Report to White Lake Town Board September 2022

Diane Lauritsen, Ph.D. LIMNOSCIENCES

1. Little Change in Lake Level for August

Summer rains in the past two months have contributed 16 inches of rain, which is the equivalent of 464 million gallons of water added to the lake, raising the lake level 4.8 inches since the end of June. The lake level at the end of August, 64.1 feet NAVD 88, is equal to the level at the start of the year, although it is 4.8 inches below the level at the end of August 2021.

Month	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	Monthly Average for Region
January	5.75	8.25	4.5	2.75	4.20	7.0	3.0	2.5	2.0	1.75	2.75	3.81
February	1.0	9.2	6.7	2.25	2.00	1.5	10.7	5.5	1.5	2.5	4.0	3.44
March	2.45	2.7	3.7	3.25	3.95	3.7	1.55	4.15	ND	1.0	7.0	3.91
April	3.75	1.75	5.1	7.25	6.75	6.75	6.75	4.55	ND	1.75	2.25	3.12
May	2.2	3.0	12.25	1.20	7.70	2.7	4.5	4.20	ND	2.25	9.25	3.67
June	6.2	7.9	7.15	5.25	10.00	4.5	3.65	8.70	3.0	17.0	2.0	4.70
July	10.5	7.5	6.85	6.00	4.75	6.75	3.75	3.0	4.65	11.25	8.6	5.75
August	5.5	6.5	7.55	5.35	6.25	5.6	4.12	9.4	9.75	8.25	9.75	5.95
September		3.2	5.95	5.00	29.45	5.2	15.0	4.7	7.0	1.0	5.0	5.29
October		0.6	3.35	3.60	2.25	2.95	14.25	9.75	1.7	1.75	2.25	3.38
November		0.4	7.5	4.90	4.25	1.0	0.50	7.25	4,15	0	2.25	3.16
December		3.4	4.25	6.00	7.5	5.45	5.1	6.5	3.7	5.75	4.25	3.14
Total		54.4	74.85	52.80	89.05	53.1	72.87	70.20		54.25	59.35	49.32
% of Lake Volume		71	97	69	116	69	95	91		70	77	64

Monthly Rainfall (inches) for White Lake 2012-2022

2. <u>Lake Conditions—Some Nearshore Areas Much Worse in August</u>

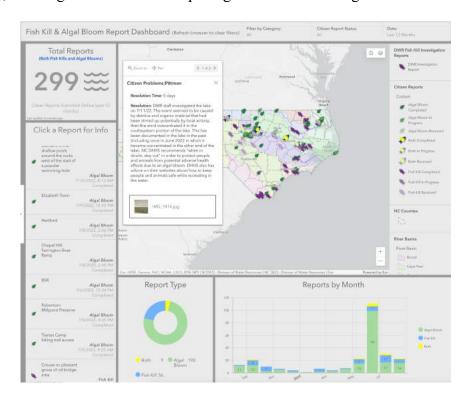
Photos taken at Lake Place/Nathan's Cove over the course of the summer show the conditions there have gotten progressively worse, with muddy sediments coating sandy lake bottom as well as the floating organic material, and a wide zone of brown covering the sand at the lake edge. Some residents have been raking up what washes ashore, but there is a great deal of material still in the water.

It bears repeating that most of the material in these recent photos is being stirred up from the lake bottom by the downward directed thrust from watercraft.



Photo on left taken August 14, and photo on right taken September 2--note the piles of material which has been raked up, and the green grass growing in the sand (which has, in essence, been fertilized by the sediment that has washed ashore).

Below is the response to Alan Pittman's photo and complaint sent to the state's algae bloom reporting app, followed by a Bladen Journal article and photo from July 2000 (when the lake was acidic), showing the mass of decomposing material seen along a seawall.





BLADEN

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Dr. Lawson is finalist for job in Pitt County

BY DAVID BRAY Staff Writer

Dr. Byron Lawson, superintendent of Bladen County Schools, has been selected as one of five finalist for the position of Superintendent of Pitt County Schools The Pitt County Board of Education released the names of four of the candidates on Friday, July 14th.

Contacted at his office at Bladen County Schools, Dr. Lawson said, This is not a position that I was seeking in any way. The opportu-nity presented itself, and I believe the fairest thing to do, profession-ally and personally, is to examine

all aspects of the situation." The Pitt County school system is considerably larger than the Bladen County system Pitt has schools serving 21,000 studer Pitt has 34 compared to Bladen which has 5,800 students enrolled at 14

According to Ginger Livingston reporting in The Daily Reflector, the Pitt County Board of Education will start interviewing candidates for the position on Monday, July

In addition to Lawson, other candidates for the superintendent position include two educators from the Pitt County school system: Brenda K. Jones, associate superintendent for human resources, and Del Burns, a former assistant superintendent for curriculum and instruc-

Michael Priddy, associate supertendent of auxiliary services Guilford County Schools, and Dr.



