Suggs Mill Pond Game Land Management Plan

2014 – 2023

N.C. Wildlife Resources Commission staff has extensively contributed to the development and preparation of this plan through their various fields of professional expertise. All content, management strategies, recommendations, goals, and needs for change were developed using the best available science and professional working knowledge of Suggs Mill Pond Game Land, its habitats, and terrestrial and aquatic species. Careful consideration has been given to all input received from the public, external agencies, and organizations that have an interest in or use the game land to ensure a that comprehensive management program is administered on Suggs Mill Pond Game Land. The successful implementation of the plan will depend on the continued input and support from all interested parties.

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EXECUTIVE SUMMARY

Suggs Mill Pond Game Land is 11,044 acres in size and occurs in Bladen and Cumberland Counties. It is owned by the state of North Carolina and the North Carolina Wildlife Resources Commission is the primary custodian. State ownership of this property dates back to 1994 when 62 acres was donated to the NCWRC. Suggs Mill Pond Game Land is managed for primary users which include hunters, trappers, anglers, and wildlife viewers. Some of the property's signature species include white-tailed deer, black bear, eastern wild turkey, and a variety of waterfowl species. In addition to primary users, there are an increasing number of non-traditional users on North Carolina Game Lands that include hikers/walkers, horseback riders, researchers, paddlers, target shooters, and others. Nine different habitat types occur on Suggs Mill Pond Game Land, each with its own ecological value. Pocosin habitat, by far, makes up the largest portion of the cover types on this property covering 48%. Twenty-two threatened, endangered, rare, or special concern animal species are thought or know to occur in the habitats found on this game land. Management goals include providing a diversity of habitat types and forest age classes through science based land management that are properly interspersed and juxtaposed across the landscape to ensure that a wide variety of terrestrial and aquatic wildlife species are maintained on the game land. Land managers strive to maintain game species at huntable levels through science based land management and sound regulations and to provide quality habitat for endangered, threatened, and rare species located on the game land to ensure their populations are maintained or increased. Additionally, extensive effort is made to provide sufficient infrastructure and opportunities to allow all game lands users a quality experience while on the game land with minimal habitat degradation and minimal conflict among user groups. To ensure these goals are met the NCWRC will need to collect various types of information regarding the species on the game land and the users of the game land, secure funding to accomplish management goals, acquire additional properties as they become available, maintain and develop regulations that promote sustained use of natural resources, and develop relationships with conservation partners that help meet management goals.

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INTRODUCTION

North Carolina Wildlife Resources Commission

The North Carolina Wildlife Resources Commission (hereafter referred to as NCWRC) was established in 1947. Prior to 1947, the tasks of managing state owned Wildlife Management Areas were executed by the Department of Conservation and Development. General dissatisfaction with the program led to the creation of the Wildlife Resources Law in 1947 that established the North Carolina Wildlife Resources Commission.

Since 1947, the NCWRC has been dedicated to the conservation and sustainability of the state's fish and wildlife resources through research, scientific management, wise use, and public input. The NCWRC is the state regulatory agency responsible for the enforcement of fishing, hunting, trapping and boating laws and provides programs and opportunities for wildlife-related educational, recreational and sporting activities.

Game Lands Program

The NCWRC's Game Lands Program is administered by the Division of Engineering and Lands Management and is an important component of the Division. This program and the land it supports are historic in nature and are recognized by hunter and non-hunter alike as one of the gems of the NCWRC. Land management practices on NCWRC holdings allow the agency to play a critical role in managing, acquiring, recovering, and enhancing wildlife habitat for rare and common species identified in various action plans to be applied on a landscape scale. North Carolina's Game Lands Program includes approximately 2,000,000 acres of public and private lands managed through professional staff for public hunting, trapping, and fishing. These lands are spread all across the state. North Carolina's national forests are designated as game lands, collectively comprising more than a million acres.

Since the program's beginnings in the early 1970's, game lands have been acquired and managed largely with funds derived from the sale of North Carolina's hunting and fishing licenses, as well as appropriations from the federal excise tax (Federal Aid in Wildlife Restoration Act) on sporting arms, ammunition, and archery equipment. Appropriately, the NCWRC and the public viewed these lands as hunting, trapping, and fishing grounds. That viewpoint is expanding as both funding sources and public interest have changed.

As the number of licensed hunters both nationally and in North Carolina has been declining, non-consumptive activities such as bird watching, hiking, and biking have been on the rise. At the same time, the majority of new money used to purchase game lands has come from state trust funds designed to promote clean water, aid in conservation of endangered species, and from the mitigation of wetlands lost to construction and highway projects. This has prompted state officials and conservation groups to see a larger role for North Carolina's game lands. The NCWRC recognizes the need to provide for a larger and more diverse group of game land users.

Game Lands Program Mission Statement

Consistent with the original establishment legislation for the NCWRC, the mission of the Game Lands Program is:

> "...to enhance, facilitate, and augment delivery of comprehensive and sound wildlife conservation programs. Inherent in delivery of a lands program consistent with this mission is the feasibility and desirability of multiple uses on lands owned by the state within the system. In addition to hunting, fishing, trapping, and wildlife viewing as primary uses, we recognize the desirability of providing opportunities for other activities on state-owned game lands that are feasible and consistent with the agency's mission, and compatible with these traditional uses."

The NCWRC's Game Lands Program management objectives are:

- To provide, protect, and actively manage habitats and habitat conditions to benefit aquatic and terrestrial wildlife resources
- To provide public opportunities for hunting, fishing, trapping, and wildlife viewing
- To provide for other resources-based game land uses to the extent that such uses are compatible with the conservation of natural resources and can be employed without displacing primary users
- To provide an optimally sustainable yield of forest products where feasible and appropriate and as directed by wildlife management objectives

PURPOSE AND NEED FOR THE PLAN

The NCWRC developed this Game Land Management Plan (hereafter referred to as Plan) to provide a foundation for the management and use of Suggs Mill Pond Game Land (hereafter referred to as Suggs Mill Pond) in Bladen and Cumberland Counties, North Carolina. The Plan will serve as a guide for the NCWRC's management actions and direction over the next 10 years and is considered amendable. The Plan will be periodically reviewed and compared to successes and failures of objectives set forth. Amendments will be made based on these successes and failures providing the NCWRC with the ability to implement adaptive resource management. Fish and wildlife conservation will receive top priority in game lands management, and wildlife-dependent recreation will be allowed and encouraged as long as it is compatible with, and does not detract from, the mission of the Game Lands Program or the purposed for which it was established. Hunting, fishing, trapping, and wildlife viewing are recognized as traditional uses on game lands and will continue to be allowed and encouraged. Non-traditional uses will be allowed on game lands as long as they are feasible and consistent with agency's mission and compatible with these traditional uses.

The Plan was prepared by a development team composed of NCWRC staff that provided various expertises to address different components of the Plan, which included staff from the divisions of

Engineering and Lands Management, Wildlife Management, Inland Fisheries, and Law Enforcement. In developing this Plan, the development team incorporated the input of state agencies, nongovernmental organizations, local citizens, and the general public through a series of public input meetings, as well as an online comment session through the NCWRC's website. This public involvement and the planning process itself are described in other sections of the Plan.

All aspects of game land management were considered in the development of the Plan and include but are not limited to; fish and wildlife communities, forest management, infrastructure development and maintenance, public uses, fish and wildlife information needs, financial assets and future needs, future plans for acquisition, regulations and enforcement, and existing and needed partnerships and collaboration.

The purpose of the Plan is to develop proposed actions that best achieve the purpose of the Game Lands Program. It will serve to attain the goals and objectives developed for the game land, contribute to the Game Lands Program mission, address key problems, issues, and relevant mandates, and provide consistency with sound principles of fish and wildlife management.

More specifically, the Plan is needed to:

- Provide a clear direction for game land management
- Provide game land neighbors, users, and government officials with an understanding of NCWRC management actions on and around the game land
- Ensure that NCWRC management actions, including wildlife management and recreational activities, are consistent with the mandates of the Game Lands Program
- Provide a basis for the development of budgetary requests for operations, maintenance, and improvement needs

Again, this Plan is written based on a ten year planning horizon and is considered a living document that can be amended and updated based on adaptive resource management. This will give managers the ability to make changes to the Plan based on varying conditions such as: updates and improvements on management strategies, changes created by catastrophic weather events, informative data received through research and surveys, and changes of wildlife population and ecosystem responses to implemented management strategies.

REGIONAL CONTEXT

Mid-Atlantic Coastal Plain of North Carolina

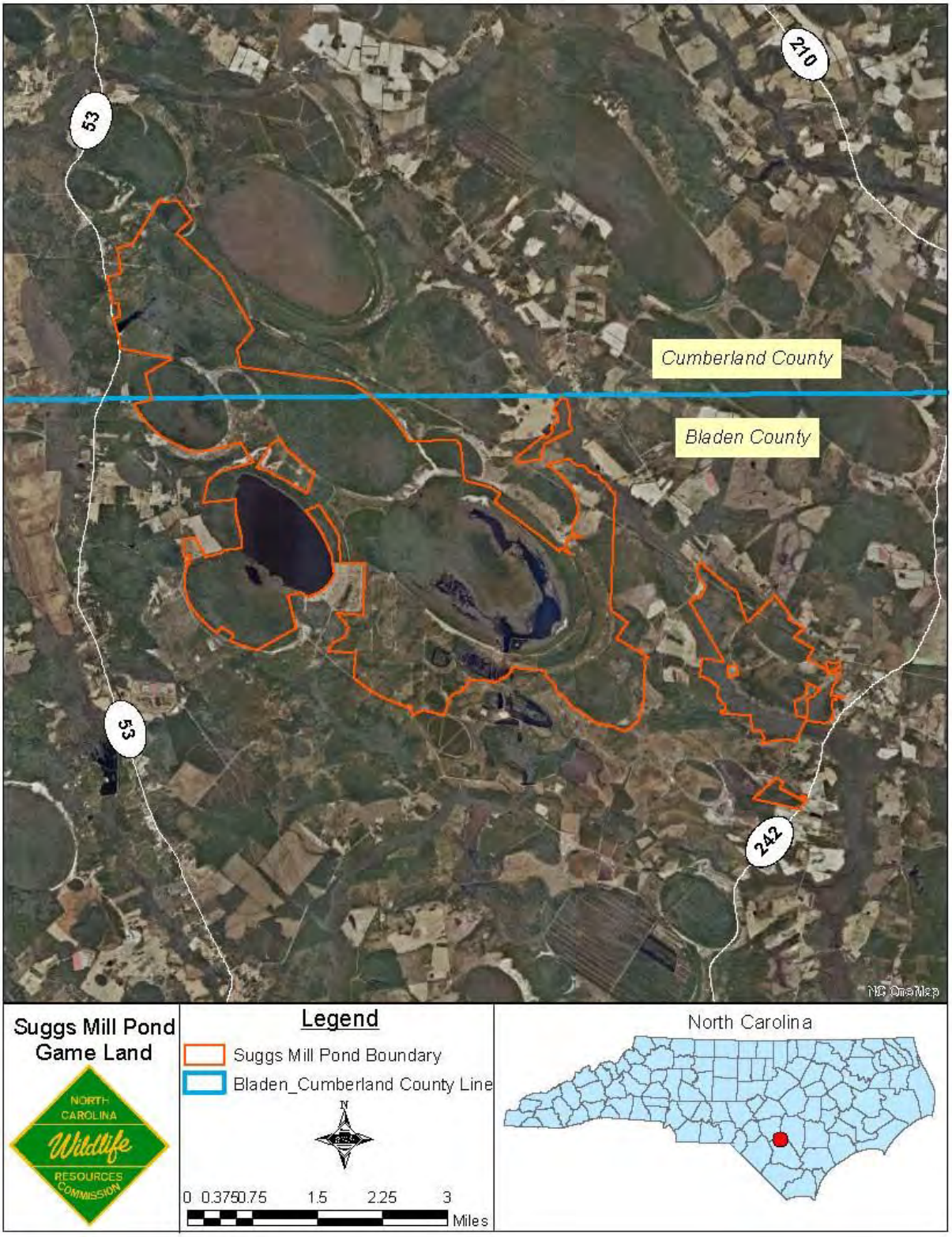
In North Carolina, a large diversity of fish and wildlife habitats exist across three distinct regions of the state: the Coastal Plain, the Piedmont, and the Mountains (Figure 1). These regions fall within much larger ecoregions, span state borders, and link North Carolina to neighboring states. Suggs Mill Pond is located primarily in Bladen County, which lies within the Mid-Atlantic Coastal Plain of North Carolina. This ecoregion is characterized by flat lands extending inland from the coast an average of 125 miles (NCWRC 2005), with the combined land and water areas covering nearly half the area of the state. Elevations increase inland at roughly one foot per mile. This ecoregion ranks among the top 10 in the continent in number of reptile, bird, and tree species (Ricketts et al. 1999) and is particularly diverse from an avifauna standpoint because it lies at the southern end of the range for many northeastern bird species and the northern end for many southeastern bird species. In fact, North Carolina is the only state where some bird species are found year round.

Figure 1 - Ecoregion delineations of North Carolina (data source: NC GAP; ecoregions as defined by Bailey 1995).

Many of the factors impacting wildlife species conservation can be traced to larger, landscape-level issues with habitat loss being the most obvious threat. Longleaf pine was historically found in all but the wettest sites in the Coastal Plain but now only exists on less than 3% of its

historical range (Frost 1993). Over 97% of these forests have been lost to agriculture, pine plantations, and the interruption of historical fire regimes (Brockway and Outcalt 1998). Habitat fragmentation largely due to land conversion and fire suppression also greatly impact habitats in the Coastal Plain of North Carolina. As habitats in this area become more dissected and isolated, they become smaller, sometimes causing them to become ecologically dysfunctional.

Suggs Mill Pond lies within a region that historically was dominated by fire driven ecosystems. Fire has been an important sculptor of the landscape, and has been used as a management tool for thousands of years (Van Lear et al. 2005). In the early twentieth century, there was a push to eliminate fire from the landscape in the United States. People portrayed fire as both destructive and damaging, largely unaware of the beneficial and maintenance aspects of burning. The U.S. Forest Service and other state forestry agencies preached and practiced fire exclusion (Van Lear et al. 2005), and this has led to increased fuel loading across the United States on both private and public lands. The suppression of fire on the landscape has taken a toll and altered many fire-adapted ecosystems and adjacent ecotones (Duerr 2007). The Mid-Atlantic Coastal Plain was no exception to these events.

