

Report to Board, Town of White Lake

January 2026

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LIMNOSCIENCES

I am working on the White Lake 2025 annual report, and have yet to receive some results, so will give you one of the sections which is complete. Of note is the substantially lower rainfall in 2025, the lowest annual total seen over the period included in the table below (2014 was not included in the table because monthly rainfall was not collected in some months at the WWTP that year):

Results

1. 2025 Rainfall and Lake Level Variability

Monthly rainfall at White Lake was below normal through May and again during the fall of 2025 (Fig. 2). Total rainfall in 2025 was >10 inches below average for the region at 42.8 inches, a volume of water which equates to 56% of the total volume of the lake (Fig. 3).

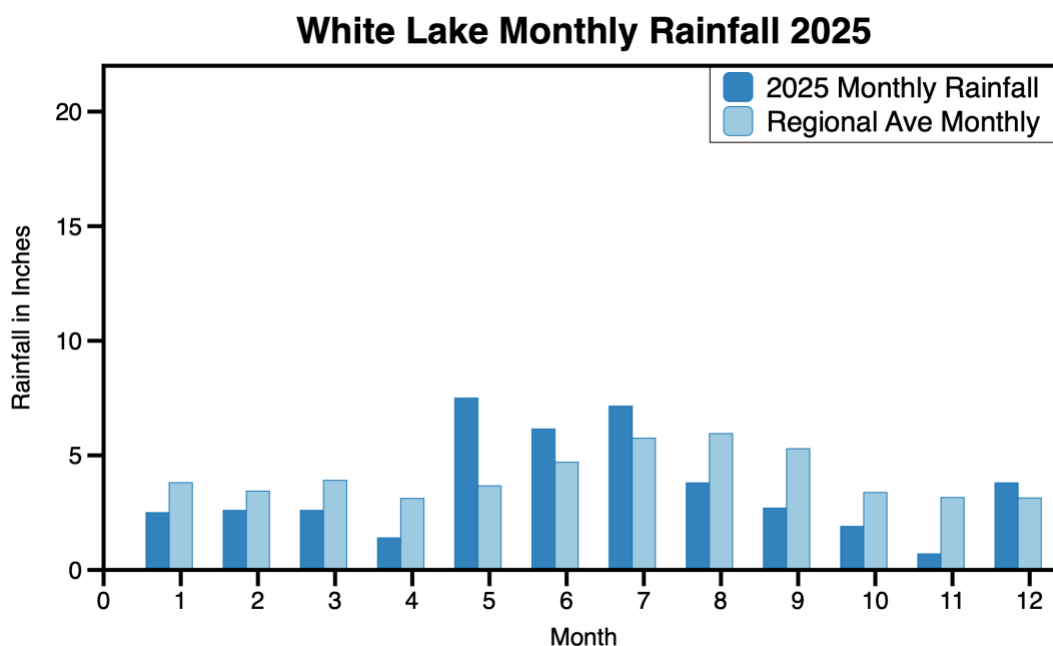


Figure 2. White Lake monthly rainfall, in inches, measured at the Town WWTP for 2025 and 2024, with long-term monthly averages for the region (measured at Elizabethtown, NC).

Monthly Rainfall (inches) for White Lake 2012-2025

Month	2025	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2013	2012	Monthly Average for Region
January	2.5	2.75	4.3	5.75	8.25	4.5	2.75	4.20	7.0	3.0	2.5	1.75	2.75	3.81
February	2.6	2.5	3.6	1.0	9.2	6.7	2.25	2.00	1.5	10.7	5.5	2.5	4.0	3.44
March	2.6	5.0	2.5	2.45	2.7	3.7	3.25	3.95	3.7	1.55	4.15	1.0	7.0	3.91
April	1.4	1.75	8.5	3.75	1.75	5.1	7.25	6.75	6.75	6.75	4.55	1.75	2.25	3.12
May	7.5	2.3	1.5	2.2	3.0	12.25	1.20	7.70	2.7	4.5	4.20	2.25	9.25	3.67
June	6.15	1.5	6.3	6.2	7.9	7.15	5.25	10.00	4.5	3.65	8.70	17.0	2.0	4.70
July	7.15	9.5	3.8	10.5	7.5	6.85	6.00	4.75	6.75	3.75	3.0	11.25	8.6	5.75
August	3.8	21.6	7.5	5.5	6.5	7.55	5.35	6.25	5.6	4.12	9.4	8.25	9.75	5.95
September	2.7	15.4	3.05	6.5	3.2	5.95	5.00	29.45	5.2	15.0	4.7	1.0	5.0	5.29
October	1.9	0.0	1.75	0.6	0.6	3.35	3.60	2.25	2.95	14.25	9.75	1.75	2.25	3.38
November	0.7	1.0	3.25	1.55	0.4	7.5	4.90	4.25	1.0	0.50	7.25	0	2.25	3.16
December	3.8	2.3	8.5	1.2	3.4	4.25	6.00	7.5	5.45	5.1	6.5	5.75	4.25	3.14
Total	42.8	65.6	54.55	47.2	54.4	74.85	52.80	89.05	53.1	72.87	70.20	54.25	59.35	49.32
% of Lake Volume	56	85.9	71.4	61.8	71	97	69	116	69	95	91	70	77	64

