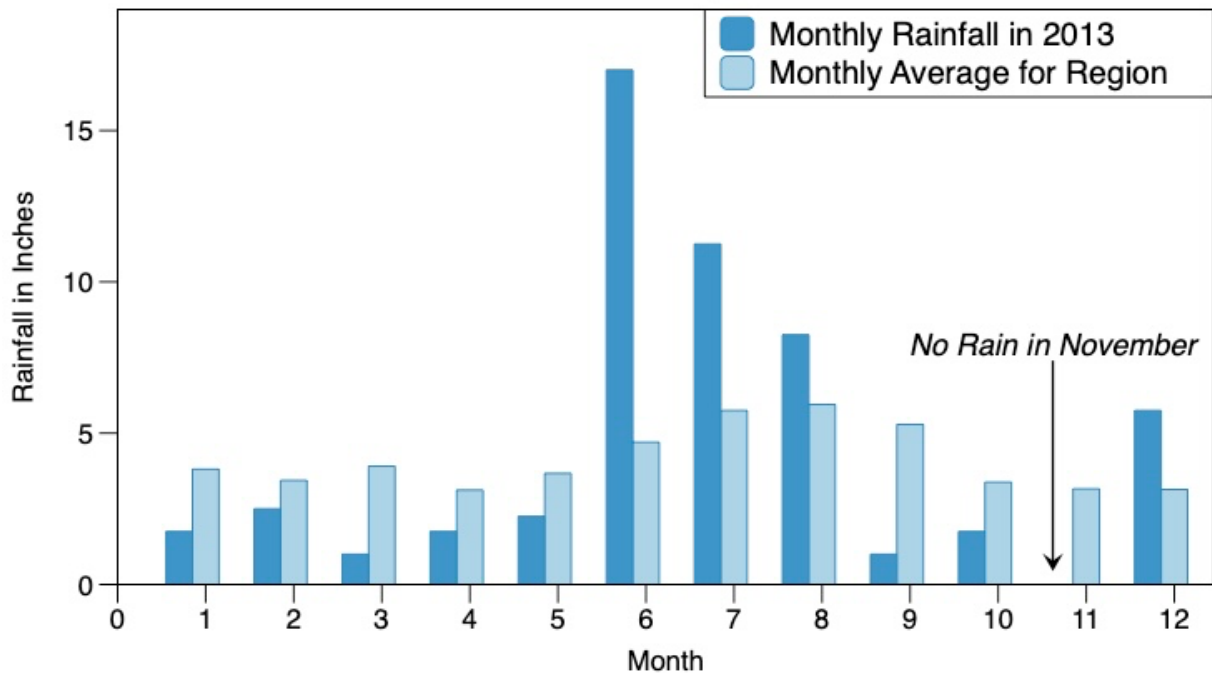


Report to White Lake Town Board, March 2024

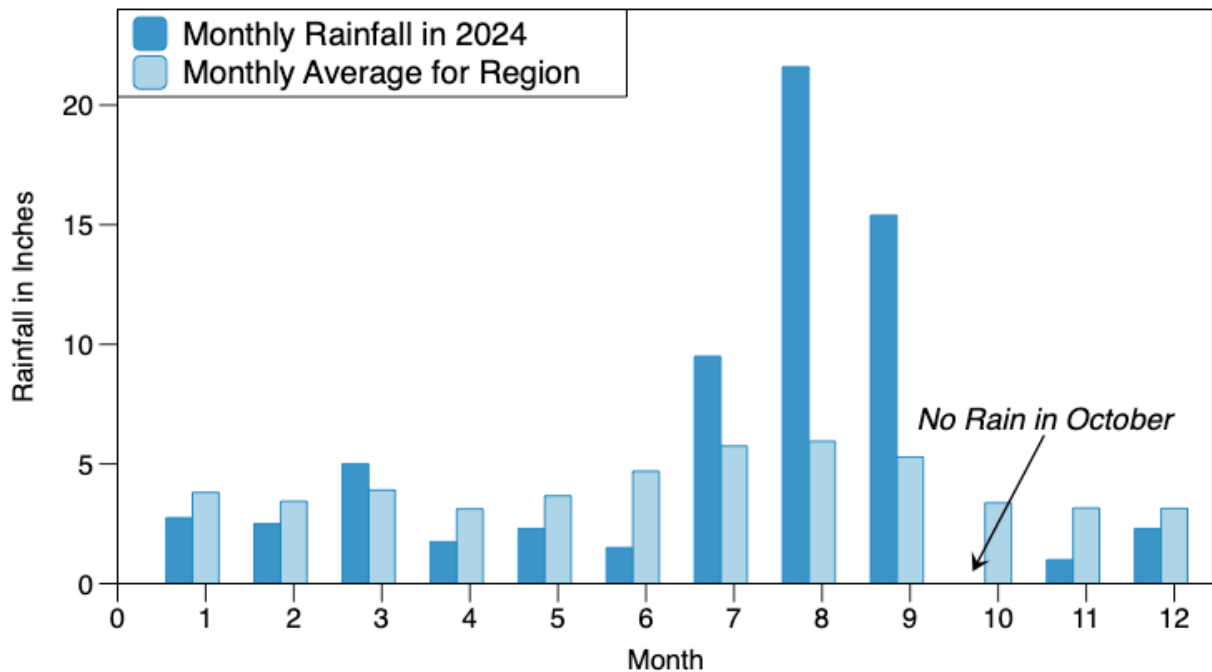
Rainfall Extremes: 2024 Looked a Lot Like 2013

