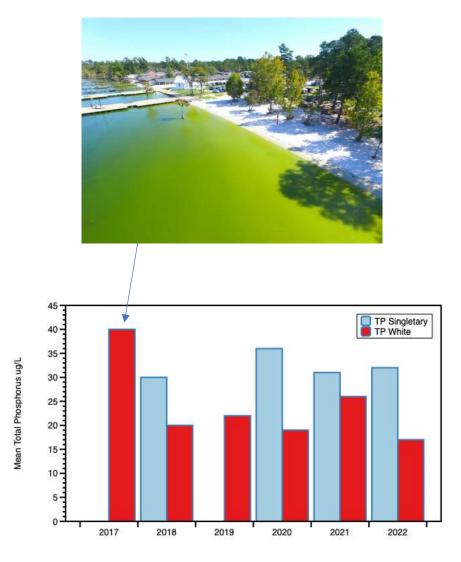
Report to White Lake Town Board November 2022

Diane Lauritsen, Ph.D. LIMNOSCIENCES

1. A Look at Phosphorus Data

The lab report for September 2022 was recently received, so this is a good time to look at trends over the past five years in concentrations of the nutrient phosphorus. The alum treatment that was done in May 2018 was designed to strip phosphorus from the water column, with the added benefit of coagulating/reducing the high levels of phytoplankton that had caused the elevated phosphorus levels.



Total phosphorus levels in the month of September, from 2017 to 2022. Values for White Lake are in red. 2017 and 2018 data from NC DEQ; 2019 to 2022 data from LIMNOSCIENCES.

The phosphorus levels found in White Lake in early May 2018, prior to the alum treatment, were even higher ($60 \mu g/L$) than what was found in September 2017, but once the cyanobacteria causing the bloom were eliminated, phosphorus levels returned to the relatively low levels that have been found historically. Singletary Lake has been sampled to provide a close-by comparison; its phosphorus levels have been and remain higher than White Lake's.

Conclusions:

- Elevated phosphorus levels can result from phytoplankton blooms; when the bloom dissipates, phosphorus levels decline.
- There is no evidence of a significant external source of phosphorus that causes phytoplankton blooms
- White Lake phosphorus concentrations are relatively low, and there is no need for further alum treatments

2. Nearshore Conditions

This year's cycle in aesthetics can be illustrated by three photos, taken at Lake Place condos:



The same trend of poor conditions over the summer, when there is a lot of boating activity, is found every year to a greater or lesser degree. The fundamental question is: what, if anything, are boaters willing to do to reduce their impacts on the lake and their fellow lake users?



IEH ANALYTICAL LABORATORIES

LABORATORY & CONSULTING SERVICES

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CASE FILE NUMBER: 1735172 PAGE 1

REPORT DATE: 10/14/22

DATE SAMPLED: 09/23/22 DATE RECEIVED: 09/26/22

FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER

SAMPLES FROM TOWN OF WHITE LAKE

CASE NARRATIVE

Seven water samples were received by the laboratory in good condition and analyzed according to the chain of custody. No difficulties were encountered in the preparation or analysis of these samples. Sample data follows while QA/QC data is contained on subsequent pages.

SAMPLE DATA

SAMPLE ID	TOTAL-P (mg/L)	SRP (mg/L)	N03+N02 (mg/L)	TOTAL-N (mg/L)	CHLOR_a (ug/L)	PHAEO_a (ug/L)	DOC (mg/L)
WL - C1	0.014	< 0.001	<0.010	0.509	9.1	2.5	7.14
WL - C2	0.016	< 0.001	0.014	0.564	8.5	3.8	7.32
WL - B1	0.020	< 0.001	0.011	0.506	9.1	3.3	7.89
WL - B2	0.017	< 0.001	< 0.010	0.516	13	1.8	7.58
WL - A1	0.019	< 0.001	0.017	0.519	10	2.6	7.64
WL - A2	0.018	< 0.001	0.018	0.524	9.6	3.8	7.44
SL - 1	0.032	0.016	0.031	0.458	30	0.4	11.7

SAMPLE ID	TURBIDITY (NTU)	AMMONIA (mg/L)	DISSOLVED NITROGEN (mg/L)	TOC (mg/L)	
WL - C1	2.0	< 0.010	0.350	8.71	
WL - C2	1.9	< 0.010	0.375	8.69	
WL - B1	2.1	< 0.010	0.365	8.51	
WL - B2	2.0	< 0.010	0.336	8.52	
WL - A1	2.3	< 0.010	0.413	8.84	
WL - A2	2.3	< 0.010	0.380	9.06	
SL - 1	4.4	0.024	0.343	13.0	



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FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER

SAMPLES FROM TOWN OF WHITE LAKE

QA/QC DATA

QC PARAMETER	TOTAL-P (mg/L)	SRP (mg/L)	N03+N02 (mg/L)	TOTAL-N (mg/L)	CHLOR_a (ug/L)	PHAEO_a (ug/L)	DOC (mg/L)
METHOD S	M18 4500PF	SM18 4500PF	SM184500N03F	SM204500NC	SM1810200H	SM1810200H	EPA 415.1
DATE ANALYZED	10/03/22	09/27/22	09/28/22	10/04/22	09/29/22	09/29/22	10/13/22
DETECTION LIMIT	0.002	0.001	0.010	0.050	0.1	0.1	0.250
-	0.002	0.001	0.010	0.020	0.1	0.1	0.200
DUPLICATE							
SAMPLE ID	ВАТСН	BATCH	SL - 1	SL - 1	SL - 1	SL - 1	ВАТСН
ORIGINAL	0.026	0.032	0.031	0.458	30	0.4	< 0.250
DUPLICATE	0.027	0.032	0.035	0.457	35	0.4	< 0.250
RPD	2.64%	0.55%	9.99%	0.22%	14.88%	13.33%	NC
SAMPLE ID	ВАТСН	BATCH	SL - 1	SL - 1			BATCH
ORIGINAL	0.026	0.032	0.031	0.458			< 0.250
SPIKED SAMPLE SPIKE ADDED	0.075	0.052	0.242	1.40			4.6
	0.050	0.020	0.200	1.00	N	214	4.50
% RECOVERY	97.18%	97.49%	105.23%	94.30%	NA	NA	102.13%
QC CHECK							
FOUND	0.093	0.039	0.419	0.505			4.17
TRUE	0.094	0.039	0.408	0.499			4.00
% RECOVERY	98.94%	100.00%	102.81%	101.20%	NA	NA	104.18%
BLANK	<0.002	< 0.001	<0.010	<0.050	NA	NA	<0.250

RPD – RELATIVE PERCENT DIFFERENCE.

NA – NOT APPLICABLE OR NOT AVAILABLE.

NC – NOT CALCULABLE DUE TO ORNOR MORE VALUES BEING BELOW THE DETECTION LIMIT.

OR – RECOVERY NOT CALCULABLE DUE TO SPIKE SAMPLE OUT OF RANGE OR SPIKE TOO LOW RELATIVE TO SAMPLE CONCENTRATION.

SUBMITTED BY:

Damien Gadomski, PhD Laboratory Manager

Mamien Hodemsh