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INFORMATION FOR NOMINATION

OF LAKE PHELPS AS AN

AREA OF ENVIRONMENTAL CONCERN

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THE CATEGORY CONTAINED IN THE REVISED SECTION .0501 OF THE STATE GUIDELINES FOR AREAS OF ENVIRONMENTAL CONCERN, FRAGILE COASTAL NATURAL AND CULTURAL RESOURCE AREAS, IS CONSIDERED MOST APPLICABLE TO THE LAKE PHELPS AREA. IT IS DEFINED AS "AREAS CONTAINING ENVIRONMENTAL, NATURAL, OR CULTURAL RESOURCES OF MORE THAN LOCAL SIGNIFICANCE IN WHICH UNCONTROLLED OR INCOMPATABLE DEVELOPMENT COULD RESULT IN MAJOR OR IRREVERSIBLE DAMAGE TO NATURAL SYSTEMS OR CULTURAL RESOURCES, SCIENTIFIC, EDUCATIONAL, OR ASSOCIATIVE VALUES, OR AESTHETIC QUALITIES."

THE BOUNDARY OF THE PUBLIC TRUST WATERS OF LAKE PHELPS, CONSIDERED TO BE AN AEC, CAN NOT BE DETERMINED DUE TO THE LACK OF A DEFINED HIGH WATER MARK. IT IS IMPERATIVE THAT AN AREA SURROUNDING THE LAKE BE DESIGNATED, INCLUSIVE OF THE LAKE PROPER, AS AN AREA OF ENVIRONMENTAL CONCERN IN ORDER TO PROTECT THE WATERS OF LAKE PHELPS.

THE INITIATION OF THE NOMINATION HAS GROWN OUT OF CONTINUOUS ATTEMPTS BY WASHINGTON COUNTY CITIZENS AND LOCAL GOVERNMENT OFFICIALS TO HAVE THE MEAN HIGH WATER MARK ESTABLISHED, THUS DESIGNATING THE AREA WHERE LOCAL GOVERNMENT CAN INITIATE CONTROLS AND PROVIDE PROTECTION FOR LAKE PHELPS. THE EXEMPTION OF FARM LANDS FROM ZONING AND SEDIMENTATION AND EROSION CONTROL LAWS HAS COMPOUNDED THE PROBLEM.

THE FOLLOWING INFORMATION IS PROVIDED IN SUPPORT OF THE NOMINATION OF LAKE PHELPS AND SPECIFIED SURROUNDING AREA AS AN AREA OF ENVORONMENTAL CONCERN.

US Department of Commerce
National Coastal Services Center Library
2234 South Hobson Avenue
Charleston, SC 29405-2413
COLLECTION

A reasonably new use within the confines of the Lake area is an experimental peat mining operation. The present permit covers an area of 216 acres located on the southwest side of Lake Phelps fronting on Keep Road and an additional permit request now pending will include 32,000 acres. The extracted peat will be used as a fuel source.

Recreation has been the primary use of the Lake in the past with plans presently in the works for expansion of park facilities by the Department of Natural Resources and Community Development, Division of Parks and Recreation. Aside from boating, fishing has been the most enjoyed activity on the Lake. Other water based recreation such as swimming, skiing, and sailing are important uses involving Lake Phelps. Picnicking and camping areas are located in the Park also.

OWNERSHIP

Ownership of lands in the area is divided among the State of North Carolina, First Colony Farms', and individual citizens. Much of the agricultural lands are being cultivated by First Colony Farms' with some farming operations belonging to individuals.

The State of North Carolina retains a 167 acre Park Site including Somerset Place, a State Historic Site. Located within this area is a boat launch, parking lot, 17-table picnic area, a permanent park office and a 13-site campground which abuts the historic site. A 500-acre tract of Park land on the southern side of the Lake is in its natural state. The actual water of Lake Phelps to the high water mark is considered Public Trust Waters and is owned by the State of North Carolina.

Existing platted residential lots on the southwest side are retained by individuals with the majority of property directly adjacent to Lake Phelps owned by First Colony Farms'.

SIGNIFICANT FEATURES

The historical, cultural, natural, and environmental resources within the confines of the 17,370 acre area is phenonmenal. Not only is there historical and cultural resources portraying the beginning of two industries which continue to be the basis for the economy of Eastern North Carolina, but included is a natural area full of scientific information relative to the formation of the Coastal Plain, and more specifically the origin of Lake Phelps.

HISTORICAL

Somerset Place located within the boundaries of Pettigrew Park has been examined carefully by the Department of Cultural Resources, Division of Archives and History, and determined to be of considerable historic value. The National importance of Somerset Place has been well documented by the Survey and Planning Section of the Division of Archives and History.

