

**Report to the Town of White Lake  
January, 2021**

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LIMNOSCIENCES**

While a detailed monitoring report will be compiled when all of the different kinds of data analysis is complete (which was done in 2019) there are several things that are attached which have also been posted to the White Lake Watch web site. These include:

1. A one-page overview called **White Lake by the Numbers**. This is a snapshot of basic information about the lake, as well as information from State Parks on the number and types of permits issued.
2. Rainfall and lake level information is now included on one page so that the relationship between the two is easier to see. For 2020, rainfall was 1.4 times higher than 2019 rainfall, with the highest monthly rainfall (12.25 inches) measured in May; as a result, the highest lake levels were observed in June—the opposite pattern of what is seen in most years, when lake levels are lower in summer months. However, even with the large difference in rainfall between years, the lake level variation was very similar between 2019 (12.7 inches) and 2020 (10.3 inches), with a higher difference (19.9 inches) over the two-year period. The lake level at the end of 2020 was six inches higher than at the start of 2020, and four inches below the highest level for the year.
3. Graphs for algae, pH and clarity for the four-year period 2017-2020 are included and show that these conditions fluctuate somewhat from month to month, but we have found that the same types of algae, which are characteristic of acidic conditions, predominate. They are able to utilize the nutrients entering the lake (particularly from the rain), and recycled nutrients within the lake. The winter of 2020-21 is looking similar to the winter of 2019-20, while the summer conditions were quite similar between years.
4. Another observation: the lake foam is very noticeable at times and is a result of prevailing winds creating currents in the water which concentrate dissolved organic material, which then floats on the water surface (in streaks of bubbles) and is pushed towards the lakeshore. Lake foam is equivalent to sea foam, commonly seen on beach walks (the photo on the left was taken at Goldston's pier on December 17, 2020 and the photo on the right was taken at Sullivan's Island, SC on December 30, 2020).



Also attached with this report is a draft stormwater ordinance for consideration by the Board.

# *WHITE LAKE BY THE NUMBERS*

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Lake Surface Area = 1,067 acres



Lake Volume = 6,796 acre-feet (2.215 Billion Gallons)  
Rainfall on Lake Surface is Primary Source of Lake Water  
Groundwater Maximum Contribution is 6% of Lake Volume



*At Lake Elevation of 64.5 feet NAVD 88:*  
Average Depth = 6.4 feet  
Maximum Depth = 9.6 feet



Annual Lake Level Variability = 10 to 14 Inches  
Lake Level Decline Up to 24 Inches During Severe Droughts



Shoreline Length = 4.77 miles  
Town Building Code Minimum Set-Back = 20 Feet From Water's Edge  
Number of Drainage Ditches and Pipes Going to Lake = 58  
Seawalls = 151 (Coverage of Approximately 45% of Lakeshore)



Boat Ramps = 14 (One Public)  
Mooring Buoys = 445  
Piers = 297

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## White Lake: Monthly Rainfall (in inches)

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

*(Volume of Total Rainfall on Lake Surface/Total Lake Volume) x 100 Gives an Estimate of Volume of Rainfall as % of Lake Volume)*

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## White Lake: Annual Lake Elevations, High and Low

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**2019 High** (January 25): 64.6 Feet NAVD 88

**2019 Low** (July 9): 63.54 Feet NAVD 88

**2020 High** (June 16): 65.2 Feet NAVD 88

**2020 Low** (January 1): 64.34 Feet NAVD 88

**2019 Lake Level Variation:** 12.7 Inches

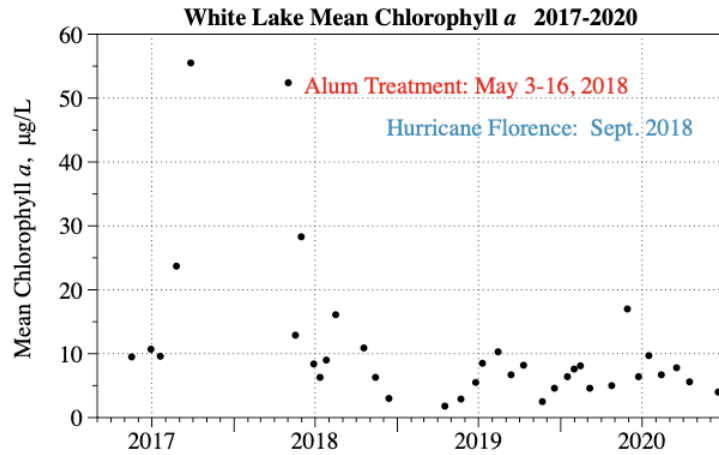
**2020 Lake Level Variation:** 10.3 Inches

**Variation Over the Two-Year Period 2019-2020:** 19.9 Inches

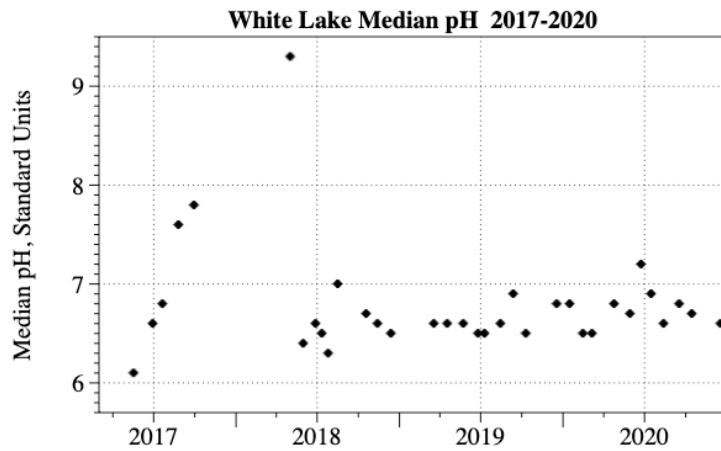
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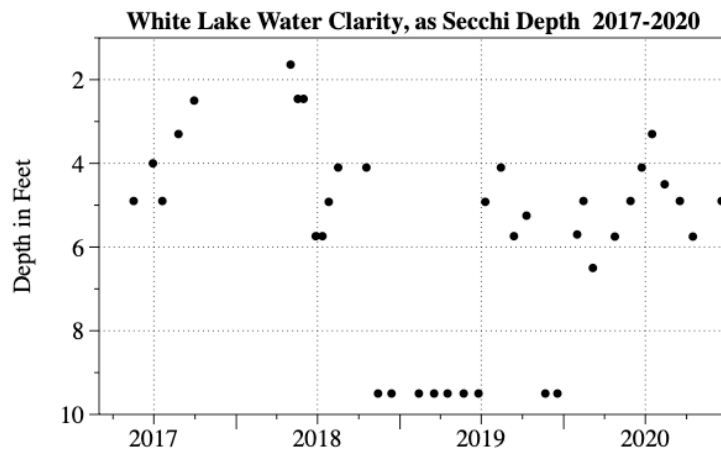
# White Lake: Algae Biomass (chlorophyll a), pH and Clarity (Secchi Depth)



Algae biomass varies slightly from month to month but relatively low since treatment



pH between 6 and 7 since treatment



Clarity graph is "upside down", as if you were looking down into the water

Clarity lower in summer but improved since treatment