

# Lake Tallavana Water Quality, Summary Report, 1st Quarter 2025

## Lake Tallavana is Impaired, according to Florida's Water Quality Criteria,

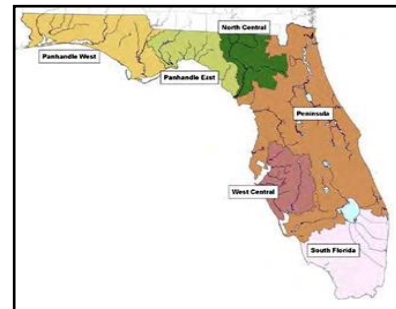
**Lake  
Tallavana  
1st Quarter  
2025**

The NNC was developed by FDEP, it is legislation that combats nutrient enrichment in our waterbodies and was adopted as a law in 2011. It has statewide numeric nutrient standards for Florida waterbodies. It replaced a difficult to enforce variable standard where a biological imbalance had to be demonstrated in the waterbody before nutrient enrichment could be addressed. The NNC is primarily concerned with nitrogen, phosphorus, and chlorophyll (algae biomass).

**Water  
Quality  
Report**

- 1) Long term water quality monitoring started in 2011. All of that data is depicted in graphs on pages 8 and 9, with trends included.
- 2) Lake Tallavana is impaired according to NNC criteria for excess nutrients, mainly Phosphorus and Nitrogen. Its impaired for elevated chlorophyll too.
- 3) Horizontal yellow lines indicate regulatory levels.
- 4) Red Dotted lines are trend lines
- 5) Excess nutrients are causing accelerated growth of aquatic plants and algae in Lake Tallavana.
- 6) Past talks with the nursery are very positive.

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	2.22 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

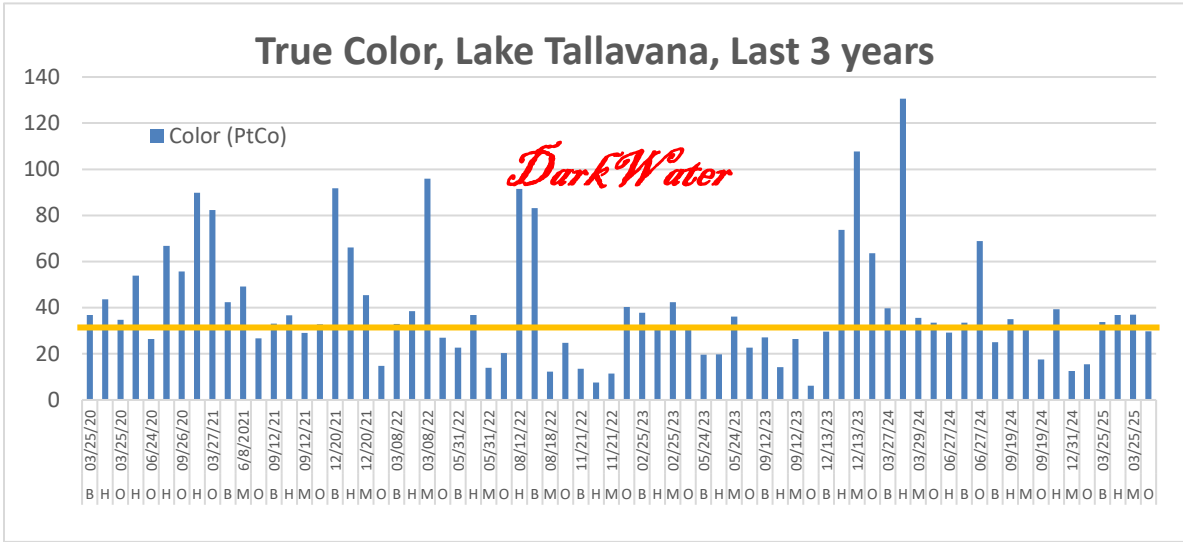


These are the nutrient criteria for Lake Tallavana (circled in red in the above chart) for the Panhandle East region of the NNC. Categories are determined by the alkalinity and color of the lake water. Lake Tallavana falls into the upper category for a high color and high alkalinity lake.