The first major development in the Albemarle-Pamlico region was related to Somerset Place, located on the northern perimeter of Lake Phelps. Developed in the late 1700's, Somerset Place was a large plantation. Drainage canals were dug, and timber cut in order to bring the swampy lands surrounding the Lake into cultivation. Josiah Collins, the founder of Somerset Place, is considered to be a pioneer of land reclamation in this region.

The clearing of land for agricultural purposes continues in the area today with the development of such large corporate farms as First Colony Farms, Mattamuskeet Farms, Tyson and Shima-American Farms. Timber production continues to be a major employment generator in Eastern North Carolina as well, as exemplified by Weyerhaeuser and Georgia Pacific. Technology has added a new dimension to the efforts of Josiah Collins, but agricultural and timber production continue to be a way of life for many residents in Washington County, as well as the Region. The reclamation of land for productive use is of national and possibly, international significance.

ORIGIN

The Albemarle-Pamlico Region is a part of the area bordering the Atlantic Ocean that is generally referred to either as the Outer Coastal Plain or as the Tidewater Region. This area is the most recently emerged from the sea and is greatly affected by oceanic influences. The relationship of Lake Phelps in the regional picture is discussed in detail in the Hydrology of the Albemarle-Pamlico Region. Lake Phelps, referred to as a Carolina Bay, is an environmental and natural resource containing many unexplored areas directly related to the origin and development of the Coastal Plains.

The origin of bay lakes such as Lake Phelps is still a mystery, thus the Lake area is a valuable laboratory for the study of the origin and properties of bay lakes. It is hoped a Geologic Survey being performed by East Carolina University may shed light on the question of origin which to date has not been satisfactorily answered.

HYDROLOGY

The hydrology of the area can be considered a unique sensitive feature. Although it is difficult to reconstruct the hydrolic conditions of the region due to changes implemented by man, Heath's hydrology study provides invaluable information on the topic. The sediments of importance to the study of the hydrolic conditions are the upper sediments which provide the area with a fresh water supply. These are from ground level downward the Quaternary sediments, the Yorktown Formation, the Pungo River Formation, and the Castle Hayne Acquifer.

The Yorktown Formation and Castle Hayne Acquifer are important water sources to Washington County, as are Quaternary sediments as a water supply to shallow wells. These units are hydrologically important because they are capable of transmitting significant quantities of water.

All sediments were saturated with salt water while the Albemarle-Pamlico Region was submerged below the sea. As sea level declined, fresh water began seeping in and flushing salt water from the aquifers. When sea level was at it's lowest level, 18,000 years ago, conditions were best for flushing. As sea level rose, the water table reached land surface causing swampy conditions. Sea water has continued to advance in the sediments. Problems within these acquifers will be addressed later.

When discussing the water budget of Lake Phelps, the amount of water transfered in and out of the Lake through these aquifers is unknown. The elevations established surrounding Lake Phelps proper range between 10 and 15 feet above mean sea level and are the highest elevations in the immediate area, suggesting little runoff from surrounding property. This fact represents some unusual hydrological features.

There are no known natural surface streams feeding Lake Phelps. Primarily the regional rainfall of 51 inches a year provides replenishment to the Lake. Precipitation exceeds evapotranspiration in the region with evaporation as the major cause of water loss measuring 36 inches each year. Natural overflow drainage, occuring when the Lake reaches a level of 12', takes form as sheet flow to the Scuppernong River through a low swampy area, with major drainage occuring by way of canals.

VEGETATION

The importance of the natural areas surrounding Lake Phelps to Washington County and to the Region cannot be measured at this time. Its resource as an educational laboratory has just begun to be realized.

The area adjacent to Lake Phelps between Moccasin Canal and the Pettigrew Park campground, extending 3 miles with an approximate width of 350', is a cypress swamp of significant value. A report prepared by Jeannie Wilson of the University of North Carolina at Chapel Hill discusses this plant community in detail.

The area is dominated by Taxodiumdistichum (Bald cypress). The varied sizes of Cypress indicate a dramatic change in water level as opposed to a more gradual fluctuation. A lower level is suggested by Cypress knees far from the shoreline along with the germination of Nyssa sylvatica var. (Black Gum). On higher ground where the drainage is better Liriodendron tulipifera and Liquidambar styraciflua (Tulip Poplar and Sweet Gum) have outgrown the Cypress.