It's only decaying algae

The thick and smelly black material that is collecting at a few localized spots mostly along the south side of White Lake is a naturally occurring algae that grows at the bottom of the lake and floats to the surface where it decays causing an offensive odor. In photo, town Director of Public Works Tim Frush lifts a plichfork of the matted material from a cove along the south shore.

Constru new hig on OK s

BY MICHAEL SIMMONS Journal Editor/GM

Construction on Bladen County two new high schools may be run ning a little behind schedule, bu not so far behind that there in nee for concern at this point that the will not be ready for students of the appointed time of fall, 2001.

So said Robbie Ferris of the a chitect firm Shuller, Ferris, Lind strom and Associates to the count school board Monday night

Contractors on both the east an west sites have asked for exter sions on when the projects must b complete, but both seem to b working within the windows c time they have been given, Ferri told the board Neither extensio request has yet been granted by hi

"There are ways to speed up con struction work," Ferris said, an added that the contracting firm o the eastern site had been behind hi planned schedule by a sell described 60 days a short time ago

behind the contractor's schedule by

only 25 days."

The western site, though it look to most observers to be well behin its tentative schedule, Ferris said He added, though, that Cool Brothers Company, the general contractor on the western school architect firm with its finalized

Lake phenomenon said to be natural

BY JACK McDUFFIE

Staff Writer
The smelly black material that has accumulated at some locations along the shore of White Lake, primarily on the south end, is nothing but decaying algae, according to Paul Rawls of the North Carolina Division of Water Quality District Office in Fayetteville

Though the material looks and smells somewhat like sludge in some localized areas, mostly in coves, it is harmless to animal life, Rawls said.
"It's more of a nuisance than a

water quality problem," Rawls pointed out. "It is a natural process that has occurred for many years. We (DWQ) have been involved in monitoring the occurrence of the problem since the 1950's and it is a regularly occurring phenomenon." Rawls says that his department

just finished the latest tests on the lake and no indication of contamination was found in the samples

"The material is the same type that has been there many times before." Rawls explained. "It is filamentous green algae of the spirogyra species that grows on the lake floor. The fact that the lake water is clear allows more light to get to the bottom of the lake which enhances the growth of the algae."

Rawls says algae, in the right proportions, is necessary and very beneficial. However, it becomes a

"Periodically we do a thorough investigation of the lake, and we've found no evidence to indicate that the situation presents a health problem."

Paul Rawls, District DWQ official

nuisance when the amount gets out

"The samples we just collected and tested confirmed that this is

spirogyra," Rawls said.
"Several factors contrib "Several factors contribute to the collection of the decaying algae in certain areas," Rawls said. "The natural current and wave action of the water along with the boat traffic

on the lake probably contribute to the algae breaking loose from the bottom of the lake and floating to the top where it decays and to black. The fact that the lake is pretty shallow probably contributes to the algae breaking loose. The decaying algae is what causes the smell that people object to.

"Based on previous studies of the

lake, there has been no degradation of water quality," Rawls added "DWQ will continue to monitor the lake to determine if condition change Periodically we do thorough investigation of the lake and we've found no evidence to indicate that the situation presents i health problem

Rawls said his agency is going to meet with town officials at a last date to look at some alternatives to try to lessen the nuisance greated by the algae accumulation.

David Coburn, park superinten

dent at Singletary Lake and the individual charged with monitoring three state-owned lakes in the SEE WHITE LAKE THE

3. <u>Lake Conditions—Increase in Bioavailable Nitrogen in July</u>

Inorganic nitrogen can be easily utilized by phytoplankton (algae suspended in the water column), and because levels were below detection limits for the first half of the year, the phytoplankton community had little to sustain their growth, resulting in several months of clear water (see attached data table). The July lab results found one form of inorganic nitrogen (NO₃+NO₂) at an average concentration of 0.014 mg/L (after two rains of 2.5" and one of 1.5" in the first half of the month), and phytoplankton densities had begun to increase to levels typical of the summer (July sample analysis not yet complete).

