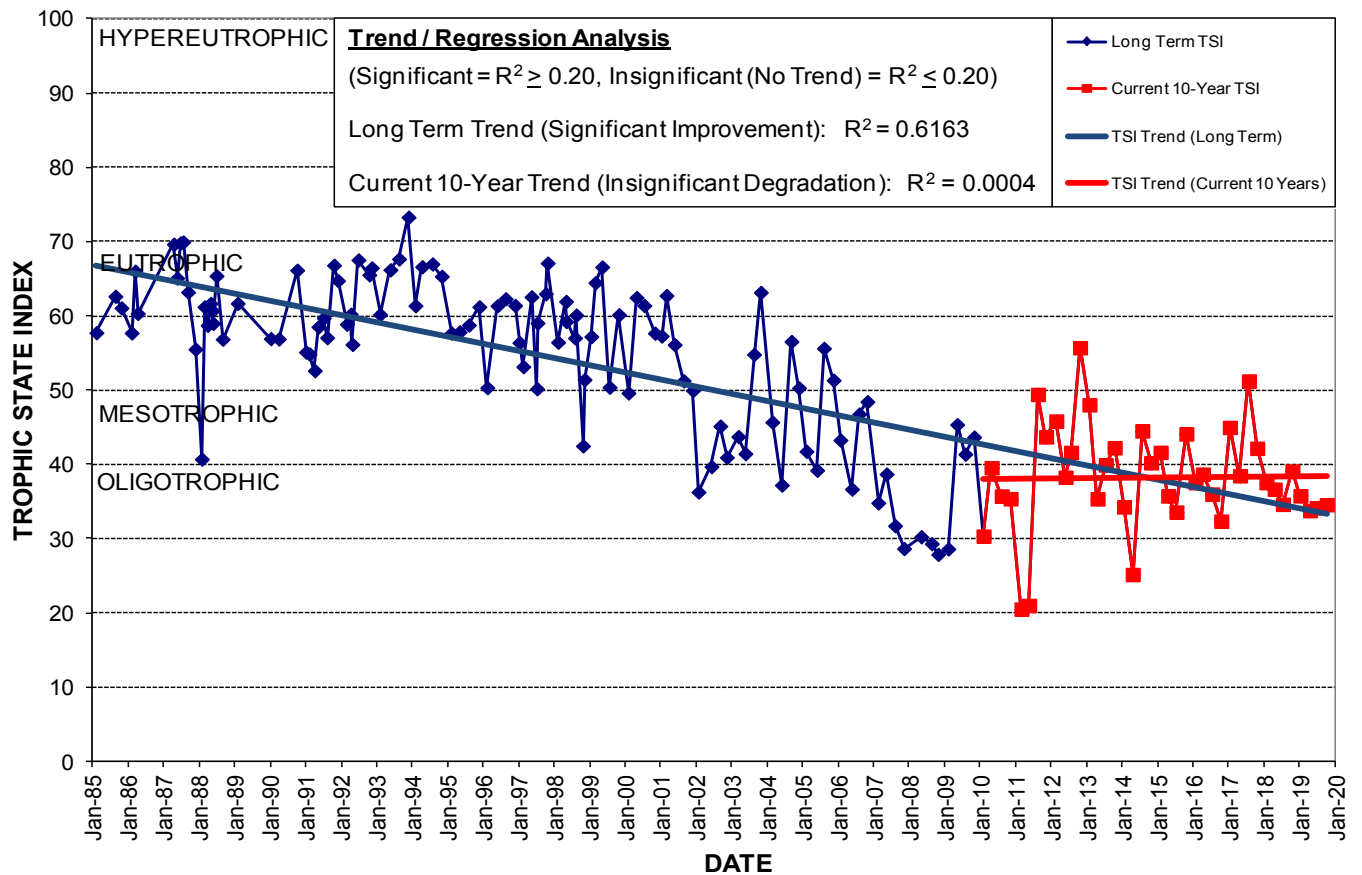
# LAKE UNDERHILL

Lake Origin: **Natural**  
 Lake Surface Area: **142 acres**  
 Lake Volume: **91,789,900 ft<sup>3</sup>**  
 Shoreline Length: **11,500 ft (3,505 m)**  
 Mean Depth: **14.9 ft (4.5 m)**  
 Maximum Depth: **29.6 ft (9.0 m)**  
 Drain Wells: **1** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 32' 25.8"** Long **W 81° 20' 11.4"**  
 Section **23** Township **22S** Range **30E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **LE-10**  
 Drainage Basin Area: **1,204 acres**  
 Land Use: **Residential: 0% Commercial: 100%**  
**Industrial: 0% Highways: 0% Natural: 0%**  
 Limiting Nutrient: **Phosphorus**

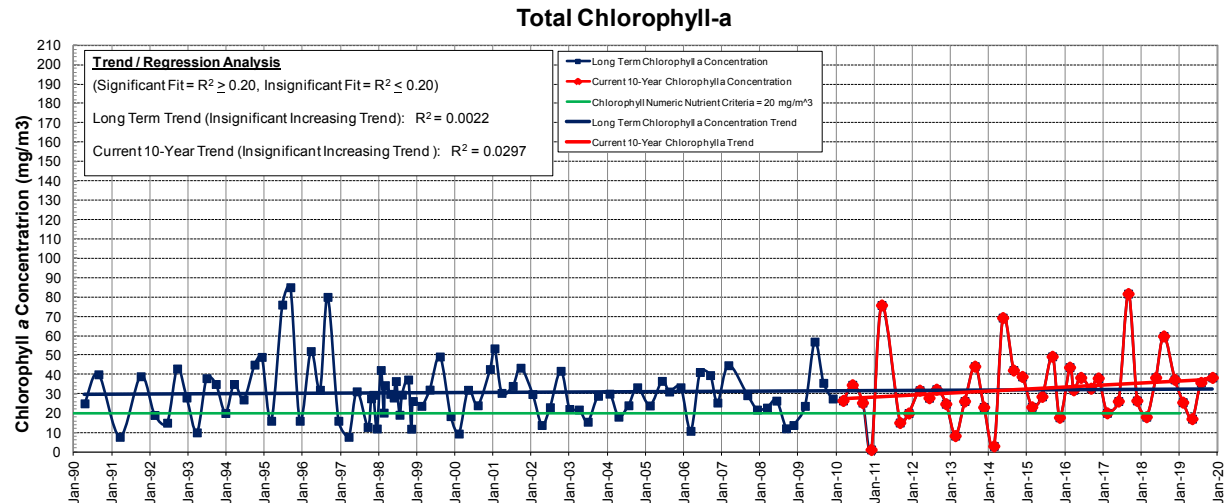
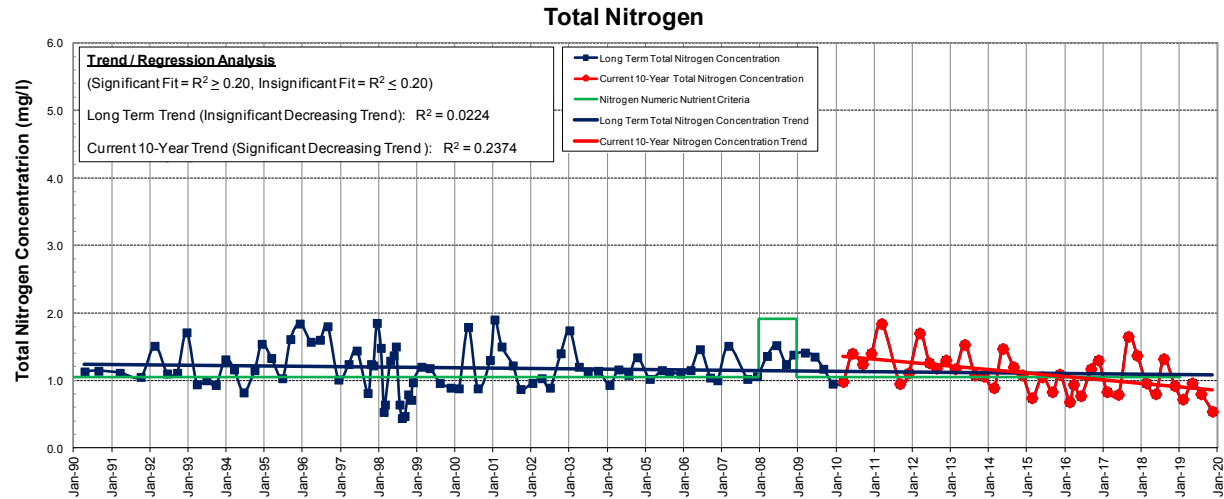
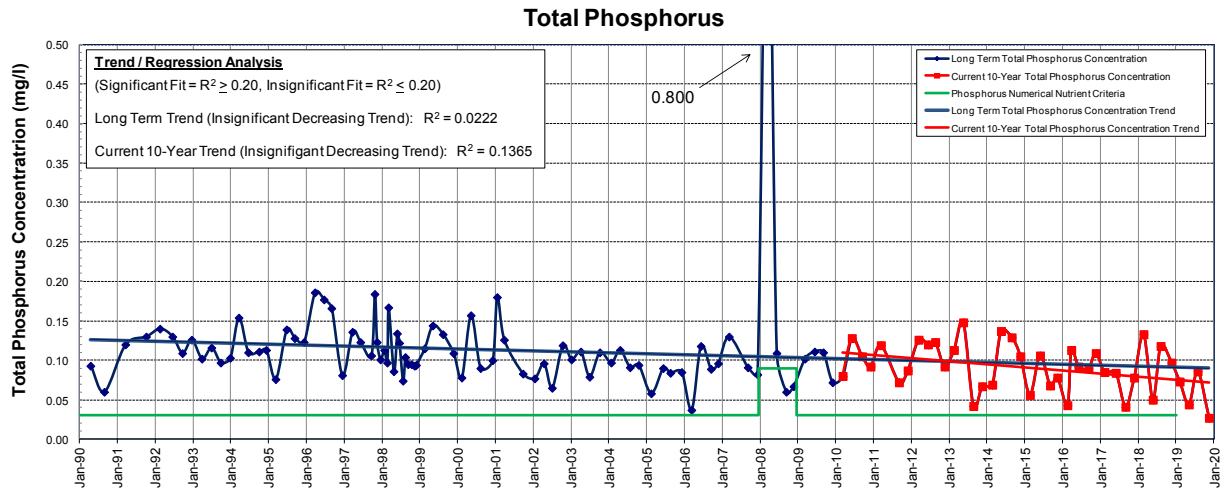
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 10			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.010	0.40	1.27	2.67	34
Maximum	0.020	0.59	4.18	16.05	51
Average	0.016	0.46	2.58	5.83	39

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Split in half by SR 408 just south of the Orlando Executive Airport and north of Lake Underhill Rd.

# LAKE WADE NUTRIENT TRENDS



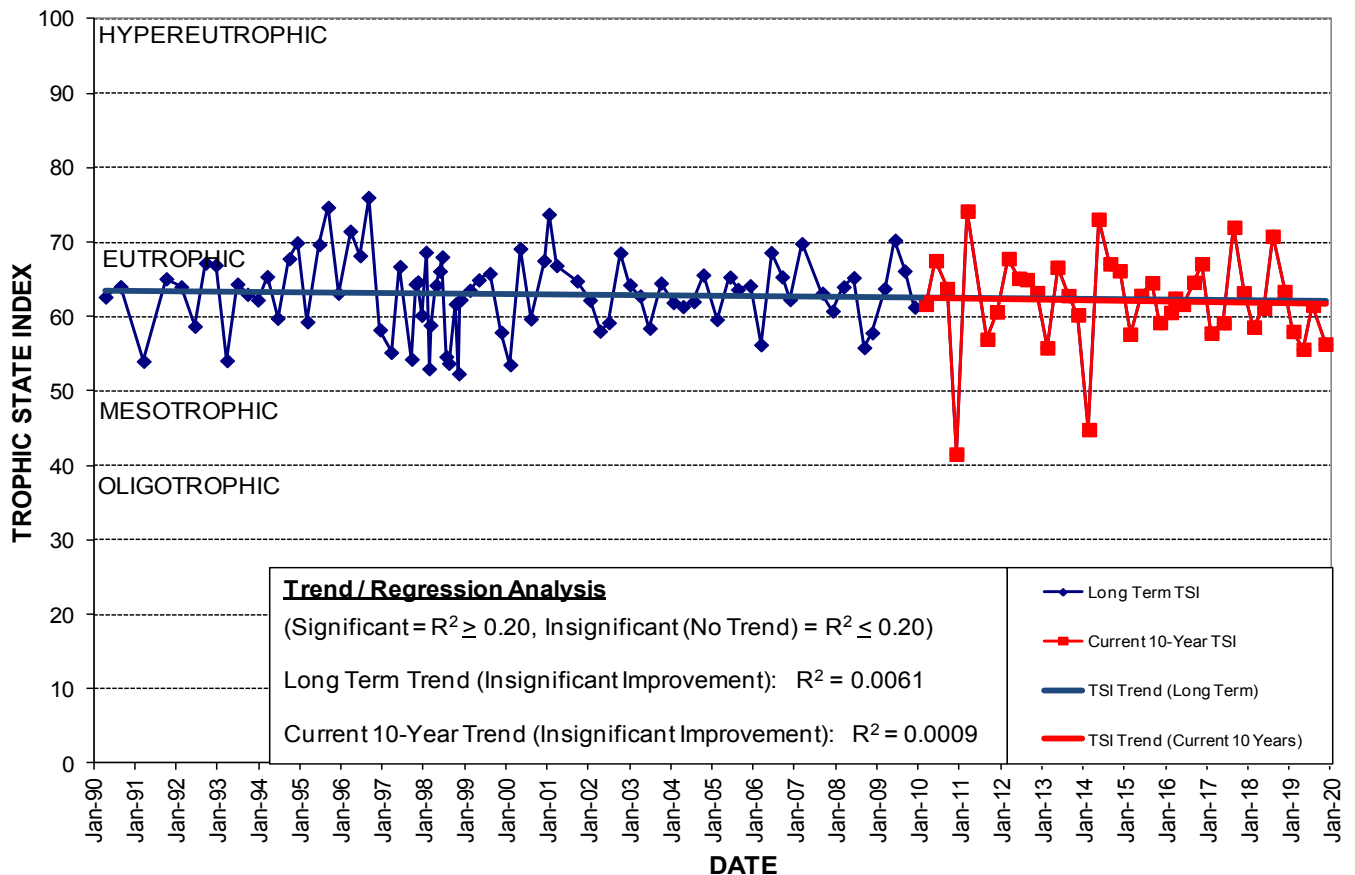
# LAKE WADE

Lake Origin: **Natural**  
 Lake Surface Area: **3 acres**  
 Lake Volume: **720,000 ft<sup>3</sup>**  
 Shoreline Length: **1,322 ft (403 m)**  
 Mean Depth: **5.9 ft (1.8 m)**  
 Maximum Depth: **8.0 ft (2.4 m)**  
 Drain Wells: **1** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 30' 58.3"** Long **W 81° 22' 03.7"**  
 Section **1** Township **23S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-18**  
 Drainage Basin Area: **167 acres**  
 Land Use: **Residential: 54% Commercial: 43%**  
**Industrial: 0% Highways: 0% Natural: 3%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

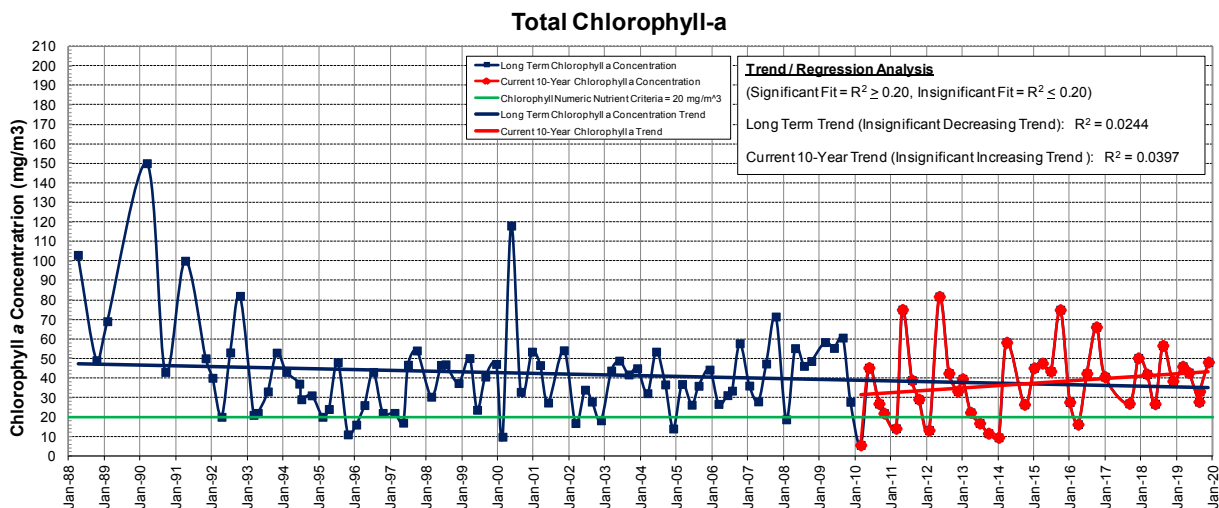
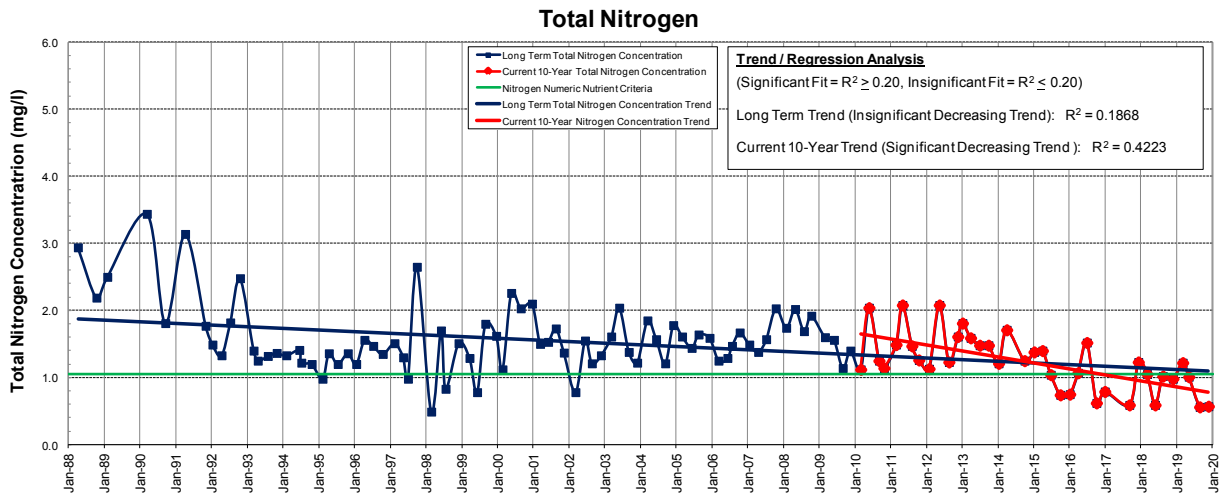
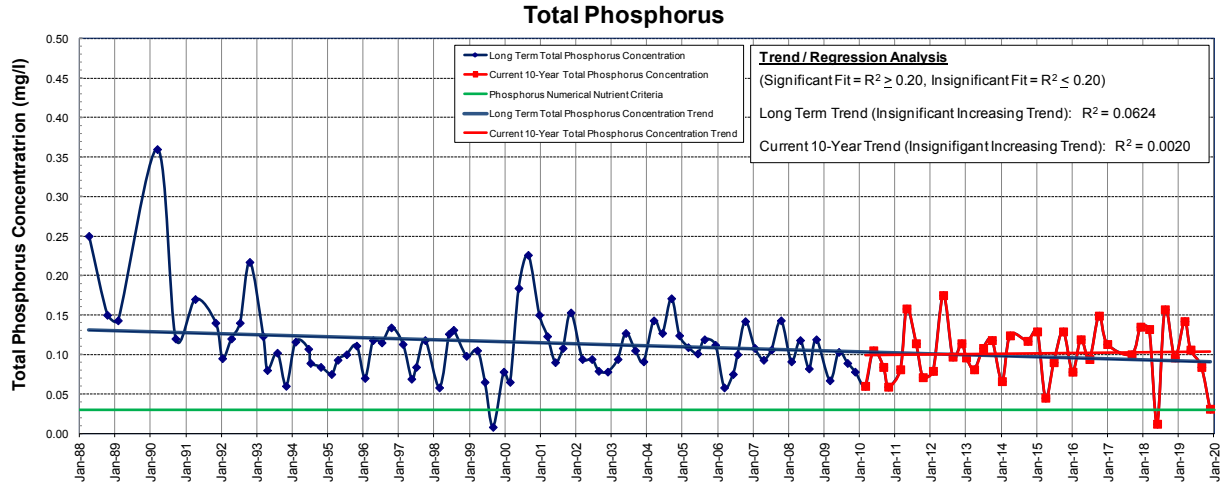
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 78			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.027	0.54	0.63	17.10	56
Maximum	0.133	1.65	1.05	81.70	72
Average	0.076	0.97	0.79	35.43	61

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** East of Summerlin Ave. between Grant St. and Crystal Lake Dr.

# LAKE WALKER NUTRIENT TRENDS





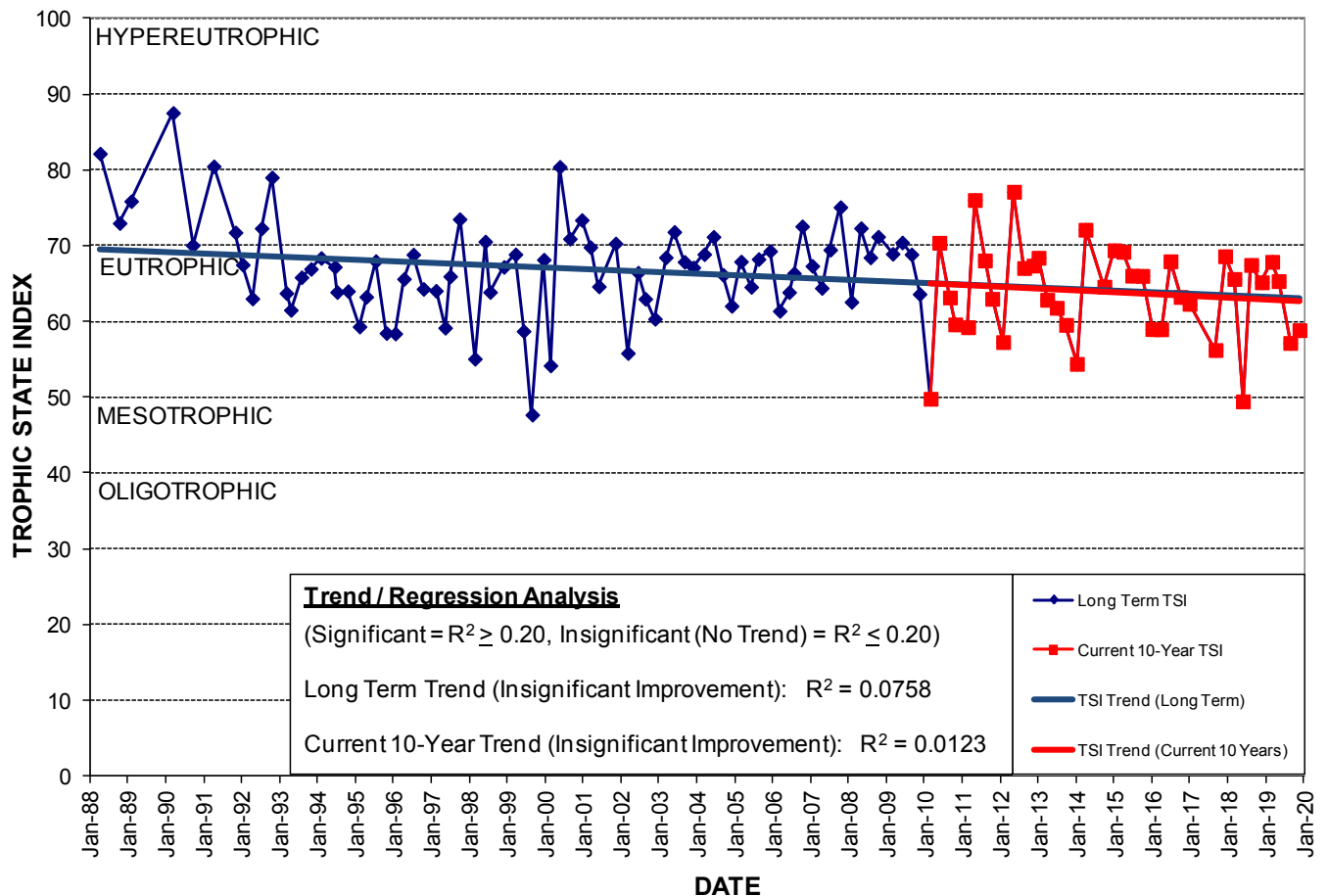
# LAKE WALKER

Lake Origin: **Natural**  
 Lake Surface Area: **4 acres**  
 Lake Volume: **1,427,200 ft<sup>3</sup>**  
 Shoreline Length: **2,072 ft (632 m)**  
 Mean Depth: **7.7 ft (2.3 m)**  
 Maximum Depth: **13.5 ft (4.1 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 31' 28.6"** Long **W 81° 25' 23.2"**  
 Section **33** Township **22S** Range **29E**  
 Water Management District: **South Florida**  
 Drainage Code: **SC-11**  
 Drainage Basin Area: **41 acres**  
 Land Use: **Residential: 85%** **Commercial: 0%**  
**Industrial: 0%** **Highways: 0%** **Natural: 14%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

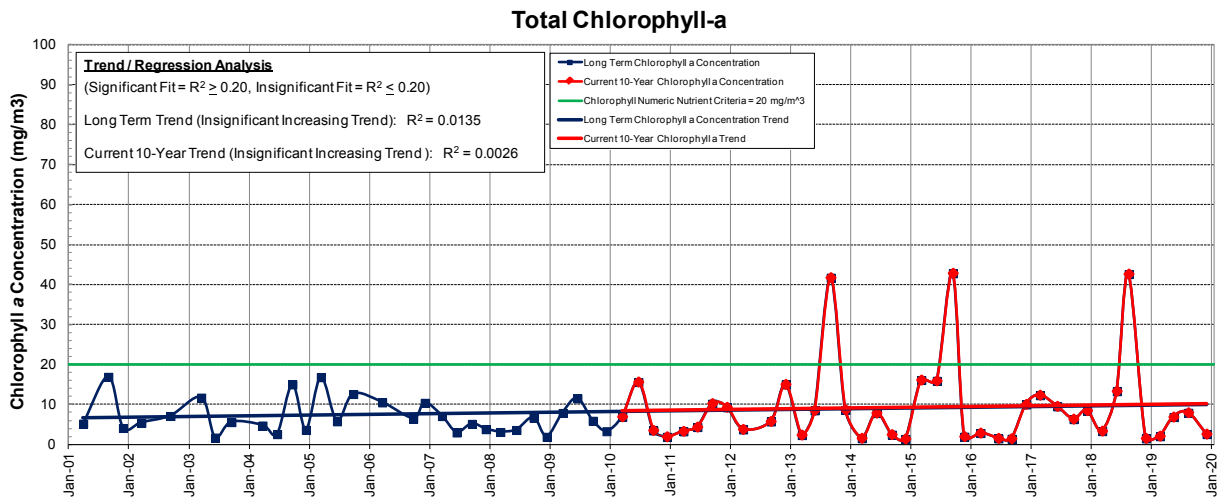
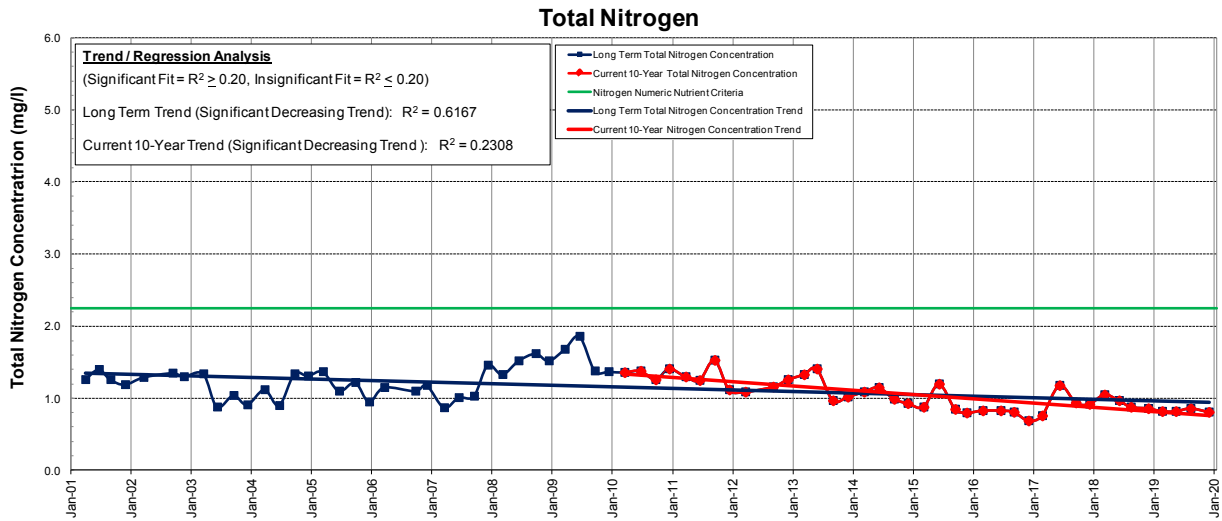
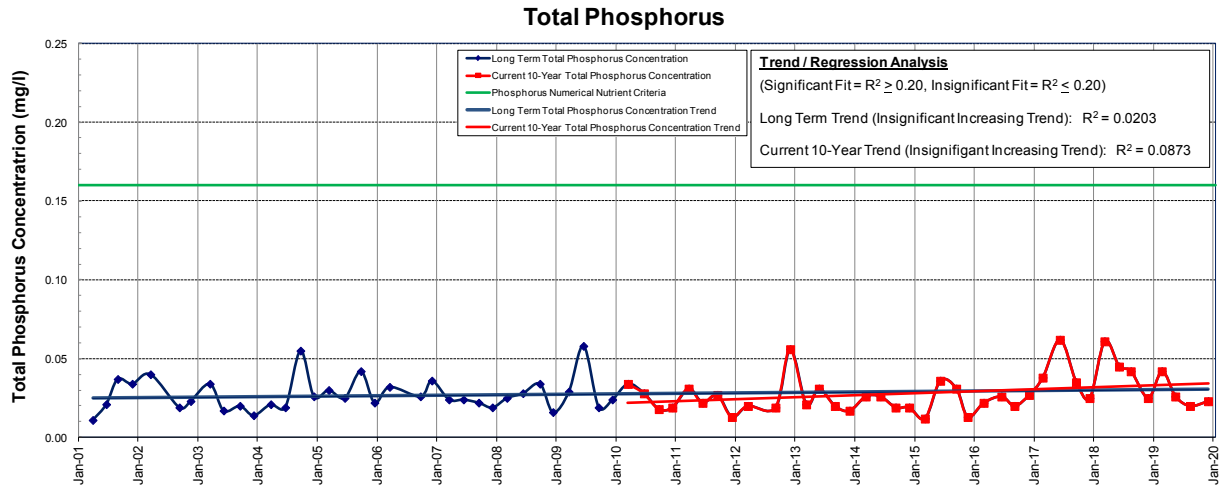
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 87			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.012	0.56	0.45	26.70	49
Maximum	0.157	1.23	0.72	56.60	69
Average	0.101	0.87	0.54	39.91	62

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** In the Johnson Village neighborhood north of Wilts St. between Crooms Ave. and Mable Butler Ave.

# LAKE WARREN NUTRIENT TRENDS



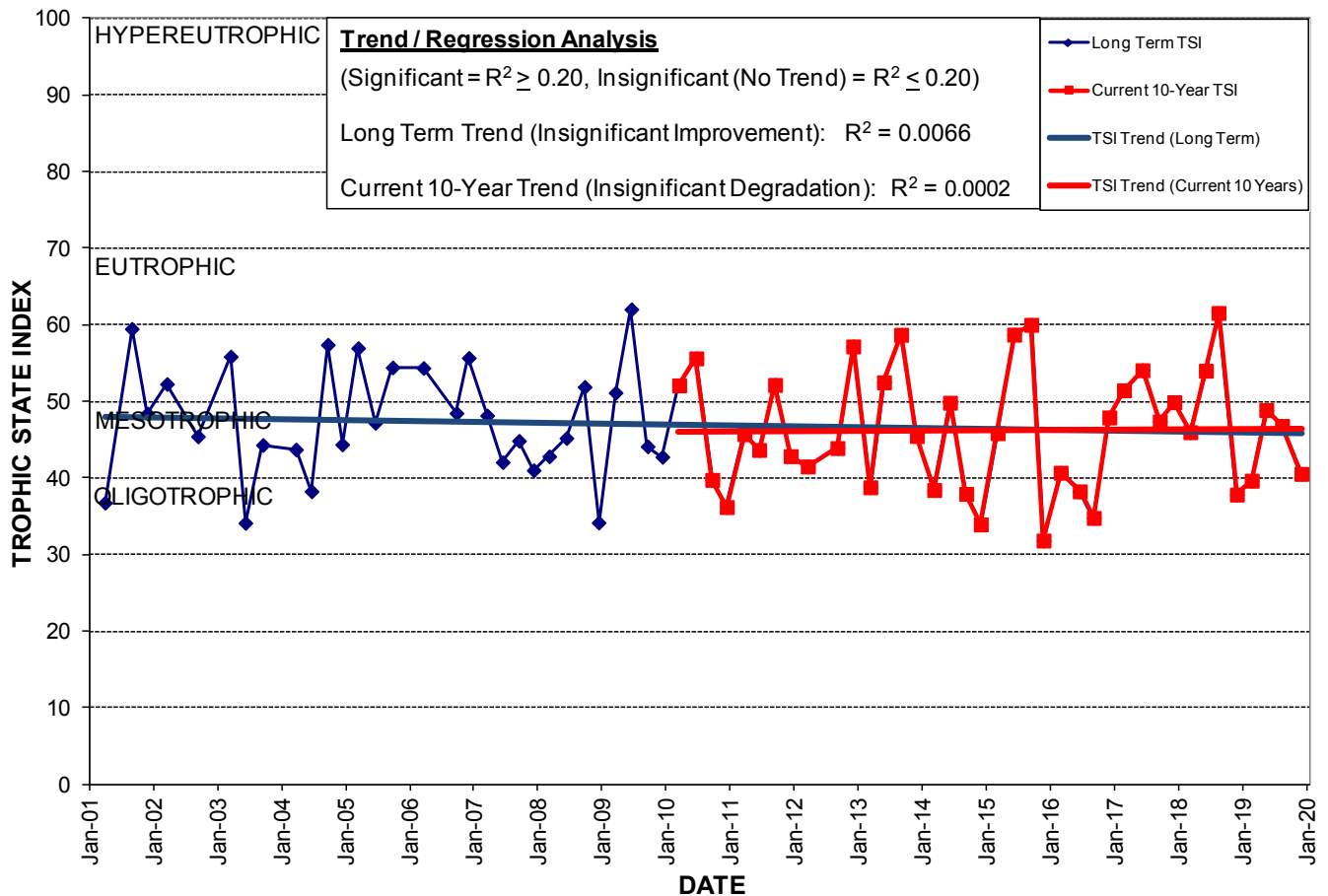
# LAKE WARREN

Lake Origin: **Natural**  
 Lake Surface Area: **31 acres**  
 Lake Volume: **No Data**  
 Shoreline Length: **8,784 ft (2,677 m)**  
 Mean Depth: **9.9 ft (3.0 m)**  
 Maximum Depth: **10.6 ft (3.2 m)**  
 Drain Wells: **1** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 27' 48.6"** Long **W 81° 20' 12.8"**  
 Section **29** Township **23S** Range **30W**  
 Water Management District: **St. Johns River**  
 Drainage Code: **BC-03**  
 Drainage Basin Area: **133 acres**  
 Land Use: **Residential: 6%** **Commercial: 0%**  
**Industrial: 0%** **Highways: 1%** **Natural: 93%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

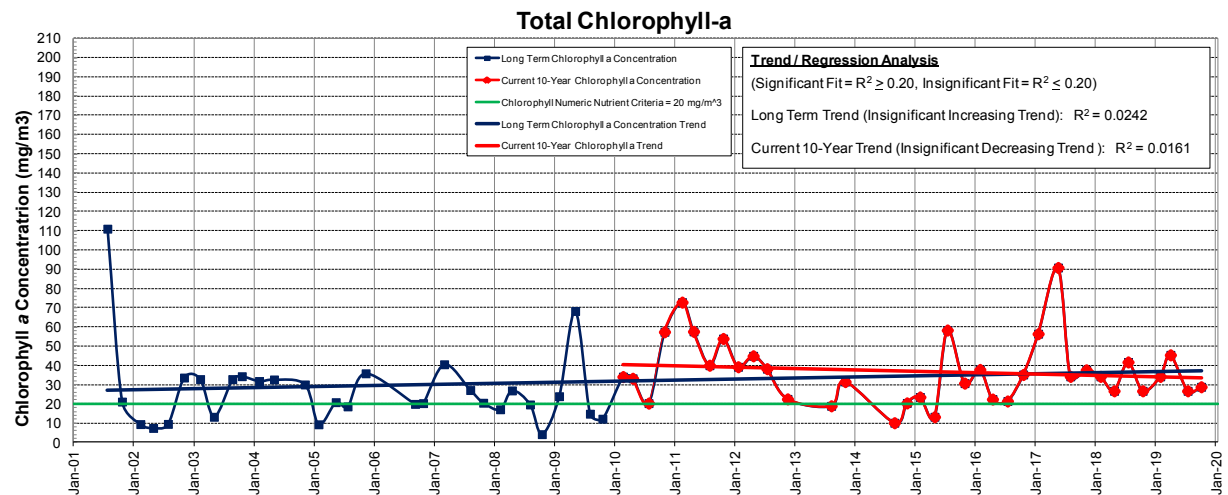
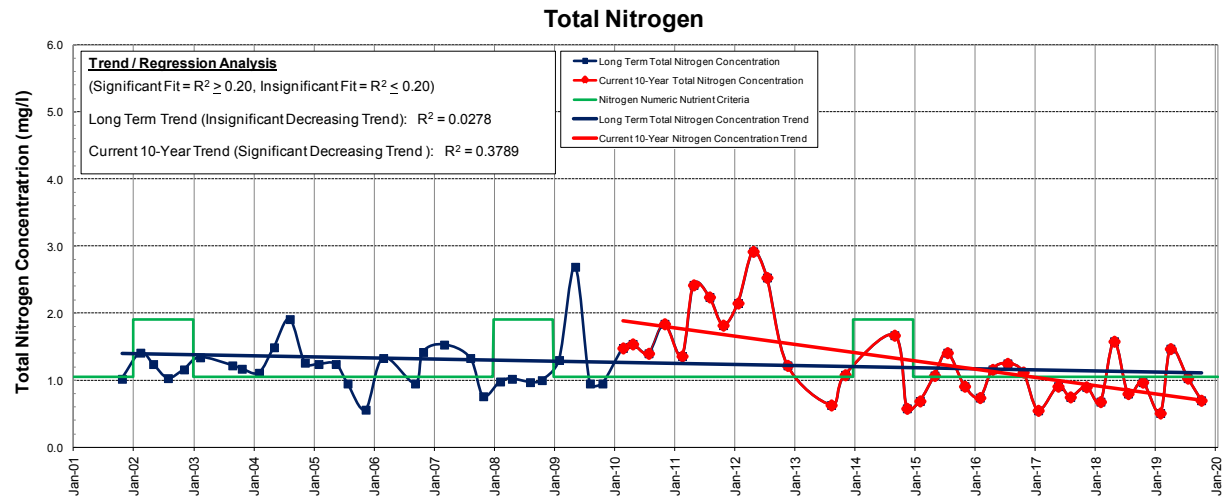
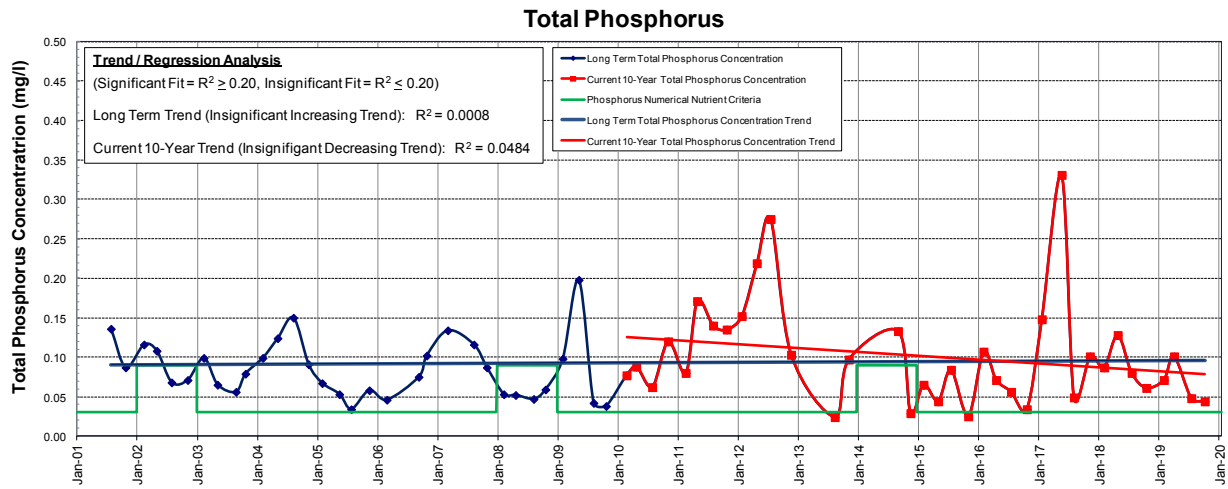
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 36			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m3)	Trophic State Index
Minimum	0.020	0.76	0.70	1.60	38
Maximum	0.062	1.18	1.24	42.70	62
Average	0.037	0.91	0.92	9.82	48

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** West off S. Conway Rd., east of Daetwyler Dr., south of Judge Rd., north of Winona Dr. Located in the Crescent Park subdivision.

# LAKE WELDONA NUTRIENT TRENDS



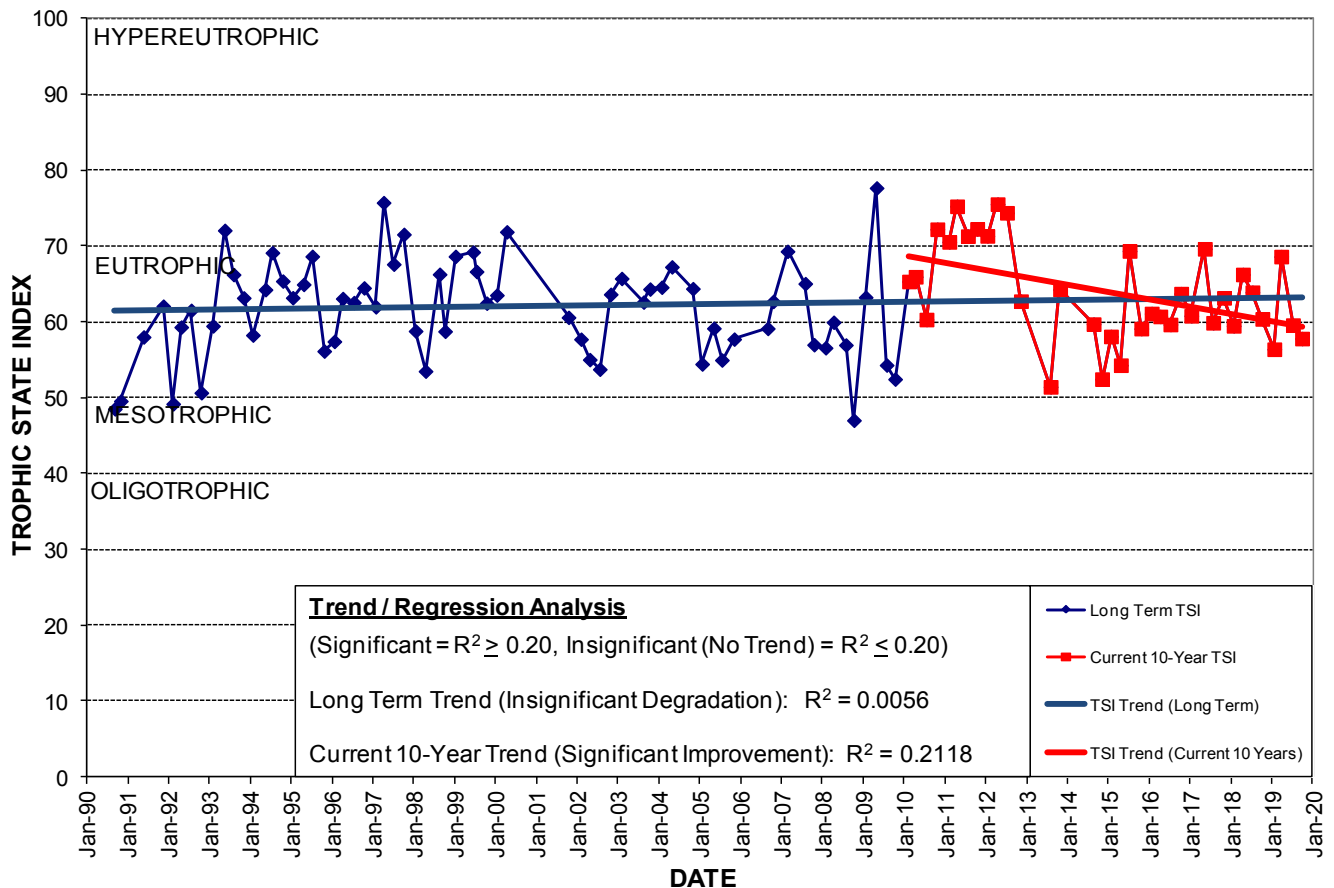
# LAKE WELDONA

Lake Origin: **Natural**  
 Lake Surface Area: **9 acres**  
 Lake Volume: **2,859,000 ft<sup>3</sup>**  
 Shoreline Length: **3,150 ft (960 m)**  
 Mean Depth: **7.4 ft (2.3 m)**  
 Maximum Depth: **14.6 ft (4.5 m)**  
 Drain Wells: **No** Aeration: **No**  
 Grass Carp (*Ctenopharyngodon idella*): **No**

Location: Lat **N 28° 31' 48.4"** Long **W 81° 21' 36.7"**  
 Section **36** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **ORL-20**  
 Drainage Basin Area: **171 acres**  
 Land Use: **Residential: 73%** **Commercial: 22%**  
**Industrial: 0%** **Highways: 0%** **Natural: 5%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

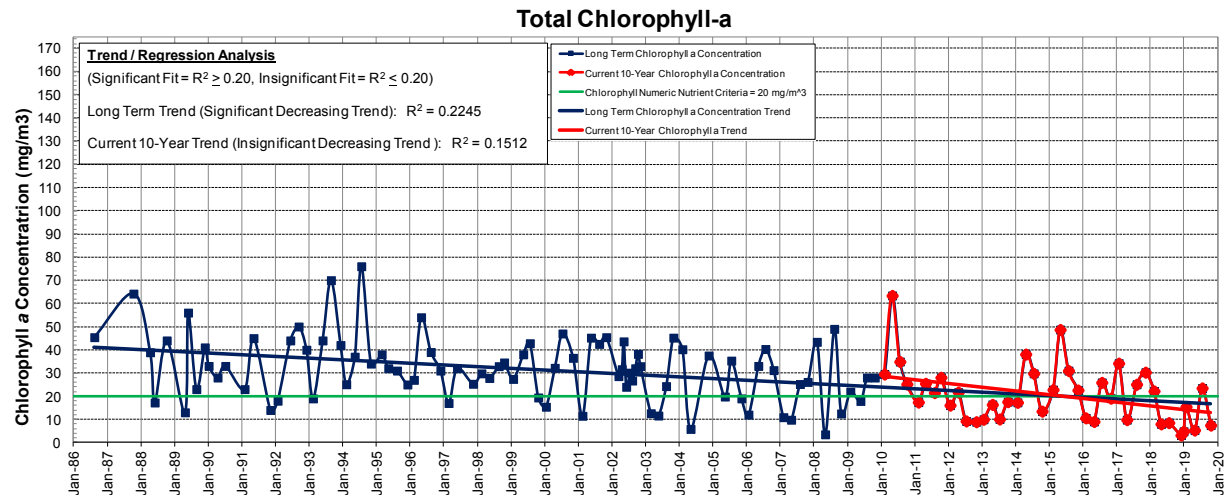
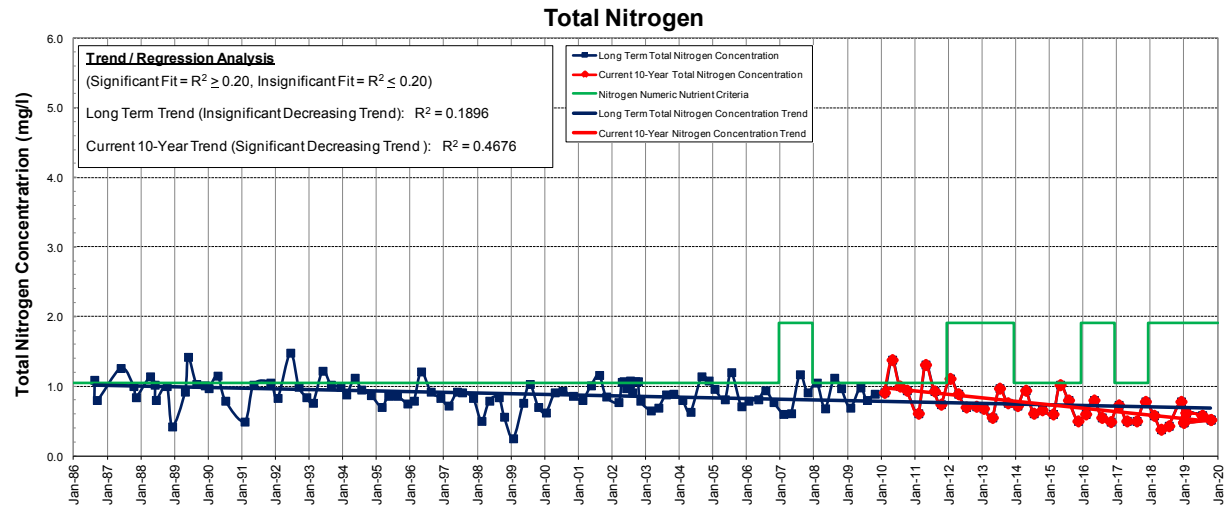
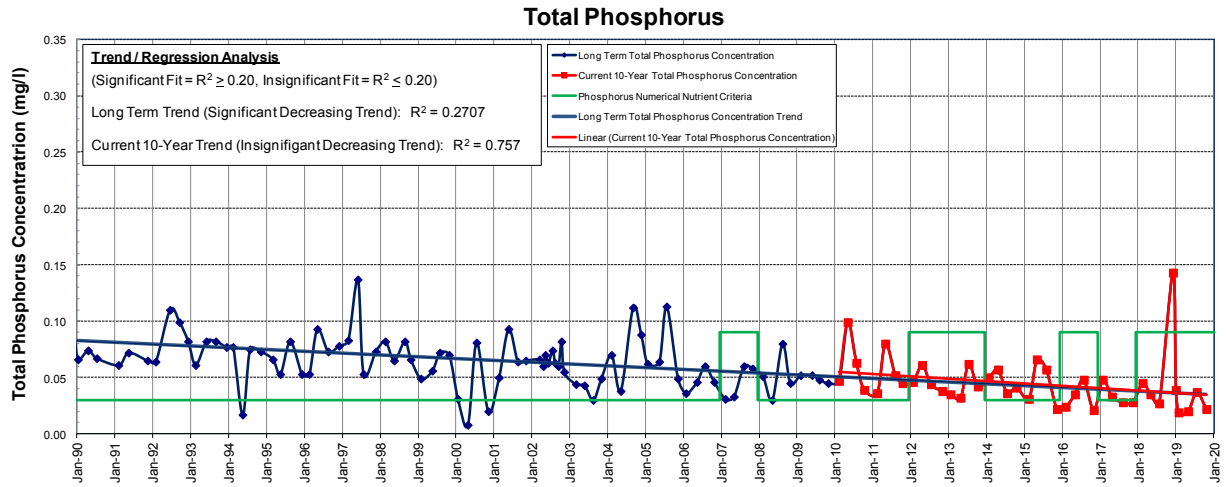
2017 - 2019 Water Quality Data		TSI Ranking (out of 94 lakes): 86			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.044	0.51	0.31	26.70	56
Maximum	0.331	1.58	0.96	90.80	70
Average	0.104	0.90	0.57	40.28	62

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** Just east-southeast of the Gore St. and Mills Ave. intersection.