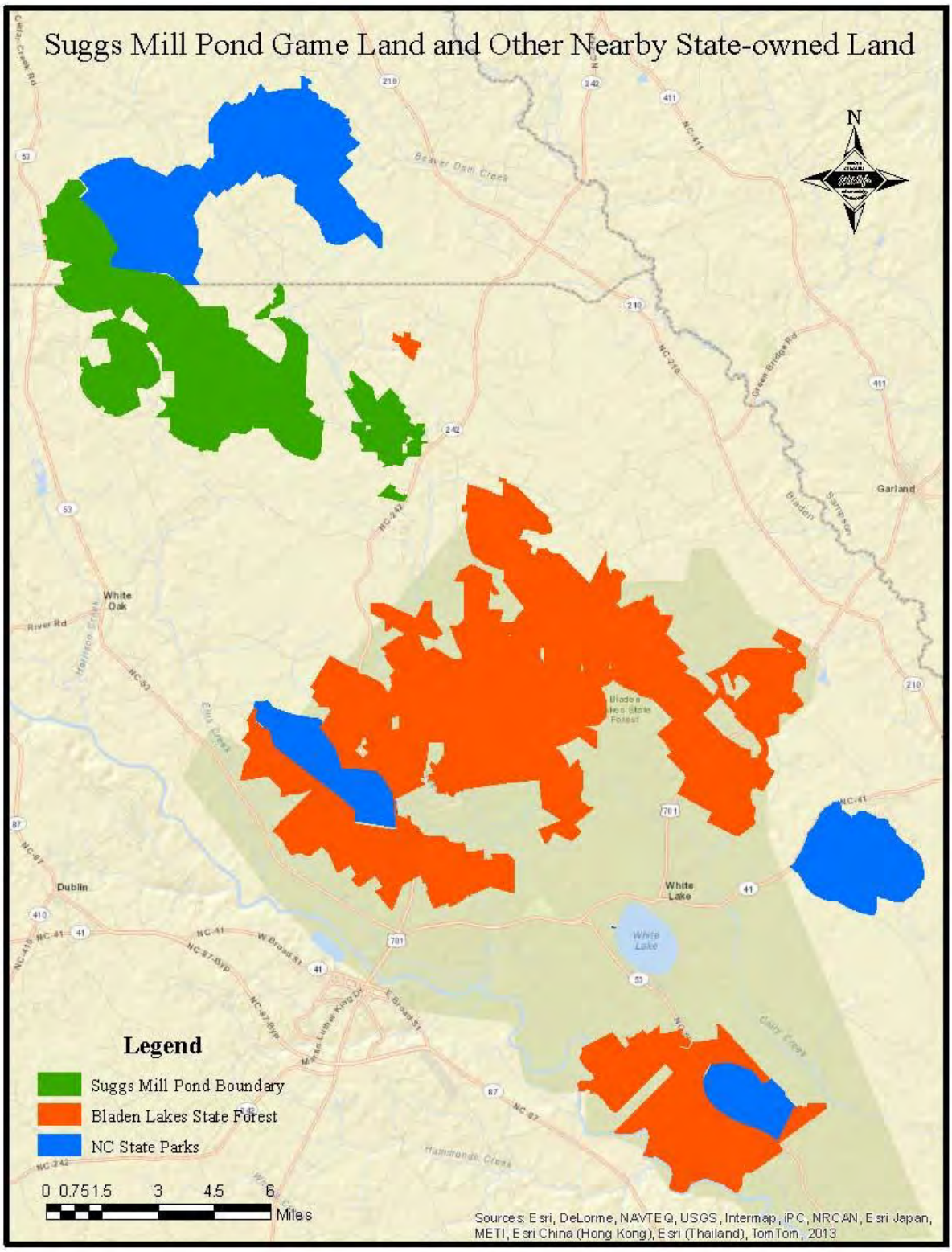


Map 1 - Suggs Mill Pond Game Land.

Role and importance of Suggs Mill Pond Game Land

Suggs Mill Pond is an 11,044 acre tract of land located in Bladen and Cumberland Counties, with the vast majority lying in Bladen County (see Map 1). Roughly 1,400 acres lies in Cumberland County. This area of the state lies in the Bladen Lakes region and is characterized by the largest concentration of mostly unaltered Carolina bays remaining throughout the range of this unusual geological feature (LeBlond and Grant 2005). Carolina bays are shallow, elliptical depressions, oriented on a northwest-southeast axis, which are found on the Atlantic coastal plain from northern Florida to southern New Jersey (Moellenbrock 1998). They are particularly numerous in Bladen County, North Carolina. A Carolina bay is an elliptical wetland basin partially to fully surrounded by an arch-shaped and usually dry sand ridge called a bay rim. Some bays are filled by lakes while other support dense, shrubby pocosin communities. A few have both open water and pocosin communities. Under natural conditions, the bay rims support natural communities of longleaf pine and intervening flats support a mix of longleaf pine and pocosin communities. This site encompasses five large bays and several smaller ones, all peat-filled. It also includes sections of the undulating sandy landscape between the bays and several segments of streams swamp along Turnbull Creek. It includes good examples of some of the typical natural communities of the region, and also some very distinctive communities, along with a cluster of rare plant and animal species.

Its proximity to other protected lands makes it a key area for the connectivity of large tracts of state owned lands in the Mid-Atlantic Coastal Plain (see Map 2). It's bordered by Bushy Lake State Natural Area (6,343 acres) to the north and is within 14 miles of Bladen Lakes State Forest (32,870 acres), Singletary Lake State Park (1,221acres), Bay Tree Lake State Park (1,447 acres), and Jones Lake State Park (2,208 acres). It should be noted that Jones Lake State Park is bordered by Bladen Lakes State Forest to the northeast and southwest and Singletary Lake State Park is all but completely surrounded by Bladen Lakes State Forest.



Map 2 – Suggs Mill Pond Game Land and other nearby state-owned lands.

Role and importance within regional conservation partnerships, priorities, and plans

There are several conservation partnerships, priorities, and plans that, in some respects, dictate and obligate management practices that occur on Suggs Mill Pond. These obligations stem from: criteria set by entities that allocate monies used to purchase land and/or fund habitat management projects, memorandums of understanding between partners, rare and endangered plant and animal species, public utilities right-of-ways, and research and surveys objectives set forth by the NCWRC. Along with the NCWRC's legal mandates and initiatives, other planning activities directly influence the development of the Plan. Various groups and agencies develop and coordinate planning initiatives involving regional, state, and local agencies, local communities, non-governmental organizations, and private individuals to help restore habitats for fish and wildlife on and off public lands.

The NCWRC is involved in cooperative partnerships in an effort to reduce the declining trend in biological diversity. Management considerations for habitats targeted in this Plan reflect the North American Waterfowl Management Plan which includes the Atlantic Coast Joint Venture, Partners in Flight Plan, the South Atlantic Migratory Bird Initiative (SAMBI), the North Carolina Wildlife Action Plan, and the NCWRC's CURE program.

The Atlantic Coast Joint Venture focuses on the middle and upper Atlantic Coast and concentrates their efforts on the conservation of habitat for native birds in the Atlantic Flyway. Within the Atlantic Coast Joint Venture is the joint venture formed between the NCWRC, U.S. Fish and Wildlife Service, and private conservation organizations.

The Partners in Flight Plan emphasizes land bird species as a priority for conservation. Habitat loss, population trends, and the vulnerability of species and threats to habitats are all factors used in the priority ranking of species. Further, biologists from local offices of the U.S. Fish and Wildlife Service, the NCWRC, and conservation organizations have identified focal species for each habitat type from which they will determine population and habitat objectives and conservation actions.

In 2001 Congress, recognizing the need for funding and planning to support the conservation, protection, and restoration of the full range of wildlife species, began providing annual funding allocations to supplement existing state fish and wildlife conservation programs. The new funding required each state and territory to develop a Wildlife Action Plan. The North Carolina Wildlife Action Plan was submitted in 2005 to meet this obligation. The Action Plan provides a conservation outline for agencies, organizations, industries, and academics across the state to advance the sound management of North Carolina's fish and wildlife resources into the future. It identifies critical fish and wildlife resources and priority conservation needs and promotes proactive conservation measures to ensure cost-effective solutions ("keeping common species common") instead of reactive measures enacted in the face of imminent losses (NCWRC, 2005)

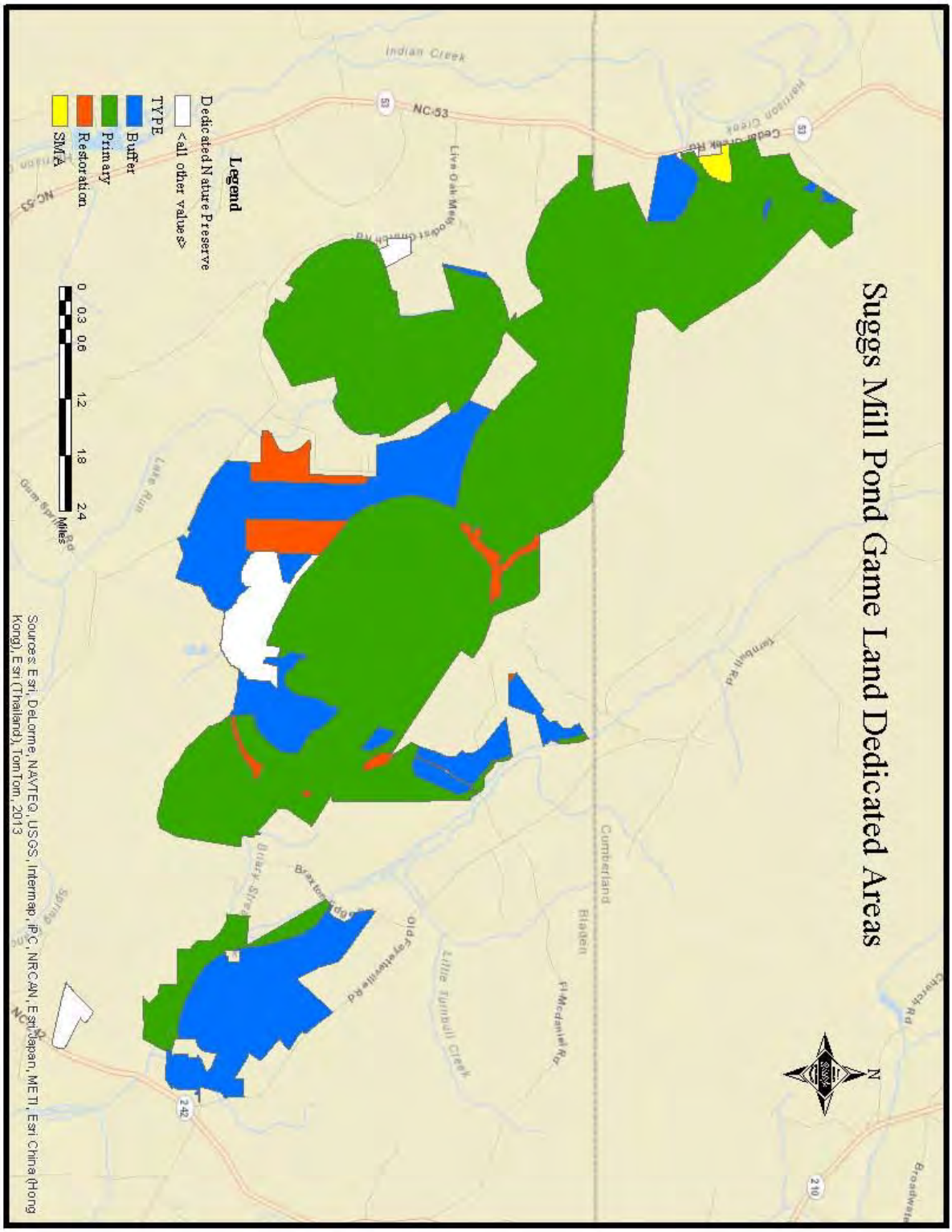
In 1998, 2006, and 2007 the North Carolina Natural Heritage Trust Fund assisted with funding used to purchase approximately 9,228 acres of land that comprises portions of Suggs Mill Pond. The North Carolina Natural Heritage Trust Fund provided supplemental funding to select state agencies for the acquisition and protection of important natural areas, to preserve the state's ecological diversity and cultural heritage, and to inventory the natural heritage resources of the state.

Lands pursued with these funds are subject to be dedicated under the North Carolina Nature Preserves Act and based on ecological values are designated into four classifications, Primary, Buffer, Restoration, and Special Management Areas (see Map 3). These designations determine the type of protection that an area receives within a property.

The Primary area of the game land is the portion which has the highest quality, receives the greatest protection, and has the greatest ecological significance. The primary boundary is drawn to include the good quality communities and rare species locations and makes up 7,928 acres of Suggs Mill Pond. It includes the bays, the stream swamp, and the most intact portions of the rims and areas between the bays.

The Buffer area is an area that serves as a buffer to the Primary area and makes up 2,480 acres. It includes all the lower quality vegetation which can contribute habitat for wider ranging species, especially if it is restored to a more natural condition.

Rules for management of Primary and Buffer areas can be found in the Articles of Dedication for Suggs Mill Pond Game Land Dedicated Nature Preserve (*Appendix XVI*).



Map 3 – Suggs Mill Pond Game Land dedicated areas.

In August 2000, the NCWRC implemented the Cooperative Upland Habitat Restoration and Enhancement program (CURE) to address the declines of small game populations and trends in habitat loss. In addition to private focal areas, the NCWRC designated four state-owned game lands totaling 21,456 acres as CURE areas: Caswell, Sandhills, South Mountains, and Suggs Mill Pond. These game lands were in mostly forested landscapes. Suitable management and appropriate target species differed from one game land to the next but, all shared a focus on early-successional habitat management through such practices as thinning of timber, use of prescribed fire, roller chopping, and other techniques. Suggs Mill Pond is intensively managed for bobwhite quail and associated songbird species but traditional game species such as deer and wild turkey benefit from this management as well as numerous non-game species such as songbirds, amphibians, reptiles, and even aquatic resources.

In 2008, the NCWRC entered into a Memorandum of Understanding (MOU) with the North Carolina Forest Service to facilitate the cooperation of the two parties in fire management activities. These activities include, but are not limited to, mitigation, training, wildfire prevention, and wildfire suppression. Among others, the guidelines set by this MOU mandates the NCWRC to conduct all prescribed fire operations pursuant to the North Carolina Smoke Management Plan.

GAME LAND SPECIFIC INFORMATION

Topographic features

The land and water areas of the Coastal Plain make up nearly half the area of the state. It can be divided roughly into two sections: the tidewater area, which is mostly flat and swampy, and the interior portion, which is gently sloping and naturally well drained. Throughout both sections, the soils consist of soft sediment with little or no underlying hard rock near the surface.

Climate

Suggs Mill Pond's climate is characterized by hot, humid summers with temperatures occasionally climbing above 95 degrees Fahrenheit, and moderate winters with temperatures seldom going below 20 degrees Fahrenheit. Since the flow of air over North Carolina is predominately from west to east, the continental influence is much greater than the ocean influence. Therefore, the state experiences a fairly large variation in temperature from winter to summer.

The most important single influence contributing to the variability of North Carolina's climate is altitude. In all seasons of the year, the average temperature varies more than 20 degrees Fahrenheit from the lower coast to the highest elevations (SCONC).

In the winter, the greater part of North Carolina is partially protected by the mountain ranges from the frequent outbreaks of cold air which move southeastward across the central states. Such outbreaks often move southward all the way to the Gulf of Mexico without attaining sufficient strength and depth to cross the heights of the Appalachian Mountain Range. When cold waves do break across, they are usually altered by the crossing and the descent on the eastern slopes of the Appalachian Range. Winter temperatures in the Coastal Plain are altered by the Atlantic Ocean which raises the average winter temperature and decreases the average day-to-night range.

In the spring of the year, the storm systems that bring cold weather southward reach North Carolina less often and less forcefully, and temperatures begin to modify. The rise in average temperatures is greater in May than in any other month (SCONC).

Differences in temperature across the state are no less pronounced in the summer than in the winter. The warmest days in the summer are found in the interior rather than near the coast. In Elizabethtown during the warmest month of the year, July, the average maximum temperature is 89.3 degrees Fahrenheit. In the coldest month of the year, January, the average minimum temperature is 31.7 degrees Fahrenheit (SERCC).

While there are no distinct wet or dry seasons in North Carolina, average rainfall does vary throughout the year. Precipitation is normally greatest in the summer, with July being the

wettest month. Summer rainfall is also the most variable, occurring greatly in connection with spotty showers and thunderstorms. Daily showers are not uncommon, nor are periods of one to two weeks without significant rainfall. Fall is the driest season, with November being the driest month. Precipitation in winter and spring occurs mostly in connection with migratory low pressure systems that appear more regularly and in a more even distribution than summer showers (SCONC). Snow and sleet occur on an average once or twice a year on the coast with little more occurrences over the southeastern half of the state. Average winter snowfall in the Coastal Plain is about one inch.