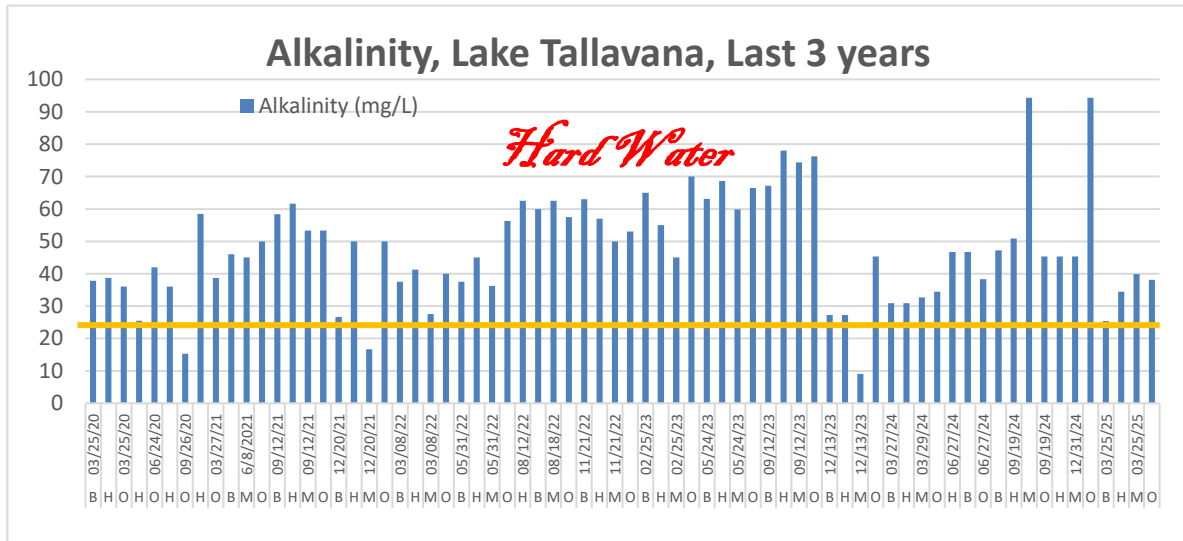
Key to Station Identification (please see map on pages 8 and 9):  
 Magnolia Hammock Creek = M  
 Hurricane Creek = H  
 Beaver Creek = B  
 Outfall = O  
 Upstream = U

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## Color and Alkalinity



Lakes with a True Color above 40.0 units are considered dark water. Lake Tallavana could be considered borderline between light/dark water lakes because the average color is 39.3 color units and is considered borderline clear/dark water. There a clearing trend for the last few years.

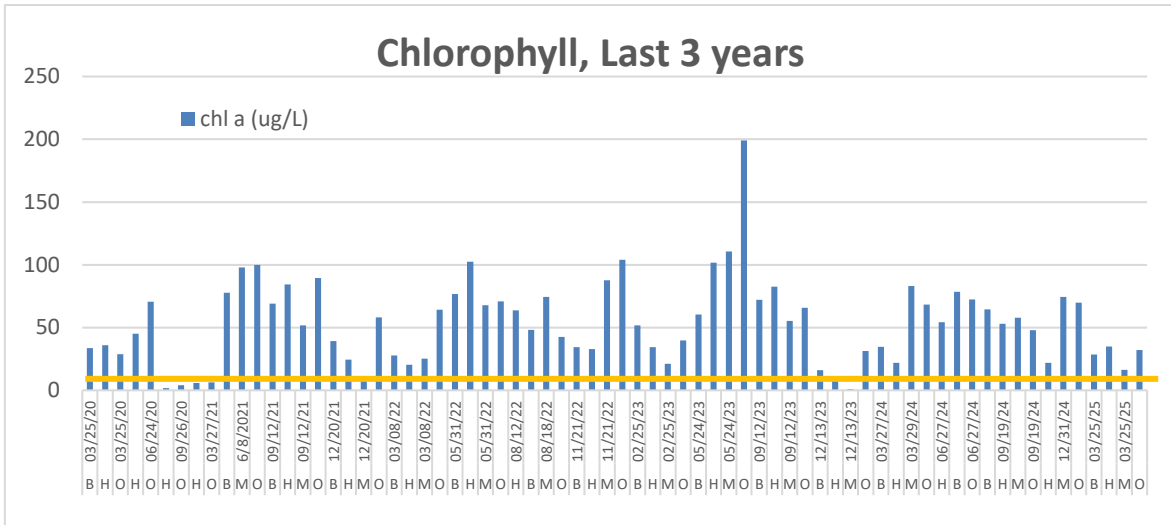


Lakes with an alkalinity well above 20 units are considered hard water. Tallavana has an average alkalinity of 48.6. This makes Lake Tallavana less productive and may put Lake Tallavana in a different NNC category. This is probably caused by increasing irrigation runoff from the nurseries as they irrigate with Floridan Aquifer water, that has a high conductance due to the carbonate matrix in the aquifer.