# LAKE WINYAH NUTRIENT TRENDS



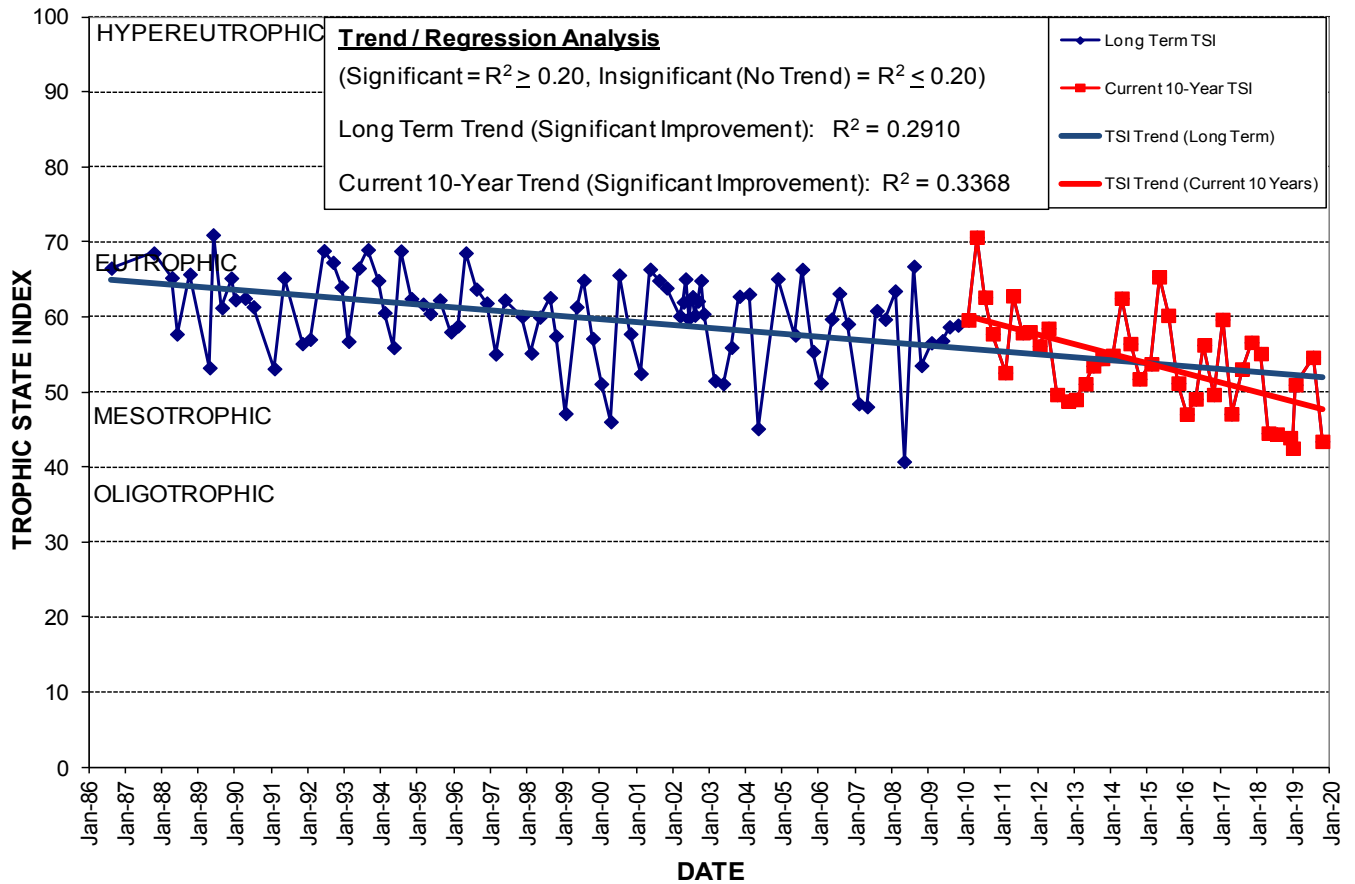
# LAKE WINYAH

Lake Origin: **Natural**  
 Lake Surface Area: **18 acres**  
 Lake Volume: **7,900,000 ft<sup>3</sup>**  
 Shoreline Length: **3,282 ft (1,000 m)**  
 Mean Depth: **10.1 ft (3.0 m)**  
 Maximum Depth: **17.0 ft (5.2 m)**  
 Drain Wells: **No** Aeration: **Yes** (installed 10/86)  
 Grass Carp (*Ctenopharyngodon idella*): **Yes**

Location: Lat **N 28° 34' 41.9"** Long **W 81° 22' 06.2"**  
 Section **13** Township **22S** Range **29E**  
 Water Management District: **St. Johns River**  
 Drainage Code: **HB-23**  
 Drainage Basin Area: **496 acres**  
 Land Use: **Residential: 35% Commercial: 32%**  
**Industrial: 4% Highways: 5% Natural: 24%**  
 Limiting Nutrient: **Balanced for Nitrogen and Phosphorus**

2017 - 2019 Water Quality Data		2016 TSI Ranking (out of 94 lakes): 52			
	Total Phosphorus (mg/l)	Total Nitrogen (mg/l)	Secchi Depth (m)	Chlorophyll-a (mg/m <sup>3</sup> )	Trophic State Index
Minimum	0.019	0.38	0.76	3.20	43
Maximum	0.143	0.78	2.03	34.20	60
Average	0.040	0.57	1.23	15.23	50

**Long-Term Trophic State Index Values and Linear Regression Trend Line**



**Location:** West of Westchester Ave. between Wilkinson St. and Dorchester St. in the Orwin Manor neighborhood, bordered by Florida Hospital to the south and west.

# **GLOSSARY**



## GLOSSARY

Abatement - action taken to correct or eliminate pollution within, associated with, or impacting a drainage system.

Aeration - the process of supplying air to a lake; promotes degradation of organic matter.

Alkalinity - the quantity of compounds which shifts the pH to the basic (not acidic) side of the pH range; the capacity to neutralize acids.

Ammonia - a compound of nitrogen and hydrogen which can be directly utilized by algae and larger aquatic plants.

Anoxic - a condition of being without oxygen; often occurs near the bottom of very productive and stratified lakes.

Biomass - weight of all organic matter in an specific ecosystem; often refers to vegetation.

Chlorophyll-a - a green pigment found in plants that carry out photosynthesis; often in direct proportion to the biomass of planktonic algae.

Dissolved Solids - organic and inorganic materials dissolved in the water.

Epilimnion - the uppermost layer of water in a thermally stratified lake.

Eutrophic - describes a lake with high concentrations of nutrients as well as abundant to excessive algal populations; Trophic State Index values between 60 & 70.

Eutrophication - the process of physical, chemical and biological aging of a lake associated with nutrient, organic, and sediment input into the lake.

Hypereutrophic - lakes characterized by very high productivity, very high nutrients; often showing persistent algae blooms, extreme dissolved oxygen concentrations and deep organic muck layers; Trophic State Index values above 70.

Hypolimnion - the bottom layer of a thermally stratified lake; can be anoxic.

Littoral Zone - shallow zone along the shoreline; usually contains rooted plants.

Macroinvertebrates - aquatic invertebrate animals large enough to see with the eye; insects, worms, mollusks, etc. make up the majority of the macroinvertebrates.

Macrophytes - rooted or floating aquatic vascular plants and large non-planktonic algae.

Mesotrophic - describes a lake with moderate concentrations of nutrients and algal levels; occasional water quality problems; Trophic State Index value between 40 and 60.

## **GLOSSARY**

Metalimnion - the layer of water between the epilimnion and the hypolimnion in a stratified lake; often an area of rapid temperature and density change.

Morphology - relating to physical structure (depth, shoreline length, shape) of a lake.

Nitrate - an inorganic form of nitrogen which can be utilized by algae and other plants.

Nitrite - an inorganic form of nitrogen which can be utilized by algae and other plants.

Nitrogen - a nutrient which can have a significant impact on the productivity of a lake by increasing algal populations.

Oligotrophic - describes a lake with clear water, low nutrients, and few water quality problems; low productivity; Trophic State Index value below 40.

Orthophosphate - a soluble form of phosphorus that can be directly utilized by algae and larger plants.

Parameters - measurable physical and chemical properties whose values can be used to determine the characteristics of the lake.

pH - the expression of the intensity of the acidity or basicity of a substance. The range is from 0-14, with 0 being the most acidic, 7 being neutral, and 14 being the most basic.

Phosphorus - essential nutrient that can contribute to the eutrophication of a lake by causing excessive algal growth.

Phytoplankton - tiny, free-floating aquatic plants found in or on water bodies.

Retrofit - an addition to an existing stormwater facility.

Secchi Depth - a measure of the transparency of the water column.

Sonde - an instrumented probe that measures various physical conditions of its surroundings

Specific Conductivity - the capacity of water to carry an electrical current; used to estimate the dissolved solid content of the water column.

Stratification - process by which lakes separate into thermal layers.

Suspended Solids - small particles that float on or are suspended within the water column.

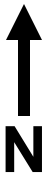
Trophic State - a measure of the degree of productivity in the water column.

Zooplankton - tiny aquatic animals that float in or on water bodies.

# **APPENDIX-**

# **BATHYMETRIC MAPS**

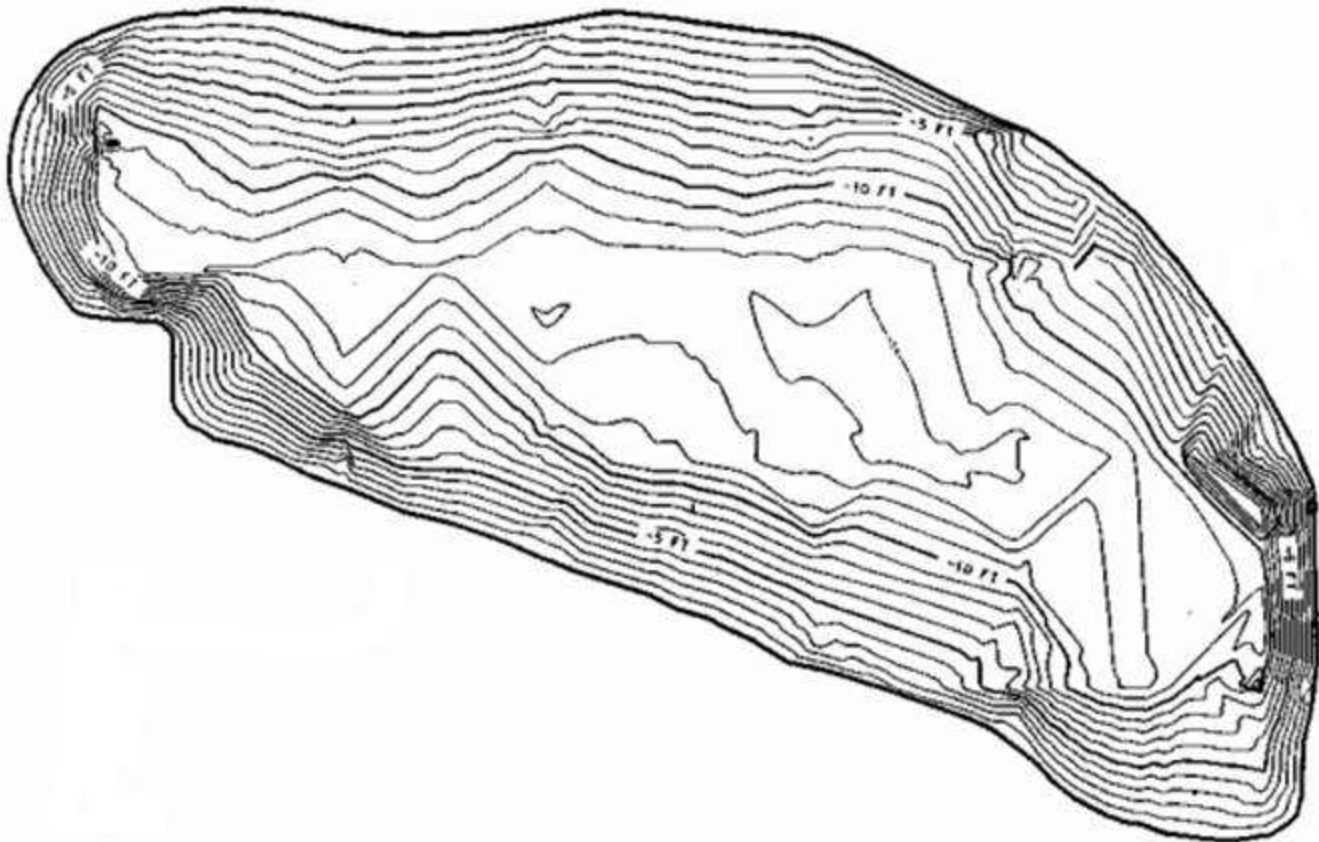
# LAKE ADAIR



Sampling Location

N 28° 33' 35.6"

W 81° 23' 27.4"



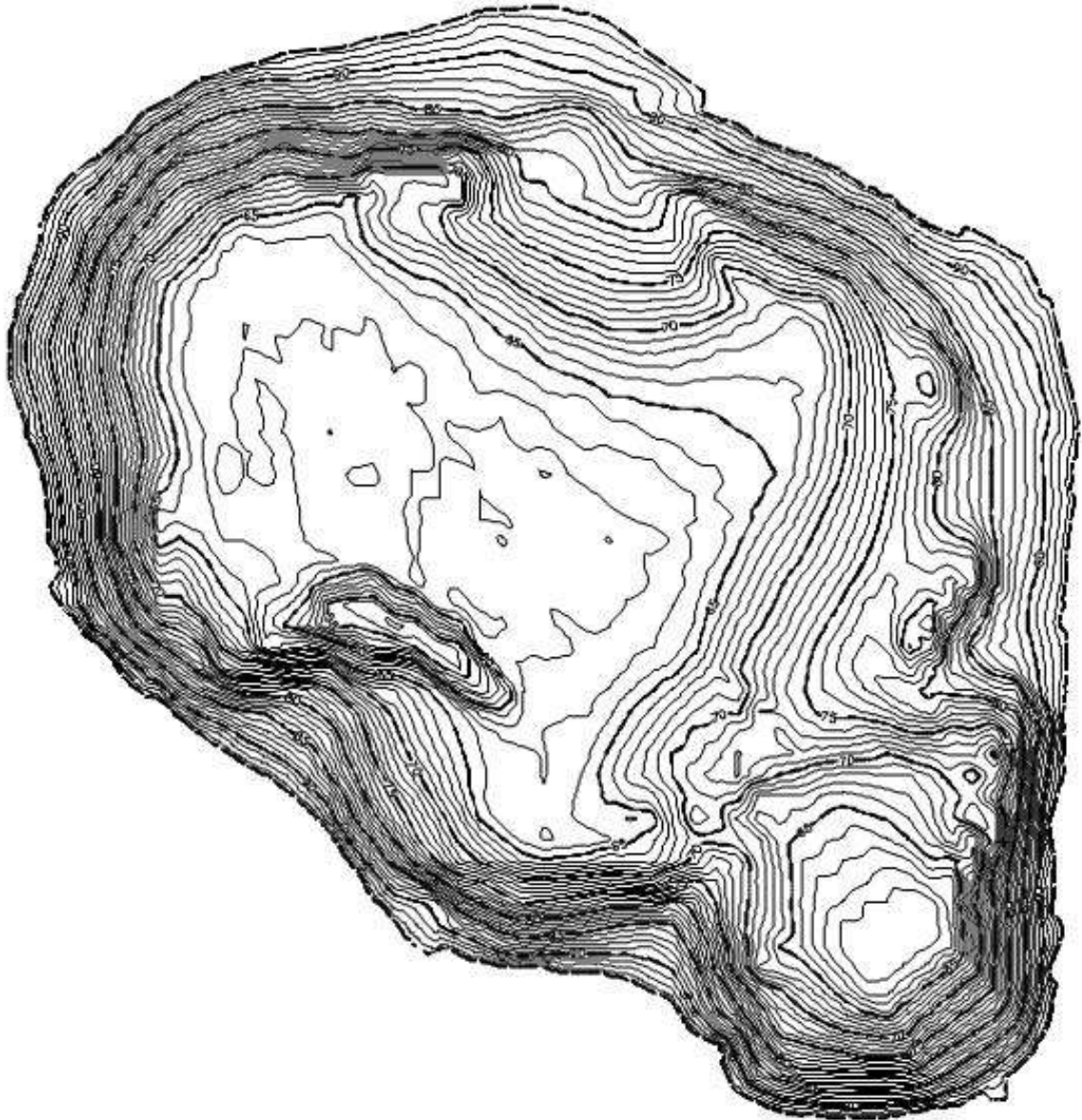
# LAKE ARNOLD



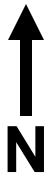
Sampling Location

N 28° 31' 51.6"

W 81° 20' 31.2"



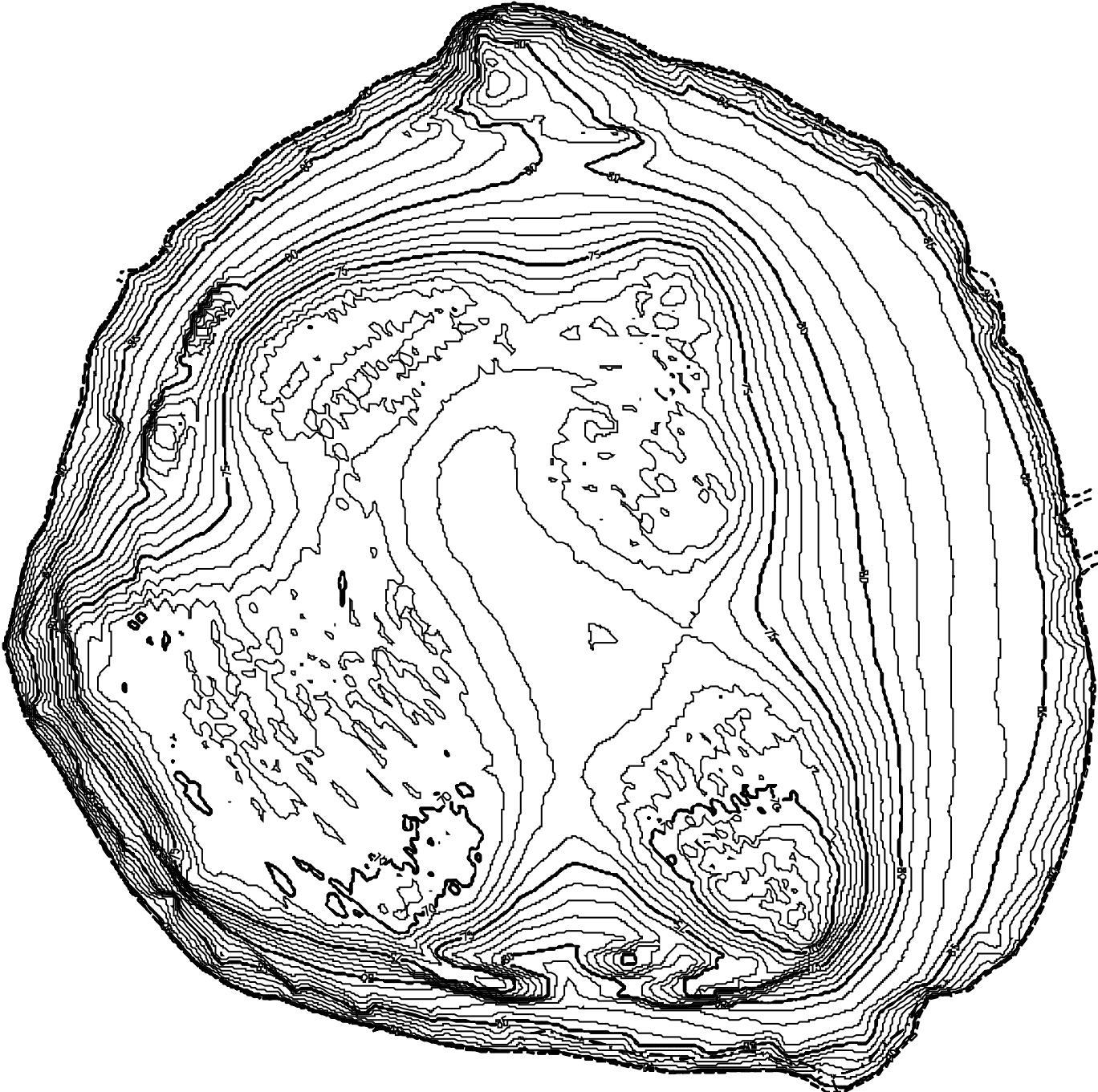
# LAKE BALDWIN



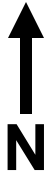
Sampling Location

N 28° 34' 21.7"

W 81° 19' 19.2"



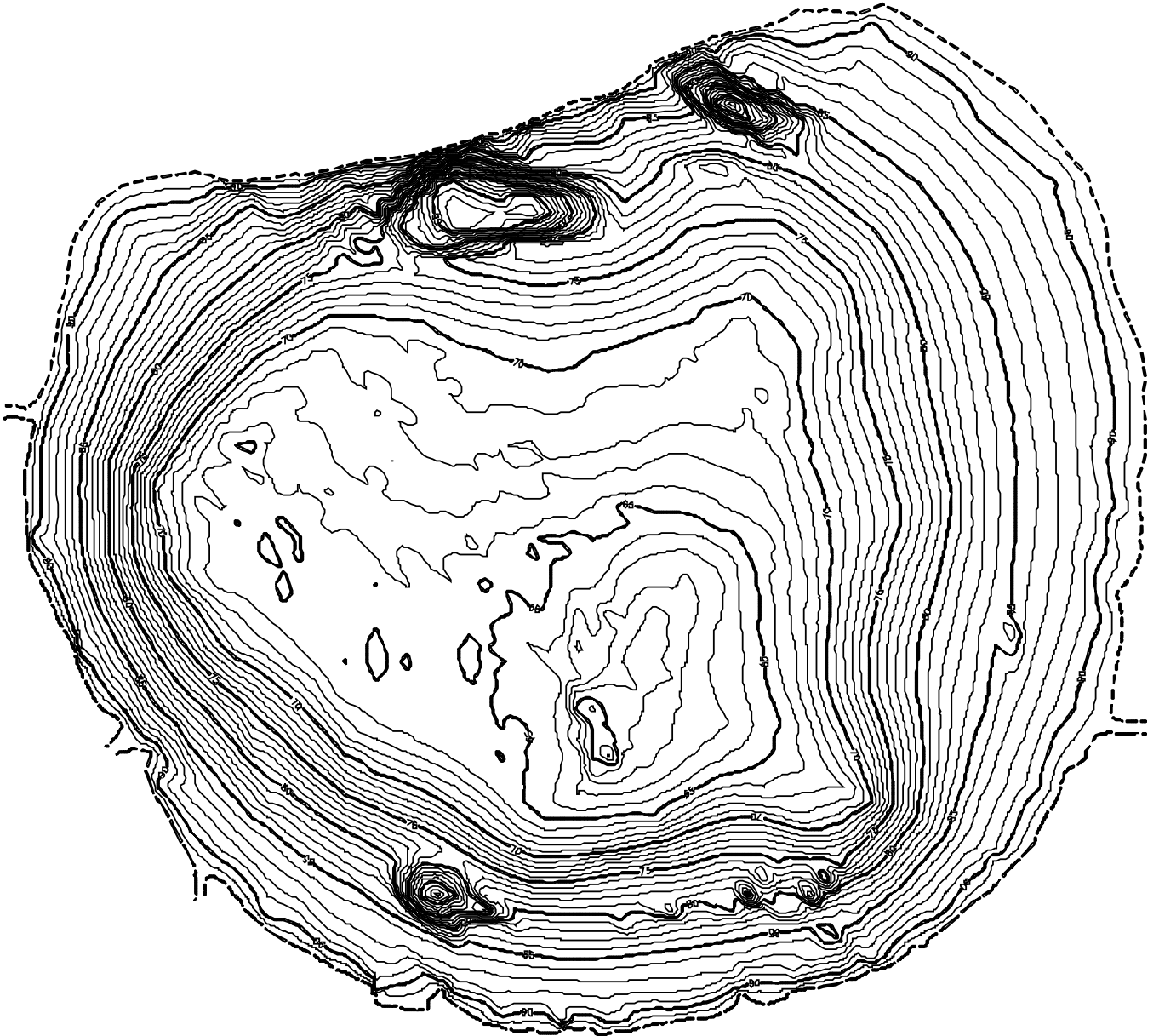
# LAKE BARTON



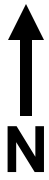
Sampling Location

N 28° 33' 02.5"

W 81° 18' 55.8"



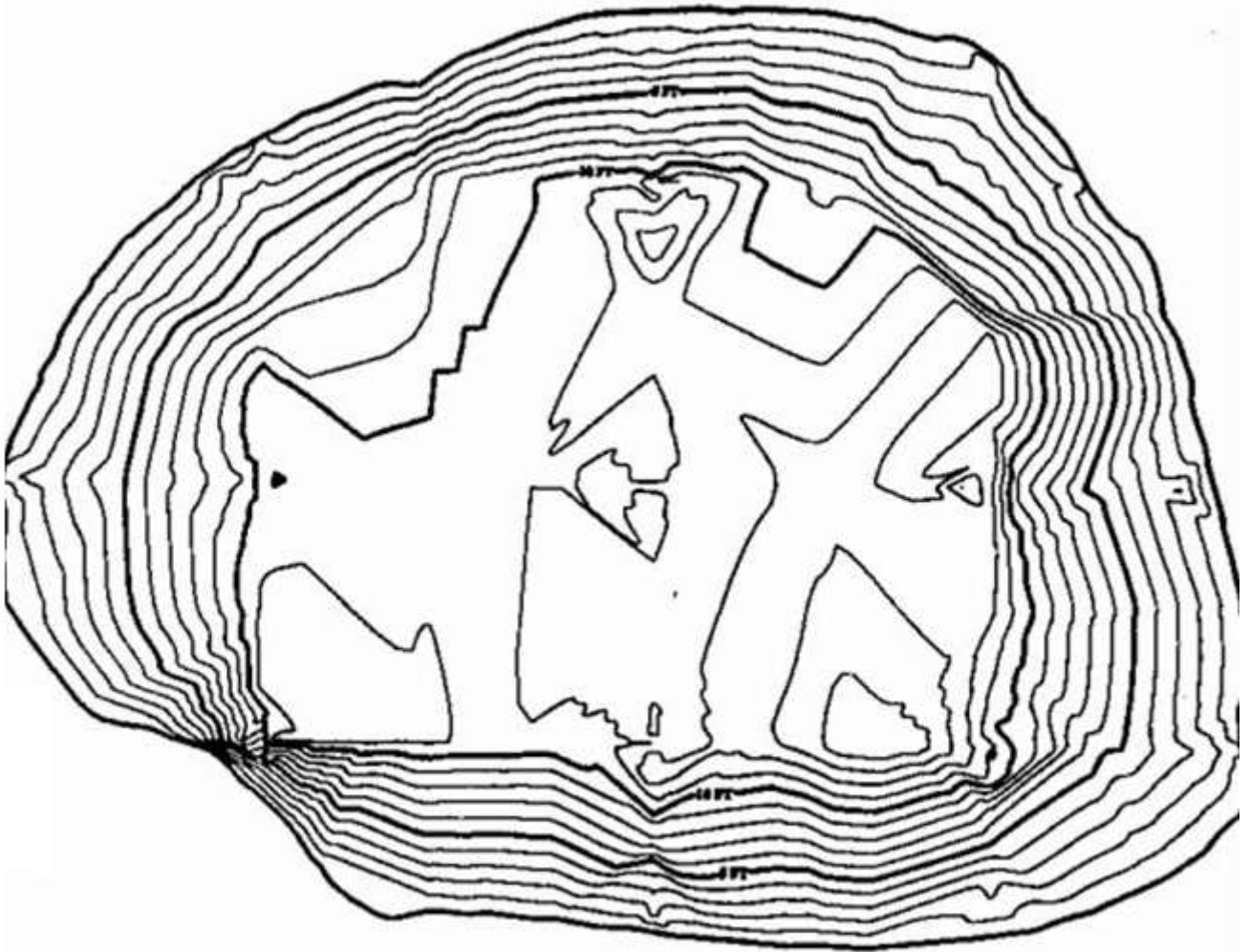
# BAY LAKE



Sampling Location

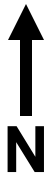
N 28° 35' 28.3"

W 81° 25' 18.5"





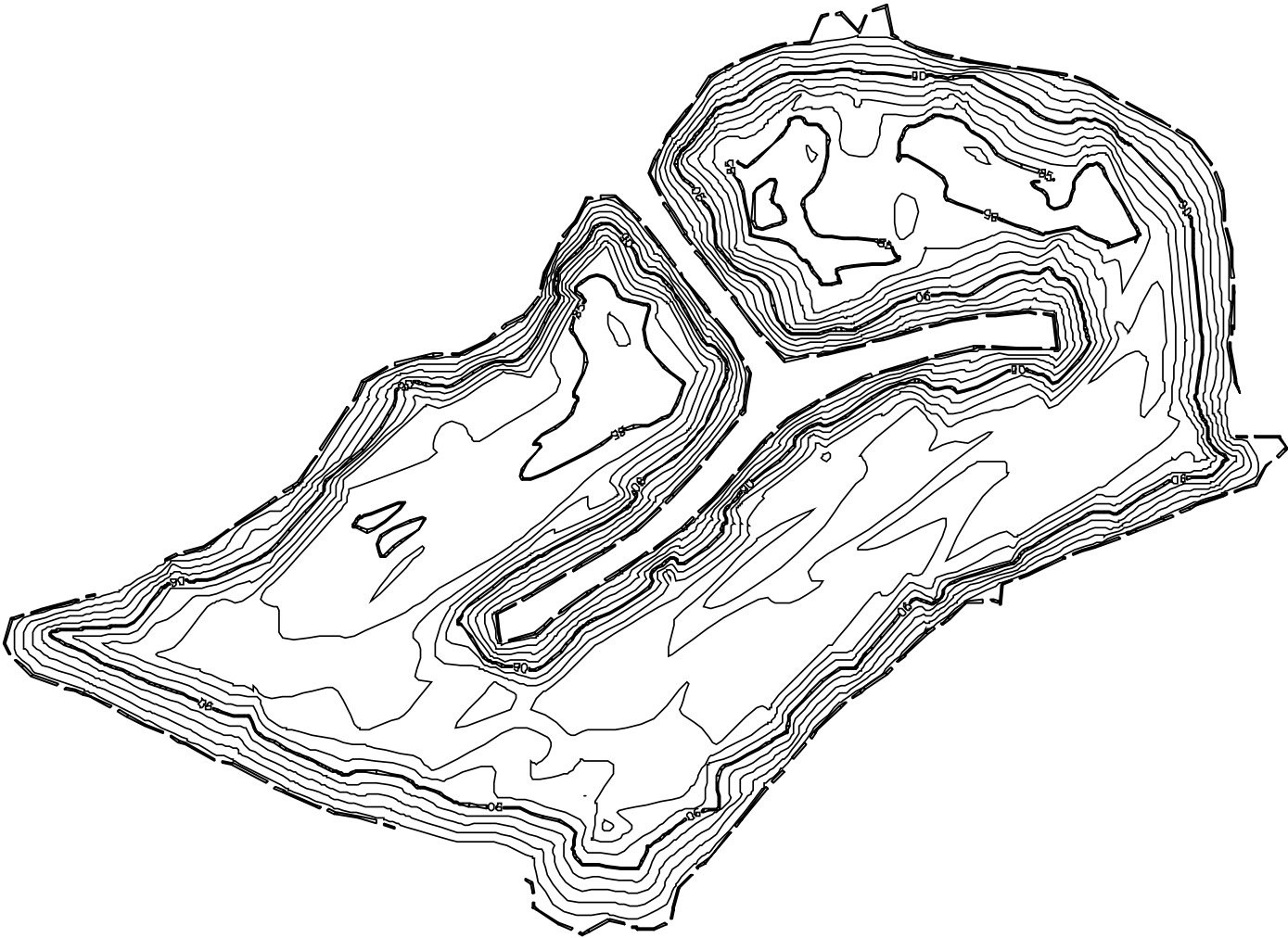
# LAKE BEARDALL



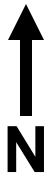
Sampling Location

N 28° 32' 11.8"

W 81° 24' 11.2"



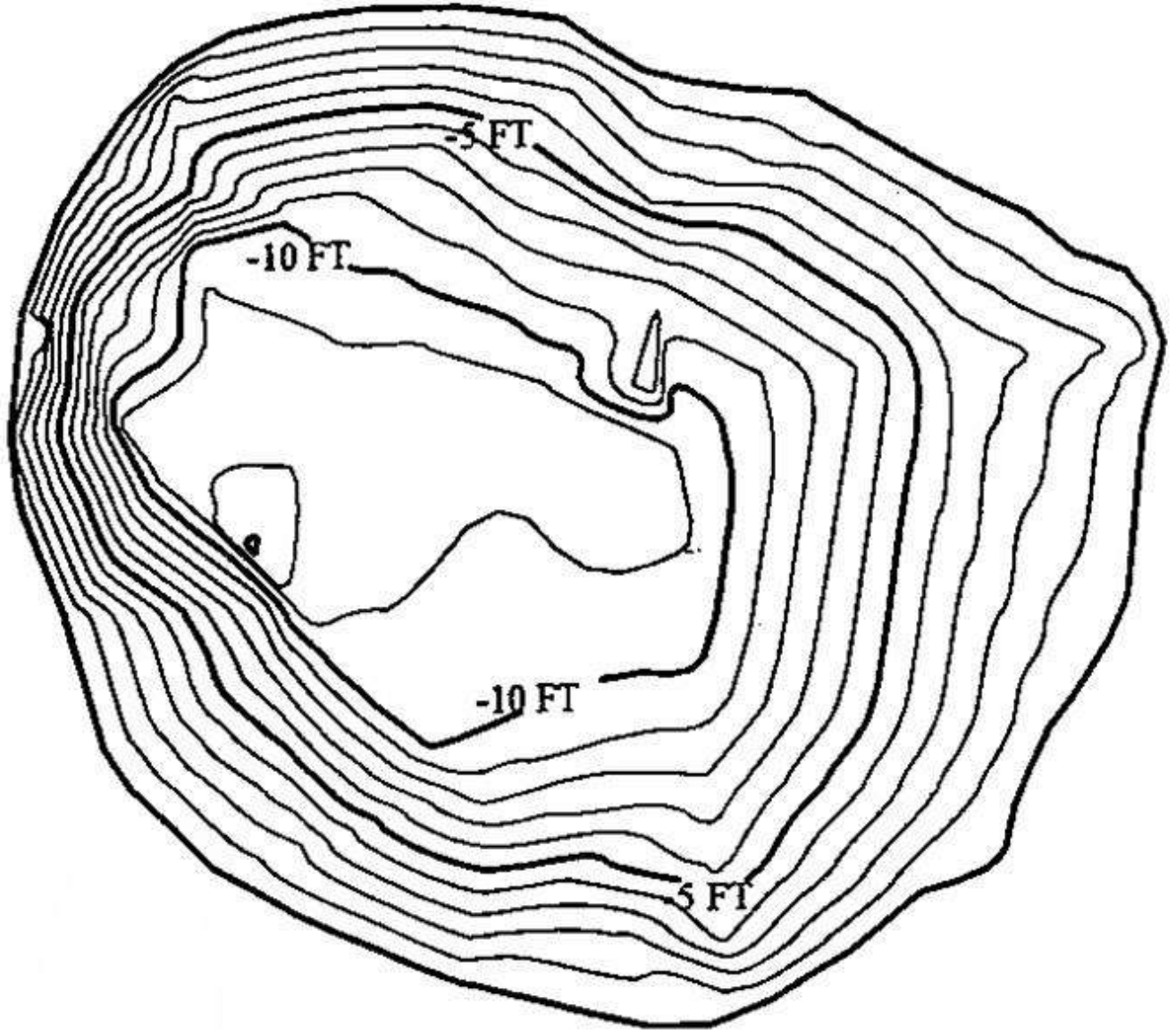
# LAKE BEAUTY



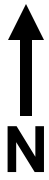
Sampling Location

N 28° 31' 23.5"

W 81° 22' 37.9"



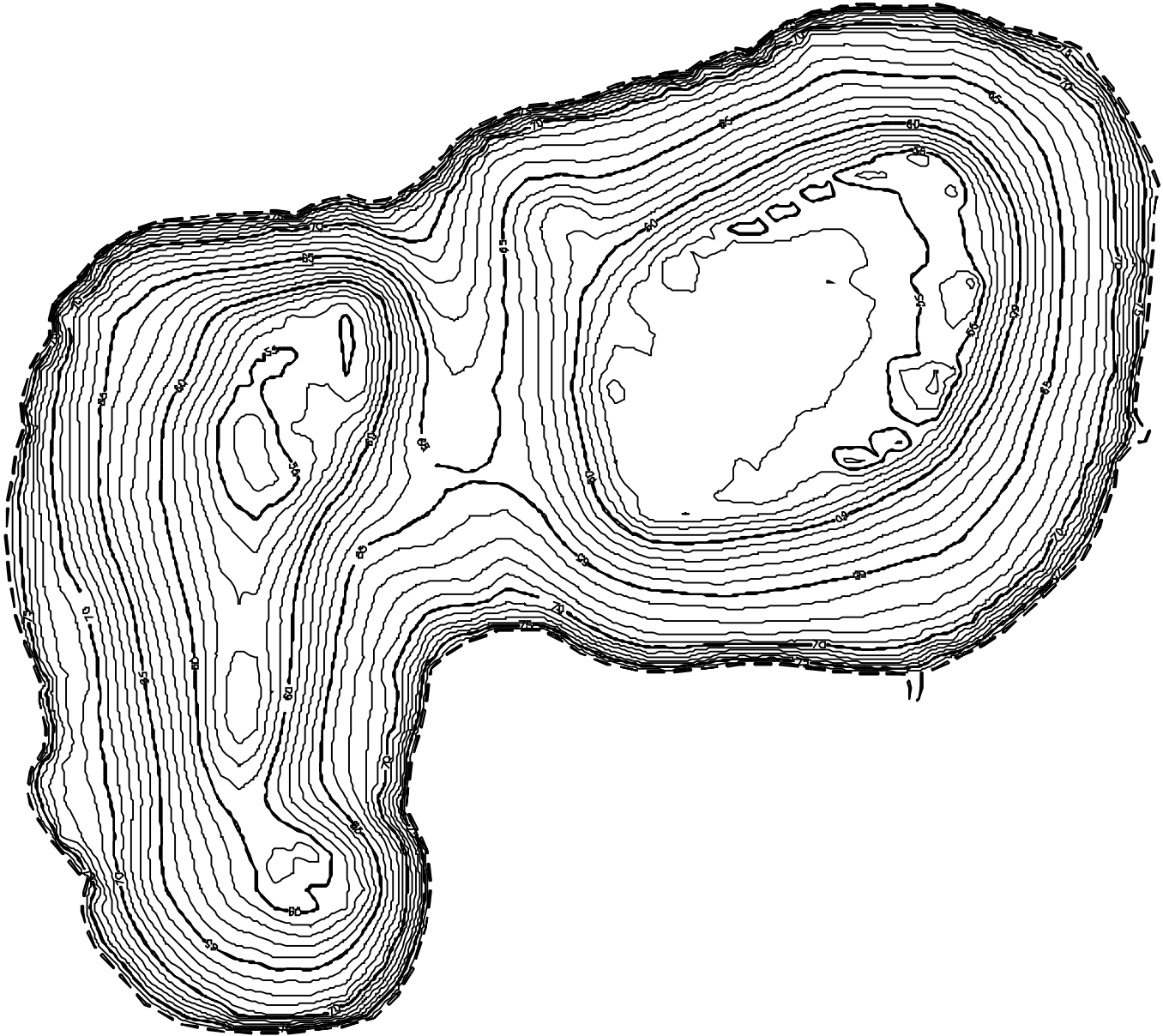
# BUCK LAKE



Sampling Location

N 28° 24' 33.8"

W 81° 14' 53.5"



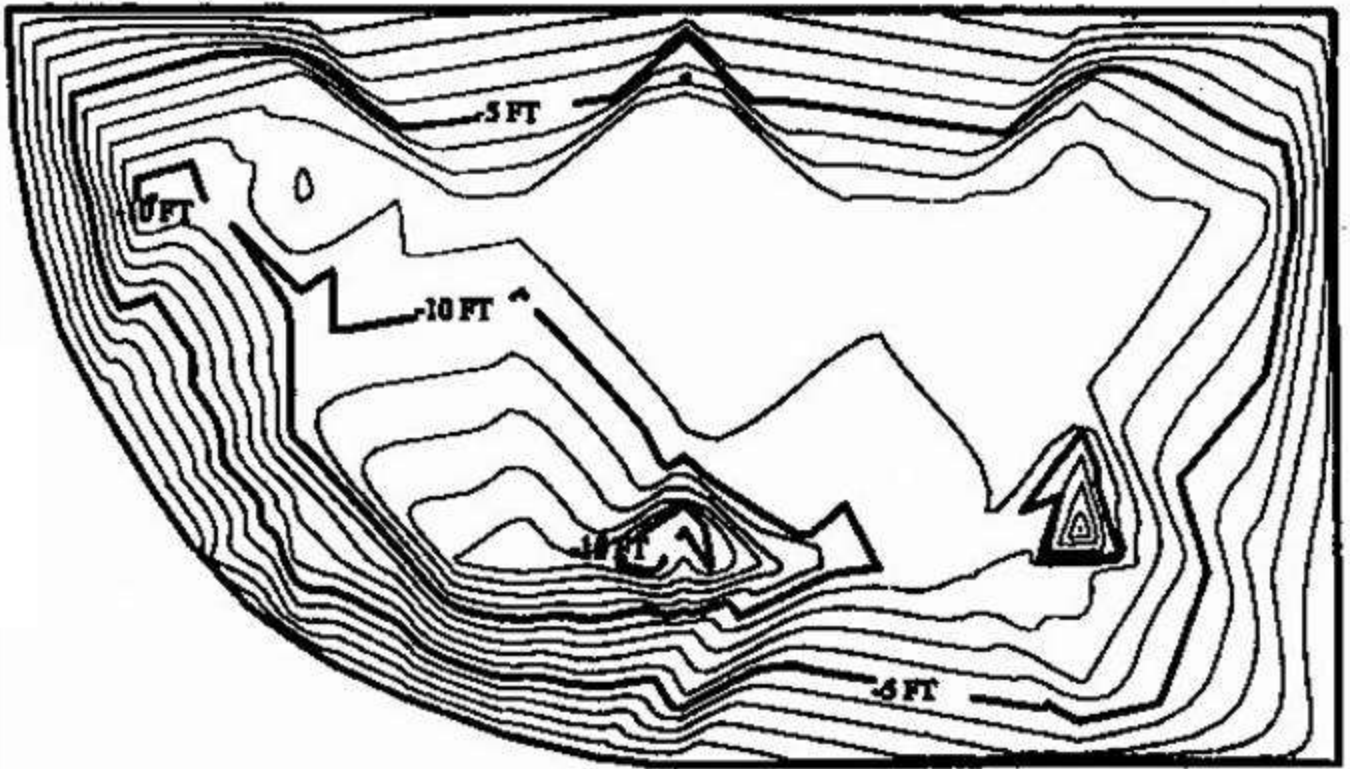
# LAKE C



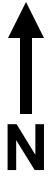
Sampling Location

N 28° 31' 52.0"

W 81° 19' 10.9"