All rivers in North Carolina commonly have a maximum flow in late spring, with a minimum flow in the fall of the year. It is rare for any but the smallest streams to be dry at any time, however, all are likely to flood. The most severe floods are those during autumn which are typically associated with hurricanes. Rarely will a single hurricane cause major flood damage, but two in succession, or one coming after a very wet spell, can be very destructive (SCONC).

Soils

In general, the soils of Bladen County are composed of sands or loamy sands and have low fertility with high acid content (low pH). Soils near and west of the Cape Fear River generally have higher loam content and are therefore more suitable for cultivation. Soils associated with the Cape Fear River floodplain and adjacent low terraces have slightly higher fertility due to their origin in the Piedmont. Large areas east of the river have nutrient-poor soils due to the sand on bay rims and adjacent upland terraces and ridges, while wetland basins have shallow to deep peat soils. In these areas, the soils of upland ridges and hills tend to be well drained dry sands with peats and mucks accumulating in the drainages, basins, and low flats.

The site's soils reflect the geomorphic processes, climatic conditions, and ecological processes. The region's warm, humid climate and abundant rainfall hasten the decomposition of organic matter. Particular soils' drainage qualities determine the how long the organic matter stays in the soil.

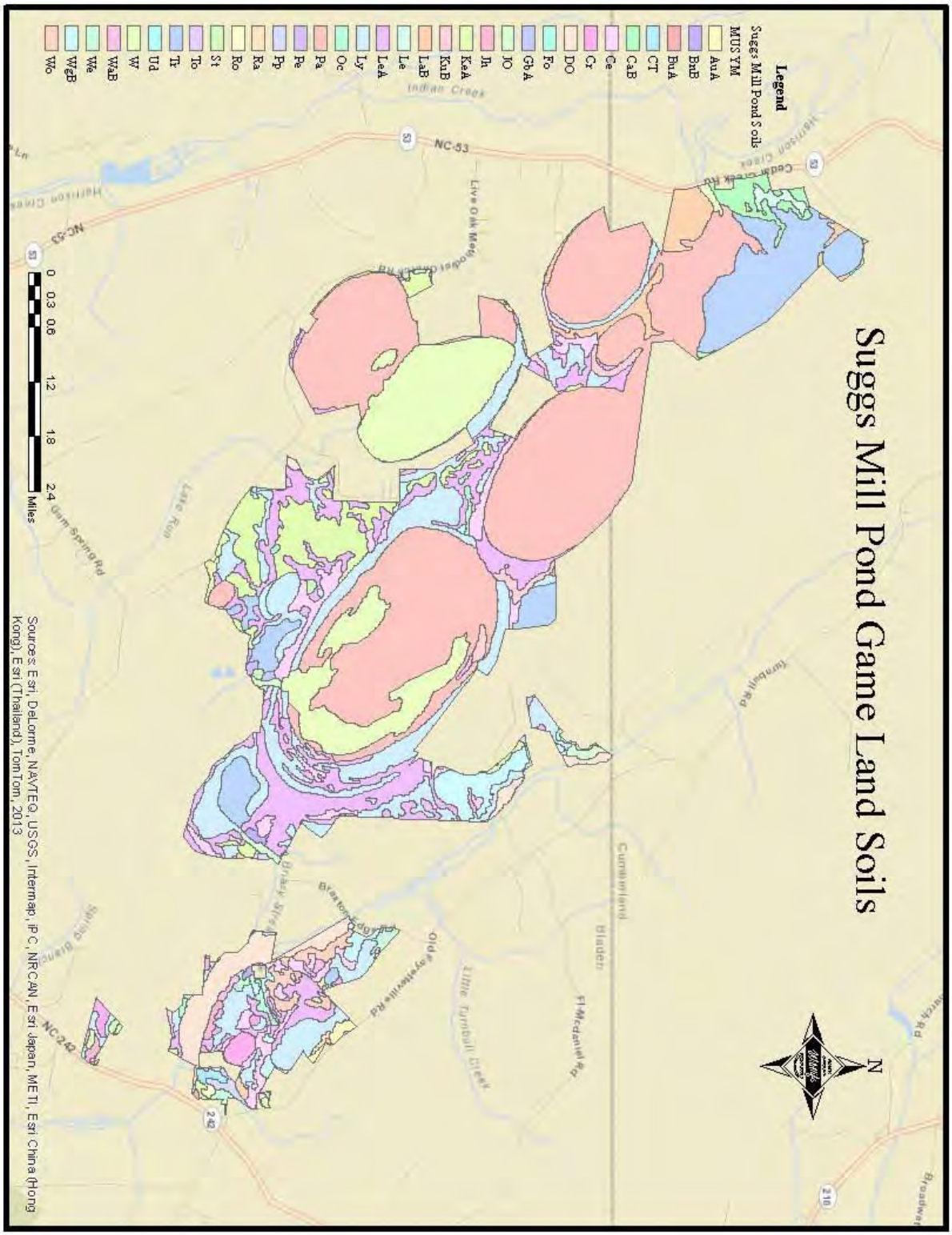
As the geologic history suggest, sandy soil horizons dominate the site. Carolina bays, with poorly drained organic or loamy subsoils, retain decomposed materials and therefore maintain organic surface horizon. However, most of the site's sandy, mineral soils are well drained and are therefore highly weathered and highly leached.

Soils identified on Suggs Mill Pond are: Autryville loamy sand, Blanton sand, Butters fine sand, Cape Fear Loam, Centenary sand, Croatan muck (rarely flooded), Croatan muck (frequently flooded), Dorovan muck, Foreston loamy sand, Goldsboro sandy loam, Johns fine sandy loam, Johnston mucky loam, Kenansville sand, Kureb sand, Lakeland sand, Leon sand, Lynn Haven and Torhunta, Ocilla loamy fine sand, Pamlico muck, Pantego loam, Paxville sandy loam, Rains fine sandy loam, Roanoke loam, Stallings loamy sand, Toisnot loam, Torhunta mucky sandy

loam, Udorthents loamy, Wagram fine sand, Wahee loam, Wakulla sand, and Woodington loamy sand (USDA, Soil Conservation Service, 1990). See Table 1 and Map 4.

Soil Series	Abbreviation
Autryville loamy sand	AuA
Blanton sand	BnB
Butters fine sand	BuA
Cape Fear Loam	CaB
Centenary san	Ce
Croatan muck, rarely flooded	Cr
Croatan muck, frequently flooded	CT
Dorovan muck	DO
Foreston loamy sand	Fo
Goldsboro sandy loam	GbA
Johns fine sandy loam	Jh
Johnston mucky loam	JO
Kenansville sand	KeA
Kureb sand	KuB
Lakeland sand	LaB
Leon sand	Le
Lynn Haven and Torhunta	Ly
Ocilla loamy fine sand	Oc
Pamlico muck, rarely flooded	Pa
Pantego loam	Pe
Paxville sandy loam	Pp
Rains fine sandy loam	Ra
Roanoke loam	Ro
Stallings loamy sand	St
Toisnot loam	To
Torhunta mucky sandy loam	Tr
Udorthents loamy	Ud
Water	W
Wagram fine sand	WaB
Wahee loam	We
Wakulla sand	WgB
Woodington loamy sand	Wo

Table 1 – Table of soil series and abbreviations for Suggs Mill Pond Game Land



Map 4 – Suggs Mill Pond Game Land soils.

Hydrology

Suggs Mill Pond lies in the Cape Fear River Basin, which is the largest river basin in North Carolina, draining 9,322 square miles, with 6,049 stream miles (NCDWQ 2000a). There are 26 counties and 116 municipalities in the basin and the population is 160 people/sq. mile. Land cover in the basin includes 56% forest land, 24% agricultural lands, 9% urban areas, and 11% other, which includes rural transport, small water areas, lakes, and estuaries (NCDWQ 2000b). This major river basin is divided into six sub-basins, two of which the game land is within. It lies almost entirely in the Cape Fear River Sub-basin and only a small portion lies within the South River Sub-basin.

Ground water provides the fresh water resources for this area but ground water level declines have been documented in the Upper Cape Fear aquifer since monitoring wells were constructed in that aquifer in the 1970s (NCDWR 2002). Studies done through monitoring well sites throughout Bladen County have shown that the ground water reservoir consists of two types of aquifers: a water table aquifer which extends from the land surface to the first confining beds of clays, sand, and silt, and confined, or semi-confined aquifers beneath and between these beds.

Monitoring wells throughout Bladen County and closest to Suggs Mill Pond indicate that below it lies three aquifers in addition to the water table aquifer: the Pee Dee, Black Creek, and Upper Cape Fear Aquifer.

Maintenance of the fresh groundwater depends on the amount of rainfall. Due to the sandy nature of the soils, rainfall infiltrates the soil and enters the water table aquifer with little or no surface runoff. However, after the ground becomes saturated during periods of extensive rainfall, some runoff occurs in roadside ditches and small intermittent freshwater ponds.

Habitats

Suggs Mill Pond is made up of nine different habitat types varying in size and location. Pocosin habitat makes up the majority of this site consisting of 48.0% of the area. Floodplain Forests comprise the next largest portion, consisting of 13.8%. Dry Longleaf Pine habitat comprises 9.7% and Plantation habitat comprises 9.3%. Lakes and Reservoirs make up 8.6%, Dry Coniferous Woodlands make up 3.6%, Early Successional Habitat makes up 2.8%, Mixed Pine/Hardwood Forests make up 2.6%, and Wet Pine Savanna makes up 1.5%. Each of these habitat types plays its own important role in the ecology of the region and will be described in greater detail later in the Plan.

Surrounding land use

Historically, this area of the state has been valued for its agricultural and silvicultural output. The production of tar, turpentine, and pitch from Bladen County's extensive longleaf pine forests played an important role in North Carolina's socioeconomic history, resulting in the "Tar Heel

State" nickname. After that industry declined in the nineteenth century, agriculture and timber production increased. Overexploitation of these natural resources contributed to the region's economic struggles during the era of the Great Depression. During that time, public works projects helped establish State Parks and the Bladen Lakes State Forest, which both lie in close proximity to Suggs Mill Pond.

During the last sixty-five years, many Carolina bays have been drained for agriculture as development in the area increased. Federal and state environment and agricultural regulations have, however, helped decrease the rate of degradation over the past 30 years. The last sixty-five years have also seen an increase in diversity in Bladen County's economy. Agriculture remains dominant, but industry has grown dramatically. Both crop agriculture and industrial growth are primarily taking place far from Suggs Mill Pond. Timber production remains the dominant economic force within close proximity to this site, due its less fertile soils and limited transportation infrastructure.

History

Historically, upland mineral soils on the Suggs Mill Pond tract would have supported longleaf pine-wiregrass systems, which burned naturally on about 1-3 year interval. The tract has been managed by a variety of timber management scenarios over time, which initially perpetuated longleaf pine. Effective control of wildfires beginning in the 1940's impacted longleaf pine regeneration and maintenance of the longleaf pine community. Subsequently, plantations of slash and loblolly pine were established on this property, probably first by the Greene Brothers Lumber Company. Later acquired by Canal Wood Industries, most of the remaining upland sites were converted to loblolly pine plantations, to the extent that 80% of longleaf sites were occupied by offsite species by the early 1990's. Planting densities were 600-700 trees per acre. It appears that few interim silvicultural treatments were applied to timber stands following establishment. In addition to timber management, wildlife management practices were undertaken, including the establishment of openings and waterfowl impoundments.

Ownership of Suggs Mill Pond by the NCWRC dates back to 1994 when a 62 acre tract of land was given to the agency as a gift. Since then, nine additional acquisitions were made to comprise the 11,044 acre game land (Table 2). The largest tract, 8,041.95 acres, was acquired by the state from Canal Wood Industries in 1998.

To promote early successional habitat, timber harvesting and prescribed burning was initiated in 2000, resulting in 1,859 acres of timber harvests, 2,690 acres of prescribed burns, and 52 acres of linear openings developed. Additionally, 522 acres have been reforested with longleaf pines, a site-specific species that was historically found on these sites. These sites have been and will continue to be managed with the application of prescribed fire.

Water level control in Horseshoe Lake, a permanently flooded Carolina Bay, dates back to at least 1938. Water level control through a water control structure had also been established for

Little Singletary Lake. Five waterfowl impoundments totaling approximately 105 acres had already been created on the property at the time of purchase. Since then, significant improvements have been made due to various activities. The ability to manage water levels has been improved with the addition and replacement of water control structures and dredging of drainage ditches within the impoundments. Grinding and removal of woody vegetation created larger and vaster open areas within the impoundments. The dam that controlled the water in Horseshoe Lake was greatly improved when it was repaired after it was damaged by a hurricane event and a boating access area was installed in conjunction with the dam repair. Ten hunter access bridges were installed to allow for better access to and within the impoundments and two wildlife observation towers were built, giving the ability to scout and view wildlife from these areas.

Since Suggs Mill Pond was purchased by the NCWRC, other improvements to habitats have been made through such management practices as the installation of field borders on annually planted wildlife openings, the conversion of hay pastures to wildlife openings consisting of native grasses and forbs, and the creation of hedgerows that provide cover and soft mast for the benefit of wildlife.

In 2011, the Simmons Road Wildfire burned 3,185 acres of this property. The fire started from a lightning strike off the game land on June 20th. The North Carolina Forest Service conducted initial attack operations and worked for 60 days before it was considered to be controlled on August 18th. Fire suppression techniques in the form of plowed and bladed lines left their mark on the landscape but have been rehabilitated as well as can be expected. One hundred and fourteen acres of merchantable timber were destroyed but have since been restored to site-suitable tree species. Two thousand one hundred and seventy five acres of pocosin habitat burned in the wildfire that had not been burned in an unknown number of years. Though initially destructive in nature, the wildfire provided a great deal of ecological benefit in its wake.

North Carolina is not only known for its natural history, but also its rich historical/cultural resources. Several archaeological sites have been identified on Suggs Mill Pond that provide tangible evidence of the varied use of the property by the past residents of the area. These archaeological sites include prehistoric Indian habitation sites, tar kilns, river landings, and colonial plantations. Because the sites can be easily damaged, unauthorized artifact collecting activities on all state owned property including NCWRC owned lands are prohibited by the Archaeological Resources Protection Act (G.S 70 Article 2) (see *Appendix XII*).

DATE	ACRES	COST	FUNDING SOURCE	COST/ACRE	TOTAL ACREAGE	TOTAL COST
1994	62.11	Gift	NA	$0.00	62.11	$0.00
1998	1.62	Land Exchange	NA	$0.00	63.73	$0.00
1998	8,041.95	$3,666,685.21	Natural Heritage Trust Fund and Clean Water Management Trust Fund	$455.94	8,105.68	$3,666,685.21
2003	818.00	$550,000.00	Clean Water Management Trust Fund	$672.37	8,923.68	$4,216,685.21
2003	610.01	$565,000.00	Clean Water Management Trust Fund	$926.21	9,533.69	$4,781,685.21
2005	31.30	$79,189.00	NCWRC Wildlife Fund	$2,546.27	9,564.99	$4,860,874.21
2006	294.04	$461,000.00	Clean Water Management Trust Fund	$1,567.81	9,859.03	$5,321,874.21
2006	380.00	$492,860.00	Natural Heritage Trust Fund, Clean Water Management Trust Fund, and NCWRC Wildlife Fund	$1,297.00	10,239	$5,814,734.21
2007	805.95	$1,045,317.15	Natural Heritage Trust Fund, Clean Water Management Trust Fund, and NCWRC Wildlife Fund	$1,297.00	11,044.95	$6,860,051.36

Table 2: History of land acquisition for Suggs Mill Pond Game Land

Purpose of Suggs Mill Pond Game Land and its importance within the region

Suggs Mill Pond serves to augment the mission and objectives of the Game Lands Program which was stated previously in the Introduction. Its uniqueness is defined by the region that it is a major component of, the Bladen Lakes Region, which is recognized for having the highest concentration of relative unaltered Carolina bays in North Carolina. Suggs Mill Pond itself is dominated by Carolina bays with 48.0% of its area made up of a mosaic of this habitat type. It is part of a unique and larger mosaic of peatland and pond communities surrounded by sandy longleaf pine and creek floodplain communities. This outstanding cluster of numerous palustrine and terrestrial communities supports an extraordinary number of rare plants and animals.