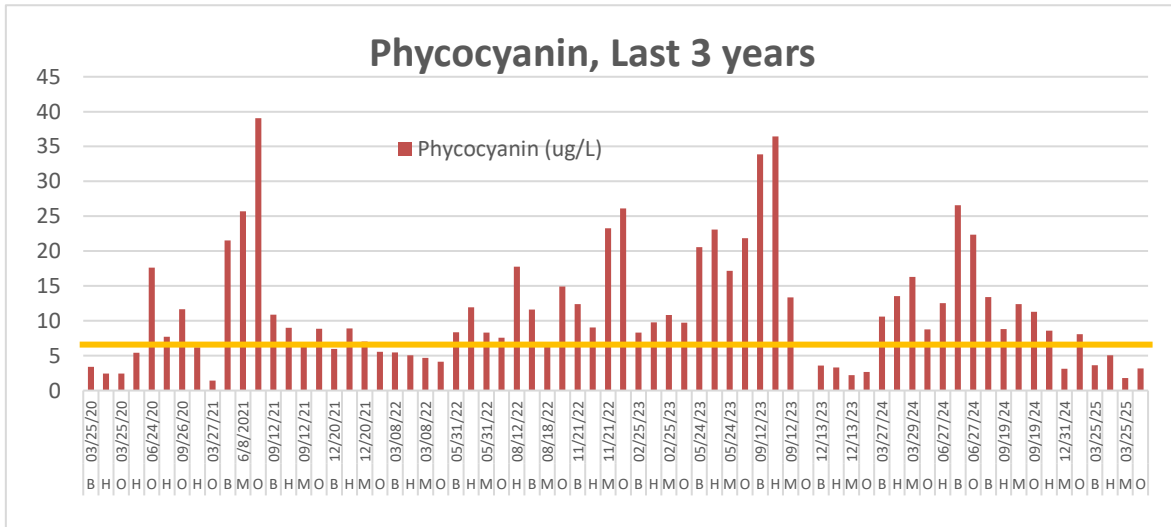


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## The Effect of too may Nutrients: Aquatic Algae



Chlorophyll is used to quantify green micro algae. Chlorophyll a is an indicator of green algae floating within the water column. It is their photosynthetic pigment. The average chlorophyll in Lake Tallavana has increased to 54.9 ug/L. Lakes with chlorophyll over 20 units are considered to be impaired according to the NNC. Green algae are not usually toxic, but can indicate poor water quality (green water). Lake Tallavana's green algae levels exceed the NNC limit, at 3 times the NNC level. Lake Tallavana exceed the chlorophyll criteria and should be considered impaired.

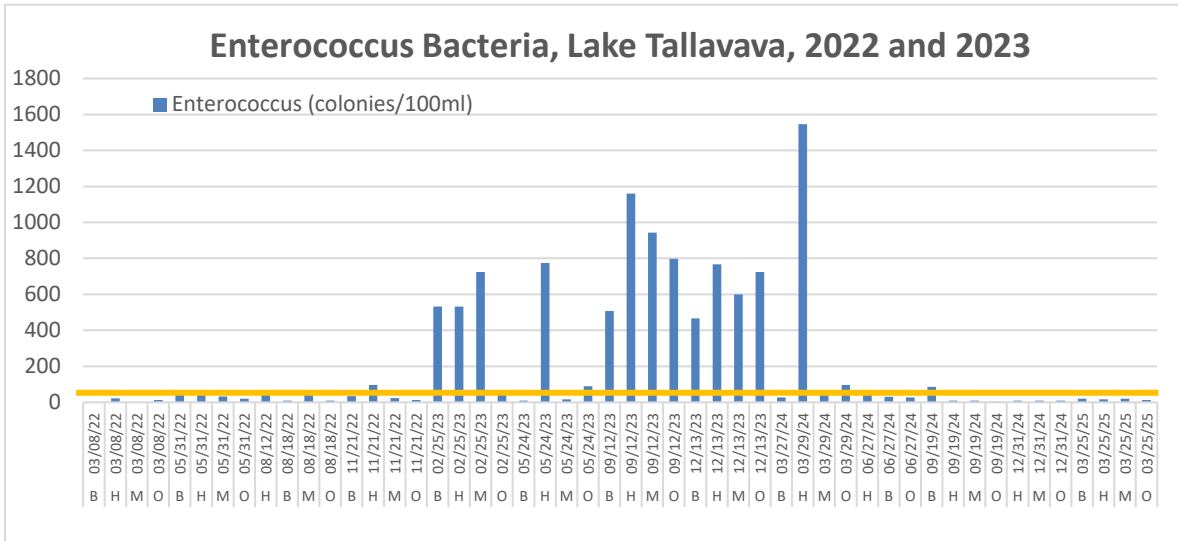


Phycocyanin is used to assess bluegreen micro algae. Phycocyanin is an indicator of bluegreen algae, or cyanobacteria, floating within the water column. It is their photosynthetic pigment. The average phycocyanin in Lake Tallavana is 16.1 ug/L, well above desirable levels. Bluegreen algae are often toxic. Blue green algae indicate very poor water quality (brownish green water). I added phycocyanin to our anaysis on the lake in 2019, and it seems to be increasing.