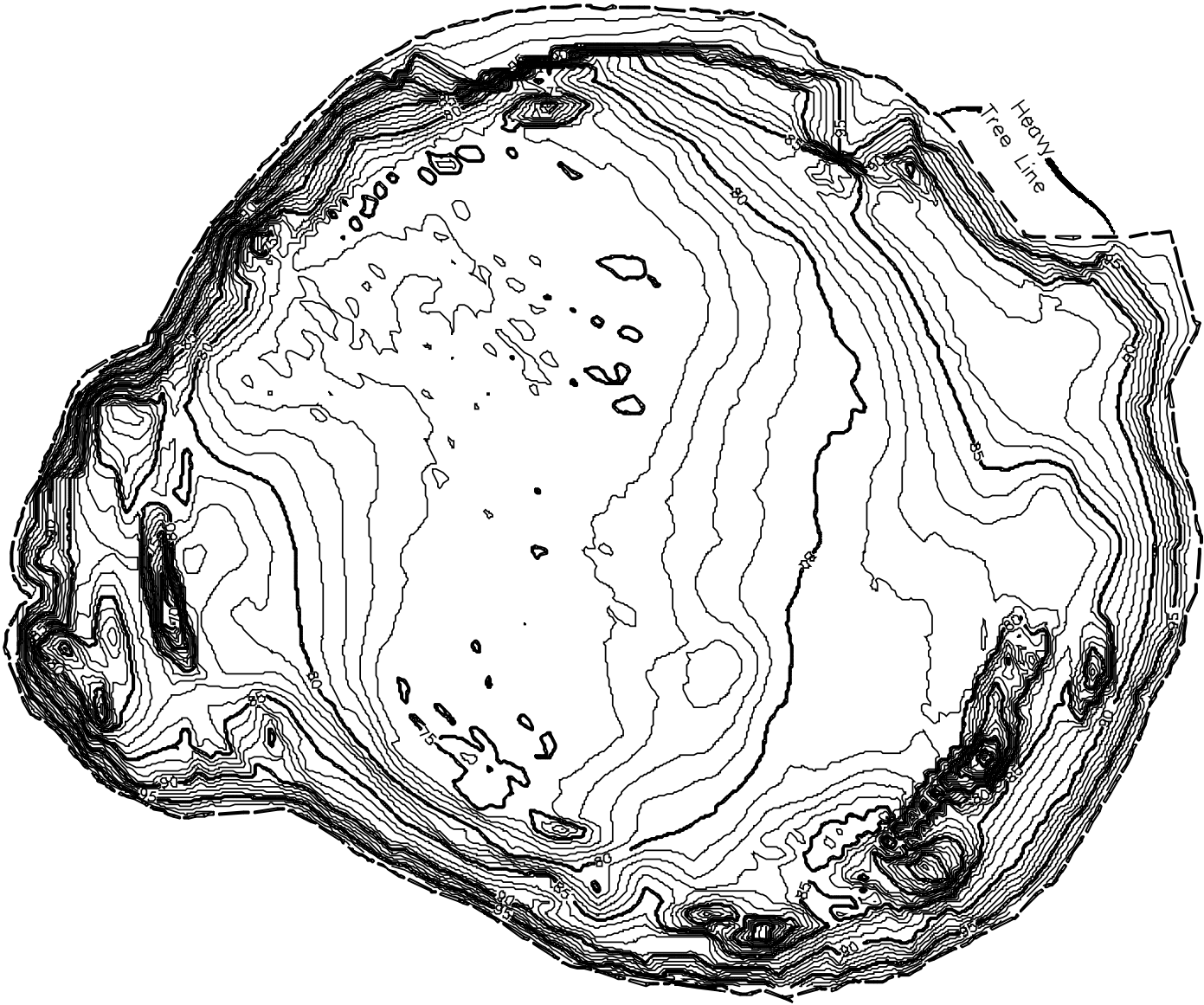
# LAKE CANE



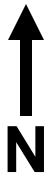
Sampling Location

N 28° 29' 06.7"

W 81° 28' 22.1"



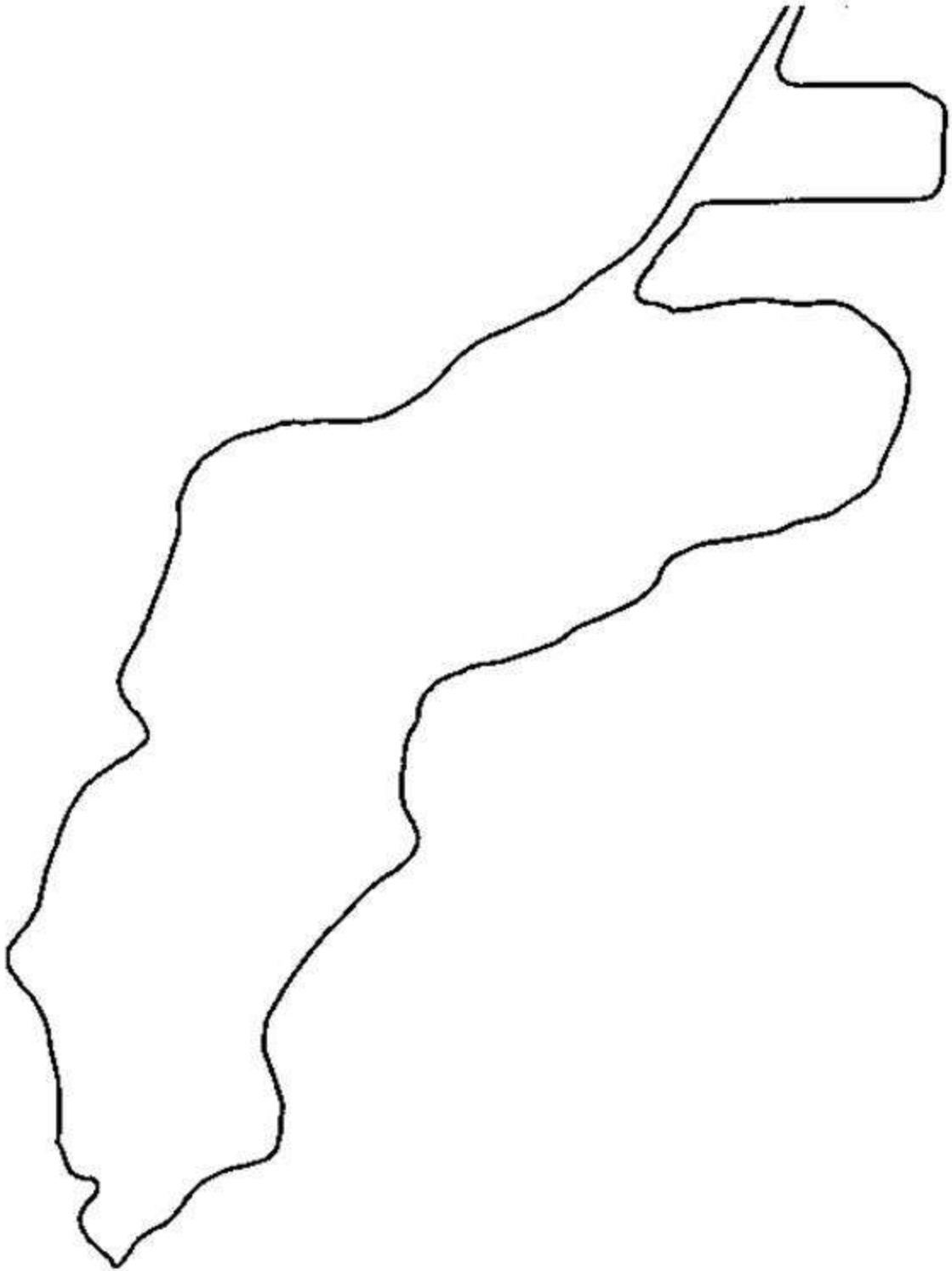
# LAKE CATHERINE



Sampling Location

N 28° 30' 07.9"

W 81° 24' 47.9"



# LAKE CAY DEE (NORTH and SOUTH)

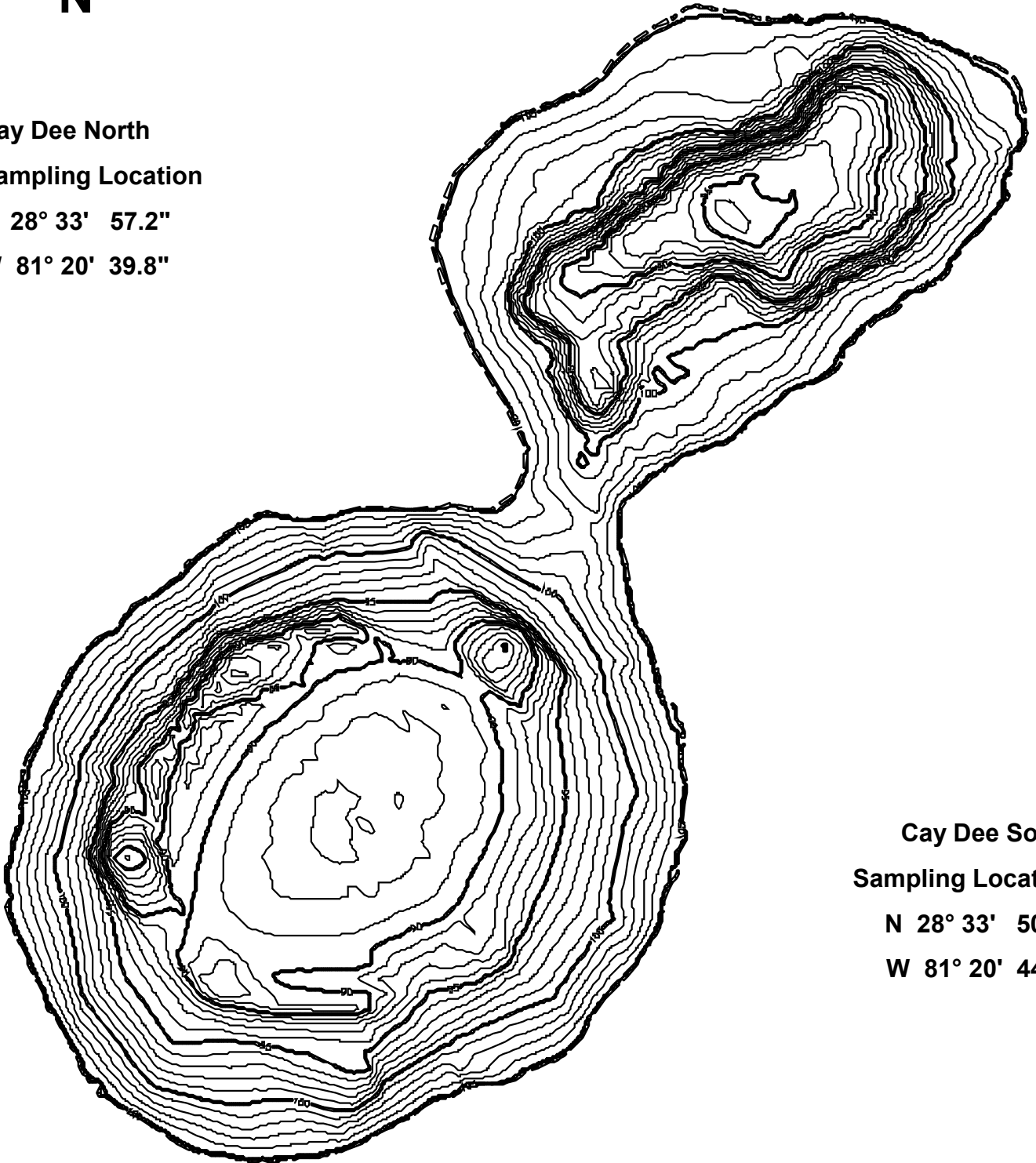


Cay Dee North

Sampling Location

N 28° 33' 57.2"

W 81° 20' 39.8"



Cay Dee South

Sampling Location

N 28° 33' 50.8"

W 81° 20' 44.2"

# LAKE CAY DEE (NORTH and SOUTH)

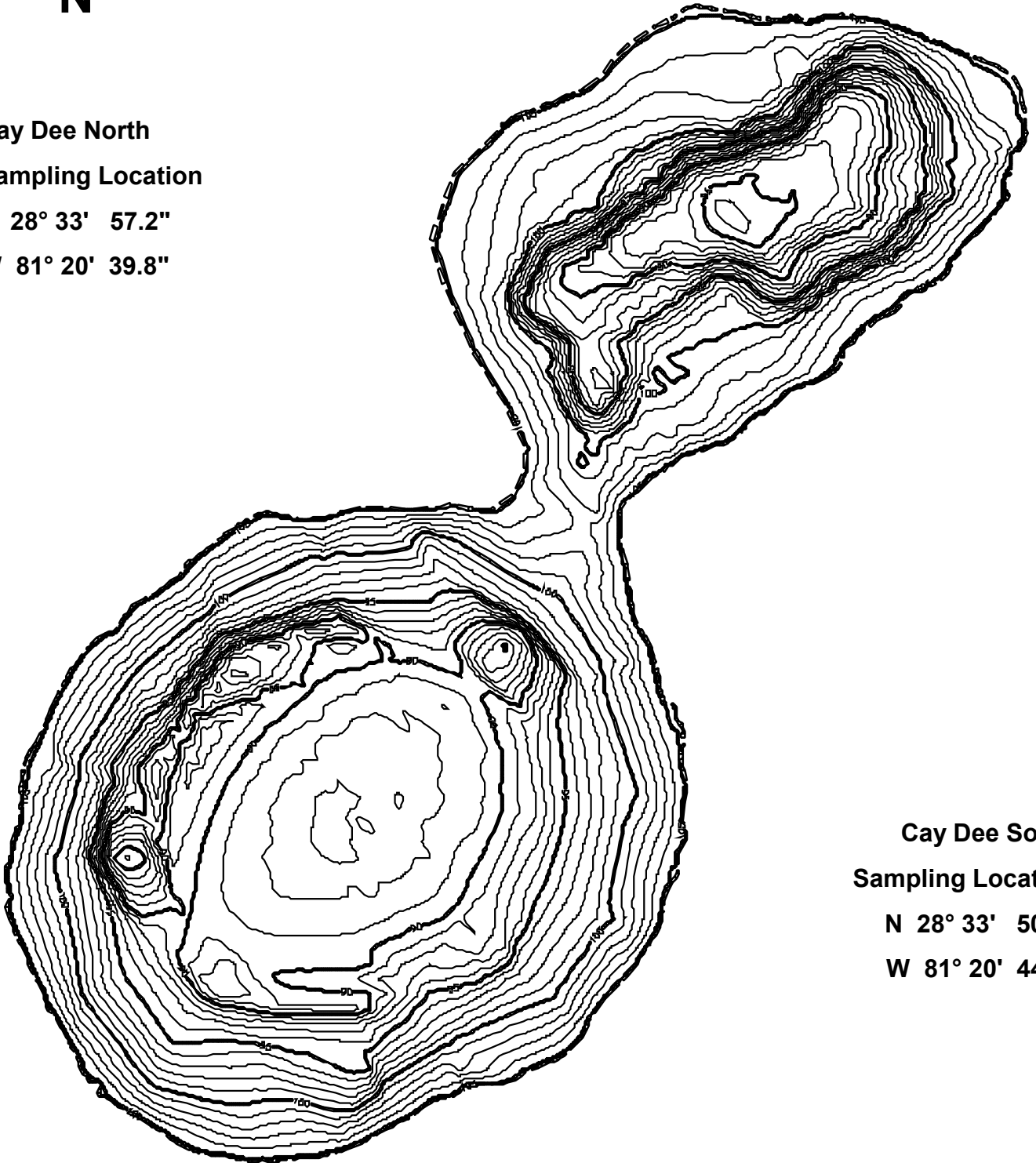


Cay Dee North

Sampling Location

N 28° 33' 57.2"

W 81° 20' 39.8"



Cay Dee South

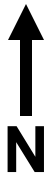
Sampling Location

N 28° 33' 50.8"

W 81° 20' 44.2"



# LAKE CHEROKEE



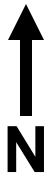
Sampling Location

N 28° 31' 58.8"

W 81° 22' 16.0"



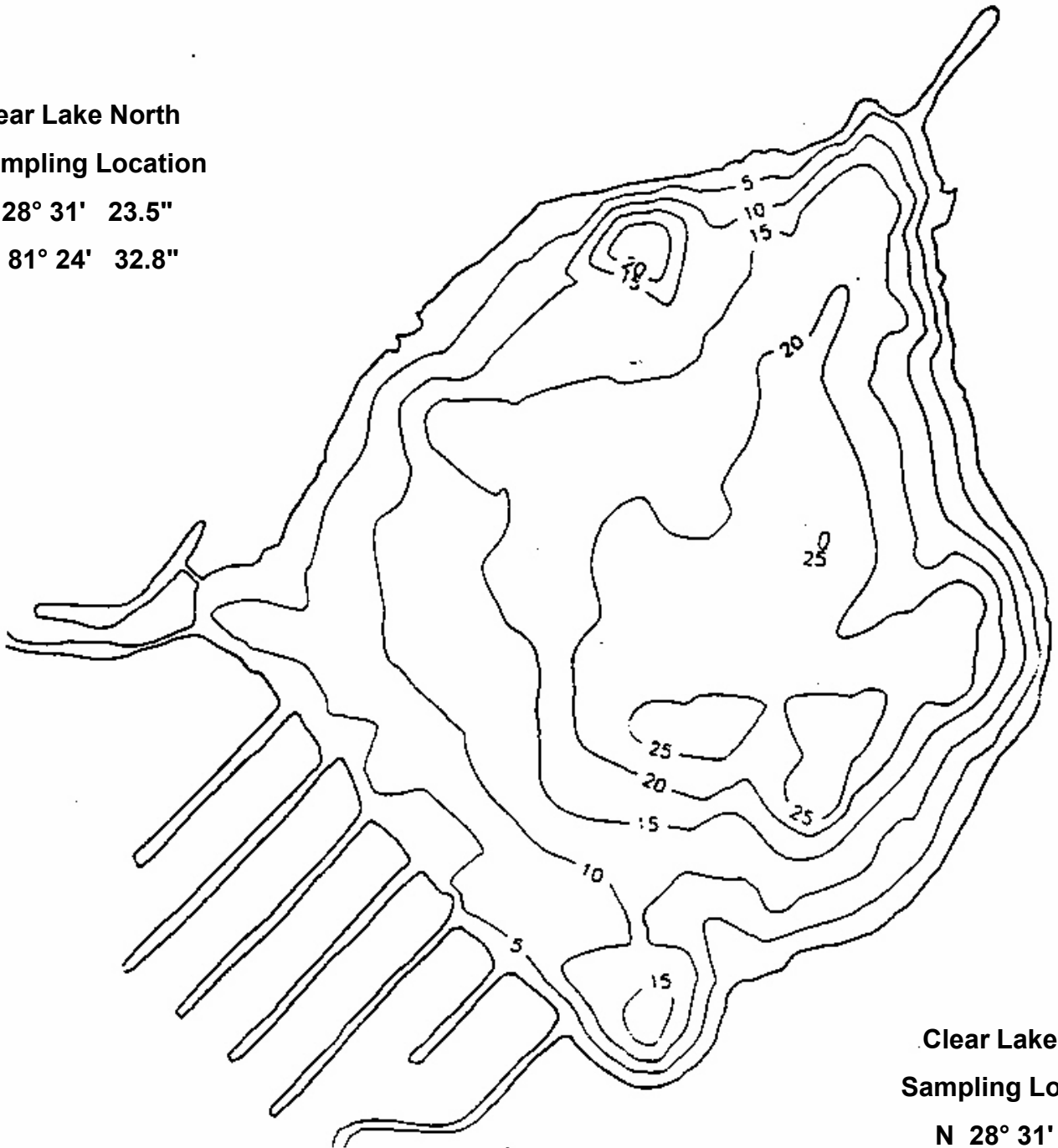
# CLEAR LAKE



**Clear Lake North  
Sampling Location**

**N 28° 31' 23.5"**

**W 81° 24' 32.8"**

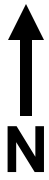


**Clear Lake South  
Sampling Location**

**N 28° 31' 07.3"**

**W 81° 24' 34.6"**

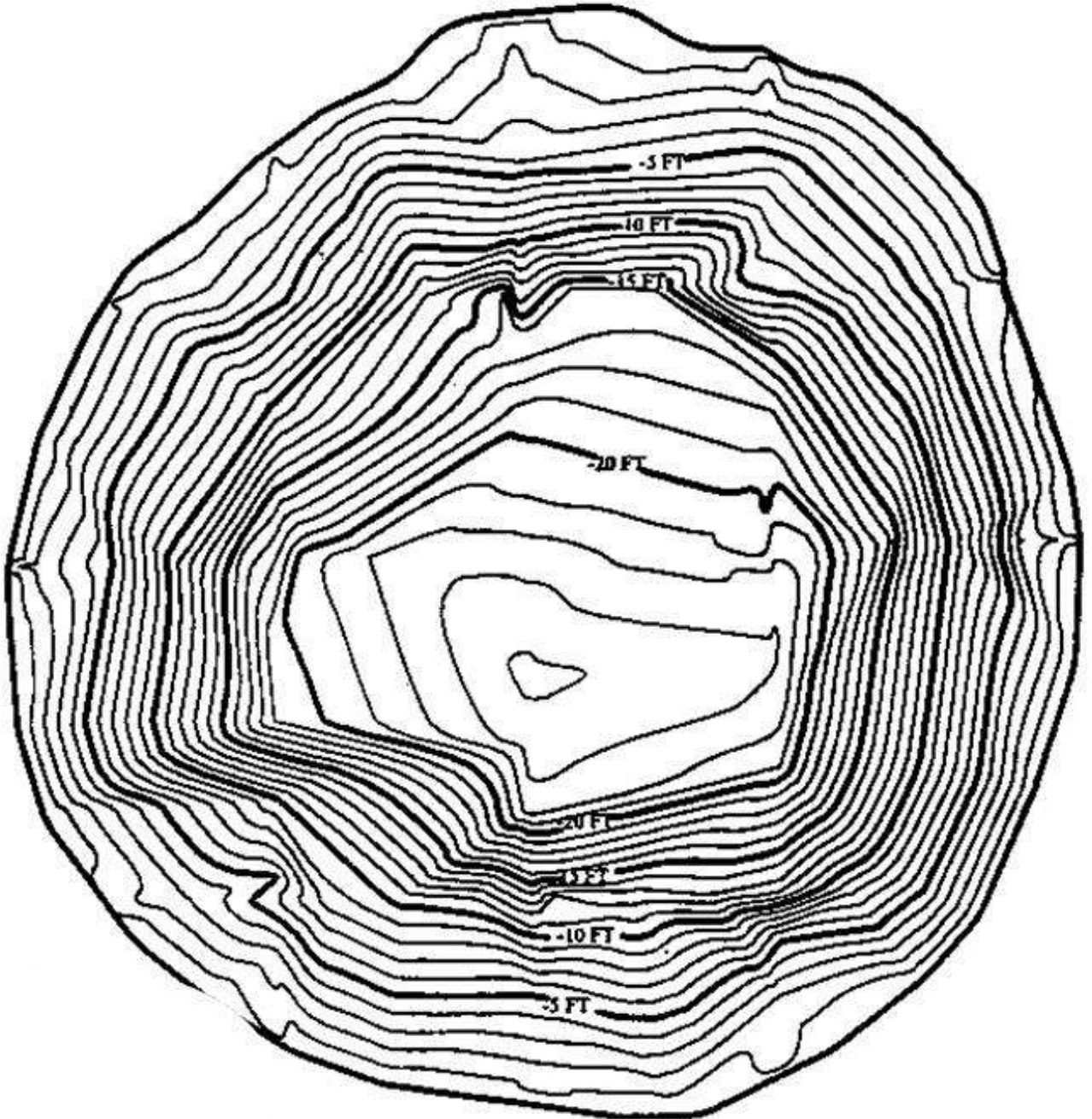
# LAKE COMO



Sampling Location

N 28° 32' 09.2"

W 81° 21' 07.2"



# LAKE CONCORD



Sampling Location

N 28° 33' 24.1"

W 81° 23' 07.1"



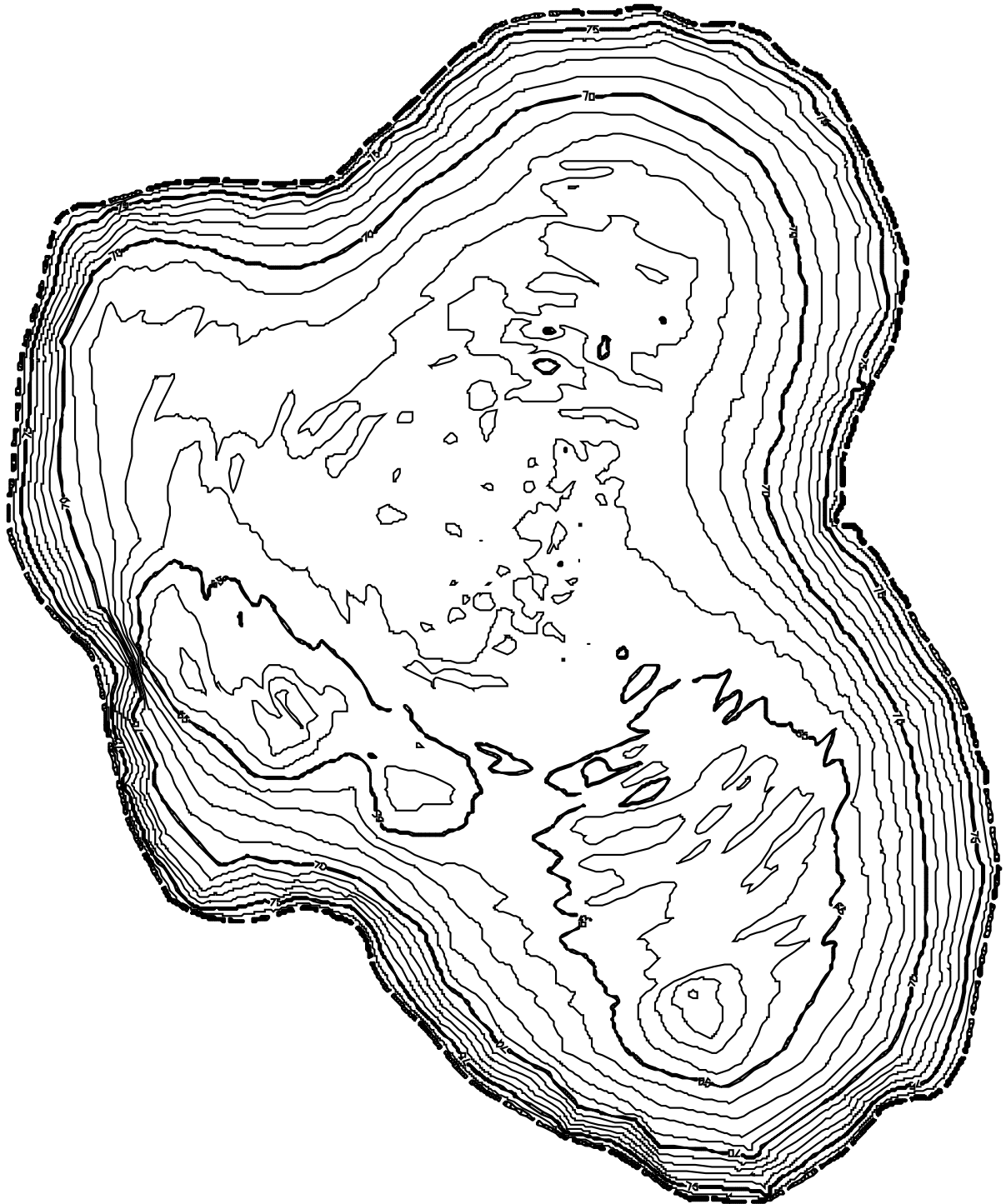
# LAKE COPELAND



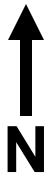
Sampling Location

N 28° 31' 39.0"

W 81° 22' 28.9"



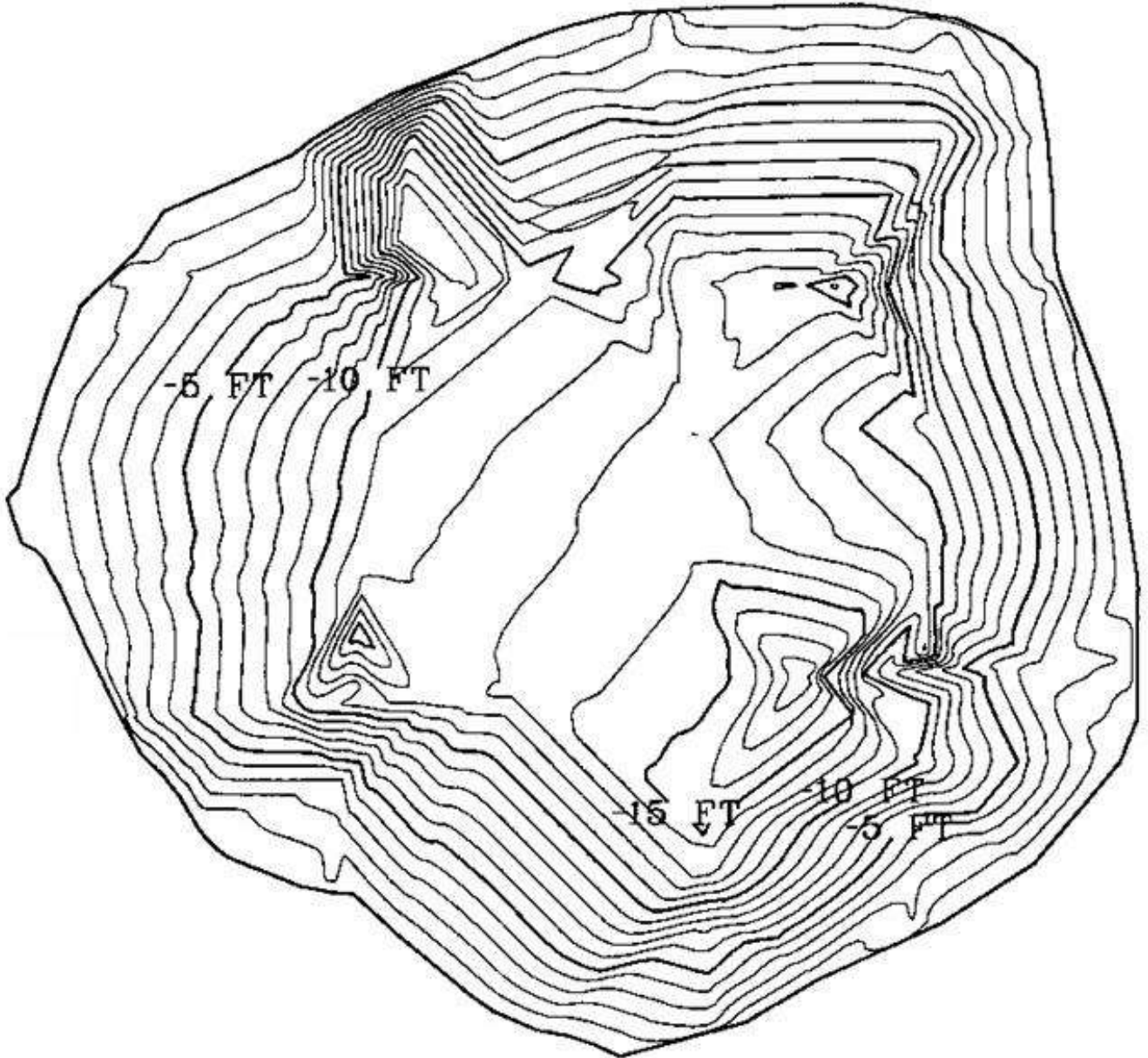
# LAKE DANIEL



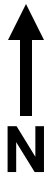
Sampling Location

N 28° 34' 55.6"

W 81° 24' 04.3"



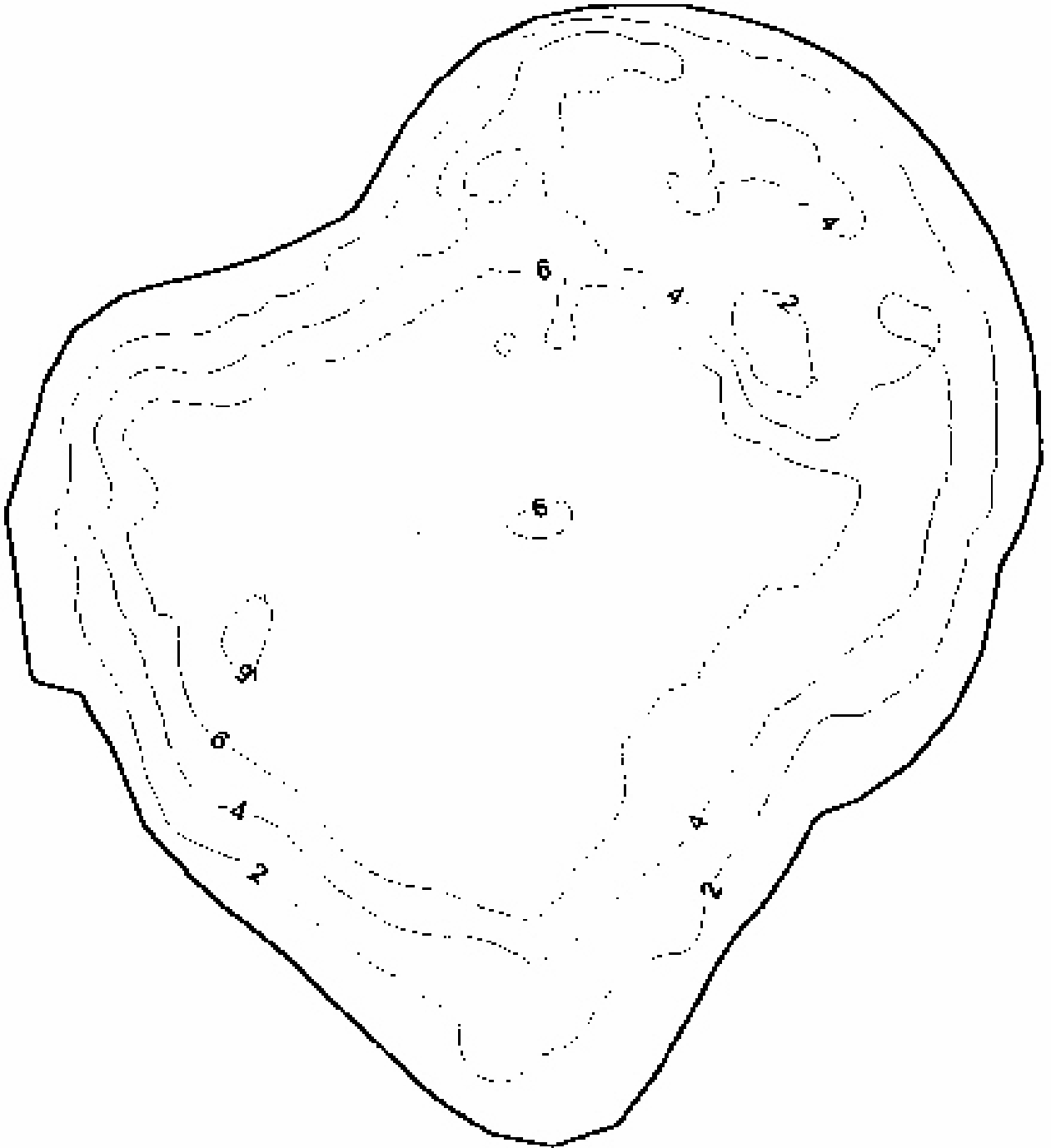
# LAKE DAVIS



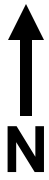
Sampling Location

N 28° 31' 52.7"

W 81° 22' 00.5"



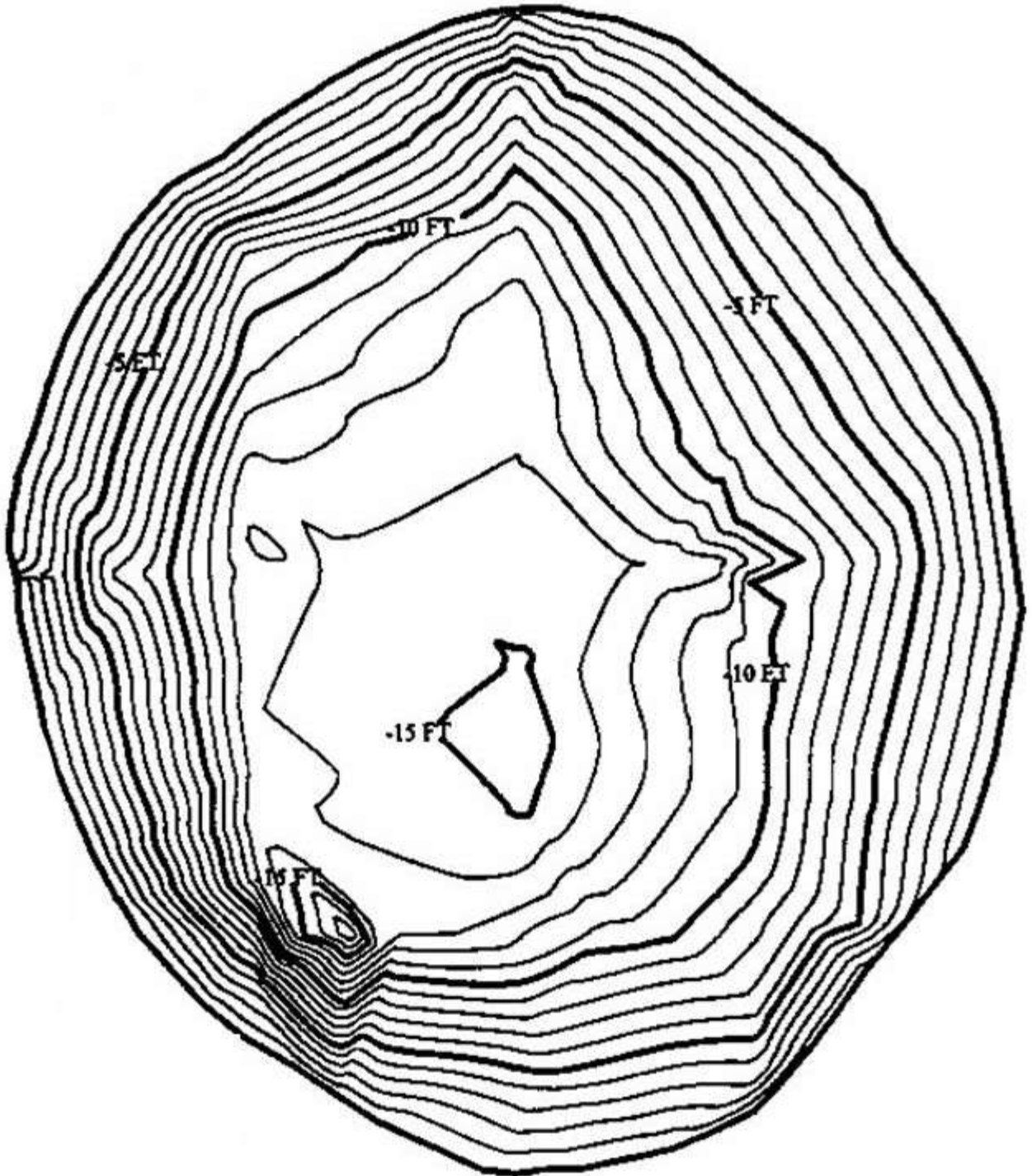
# LAKE DOT



Sampling Location

N 28° 33' 08.2"

W 81° 23' 12.4"





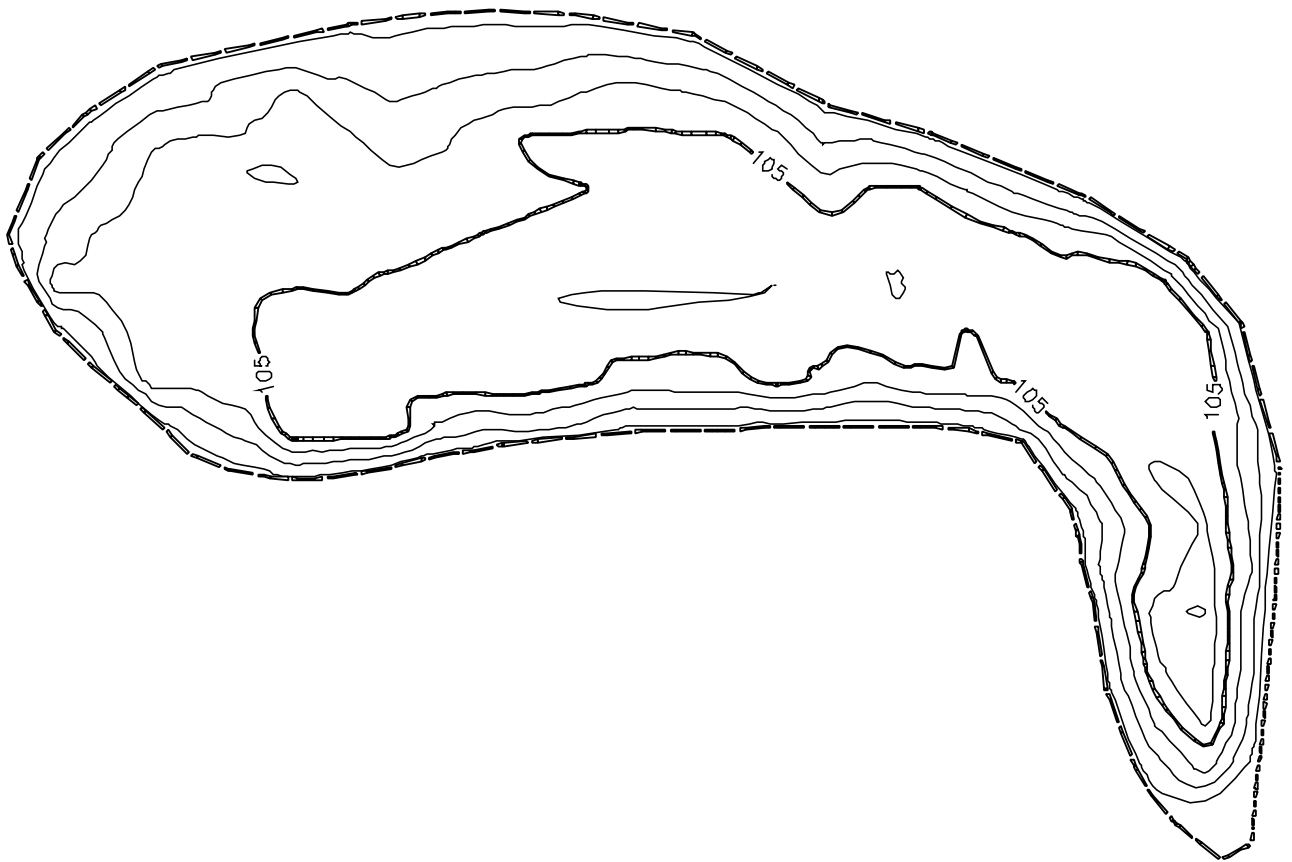
# LAKE DOVER



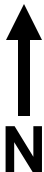
**Sampling Location**

**N 28° 31' 57.0"**

**W 81° 19' 18.8"**



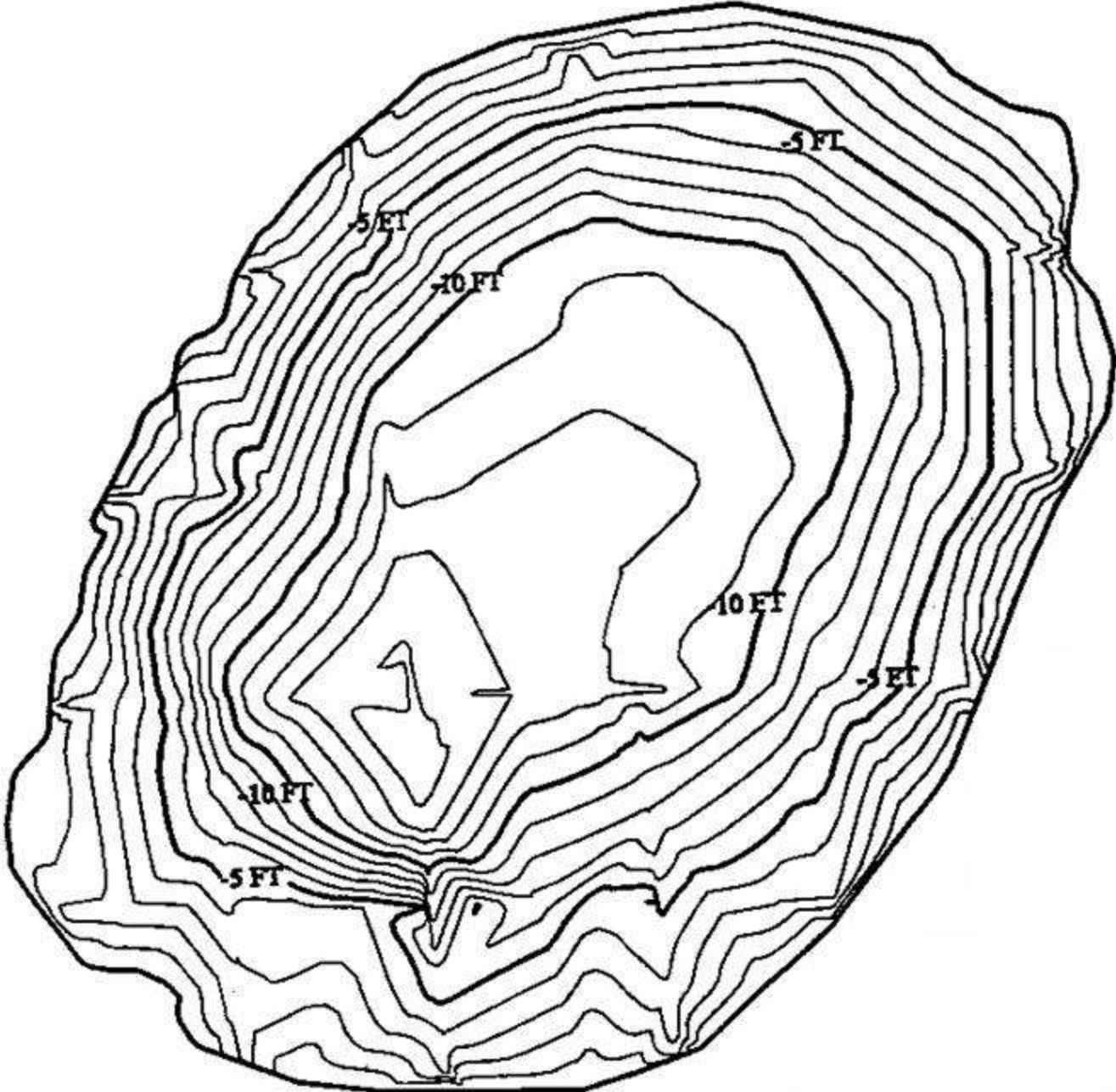
# LAKE DRUID



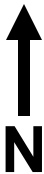
Sampling Location

N 28° 33' 37.4"

W 81° 20' 59.3"



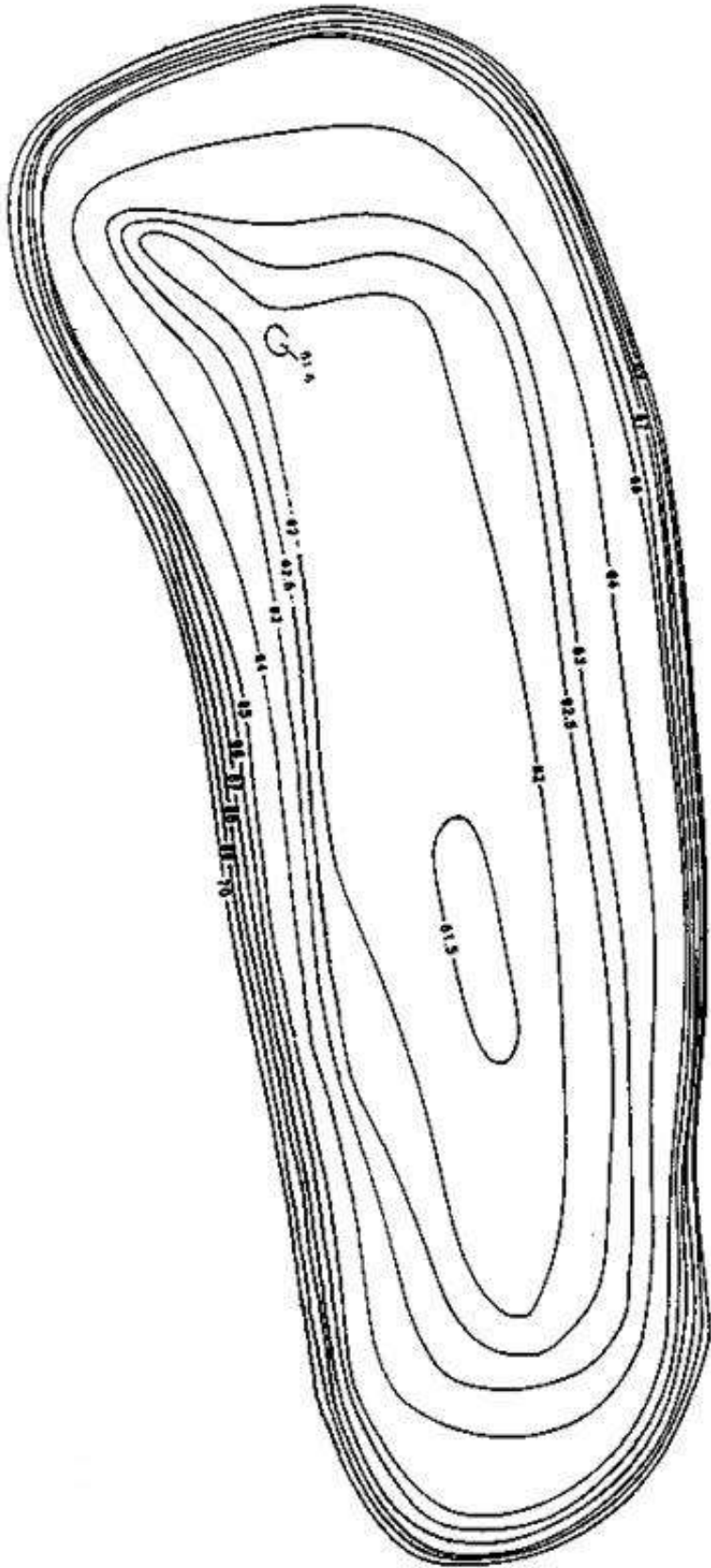
# LAKE EMERALD



Sampling Location

N 28° 31' 47.6"