With a significant amount of land in this region, and in close proximity to Suggs Mill Pond, already in North Carolina state ownership (including Bladen Lakes State Forest, Bushy Lake

State Natural Area, Salters Lake State Natural Area, and Jones Lake State Park), and still limited development in the area, there is an excellent opportunity to permanently protect a substantial portion of this unique mosaic, with spatial relationships intact.

It is clear that the interactions between the natural communities found within this region, and on the game land, are important; in fact, many of the rare species of plants and animals are found in the communities' ecotones. Therefore, protecting these communities and their spatial relationships is critical to the successful achievement of the Game Lands Program objectives.

In addition to its ecological importance, Suggs Mill Pond offers recreational opportunities for the public interest and makes it a destination for many user groups. Traditional game land users seek out this game land and are provided the opportunity to hunt, fish, trap, and watch wildlife found in the various habitats.

All hunting on this game land is allowed through the NCWRC's Permit Hunting Opportunities Program, which allows for managed participation and provides unique hunting opportunities for this special area for species such as dove, deer, waterfowl, turkey, small game, and furbearer trapping. This program also includes special opportunities for youth and persons with disabilities. The program offers quota and non-quota (point-of-sale) hunts. Due to certain management practices conducted on it, Suggs Mill Pond offers excellent hunting opportunities that some other game lands don't. A tremendous amount of time and effort is allocated to the management of approximately 105 acres of waterfowl impoundments and over 70 acres of wildlife openings. Waterfowl impoundments are intensively managed by planting annual cereal crops, manipulation and management of desirable native vegetation, and timely manipulation of water levels. Wildlife openings are also intensively managed by the planting of annual and perennial crops that serve to attract wildlife. Additionally, native vegetation is managed through various techniques such as burning, disking, and herbicide application.

The NCWRC developed a three-tier hunting system for disabled sportsman and it is designed to offer a variety of hunting levels for disabled hunters. Suggs Mill Pond participates in the Tier II hunts which allows for managed participation of disabled hunters and their companion in order to provide unique hunting opportunities. Shooting houses, or blinds, are provided for the hunters and they are purposefully located in areas that provide excellent opportunities to harvest game.

One of the most important developments in the recovery of North Carolina's black bear populations began in 1971 with the creation of a bear sanctuary system (NCWRC 2012). Currently there are 490,000 acres of designated bear sanctuary in North Carolina. Suggs Mill Pond was enrolled into the black bear sanctuary system prior to ownership by the state, having been enrolled by the previous landowner, Canal Wood Industries. The role of this program is to protect core areas of habitat that encompass the relatively small home ranges of breeding females. The idea is that females reproduce in the sanctuaries, and bear populations would increase and expand into surrounding areas. The bear sanctuary system has been one of the most

successful and important innovations in the history of bear management in North America and has been a primary factor in the recovery of bear populations in North Carolina.

Specific goals of Suggs Mill Pond Game Land

As stated earlier, Suggs Mill Pond is enrolled in the NCWRC's CURE Program and management techniques focus on promoting early succession habitat for the benefit of small game species and other non-game species that utilize this habitat. Great effort has been put forth to create and manage this habitat type and continues to be a focal point of this game land. It is a goal of this game land to continue to apply sound management techniques that provide for the proliferation of wildlife species that depend on early successional habitat.

It's participation in the Permit Hunting Opportunities Program has resulted in excellent opportunities to enjoy a quality experience with managed participation. The concept behind the permitting the hunts on Suggs Mill Pond is to provide a managed number of hunters on a managed number of hunt days in order to allow for a high quality hunting experience and opportunity to harvest game. Extra time and effort is spent managing habitat and resources that supplement the opportunity to enjoy these experiences. In the interest of maintaining these opportunities, the goal is to continue to be enrolled in this program.

The black bear sanctuary system has proven to be an effective tool for increasing and maintaining a healthy population of bears in North Carolina. In line with the latest North Carolina Black Bear Management Plan, our sanctuary system needs the flexibility to allow adjustments in the amount of sanctuary in a given Bear Management Unit to meet management goals. It is clear that adjusting this one variable can have more of an impact than changes in season structure (NCWRC 2012). Ideally, we would like to add or remove sanctuary based on bear population objectives, in combination with hunter desires and human-bear interactions.

Restoration of longleaf pine on all sites where it was historically found is a long-term goal of Suggs Mill Pond. Longleaf pine was historically found in all but the wettest sites in the Coastal Plain but now only exists on less than 3% of its historical range (Frost 1993). Prior to ownership by the State, most of the upland sites on this game land had been converted to loblolly pine plantations to the extent that almost 80% of historical longleaf sites were occupied by off-site species. Prescribed fire will be the most appropriate management technique to manage the sites and will be applied on a 1–3 year interval.

Not only will fire be used on the existing and restored longleaf sites, but it will also be the dominate tool used manage other sites on this game land. Ecotones, transitional areas between two communities, require the application of prescribed fire to remain as areas that have a great diversity of plants and animals. Not only does fire in pine communities affect the composition and structure of the pine communities themselves, but also affects surrounding ecosystems and ecotones that exist in between (Duerr 2007). Upland sites that are currently occupied by slash and loblolly pine will also be maintained and managed with the use of prescribed fire.

Additionally, the goals of Suggs Mill Pond are to:

- Provide for a diversity of habitat types and forest age classes though science based land management practices that are properly interspersed and juxtaposed across the landscape to ensure that a wide variety of terrestrial and aquatic wildlife species are conserved on the game land.
- Conserve popular sport fish and game species at huntable/fishable levels through science based land management and sound regulations.
- Provide quality habitat across the game land for endangered, threatened, and rare species to promote sustainable and perpetual populations.
- Provide sufficient infrastructure and opportunity to allow compatible and appropriate game lands users a quality experience while on the game land with minimal habitat degradation and minimal conflict among user groups.

Measures of success for Suggs Mill Pond Game Land

- Wildlife and fish inventories/surveys indicate that a wide variety of species are present at sustained levels and are properly managed on the game land.
- Surveys and inventories of target sport fish and game species indicate that population levels of these species are being managed at sustained levels.
- Inventories/surveys indicate that populations of endangered, threatened, and rare species found on the game land are being maintained or restored.
- Inventories/surveys indicate that previously unknown populations or previously unknown endangered, threatened, and rare species are found on the game land.
- Surveys of game land users indicate a high level of user satisfaction.

HABITAT COMMUNITIES

Pocosin

5,238 acres, or 48%, of Suggs Mill Pond is made up of pocosin habitat. These peatland communities include high pocosins, bay forests, and streamhead pocosins. These communities occur on peatlands of poorly drained interstream flats, and peat-filled Carolina bay depressions and swales of the eastern Coastal Plain (Schafale and Weakley 1990). The streamhead communities occur primarily in the Sandhills along small headwater streams, either on flat bottoms or extending up adjacent seepage slopes.

Extremely acidic in nature due to organic soils, generally these habitats are nutrient poor and usually continuously saturated with water. Fires were historically associated with droughts, and fire frequency and intensity strongly influence vegetative structure dominance, composition, stature, and diversity. All but the streamhead communities occur along a gradient of moisture, nutrients, and peat depth and typically occupy different locations with the domed peatlands of interstream flats and Carolina bays and swales. The wettest sites, typically the center of bays, may contain only low shrubs and stunted pond pine, with beds of sphagnum, pitcher plants, and cranberry. Higher, drier sites are characterized by an extremely dense shrub layer.

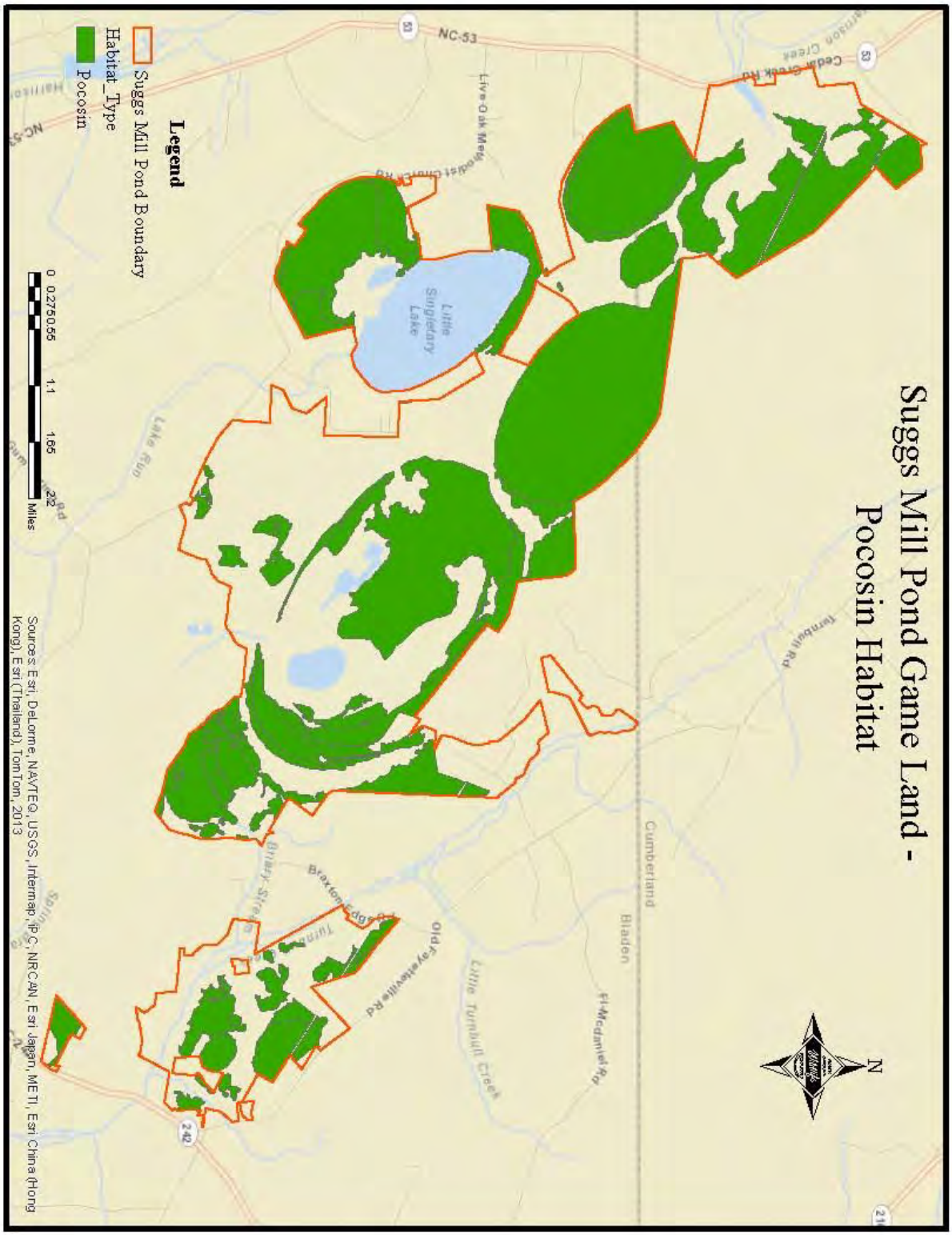
High pocosins are extremely nutrient poor with little normal nutrient input other than rainfall. Under natural conditions, fire was an important component shaping the structural diversity of these communities. Compared to other pocosin habitats in North Carolina, they are intermediate between low pocosin and pond pine woodlands in terms of location, depth of peat, shrub height and density, and stature of trees. The shrub layer is typically 1.5-3 meters in height and trees still tend to be scattered and small in stature.

Bay forests occur throughout the game land and, according to Schafale and Weakley (1990), typically exist as a mosaic with other pocosin communities. They occur on shallow organic soils and the canopy is dominated by loblolly bay, sweet bay, and red bay. Bay forests are believed to be a late-successional community that replaces other pocosin communities after a long absence of fire. These bay forests may be solely a product of fire suppression, or there may be sites which naturally supported them (Schafale and Weakley 1990).

Streamhead pocosin communities resemble peatland pocosins but they are found in very different physical settings: ravines in permanently saturated Sandhill seeps. These habitats are subject to influence from fire on adjacent uplands and are characterized by an open canopy of pond pine, with potential for red maple, sourwood, swamp black gum, and tulip poplar. A dense shrub layer is usually present and herbs are sparse. There is a higher shrub and tree diversity in these communities due to nutrients released by burning in adjacent uplands and more frequent disturbance from fires that burn into the edges (Schafale and Weakley 1990).

Location and condition of habitat (see Map 5)

The condition of pocosin habitats in much of the Coastal Plain is poor due to fire suppression, changes in hydrology, intensive silviculture, and conversion of forest types. Suggs Mill Pond lies in the Bladen Lakes region which is characterized by the largest concentration of mostly unaltered Carolina bays remaining throughout the range of this unusual geological feature (LeBlond and Grant 2005). Fire suppression has undoubtedly altered the condition of pocosin habitats on this game land but fire has been reintroduced into these communities where feasible. However, ever increasing obstacles of using prescribed fire (e.g., smoke sensitive areas and public misconceptions) coupled with the fact that some of the pocosin habitats on Suggs Mill Pond are very large limits the feasibility and opportunity to reintroduce fire into these communities. The ecotones between upland sites and the lowland pocosin habitats are burned when feasible and great effort has been put forth to reduce and sometimes eliminate the installation of fire breaks in these ecotones. Smaller pocosins that are found within upland communities or pocosins that allow substantial fire breaks to be installed have been burned in prescribed fire efforts.



Map 5 – Pocosin habitat on Suggs Mill Pond Game Land.

Priority non-game species associated with pocosin habitat

Taxonomic Group	Common Name	Scientific Name	State Status (Federal Status)	Natural Heritage Program State and Global Rank
Mammals	Star-nosed Mole	Condylura cristata	SC	S_2, G_5T_2Q
Amphibians	Oak Toad	Bufo aquercicus	SR	S_3, G_5

Priority game species associated with pocosin habitat

Taxonomic Group	Common Name	Scientific Name
Mammals	American Black Bear	Ursus americanus
	White-tailed Deer	Odocoileus virginianus
	Raccoon	Procyon lotor

Problems affecting species and habitats

Fire suppression is an important factor threatening much of the pocosin habitats on Suggs Mill Pond due to the strong influence fire has on their vegetative structure, composition, and diversity. As stated previously, the location and size of much of the pocosin habitat coupled with the constraints associated with prescribed fire, reintroduction of fire into these communities creates a challenge for game land managers. The volatility of fuels in these communities and smoke management concerns also pose everlasting challenges to addressing this threat. It is our concern that the build-up of fuels due to the lack of fire will result in these stands burning in wildfire conditions and that the fire will be so intense that the ground will burn, thus killing the entire stand. Some wildfires can be beneficial, acting as a renewing force, releasing nutrients that stimulate seed germination and quick regrowth from root sprouts, regenerating plant communities. Intense fire is a natural part of pocosin systems, but extensive peat consumption, especially in ditched peatlands, is a significant impact.

