

# 2025 Lakes Monitoring Annual Report

## Lake Kanturk

*Lake Kanturk is within the northside subdivision of Killearn Estates, located just north of Interstate-10 near Thomasville Road within the City of Tallahassee corporate limits. Lake Kanturk resides downstream of Lakes Kinsale and Killarney.*

- Lake Kanturk Physiographic Province: Red Hills
- Publicly Accessible: No (Private)
- Surface Area: 77 acres
- Drainage Basin: 7,720 acres
- Maximum Depth: 7 feet.
- Average Depth: 4 feet
- Trophic Classification: [Eutrophic](#)
- [Fish Consumption Advisories](#): None
- Lake Type: Clear-Acidic
- Water Quality Conditions: Marginal
- Water Quality Impairments: 4e Restoration Plan (Chlorophyll, Total Nitrogen, & Total Phosphorus)
- Biological Health: Poor



## Evaluation of Lake Health

Healthy lake systems often exhibit well-balanced populations of flora and fauna. While some level of disturbance can be tolerated, excessive human activities may result in lake degradation. Human stressors such as increased inputs of nutrients, sediments and pesticides from watershed runoff, undesirable removal of native shoreline and upland buffer vegetation, and introduction of nuisance (generally exotic) plants and animals all contribute to degradation of our water resources. The Florida Department of Environmental Protection (FLDEP) has methods to evaluate if these anthropogenic activities have resulted in conditions where a particular waterbody has exceeded water quality criteria, (Chapter 62-302, Florida Administrative Code), including whether adverse impacts to biological communities have occurred. The most common criteria used by FLDEP to determine lake health is called "Numeric Nutrient Criteria" (NNC). FLDEP water quality standards are designed to protect the designated uses of waters of the state (*e.g.*, recreation, aquatic life support). This criterion will show exceedances of these standards that may impede the designated use of a particular waterbody. The Numeric Nutrient Criterion primarily evaluates Chlorophyll-*a*, Total Nitrogen and Total Phosphorus. Chlorophyll-*a* is a measure of algal biomass in a water column and is generally found in higher concentrations as a response to increased levels of nitrogen and/or phosphorus. In clear, low alkalinity lakes (a lake where color is  $\leq 40$  PCU and the alkalinity is  $\leq 20$  mg/L  $\text{CaCO}_3$ ), a healthy system is expected to have  $< 6$   $\mu\text{g/L}$  of chlorophyll-*a*. In colored ( $> 40$  PCU) lakes or clear, high alkalinity ( $> 20$  mg/L  $\text{CaCO}_3$ ) lakes,

healthy systems are expected to have  $< 20$   $\mu\text{g/L}$  of chlorophyll-*a*. Chlorophyll-*a* values greater than those referenced may result in unwanted shading of aquatic plants and/or greater potential for harmful algal blooms. **Table 1** below represents the FLDEP Numeric Nutrient Criteria for Florida lakes.

**Table 1. Florida Numeric Nutrient Criteria**

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 $\mu\text{g/L}$	0.05 mg/L	1.27 mg/L	0.16 mg/L <sup>1</sup>	2.23 mg/L
$\leq 40$ Platinum Cobalt Units and $> 20$ mg/L $\text{CaCO}_3$	20 $\mu\text{g/L}$	0.03 mg/L	1.05 mg/L	0.09 mg/L	1.91 mg/L
$\leq 40$ Platinum Cobalt Units and $\leq 20$ mg/L $\text{CaCO}_3$	6 $\mu\text{g/L}$	0.01 mg/L	0.51 mg/L	0.03 mg/L	0.93 mg/L