W 81° 21' 47.5"



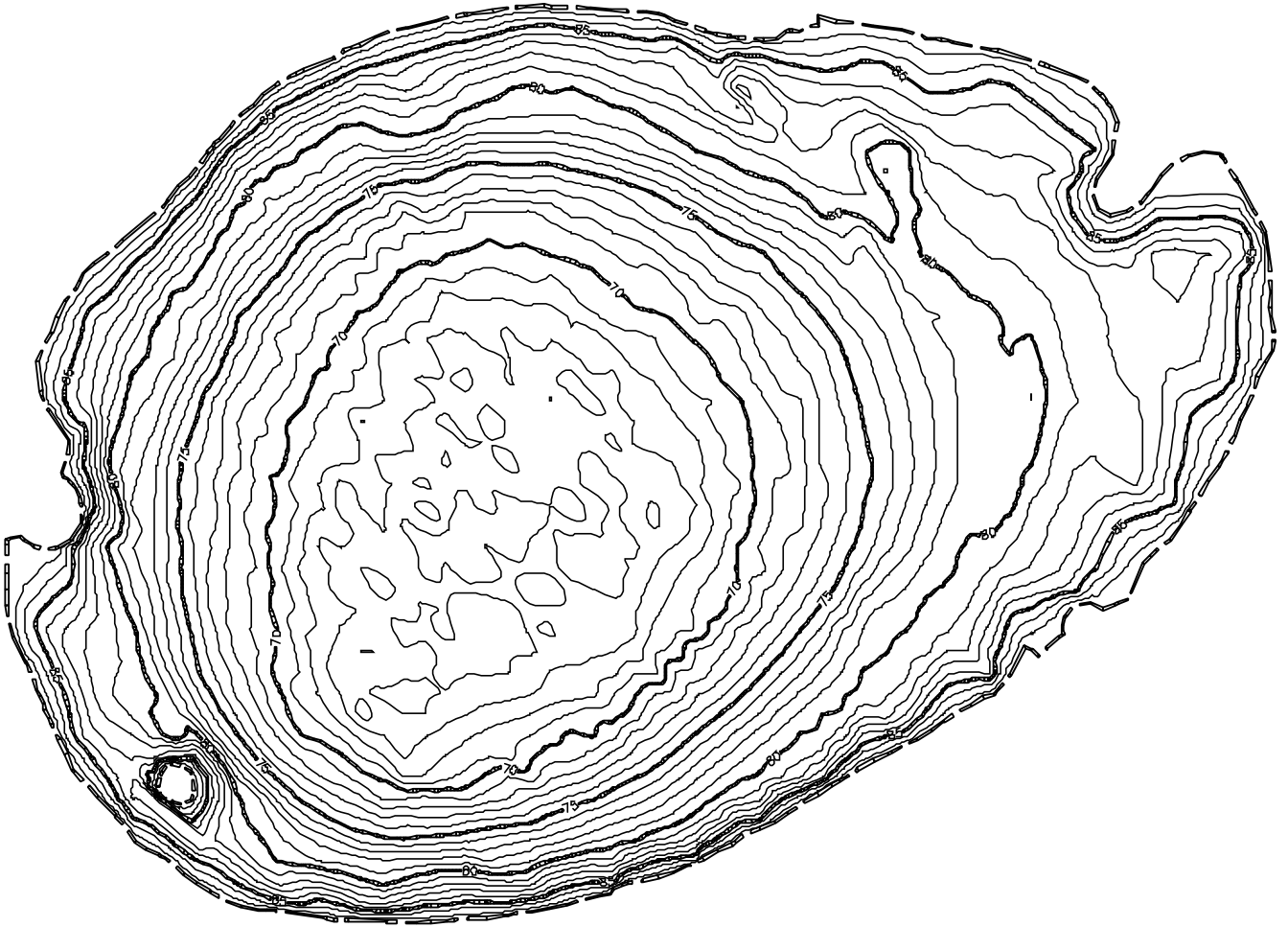
# LAKE EOLA



Sampling Location

N 28° 32' 39.1"

W 81° 22' 21.4"



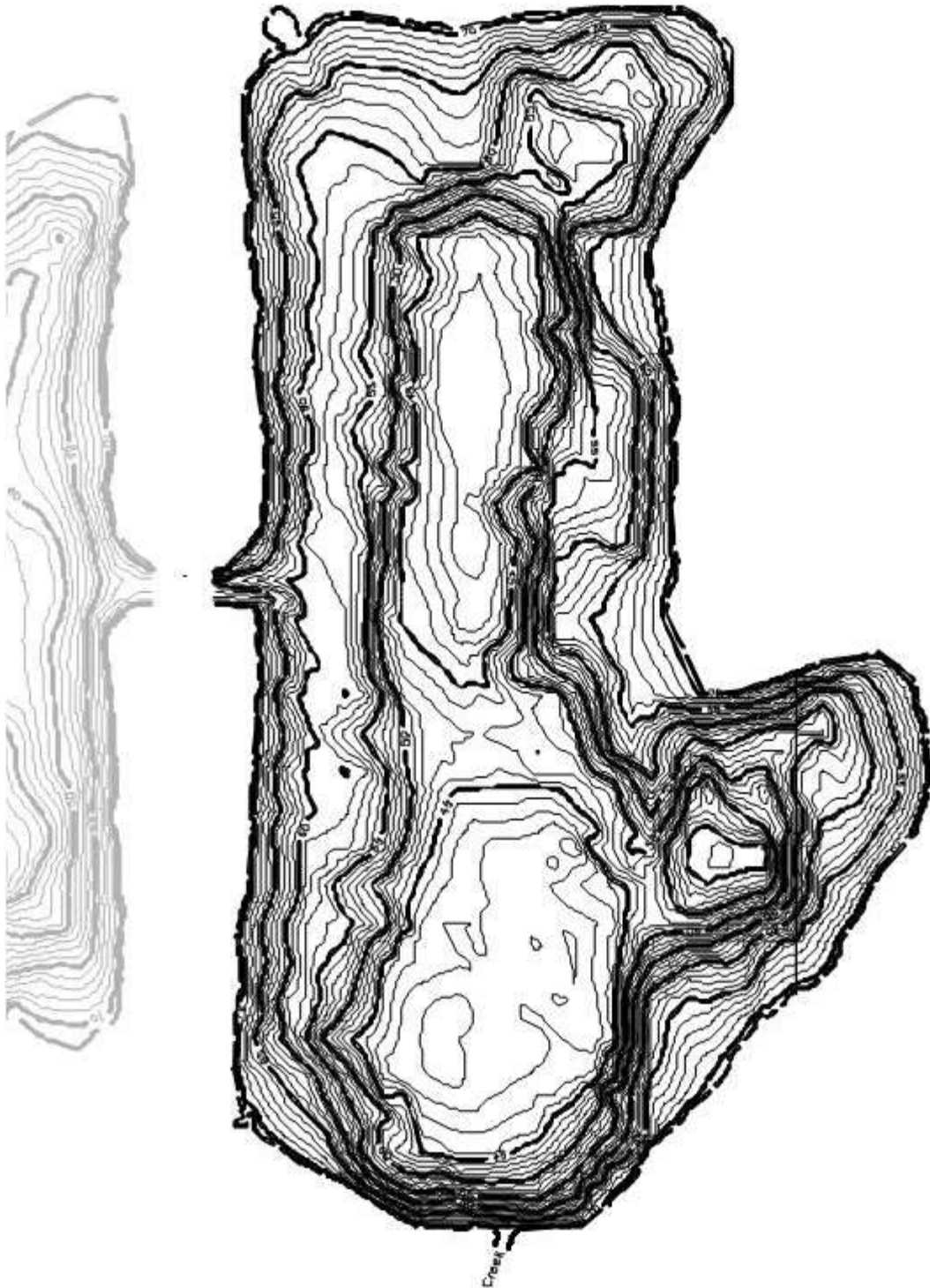
# LAKE ESTELLE EAST



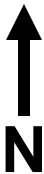
Sampling Location

N 28° 34' 26.9"

W 81° 21' 47.0"



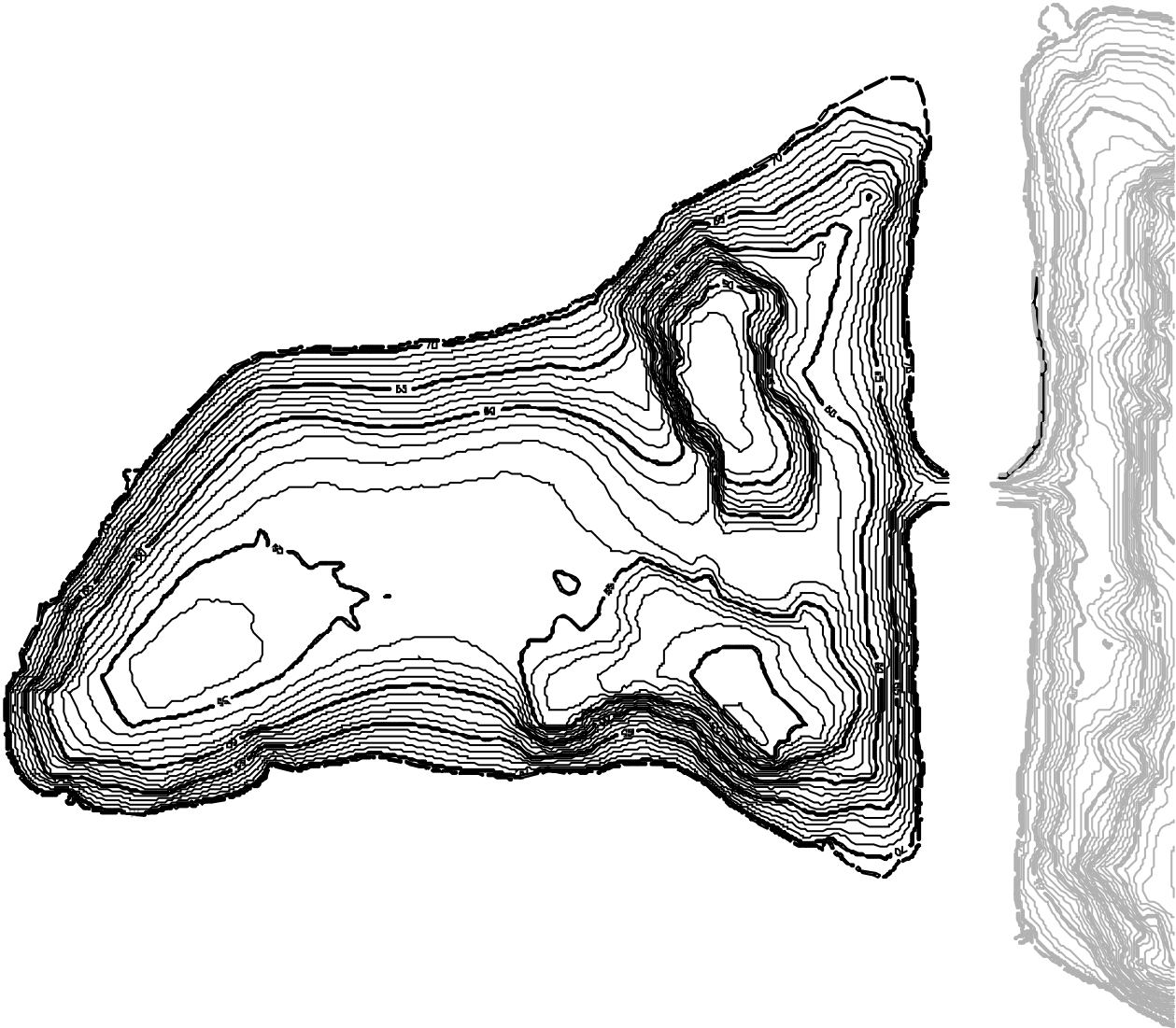
# LAKE ESTELLE WEST



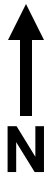
Sampling Location

N 28° 34' 29.6"

W 81° 22' 01.2"



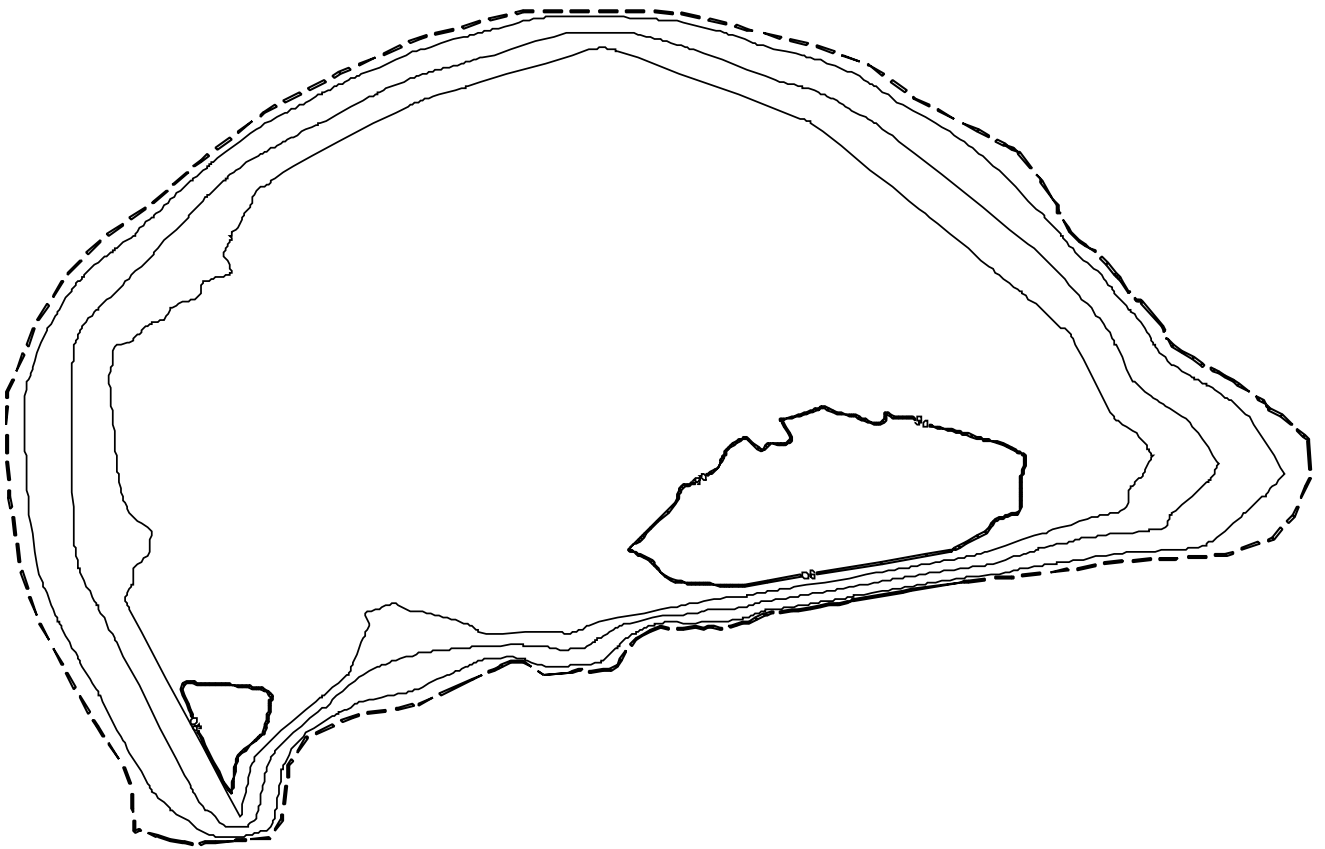
# LAKE FAIRHOPE



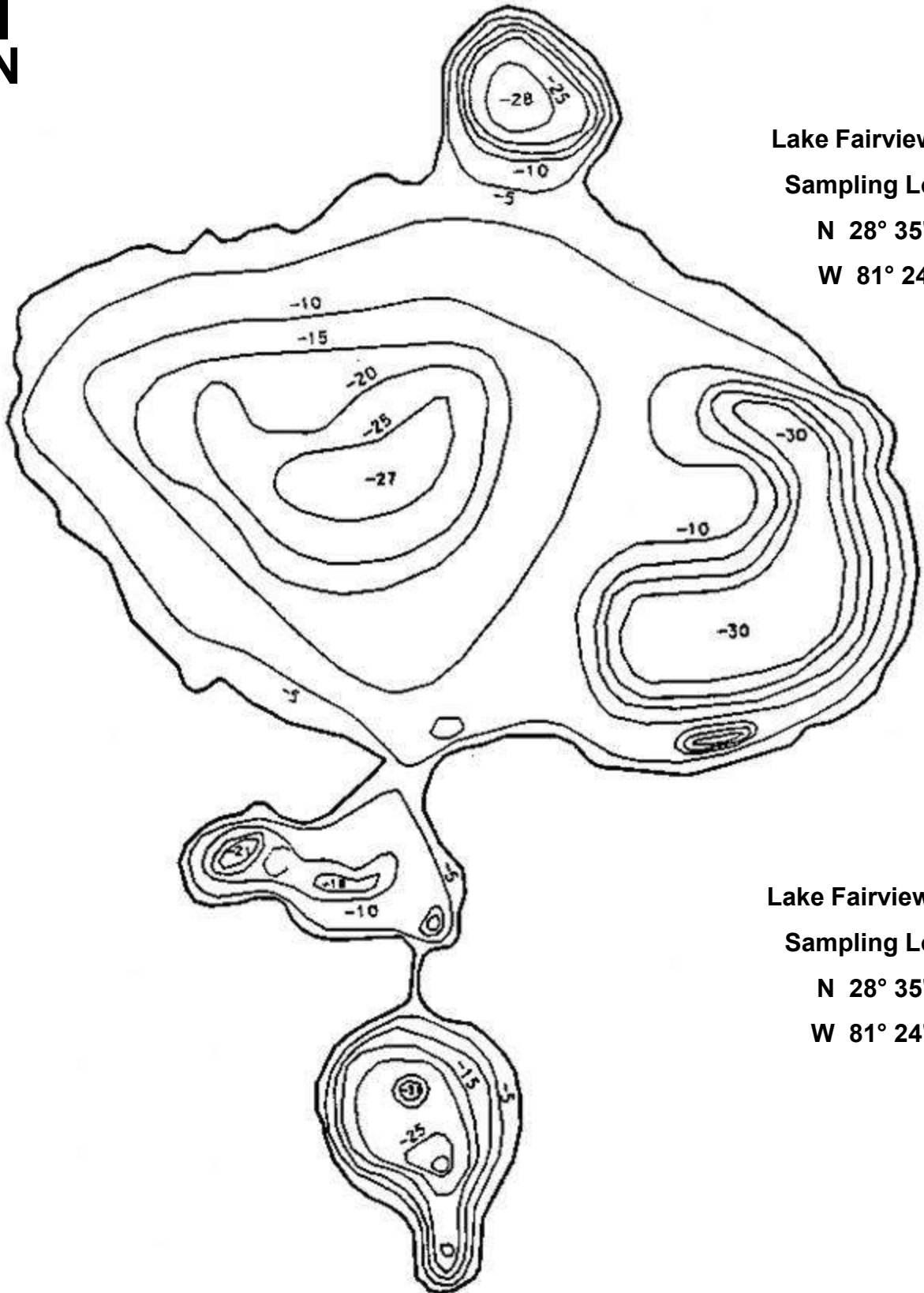
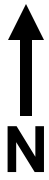
Sampling Location

N 28° 35' 03.1"

W 81° 23' 37.3"



# LAKE FAIRVIEW



**Lake Fairview North**

**Sampling Location**

**N 28° 35' 49.2"**

**W 81° 24' 18.4"**

**Lake Fairview South**

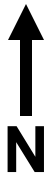
**Sampling Location**

**N 28° 35' 29.4"**

**W 81° 24' 20.2"**



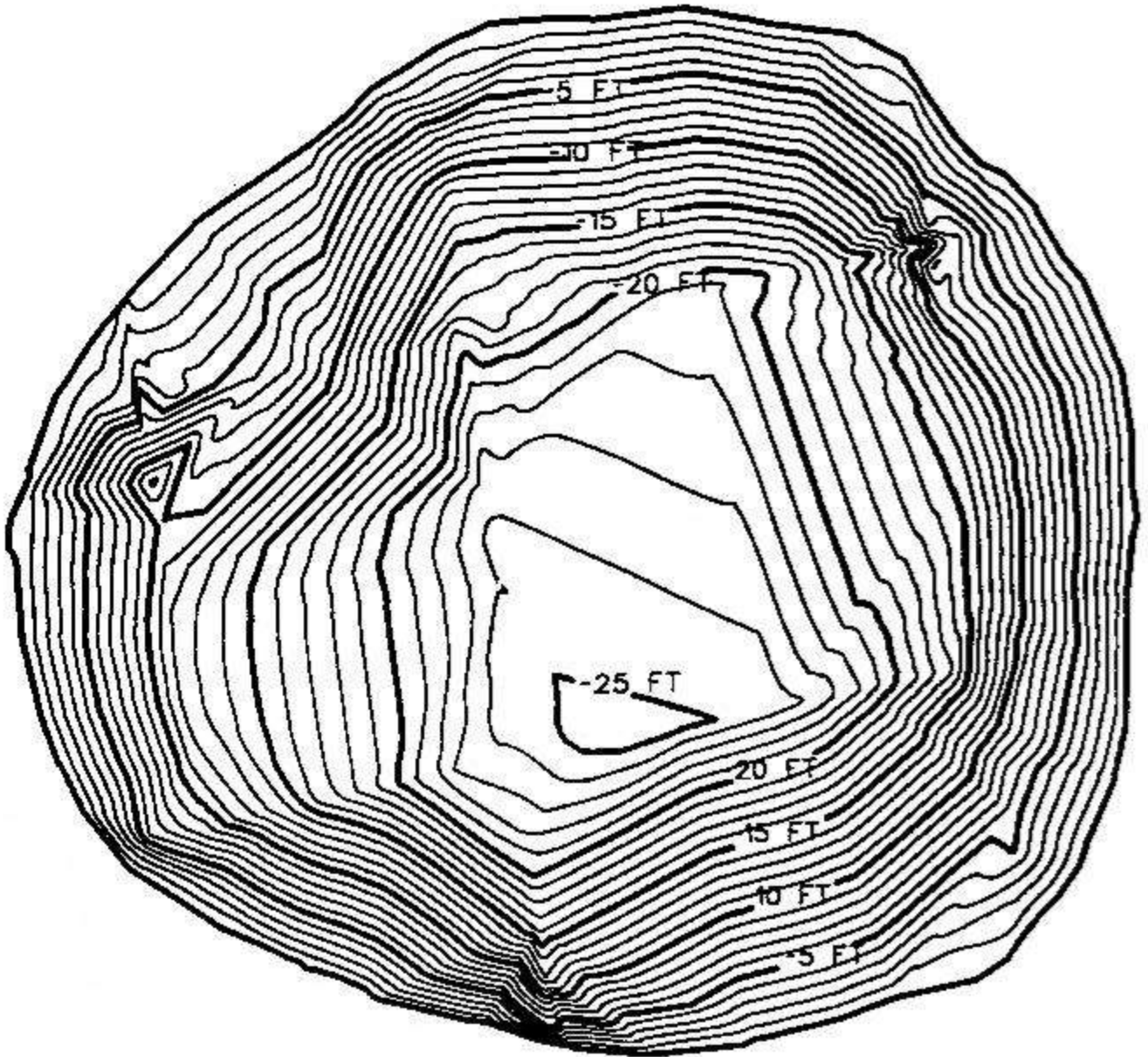
# LAKE FARRAR



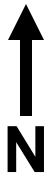
Sampling Location

N 28° 30' 29.9"

W 81° 19' 14.9"



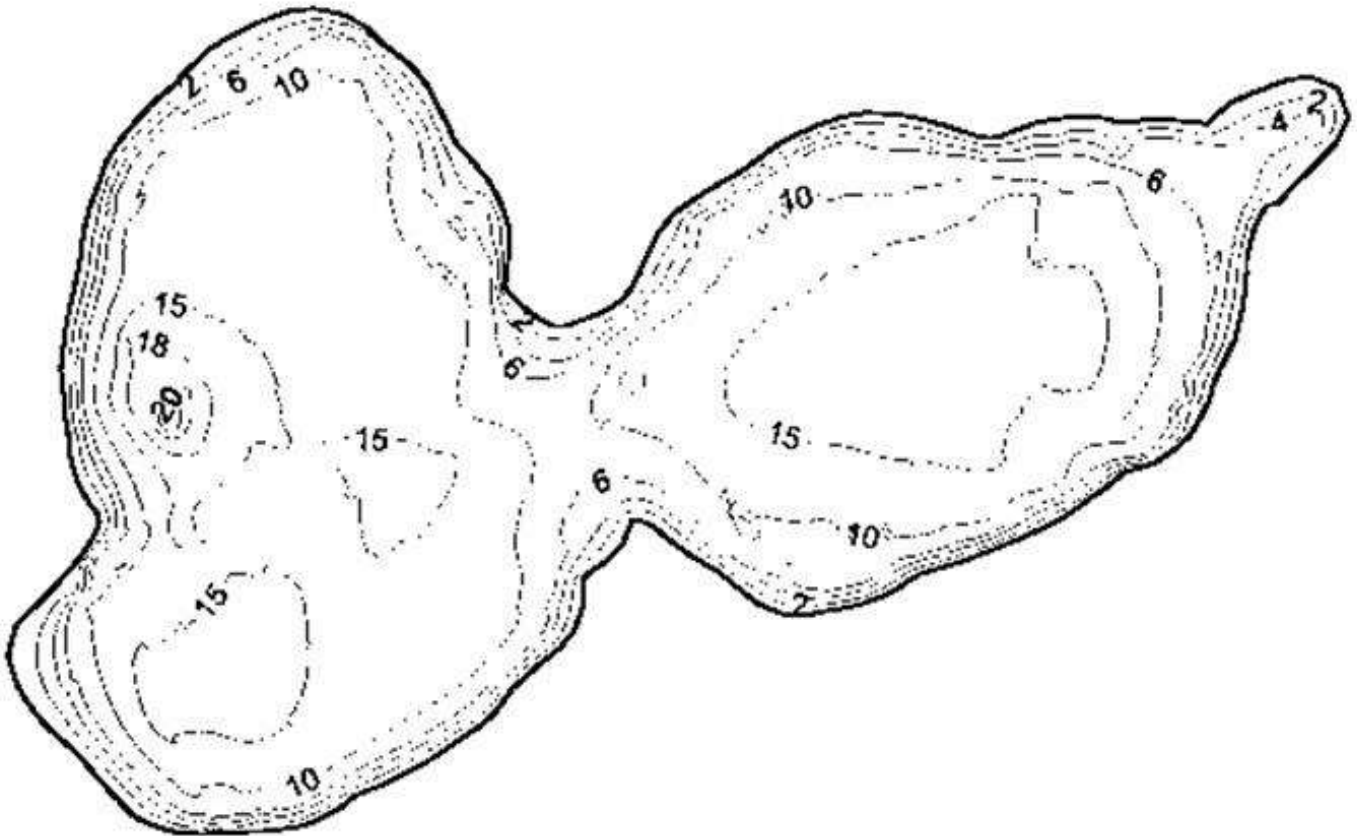
# LAKE FORMOSA



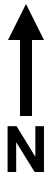
Sampling Location

N 28° 34' 07.3"

W 81° 22' 02.6"



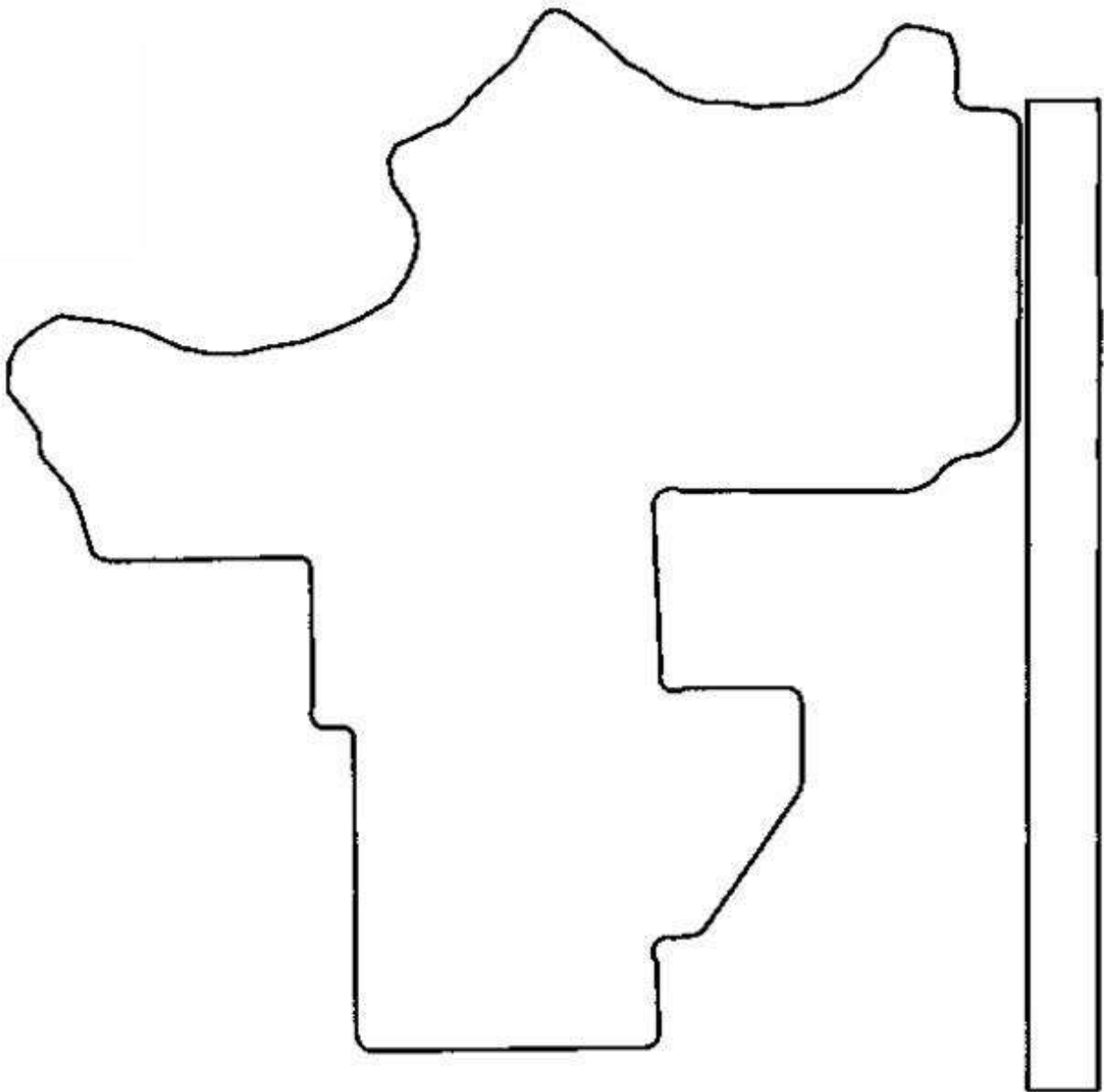
# LAKE FRAN



Sampling Location

N 28° 31' 19.6"

W 81° 26' 42.7"



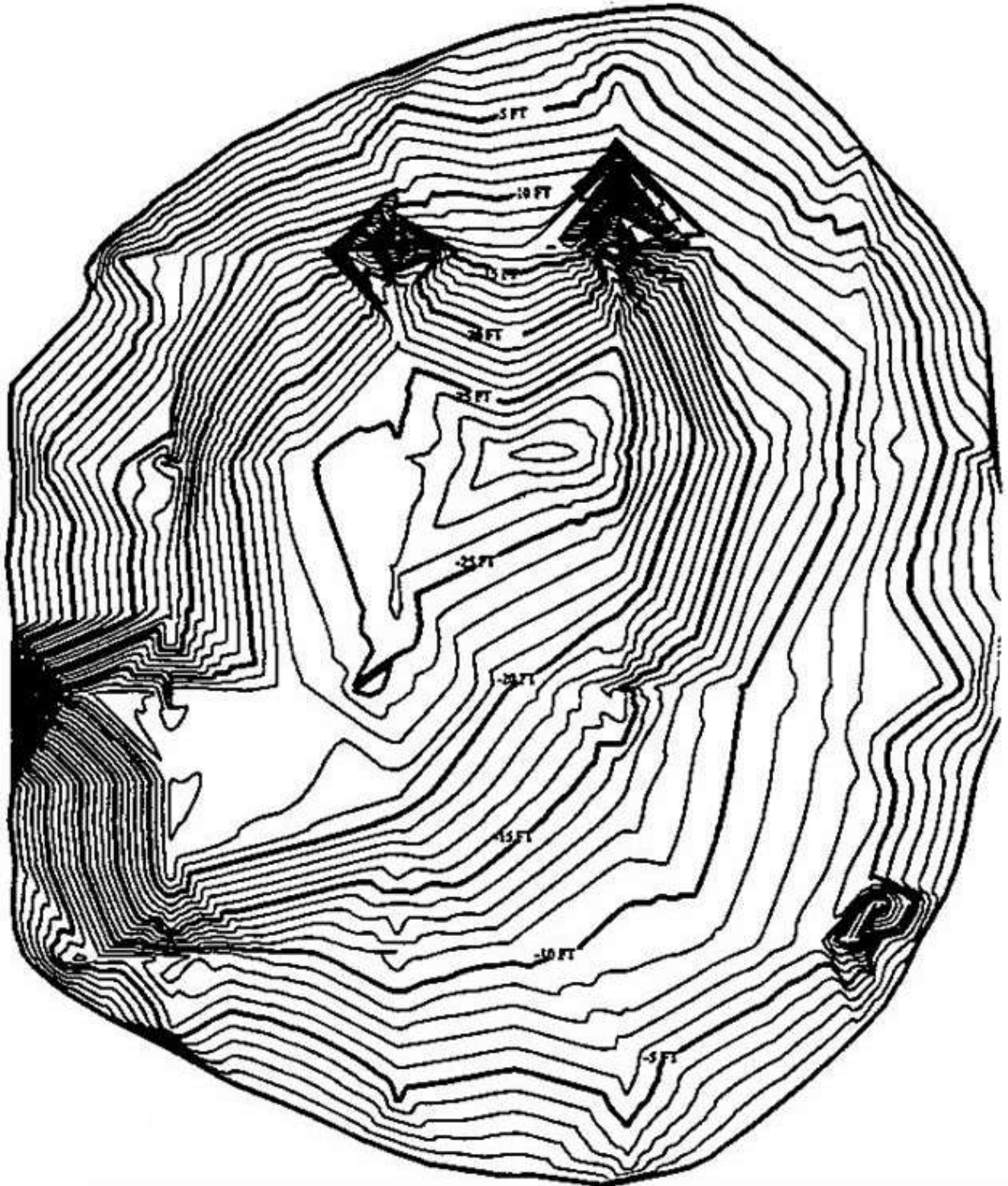
# LAKE FREDRICA



Sampling Location

N 28° 30' 30.2"

W 048° 40' 05.0"



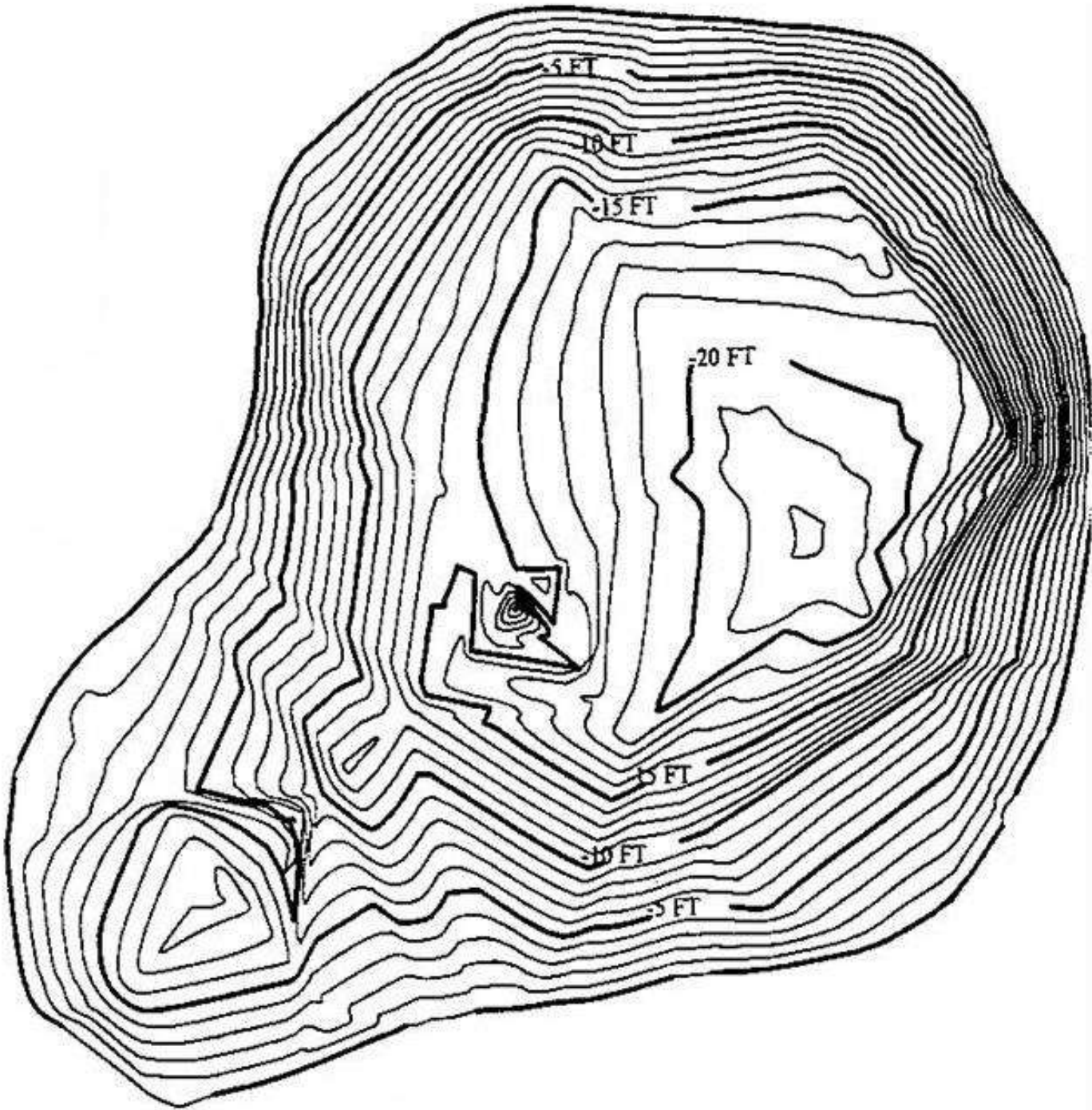
# LAKE GEAR



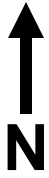
Sampling Location

N 28° 33' 23.0"

W 81° 19' 49.4"



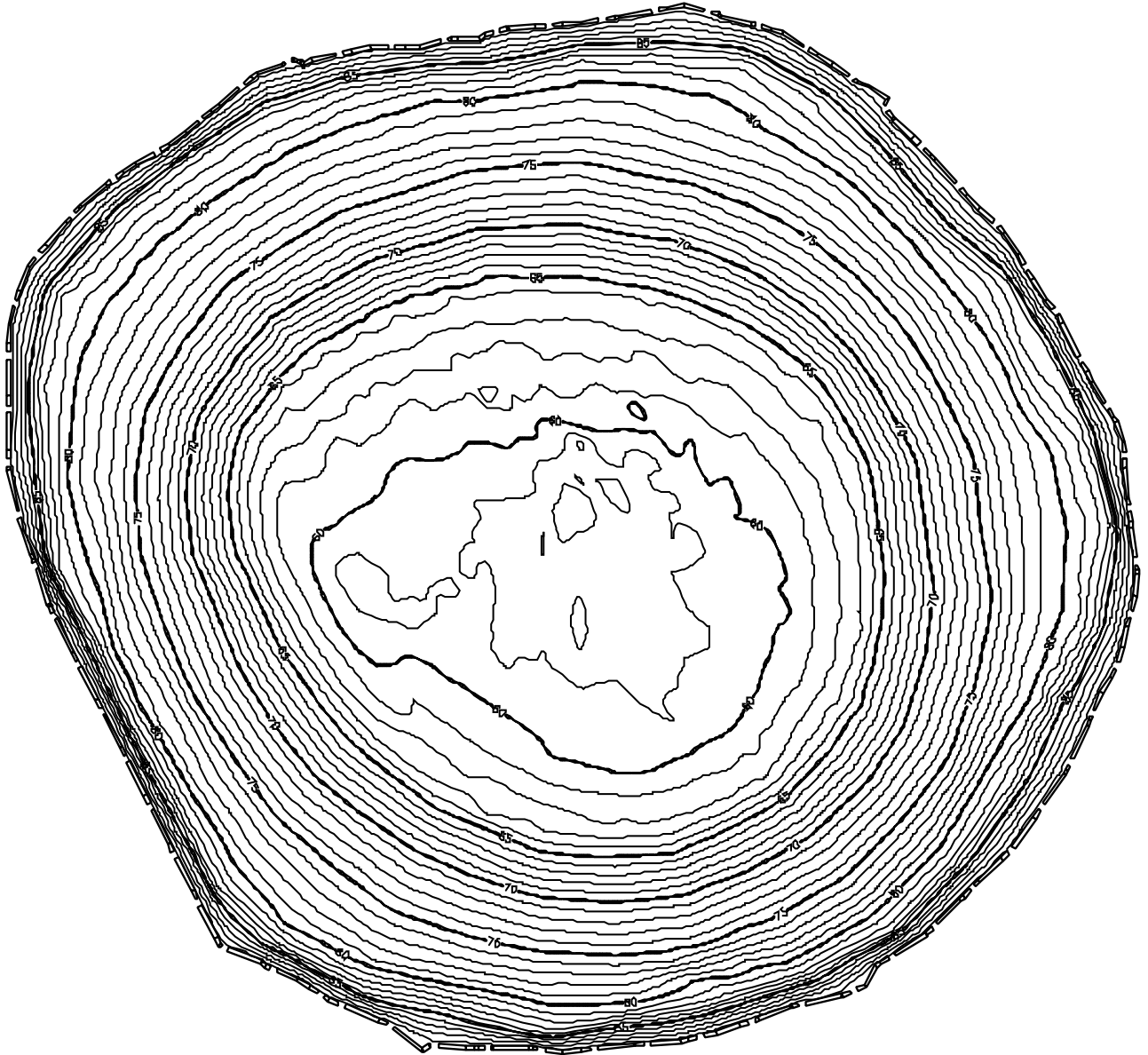
# LAKE GEM MARY



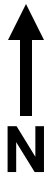
Sampling Location

N 28° 29' 43.4"

W 81° 21' 55.8"



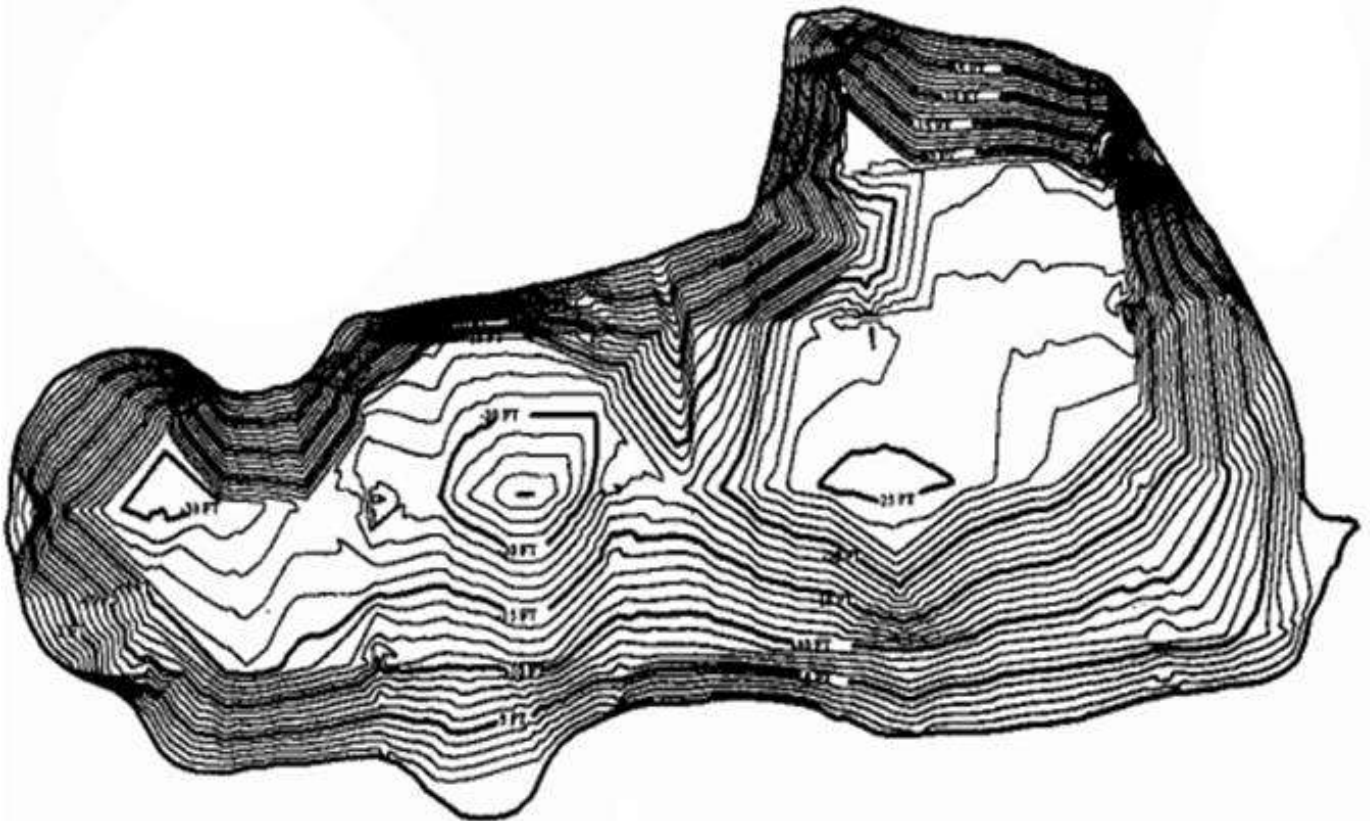
# LAKE GEORGE



Sampling Location

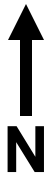
N 28° 30' 02.5"

W 81° 19' 04.4"