The most extensive Cypress stand is located in the western section of the swamp. No aquatic species of vegetation are present in this area, but behind the acquatic zone is a narrow Juncus (Rush) zone, and a shrub zone with Celphalanthus occidentalis (Buttonbush), Sambucus canadensis (Elderberry) and Callicarpa americana (Beautyberry). Beneath the Cypress Asimina triloba (Paw Paw), Itea virginica (Virginia Willow) and Lindera benzoin (Spicebush) are well developed. In the eastern area of swamp, aquatic species such as Myripohyllum exalbescens (Parrot feather), Pontederia cordata (Bickerelweed) and Vallesneria americana (eelgrass) are found. Bog and pocosin species can be found due to soil conditions. Those found are Clethra alnifolia var. alnifoldia (Sweet Petter Bush, White Alder), Magnolia Virginiana (Sweet Bay), and Persea borbonia (Red Bay). Herbaceous species present include Arisaema triphyllum (Jack-in-the-pulpit), Hydrocotyle umbellata (Marsh pennywort), Impatiens capensis (Jewelweed, Touch-me-not), Pilea pumila (Clearweed), and Boehmeriia cylindrica (False Nettle).

Ms. Wilson (1975) concludes her report with the opinion that the "Cypress swamp is indeed a unique area and should remain as it is, providing the level of the lake is not altered. In its natural state, it would serve as an excellent scientific and educational study area."

The just published Lake Phelps Lake Management Study reveals the existence of a rare and endangered plant species, the spotted pipewort (Eriocalon pellucidum), on State property south of Lake Phelps.

FISH

Approximately 26 species of fishes are recorded to be located in Lake Phelps one of which is identified on the rare and endangered fish list, the Waccamaw Killifish. A number of game species are present including

the large mouth bass, white perch, bluegill, and chain pickerel. Other species include channel and white catfish, alewife and blueback herring. Forage species include golden shiners, tidewater silversides, gizzard shad, longnose gar, and striped killifish.

MAMMALS

Black bear are sited occasionally in heavily wooded areas along with frequent appearances by the white-tail deer. Fur bearing species generally located in the heavily wooded areas along the shoreline of the Lake include racoon, opossum, mink, muskrat, fox, and bobcat.

BIRDS

Lake Phelps has been recognized by the Wildlife Resources Commission as a resting and feeding area for migratory birds. Canadian geese and a variety of ducks feed on adjacent agricultural lands and natural vegetation along the shoreline. Wood ducks are provided the perfect habitat with Cypress trees for nesting and insect foods produced in the vegetation along the shoreline.

The bald eagle sited twice in the Lake Phelps area is on the State rare and endangered species inventory.

CULTURAL

The recreational benefits provided by Lake Phelps and the surrounding area reflect significant cultural value. Outings to Lake Phelps provide a look at the past and a beautiful setting for present day activities to visitors.

Local citizens are reminded of the foundation on which their family's livelihood is based and many memorable times experienced by loved ones throughout the years.

The culture of Eastern North Carolina can be enjoyed and experienced, in manyways, by many persons, in the natural, historical and recreational atmosphere of Lake Phelps.

PROSPECTIVE USES

There has been much concern over this beautiful and unique Lake for many years. It is an important natural resource for the study of flora and fauna, unequaled in its recreational capacity. A statement included in the Proceedings of the Symposium on Endangered and Threatened Biota of North Carolina expresses the immediacy of the problem. "Not only is the recreational function of the State Park seriously impaired, but the resort property and the entire lake fauna are endangered. We are not optismistic about the future of Lake Phelps." (Bailey, 1975).

Protection is a must to prevent what is occuring constantly as natural areas are exploited. The cultural value of the Lake Phelps area and the array of natural beauty make it a valuable public asset. This Coastal Plain Lake, the second largest fresh water lake in North Carolina, has undergone many changes. According to the Symposium proceedings, none of the fresh waters of the peninsula between the Albemarle and Pamlico sounds consisting of lakes, the Scuppernong and Aligator rivers and small streams, along with their typical Coastal Plain-estuarine fauna are imperiled, except Lake Phelps.

Present and future uses surrounding Lake Phelps are responsible for its precarious state of well being.

AGRICULTURE

Despite state control of a large portion of the Lake Phelps area, many problems are occuring which they cannot presently prevent. Much of the area surrounding Lake Phelps has been stripped of its natural vegetation and put into cultivation. This has had great impact on the Lake. The Draft Lake Management Plan states that "farming operations of this magnitude implemented adjacent to Lake Phelps affect the wildlife habitat, fishery, water fowl habitat, as well as the recreation of the Lake and Park." (NRCD 1977) Each problem will be discussed along with its specific impact on the lake environment.