Figure 3. White Lake monthly rainfall, in inches, measured at the Town WWTP from 2012-2025, with long-term monthly averages for the region measured at Elizabethtown, NC.

There was a moderate variation in lake elevations in 2025 (10.8 inches) with the lowest level, 63.7 ft NAVD 88 seen in November (Fig. 4). The seven-year (2019-2025) mean high-water level for White Lake was 64.86 feet NAVD 88. The total variation in lake levels (high to low) over the five-year period was 22.8 inches which is in line with what has been measured historically.

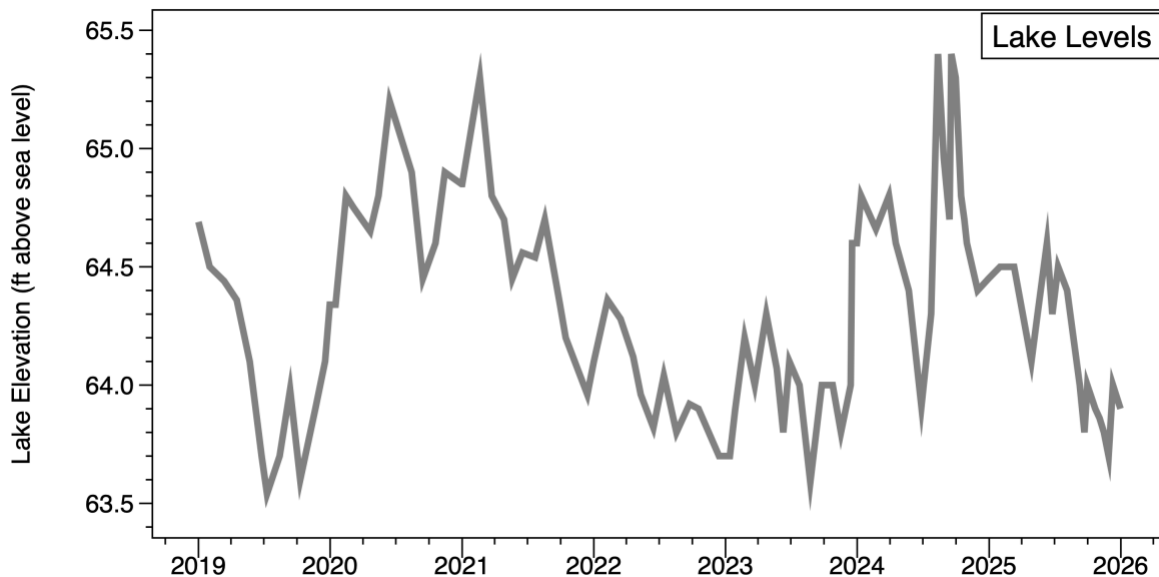


Figure 4. White Lake elevations for the period 2019-2025 (reported in feet above sea level, NAVD 88 datum).