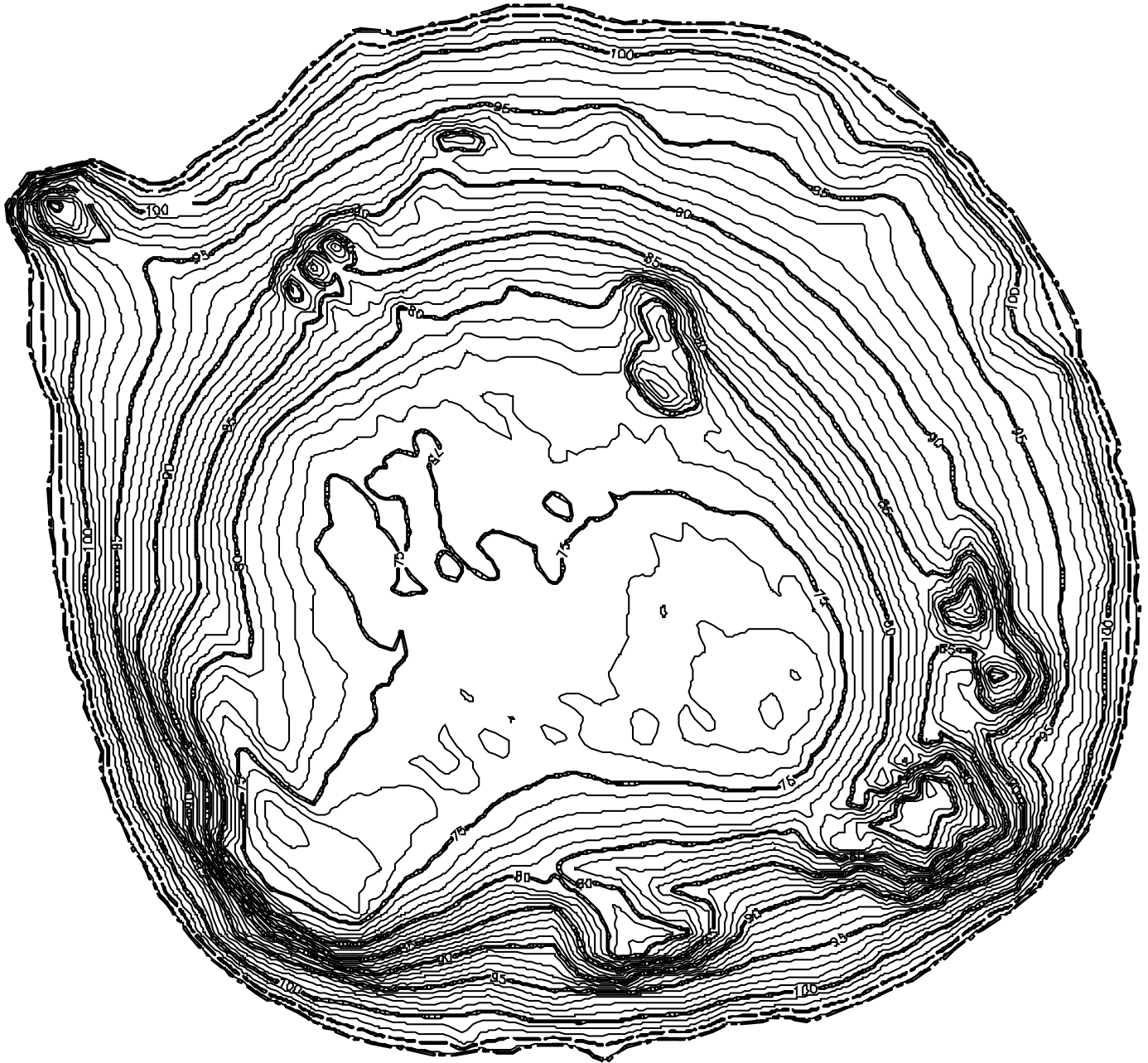
# LAKE GILES



Sampling Location

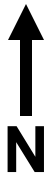
N 28° 31' 48.4"

W 81° 20' 03.1"





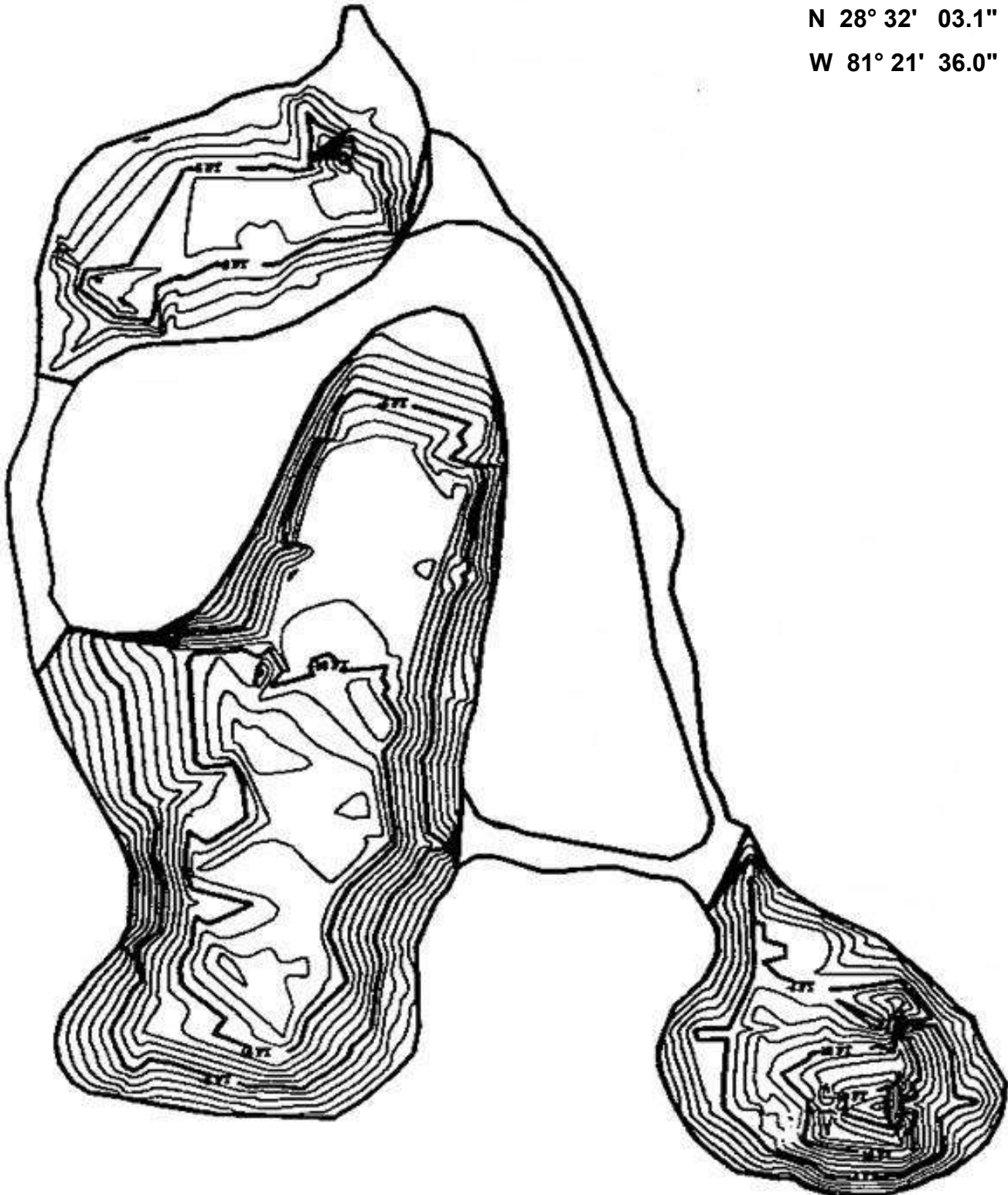
# LAKE GREENWOOD



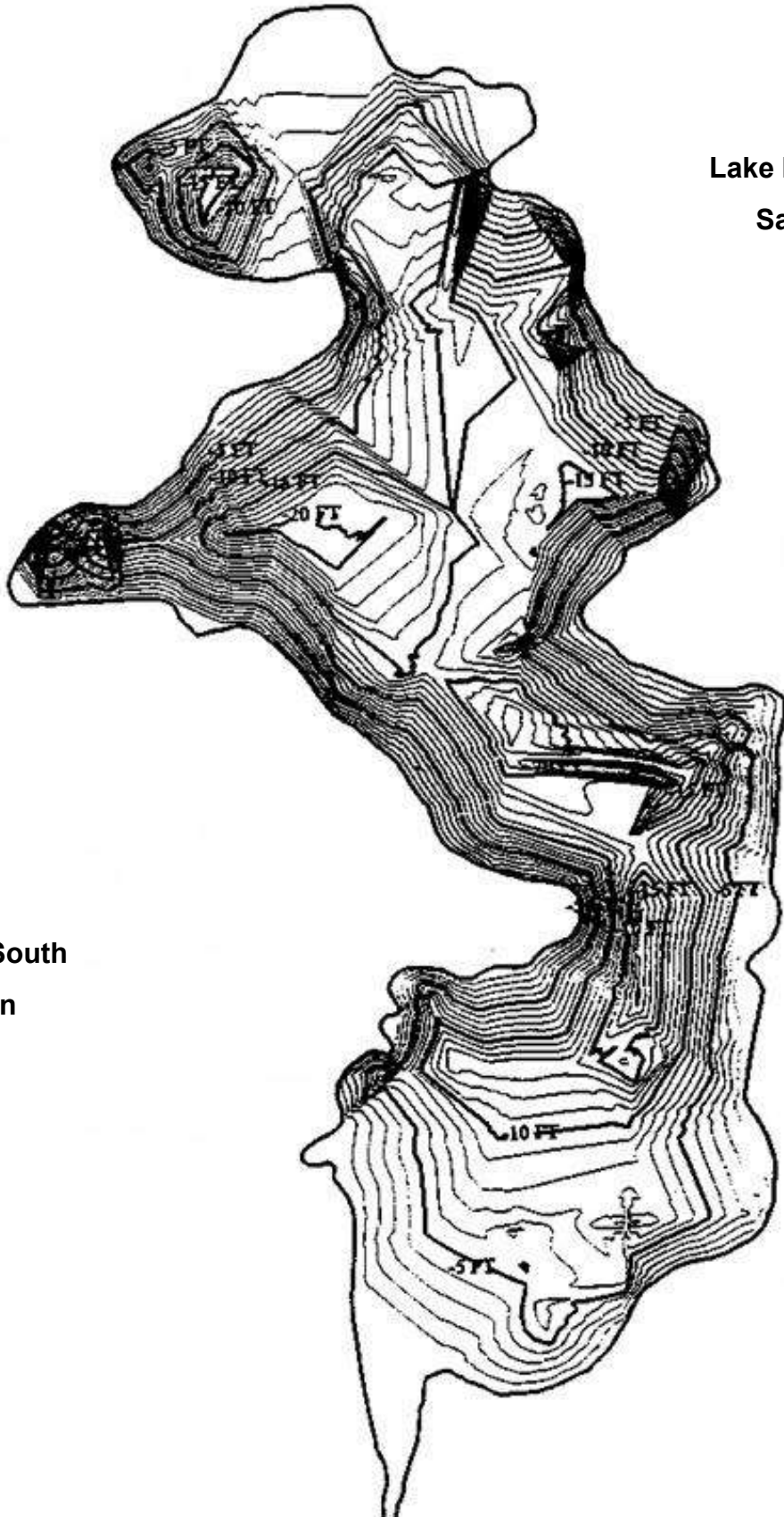
Sampling Location

N 28° 32' 03.1"

W 81° 21' 36.0"



# LAKE HIAWASSEE



Lake Hiawassee North

Sampling Location

N 28° 31' 45.8"

W 81° 28' 58.8"

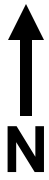
Lake Hiawassee South

Sampling Location

N 28° 31' 25.0"

W 81° 28' 51.2"

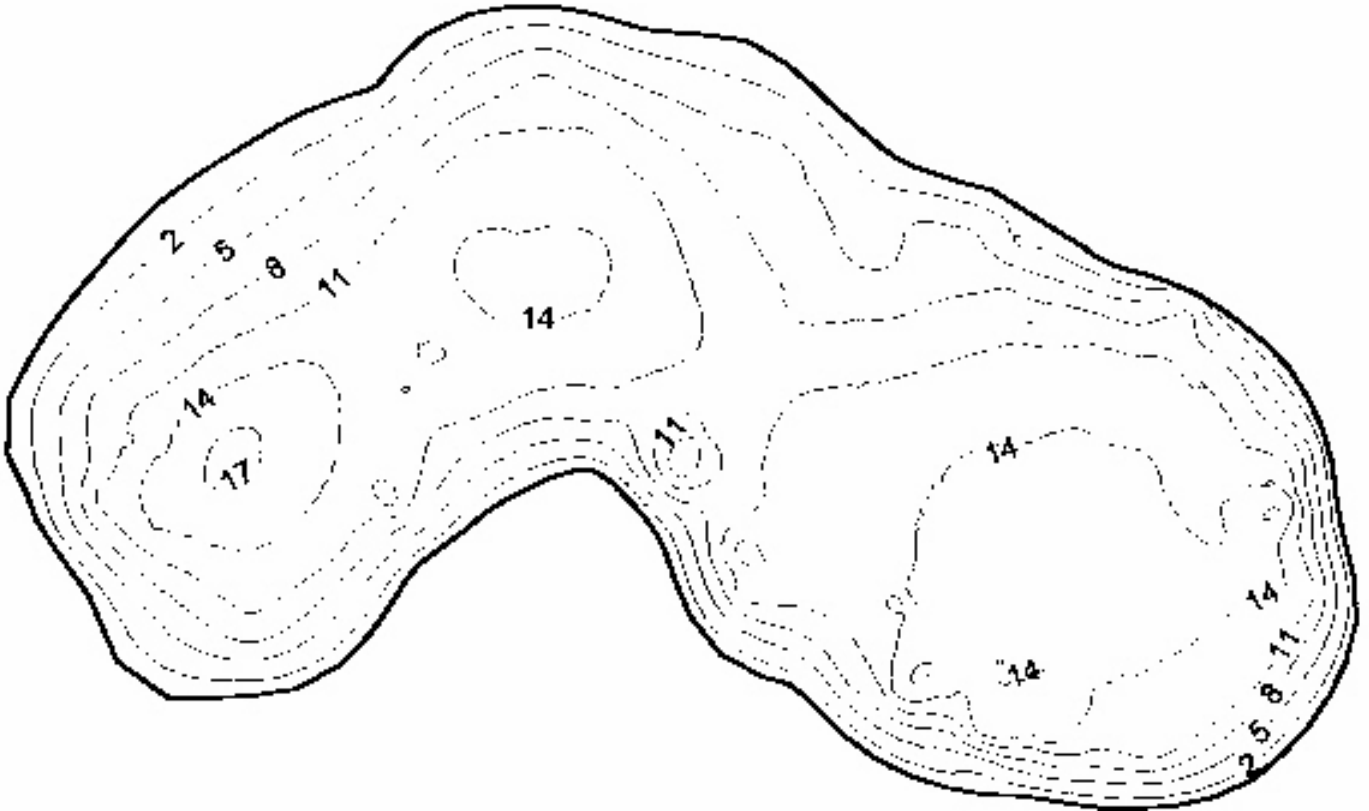
# LAKE HIGHLAND



Sampling Location

N 28° 33' 37.4"

W 81° 22' 16.3"



# LAKE HOLDEN

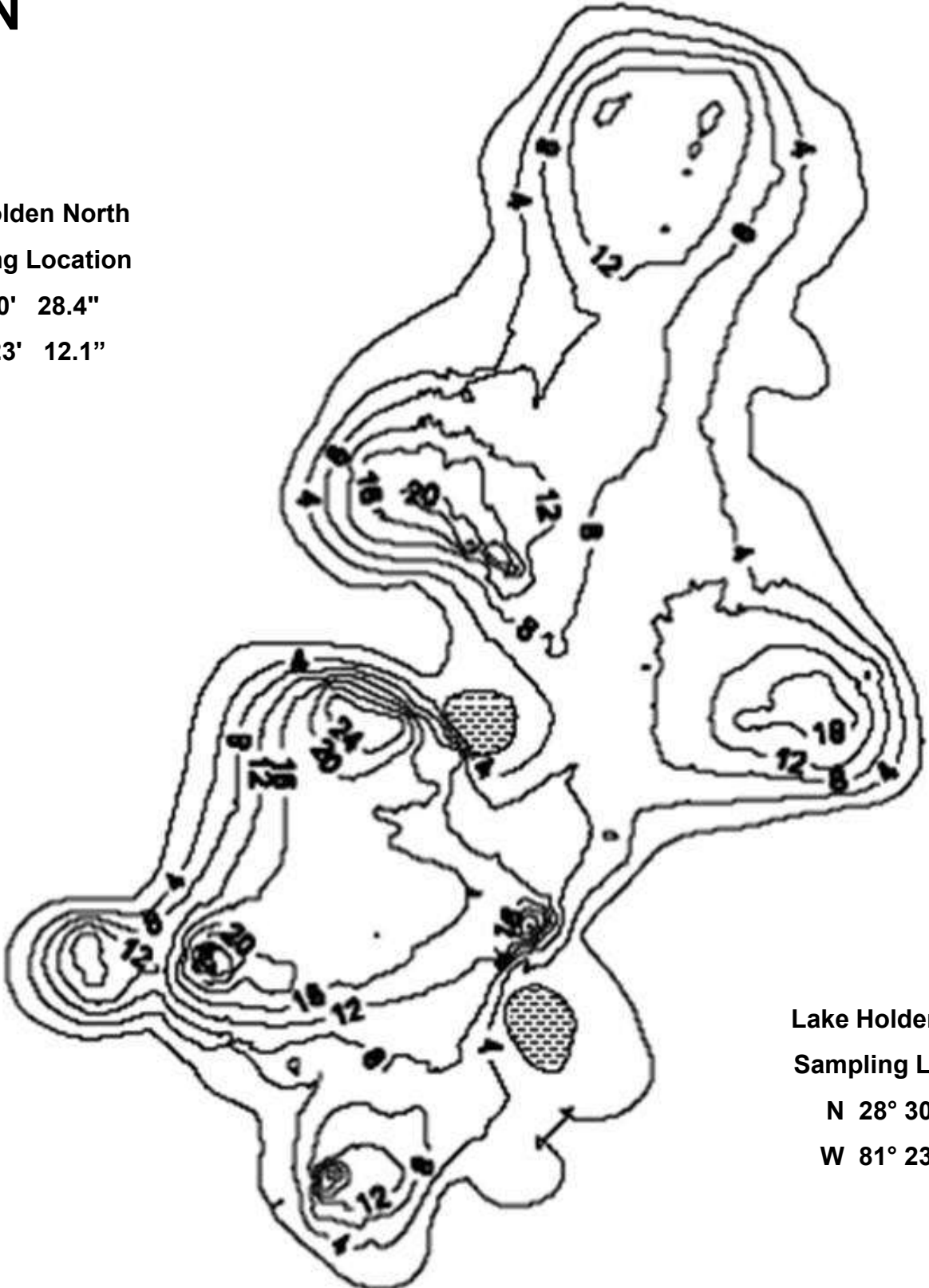


Lake Holden North

Sampling Location

N 28° 30' 28.4"

W 81° 23' 12.1"



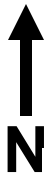
Lake Holden South

Sampling Location

N 28° 30' 04.7"

W 81° 23' 21.8"

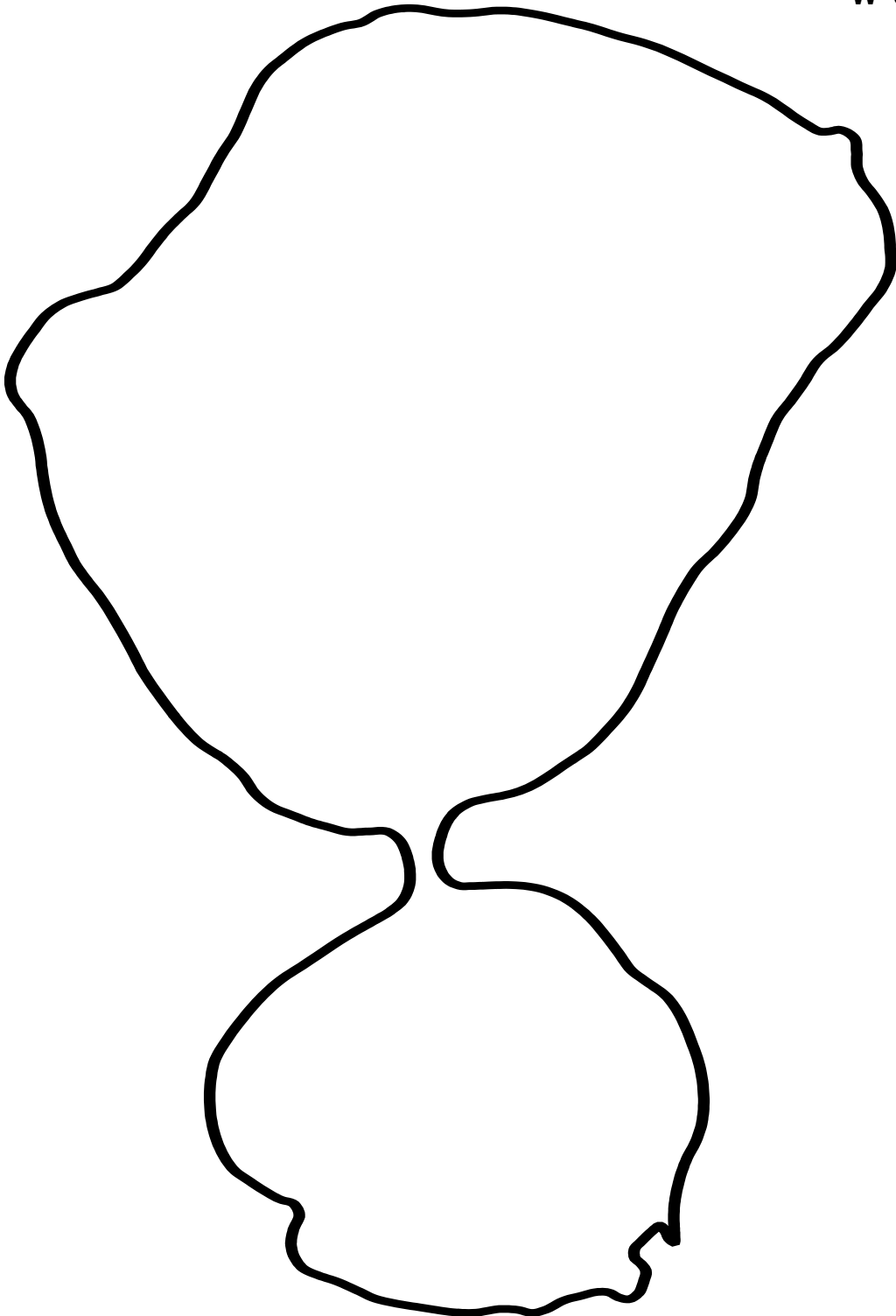
# LAKE HOURGLASS



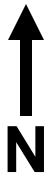
**Sampling Location**

**N 28° 31' 19.9"**

**W 81° 21' 25.2"**



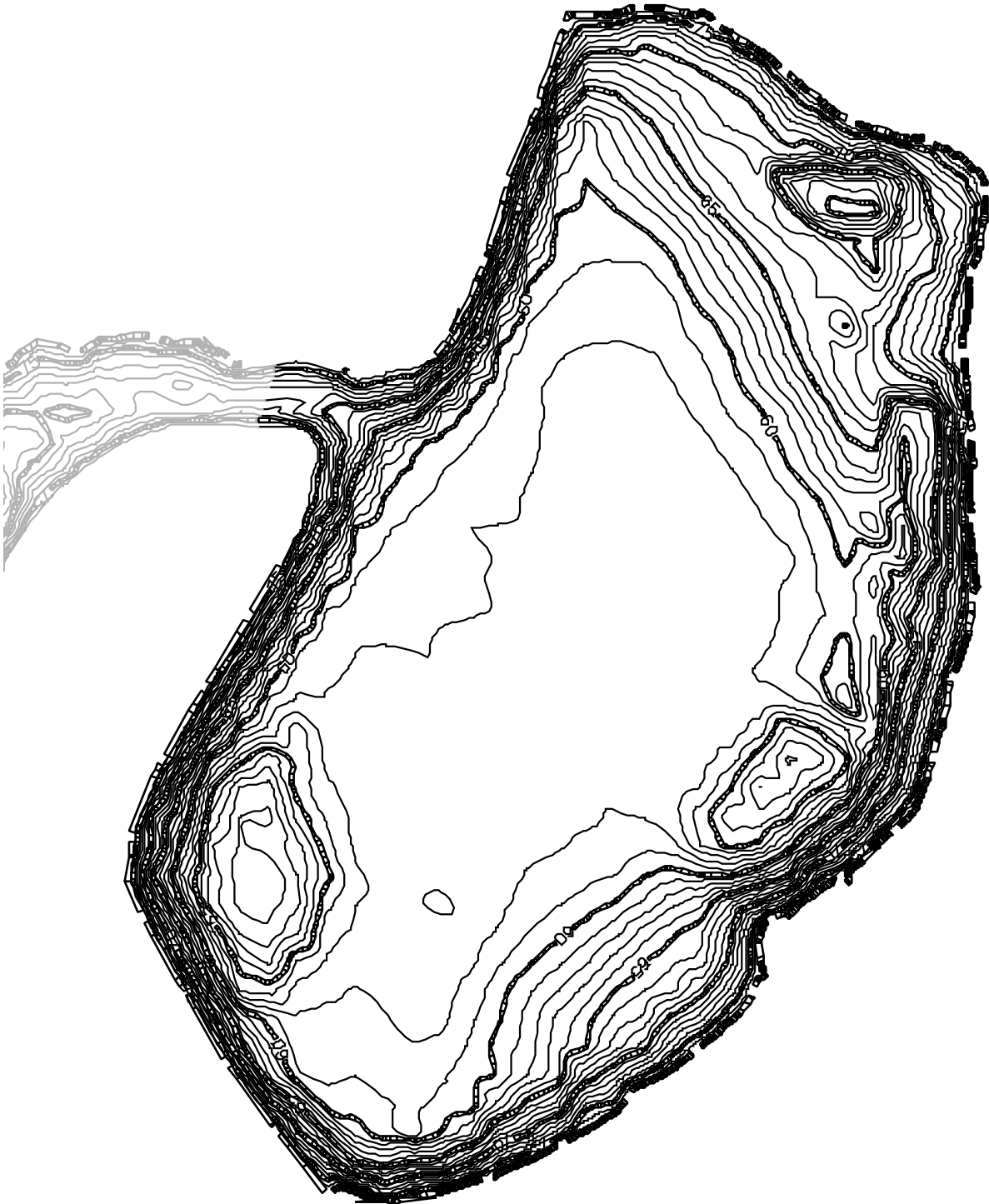
# LAKE IVANHOE EAST



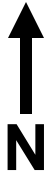
Sampling Location

N 28° 33' 46.1"

W 81° 22' 31.8"



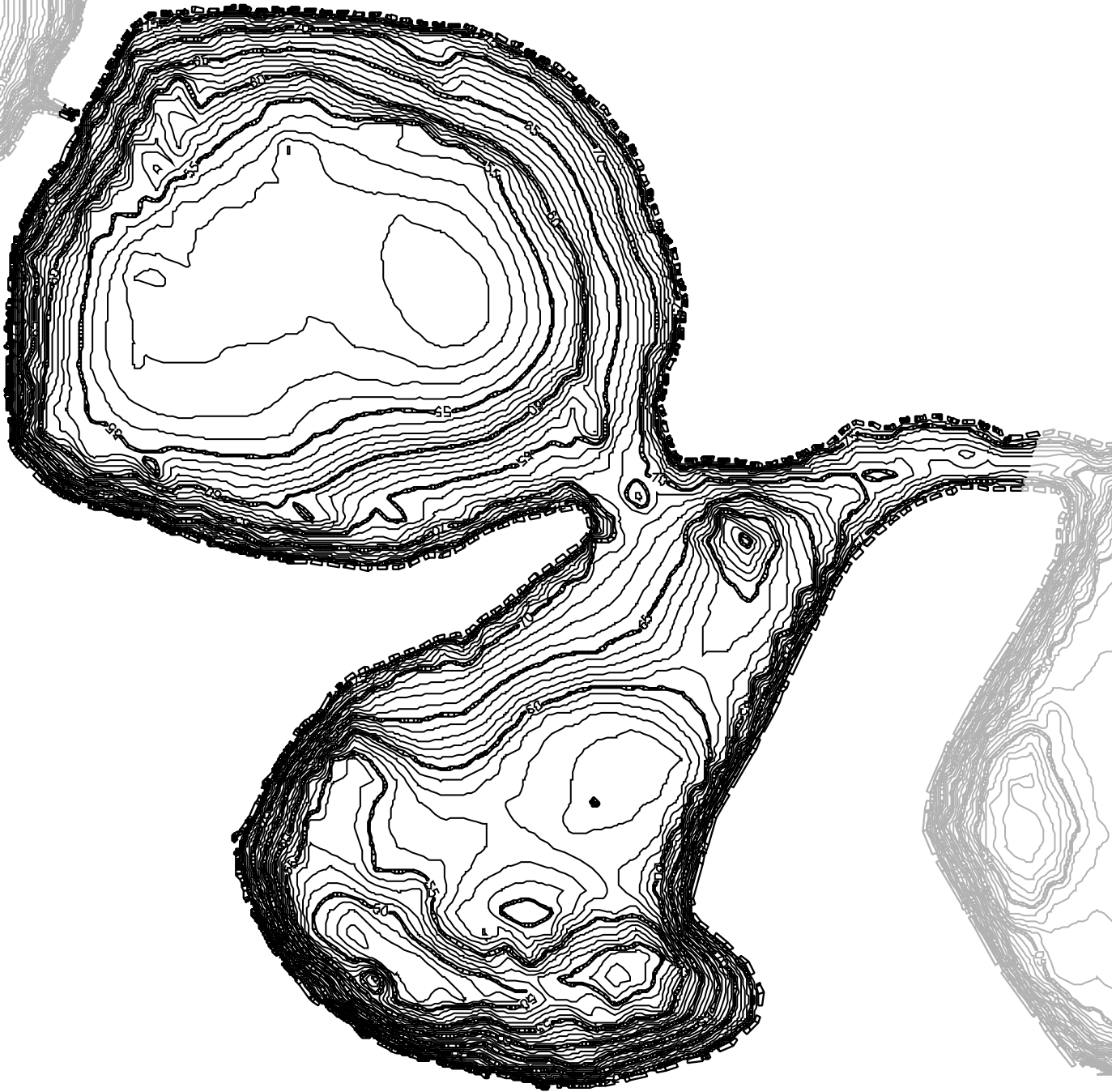
# LAKE IVANHOE MIDDLE



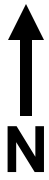
Sampling Location

N 28° 33' 55.4"

W 81° 22' 55.6"



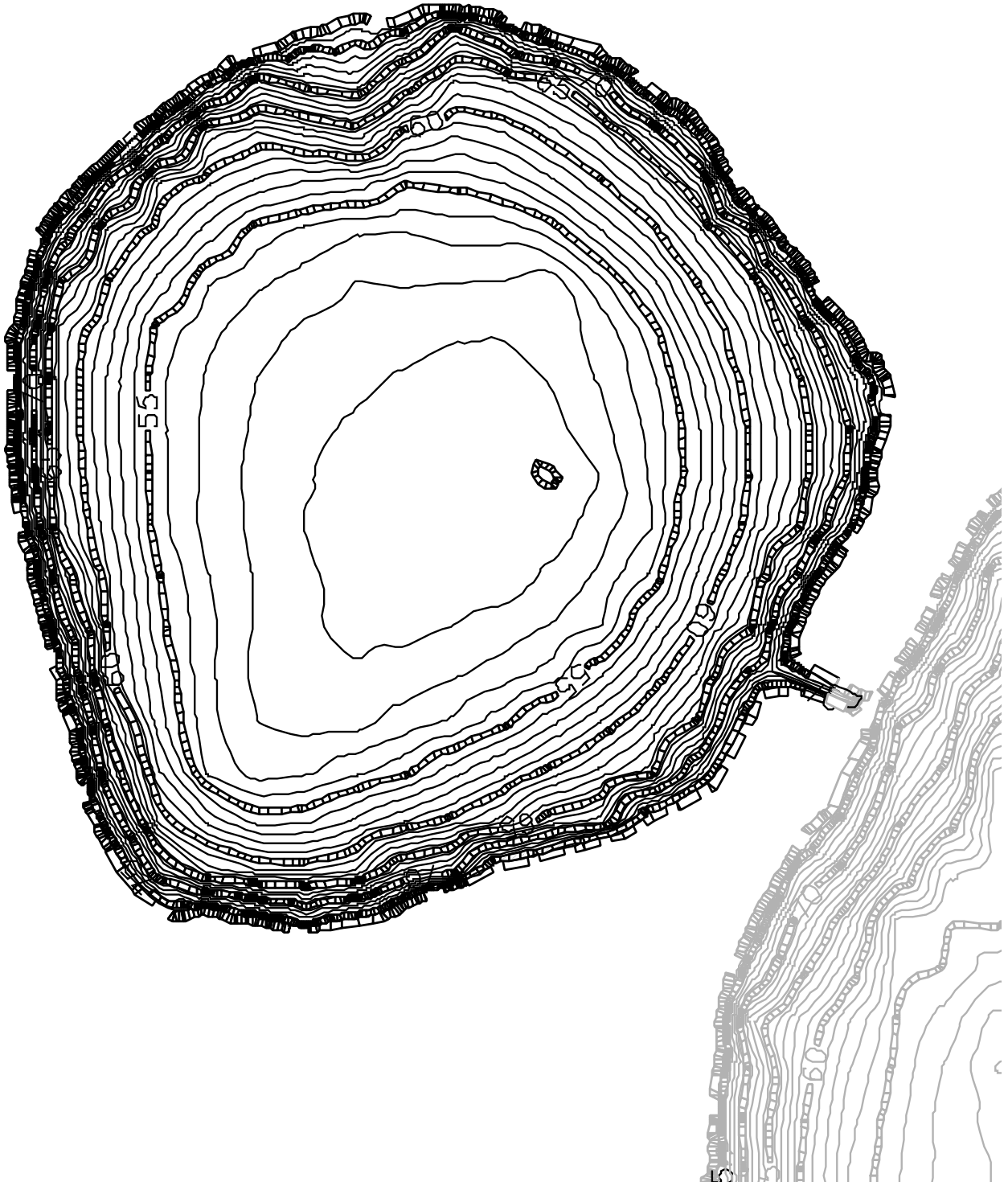
# LAKE IVANHOE WEST



Sampling Location

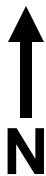
N 28° 34' 00.5"

W 81° 23' 07.1"





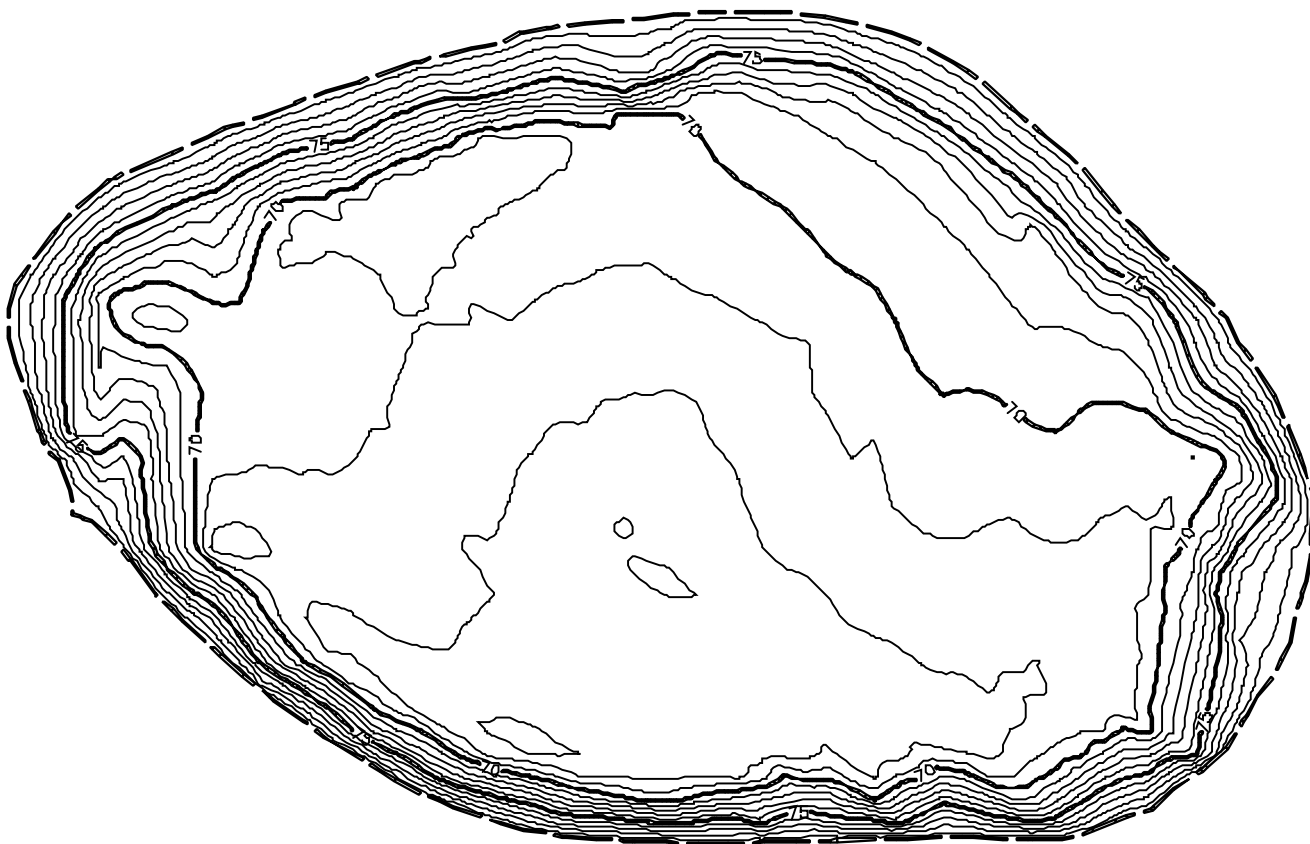
# LAKE KASEY



Sampling Location

N 28° 35' 56.8"

W 81° 26' 35.5"



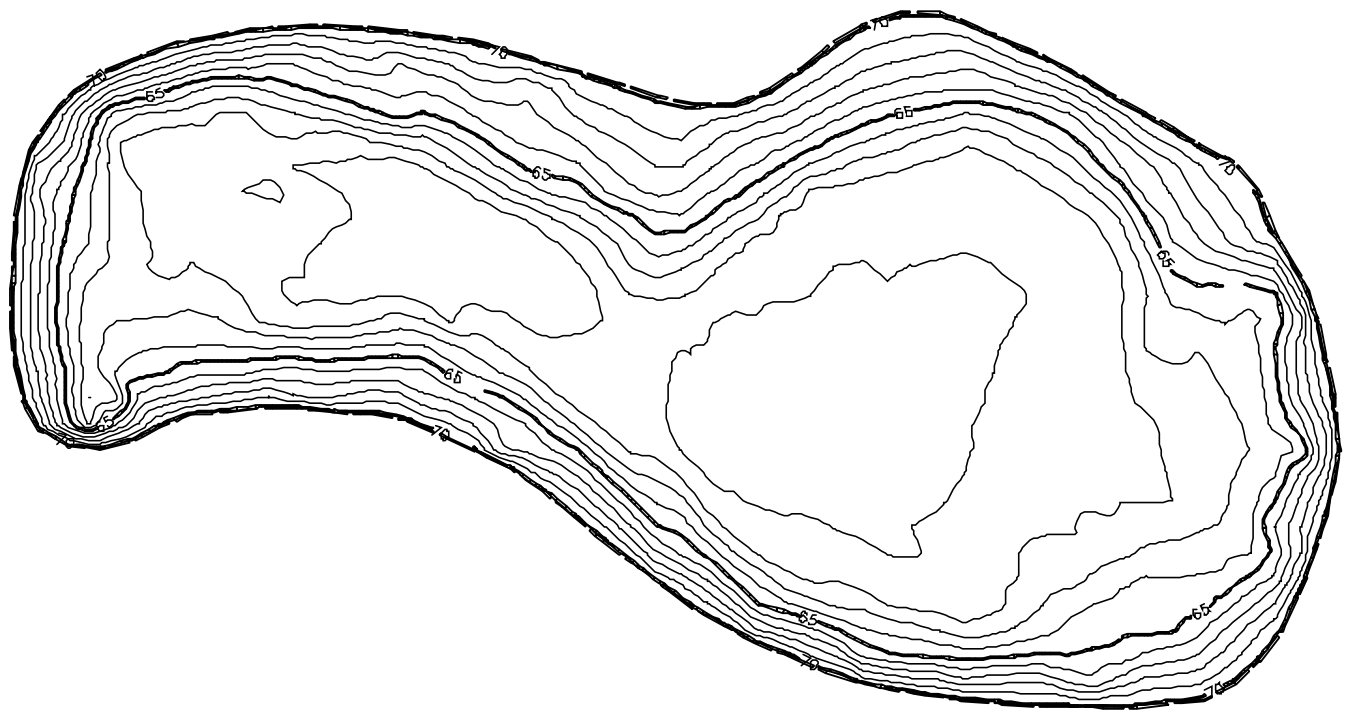
# LAKE KELLY



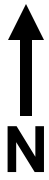
Sampling Location

N 28° 35' 56.4"

W 81° 26' 52.8"



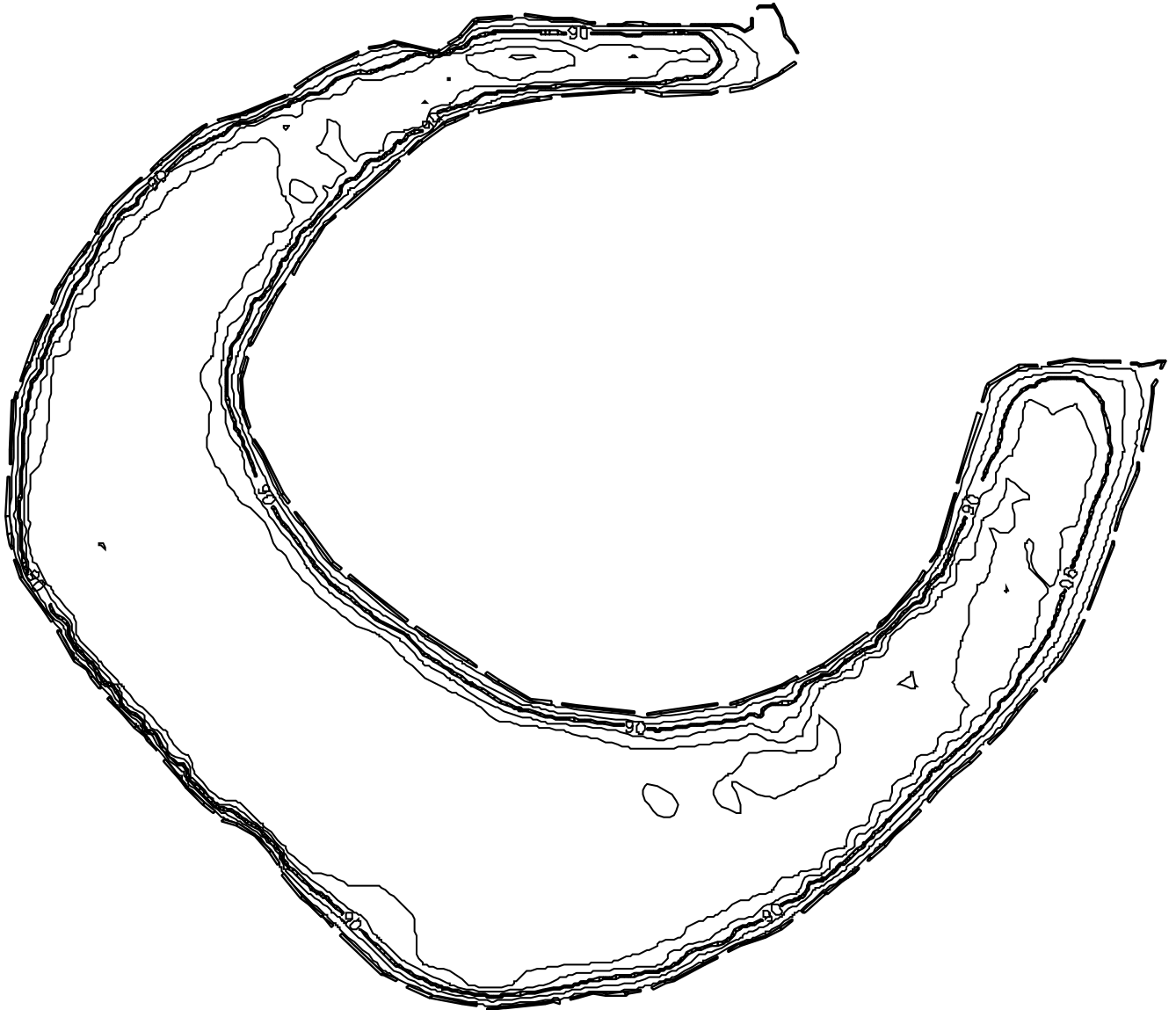
# LAKE KOZART



Sampling Location

N 28° 31' 32.5"

W 81° 26' 19.7"



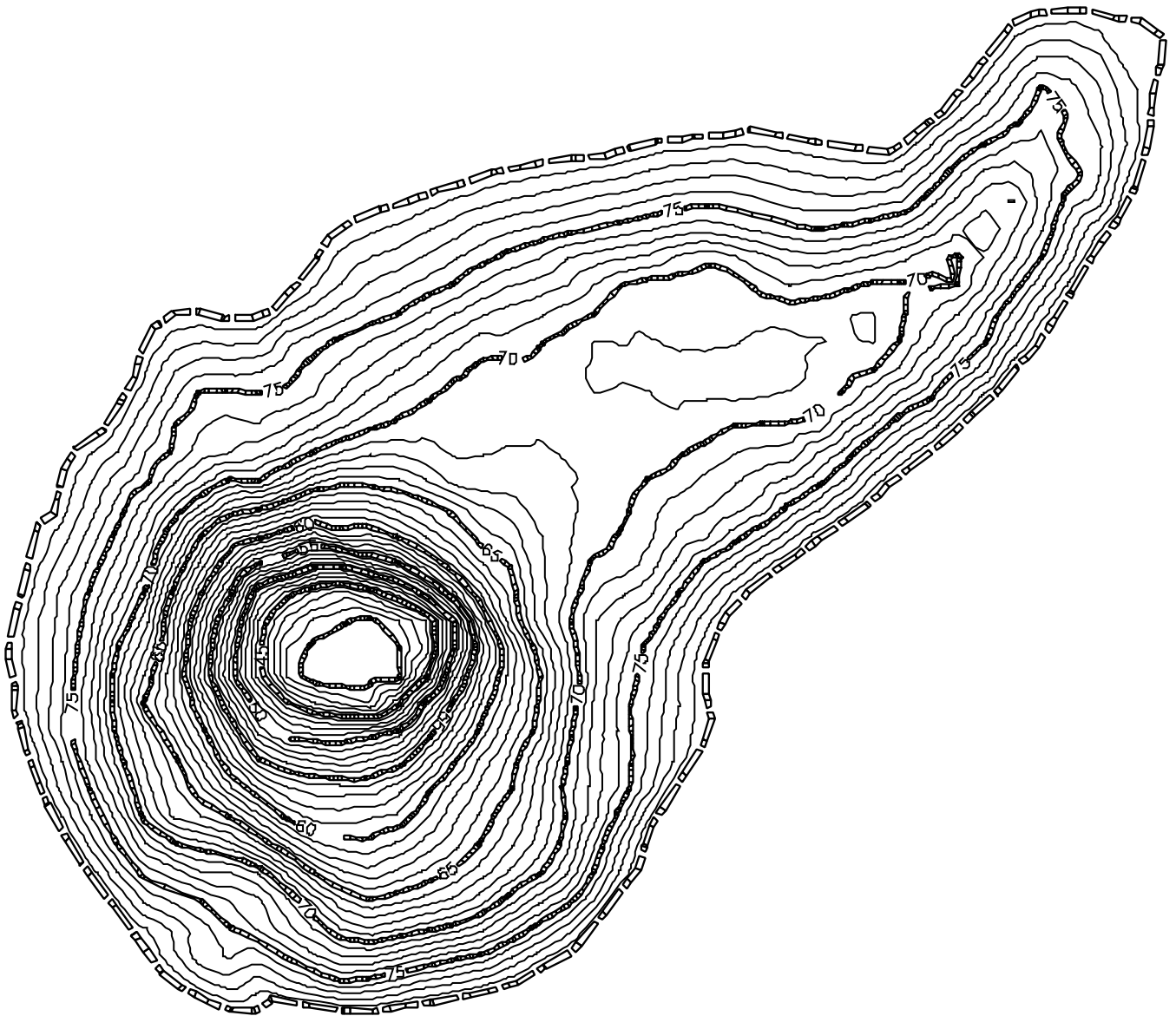
# LAKE KRISTY



Sampling Location

N 28° 35' 51.0"