The Environmental Impact Statement for the Parks and Recreation Master Plan lists three major problems which are supported in other documents as well.

1. Intense wind due to massive clearing of vegetation
2. Smoke and dust filled air from debris burns and aeolian sediment
3. Ground water variation

Sediment, thought to be carried by wind from agricultural lands, has caused a change in water quality. At a 1975 symposium concerned with endangered and threatened Biota, Lake Phelps was a topic for discussion. The changes in Lake Phelps since 1964 were discussed by Joseph Bailey (1975).

"In 1964, the North shore of Phelps Lake had a firm sand bottom, with a light covering of shifting loose silt of peat origin which did not seriously impede seining efforts." By 1965 areas of "fibrous and pulpy peat" were found on top of the sand. In 1972 major changes had taken place. Water level was up 30 cm or more and the predominantly sand bottom was now covered along the north shore with 15 to 60 cm or more of fine silt and muck. Mr. Bailey concluded the "light peat soil had apparently

been periodically windcarried into the water." The prevailing winds, southwest to northeast, have caused the accumulation of sediment on the north and northeast sides of the lake.

A biological analysis by A. M. Witherspoon of the sediments in Lake Phelps suggested the following: 1. Algae species in the lake sediments are capable of producing algae bloom. 2. The highest levels of Algae with the deepest accumulation is on the north and northeast side of the lake. 3. The untimely removal of the sediment accumulations could trigger increased algae growth in the Lake. All species of algae found were associated with sediment accumulations.

These aeolian sediments threaten the recreational boating capacity of the Lake due to maintenance problems associated with collection of sediment on boat motors and hulls.

The hydrology is being affected by farming practices. The large network of drainage canals associated with farming operations is lowering the water table, due to the seepage of groundwater into the ditches, causing an unsaturated zone below the land surface. Heath's hydrology study provides very important information on the effect of drainage ditches on the area ground water. He suggests the artificial lowering of the water table and the change from swamp land to cultivated fields has an effect on the local water budget. The effect is a significant increase in the amount of water moving through the shallow groundwater system after drainage practices are instituted.

Although rainwater is the major source of replenishment of the Lake, ground-water inflow also represents a small source. The development of drainage canals around the Lake which are lower than the Lake bottom cause water from the Lake to move through the ground to the drainage canals.

These canals have short-circuited lateral seepage of ground water to the Lake.

The lowering of the water table has an important regional effect. Salt water is rising in the sediments, gradually displacing the fresh water and most of man's actions have tended to increase the rate of advance. Phosphate mining in Aurora has affected the water table as far away as Washington County, as has water withdrawn for industrial purposes in Plymouth and Washington.

If the ground water supply is infiltrated with sea water, the Region's major source of water supply will be ruined. The other potential sources of fresh water are lakes and the major drainage canals. Heath suggests, "It is difficult to develop effective policies for the management of ground-water systems before either the quantity or quality of the water are significantly affected" (Health, 1975). It appears the expansion of cultivation will continue as will industry and we should prepare to protect what may one day become a water source for not only Washington County, but surrounding areas.

RESIDENTIAL DEVELOPMENT

Residential development is increasing along the periphery of Lake Phelps. Scattered homes sit on the western and southern boundaries of the Lake with a large concentration of dwellings and mobile homes located on the southwest. Development has been recognized as a major threat to the quality of the Lake water due to:

1. The failure of septic tank systems
2. Critical reduction of the vegetation buffer along the lake shore
3. Increased winds and sediments due to the clearing of land

4. Increased foot and vehicular traffic

The Washington County CAMA Plan recognizes the potential increase in residential development. "The market for waterfront acreage should increase as the heavily populated areas of the Northeast and Piedmont begin to migrate towards this area in search of homesites near the water." (McGarrity, 1976). Increased residential and commercial development could accelerate septic tank problems causing further contamination of the Lake.

Requests were made by Health Officials in September of 1974 to the Department of Natural and Economic Resources to establish a high water mark differentiating state property from that in private ownership. Individual lots were sold with boundaries extending to the low water mark. The general boundary for state property is the high water mark.

Property owners and Health Officials located septic tanks at a distance from the water which they felt would be more than adequate for protection. Due to heavy rains in recent years, the water level has approached dwellings, and inundated septic systems. Health Officials wrote; "The waters were interfering with septic tank installations in the area and causing public health problem." (Glover, 1974). Mr. Glover, District Health Director, expressed his concern to DNER that the situation would become worse in the future. In 1974 there was no boundary to assist Health Officials in designating a setback for the location of septic tanks and lines. A letter written to Mr. Glover by the Assistant Director of Parks and Recreation suggested some of the septic systems "might actually be on stateowned property" (Thomasson, 1978).