C. Conservation actions necessary to conserve the species and habitat and priorities for implementation

The most important action necessary to manage this habitat type is the application of prescribed fire. It can be used to increase the heterogeneity in these pocosin habitats related to vegetative dominance, stature and diversity. Growing season fires should be encouraged, although seasonality is not as important as frequency (Robbins and Myers 1992). Fire will increase vegetative structure and should promote the establishment of herbaceous groundcover in some community types. Rare species associated with peatland pocosins are dependent on the combination of wet conditions and frequent fire.

Burning on Suggs Mill Pond has often been accomplished on uplands without the use of fire breaks in the ecotones between the upland sites and pocosin habitats, especially in winter when moisture serves to prevent fires from burning out of control in the pocosin. Efforts should continue to be made to burn in this manner and ecotone management should be prioritized based on feasibility of burning without fire breaks. Nearly all of the fire breaks on Suggs Mill Pond are made up of existing roads and trails that require very little to no manipulation before burns are conducted. Bare, mineral soil is upturned on these roads and trails with a tractor and disk harrow and eliminates the need for breaks to be installed with a fire plow. This activity greatly minimizes disturbance to ecotones, reduces erosion and changes to hydrology, and eliminates the need for fire break rehabilitation.

The placement of fire breaks should be examined on a case-by-case basis for each burn unit containing pocosin ecotones that may be used for fire breaks and a determination should be made on-site. Establishing new fire breaks in pocosin ecotones should be weighed against the ability to safely, effectively, and frequently apply fire to this landscape. Where feasible, modification of fire breaks in these transition zones should be strongly considered. Additionally, any needed rehabilitation of fire breaks should occur immediately following the completion of a prescribed burn. The highest priority should be given to lines that may affect the hydrology or water quality of a given site.

Because pocosin habitats are particularly important for wintering birds due to the high amount of soft mast available, protection and proper management is necessary to provide for these species. These pocosin habitats also provide for a greater number of wildlife species including black bears. In a study done by Jones and Pelton (2003), black bears preferred pocosins and clearcuts over managed pine habitats presumably because of the superior cover and food provided by these cover types. This has also been reported for pocosin habitats by Landers et al. (1979), Hellgren and Vaughan (1988), Hellgren et al. (1991), and Lombardo (1993). Pocosins also provide for black bears a sanctuary from human activity by providing areas of impenetrable escape and hiding cover. Suggs Mill Pond is a black bear sanctuary and protects home ranges of breeding females. These habitats are critical for that purpose.

Though extensive amounts of pocosin lands are already protected, some specialized types require more protection, such as the Carolina bays found on Suggs Mill Pond. Acquisition partnerships through conservation partners will be important. Opportunities may be presented to take advantage of initiatives and programs that promote pocosin restoration such as Forest Landbird Legacy Program, Partners for Wildlife, and the North American Wetland Conservation Act. Identified funding sources for potential land acquisition include the North Carolina Clean Water Management Trust Fund, Coastal Wetland Grants, Forest Legacy, and Recovery Land Acquisition Grants.

D. Desired future condition

Our desired future condition for this cover type is to continue to maintain our pocosin habitats with prescribed fire when it can be done safely and effectively. In the pocosin habitats that currently have suitable fire breaks; 105 acres (2%) have a fire return interval of 2-3 years. Additionally, 681 acres (13%) of pocosin habitat has a fire return interval of 4-7 years. These sites consist of 786 of the 5,238 total acres in this cover type and many of those acres occur within burn units containing other habitat types. The remaining 4,393 acres are made up of extremely large and/or isolated, inaccessible pocosin communities. Where possible and fuel and weather conditions allow we should continue to burn these areas.

It should be noted that 2,175 acres of pocosin habitat burned in the Simmons Road Wildfire in 2011 on this property. It is unknown when or if these acres had ever been burned before.

As stated earlier, size and location of pocosin habitats on Suggs Mill Pond pose challenges to using prescribed fire in many cases. The characteristics of these pocosins (*i.e.*, large size, proximity to other properties, high fuel loads, inaccessible) make it impossible to control fires set under prescription. Smoke management guidelines also present their own unique challenges when burning these areas containing such high fuel loads. In large pocosins without suitable fire breaks we will attempt to use wildfires to maximize the ecological benefits of this occurrence.

One metric for successful management of these habitats will be to identify the pocosin habitats with high wildlife risks and to work closely with the North Carolina Forest Service to manage wildfires in these areas to maximize the ecological benefits in the case of these events. This will include but is not limited to maximizing burnout operations to include pocosin communities and minimizing the use of plowed and/or pushed lines to safely contain wildfires. However, the highest priorities in the event of a wildfire will be the safety and protection of human life, dwellings, and structures.

Additional management actions we may use to manage this cover type include increasing the size of burn compartments, conducting aerial ignition burns, and/or contract burning some of these areas. Other options will be entertained as they arise.

There are currently very few fire breaks on this property that require the use of a bulldozer and traditional fire plow. Nearly all fire breaks are created and maintained with a tractor and disk harrow. We will continue to use a tractor and disk harrow to establish and maintain fire breaks whenever possible. In the event that a bulldozer and traditional plow are used to establish burn compartments or to gain control of an out of control fire, we will attempt to rehabilitate 100% of these plow lines within 6 months of creation. Finally, every attempt will be made not to establish new fire lines in the pocosin ecotones.

E. Future forest management

All but approximately 435 acres of pocosin habitat on this game land have been dedicated as Primary areas by the North Carolina Natural Heritage Program. In these areas, the cutting or

removal of dead or alive trees is prohibited. Furthermore, due to frequently saturated soils and the high risk of rutting and ground damage due to logging operations, no active forest management will take place in these areas on Suggs Mill Pond, except in the case of restoration after natural catastrophic events.

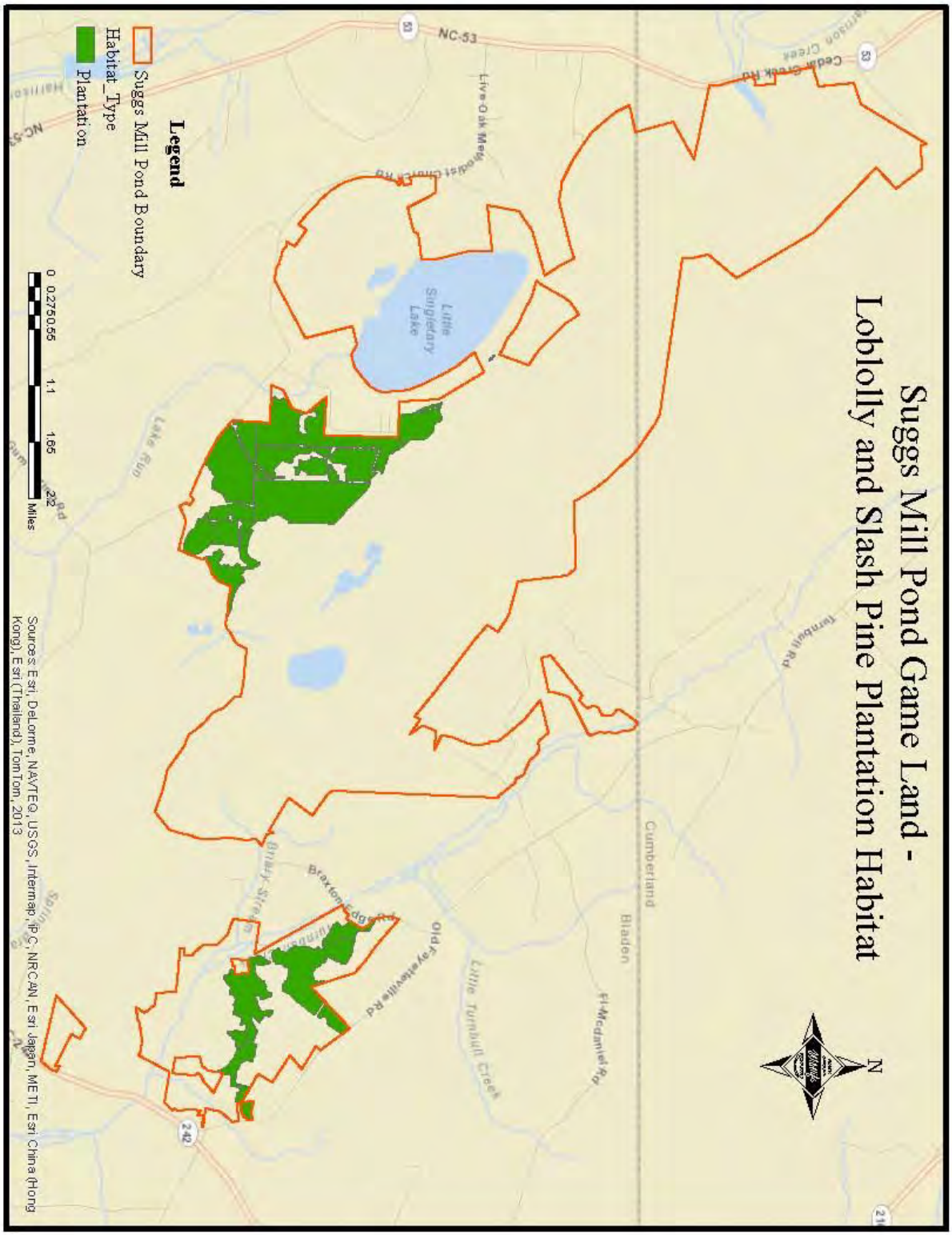
Loblolly and Slash Pine Plantations

This cover type consists of loblolly and slash pine. The understory and midstory in these areas ranges from dense growing pocosin shrubs (e.g., wax myrtle, fetterbush, and titi) and hardwood tree species (e.g., oaks, hickories, sweetgum or red maple) to bare ground or pine straw. Midstory and understory species composition and structural diversity in plantations are influenced by soil type, fire regime, and the amount of sunlight reaching the forest floor. This in turn determines the wildlife species present at various stages in the history of the stands.

A. Location and current condition of habitat (see Map 6)

This cover type consists of 1,010 acres, which makes up 9.3% of the total cover of this game land. The vast majority of this cover type is found on the tract of land that was initially purchased by the NCWRC from Canal Wood Industries in 1998. Under their ownership, this cover type was managed for maximum timber production, which was the justification for planting off-site species of loblolly and slash pine on historical longleaf sites and the drainage of wetter sites. Consequently, many stands in this habitat still consist of these off-site species and were heavily stocked upon acquisition. Since acquisition by the NCWRC, all stands have had at least one thinning, with some stands having multiple thinnings. Since 2000, 273 acres have been clearcut and restored to longleaf pine. Furthermore, these habitats were guarded from fire for a significant time, which greatly impacted the diversity and structure of other vegetation within them. All of the remaining plantations have since then been incorporated into active burn units with permanent fire breaks in place. These prescribed burning activities have resulted in improvements to the condition of this habitat. Thinnings and burning have created and maintained an open canopy in many of the stands and the condition of this habitat continues to improve with continued use of these management techniques.

Diversity in plant species composition and the configuration of vertical layers and horizontal patterns of vegetation define the differences between naturally regenerating stands and plantations (Allen et al. 1996). From stand initiation to final harvest, plantation forestry provides habitat for early successional species, pine specialist, and some forest species for short periods of time. Plantations provide habitat for edge- and grassland-dependent species during the initial years following establishment (Stauffer et al. 1990, Allen et al. 1996). On Suggs Mill Pond, there are stands in different stages of rotation, creating what could be considered an uneven-aged forest. With uneven-aged forests, the mosaic created by clearcut stands interspersed through stands of older trees creates a diverse environment that provides habitat for a variety of wildlife.



Map 6 – Loblolly and slash pine plantation habitat on Suggs Mill Pond Game Land.

Priority non-game species associated with loblolly and slash pine plantations

Taxonomic Group	Common Name	Scientific Name	State Status (Federal Status)	Natural Heritage Program State and Global Rank
Birds	Cooper's Hawk	Accipiter cooperii	SC	S_3S_4B, S_4N, G_5
	Bachman's Sparrow	Peucaea aestivalis	SC	
Reptiles	Timber Rattlesnake	Crotalus horridus	SC	S_3G_4
	Pigmy Rattlesnake	Sistrurus miliarius	SC	S_3, G_5

Priority game species associated with loblolly and slash pine plantations

Taxonomic Group	Common Name	Scientific Name
Birds	Eastern Wild Turkey	Meleagris gallopavo silvestris
	Northern Bobwhite Quail	Colinus virginianus
	Mourning Dove	Zenaida macroura
Mammals	American Black Bear	Ursus americanus
	White-tailed Deer	Odocoileus virginianus
	Eastern Fox Squirrel	Sciurus niger
	Eastern Gray Squirrel	Sciurus carolinensis

B. Problems affecting species and habitat

Besides the obvious conversion of these stands to off-site species of loblolly and slash pine, fire suppression prior to NCWRC ownership is the greatest problem affecting the condition of this habitat. This has caused some stands to consist of a dominant midstory of hardwoods, increased heavy fuel loads, inhibited the growth of grasses and forbs on the forest floor, and decreased the occurrence of rare and endangered species. Most of the understory grass, forb, and shrub layers are lost when the canopy of a newly planted timber stand closes, typically 7-15 years after planting. The forest canopy is one of the foremost determinants of the microhabitat within a forest. It affects plant growth and survival, hence determining the nature of the vegetation, and wildlife habitat (Jennings et al. 1999).

Our current average fire return interval for 71% (717 acres) of the plantation cover type is 3 years or less. The remaining 29% (293 acres) of the plantation cover type has a fire return interval of 4-6 years. Due to the lack of fuel loads created by younger loblolly pine trees, lower site indices, sparse grasses and herbaceous ground cover, and abundant pocosin shrubs, game land managers have encountered problems with conducting prescribed burns every 3 years in some stands. This has forced game land managers to increase fire return intervals to 4 years in order to conduct prescribed burns that meet management objectives.

While some of these stands have been thinned enough to provide an open canopy and others have been restored to longleaf pine, a few stands continue to have high tree densities and the understory vegetation is dominated by tall ericaceous shrubs. Additionally, fire has only been

reintroduced into these stands over the last 15 years but had been suppressed for decades before its reintroduction. These intensively managed pine plantations lack age diversity within the stands and few stands will reach maturity within the ten year planning horizon.

Long-term damage from extensive site preparation and drainage of some of these sites pose problems to this habitat as well. Because poorly drained soils with high seasonal water tables greatly affected survival and growth of planted seedlings, drainage by previous owners was conducted to improve soil trafficability for harvesting and planting operations and to reduce stress on planted trees caused by excessive soil water conditions. Furthermore, these techniques have affected the hydrology of these sites in the form of altering outflow rates, evapotransporation, and reduction of water table elevations.

These intensive site preparation techniques can also affect soil quality in many ways. Powers et al. (1990) cited that intensive site preparation can lead to soil nutrient loss, organic matter removal, and the alteration of soil structure and site hydrology. Childs et al. (1989) cited compaction, surface soil mixing and displacement, and soil removal as being serious threats to the physical quality of forest soils as well.

C. Conservation actions necessary to conserve the species and habitat and priorities for implementation

Unlike nearly all other forest types mentioned in this Plan, the loblolly/slash pine forest is mostly non-natural. Therefore, there is a need to return acreage in this cover type to natural communities, most notably longleaf pine communities where soils are appropriate, in turn decreasing the overall acres of loblolly and slash plantations. Restoring site-appropriate stands back to dry longleaf communities should be the primary goal of this cover type.