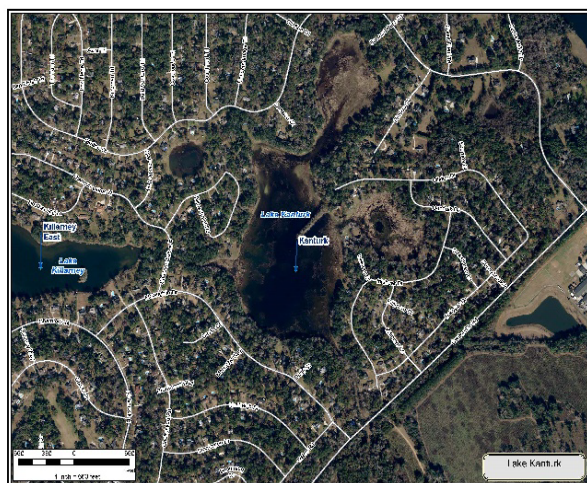
From a biological perspective on lake health, the Lake Vegetation Index (LVI) is utilized as the primary bioassessment tool. This rapid field method was developed by FLDEP to assess the subject lake's plant community.

For the LVI, the lake is divided into twelve sections, with four of these sections chosen at random to be evaluated. The evaluation occurs during the summer months when vegetation is actively growing. Criteria documented are "percent native species", "percent invasive exotic species", "percent sensitive species", and the "coefficient of conservatism" (C of C; a measure of how tolerant a species is to disturbance) of the dominant species. According to DEP SOP LT 7000, the LVI score ranges and categories are: (78-100) Exceptional; (43-77) Healthy; and (0-42) Impaired. DEP's revised impairment threshold score of 43 and higher fully meet the expectation of a healthy, well-balanced community, and scores below 42 are considered impaired. The LVI assessment was

performed per DEP SOP FS7310 and calculated per DEP SOP LT7000.

Lake Kanturk does not maintain a consistent permanent pool of water, which is inconducive to water quality and biological monitoring activities. However, water quality data is available for Lake Kanturk dating back to 1998 and biological monitoring has occurred since 2001. During 2023, no water quality samples were collected due to low water levels and an exposed lakebed. Surprisingly, 2024 brought increased water levels appropriate to collect all 4 quarters of sampling. The following tables and charts provide water quality (annual geometric means) and biological results covering the time-period of 2011-2024. **Figures 1 & 2** display the water quality and biological monitoring locations within Lake Kanturk.