The supply of nutrients to the acquatic environmnet causes the process of eutrophication. In extreme cases, the waterbloom phenomenon develops and in stagnant water oxygen supply becomes depleted.

This leads to fish kills and other ramifications that render a recreational useless. A local example of this phenomena is the Chowan River where algae bloom in the summer of 1978 caused extensive damage and now, in the summer of 1979, the Pamlico River is experiencing similar problems.

Studies completed as late as 1966 showed no sources of nutrients in Lake Phelps. This is a recent occurence and the run-off from septic tanks could very well be a big source of the small, but significant, nutrient increase in the Lake. The Parks and Recreation Master Plan suggests the septic tank nitrification fields may also be contributing to the degradation of area ground water supplies.

RECREATION

The expansion of recreational facilities adjacent to Lake Phelps will have an effect on the Lake area as outlined in the Draft Environmental Impact Statement - Pettigrew Lake Study.

The attendance figures up from those of 1975 totaling 44,593, topped 53,919 in 1976. The demand on the park facilities has increased 27 percent in the last three years. The trend is expected to continue, putting greater demand on the Park and surrounding areas with a projection of 85,000 annual visitors to the Park and 32,000 annually to visit Somerset Place.

The Park land located on the northern side of Lake Phelps is designated Conservation in the Washington County CAMA Plan. This designation is defined as fragile, hazard and other lands necessary to maintain a healthy natural environment and necessary to provide for the public health, safety, or welfare. The lands under Conservation and Rural are considered lands to be protected and to help focus the attention of state and local agencies and interests concerned with valuable natural resources of the State.

Presently all of the recreation facilities at Pettigrew State Park are located on 30 acres of the State owned 167 acre Park. After evaluating the existing site for future recreational development, it was determined: 1) sufficient land is not available for a convenient parking lot for boat launching; 2) corrective measures must be taken to maintain the existing boat launch; 3) the picnic area is of insufficient size to handle existing use; 4) the campground can be expanded by only 12 sites, while reducing the open field used for group games; and 5) the silted lake bottom along the Pettigrew site is unsuitable for swimming.

The proposed development concept includes the use of land west of Somerset for a day use area, land east of Somerset for overnight camping and the purchase

of Big Point on the north side of the Lake for a day use area with swimming and boat launching facilities. Educational and hiking trails will wind along the lakeshore connecting the various recreation sites. The proposed developed acreage would total 480 acres.

The need for recreational acreage for the Coastal Region is assessed at 16,632 acres. Although there is an excess of recreational acreage in the multi-county planning region containing the Park, according to the Master Plan Environmental Impact Statement, Lake Phelps is one of the primary fresh water recreation facility on the Coast, thus great pressure will be placed on the facility.

The Master Plan as drawn, represents the total possible development that could be realized, but does not advocate this development to be completed at one time. The development of the proposed stages or phases are dictated by appropriation amounts, quantity of future demand realized, and the magnitude of adverse environmental impacts encountered during early development stages. If this approach is strictly adhered to, any negative effects from the expanded development of Pettigrew Park can be prevented.

According to the EIS, the impact from the Park development compared to that of agricultural development is insignificant. The EIS states, "the Pettigrew region has been severely damaged environmentally by agricultural practices. Virgin vegetation has been removed from most of the area, ground water levels have been lowered by drainage canals, and the soil composition, fertility, and characteristics constantly altered. As a result, the relative degree of adverse environmental impact created by the Pettigrew Master Plan will be in regionally insignificant levels." (Hazard, 1978).

The improvements planned for the Pettigrew Park area on the north side of Lake Phelps and the Big Point area include the following: swimming beach, boat launch and dock, hiking trails, interpretive trails, permanent park office and

maintenance area, an 84 table picnic area, two toilet buildings, a 24 car parking lot, open space for informal games, 60 car parking lot, fishing pier, 12 car parking lot, a visitor's center, residence for the site manager, two group tent camps; each with a capacity of 50 to 75 persons, a 25 car parking lot with two bus spaces, 12 to 15 campsites, 1800 square feet open air shelter, wash house with showers, two 70 site camp loops, two wash houses and toilet buildings, boat launch with a 60 car/trailer parking lot, two launching ramps and a boat basin, enlargement of a canal to accommodate 16 to 18 feet boats, a nature trail through the bald cypress forest, 1.65 miles of new road, 90 car trailer lot, 36 floating dock slips, gasoline pumps, 10 rental boats, 10 rental sailboats, concession shelter, concession building containing boating supplies, fishing equipment and refreshments, open and covered storage areas for boats, park ranger's residence, two picnic areas with 60 tables, grills, trash receptacles, two toilet buildings, swimming beach, and three 20 car parking areas.