In order to accomplish this goal, loblolly and slash pine overstories should be removed and regenerated to longleaf pine using the most appropriate silvicultural technique to the site. Once longleaf is established, it should be managed in uneven-aged stands using selection cuts in the same manner as current longleaf stands on this game land.

Additional older aged pine acreage is needed. Therefore, on sites with soils not conducive to longleaf restoration, pine stands should be managed on long rotation (e.g., 60-100+ years) or in uneven-aged stands. Where appropriate, forest management techniques should be used to mimic the characteristics of older stands, which include canopy gaps, dead and downed material, and the retention of cavity trees. Basal areas should be maintained at levels that allow for an herbaceous understory, i.e., 40-60 ft^2/acre. When available, mature hardwood trees should be retained and released during harvest operations.

Equally high in priority is for this cover type is the restoration and continued implementation of a natural fire regime, regardless of the overstory pine species. This will involve working towards resolving smoke management issues, negative public sentiment, and liability concerns associated

with prescribed burning. Restoration of natural fire frequency, intensity, and seasonality is critical for pine-related reptiles, amphibians, and their prey (Bailey et al. 2004), as well as other pine-related wildlife.

The upland forested areas on Suggs Mill Pond will continue to be managed for open canopies to allow sunlight to reach the forest floor. This will be accomplished through thinnings of pine stands and conversion of slash and loblolly pine plantations to longleaf pine where appropriate. Stands with hardwood dominated midstories will be controlled on a site-specific basis. Prescribed fire will be the primary tool to prevent hardwoods from dominating the midstory and causing canopy closure. When and if fire proves to be ineffective at accomplishing this goal, herbicide or mechanical removal will be considered for a midstory treatment. Prescribed fire will also be used to maintain, restore, and improve existing native vegetation.

Cooperative efforts related to management activities need to continue and expand with largescale "commercial" forest landowners to continue to try and improve habitat conditions at the landscape and stand level for a variety of wildlife species (Measells et al. 2002). Additionally, continued cooperative efforts with red-cockaded woodpecker working groups (for translocation, or to manage the Sandhills and coastal populations of red-cockaded woodpeckers) is needed.

D. Desired future conditions

The desired future condition for this habitat type is restored, site-suitable vegetation communities with a primary emphasis on the longleaf pine/wiregrass ecosystem and a 3-year fire return interval.

Due to the young age of the majority of the plantations on Suggs Mill Pond (the average plantation age is 32 years), our first goal within the ten year planning horizon is to restore 25%, or approximately 250 acres, to longleaf pine. We will consider an acre "restored" once longleaf has been planted. We plan to achieve this goal utilizing the following timber management practices. See Future Forest Management below for planned restoration strategies. Once longleaf is established it will be managed as dry or wet pine savanna, depending on soil and site conditions.

Our second goal is to reduce our average fire return interval from 4-6 years to 3 years in the 29% of plantation habitat that was previously mentioned. It is our thought that with continued application of prescribed fire and the continued growth of timber within these young stands, we will be able to accomplish management objectives with a 3 year burning cycle. Older, larger trees will produce more fine fuels to carry fire throughout the burn compartments and the grassy and herbaceous ground cover should improve and be less sparse, hence further improving the ability to carry fire throughout the stand. Burning of these compartments will be accomplished with the use of existing natural and engineered fire breaks. The 3 year fire return interval will continue to restore the understory component, which will facilitate conversion to longleaf savanna cover type.

E. Future forest management

Where soil types are appropriate, plantations of loblolly and slash pine will be converted to longleaf pine/wire grass communities. Stand age, stocking, site index, soil type, and spatial orientation will determine when and how appropriate stands are converted to longleaf pine. Silvicultural techniques for conversion will include row thinning, selection harvest, and clear-cutting. Some stands may be thinned to a low basal area (20-30 ft^2/acre) and underplanted with longleaf pine. Specific timber harvest prescriptions will be made in the annual forest management plans.

During harvest operations, attempts will be made to establish permanent locations for loading decks and primary skid trails that will facilitate the continuous entries required for selection harvests and uneven-aged management. All harvest operations will follow North Carolina Forestry Best Management Practices for soil and water quality.

Once the final harvest of loblolly or slash pine has been made, containerized longleaf plugs will be planted with a spacing that allows for multiple future wildlife management options (i.e., >500 trees per acre). Mechanical site preparation practices (e.g., v-sheering, bedding) will be avoided for longleaf restoration sites to minimize disturbance of native ground cover. Native understory plantings will be considered following timber harvests in areas lacking native understory or a substantial native seed-bank.

While stands are growing to an age appropriate for harvest and conversion, basal areas will be maintained at 50 - 80 ft^2/acre. When stands become overstocked and basal areas are too high, they will be commercially thinned. This will maintain an open canopy and promote a vigorous understory.

Dry Longleaf Pine

Different subtypes often grade into each other or occur as a mosaic on the landscape. Frequent fire maintains a canopy dominated by longleaf pine, an open midstory, and an understory dominated by wiregrass or other grasses and forbs. Subtypes occurring on this property are the Mesic Pine Flatwood and Xeric Sandhill Scrub communities.

Mesic Pine Flatwood sites occur on mesic (non-wetland) sites and have a closed to open canopy of longleaf pine occasionally mixed with loblolly pine (Schafale and Weakley 1990). The low shrub layer can be dense and the herb layer is dominated by wiregrass in frequently burned areas. These communities historically experienced frequent low to moderate intensity fires that maintained a rather open canopy, open to sparse shrub layer, and thick diverse herb layer (Schafale and Weakley 1990).

Xeric Sandhill Scrub sites occur on deep sand ridges and swale systems, which include Carolina bay rims and sandy uplands of the southern Coastal Plain. Longleaf pine dominates the open canopy with open to dense understory of turkey oak. Most of these communities naturally experienced frequent low intensity fires with the peak fire season thought to be in early summer (Schafale and Weakly 1990).

When fire is absent or infrequent in these communities, scrub oaks, other hardwoods, and shrubs become common in the midstory and shade out native grasses and forbs. The historical expanse of longleaf pine habitats likely supported stable populations of many early seral species without the understory of a mature or old growth pine forest. Longleaf pine is a very long lived species, so the old growth component of this habitat type was very significant.

A. Location and current condition of habitat (see Map 7)

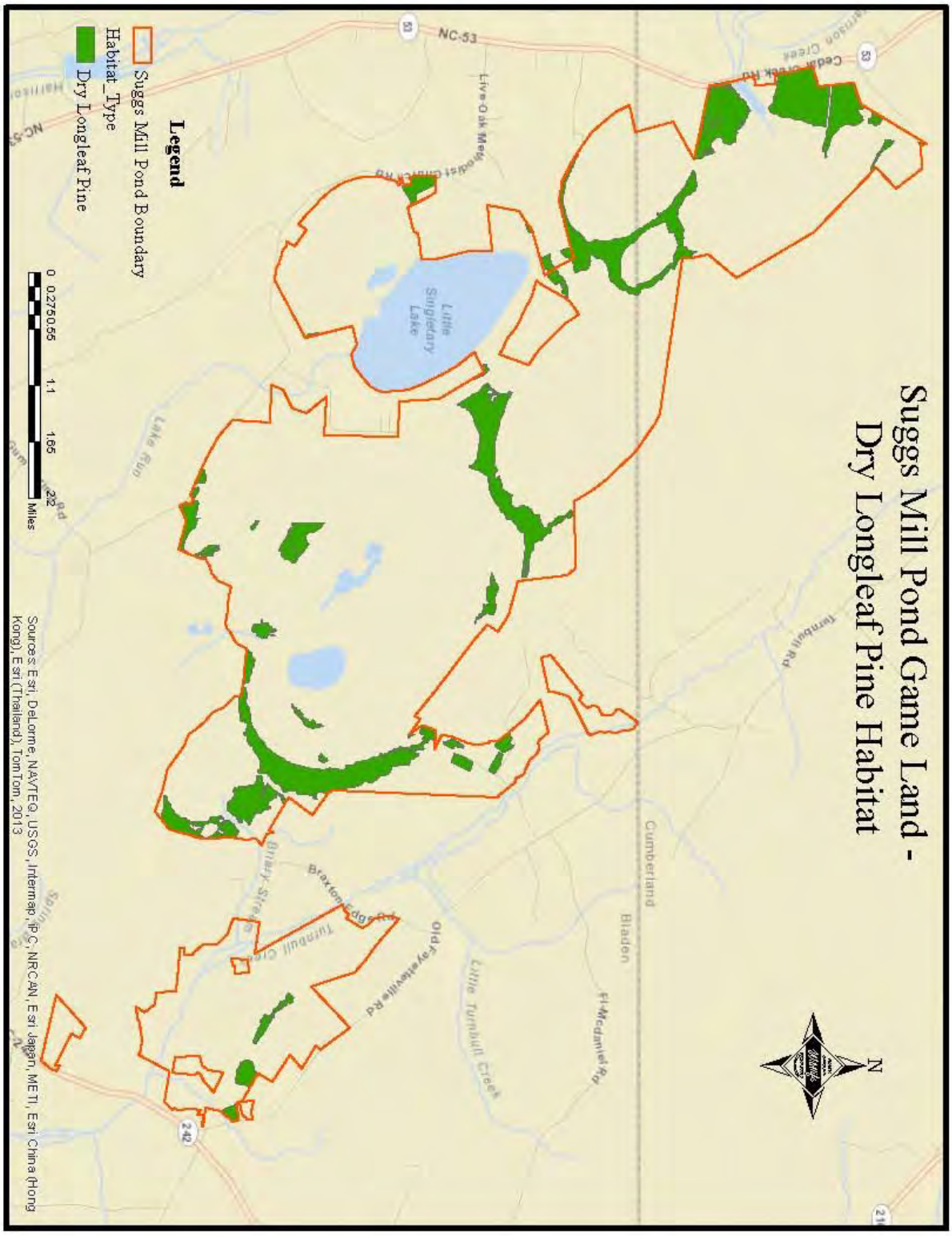
Approximately 1,063 acres of dry longleaf pine communities occur on Suggs Mill Pond, and comprises 9.7% of the property. The Carolina bay rims and upland sites were historically dominated by this cover type but land conversion and fire suppression has drastically changed vegetative composition of these sites on this property. Most of these sites were converted to loblolly and slash pine plantations while others were heavily harvested and never reforested.

Since this property was purchased by the NCWRC, 273 acres of loblolly and slash pine stands were clearcut and converted back to native longleaf pine. Heavily harvested longleaf sites hold remnant patches of longleaf pines and have been established as active burn compartments but oak-dominated midstories are clear evidence of the lack of fire.

Of the total 1,063 acres of this cover type, 138 acres (13%) of these stands have a fire return interval of 3 years or less; 372 acres (35%) have a fire return interval of 4-6 years; 340 acres are comprised of newly established stands and aren't mature enough to be incorporated into burn

compartments; and 213 acres (20%) of older longleaf communities have not yet been incorporated into burn compartments.

Approximately 522 acres of longleaf pine have been established on appropriate sites since 2000. The herbaceous composition of these sites varies from wiregrass and *Andropogon* species to fern species on more disturbed sites. Some of these sites have been burned since they were able to withstand a prescribed fire. This has improved the groundcover and reduced the number of encroaching pine and hardwood species. Other newly established sites have not been burned because of their vulnerability to damage from fire.



Map 7 – Dry longleaf pine habitat on Suggs Mill Pond Game Land.

Priority non-game species associated with dry longleaf pine habitat

Taxonomic Group	Common Name	Scientific Name	State Status (Federal Status)	Natural Heritage Program State and Global Rank
Birds	Bachman's sparrow	*Aimophila aestivalis*	SC	S_3B, S_2N, G_3
Amphibians	Oak toad	*Bufo quercicus*	SR	S_3G_5
	Ornate Chorus Frog	*Pseudacris ornata*	SR	S_3G_5
	Carolina gopher frog	*Rana capito*	T	S_2, G_5T_2Q
Reptiles	Timber(canebrake) rattlesnake	*Crotalus horridus*	SC	S_3G_4
	Pigmy rattle snake	*Sistrurus miliarius*	SC	S_3G_5

Priority game species associated with dry longleaf pine habitat

Taxonomic Group	Common Name	Scientific Name
Birds	Northern Bobwhite Quail	*Colinus virginianus*
	Eastern Wild Turkey	*Meleagris gallopavo silvestris*
	Mourning Dove	*Zenaida macroura*
Mammals	White-tailed Deer	*Odocoileus virginianus*
	Eastern Fox Squirrel	*Sciurus niger*

B. Problems affecting species and habitat

Stands of mature dry longleaf pine habitat are found in isolated patches and are small in acreage. Though historically dispersed across this region of the State in a mosaic with other communities, mature stands of this cover type are scattered. There are potentially several hundred acres in the plantation cover type appropriate for conversion to dry longleaf pine habitat.

There are 553 acres (52%) of this cover type that are not currently in an active burn rotation. This is largely due to recent acquisition of these sites, the young ages of some stands, lack of manpower, smoke management issues, narrow windows of opportunity to conduct burns, and higher priority burn compartments. The lack of permanent fire breaks around some of these unburned stands also poses a challenge.

The hardwood midstories found in mature stands pose additional problems and threats to these habitats. However, prescribed burning activities set to take place in the ten year planning horizon will assist in reducing this component. Ground cover in these stands ranges from fair to poor. The lack of fire prior to ownership by the NCWRC has posed challenges and problems in ground cover restoration efforts.

Most of these areas have been incorporated into active burn compartments but it will take the continued application of prescribed fire over many years to negate the impacts of fire suppression in the years prior to NCWRC ownership.

Finally, loblolly pine is a prolific annual seeder and seedlings initiate height growth immediately. Loblolly regeneration will be a significant competitor in young longleaf stands and will have to be aggressively dealt with.

C. Conservation actions necessary to conserve the species and habitat, and priorities for implementation

The highest conservation priority for this cover type is to incorporate unburned stands into active burn compartments. Frequent prescribed fire is an essential part of longleaf pine ecosystem restoration and management. Although the lack of prescribed fire in some stands is directly related to the vulnerability of young trees, other stands have not been burned because of challenges previously stated. Great effort should be made to overcome these challenges. Creation of permanent fire breaks is imperative. Methods to overcome smoke management issues will be critical in implementing a prescribed fire regime on these stands. Manpower needs should be identified and efforts should be made to ensure that help is available.

Another conservation priority in this cover type is to increase the age structure distribution. Essentially, this will involve removing acres of loblolly and slash pine plantation and planting longleaf pine on sites with appropriate soil types. During the establishment phase of the conversion process, emphasis should be placed on retaining species diversity of the herbaceous groundcover and suppression of competing loblolly pine regeneration. Subsequently, maintaining or increasing the ability to apply frequent prescribed fire will also be a top priority.

Maintaining a diverse vertical structure with older, large diameter trees across the landscape should also be a priority during the conversion process. This will need to be balanced with the competition that mature loblolly and slash pine trees will present in longleaf plantings in the form of shading and regeneration.

Preservation of additional elements of older forests like coarse woody debris and large diameter snags should also be a priority while establishing new acres in this cover type.

Prescribed growing season fire needs to increase in these systems and midstory reduction is essential.

D. Desired future condition

The desired future condition for this cover type is an open savanna with an uneven-aged longleaf canopy, an open midstory, and a diverse herbaceous groundcover. Frequent fire will suppress hardwoods; however, a minor oak component in the midstory is a natural condition and is beneficial to wildlife.