**Figure 1. Water Quality Monitoring Locations**

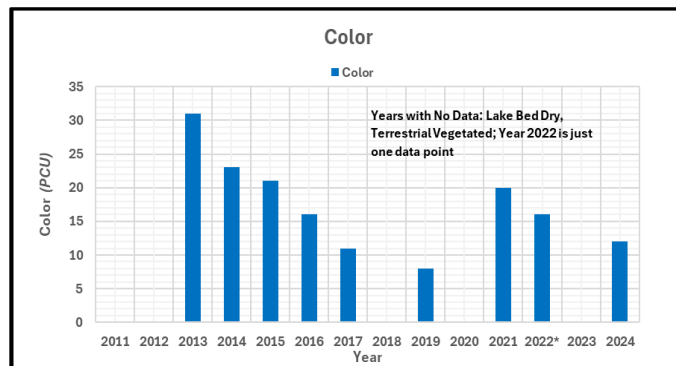


**Table 2. Water Quality Annual Geomeans**

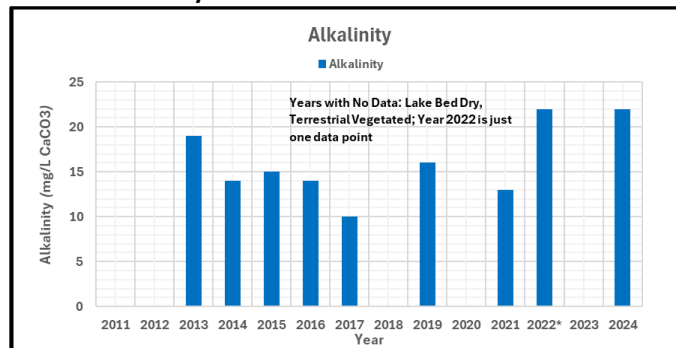
Yearly Geomeans of FLDEP Nutrient Criterion Parameters Lake Kanturk					
Year	Chlorophyll *	Color	Alkalinity	TN *	TP*
2011	Low water levels to dry exposed bottom prevented sampling				
2012					
2013	22	31	19	0.31	0.138
2014	12	23	14	0.46	0.032
2015	4	21	15	0.46	0.020
2016	17	16	14	0.98	0.020
2017	6	11	10	0.33	0.040
2018	Low water level, no collection of samples for the year. Lake with overgrown upland vegetation				
2019	2	8	16	0.33	0.030
2020	Low water level, no collection of samples for the year. Lake with overgrown upland vegetation				
2021	3	20	13	0.72	0.043
2022*	31	16	22	1.33	0.069
2023	Low water level, no collection of samples for the year. Lake with overgrown upland vegetation				
2024	10	12	22	0.54	0.035