The impact of construction activities is discussed in the EIS in reference to land use, hydrology, soils, flora and fauna. The area to receive major alterations is Big Point. In its natural state, the area is heavily vegetated, with a high water table. The variation in facility placement will define the range of impact magnitudes, as will the type of facility.

Proposed sites will require fill for roadways and parking lots which will alter the hydrology of the area. The increase of impermeable surfaces will contribute to increased run off containing impurities associated with the automobile. This will also increase the burden on the existing drainage system. Clearing land for the location of access and recreational facilities will alter the present environment of vegetation and animal life.

The location of septic tanks will subject the area to groundwater pollution due to the high water table. Increased sediment during construction may cause

deposits in the Lake itself, as would increased wind due to land clearing.

According to the Park Plan EIS, before any construction or development, a qualified naturalist will be consulted in order to prevent any possible damage to any rare or endangered plant species that may be present. Removal of vegetation is slated for both the Big Point area and the Pettigrew site.

The comparison of the recreational improvements to the agricultural development in the area does not appear to justify immediate acceptance of the proposed activities as harmless. The EIS, along with many sources, dwell on the major problems agricultural practices have caused in the Lake Phelps area. The magnitude of existing problems make it even more imperative that all uses proposed in close proximity to Lake Phelps receive careful review and scrutiny, and that special care be taken as the much needed recreational facilities are developed.

PEAT MINING

The projected acreage of peat deposits, within a tri-county area, which can be harvested is over 146,000 including a large area around Lake Phelps, according to a study by the Research Triangle Institute.

Peat, considered young coal, is a fuel formed by the decomposition of organic matter over thousands of years in an environment plentiful in water and deficient in oxygen. The peat located on land owned by First Colony Farms south of Lake Phelps is considered to be in the ideal range of decomposition for fuel peat due to its high heating value with low ash.

Most of First Colony's harvestable peat occurs on untimbered, poorly drained land covered with waxy leafed shrubs and scattered pond pine. Attempts at using the land for other agricultural uses has been economically prohibitive. The inflated costs of all facets of land development for agriculture and the

current levels of farm prices makes it economically unattractive to develop peat lands.

Experimentation efforts on the farm to reclaim mined areas for agricultural use have proven successful. Five and a half feet of peat was removed from a 50' x 1600' strip to test the production capability of the area. Half of the land was planted in soybeans and half in grain sorghum with test yields of 38 bushels/acre of beans and almost 76 bushels/acre of sorghum. Later the strip of land was planted in corn and soybeans. The land yielded 160 bushels/acre of corn and just under 40 bushels/acre of beans. This is equivalent to production on other First Colony land.

The sod peat production involves harvesting wood and peat together. The procedure is explained in R. N. Campbell's report on The History, Current Status and Future Plans for First Colony Farms' Peat for Energy Program: "The digging member on the sod machine is a circular plate which has around its periphery 45mm diameter cutters oriented like the paddles on a paddle wheel. The plate is canted 15 degrees off the vertical so that when the machine is operating, it is cutting a slot in the ground which is the width of the cutter, 15 degrees off vertical, and 40cm deep. The rotation of the cutting plate is against the direction of motion of the prime mover so that the first material encountered by a cutter is raw peat 40cm below the surface which will be at a moisture content of about 82%. As this cutter moves on around, it picks up a certain amount of relatively dry peat near the surface producing a mixture which, ideally, will be in the range of 66 to 69%. This range produces well formed sods which dry quickly. As the cutter emerges from the surface, this material is slung off by centrifugal force into the bottom of a cylinder. In the cylinder is an auger which forces the material through a die (or dies) where, upon emergence, it breaks up into individual cylinders which average about 30cm in length.

These are deposited on the surface where they remain until air dried to the desired moisture content."(Campbell, 1979).

The production process is now underway and a permit has been requested from NRCD to mine 32,000 acres spanning Washington, Hyde and Tyrrell counties.

Negotiations are in the works between First Colony and the North Carolina Electric Membership Corporation for a fuel contract under which the Farm would furnish peat sods to fuel a 6,000mw power plant (located on the farm) for a period of forty years.