As previously stated, increasing this cover type on the landscape is a high conservation priority. Therefore, our goal for the 10-year planning horizon will be to add 250 acres of dry longleaf pine

communities to Suggs Mill Pond through conversion of loblolly and slash plantation. We will consider an acre converted once longleaf has been planted.

Frequent prescribed fire is the primary method used to promote and maintain desirable species/community associations. Establishing sites that are not currently incorporated into active burn compartments is also a high conservation priority. Currently, this habitat type has 553 acres that are not established into active burn compartments and 372 acres with a fire return interval of 4-6 years. Our goal over the ten year planning horizon is to incorporate these inactive stands into active burn compartments and to reduce the fire return intervals in other stands to 3 years or less.

E. Future forest management

Silvicultural techniques for conversion will include selection harvest, patch clearcutting, and clearcutting. Stand age, stocking, site index, soil type, and spatial orientation will determine when and how loblolly and slash pine plantations are converted to longleaf pine. Specific timber harvest prescriptions will be made in the annual forest management plans developed each year.

Once the final harvest of loblolly or slash pine has been made, containerized longleaf plugs will be planted with a spacing that allows for multiple future wildlife management options.

Herbaceous plantings will be considered following timber harvests in areas lacking native understory or a substantial native seed-bank.

All new longleaf plantings will be managed towards a perpetual, uneven-aged forest. Row thinning may be used for initial entries and selection harvests will be used once mature age classes have been reached. Initial placement of primary skidding trails and loading decks will be made with long term harvest operations in mind and will allow for future entries. All operations will follow North Carolina Forestry Best Management Practices for soil and water resources.

Wet Pine Savanna

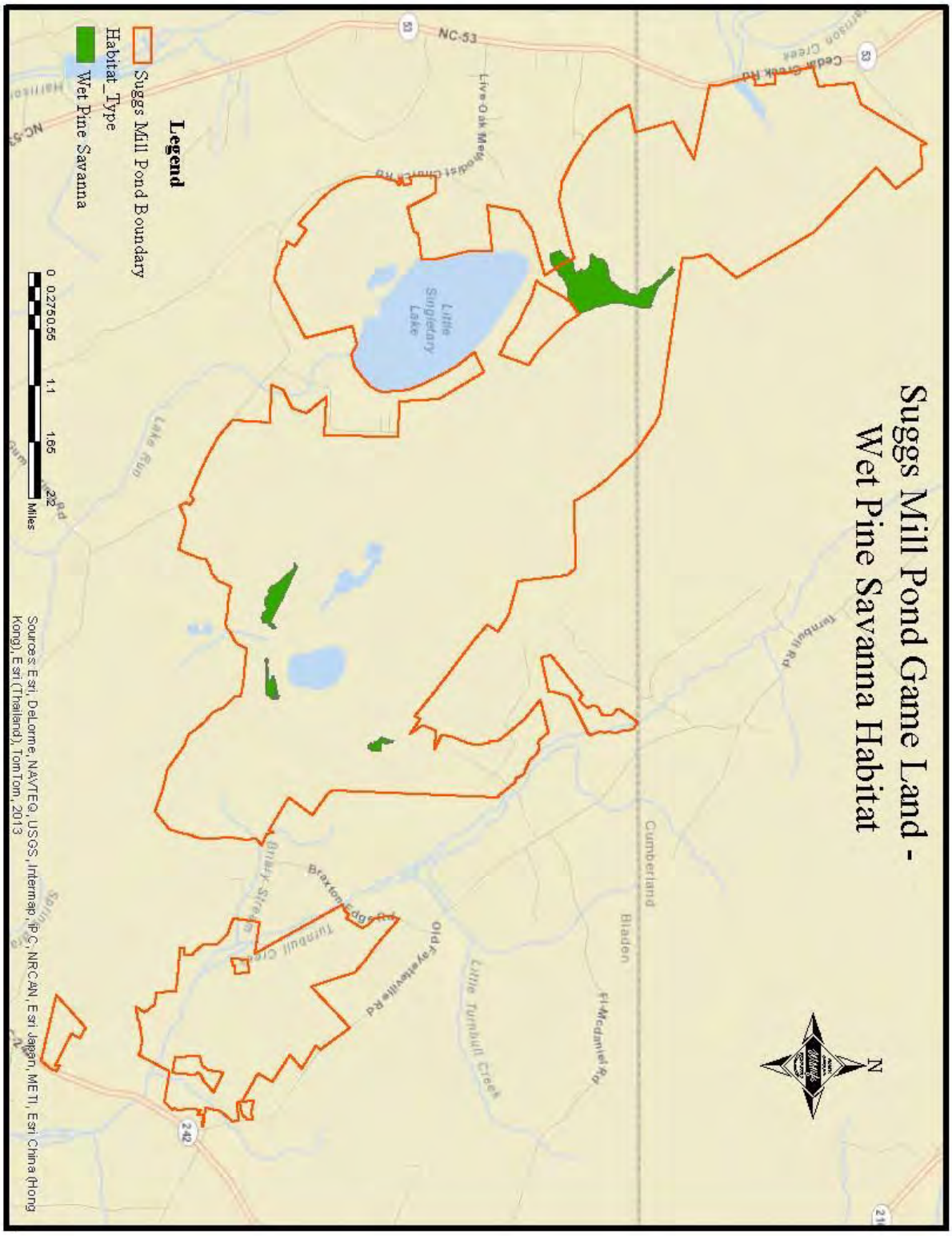
This habitat type includes pine savanna communities which are mineral wetlands that under natural conditions are subject to frequent burning (Schafale and Weakley 1990). With fire, they are characterized by an open canopy dominated by longleaf pine or pond pine, an open midstory, and an understory comprised of some mixture of wiregrass, cane, herbs, and pocosin shrubs depending on soil moisture and fire frequency. Some of the herbaceous plant diversity in these systems, particularly in pine savannas, is the highest in temperate North America if burned on a consistent and frequent basis. When fire is suppressed, a dense shrub understory develops and herb diversity declines drastically. These pine communities are similar to dry longleaf pine communities in that they often grade into each other and can occur as a mosaic on the landscape. They may also grade into pond pine woodlands and pocosins.

A. Location and condition of habitat (see Map 8)

There are approximately 167 acres (1.5%) of wet pine savanna on Suggs Mill Pond. The condition of these communities has been greatly reduced due to fire suppression. In the absence of fire, herb diversity and density greatly decline as shrubs present in the understory or surrounding habitat quickly invade and attain dominance.

Wet pine savannas on Suggs Mill Pond are only found in four isolated patches across the property. These sites occur on wet, flat areas and on low "islands" in peatlands. These sites had not been burned for an unknown number of years under previous ownership, but with the reintroduction of prescribed fire, their condition has improved over the last 15 years.

Stands were overstocked but all have been thinned at least one time in the 15 years of NCWRC ownership. Midstories were dominated by young pines and hardwoods and vegetation on the forest floor was sparse with areas of bare soil or covered with pine straw. Thinnings and burning have improved the quality of these habitats by opening canopies, reducing midstories, and stimulating the growth of herbaceous ground cover.



Map 8 – Wet pine savanna habitat on Suggs Mill Pond Game Land.

Priority non-game species associated with wet pine savanna

Taxonomic Group	Common Name	Scientific Name	NC Status (Federal Status)	Natural Heritage Program State and Global Rank
Birds	Bachman's sparrow	*Aimophila aestivalis*	SC	S_3B, S_2N, G_3
Amphibians	Mabee's Salamander	*Ambystoma mabeei*	SR	S_3, G_4
	Oak Toad	*Bufo quercicus*	SR	S_3, G_5
	Ornate Chorus Frog	*Pseudacris ornata*	SR	S_3, G_5
	Carolina Gopher Frog	*Rana capito*	T	S_2, G_3
	Dwarf Salamander	*Eurycea quadridigitata*	SC	S_2, G_5T_2Q
Reptiles	Mimic Glass Lizard	*Ophisaurus mimicus*	SC	S_2, G_3
	Pigmy Rattlesnake	*Sistrurus miliarius*	SC	S_3, G_5

Priority game species associated with wet pine savanna

Taxonomic Group	Common Name	Scientific Name
Birds	Eastern Wild Turkey	*Meleagris gallopavo silvestris*
	Northern Bobwhite Quail	*Colinus virginianus*
	Mourning Dove	*Zenaida macroura*
Mammals	American Black Bear	*Ursus americanus*
	White-tailed Deer	*Odocoileus virginianus*
	Eastern Fox Squirrel	*Sciurus niger*
	Eastern Gray Squirrel	*Sciurus carolinensis*

B. Problems affecting species and habitats

Many of the problems affecting dry longleaf pine communities on Suggs Mill Pond also affect the wet pine savanna communities. Prior conversions of these sites to intensively managed pine plantations, lack of fire, and the fragmentation of these habitats have all caused problems. Previous intensive site preparation in the form of draining and clearing of adjacent sites has altered hydrology and the vegetative assemblages.

The construction of fire lines in the pocosin ecotone degrades these microhabitats and may decrease floral diversity. The rutting caused by logging equipment also alters the micro-topography of these ridge/drain complexes.

C. Conservation actions necessary to conserve the species and habitat and priorities for implementation

The highest priority in this habitat type is the maintenance of a frequent fire return interval. Growing season fires should be encouraged, although seasonality is not as important as frequency (Robbins and Myers 1992). Efforts should be made to better understand the temporal effects of prescribed burning on the plant and animal communities in these wet savannas on Suggs Mill Pond. Additionally, because of ever increasing obstacles to prescribed fire (e.g., smoke sensitive areas, public misconceptions), alternatives to burning (e.g., mechanical and

chemical treatments) must be explored. These alternatives may also be useful in the initial restoration of long fire-suppressed savannas.

The current placement of fire lines should be examined on a case by case basis for each burning compartment. Establishing any new fire lines in pocosin ecotones should be weighed against the ability to safely, effectively and frequently apply fire to the landscape. If there are lines that can be modified to restore these transition zones, this should be a high priority.

Additionally, if rehabilitation of fire breaks is needed, it should occur as soon as possible after the burn is completed. The highest priority for this restoration should be any permanent breaks that are currently affecting hydrology or water quality. Efforts to explore hydrologic restoration of extensively drained sites would prove beneficial to efforts on Suggs Mill Pond as well as other NCWRC holdings with wet savanna habitat.

Snags should be retained during timber harvests to increase the numbers available for cavity-using wildlife species. Efforts need to be made to maintain sufficient levels of woody debris in stands for reptiles, amphibians and small mammals. In disturbed sites, consideration should be given to create borrow sites or ponds for breeding use by amphibians, which are scarce in most flatwoods and savannas devoid of pools or open water.

Because of the potential for a great number of rare plants and animals in these habitats, protection of remaining sites is of utmost importance and urgency. Land acquisition and easements should be promoted through cooperation with conservation partners. Opportunities exist to take advantage of existing initiatives and programs with the US Fish & Wildlife Service and the Natural Resources Conservation Service, such as the Forest Landbird Legacy Program, Partners for Fish and Wildlife, and Farm Bill programs, to improve forest habitat for birds and other wildlife on privately-owned lands. Regional landscape-level conservation initiatives such as those in the Sandhills, Cape Fear ARCH, and Onslow Bight regions for dry longleaf pine also apply to wet pine savanna communities. Identified funding sources for acquisition include the Clean Water Management Trust Fund, Coastal Wetlands Grants, Forest Legacy, and Recovery Land Acquisition Grants.

D. Desired future condition

Our desired future condition for this cover type is to maintain an open, savanna-like understory with high plant species diversity and a vertical structure.

Because fire return interval is highly correlated with plant species diversity and an open understory, we will use it as our metric for success in this cover type. Currently only 38 acres (22%) of this cover type has a fire return interval of 3-4 years. The remaining 130 acres (78%) of this habitat has not been burned because of high levels of fine fuel moisture, wet soils, and previous occupation of overstocked loblolly pines on one site. In the Simmons Road Wildfire in 2011, a 123-acre compartment dominated by loblolly pine was decimated, salvage cut, and

restored to the wet pine savanna cover type. Our goal over the ten year planning horizon is to incorporate this 123-acre site into a 3-4 year burn rotation.

Additionally, we will attempt to rehabilitate 100% of any fire breaks that are created using a traditional fire plow within 6 months of creation. Currently, there is only one burn compartment on Suggs Mill Pond that requires the use of a traditional fire plow to establish a fire break. All other fire breaks consist of existing roads, trails, and natural fire barriers (water). We will continue to use existing roads, trails, and natural breaks to conduct prescribed burns. Finally, every attempt will be made not to establish new fire breaks in the pocosin ecotone.

E. Future forest management

Timber in this habitat type will be harvested using single and group selection cuttings to maintain uneven aged stands. Harvest decisions will be primarily influenced by stocking. Specific harvest prescriptions will be detailed in the annual forest management plans developed each year.

Where available, existing openings from previous harvest operations will be used for loading decks. Logging slash will be distributed back into the stand to maintain course woody debris. Care will be taken to shut operations down when conditions become conducive to rutting and North Carolina Forestry Best Management Practices will be strictly adhered to.

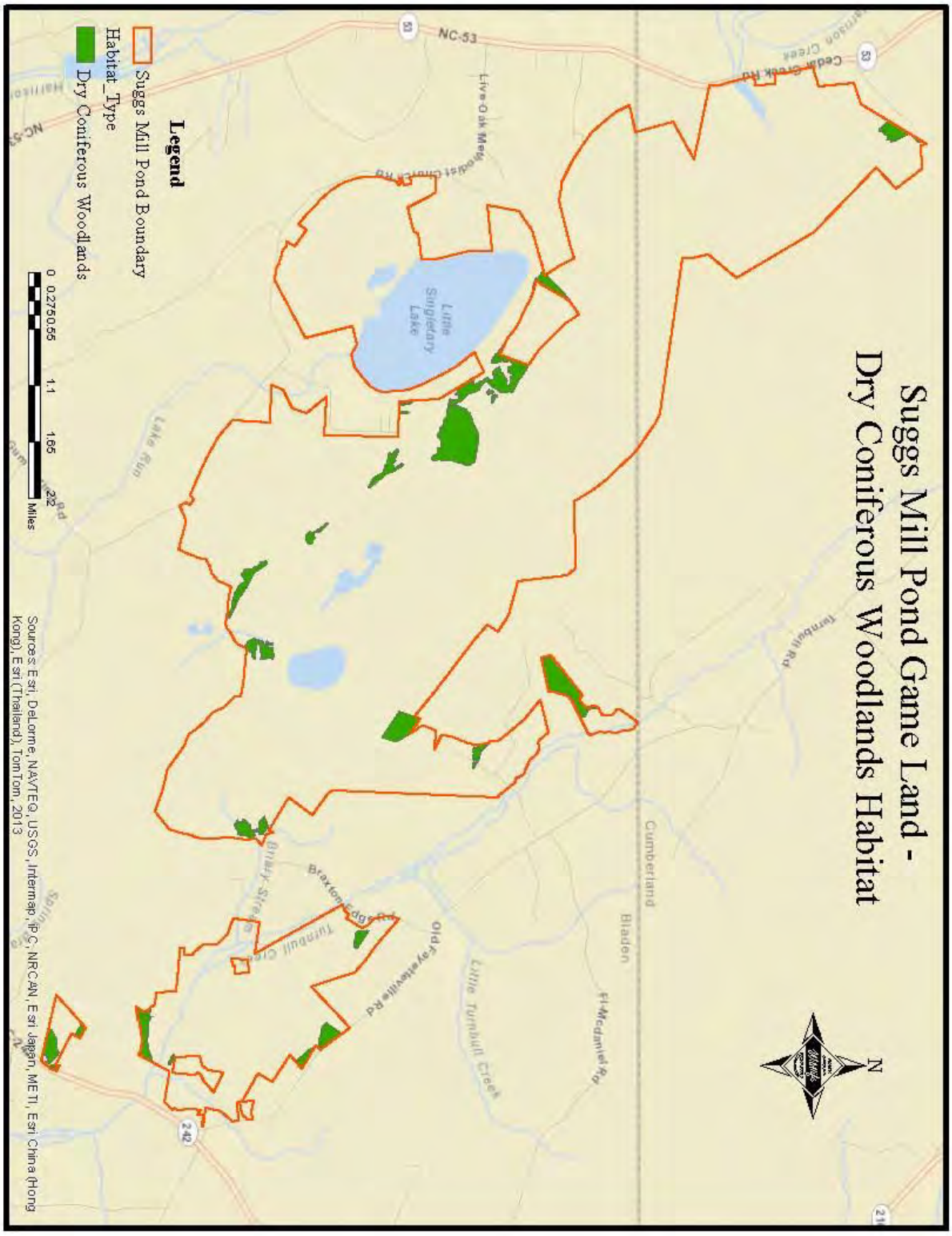
Dry Coniferous Woodlands

Non-longleaf pine coniferous woodlands occur throughout the Coastal Plain in areas that have naturally regenerated after being harvested or, due to the lack of fire, lost their original longleaf component and naturally regenerated in other pine species. The understory and midstory in these areas may be dominated by dense growing pocosin shrubs and/or hardwood species such as oaks, hickories, sweetgum, or maple. The exact midstory and understory species composition and structural diversity in these habitats is greatly influenced by management strategies which include timber harvests, prescribed burning, and treatments of the midstory component. This in turn determines the wildlife species present at various stages in the history of the stands.