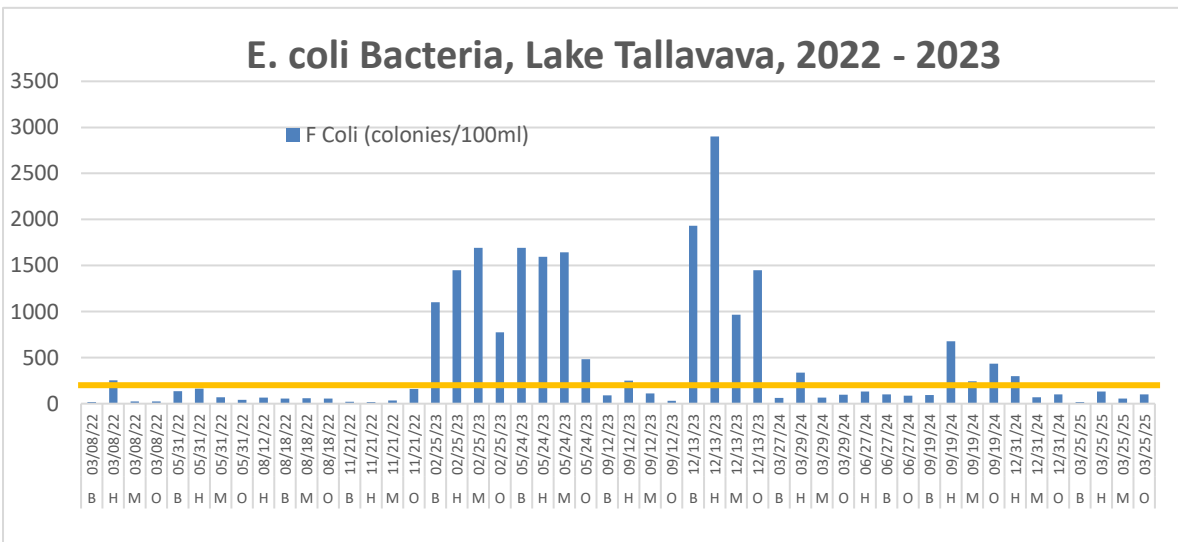


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## Bacteria: Enterococcus and Fecal Coliforms



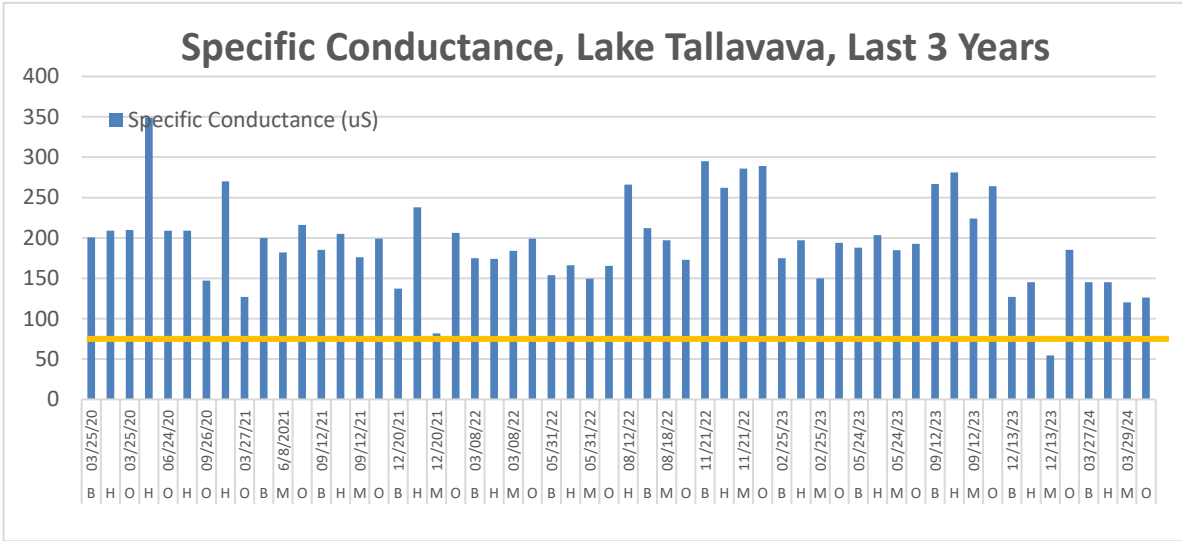
The average level of these harmful bacteria in Lake Tallavana is 234 counts per 100 ml of lake water, is considered poor water quality. Counts of Enterococcus bacteria shall not exceed a monthly geometric mean of 35 nor exceed the Ten Percent Threshold Value (TPTV) of 130 in 10% or more of the samples in a geometric mean.



