

## WHITE LAKE STUDY BACKGROUND INFORMATION

White Lake is a natural lake fed by springs located in a natural depression which has been theorized as being caused by a meteorite bombardment of the earth, several millenniums ago. The lake has been used for recreational purposes for many years. Most of the property surrounding the lake is occupied by private cottages, with only a few public beaches. Development in the area was inhibited prior to 1961, due to lack of water and sewer facilities. However, since that time water and sewer systems have been installed and development has become more rapid. By about 1962 or 1963, the area shown on the attached map within the town limits of White Lake was fairly well developed. However, the edge of the west of the lake had not been developed, due to the fact that it was very swampy and not adaptable to development without large expenditures of money. In approximately the year 1963, Mr. Tilden Walker acquired this property and began developing by building a road as shown on the map. The road originally was built with no openings installed for drainage purposes. In the year 1964, which was the wettest year in North Carolina of record since the Weather Bureau has been keeping records in this State, the lake became overfull and was damaging docks on the old side of the lake, and also getting up out of the lake bank and under cottages and houses. The residents of White Lake felt that surely the Tilden Walker road was blocking the outlet of the lake causing this unusual rise. There is little doubt that they were partially correct in this summation. On October 5th, at the direction of the then Governor of North Carolina, the State Highway Commission cut two dragline ditches through the Walker fill at the locations shown, and Mr. Walker, under the direction of the State Parks Service, installed seven 29"x18" C. M. pipe arches, at each of these locations.

During this same period of high water in the lake, Mr. Fred Keith, who owns property north of the Walker property, approached the Highway Commission for permission to install a pipe under U.S. 701. This permission was at first denied, but then after further study and consideration, it was decided to allow the installation provided the controlling elevation of the invert be set by the State Parks Service. Mr. Tom Ellis advised Mr. Keith that if left with his Department's jurisdiction, the elevation would be 66.0. Mr. Keith therein decided that the installation of the pipe would be of no benefit, and the matter was dropped.

Recently with the help of the Highway Commission, Mr. Tilden Walker has dug an outlet ditch below U.S. 701 and a head ditch above U.S. 701. The installation of a 24" concrete pipe was begun at an elevation of 56.8±, mean sea level. When residents of White Lake discovered that this work was being done they immediately protested, fearing that the digging of a ditch this deep may affect the surface of the lake. On September 17th, this office was contacted about this matter, and I went to White Lake and advised that work on Highway right of way should cease until the matter was given further study and settled. It was agreed with the delegation representing the people of White Lake, which consisted of the Mayor and several Councilmen, and also the Chairman of the County Commissioners and two Commissioners, that a study would be made to see if the cutting of the ditch might have a detrimental effect on the water elevation in White Lake.

#### STUDY AND CONCLUSIONS

In order to make a study of the possible effects of the proposed ditch, records were obtained on the surface elevations of White Lake since October 1964, through August 20, 1968. Also, rainfall records for the rain gage at Elizabethtown Lock No. 2, which is 4½ miles from White Lake, were obtained for use in the study. Average temperatures for the same period were also obtained for the station at Lock No. 2. From this information, the mean monthly evaporation from White Lake was calculated and a chart prepared showing the lake elevation and the net rainfall evaporation. These two are shown on the attached chart and show the close correlation between the surface elevation and the evaporation rainfall. Calculations were made on the outflow through the fourteen 29x18" C. M. pipe arches and it was found that for the month of February, 1965, which had the highest outflow for any month during this period, that the amount only amounted to slightly over two-tenths of an inch on White Lake. From this it can be seen that the outflow is of no significance in the study. It is also concluded that these pipes serve only as a psychological factor that should another year occur as wet as 1964, the lake will again rise well above its normal elevation. It was also concluded from the comparison of the different factors involved that the balance of water in White Lake is very delicate. It is felt that anything done to upset this balance, in either direction, would be detrimental to the recreational facilities provided by the lake, and catastrophic to the owners of the property on the old side of the lake, who depend on the influx of vacationers during the season to provide their income.

In determining whether or not seepage would flow into the ditch three observation wells were dug at the locations shown on the attached map. It was found that within less than a 24 hour period water rose in these wells to within six inches of lake surface elevation. They were not observed for a longer period of time, however, it is felt that had they been left open, water would have eventually reached very closely the elevation of the water in the lake. It was also observed that the water in the ditch dug by Mr. Walker on the upper side of U.S. 701, rose 1.1' between September 17th and 24th. During this period absolutely no rainfall had fallen. It is, therefore, concluded that there is seepage to this ditch from the lake. It is felt that the seepage under the road would be retarded for some period of time, but due to the manner in which this fill was put in, that is - the trees were knocked down with bulldozers and covered with sand clay, that the seepage through this area would increase over a period of time and could actually increase to the point that the lake would be lowered several feet. As an example, it has been calculated that even  $1\frac{1}{2}$  cubic feet a second seepage to this ditch could over a year's time cause the average surface of the lake to fall one foot. This, of course, depending on rainfall and temperatures, but for the average year the above would hold true.

