

EutroSORB WC Laboratory Jar Test Study

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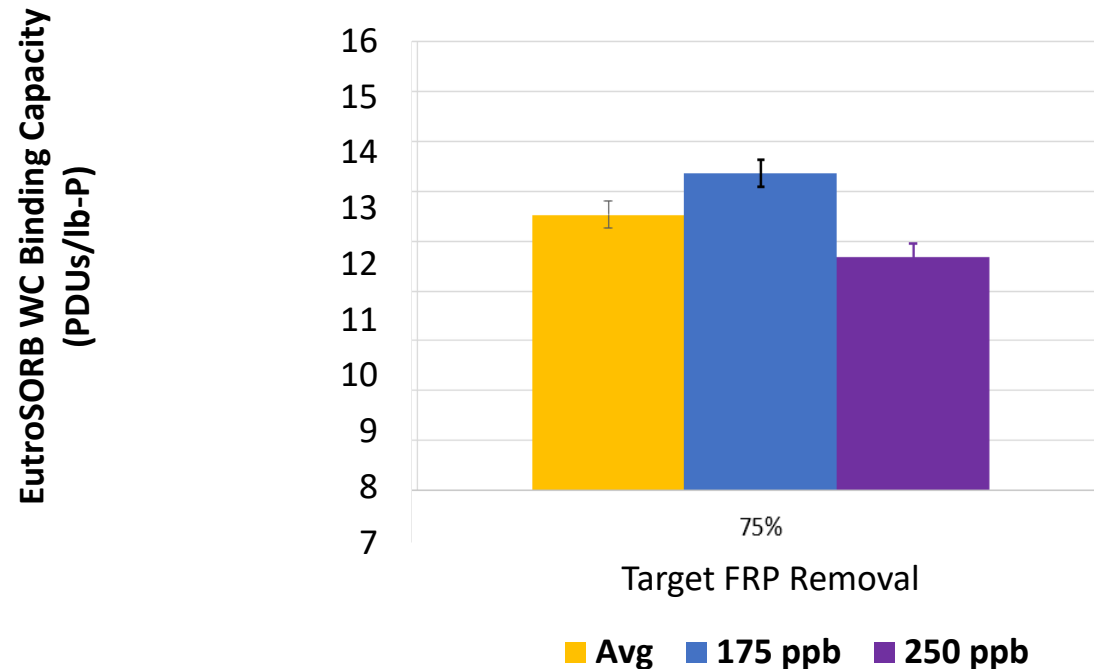


Jar Test Study Description

1. Placido Bayou Pond water was spiked to 4 different concentrations of free reactive phosphorus (FRP) based on the range of historical water quality:
 - 175 ug-P/L and 250 ug-P/L
2. Spiked water was homogenized then split into 30 mL samples.
3. The 30 mL samples were dosed with EutroSORB WC according to the following regime:
 - P-removal target: 75% FRP removal.
 - EutroSORB WC was dosed based on the P-binding assumption of 1.25 gal/lb-P (10 PDUs/lb-P)
 - 3 replicates of each sample with the same starting FRP and P-removal target
4. Untreated controls and treated samples were placed on orbital shaker for 3 hours and FRP of all samples was measured at the end
 - P-binding capacity for each starting FRP and P-removal target was calculated based on the FRP difference between the control and the treated samples

Study Results

- 1 Gallon of EutroSORB WC = 8 PDUs
- Lower PDU/lb-P = higher P-binding efficiency
- SeScript water quality data shows the average FRP is ~211 ppb, which is in between the study FRP conditions (175 and 250 ppb).
- **Therefore, it is expected that it will require ~12.5 – 12.8 PDUs/lb-P removed**



Prescription

- This study demonstrates that EutroSORB WC will effectively remove FRP in Placido Bayou Pond water at a rate of ~12.5 – 12.8 PDUs/lb-P
- Based on a surface area of 12.5 acres and an average depth of 18.5 ft, and an average FRP concentration of 211 ppb, the following doses would be required:
 - 1,239 PDUs for 75% FRP Removal

Results

- Pre treat sampling 6/28/22: Free Reactive Phosphorus (FRP) average of 3 samples 211 ppb, Total Phosphorus (TP) 256 ppb
- Post treat sampling 9/12/22: FRP 38 ppb, TP 115 ppb
- FRP removal 80%
- TP removal 60%

Bathymetric Mapping

Placido Bayou, Site 7



Contour and Depth

Contour and Depth	
LAND	DEEP WATER
Number of Data Points	2,291
Survey Acreage (acres)	12.50
Maximum Depth (ft.)	30.03
Average Depth (ft.)	18.5
Total Lake Volume (gal)	66,277,000