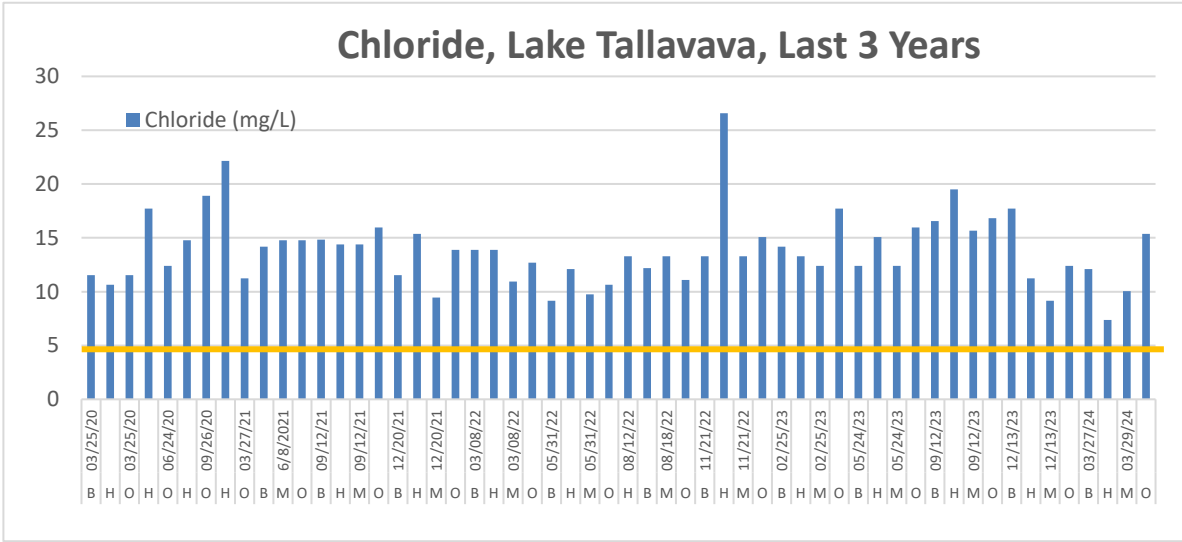
E coli bacteria, or Escherichia Coli, are regulated in recreational waters and should not exceed a monthly geometric mean of 126, nor exceed the Ten Percent Threshold Value (TPTV) of 410 in 10% or more of the samples during any 30-day period. The average level is 606 counts definitely exceeds this standard.

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## Specific conductance and Chloride



Lakes with conductance below 70 units are mostly rain water. Lake Tallavana exceeds this threshold with an average conductance level of 198 mg/L. another indicator of the lake filling with irrigation groundwater from the nurseries.

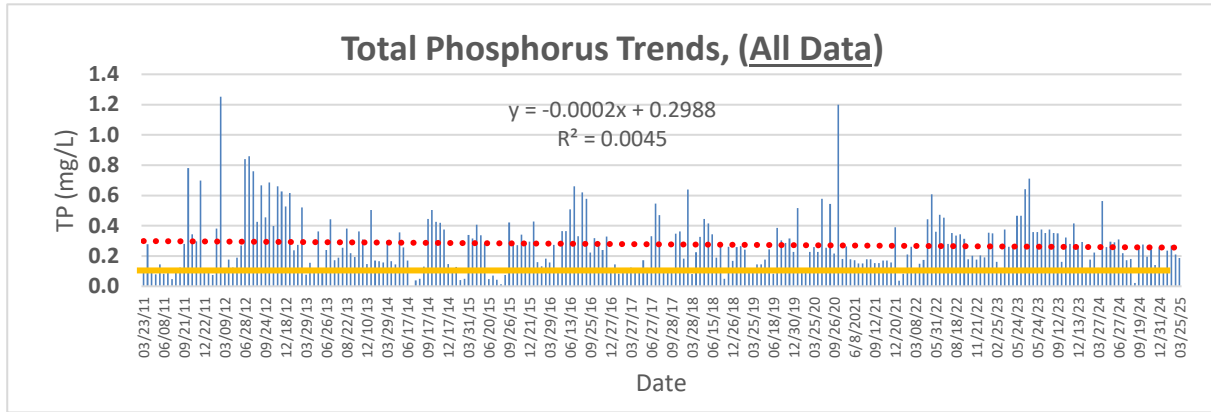


Lakes with chlorides of less than 7 units are in equilibrium with the earth's crust. Lake Tallavana exceeds this threshold with an average chloride level of 14.1 mg/L. This could indicate some sewage influences in Lake allavana since the primary source of elevated chlorides is often humal excrement. Chlorides can also be derived from Hurricane activity in coastal areas.