The "\*" indicates only 1 sampling event for Year 2022

**Chart 1. Color**

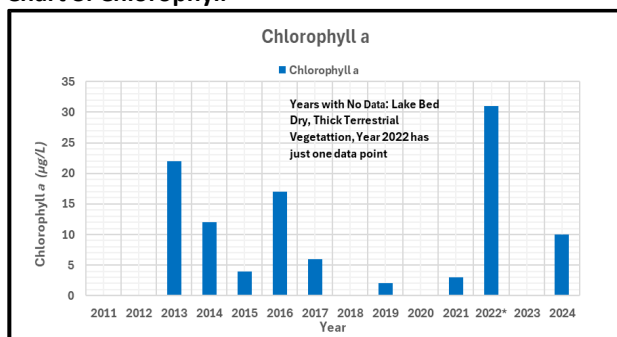


**Chart 2. Alkalinity**

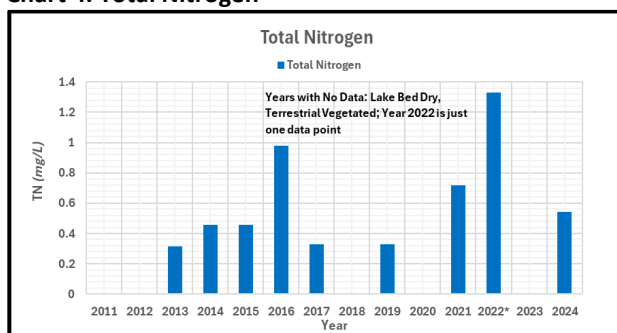




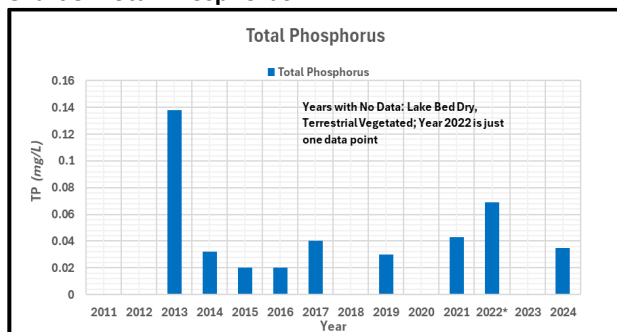
**Chart 3. Chlorophyll**



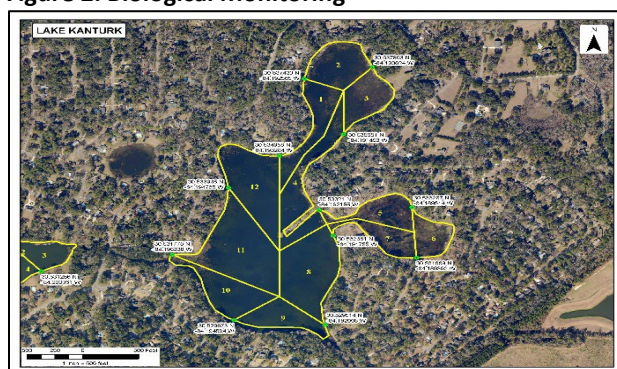
**Chart 4. Total Nitrogen**



**Chart 5. Total Phosphorus**



**Figure 2. Biological Monitoring**



## Data Discussion

The data within the above charts and tables is used to determine overall lake health and to assess whether any existing data trends are evident. The City's Lakes Monitoring Program utilizes the Mann-Kendall Statistical Trend Analysis to determine if any statistically significant trends are present. Based on the data thru year 2024, no statistical trends exist for any of the water quality (Chlorophyll-*a*, TN, TP) or biological parameters (LVI) of primary concern.

The 2024 nutrient data, primarily chlorophyll, total nitrogen and total phosphorus has improved a bit from the last available data in 2022. However, the water quality nutrient conditions are best characterized as marginal, while the vegetative biological community is somewhat poor. This characterization concurs with the FLDEP assessment of water quality, which shows impairments for chlorophyll-*a*, total nitrogen and total phosphorus, when assessed as a "clear-acidic" lake. Lake Kanturk is a very shallow "Clastic Upland" lake as described in the Florida Natural Area Inventory (FNAI). As such, Lake Kanturk is more susceptible to desiccation during long periods of drought or below average rainfall. When the lake bottom is dry, terrestrial grasses and plants overtake a large portion of the lake bottom. As ample rainfall occurs to refill the lake system, established terrestrial plants die and decompose. This vegetative decomposition releases stored nutrients, which can lead to the production of severe algal blooms resulting in high chlorophyll-*a* concentrations. Additionally, the Red Hill clay soils found within the Killearn Chain of Lakes drainage basin naturally contributes to elevated phosphorus levels. When Lake Kanturk is full of water, the lake

often maintains nutrient levels that are near “clear, acidic” lake criterion. As **Table 2** illustrates, Kanturk is often dry, or water levels are insufficient to complete water quality and biological monitoring.

Suburban housing developments surround Lake Kanturk and the contributing drainage basin. Previous research shows that local area best management practices (BMP’s) are the most effective method of controlling nutrient inputs to the lake and supply necessary drainage volume to hydrate the lake. However, even under normal rainfall patterns, the lake is unable to maintain its permanent pool volume. The cyclical pattern of the lake going dry, establishing terrestrial plants and the subsequent reflooding of the lake bottom, is the primary catalyst for nutrient exceedances for this lake.

When monitoring activities are to be completed, it’s noted that Lake Kanturk populates a rich and diverse fish population along with many different bird species. Bald Eagles, Osprey, Green and Blue Heron, Wood Storks, Kingfishers, and many other notable popular bird species are often seen wading and flying over the lake.