Land south of Lake Phelps, approximately 20,000 acres, has had canals and ditches in place for a number of years, and is ready for sod harvesting. Other areas will have to be drained for at least two years before put into production. This suggests the area south of the Lake will be one of the first areas to be mined.

According to the Draft Environmental Impact Statement prepared on Amendments to the North Carolina Coastal Management Program, the extraction, production, and burning of peat to generate electricity is considered to be less harmful to the environment than the mining of coal. It will however have an impact on the water table and water quality due to aeolian sediments and the removal of ground water through the mining process.

The long term effects of such a massive environment altering activity must be adequately assessed and protective measures instituted to prevent irreversible damage to the natural, cultural and educational values of Lake Phelps.

SUMMARY

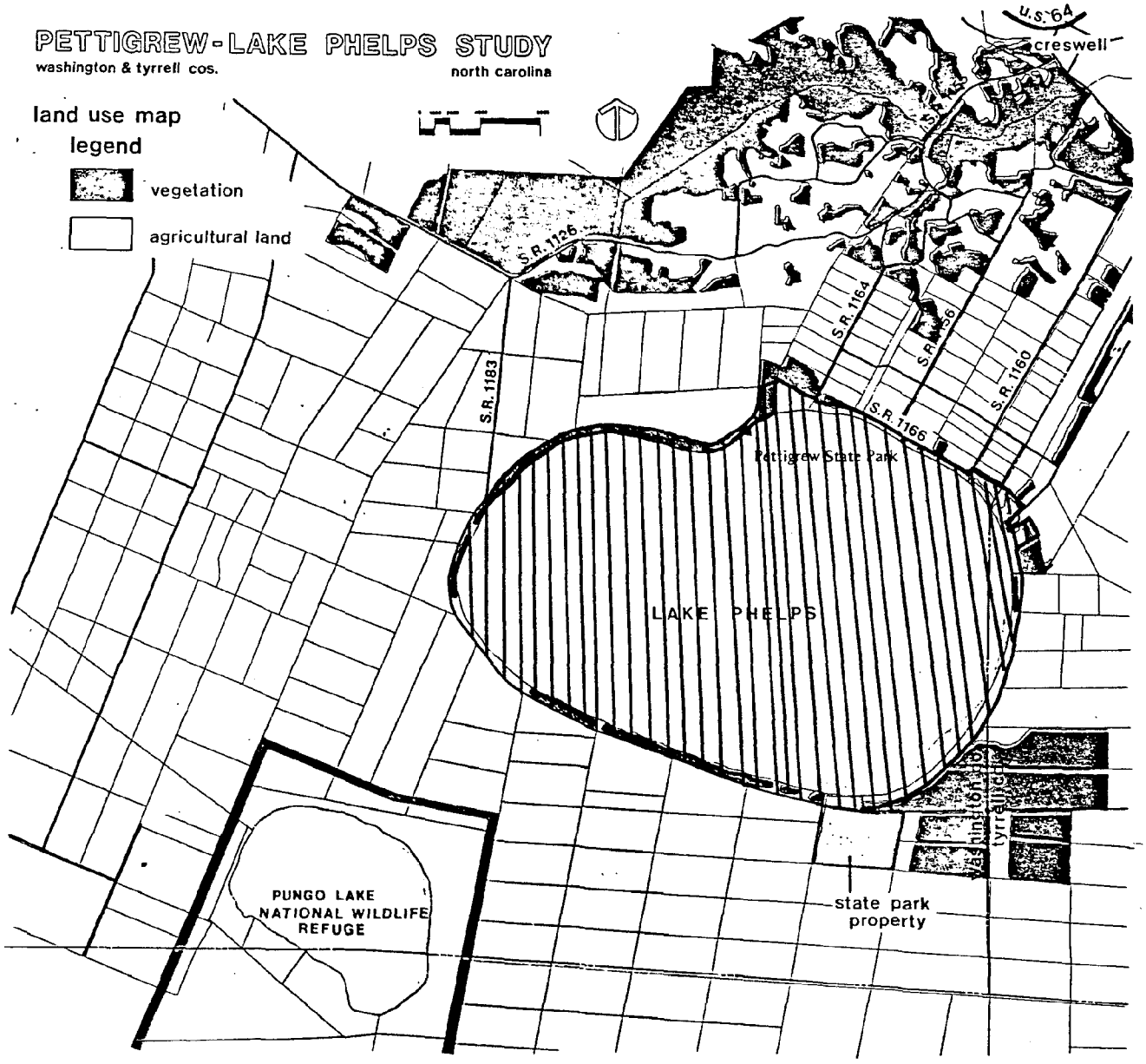
There can be no question as to the considerable value of the Lake Phelps area locally, statewide and possibly nationwide. Fragile natural and cultural areas, noted in Section .0502 of the State Guidelines, are to be key components of systems unique to the coast, areas of significance to the scientific or educational communities, particularly important to a locale either in an aesthetic or cultural sense, and of special importance to our understanding of past human settlement and its interaction with the coastal zone.