It is, therefore, concluded that no openings should be allowed under U.S. 701 below the elevation of 66.0, mean sea level.

Supporting data for the above conclusions is available in the Hydrographic Engineer's office of the State Highway Commission.

Submitted by C. R. Edgerton, State Hydrographic Engineer.

Location of proposed pipe line  
Proposed elev. 56.8 ± msl

Ditches cut  
by Walker

BLADEN  
7 @ 29" x 18" CMPA  
elev. 65.7 msl  
7 @ 29" x 18" CMPA  
elev. 65.9 msl.

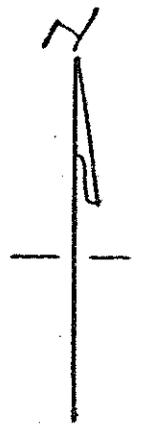
2 Lines 48"  
Elev. 61.6 msl  
Natural Outlet

Observation  
Wells  
Road & Fill  
area (Walker  
development)

WHITE LAKE  
Ave. Lake Elev  
Since 1965  
65.8 msl

S T A T E F O R E S T

WHITE LAKE  
POP. 130



Bladen County  
White Lake  
Drainage Study  
CRE 9-'68



STATE OF NORTH CAROLINA  
STATE HIGHWAY COMMISSION



May 16, 1973

MEMORANDUM TO: Messrs. C. R. Edgerton and  
N. S. Day

FROM: Don Overman *D. J. Overman*

SUBJECT: Ratified House Bill 994 - An Act To Allow  
The Town of White Lake to Dig Ditches Below  
a Certain Level

Attached for your information and guidance is a copy of Ratified House Bill 994 - 1973 Session of the General Assembly and Ratified House Bill 406 - 1971 Session, pertaining to digging ditches below a certain level in the vicinity of White Lake.

Basically, the Ratified House Bill 994 excludes the Town of White Lake for the purpose of installing, repairing and maintaining its water and sewer mains and lines, provided the Town has obtained a permit from the State Highway Commission in accordance with G. S. 136-93.

HJ:ph

Attachments

GENERAL ASSEMBLY OF NORTH CAROLINA  
1973 SESSION  
RATIFIED BILL

CHAPTER 252

HOUSE BILL 994

AN ACT TO AMEND CHAPTER 570 OF THE SESSION LAWS OF 1971 SO AS TO ALLOW THE TOWN OF WHITE LAKE TO DIG DITCHES BELOW A CERTAIN LEVEL IN BLADEN COUNTY.

The General Assembly of North Carolina enacts:

Section 1. Chapter 570, Session Laws of 1971, is hereby amended by deleting the period and adding a comma at the end of Section 1 and by adding the following: except for the Town of White Lake, after first having obtained a written permit from the State Highway Commission or its duly authorized officers, as provided in G.S. 136-93, in the installation, repair and maintenance of its water and sewer mains and lines.

Sec. 2. This act shall become effective upon ratification.

In the General Assembly read three times and ratified, this the 23rd day of April, 1973.

JAMES B. HUNT, JR.

James B. Hunt, Jr.

President of the Senate

JAMES E. RAMSEY

James E. Ramsey

Speaker of the House of Representatives

GENERAL ASSEMBLY OF NORTH CAROLINA  
1971 SESSION  
RATIFIED BILL

CHAPTER 570

HOUSE BILL 406

AN ACT TO PREVENT THE DIGGING OF DITCHES BELOW A CERTAIN LEVEL IN  
BLADEN COUNTY.

The General Assembly of North Carolina do enact:

Section 1. It shall be unlawful for any person, firm or corporation to dig any ditch under any portions of U. S. Highway No. 701, N. C. Highway No. 53 and S. R. 1515 which surround that body of water in Bladen County known as White Lake below 66 feet above sea level.

Sec. 2. If any person shall violate the provisions of this act he shall be guilty of a misdemeanor and may be fined or imprisoned in the discretion of the Court.

Sec. 3. All laws and clauses of laws in conflict with this act are hereby repealed.

Sec. 4. This act shall become effective upon ratification.

In the General Assembly read three times and ratified, this the 16th day of June, 1971.

H. P. TAYLOR, JR.

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H. P. Taylor, Jr.

President of the Senate

PHILIP P. GODWIN

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Philip P. Godwin

Speaker of the House of Representatives