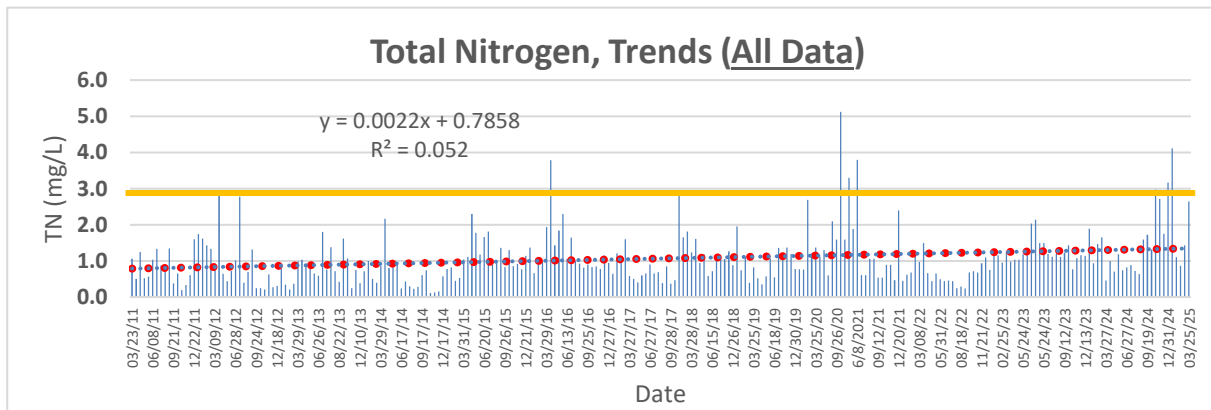
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## All Data, Trends

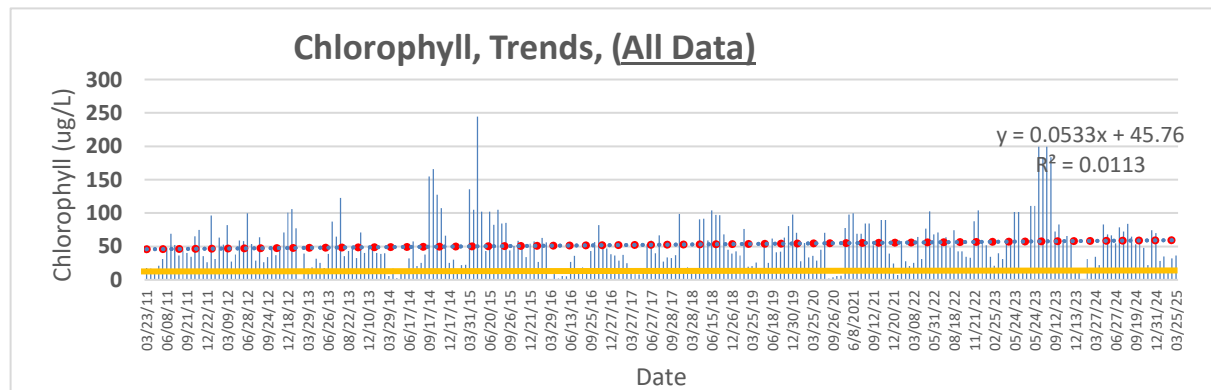
Phosphorus, Nitrogen and Chlorophyll is monitored at all lake stations. The water quality of Lake Tallavana has high nutrients and that causes the excessive vegetative growth (plants and algae).



The Phosphorus levels are decreasing in Lake Tallavana, slightly. Lake Tallavana is impaired for with high levels of phosphorus. The average total phosphorus in Lake Tallavana is 0.276mg/L.