W 81° 26' 49.6"



# LAKE OF THE WOODS



Sampling Location

N 28° 31' 45.5"

W 81° 22' 47.6"



# LAKE LANCASTER

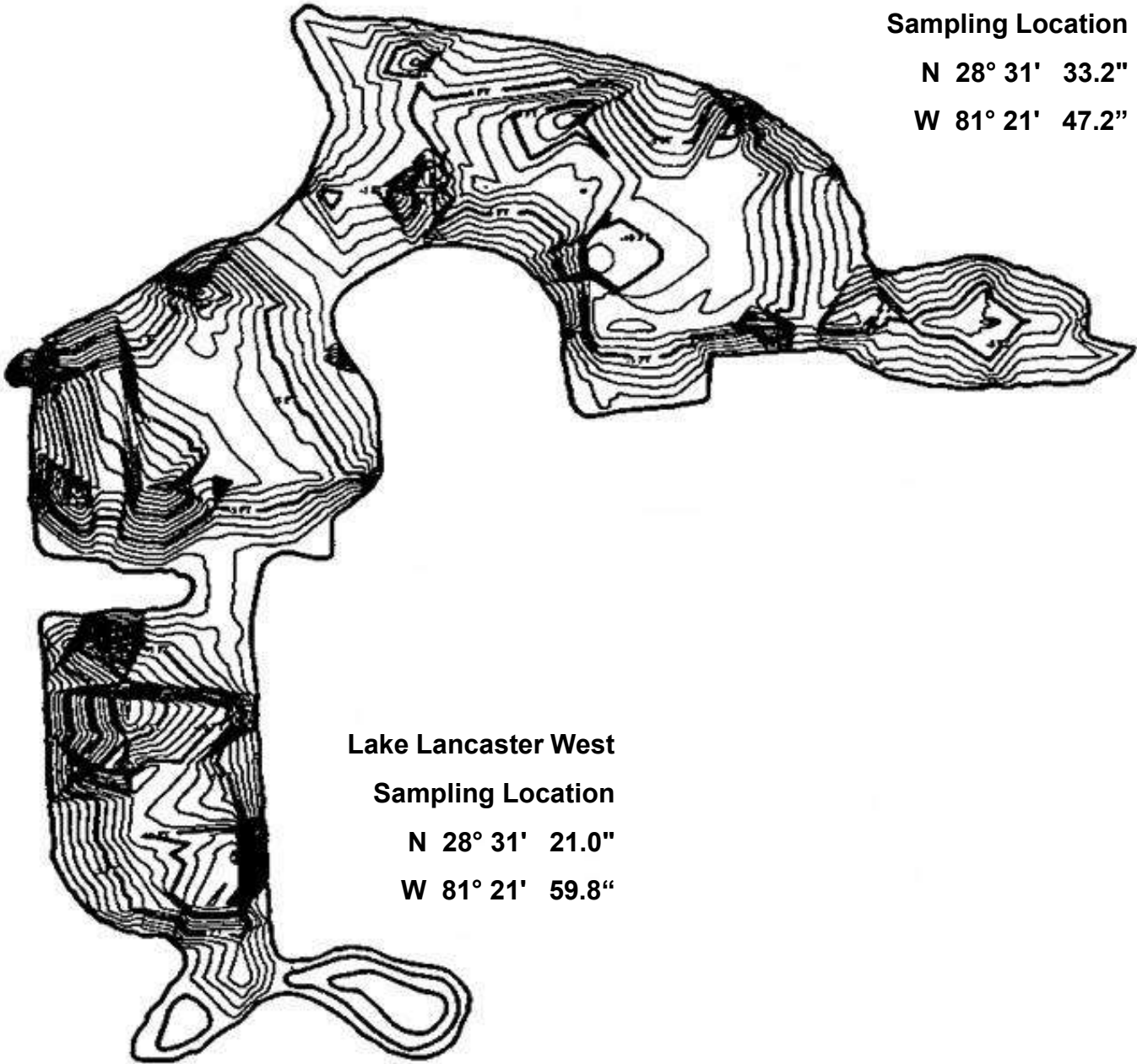


**Lake Lancaster East**

**Sampling Location**

**N 28° 31' 33.2"**

**W 81° 21' 47.2"**



**Lake Lancaster West**

**Sampling Location**

**N 28° 31' 21.0"**

**W 81° 21' 59.8"**

# LAKE LAWNE



**Lake Lawne North**

**Sampling Location**

**N 28° 34' 00.8"**

**W 81° 26' 16.8"**

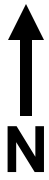
**Lake Lawne South**

**Sampling Location**

**28° 33' 36.4"**

**81° 26' 17.9"**

# LAKE LAWSONA



Sampling Location

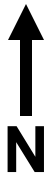
N 28° 32' 27.6"

W 81° 21' 52.2"





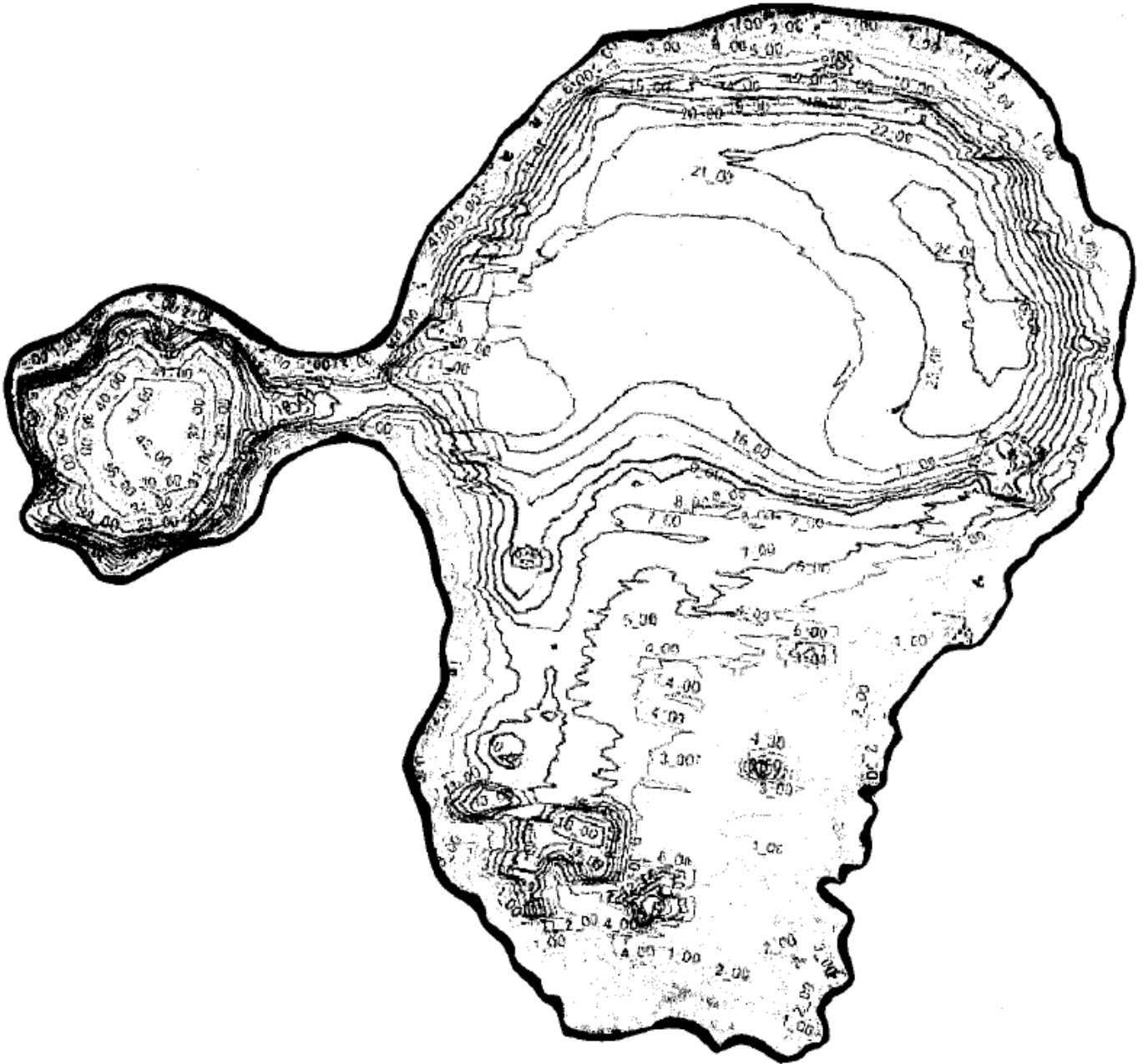
# LITTLE LAKE FAIRVIEW



Sampling Location

N 28° 35' 29.0"

W 81° 23' 19.0"



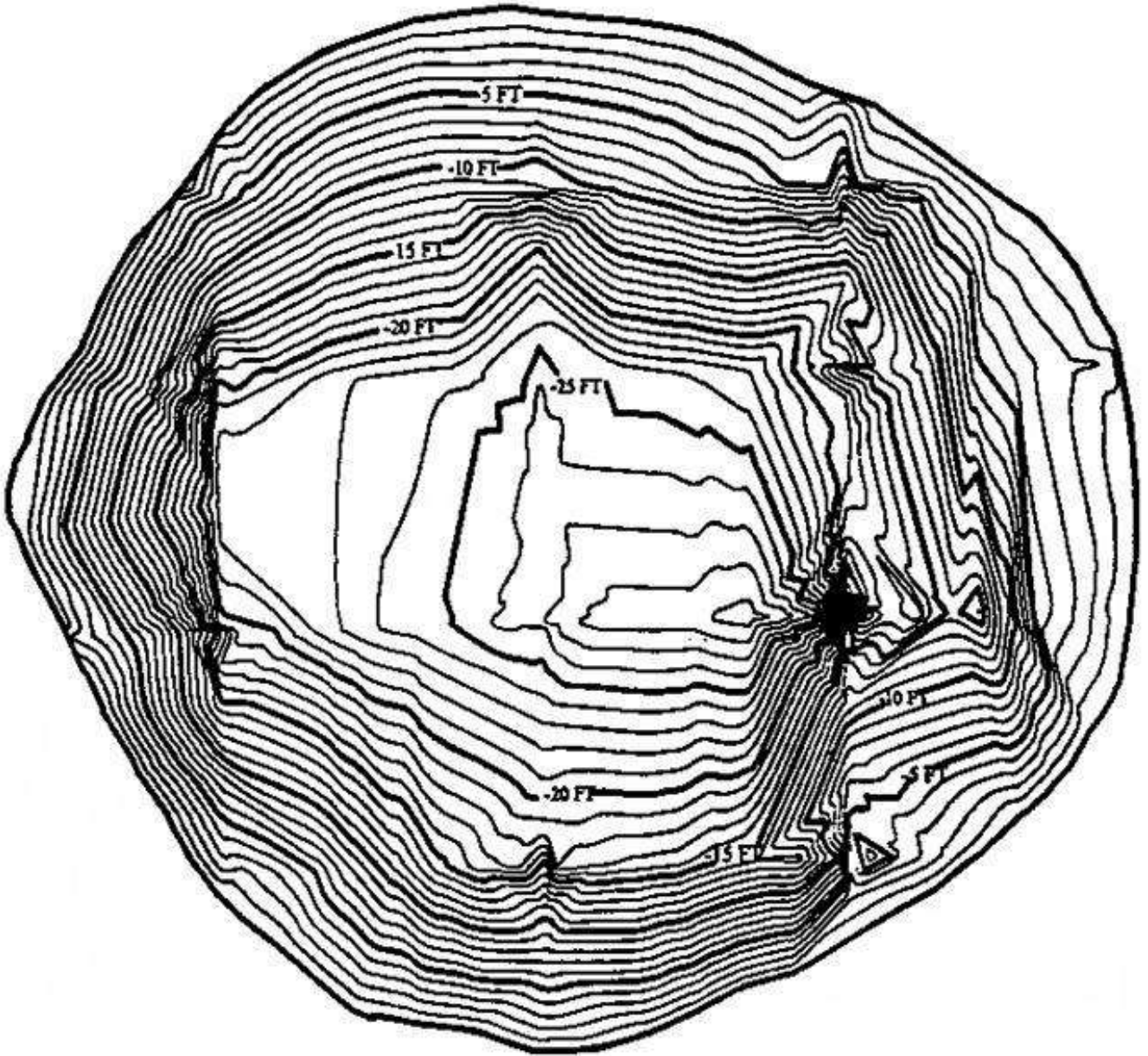
# LAKE LORNA DOONE



Sampling Location

N 28° 32' 29.4"

W 81° 24' 10.4"



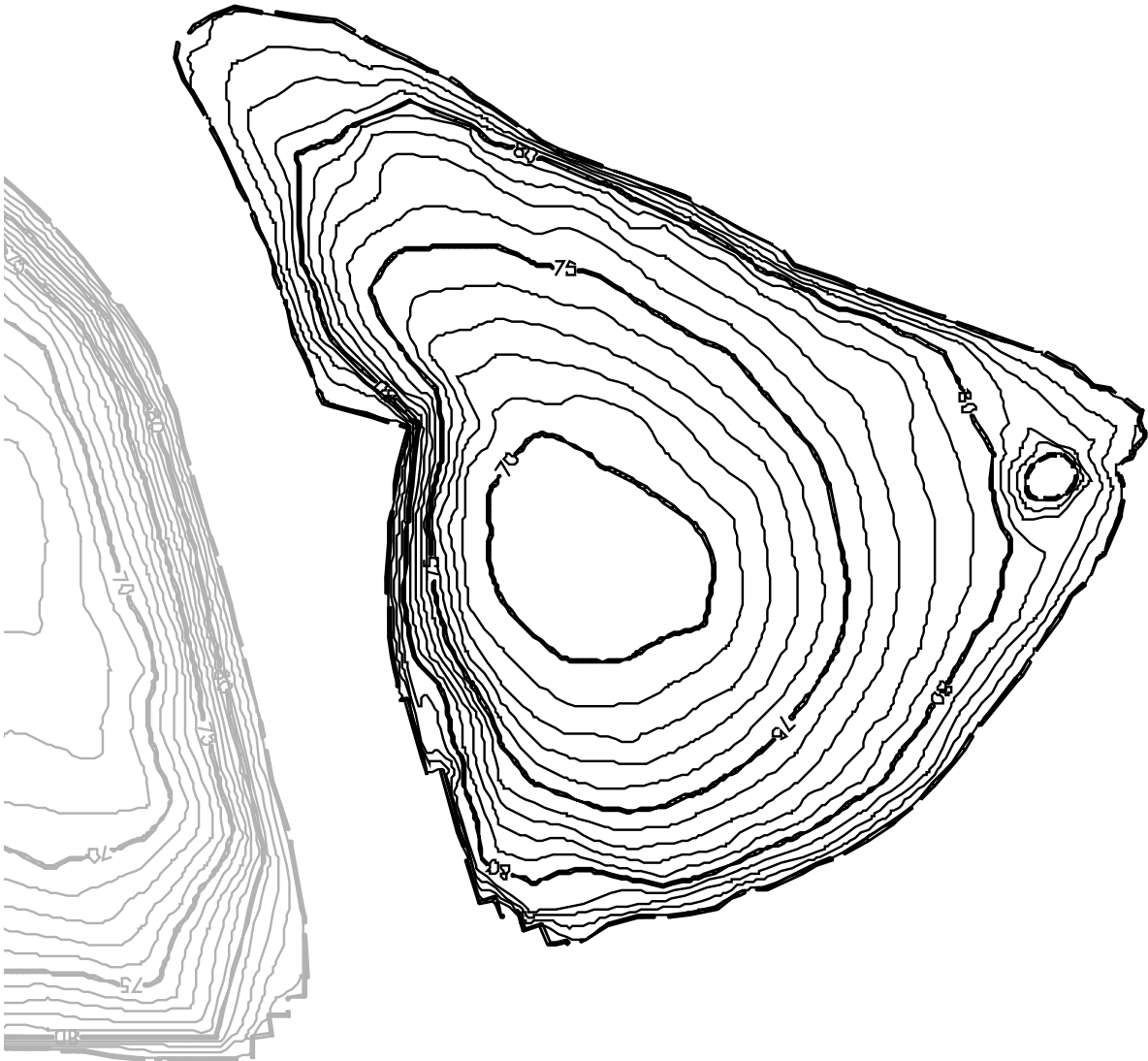
# LAKE LUCERNE EAST



Sampling Location

N 28° 32' 05.6"

W 81° 22' 34.3"



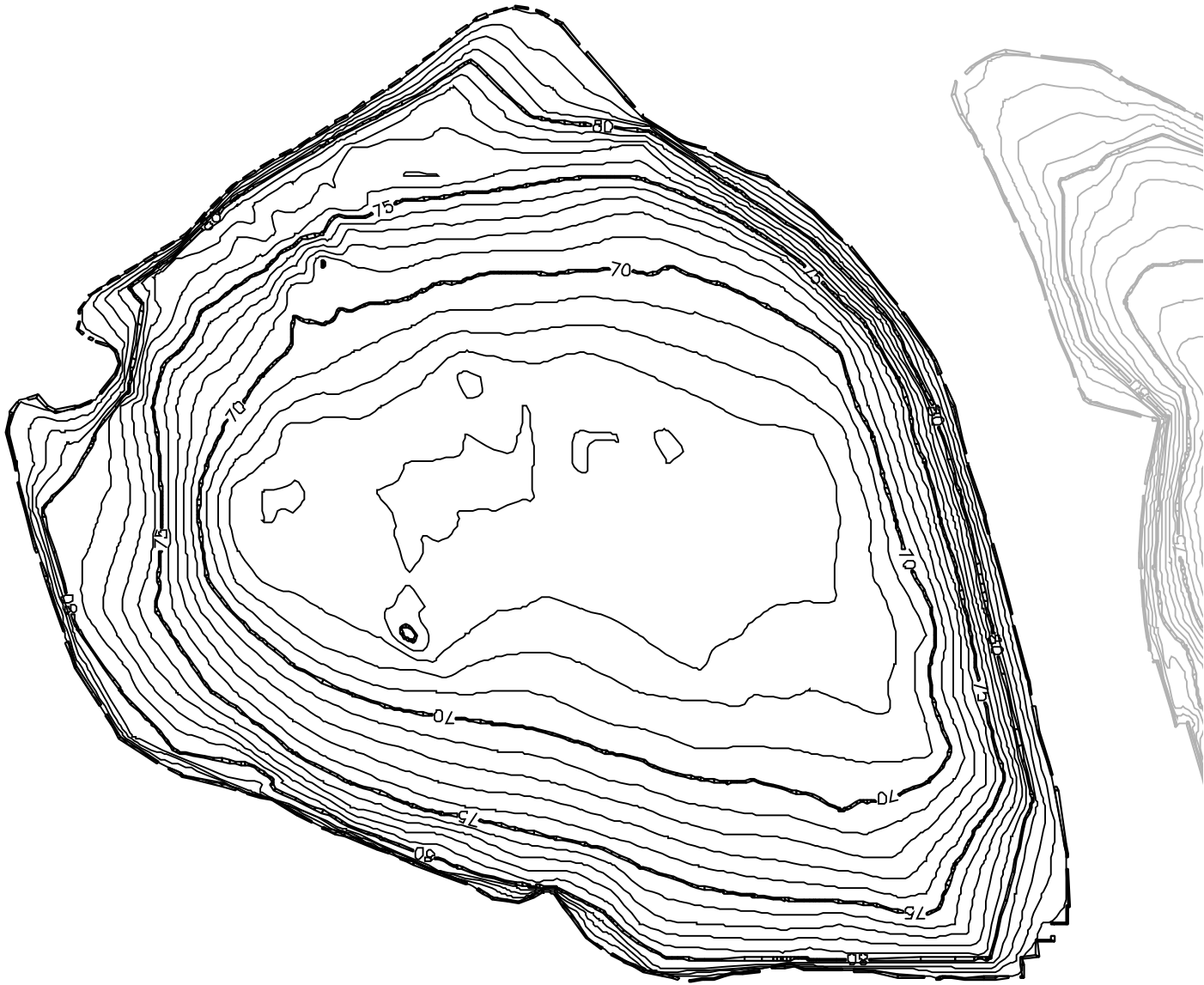
# LAKE LUCERNE WEST



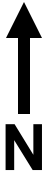
Sampling Location

N 28° 32' 06.4"

W 81° 22' 41.9"



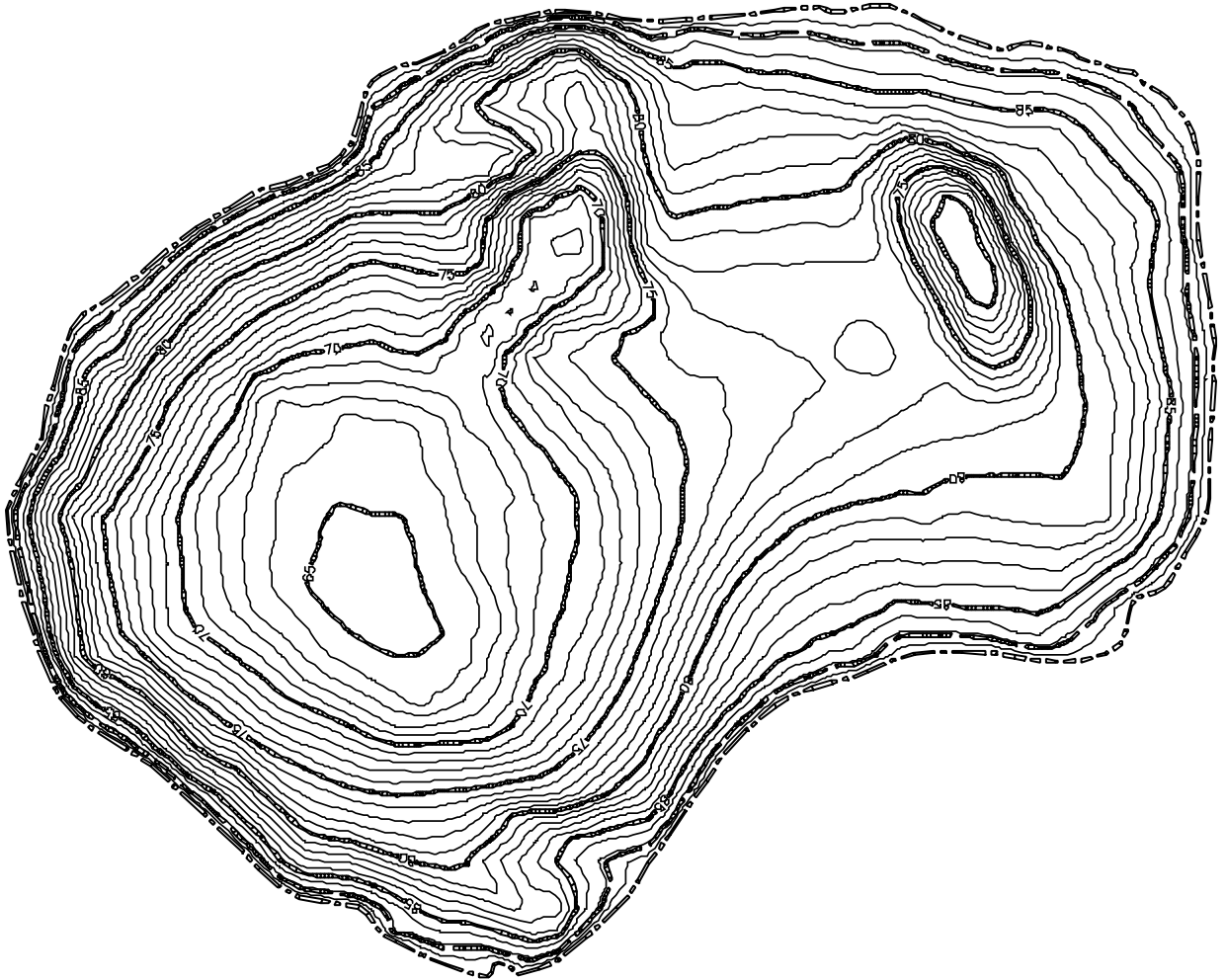
# LAKE LURNA



**Sampling Location**

**N 28° 31' 21.7"**

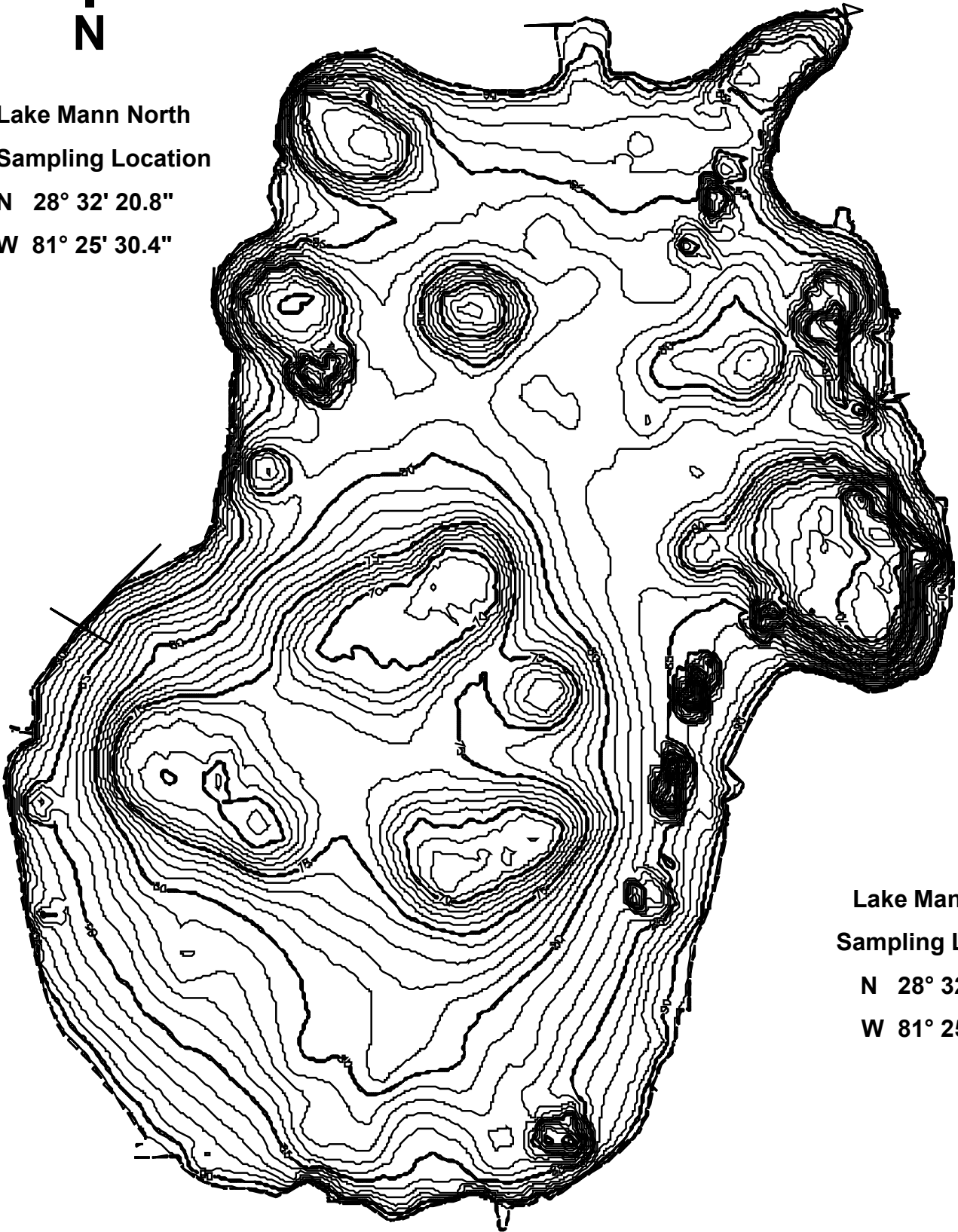
**W 81° 22' 28.2"**



# LAKE MANN

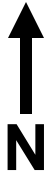


Lake Mann North  
Sampling Location  
N 28° 32' 20.8"  
W 81° 25' 30.4"



Lake Mann South  
Sampling Location  
N 28° 32' 03.1"  
W 81° 25' 37.9"

# LAKE MARE PRAIRIE



Sampling Location

N 28° 27' 34.9"

W 81° 19' 23.7"



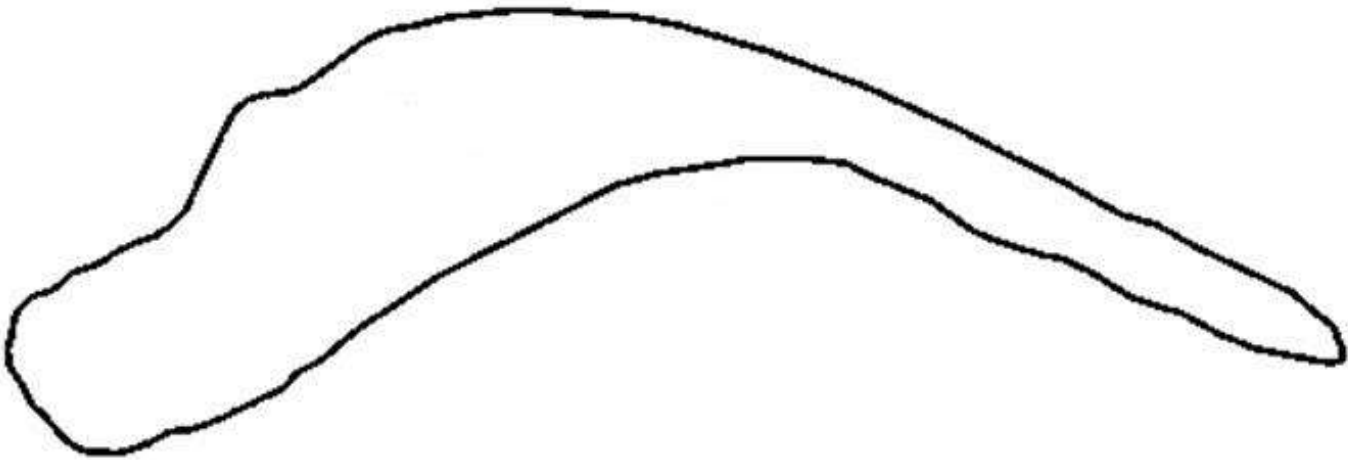
# LAKE MICHELLE



**Sampling Location**

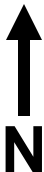
**N 28° 27' 26.3"**

**W 81° 18' 07.2"**





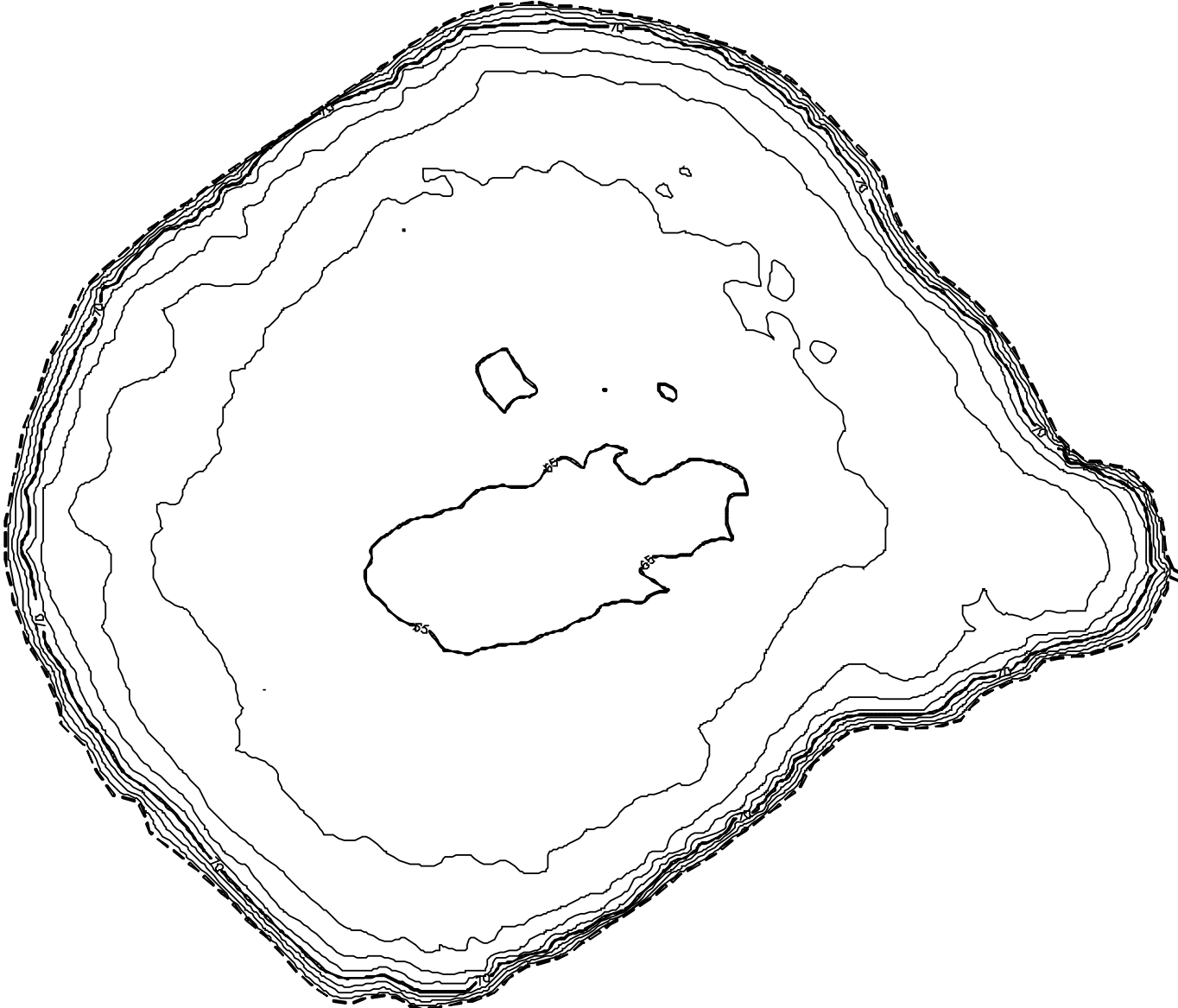
# MUD LAKE



Sampling Location

N 28° 23' 21.1"

W 81° 17' 26.9"



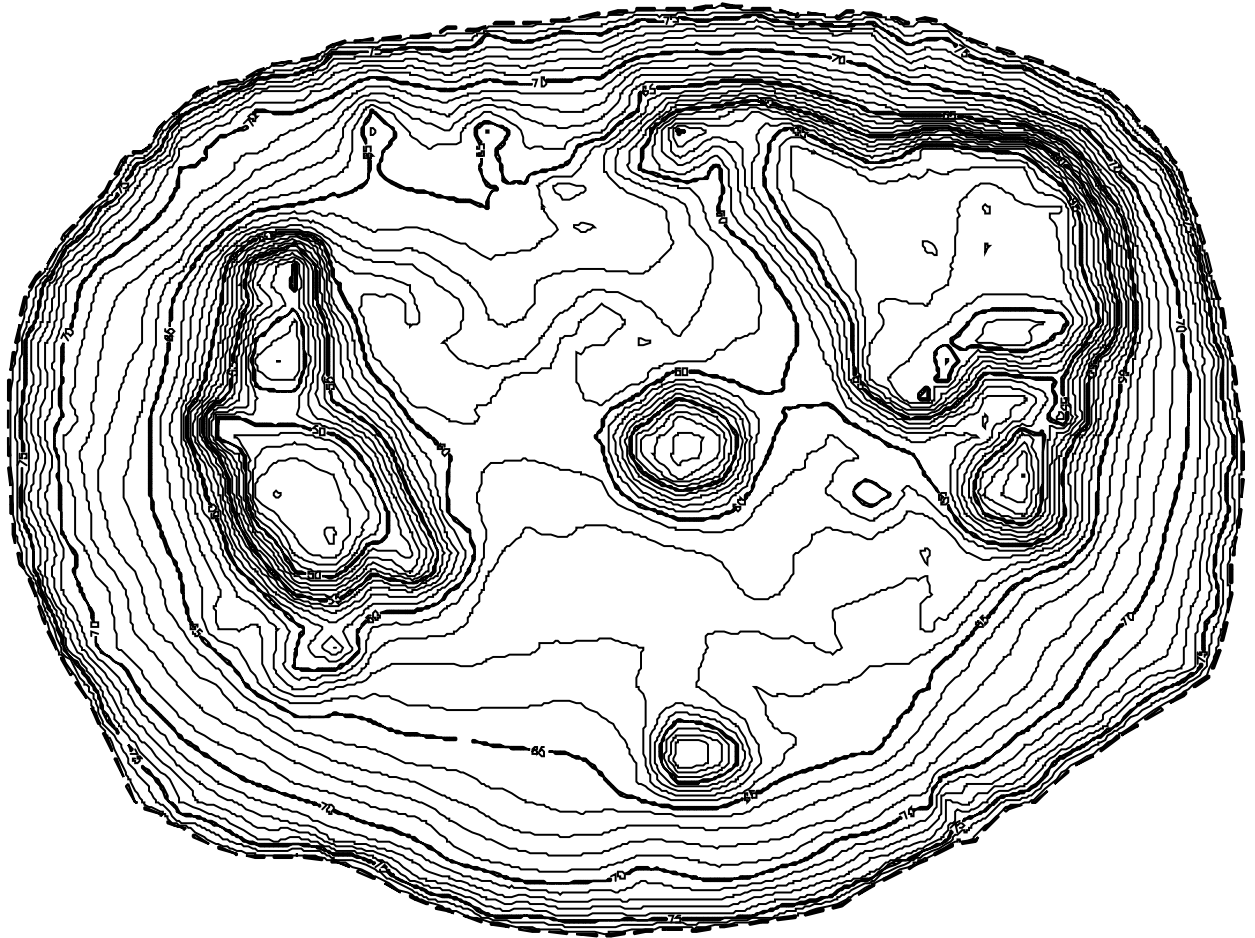
# LAKE NONA



**Lake Nona North  
Sampling Location**

**N 28° 24' 45.0"**

**W 81° 16' 15.6"**

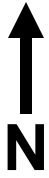


**Lake Nona South  
Sampling Location**

**N 28° 24' 24.0"**

**W 81° 16' 15.3"**

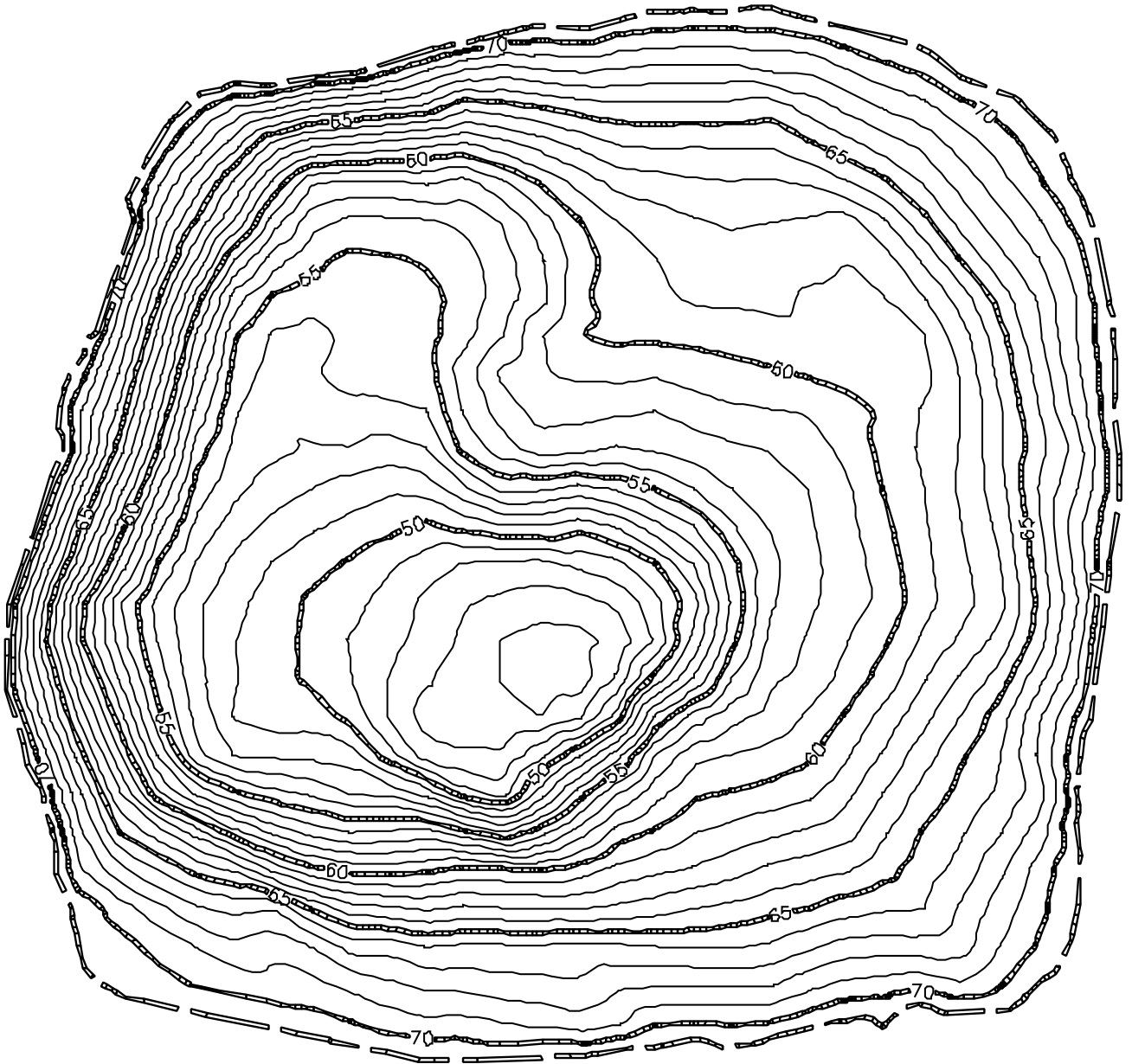
# LAKE OLIVE



Sampling Location

N 28° 32' 22.6"

W 81° 22' 01.9"



# LAKE ORLANDO

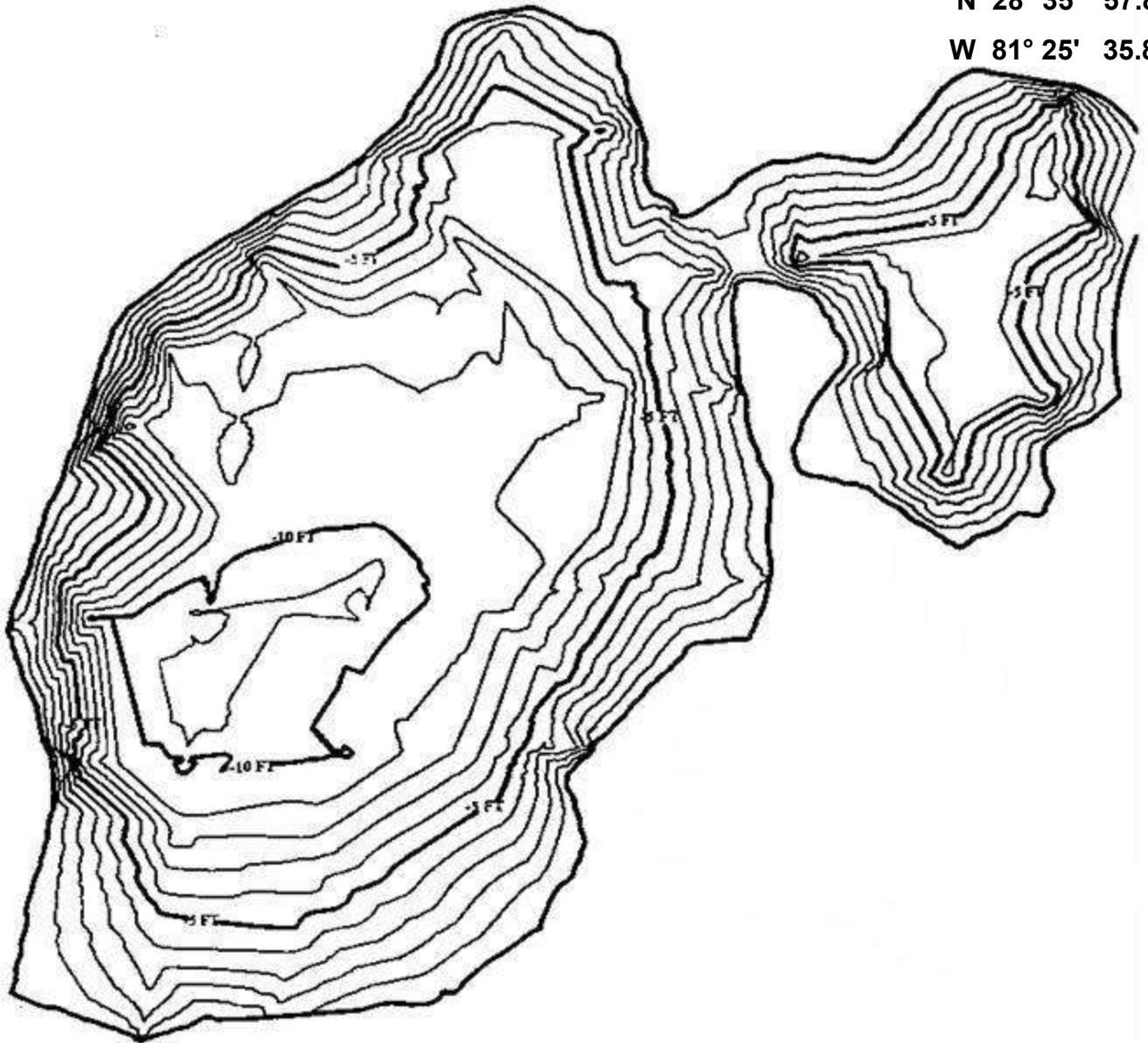


Lake Orlando East

Sampling Location

N 28° 35' 57.8"

W 81° 25' 35.8"



Lake Orlando West

Sampling Location

N 28° 35' 47.8"

W 81° 25' 59.9"

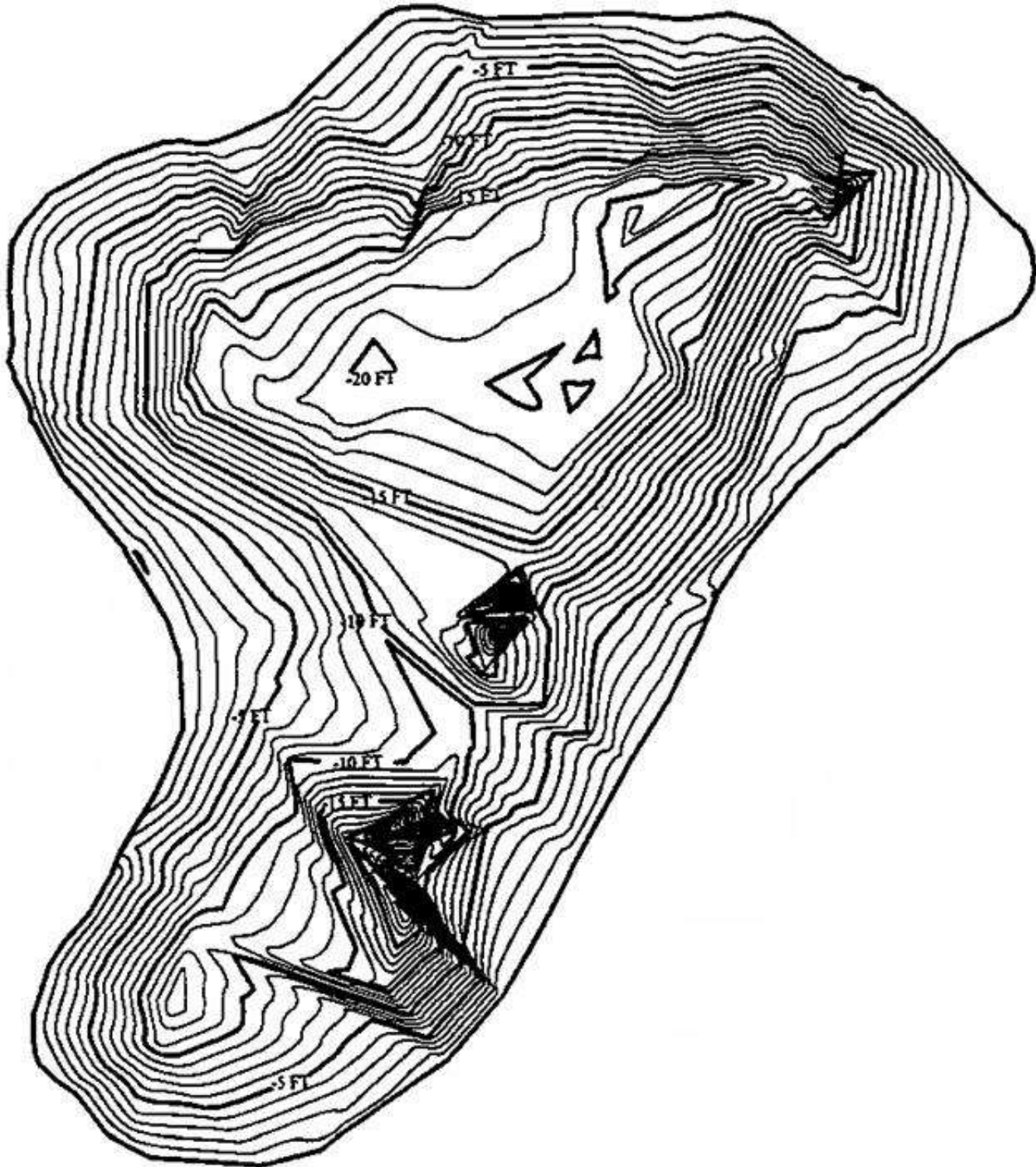
# LAKE PAMELA



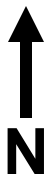
Sampling Location

N 28° 31' 14.2"