High rainfall over a three-month summer period each year
(2013 total = 54.25", 2024 total = 65.6")

White Lake Monthly Rainfall 2013



White Lake Monthly Rainfall 2024



High summer rainfall can benefit lake levels but can negatively impact the town's sewer system, particularly when high I&I (inflow and infiltration—groundwater leakage into the pipes) volume is layered on top of high summer water usage and wastewater production.

Phase 1 and 2 sanitary sewer improvements reduced I&I but much more remains to be done. The town had applied for ARPA funding for a third phase of work on the system but has not been successful in getting its applications approved. Funding applications have recently been sent to the State Revolving Fund (CWSRF) and a Federal Clean Water Act funding program, and an appropriation request was sent to the State legislature. Federal funding sources (which includes SRF funding to states) are becoming more restrictive and funding levels are slated to decline, so the success rate for traditional funding will likely decline further.

PHASE 1 & 2 - SANITARY SEWER IMPROVEMENTS FOR THE TOWN OF WHITE LAKE, NC

Phase-1

The Phase-1 project scope of work consisted of the following: Replacement and rehabilitation of 6,310 linear feet of 8", 10", and 16" gravity sewer mains, precast manholes, rehabilitation of manholes and pump station wet wells, replacement of 1,547 linear feet of 4" and 6" water line, and improvements to the wastewater treatment plant headworks, influent piping, bar screen and grit removal systems. The project was completed September 2021, for the total project amount of \$2,155,000.

Phase-2

The Phase 2 project scope of work consisted of the following: Replacement and rehabilitation of 11,481 LF of 8", 10", and 12" gravity sewer with precast manholes, rehabilitation of manholes, and 2,394 LF of 2", 4", 6" and 8" water line replacement. The project was completed April 2023, for the total project amount of \$2,715,000.

Phase-3 (August 2023 Estimates)

Total project budget for application = \$4,428,322.

In phase 1, 34 manholes were rehabbed and 17 were replaced, and in phase 2, 21 manholes were rehabbed, and 26 manholes were replaced. The phase 3 proposal includes the rehabilitation of 37 manholes, at an estimated total cost of \$29,600. Shank and Zamora discussed the need to target manholes for rehabilitation/replacement in their 2019 groundwater studies, as they can be a source of both inflow and infiltration, and exfiltration (wastewater leaking into the groundwater, and potentially the lake).

Selecting projects for cash-funding, such as rehabilitation of the remaining manholes or the completion of work that was designed but not completed (Russ Street, Woodlief Drive) in phase 2 could be evaluated in the next budget cycle.