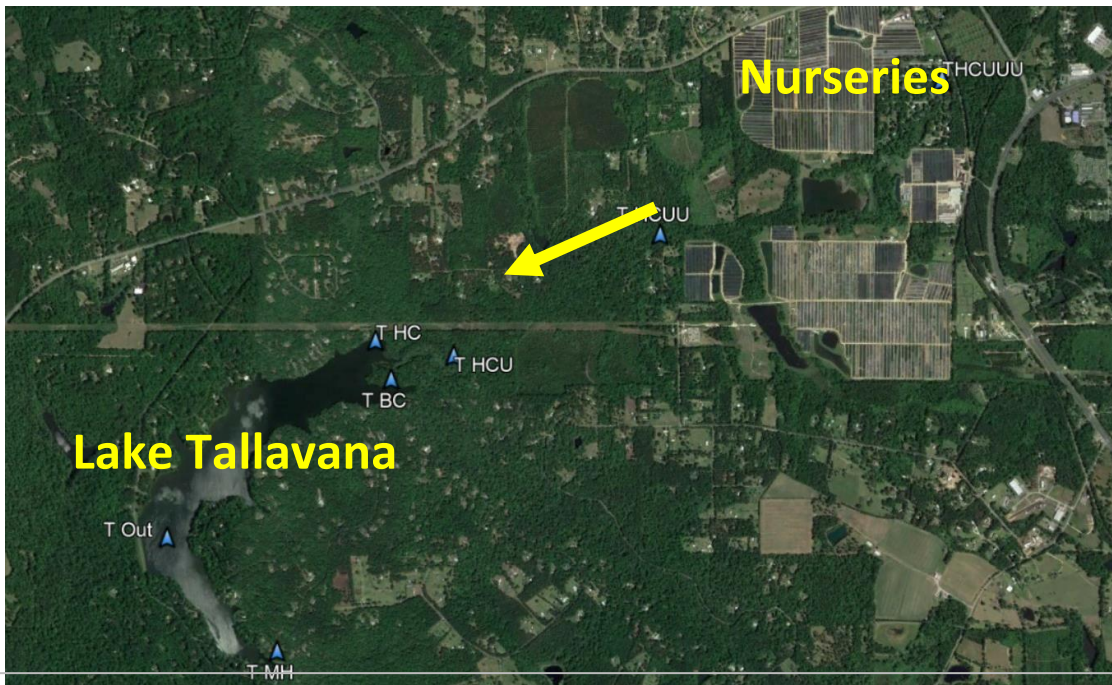


The nitrogen levels are increasing in Lake Tallavana. Lake Tallavana is not impaired for nitrogen.



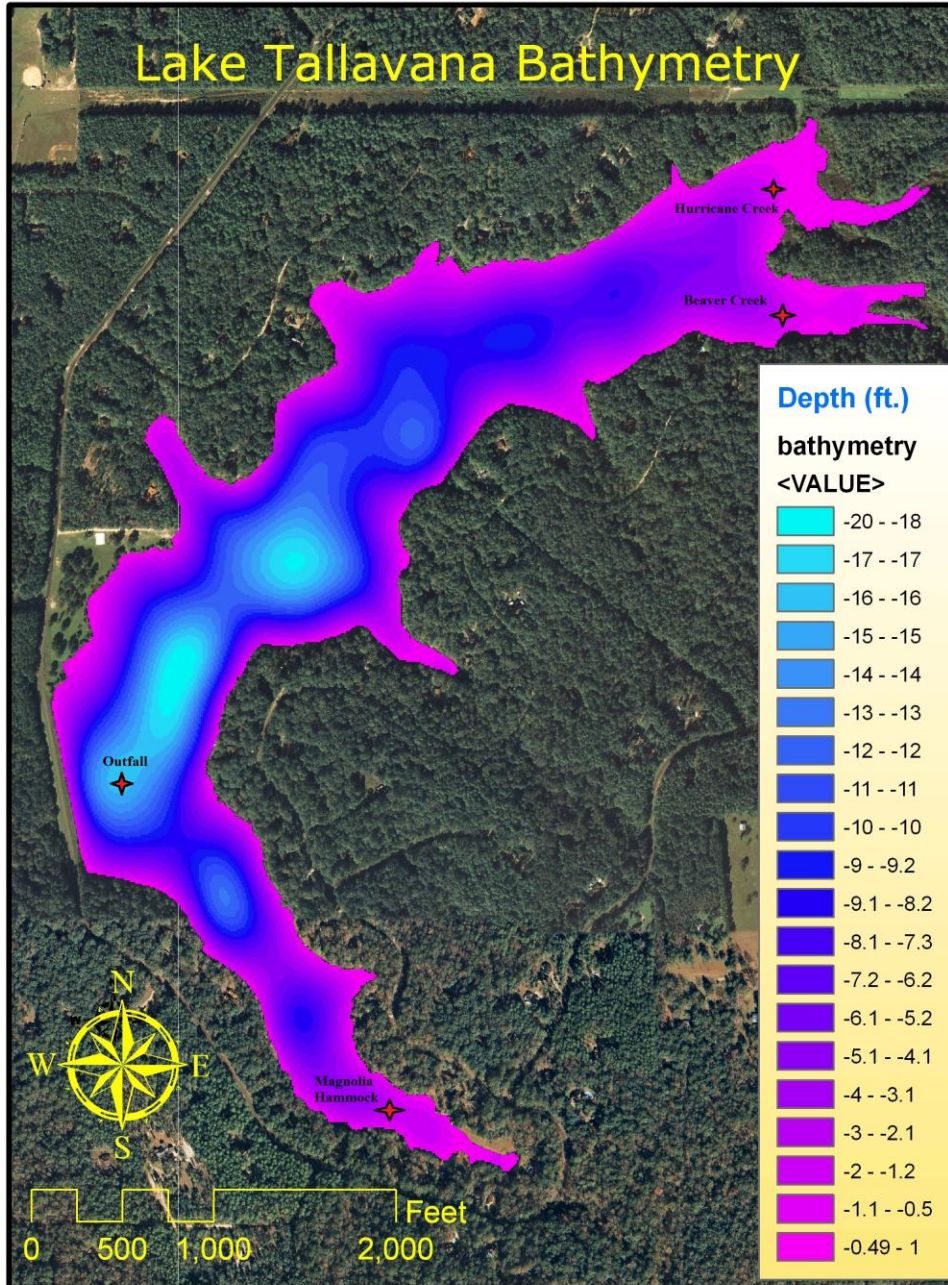
The algae levels, as measured by chlorophyll, are increasing in Lake Tallavana. Lake Tallavana is impaired with high levels of chlorophyll. The average chlorophyll is 45.9 ug/L.