W 81° 27' 45.0"



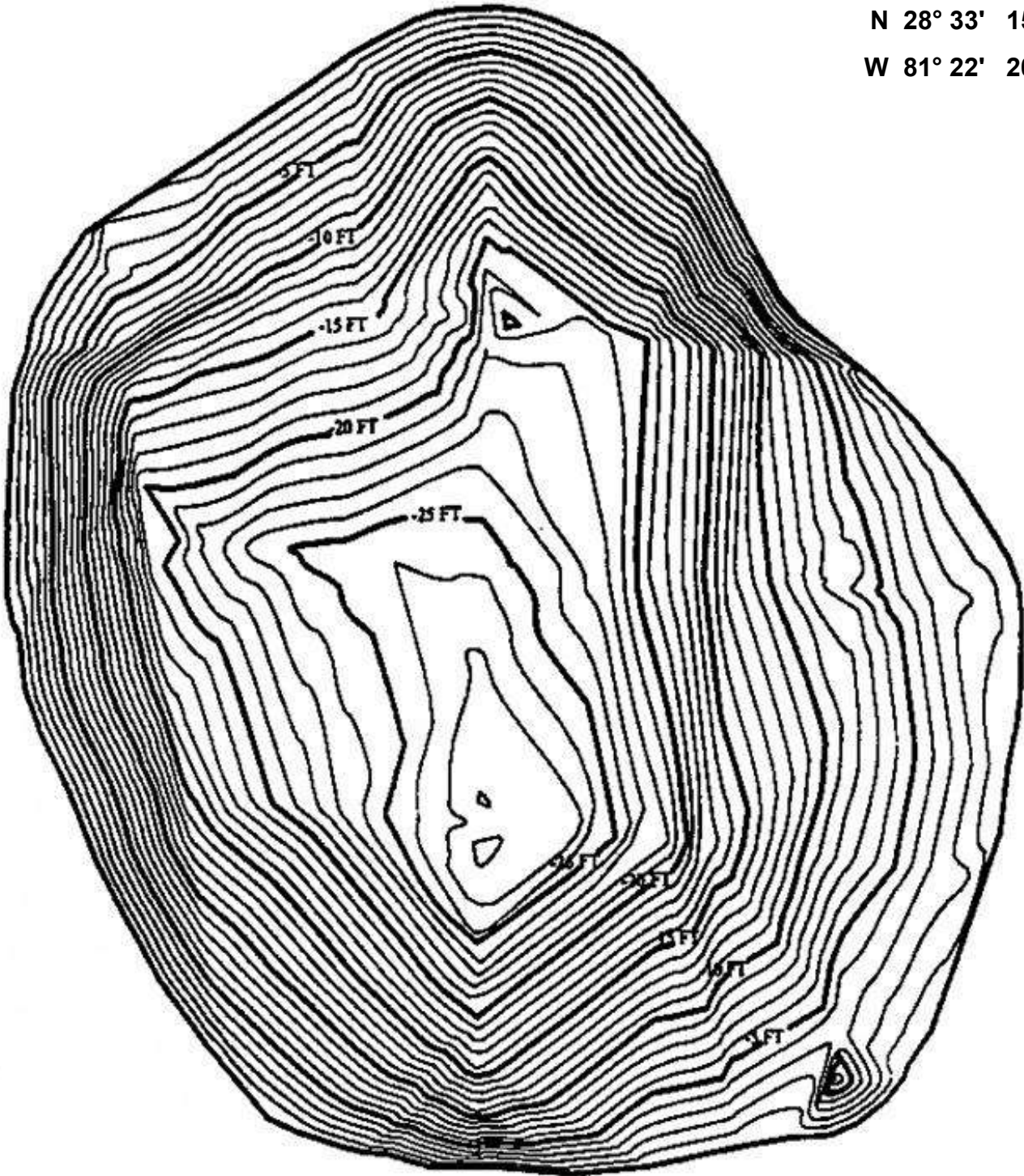
# PARK LAKE



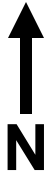
Sampling Location

N 28° 33' 15.5"

W 81° 22' 20.6"



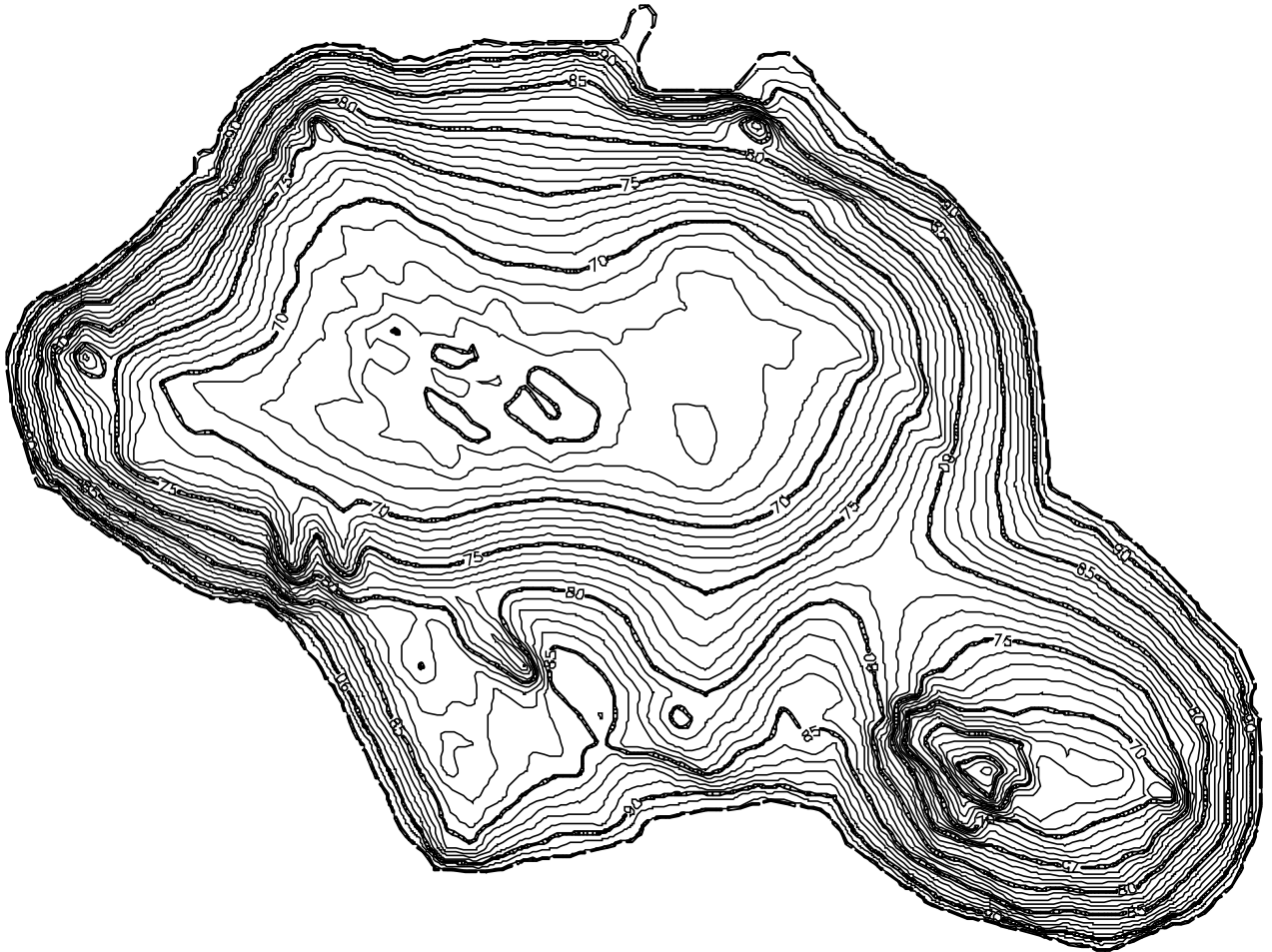
# LAKE PINELOCH



Sampling Location

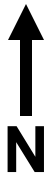
N 28° 30' 29.2"

W 81° 22' 05.5"





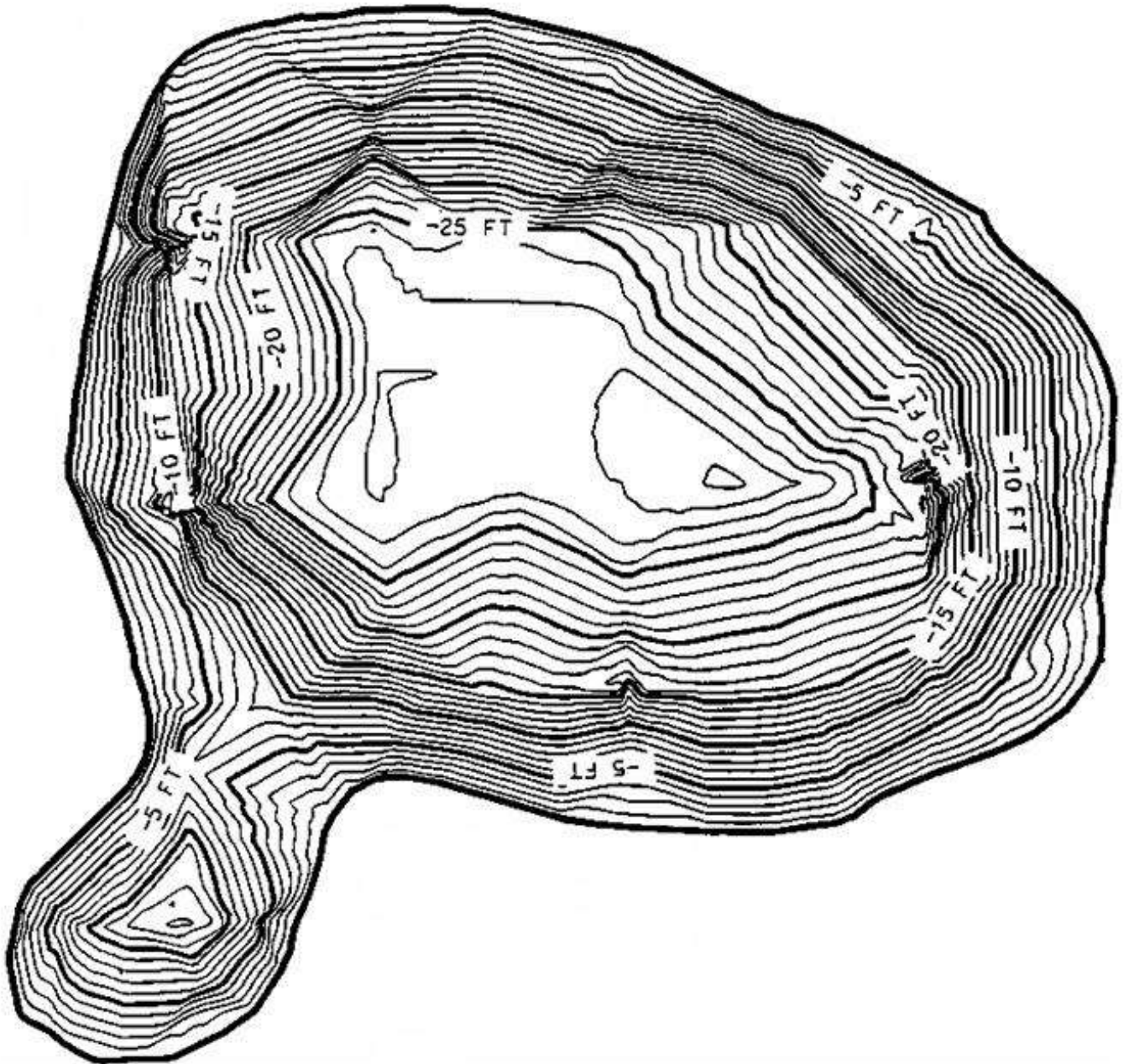
# LAKE PORTER



Sampling Location

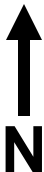
N 28° 30' 43.6"

W 81° 19' 22.8"





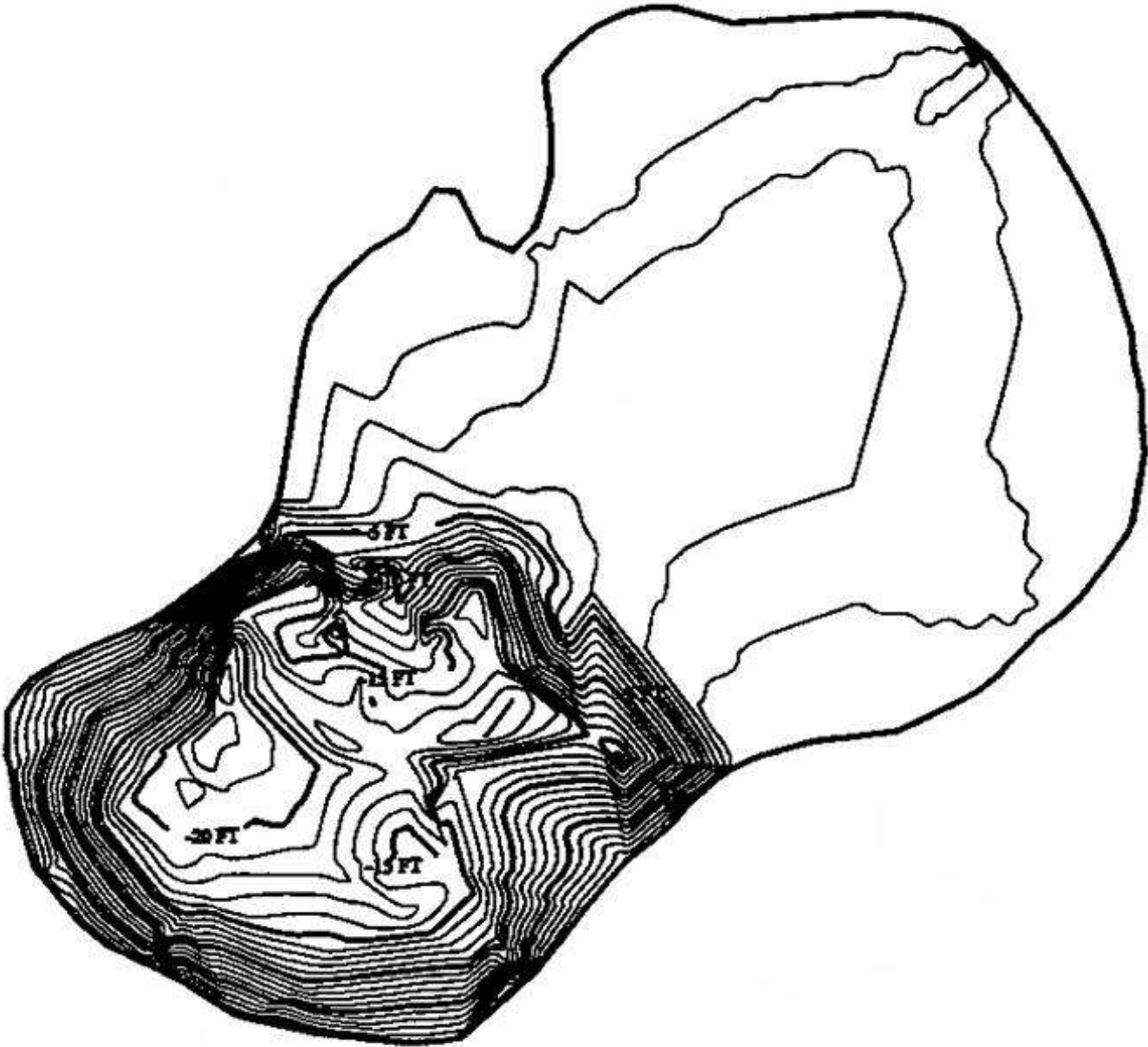
# LAKE RABAMA



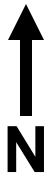
Sampling Location

N 28° 31' 13.8"

W 81° 19' 45.1"



# RED LAKE



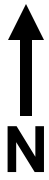
Sampling Location

N 28° 24' 21.2"

W 81° 15' 31.3"



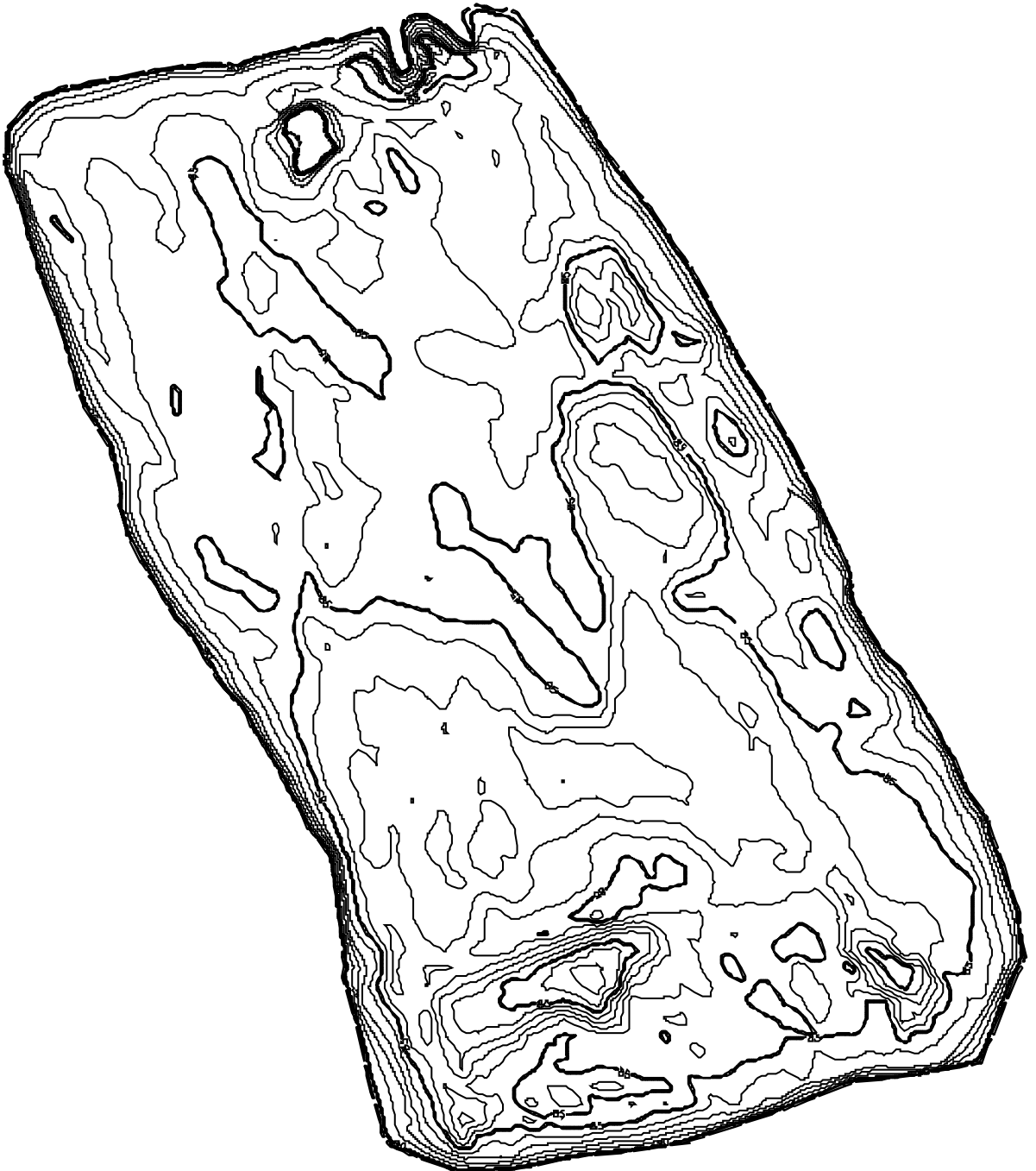
# LAKE RICHMOND



Sampling Location

N 28° 30' 42.5"

W 81° 26' 02.8"



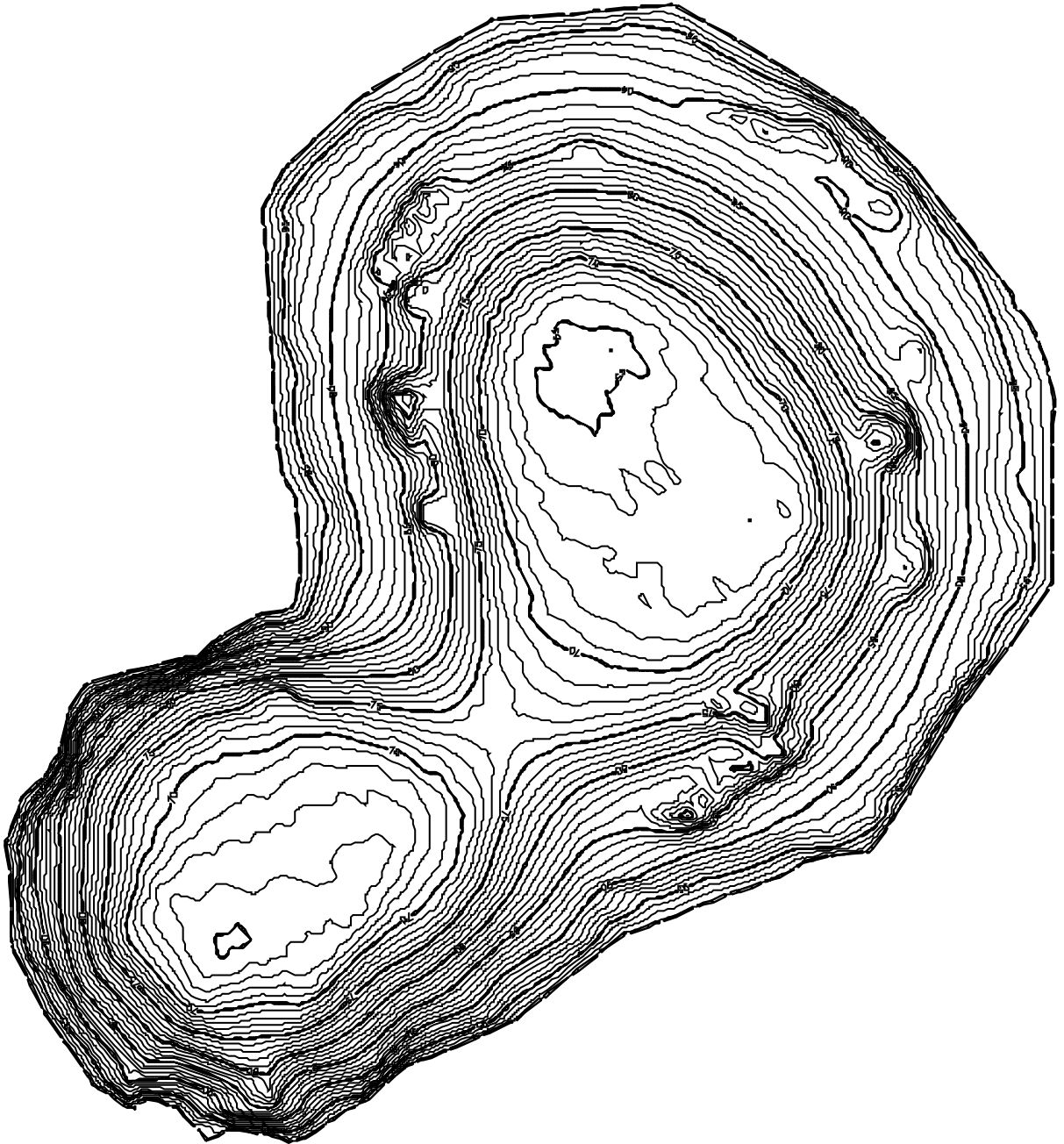
# ROCK LAKE



Sampling Location

N 28° 32' 52.6"

W 81° 24' 05.5"



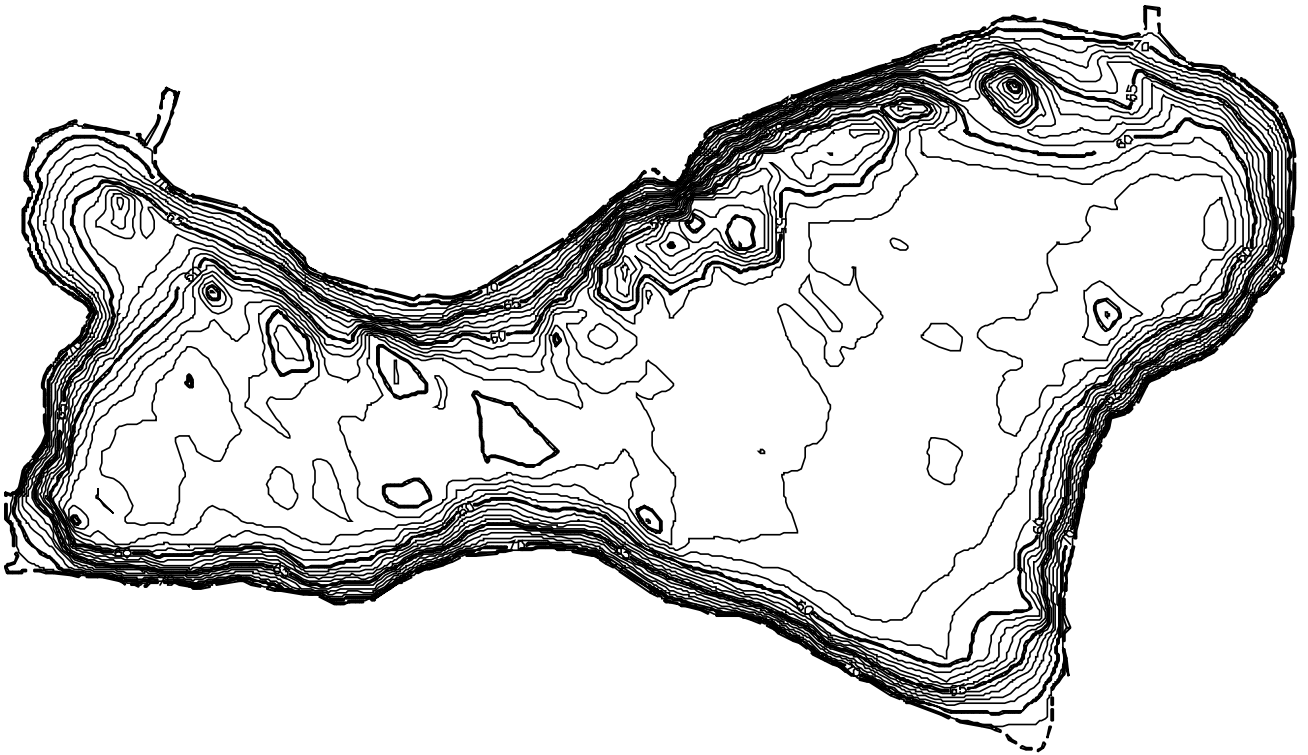
# LAKE ROWENA



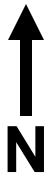
Sampling Location

N 28° 34' 17.4"

W 81° 21' 27.0"



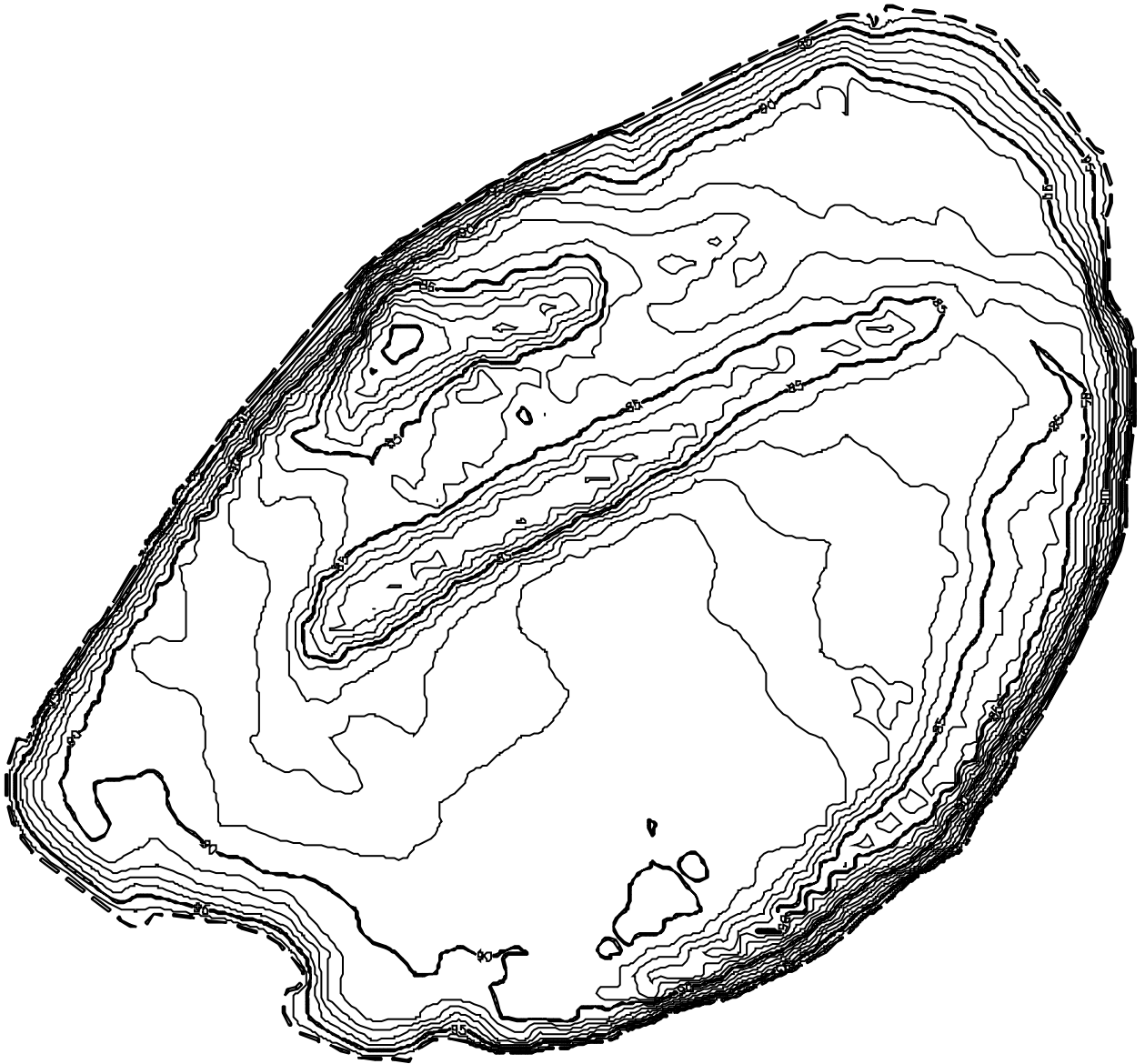
# LAKE SANDY



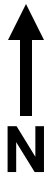
Sampling Location

N 28° 27' 30.6"

W 81° 27' 59.4"



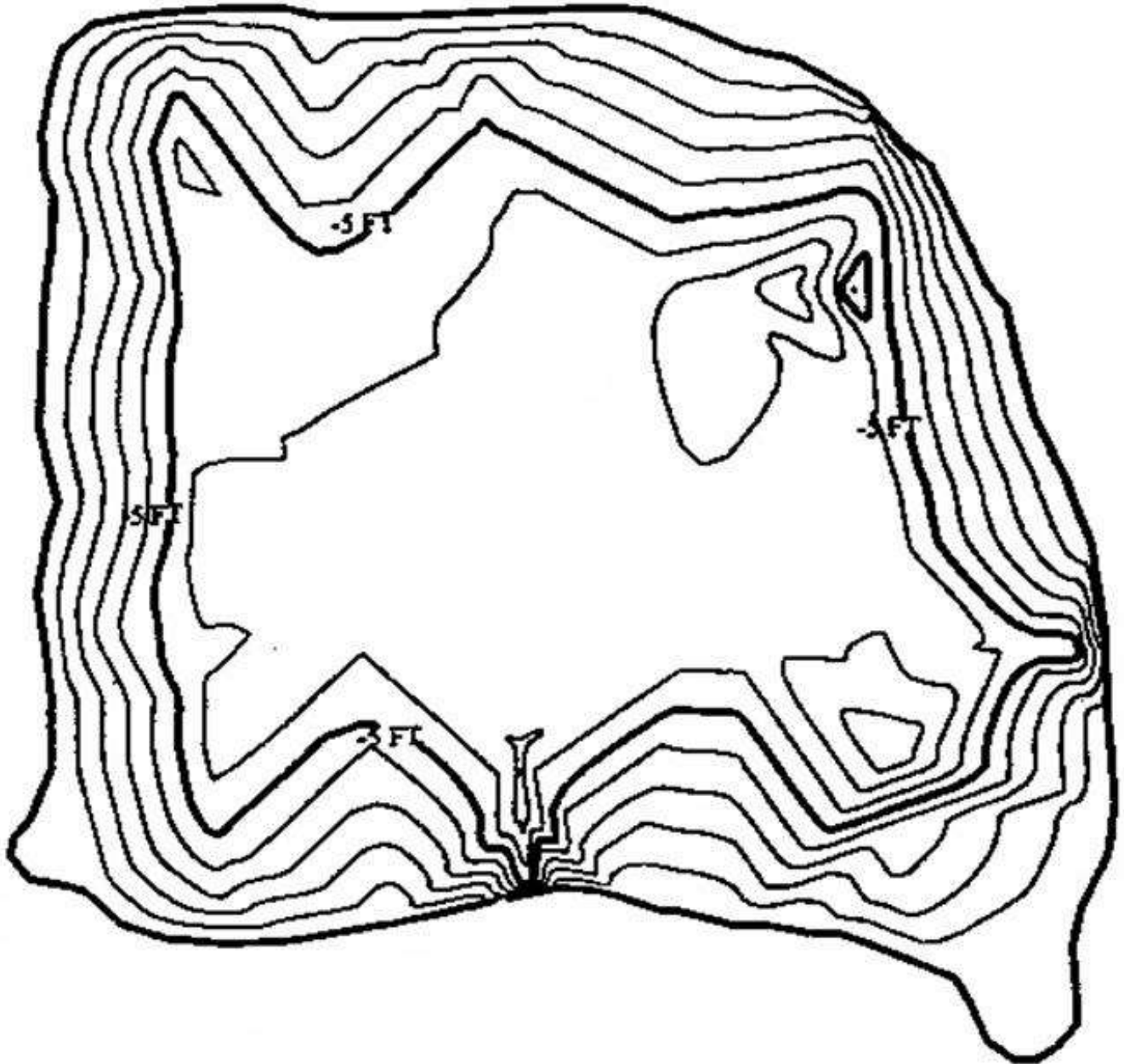
# LAKE SANTIAGO



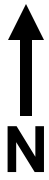
Sampling Location

N 28° 31' 59.5"

W 81° 19' 05.2"



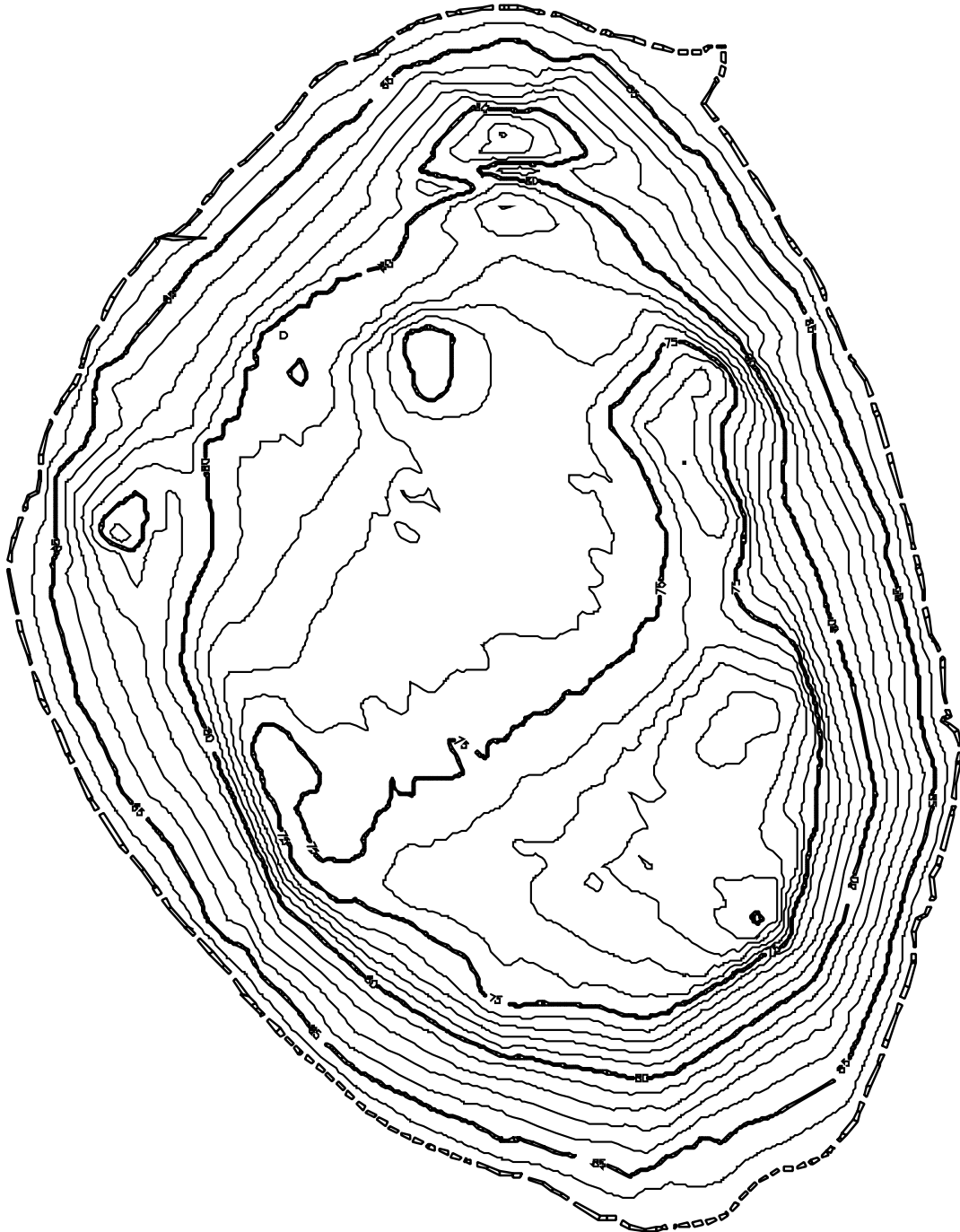
# LAKE SARAH



Sampling Location

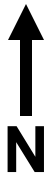
N 28° 35' 07.5"

W 81° 24' 09.2"





# LAKE SHANNON



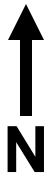
Sampling Location

N 28° 33' 53.3"

W 81° 20' 28.3"



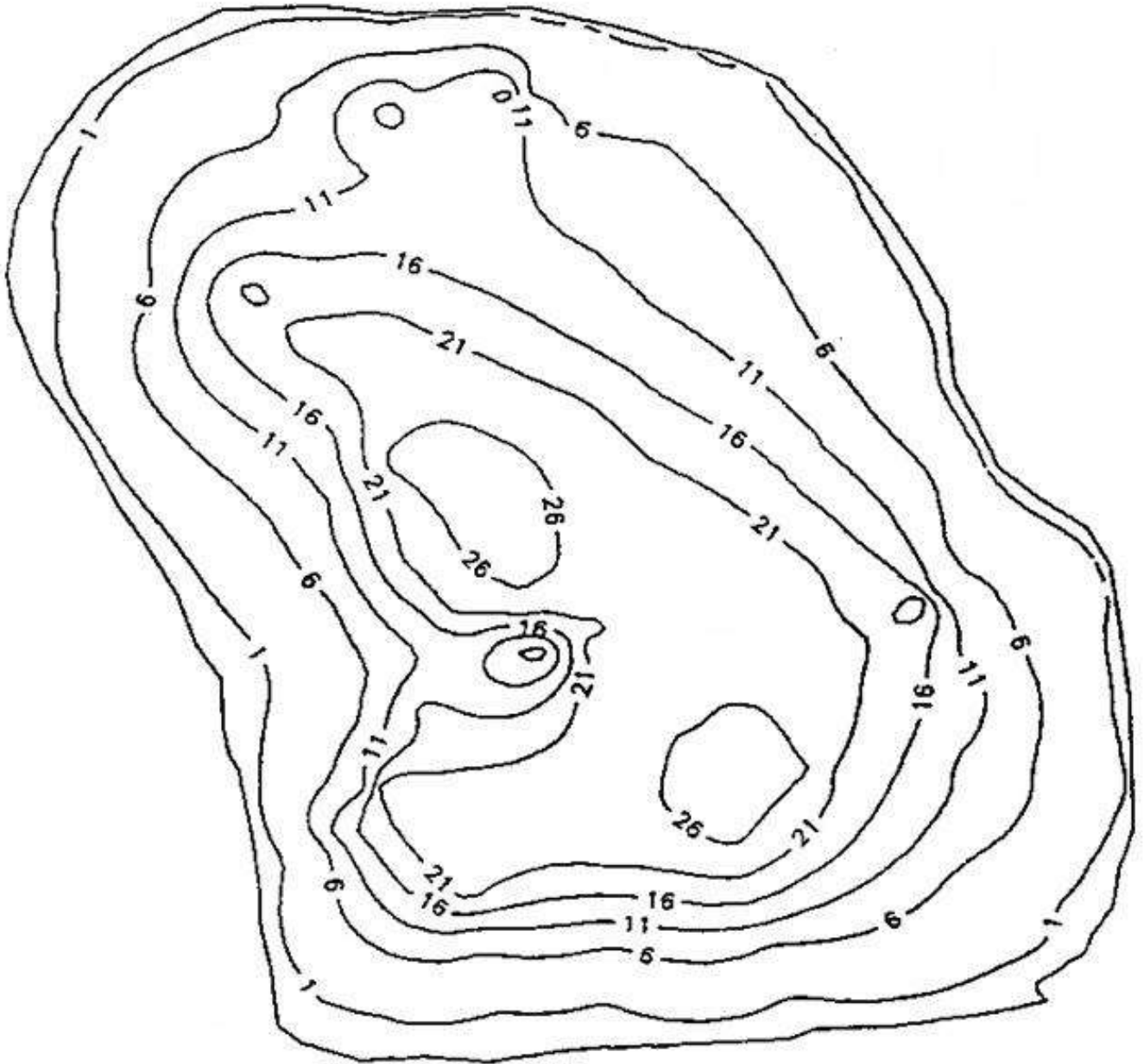
# LAKE SILVER



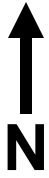
Sampling Location

N 28° 34' 41.2"

W 81° 23' 47.8"



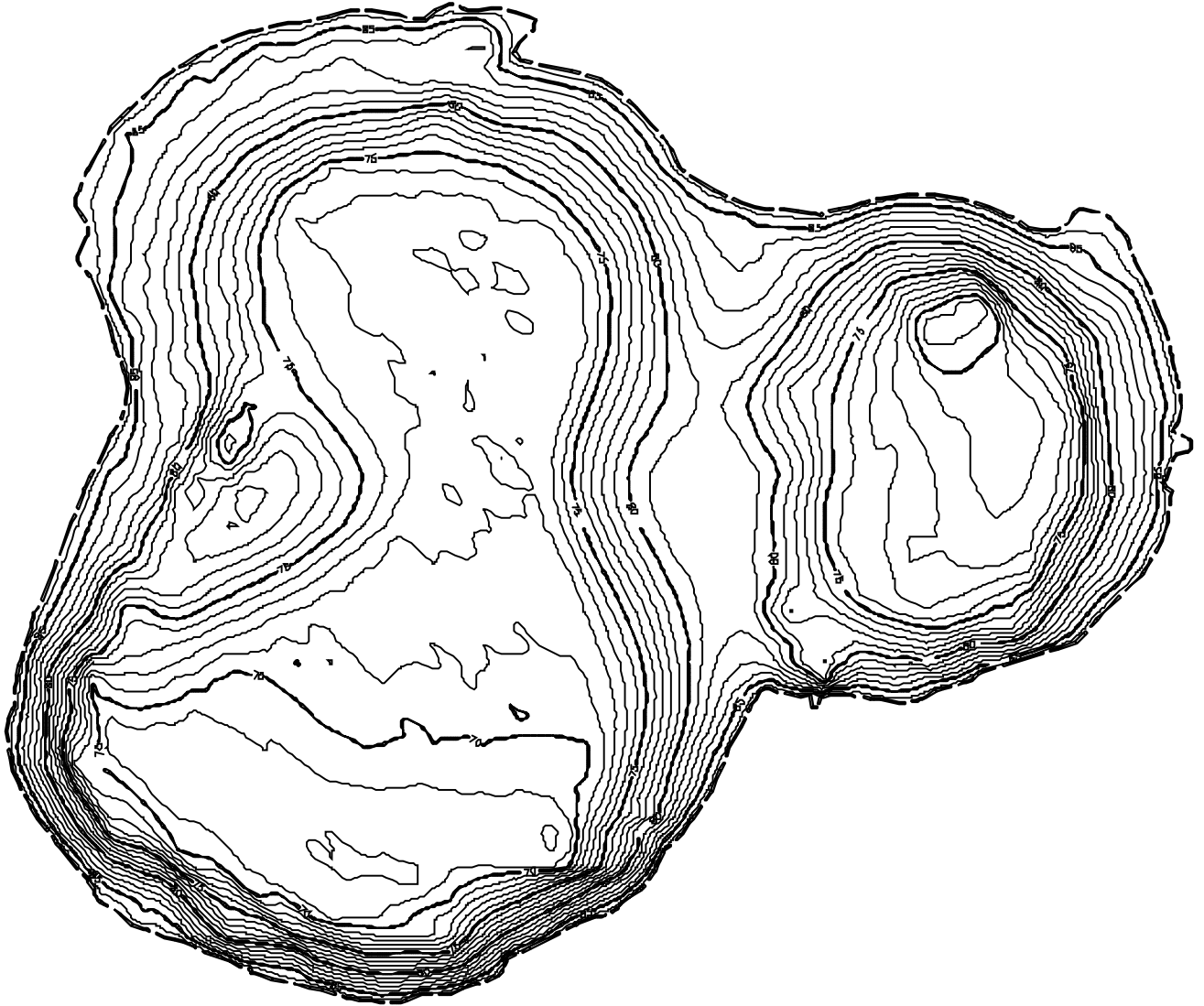
# SPRING LAKE NORTHWEST



Sampling Location

N 28° 33' 22.7"

W 81° 23' 58.6"



# SPRING LAKE SOUTHWEST



Sampling Location

N 28° 27' 18.4"

W 81° 28' 59.9"