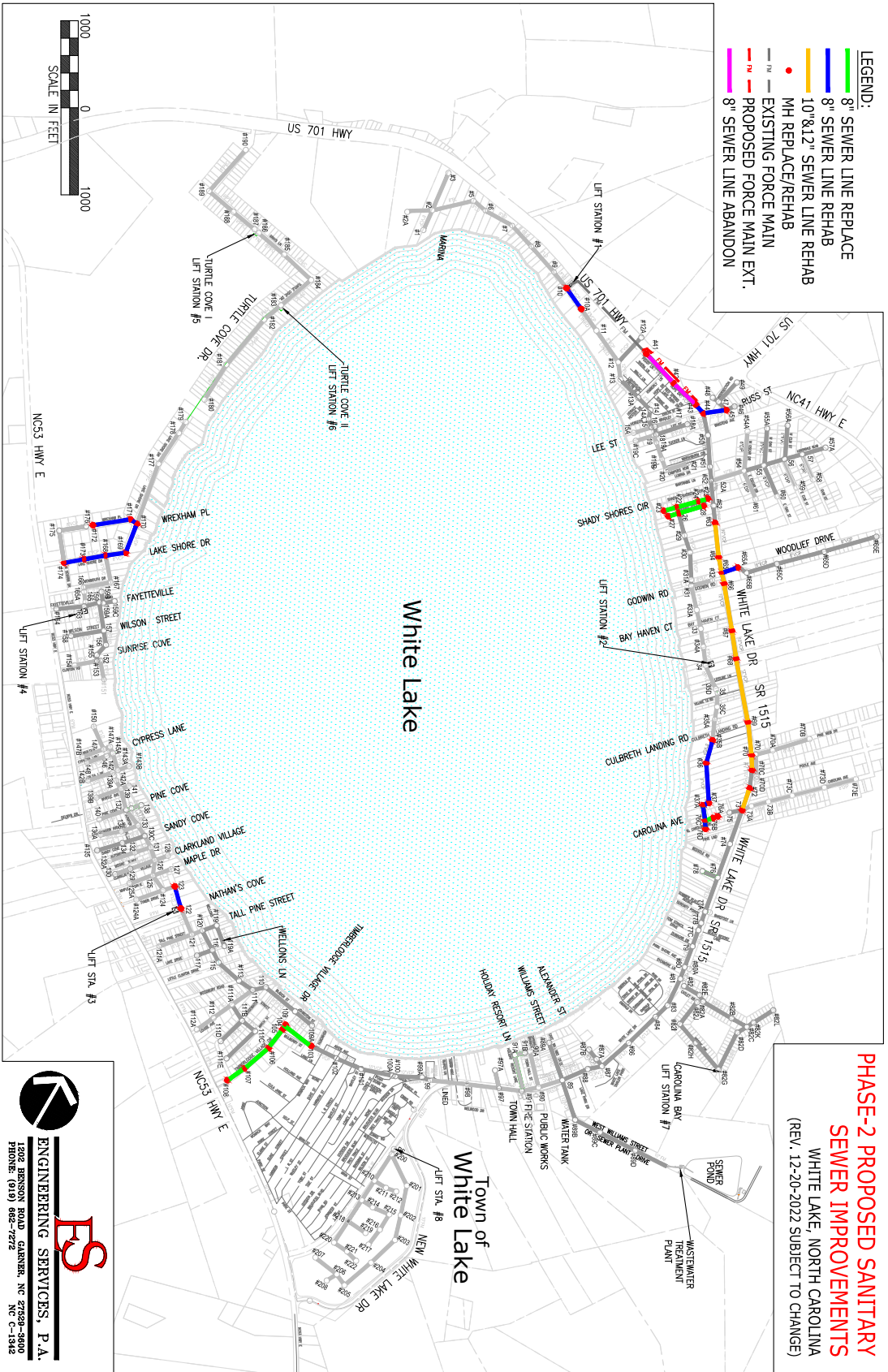
Because of the very close proximity to the lake, maintaining the Town's sanitary sewer system should be a priority.

LEGEND:

- 8" SEWER LINE REPLACE
- 8" SEWER LINE REHAB
- 10" SEWER LINE REHAB
- 16" SEWER LINE PIPE BURST
- 16" SEWER LINE REPLACE
- MH REPLACE/REHAB
- SEWER SERVICE REROUT



- LEGEND:**
- 8" SEWER LINE REPLACE
 - 8" SEWER LINE REHAB
 - 10" & 12" SEWER LINE REHAB
 - MH REPLACE/REHAB
 - EXISTING FORCE MAIN
 - PROPOSED FORCE MAIN EXT.
 - 8" SEWER LINE ABANDON



**PHASE-2 PROPOSED SANITARY
SEWER IMPROVEMENTS**
WHITE LAKE, NORTH CAROLINA
(REV. 12-20-2022 SUBJECT TO CHANGE)

ES
ENGINEERING SERVICES, P.A.
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NC C-1342

Rainfall patterns have become less predictable, and big rains can bring a massive amount of water into the lake in a short period of time, so maintaining the Turtle Cove outlet as a flood relief valve is important.

The pH of rainfall has continued to increase, and the 2023 monitoring data from Clinton, NC shows it was slightly above 6 (as it was in 2022). It bears repeating that the lake pH reflects the reality of higher rainfall pH, and there is no way for the lake pH to return to the acidity levels of the past (when rain was acidic) as long as ammonia emissions from agriculture (which is what is causing the continued increases in rainfall pH in the region) are high.

Site NTN NC35