**Photo 1. Typical appearance for Lake Kanturk during year 2024. Heavy mixture of upland and aquatic vegetation.**



**Chart 6. A Typical Biological LVI Species List**

Typical Aquatic Vegetation within Lake Kanturk	
Scientific Name	Common Name
<i>Acer rubrum</i>	RED MAPLE
<i>Alternanthera philoxeroides</i>	ALLIGATOR WEED
<i>Azolla caroliniana</i>	CAROLINA MOSQUITO FERN
<i>Bidens pilosa</i>	SPANISH NEEDLES
<i>Cephalanthus occidentalis</i>	COMMON BUTTONBUSH
<i>Ceratophyllum demersum</i>	COONTAIL
<i>Colocasia esculenta</i>	TARO; WILD TARO; ELEPHANT EAR
<i>Cyperus sp.</i>	SEDGES (MANY DIFFERENT SPECIES)
<i>Eichhornia crassipes</i>	WATER HYACINTH
<i>Eleocharis baldwinii</i>	BALDWIN'S SPIKERUSH; ROADGRASS
<i>Eupatorium capillifolium</i>	DOGFENNEL
<i>Hydrilla verticillata</i>	HYDRILLA
<i>Juncus marginatus</i>	SHORE RUSH; GRASSLEAF RUSH
<i>Liquidambar styraciflua</i>	SWEETGUM
<i>Ludwigia leptocarpa</i>	ANGLESTEM PRIMROSEWILLOW
<i>Myrica cerifera</i>	SOUTHERN BAYBERRY; WAX MYRTLE
<i>Najas guadalupensis</i>	SOUTHERN WATERNYMPH
<i>Nelumbo lutea</i>	AMERICAN LOTUS
<i>Nuphar sp.</i>	SPATTERDOCK
<i>Nymphaea odorata</i>	AMERICAN WHITE WATERLILY
<i>Panicum hemitomon</i>	MAIDEN CANE
<i>Panicum repens</i>	TORPEDO GRASS
<i>Polygonum densiflorum</i>	DENSEFLOWER KNOTWEED
<i>Polygonum hydropiperoides</i>	MILD WATERPEPPER; SWAMP SMARTWEED
<i>Pontederia cordata</i>	PICKERELWEED
<i>Sagittaria latifolia</i>	BROADLEAF ARROWHEAD; COMMON ARROWHEAD; DUCK POTATO
<i>Sagittaria striata</i>	AMERICAN CUPSCALE
<i>Salix caroliniana</i>	CAROLINA WILLOW; COASTALPLAIN WILLOW
<i>Sambucus nigra canadensis</i>	AMERICAN ELDER; ELDERBERRY
<i>Sapium sebiferum</i>	CHINESE TALLOW
<i>Scirpus cubensis</i>	CUBAN BULRUSH

Lake Kanturk’s vegetative community is rich with native and exotic nuisance plant species. Due to low water levels for the past several years, an LVI plant survey has not been completed. **Chart 6** illustrates typical plant species that are found within Lake Kanturk. Unfortunately, *Hydrilla verticillata* has infested Lake Kanturk via the connection with Lake Killarney. This invasive plant effectively prohibits the establishment of native submerged vegetation. However, *Hydrilla* does support a healthy and vibrant Large-Mouth Bass population. Providing coverage for algal growth, aquatic invertebrates forage along the *Hydrilla* vegetation. This initiates the food web interaction that ultimately produces the popular bass fishing. The plants listed in “Red” (in **Chart 6**) indicate exotic nuisance vegetation that ideally should be targeted for removal.



Photos 2 & 3. Below photos (October 2022) show extremely low water levels and terrestrial grasses thriving on Kanturk's lakebed.



Photo 4. Below photo taken May 2023. Same location as above, but grass overtaking lake bottom.



Photos 5 & 6 Photos below show Lake Kanturk full of water, notice the thick *Hydrilla* just below the water's surface.



Thank you for your interest in maintaining the water quality of City of Tallahassee area lakes. Visit the web-links below for more information on the City of Tallahassee, Leon County and Florida natural water resources.

City of Tallahassee Think About Personal Pollution (TAPP) Program  
<https://tappwater.org/>

City of Tallahassee Stormwater Management  
<https://www.talgov.com/you/stormwater>

Leon County Water Resources  
<https://cms.leoncountyfl.gov/waterresource>

Best Management Practices for Protection for Water Resources

[https://ffl.ifas.ufl.edu/media/fflifasufledu/docs/GIB\\_MP\\_Manual\\_Web\\_English.pdf](https://ffl.ifas.ufl.edu/media/fflifasufledu/docs/GIB_MP_Manual_Web_English.pdf)

DEP biological assessment resources:

<https://floridadep.gov/dear/bioassessment/content/bioassessment-training-evaluation-and-quality-assurance#LVI>

FWCC Aquatic Plant Management:

<http://myfwc.com/wildlifehabitats/habitat/invasive-plants/aquatic-plant/>

Freshwater Algal Bloom information:

<https://floridadep.gov/AlgalBloom>

University of Florida / IFAS Lake Resources:

[Florida LAKEWATCH](#)