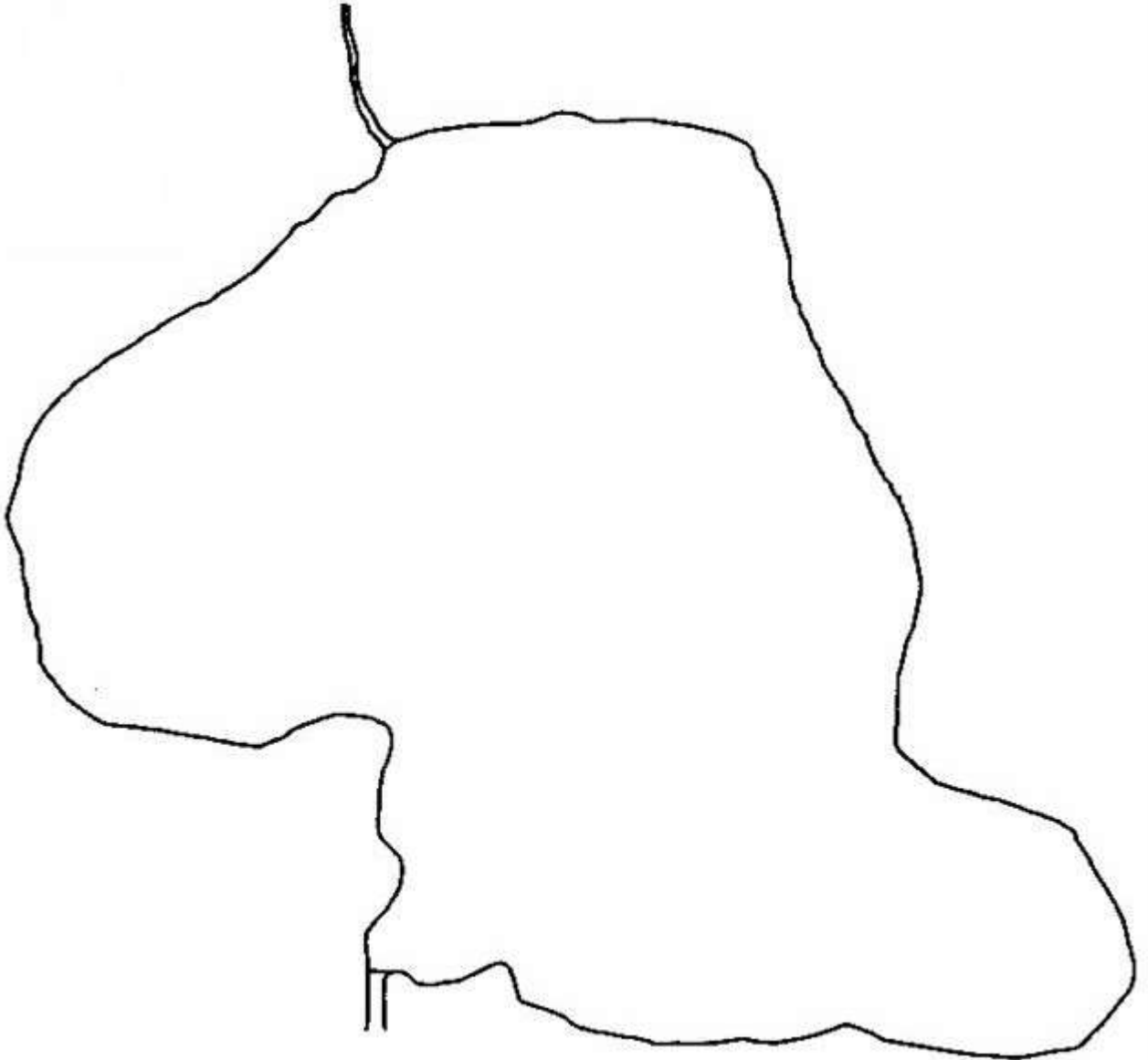
# LAKE SUE



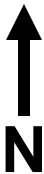
**Sampling Location**

**N 28° 34' 39.0"**

**W 81° 21' 15.5"**



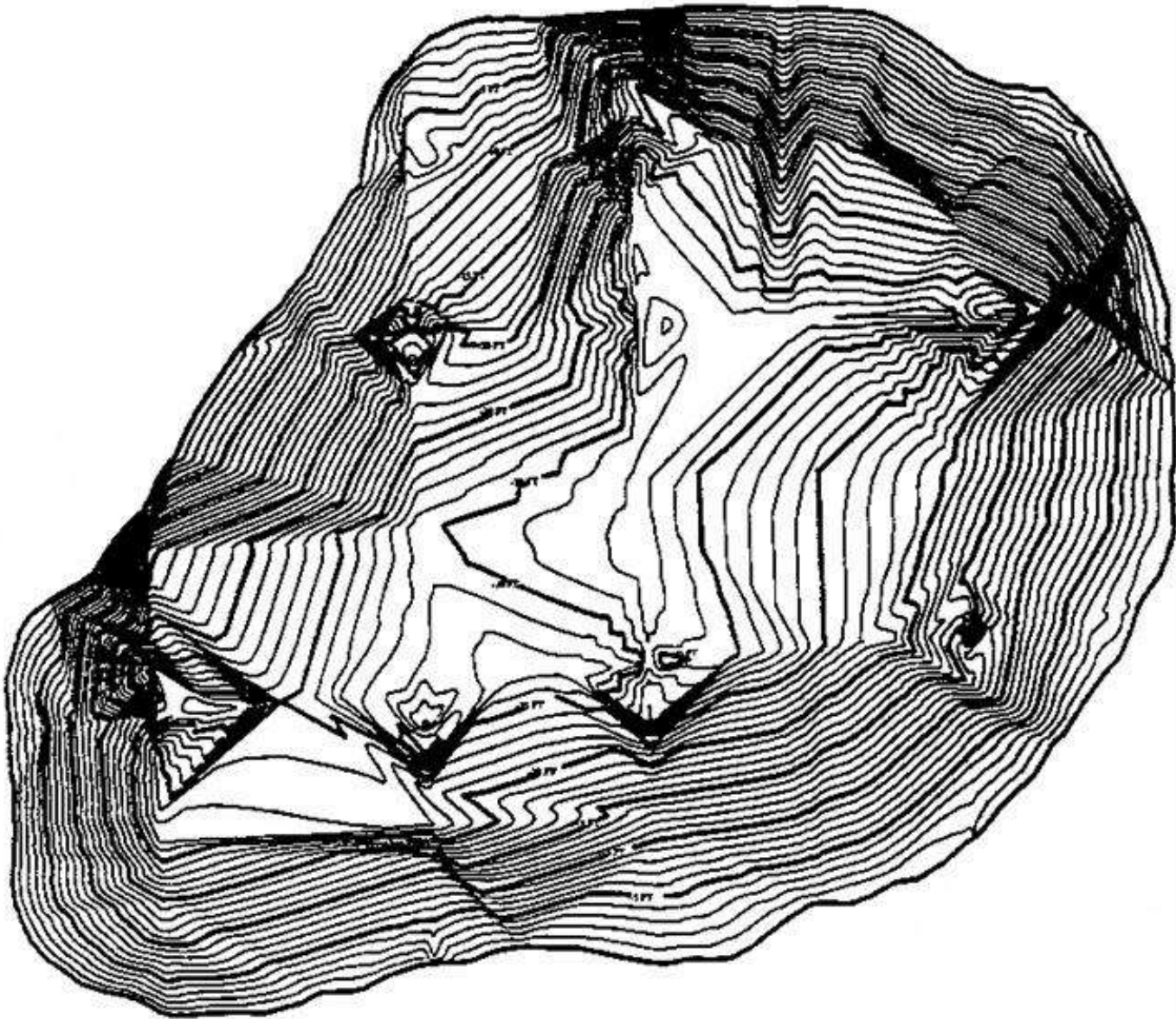
# LAKE SUNSET



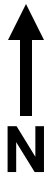
Sampling Location

N 28° 32' 11.0"

W 81° 24' 41.0"



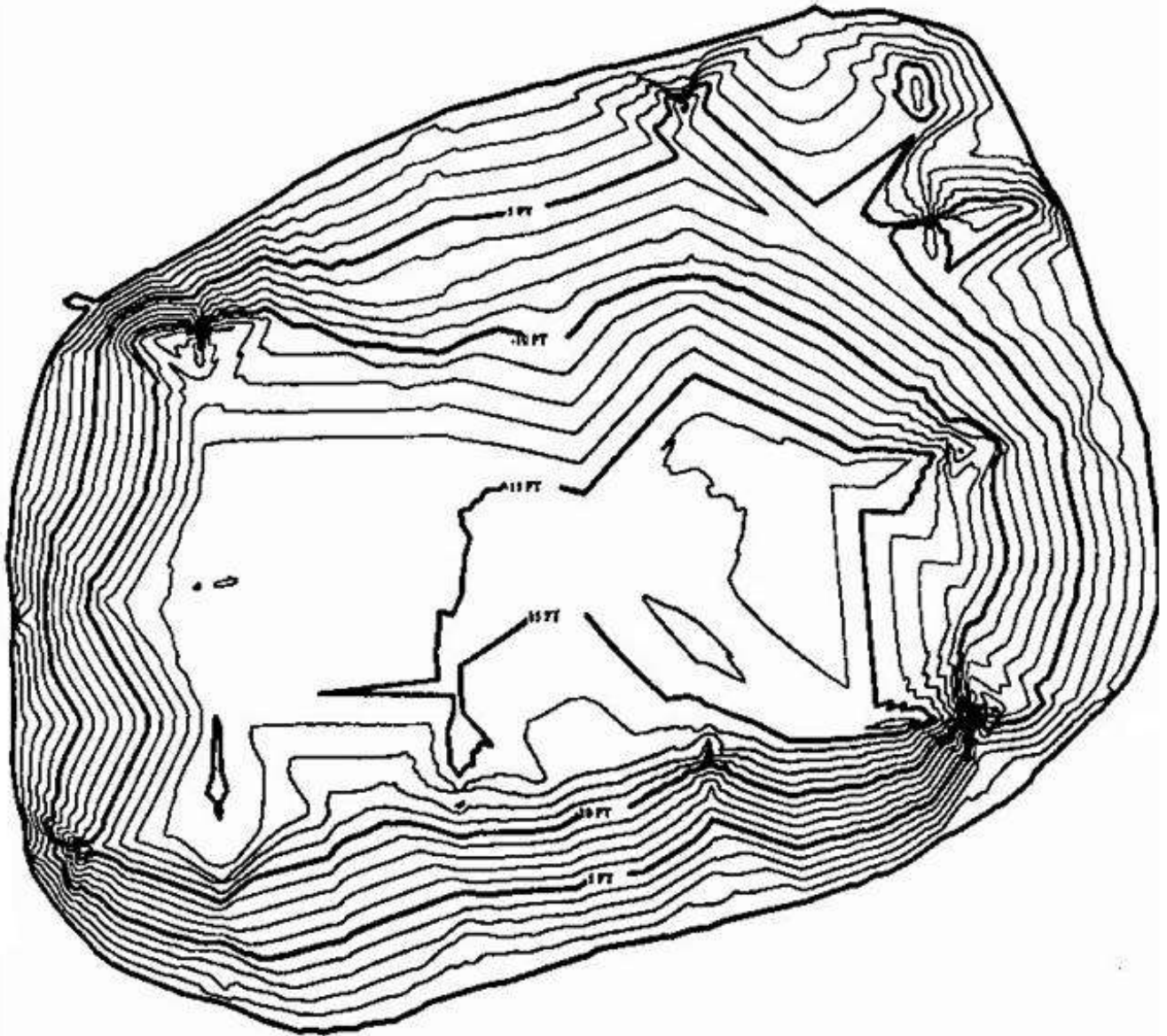
# LAKE SUSANNAH



Sampling Location

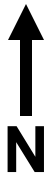
N 28° 33' 45.0"

W 81° 19' 21.0"





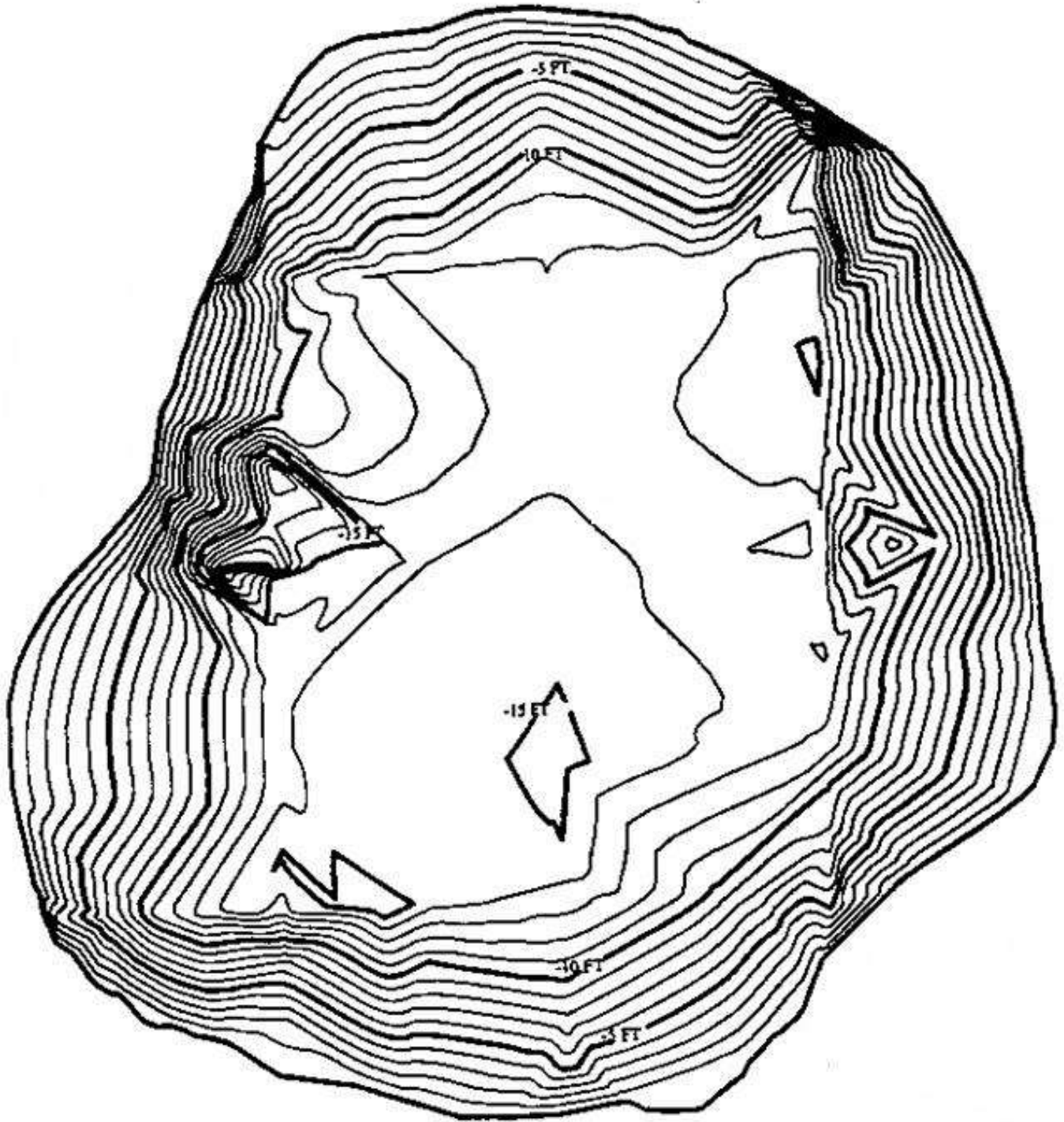
# LAKE TENNESSEE



Sampling Location

N 28° 30' 37.1"

W 81° 19' 55.6"





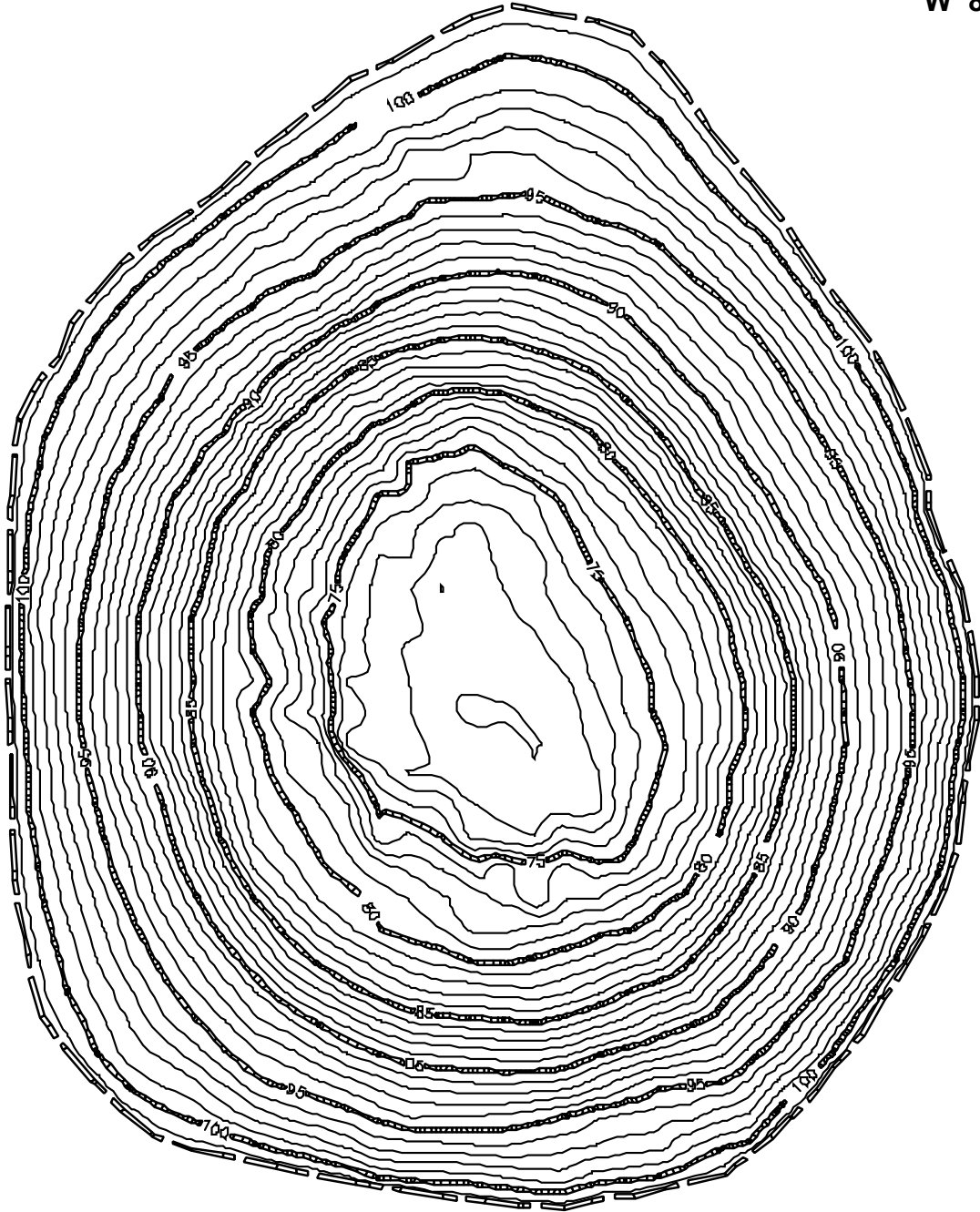
# LAKE TERRACE



Sampling Location

N 28° 31' 14.9"

W 81° 20' 47.0"



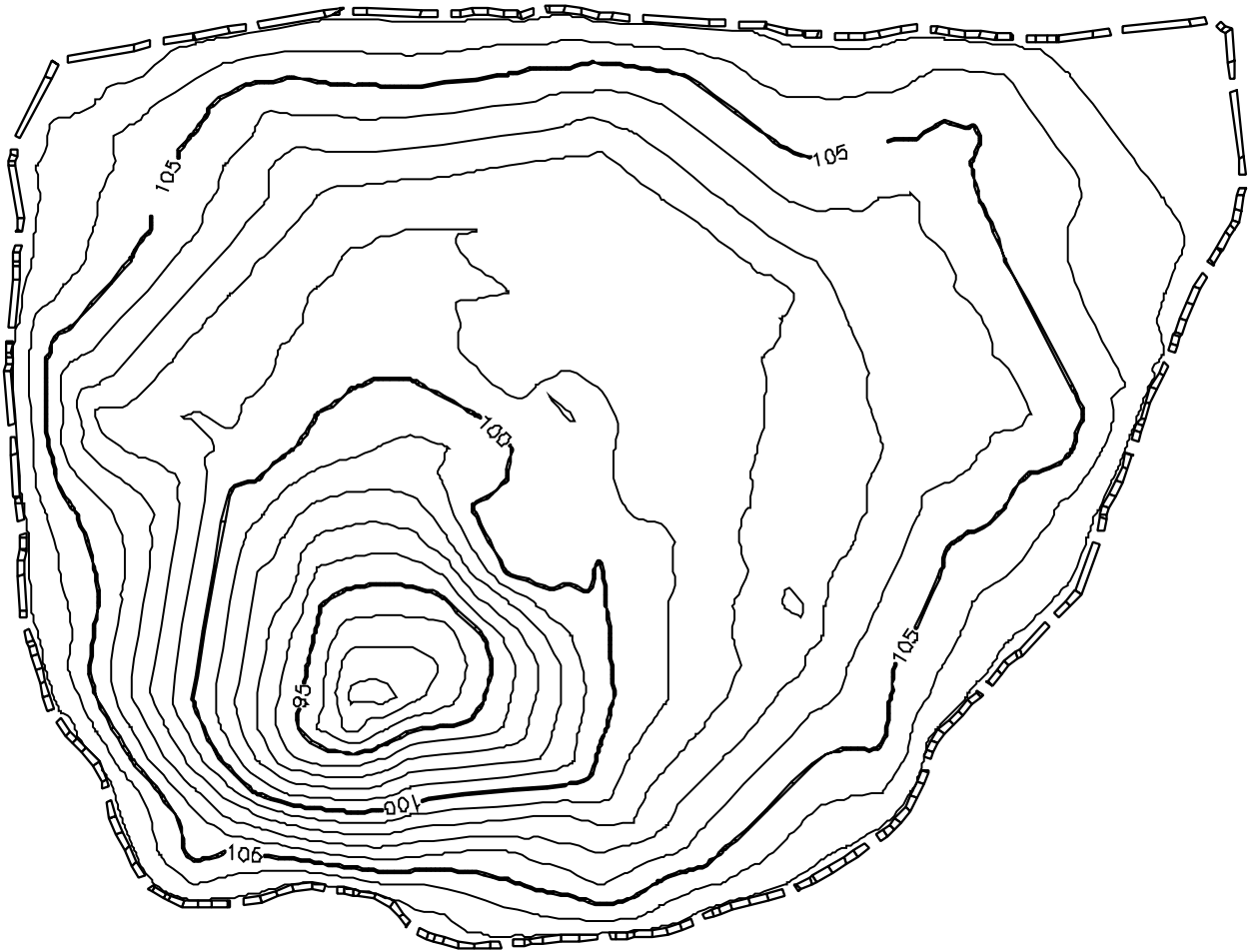
# LAKE THERESA



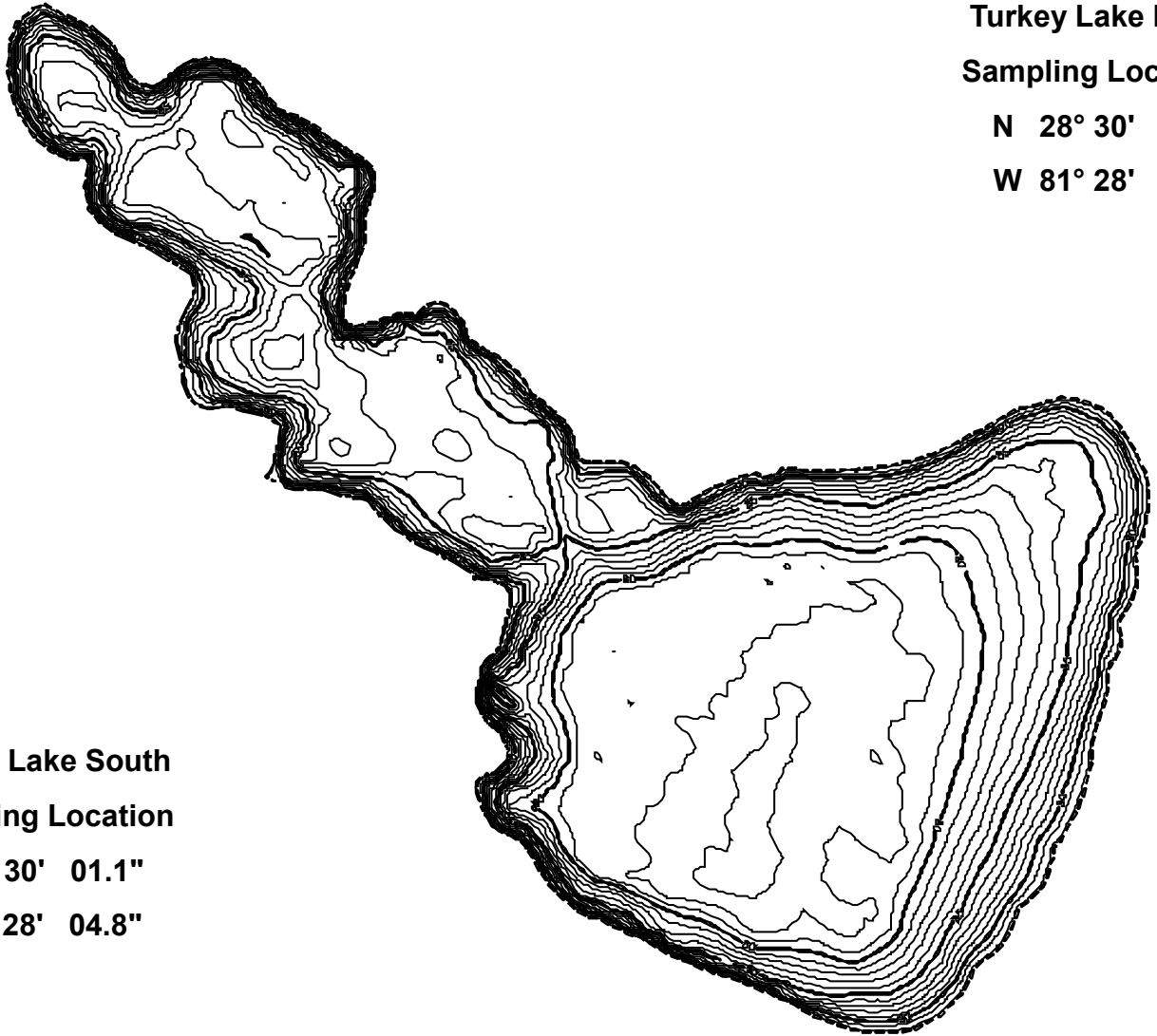
Sampling Location

N 28° 33' 38.9"

W 81° 20' 20.8"



# TURKEY LAKE



**Turkey Lake North**

**Sampling Location**

**N 28° 30' 29.9"**

**W 81° 28' 40.4"**

**Turkey Lake South**

**Sampling Location**

**N 28° 30' 01.1"**

**W 81° 28' 04.8"**

# LAKE UNDERHILL

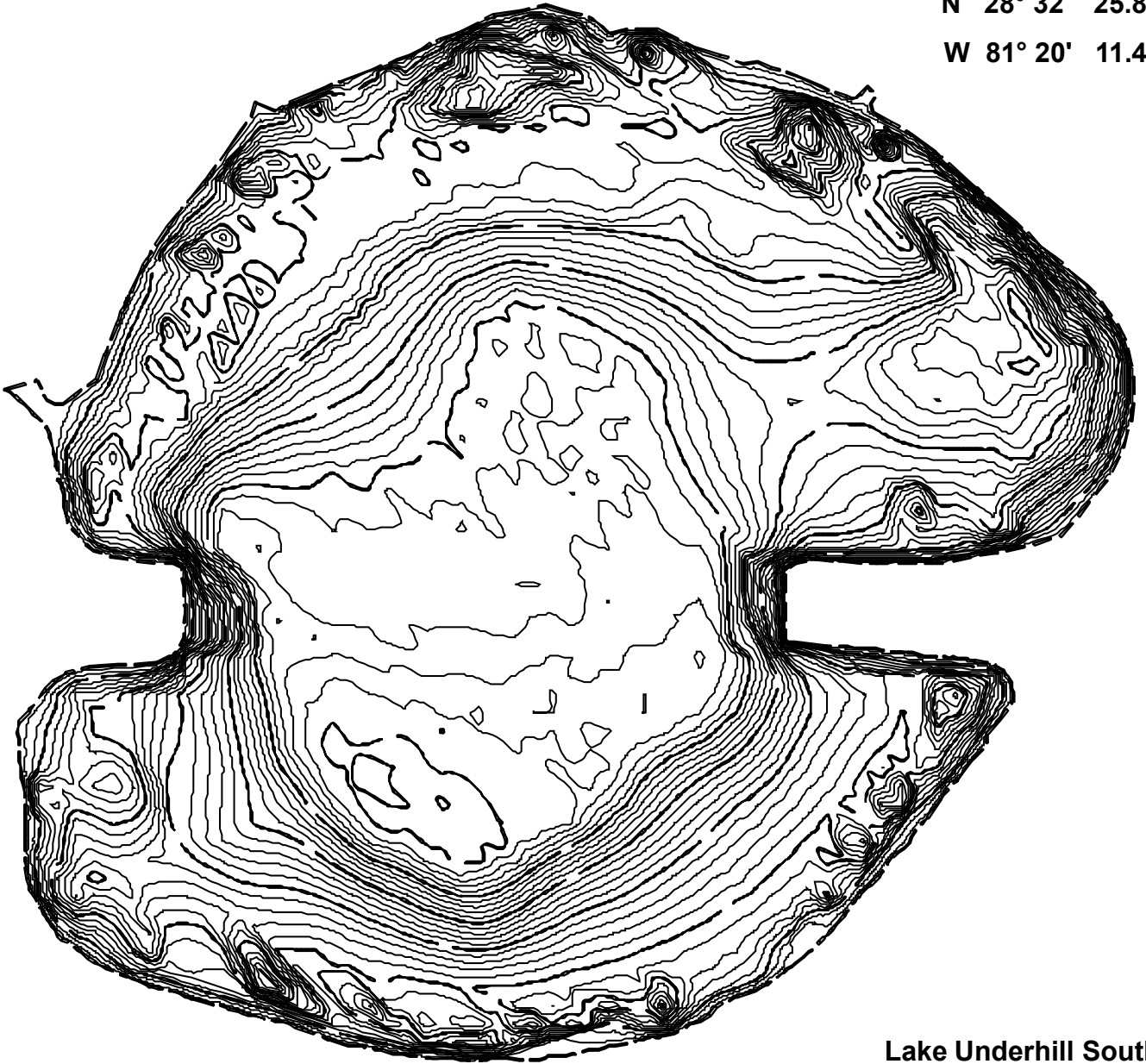


Lake Underhill North

Sampling Location

N 28° 32' 25.8"

W 81° 20' 11.4"



Lake Underhill South

Sampling Location

N 28° 32' 12.8"

W 81° 20' 13.2"

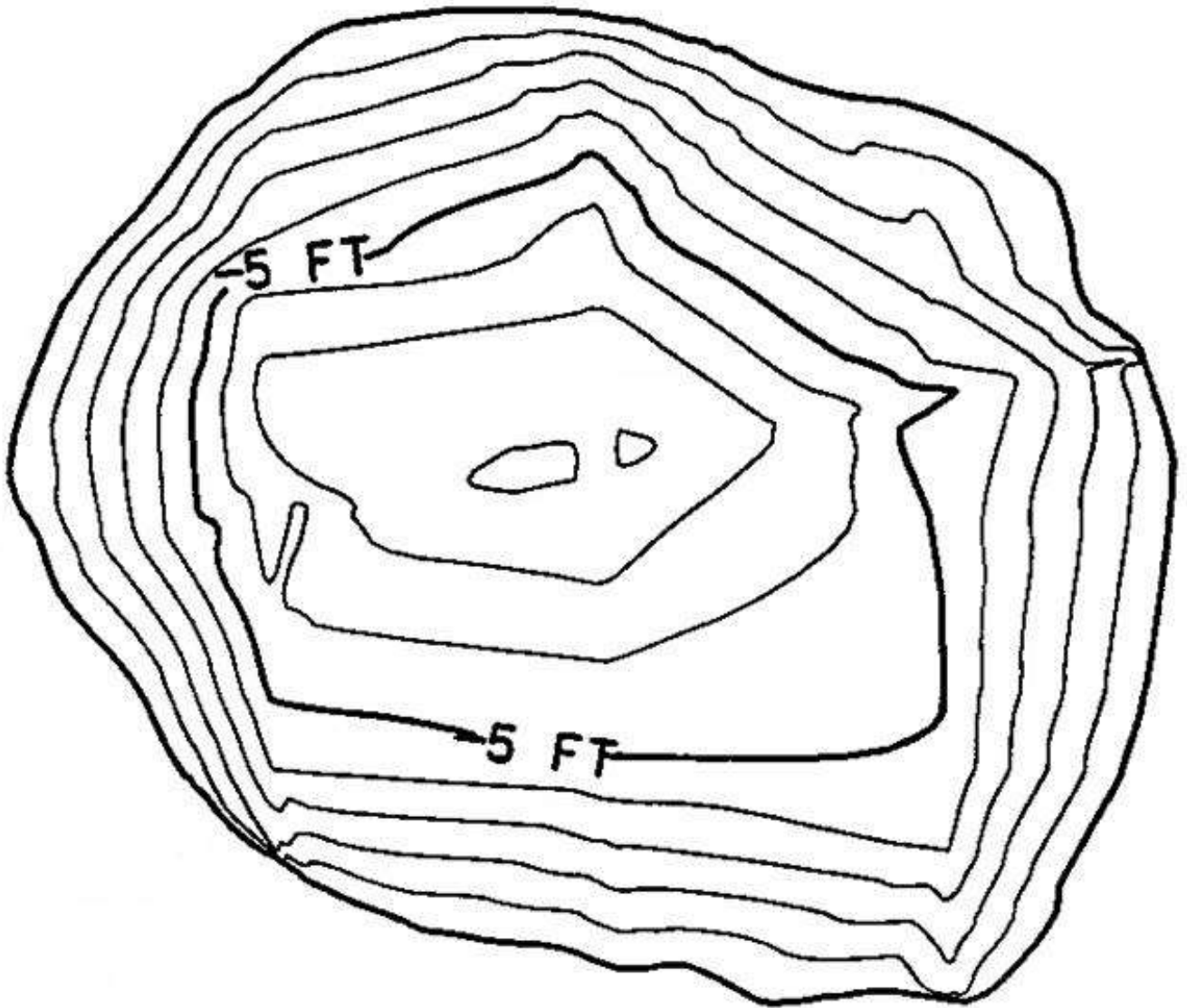
# LAKE WADE



Sampling Location

N 28° 30' 58.3"

W 81° 22' 03.7"



# LAKE WALKER



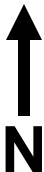
**Sampling Location**

**N 28° 31' 28.6"**

**W 81° 25' 23.2"**



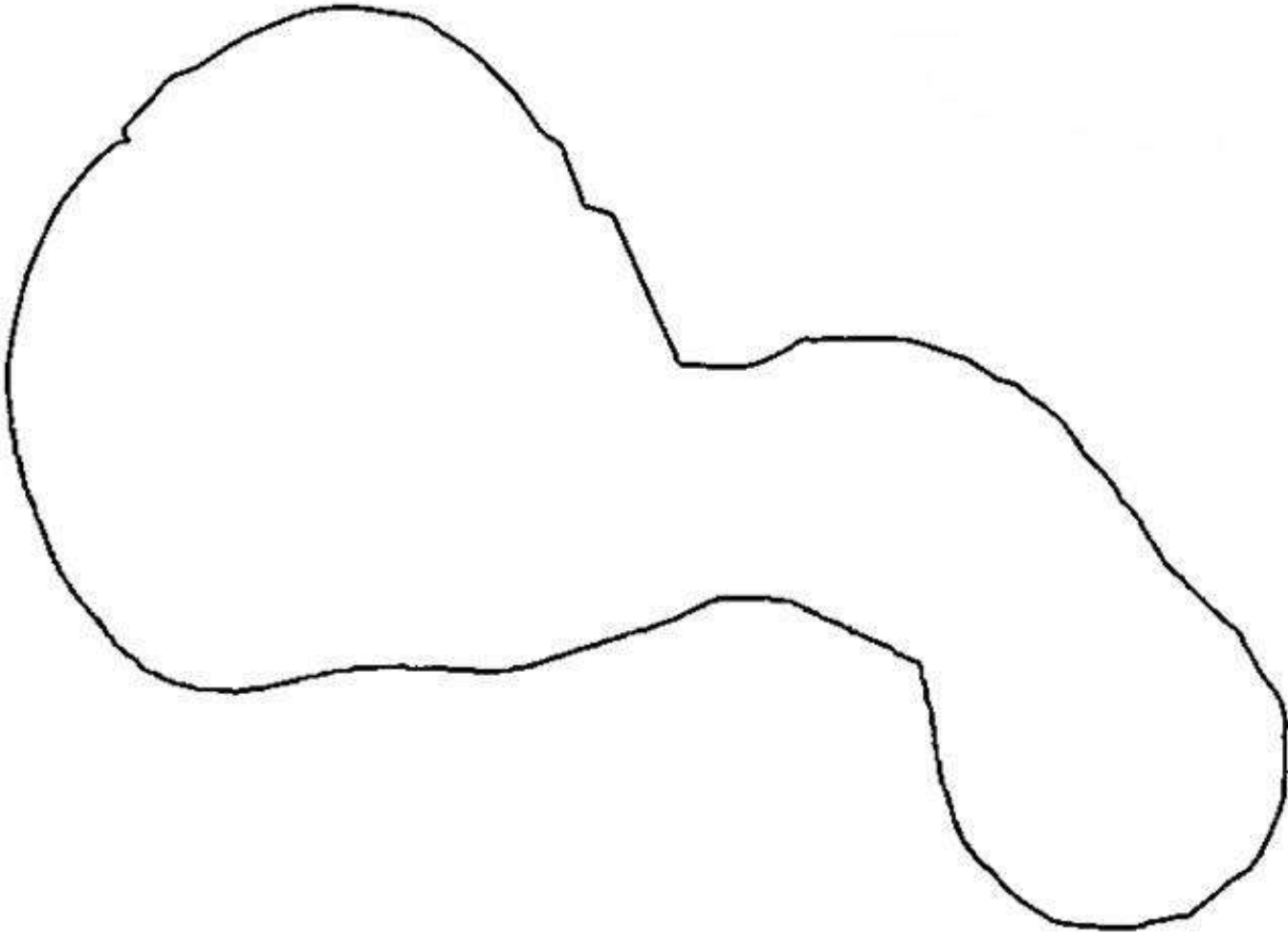
# LAKE WARREN



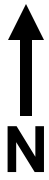
**Sampling Location**

**N 28° 27' 48.6"**

**W 81° 20' 12.8"**



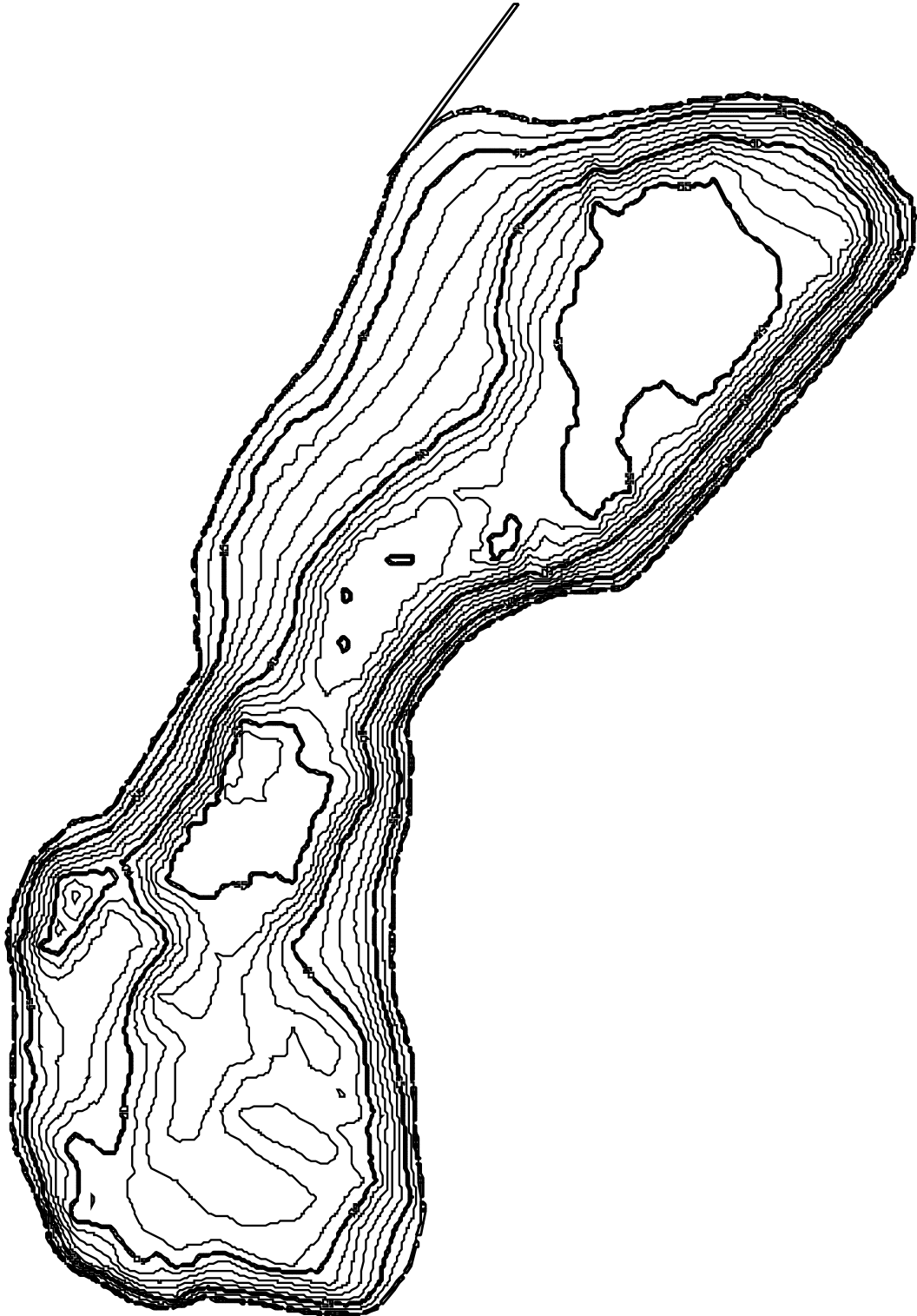
# LAKE WELDONA



Sampling Location

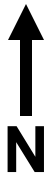
N 28° 31' 48.4"

W 81° 21' 36.7"





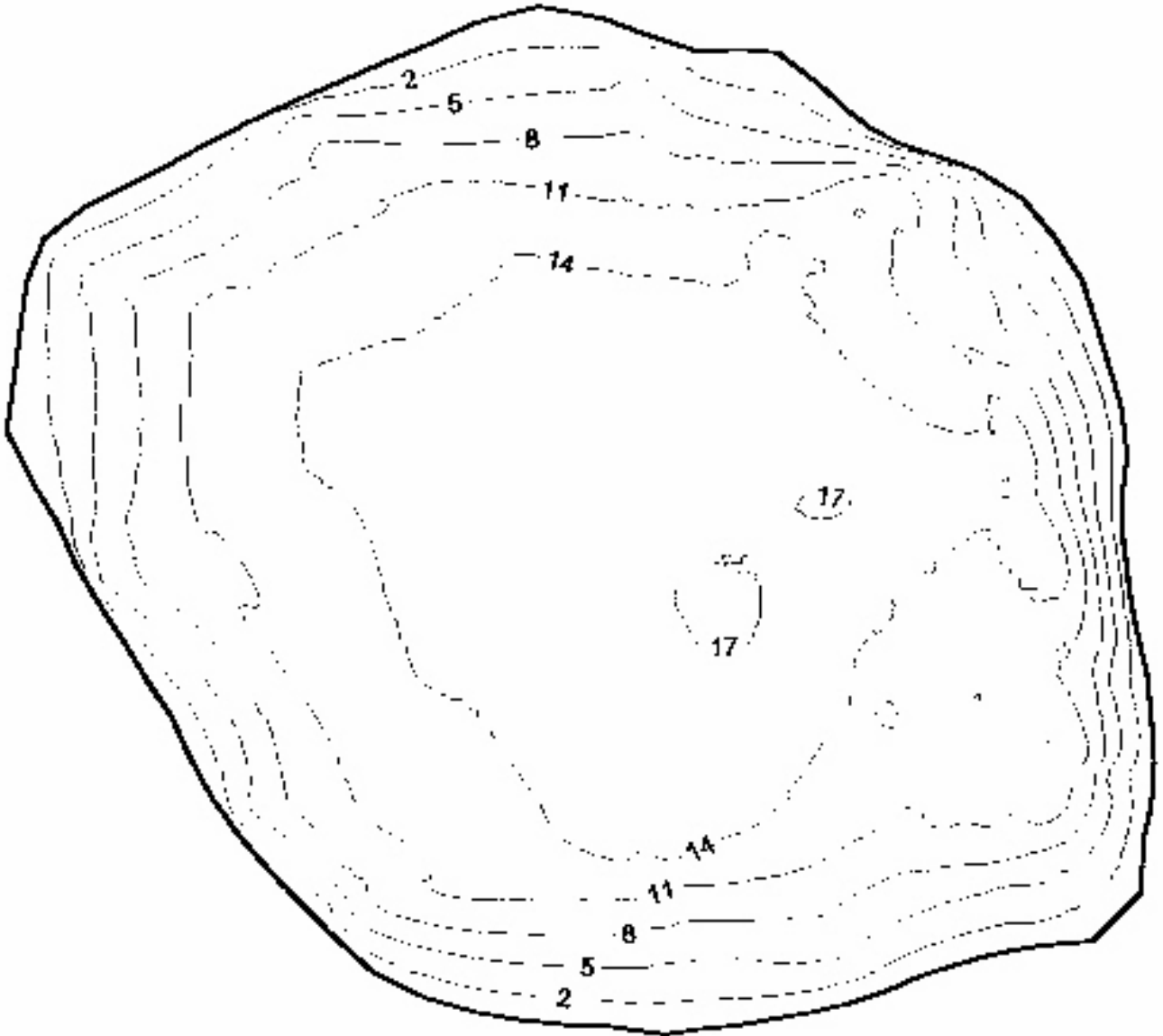
# LAKE WINYAH



Sampling Location

N 28° 34' 41.9"

W 81° 22' 06.6"



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## **REFERENCE GUIDE AND ENVIRONMENTAL RESOURCES DIRECTORY** **FOR THE ORLANDO AREA**

To report a fuel or chemical spill, call 911.

### **If in the City of Orlando:**

To report an Illicit /Pollution Discharge to the stormwater system or a lake, call Streets and Stormwater Division – Stormwater Compliance at 407.246.2370.

For solid waste, recycling, or yard trash, call Solid Waste Division at 407.246.2314.

To report a sewage overflow, call Wastewater Division at 407.246.2213.

To request help or information concerning nuisance aquatic plants or shoreline maintenance, call Streets and Stormwater Division – Surface Water Maintenance at 407.246.2370.

To request stormwater system maintenance, or report flooding, call Streets and Stormwater – Stormwater Management at 407.246.2238.

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To obtain rules and requirements for aquatic plant removal, call Florida Fish and Wildlife Conservation Commission at 407.858.6170. For seawall rules and requirements, call FDEP at 407.897.4100

Florida Department of Environmental Protection (Central District)

3319 Maguire Blvd., Orlando, FL 32803-3767

Phone 407.897.4100

Web address: [floridadep.gov](http://floridadep.gov)

Florida Fish & Wildlife Conservation Commission (Central Region)

1239 SW 10<sup>th</sup> Street, Ocala, FL 34471

Phone 352.732.1225 Fax 352.732.1391

Web address: [myfwc.com](http://myfwc.com)

St. John's River Water Management District (Orlando Service Center)

975 Keller Road, Altamonte Springs, FL 32714

Phone 407.659.4800 Fax 407.659.4805

Web address: [sjrwmd.com](http://sjrwmd.com)

South Florida Water Management District (Orlando Service Center)

1707 Orlando Center Parkway, Suite 200, Orlando, FL 32809

Phone 407.858.6100 Fax 407.858.6121

Web address: [sfwmd.gov](http://sfwmd.gov)

Orange County Environmental Protection Division

3165 McCrory Place, Suite 200, Orlando FL 32803

Phone 407.836.1400 Fax 407.836.1499

Web address: [orangecountyfl.net](http://orangecountyfl.net)

Florida LAKEWATCH Program

Web address: [lakewatch.ifas.ufl.edu](http://lakewatch.ifas.ufl.edu)

North American Lake Management Society

Web address: [nalms.org](http://nalms.org)

Florida Lake Management Society

Web address: [flms.net](http://flms.net)

City of Orlando

Web address: [orlando.gov](http://orlando.gov)





CITY OF  
**ORLANDO**  
STREETS AND STORMWATER