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The water quality in Lake Tallavana is controlled by the source water that fills the lake. This is mostly agricultural reuse water from the large box nurseries upstream in its drainage basin. The water the nurseries use to irrigate is ground water pumped from the aquifer. Nutrients, pesticides, herbicides, fungicides and bacteria flow into Lake Tallavanan with this irrigation water.

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McGlynn Laboratories, Inc.

Key to Station *Identification* (surface water samples):

Magnolia Hammock Creek = M

Hurricane Creek = H

Beaver Creek = B

Outfall = O

McGlynn Laboratories, Inc. 568 Beverly Court, Tallahassee, FL 32301

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High Nutrients cause the Excess and Rapid Growth of aquatic plants and algae. Invasive exotics grow the fastest. Here are some examples from Lake Tallavana.



Salvinia Bloom, Lake Tallavana, photo SEM, fall 2021



Salvinia Bloom, Lake Tallavana, fall 2021, photo by SEM  
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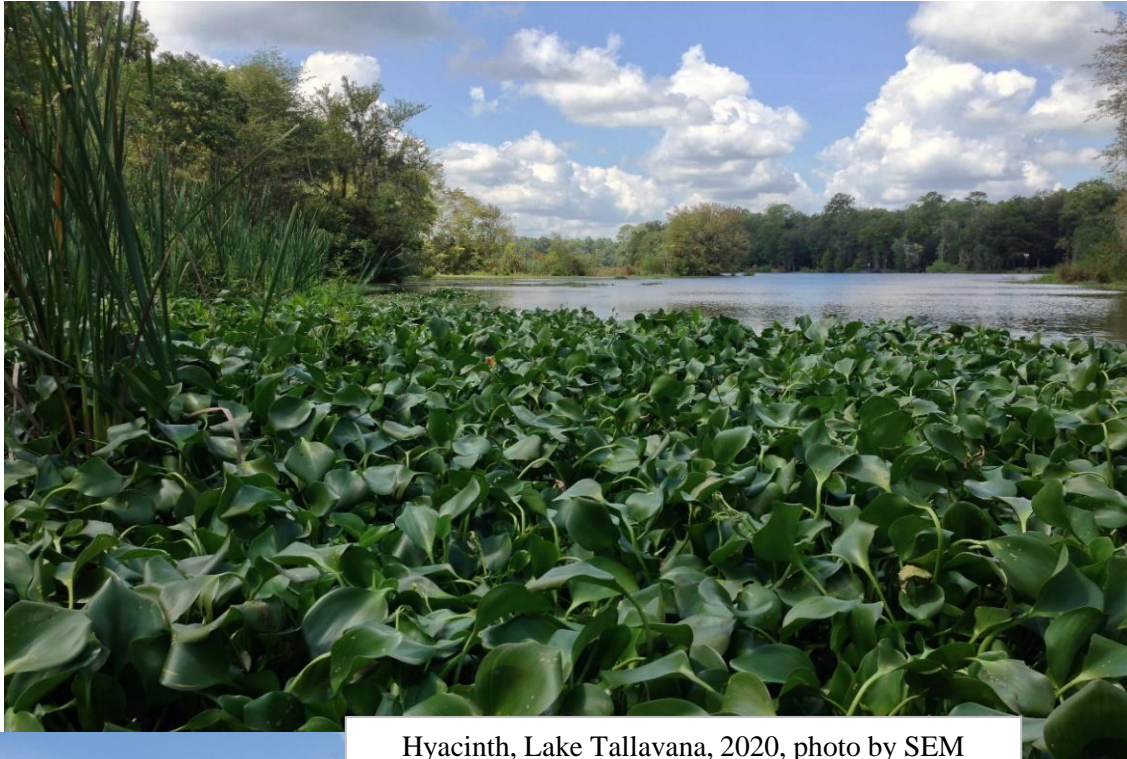
Lyngbya, Lake Tallavana, August 2021, photo SEM



Lyngbya, Lake Tallavana, August 2021, photo SEM

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Hyacinth, Lake Tallavana, 2020, photo by SEM



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