Water Quality Data: Placido Bayou, Pond 7

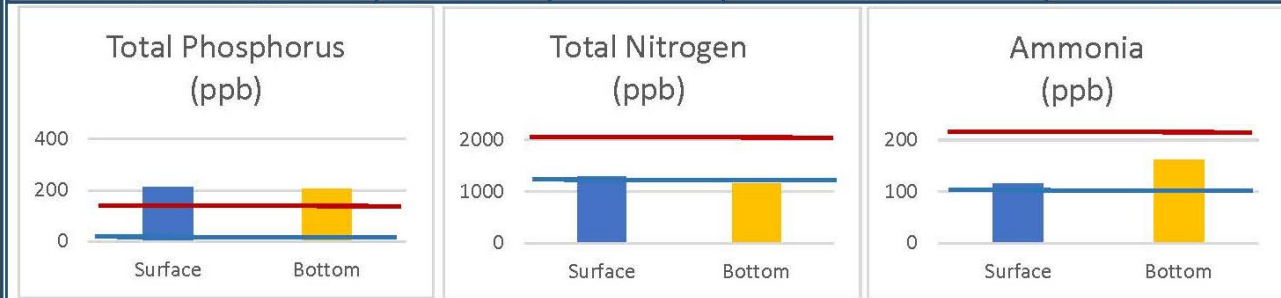
Site Readings

Test	Desired	Action	Lake Readings - Pond 7		This lake is:
	Range	Level	Surface	Bottom	
Nutrients – Total Phosphorus	< 30 ppb	> 100 ppb	213	204	Very High*
Nutrients – Total Nitrogen	< 1200 ppb	> 2000 ppb	1295	1145	High*
Nutrients – Ammonia	< 100 ppb	> 250 ppb	116	162	Very High*
Water Clarity - Secchi Depth	≥ 4 Feet	N/A	5 ft.		Normal



Basic Lake Information

Measured	Calculated Approximation
Perimeter Ft: 6,000'	Volume-Gal: 75,558,000
Surface Acres: 12.5	Total Acre Ft: 232
Depth: 28'	



Observations

Water quality data suggest that this site is experiencing elevated nitrogen and phosphorous levels.

Ammonia is a byproduct of organic matter decomposition. It is common for ammonia to accumulate under low-oxygen conditions or from recent runoff events. Elevated ammonia may cause toxicity issues for aquatic life.

Elevated nitrogen may be due to fertilizer runoff, decaying plant material, or low oxygen levels at the bottom of the water column.

Lakes with phosphorous pollution can lead to an unbalanced ecosystem. This can lead to a variety of negative effects including, but not limited to, foul odors, reduced clarity, etc.

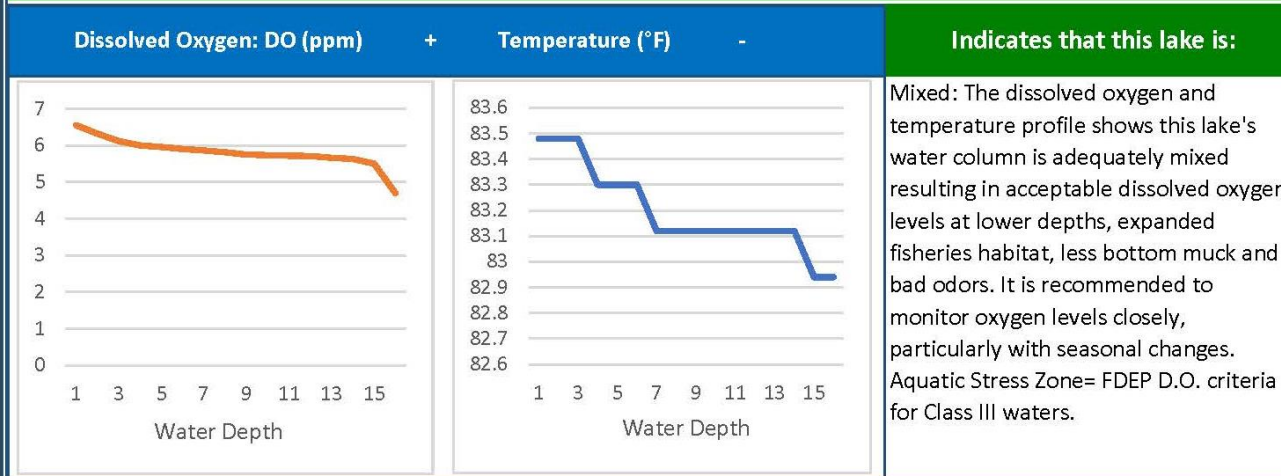
The TN/TP Ratio is: 5.85

When the TN/TP ratio is < 75, the chances of having toxin producing cyanobacterial blooms (blue-green algae) as plankton or filamentous mats increase. Water column phosphorus needs to be reduced to promote more desirable algal groups.

The trophic lake health index is: 81.15

Oligotrophic	Mesotrophic	Eutrophic	Hypereutrophic
0	30	60	90
			120

Eutrophic lakes have a TSI of 41-100 and usually have intermittent plankton algae blooms, fair water clarity, muck accumulation, occasional odor, moderate dissolved oxygen levels, dense submersed plant growth and algae mats.



Recommendations for This Lake

- Phosphorus reduction
- Nitrogen/Ammonia reduction
- Watershed Management
- On-going water quality monitoring

Observations/Next Steps

- While we effectively removed 80% of FRP and 60% of TP after the EutroSORB WC application, two algal blooms have occurred.
- Thoughts on algae blooms: Once the EutroSORB WC effectively removed target of 80% FRP, sediment release may have caused the blooms. Sediment sampling was completed on 10/19. Results will be reviewed after SePRO's lab finalizes testing.

Observations/Next Steps

Continued

- Benthic (bottom) Cyanobacteria may have potentially been dormant and then by clearing the water column of FRP/TP, acted as a catalyst for the algal blooms. By reducing the total Cyanobacteria cell count, any needed future algaecide applications will be more effective.