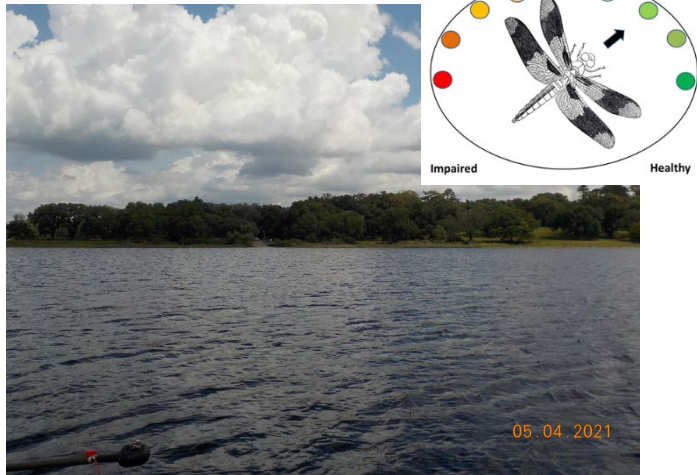


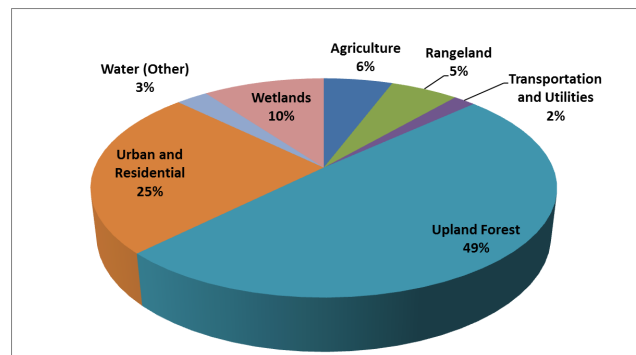
## Waterbody: Lake Carr



## Basin: Lake Jackson

Lake Carr is an approximately 880 acre, primarily phosphorus-limited, shallow lake located north of Lake Jackson and is essentially surrounded by two property owners: Ayavalla Land Company and Orchard Pond LLC. Lake Carr is a valuable biological, aesthetic and recreational resource of Leon County and was designated as an Aquatic Preserve in 1973 for the primary purpose of preserving and maintaining the biological resources in their natural condition.

As shown in the following pie chart, 38% of land uses in the 5,931-acre Lake Carr watershed are agriculture, rangeland, transportation, utilities, urban and residential. The lake receives direct runoff from the surrounding agricultural property as well as flow from the residential areas east of Meridian Road (Summerbrooke and Ox Bottom Manor). Waterbodies in the residential areas are modified farm ponds serving as stormwater facilities dedicated to the respective homeowner's associations for maintenance. The Summerbrooke Golf Club (157 acres) also lies in this watershed. Increases in stormwater runoff and waterbody nutrient loads can often be attributed to these types of land uses.



### Background

Healthy, well-balanced lake communities may be maintained with some level of human activity, but excessive human disturbance may result in waterbody degradation. Human stressors may include increased inputs of nutrients, sediments, and/or other contaminants from watershed runoff, adverse hydrologic alterations, undesirable removal of habitat or riparian buffer vegetation, and introduction of exotic plants and animals. State water quality standards are designed to protect designated uses of the waters of the state (e.g., recreation, aquatic life, fish consumption), and exceedances of these standards are associated with interference of the designated use.

### Methods

Surface water and sediment samples were collected to determine the health of Lake Carr and met the requirements of the Florida Department of Environmental Protection (FDEP).

### Results

#### *Nutrients*

The nutrient thresholds and results are found in Table 1. According to FDEP requirements, Numeric Nutrient Criteria (expressed as an annual geometric mean) cannot be exceeded more than once in a three-year period. FDEP requires four temporally independent samples per year to be collected to fulfill data requirements for the Numeric Nutrient Criteria (NNC) thresholds. When the specified number of

samples were collected, state criteria were not exceeded.

Due to extremely low water levels and a plethora of aquatic vegetation, staff was unable to launch a boat to collect water quality samples in 2012 and the first quarter of 2013. Low water levels prevented water quality sampling during the third quarter of 2021. Based on three samples collected in 2021, chlorophyll-a (1.19 µg/L), total nitrogen (0.27 mg/L) and total phosphorus (0.01 mg/L) levels were below the state criteria.

**Table 1.** FDEP's chlorophyll-a, total nitrogen and phosphorus criteria for lakes applied to Lake Carr.

Clear Lake, Low Alkalinity	Chlorophyll-a 6.0 µg/L	Total Nitrogen Threshold 0.51-0.93 mg/L	Total Phosphorus Threshold 0.01-0.03 mg/L
2004	1.3	0.29	0.01
2005	1.4	0.27	0.01
2006	1.1	0.39	0.01
2007	2.2	0.61	0.02
2008	4.6	0.64	0.02
2009	4.8	0.50	0.02
2010	5.5	0.49	0.02
2011	5.2	0.44	0.01
2012-2013	-	-	-
2014	1.4	0.35	0.01
2015	4.0	0.30	0.02
2016	2.4	0.28	0.01
2017	2.4	0.36	0.01
2018	2.5	0.31	0.01
2019	4.0	0.26	0.01
2020	2.0	0.71*	0.01
2021	-	-	-

\* May 5, 2020 sample contaminated.