Due to the problems noted within this text and future plans for the expansion of residential, agricultural, mining and recreational activities, the well being of Lake Phelps is in danger. Attempts by local agencies and individuals to protect the Lake have been thwarted primarily due to the lack of a designated high water mark, and the large land holdings by influential individuals and/or agencies adjacent to the Lake. The Lake Phelps issue has been bounced from agency to agency with no concrete solution.

With the assistance of the Coastal Resources Commission, further degradation of the Lake can be prevented in the interest of local citizens and those who come from other parts of the State, to use and enjoy the benefits offered by the beautiful and unique Lake Phelps.

The Area for designation as an Area of Environmental Concern shall be described as follows:

The boundary shall follow the western then southern boundary of the right-of-way line of State Road 1183 until it ends at the 500 acre State Park property south of Lake Phelps where it shall continue in the road bed of what is known as Keep Road until it reaches State Park property on the northeast side of the Lake. The boundary shall follow the present State property line to the north side of Lake Phelps and shall include tract 5 of Clarion Estates and continue in the Keep Road road bed until it reaches State Road 1183 on the northwest side of the Lake.



REFERENCES

Bailey, J. R. 1975. Fresh Water Fishes. Proceedings of the Symposium on Endangered and Threatened Biota of North Carolina. Raleigh, N. C.: North Carolina State Museum of Natural History.

Campbell, R. N. 1979. Peat for Energy Program, History, Current Status and Future Plans. Washington County, N. C.: First Colony Farms, Inc.

Hazard, R. B. 1978. Draft Environmental Impact Statement for Pettigrew Park Master Plan. Raleigh, N. C.: N. C. Department of Natural Resources and Community Development, Division of Parks and Recreation.

Heath, R. C. 1975. Hydrology of the Albemarle-Pamlico Region North Carolina; A Preliminary Report on the Impact of Agricultural Developments. U. S. Geological Survey Water-Resources Investigations 9-75. Raleigh, N. C.: U. S. Geological Survey, Water Resources Division.

McGarrity, John. 1976. Washington County CAMA Land Use Plan.

N. C. Coastal Resources Commission. 1979. State Guidelines for Areas of Environmental Concern, Proposed Amendments. Raleigh, N. C.: N. C. Department of Natural Resources and Community Development, Office of Coastal Management.

N. C. Department of Natural Resources and Community Development. 1977. Draft Lake Phelps Management Plan. Raleigh, N. C.: N. C. Department of Natural Resources and Community Development.

N. C. Department of Natural Resources and Community Development. 1979. Lake Phelps Lake Management Plan. Raleigh, N. C.: N. C. Department of Natural Resources and Community Development, Division of Parks and Recreation.

N. C. Department of Natural Resources and Community Development. 1977. Pettigrew State Park Master Plan. Raleigh, N. C.: N. C. Department of Natural Resources and Community Development, Division of Parks and Recreation.

Ramsay, M. J. 1979. Personal Communication. Somerset Place National Historic Site. Raleigh, N. C.: N. C. Department of Cultural Resources, Division of Archives and History.

Riggs, S. R. and M. P. O'Connor. 1975. Geological Bibliography of North Carolina's Coastal Plain, Coastal Zone and Continental Shelf. Sea Grant Publication UNC-SG-75-13. Raleigh, N. C.: N. C. State University - University of North Carolina Sea Grant Program.

U. S. Department of Agriculture. 1978. Soil Survey Maps and Interpretations for Washington County, North Carolina. U. S. Department of Agriculture, Soil Conservation Service.

Williams, Floyd. 1979. Personal Communication. First Colony Farms' Peat Mining Permits. Washington, N. C.: N. C. Department of Natural Resources and Community Development.

Wilson, J. E. 1975. Lake Phelps Cypress Natural Area. Unpublished Report. Chapel Hill, N.C.: University of North Carolina.

Winslow, Darrell. 1979. Personal Communication. Septic Tank Problems at Lake Phelps. Washington County, N.C.: Washington County Health Department.

Witherspoon, A. M. 1976. A Preliminary Report of Algal Activity in Phelps Lake, North Carolina. Raleigh, N.C.: N. C. State University.

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