Annual Lake Elevations, High and Low

2019 High (January 25): 64.6 Ft NAVD 88

2020 High (June 16): 65.2 Ft NAVD 88

2021 High (February 19): 65.3 Ft NAVD 88

2022 High (January 17): 64.3 Ft NAVD 88

2023 High (December 18): 64.6 Ft NAVD 88

2024 High (Aug. 12, Sept. 18): 65.4 Ft NAVD 88

2025 High (June 10): 64.6 Ft NAVD 88

2019 Low (July 9): 63.5 Ft NAVD 88

2020 Low (January 1): 64.3 Ft NAVD 88

2021 Low (November 29): 63.9 Ft NAVD 88

2022 Low (May, Oct-Dec.): 63.7 Ft NAVD 88

2023 Low (August 28): 63.6 Ft NAVD 88

2024 Low (July 5): 63.7 Ft NAVD 88

2025 Low (November 3): 63.7 Ft NAVD 88

2019 Lake Level Variation (High to Low): 12.7 Inches

2020 Lake Level Variation (High to Low): 10.3 Inches

2021 Lake Level Variation (High to Low): 16.8 Inches

2022 Lake Level Variation (High to Low): 7.2 Inches

2023 Lake Level Variation (High to Low): 12.0 Inches

2024 Lake Level Variation Between Jul 5 and Aug 12: 20.4 inches

2025e Level Variation (High to Low): 10.8 Inches

2. Rainfall pH in the Region

Improvements in air quality have resulted in the elimination of acid rain across the continent in recent years, including at White Lake, so that the annual median pH of the rainfall and lake water has increased about 1.5 standard units since the mid 1970s. The National Atmospheric Deposition Program station at Clinton monitors rainfall and posts results to their web site, with a time lag of about a year in the generation of trend plots. In 2024, the median pH of rainfall at the was 5.76 standard units (Fig. 5), with a range from 5.44 to 6.55 (weekly data accessible at the NADP web site using the link below).

Site NTN NC35

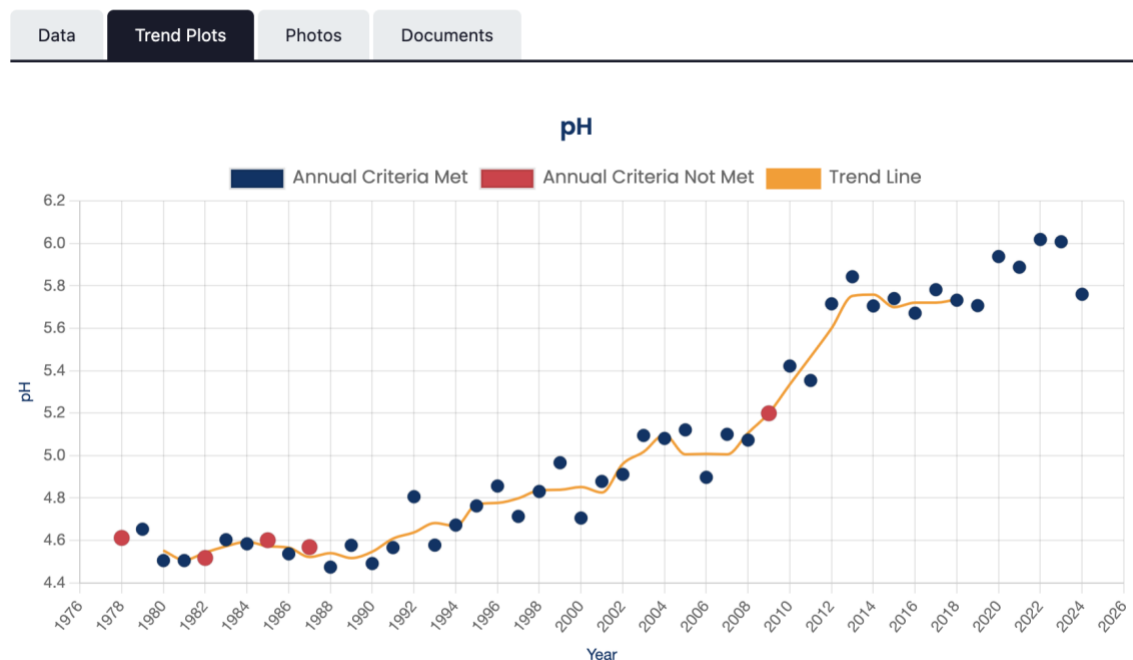


Figure 5. Median annual pH (SU) of rainfall at the Clinton Crops Research Station in Sampson County (NC35). NADP web site, <https://nadp.slh.wisc.edu/sites/ntn-NC35/> accessed 12/11/25.

I organized and participated in a special session on the Bay Lakes at a lakes conference in November and am working on organizing a Bay Lakes workshop with state agency representatives for March of this year.

I am also working to develop training for a citizen science group at White Lake, utilizing technology to monitor rainfall, lake levels, lake temperatures, and light levels.