### Dissolved Oxygen

As Figure 1 shows, station CA1 percent dissolved oxygen (DO) saturation values did not meet Class III water quality criteria while station CA2 failed to meet the criteria four times during the sampling period. This was not unexpected, since the CA1 sta-

tion is a shallow station normally covered with vegetation, which prevents rapid water exchange with the larger area of the lake. Plant respiration (samples were often taken in the morning hours) also contributed to the low DO saturation values. While there is a substantial community of submerged vegetation at the CA2 station, emergent vegetation is relatively uncommon at this site, so conditions are more optimal for rapid water exchange with the remainder of the lake. Staff believes that this is a natural condition for both locations.

### Floral Assessment

The Lake Vegetation Index (LVI) score for Lake Carr was 68, placing the lake's vegetative community in the Healthy category.

Thirty-three plant species were found during the survey. The native species, coontail (*Ceratophyllum demersum*) and fragrant waterlily (*Nymphaea odorata*) were the most dominant plants in the lake.

Other native vegetation included red maple (*Acer rubrum*), buttonbush (*Cephalanthus occidentalis*) fanwort (*Cabomba caroliniana*), leafy bladderwort (*Utricularia foliosa*) and pickerelweed (*Pontederia cordata*). The exotic spadeleaf (*Centella asiatica*) was also found in the littoral zone of the lake.

[Click here for more information on the Lake Carr LVI.](#)

[Click here for more information on common exotic and invasive plants in Leon County wetlands and waterbodies.](#)

### Other Parameters

Other water quality parameters appear to be normal for the area and no impairments were noted.

### Conclusions

Based on ongoing sampling, Lake Carr met the nutrient thresholds for the East Panhandle Region. Staff

considers the DO results at Stations CA1 and CA2 a natural condition. The LVI score for Lake Carr was 68, placing the lake's vegetative community in the Healthy category.

Other water quality parameters appear to be normal for the area and no impairments were noted.

Thank you for your interest in maintaining the quality of Leon County's water resources. Please feel free to contact us if you have any questions.

**Contact and resources for more information**

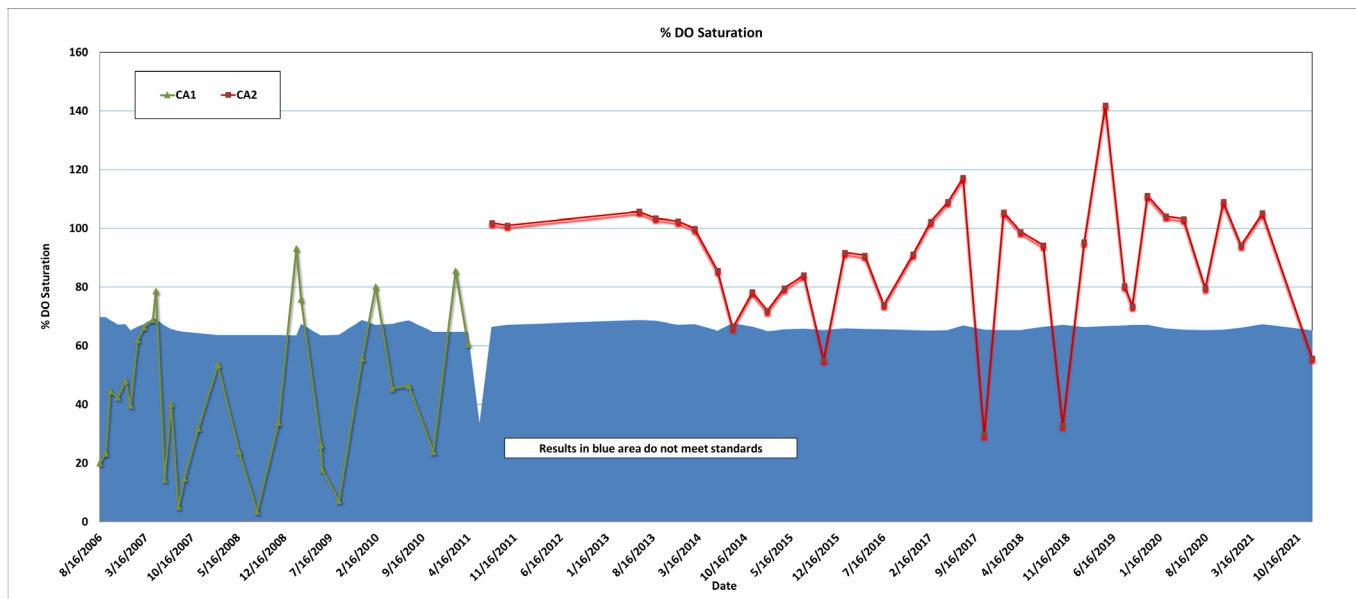
[www.LeonCountyWater.org](http://www.LeonCountyWater.org)

[Click here to access the results for all water quality stations sampled in 2021.](#)

[Click here for a map of the watershed – Sample Site CA2.](#)

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**Figure 1.** Dissolved Oxygen Percent Saturation results for Lake Carr.