White Lake Monitoring Project 2021-June 2022

	12/18/20	2/25/21	3/24/21	4/27/21	5/20/21	6/17/21	7/22/21	8/18/21	9/28/21	10/15/21	11/19/21	12/14/21	2/8/22	3/16/22	4/20/22	5/11/22	6/15/22
Mean Temp (C)	10.0	10.6	13.9	19.8	23.5	28.0	28.9	29	24.2	23.6	14.7	12.1	8.7	14.4	17.6	19.6	29.6
Lake Level (gauge)	2.32	2.60	2.20	2.10	1.85	1.96	1.94	2.10	1.75	1.60	1.46	1.36	1.76	1.68	1.52	1.36	1.22
Secchi Depth (m)	1.7	1.2	1.0	0.75	1.75	1.3	1.1	1.0	0.75	1.0		1.1	0.75	1.25	2.1	2.1	1.25
Turbidity (NTU)		2.0	2.3	3.5	1.5	2,6	2.7	2.2	3.2	3.0		3.1	5.8	3.6	2,5	1.9	2.6
Mean DO (mg/L)	11.1	12.2	10.9	10.1	7.9	7.8	8.1	7.8	9.1	9.0	10.3	10.8	12.1	10.5	9.38	9.6	8.1
Mean DO % Sat.	98.4	109	106	110	92	100	105	102	108	106	101	100	104	104	97	108	106
Mean Sp. Cond.	36.3	32.6	32.5	33.4	33.7	33.0	32.6	31.8	31,4	31.0	34.9	34.6	28	28.2	28.8	28.8	25.9
(uS//L)																	
Range pH (su)	6.5-6.7	6.5-6.7	6.9-7.0	7.6-8.6	6.5	6.8-7.0	6.9-7.2	6.8-7	8.2-8.6	7.0-7.2	6.4-6.6	6,9-7.0	6.3-6.9	6.7-6.8	6.8-7.0	7.0-7.1	6.7-6.9
Mean Chlorophyll a (µg/L)	(3.1)	11.3 (16.7)	16.3 (24)	15.8 (29)	3.8 (3.5)	9.4 (8.2)	4.9 (11)	11.7 (19)	15 (12)	8 (12)	(6.2)	8.2 (9.5)	18 (19.7)	5.3 (7)	4.4 (2.3)	5.2 (3.7)	3.4 (6.2)
Mean Algal Biovol. (mm3/m3)		36,152		225,459	10,534	5,316	8,297	17,021	23,774	20,912		19,089	32,568		1,138	794	656.7
Mean Algal Density (# cells/mL)		135,350		677,716	73,532	465,253	221,699	200,761	153,580	142,012		96,512	89,336		37,090	38,634	20,423
Mean DOC (mg/L)		5.15	8.26	13.4	7.16	6.0	5.46	5.24	7.57	6.69		6.7	8.1	7.4	6.7	7.04	8.17
Mean Total N (mg/L)		0.787	0.577	0.605	0.509	0.723	0.679	0.672	0.755	0.850		0.738	0.917	0.707	0.79	0.704	0.745
NO3-NO2 (mg/L)		0.015*	< 0.010	0.011	< 0.010	< 0.010	<0.010	0.010	<0.010	<0.010		0.014	<0.010	< 0.010	<0.010	<0.010	<0.010
NH4-NH3 (mg/L)		0.023	0.034	0.011	<0.010	0.014	<0.010	<0.010	0.012	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010	0.010
TDN (mg/L)		0.478	0.469	0.380	0.281	0.571	0.455						0.475	0.430	0.384	0.454	0.549
Mean Total P (mg/L)		0.025	0.026	0.039	0.024	0.024	0.023	0.022	0.026	0.024		0.022	0.031	0.032	0.024	0.025	0.029
SRP (mg/L)		<0.001	0.001	0.011	0.001	< 0.001	<0.001	< 0.001	0.001	0.003			0.002	0.002	0.001	0.002	< 0.001
TDP (mg/L)		<0.002	0.002														
TN : TP (mass)		31,5	22.2	15.5	21.2	30.1	29.5	30.5	29	35.4		33.5	26.6	22.0	29.8	27.9	26.0
# of Samples	6	3	3	6	6	6	6	6	6	6		6	6	6	6	6	6



IEH ANALYTICAL LABORATORIES

LABORATORY & CONSULTING SERVICES

3927 AURORA AVENUE NORTH, SEATTLE, WA 98103 PHONE: (206) 632-2715 FAX: (206) 632-2417

CASE FILE NUMBER: 1733700 PAGE 1

REPORT DATE: 08/02/22 DATE SAMPLED: 07/14/22 DATE RECEIVED: 07/15/22

FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER

SAMPLES FROM TOWN OF WHITE LAKE

CASE NARRATIVE

Six 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

	TOTAL-P	SRP	N03+N02	TOTAL-N	CHLOR_a	PHAEO_a	DOC
SAMPLE ID	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(ug/L)	(ug/L)	(mg/L)
WL-C1	0.024	< 0.001	0.016	0.756	5.3	2.8	9.85
WL-C2	0.025	< 0.001	0.014	1.01			11.5
WL-B1	0.030	0.002	< 0.010	0.773	6.2	1.9	11.1
WL-B2	0.025	< 0.001	0.016	0.747			9.53
WL-A1	0.024	< 0.001	0.012	0.981	8.0	1.3	10.9
WL-A2	0.025	< 0.001	< 0.010	0.897			10.3

	TURBIDITY	AMMONIA	DISSOLVED
SAMPLE ID	(NTU)	(mg/L)	NITROGEN (mg/L)
WL-C1	2.1	< 0.010	0.692
WL-C2	2.0	< 0.010	0.481
WL-B1	2.0	< 0.010	0.467
WL-B2	2.3	< 0.010	0.461
WL-A1	2.0	0.012	0.497
WL-A2	2.0	< 0.010	0.487