A. Location and condition of habitat (see Map 9)

Dry coniferous woodland sites on Suggs Mill Pond are found in small isolated patches and make up 3.6% (394 acres) of the game land. These sites were spared conversion to pine plantations and were probably allowed to naturally regenerate after they were last harvested under previous ownership. Decades of fire suppression is evident. These sites are in generally poor structural condition with a dense midstory and sparse to moderate understory. Herbaceous ground cover consisting of grasses and forbs is generally sparse due to the overall lack of sunlight availability.

Due to drainage, some of these sites occur on the property where they would not have occurred historically. Draining of adjacent sites was conducted to alter the hydrology in order to establish loblolly and slash pine plantations. Some of these sites would probably have been in some pocosin community type because of higher water tables and less outflow rates causing soils to be saturated most of the year. Other sites on this property are thought to have historically been dry longleaf communities, but because of improper management and the exclusion of fire, they naturally evolved into loblolly and slash pine dominated stands.



Map 9 – Dry coniferous woodlands habitat on Suggs Mill Pond Game Land.

Priority non-game species associated with dry coniferous woodlands

Taxonomic Group	Common Name	Scientific Name	State Status (Federal Status)	Natural Heritage Program State and Global Rank
Birds	Cooper's Hawk	Accipiter cooperii	SC	S_3S_4B, S_4N, G_5
	Bachman's Sparrow	*Peucaea aestivalis*	SC	
Reptiles	Timber Rattlesnake	*Crotalus horridus*	SC	S_3G_4
	Pigmy Rattlesnake	*Sistrurus miliarius*	SC	S_3, G_5

Priority game species associated with dry coniferous woodlands

Taxonomic Group	Common Name	Scientific Name
Birds	Eastern Wild Turkey	*Meleagris gallopavo silvestris*
	Northern Bobwhite Quail	*Colinus virginianus*
	Mourning Dove	*Zenaida macroura*
Mammals	American Black Bear	*Ursus americanus*
	White-tailed Deer	*Odocoileus virginianus*
	Eastern Fox Squirrel	*Sciurus niger*
	Eastern Gray Squirrel	*Sciurus carolinensis*

B. Problems affecting species and habitat

Besides the obvious regeneration of these stands to off-site species of loblolly and slash pine, fire suppression prior to NCWRC ownership is the greatest problem affecting the condition of this habitat. This has caused stands to consist of a dominant midstory of hardwoods, increased fuel loads, inhibited the growth of grasses and forbs on the forest floor, and decreased the occurrence of rare and endangered species. Most of the understory grass, forb, and shrub layers are lost when the canopy of a newly harvested and naturally regenerated timber stand closes, typically 7-15 years after planting. The forest canopy is one of the foremost determinants of the microhabitat within a forest. It affects plant growth and survival, hence determining the nature of the vegetation, and wildlife habitat (Jennings et al. 1999).

Currently, 157 acres (40%) of the dry coniferous woodlands on Suggs Mill Pond are in an active burn rotation; 75 acres (19%) have a fire return interval of 3 years, 77 acres (20%) have a fire return interval of 4 years; and 5 acres (1%) is burned annually. The remaining 237 acres consist of sites that are located in areas that are inaccessible or prove to be difficult to burn. These areas have never been burned under NCWRC ownership. Locations include areas adjacent to the property line where burning may not be feasible, in ecotones between large pocosin habitats and upland sites, or in isolated areas that are inaccessible.

Additionally, lack of sufficient fine fuels to carry prescribed fires has posed obstacles in burning these habitats. The dense shrub layer and lack of grasses and forbs don't allow fires to burn at the intensity needed to accomplish management objectives. Conversely, the weather conditions

that do allow these habitats to burn present issues with fires that are too intense, having the potential for wildfire situations or intensities that would cause undesired harm to trees. In other words, when weather conditions are favorable for burning these sites, the ignition of the heavy fuels found in the dense shrub layers burns with intensities greater than desired and may burn out of control.

On sites that offer the ability to use fire as a management tool, heavy fuels of the aforementioned shrub layer have been reduced, herbaceous ground cover has increased, and burns have been conducted within prescription.

C. Conservation actions necessary to conserve the species and habitat and priorities for implementation

Fire should continue to be applied to these habitats and the fire frequency should be increased to at least once every three years on tracts that can feasibly be burned. Restoration of natural fire frequency, intensity, and seasonality is critical for pine-related reptiles, amphibian, and their prey (Bailey et al. 2004), as well as other pine-related wildlife.

On dry coniferous woodland sites that were historically dry longleaf communities, restoration of these natural communities should be the primary goal. Additional older aged pine acreage is needed. Therefore, on sites with soils not conducive to longleaf restoration, pine stands should be managed on long rotation (e.g., 60-100+ years) or in uneven-aged stands. Where appropriate, forest management techniques should be used to mimic the characteristics of older stands, which include canopy gaps, snags, dead and downed material, and the retention of cavity trees. Basal areas should be maintained at levels that allow for an herbaceous understory, i.e., 40-60 ft^2/acre. When available, mature hardwood trees should be retained and released during harvest operations.

Accessible areas of this cover type should continue to be managed for open canopies to allow sunlight to reach the forest floor. Where appropriate, this will be accomplished through thinnings of pine stands and conversion of dry coniferous woodlands to longleaf pine communities. Stands with hardwood dominated midstories should be controlled on a site-specific basis. Prescribed fire will be the primary tool to prevent hardwoods from dominating the midstory and causing canopy closure. When and if fire proves to be ineffective at accomplishing this goal, herbicide or mechanical removal will be considered for a midstory treatment. Prescribed fire will also be used to maintain, restore, and improve existing native herbaceous vegetation.

D. Desired future conditions

The desired future condition for this habitat type is restored, site-suitable vegetation communities with a primary emphasis on the longleaf pine/wiregrass ecosystem and a 3-year fire return interval. On wetter sites that may have historically been pocosin habitat, pine stands should be

managed on long rotation to allow maturation which will provide characteristics beneficial to wildlife. These characteristics include canopy gaps, snags, dead and downed wood, and cavity trees.

As stated earlier, some of these sites are inaccessible and/or are so small and isolated that management of these areas is not feasible. If the opportunity presents itself to conduct management activities, necessary and appropriate actions will be taken to improve their habitat quality. This may include thinning of stands that have closed canopies, application of prescribed fire, or midstory treatments that serve to eliminate its dominance.

Our second goal is to reduce our average fire return interval accessible sites to 3 years. It is our thought that with continued application of prescribed fire and the continued growth of timber within these stands, we will be able to accomplish management objectives with a 3 year burning cycle. Older, larger trees will produce more fine fuels to carry fire throughout the burn compartments and the grassy and herbaceous ground cover should improve and be less sparse, hence further improving the ability to carry fire throughout the stand. Burning of these compartments will be accomplished with the use of existing natural and engineered fire breaks. The 3 year fire return interval will continue to restore the understory component, which will facilitate conversion to longleaf savanna cover type on appropriate sites.

E. Future forest management

Stands that are accessible will be managed for low basal areas and open canopies via commercial thinnings. Where accessibility and soils allow, stands will be converted back to longleaf pine when the current stands mature or when they can be incorporated into sales of adjacent stands.

Mixed Hardwoods and Pine

288 acres (2.6%) of Suggs Mill Pond is made up of mixed hardwoods and pine habitat. This type of habitat is an oak-dominated natural community. It includes sites that may have been longleaf pine stands at one time, but without fire have regenerated into closed canopy mixed hardwood/pine stands with crowded midstory development and low understory species diversity.

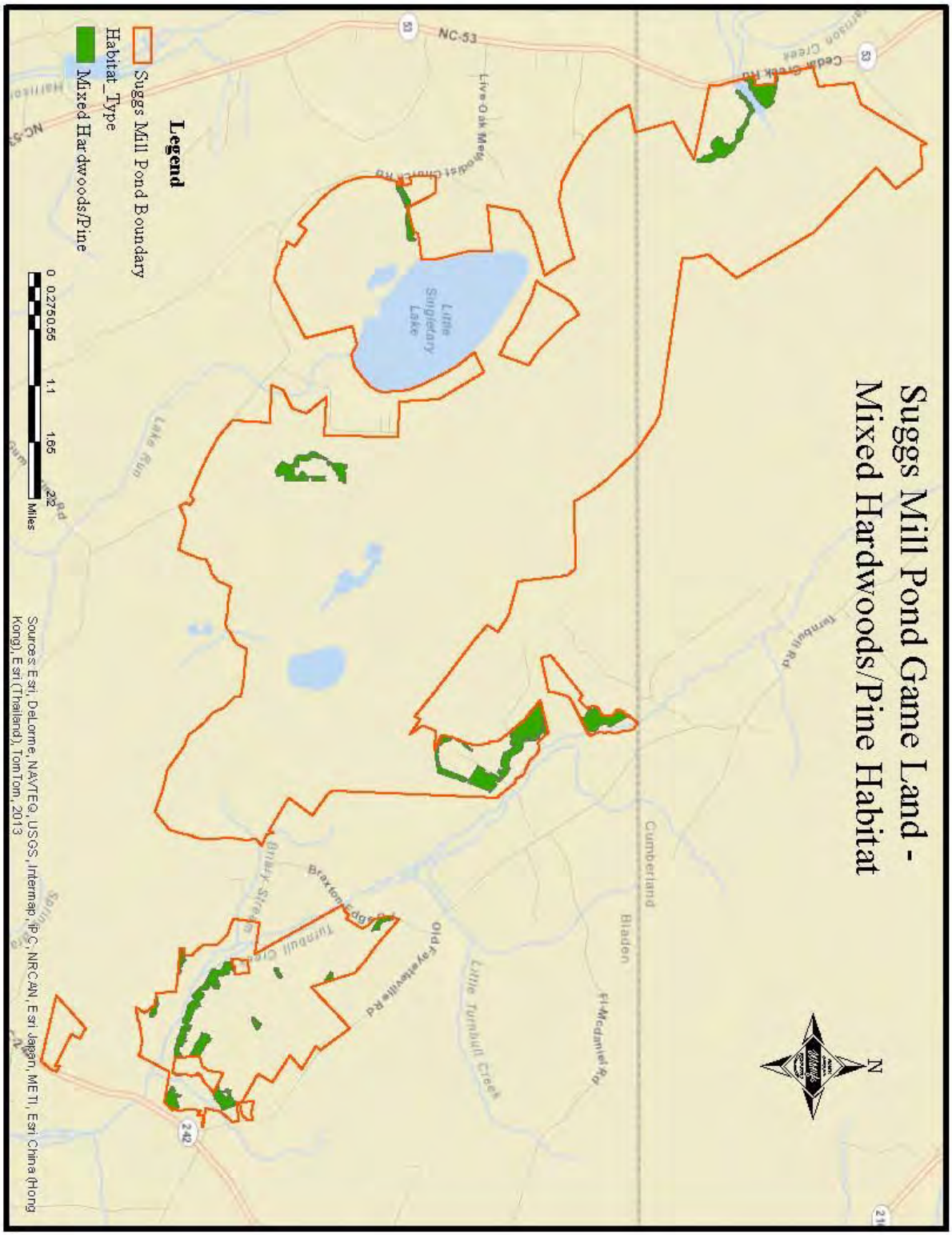
In the Coastal Plain of North Carolina, two examples of these oak dominated communities exist but only the Dry Oak-Hickory Forest cover type is found on Suggs Mill Pond. This is an upland community and was once one of the predominant cover types in the Piedmont, and although not as common in the Coastal Plain, it was clearly widespread before European settlement and land clearing (Schafale and Weakley 1990).

A. Location and condition of habitat (see Map 10)

Oak dominated forest communities are located throughout the Coastal Plain, but are no longer common except in small patches, as is the case on this game land. Most of the forests have been logged or cleared at least once in the past 300 years, and many have been cleared multiple times. The quality of these communities depends primarily upon the age of the canopy trees, management history, and degree of fragmentation of the tract. The condition of these stands has degraded over time with habitat fragmentation, fire suppression, and the resultant lack of understory and crowned midstory development.

The existing Dry Oak-Hickory Forests on Suggs Mill Pond have experienced the same outcome. They are isolated, probably due to fragmentation by clearcutting and conversion to loblolly and slash pine plantations. In these stands, fire has been non-existent for at least the last two decades, they lack significant groundcover, and the midstory has crowned, preventing much sunlight from reaching the forest floor.

Judging by the limited number of pines, red maple, tulip poplar, and sweetgum, no disturbance has occurred in these stands in many years, probably since it was last timbered. These forests on this game land are uneven-aged with old trees occasionally present. The last disturbance that these stands experienced coupled with the lack of fire has changed the species composition and structure. It is believed that these sites were once dominated by longleaf pine but the lack of frequent fire has resulted in dominance by oaks, hickories, and other hardwood species.



Map 10 – Mixed hardwoods/pine habitat on Suggs Mill Pond Game Land.

Priority non-game species associated with mixed hardwood and pine forest habitat

Taxonomic Group	Common Name	Scientific Name	State Status (Federal Status)	Natural Heritage Program State and Global Rank
Birds	Cooper's Hawk	Accipiter cooperii	SC	
Amphibians	Four-toed Salamander	Hemidactylium scutatum	SC	S_3, G_5
Reptiles	Timber (Canebrake) Rattlesnake	Crotalus horridus	SC	S_3, G_4

Priority game species associated with mixed hardwood and pine forest habitat

Taxonomic Group	Common Name	Scientific Name
Birds	Eastern Wild Turkey	Meleagris gallopavo silvestris
Mammals	White-tailed Deer	Odocoileus virginianus
	American Black Bear	Ursus americanus
	Raccoon	Procyon lotor
	Bobcat	Lynx rufus
	Eastern Gray Squirrel	Sciurus carolinensis
	Eastern Fox Squirrel	Sciurus niger

B. Problems affecting species and habitat

Conversion to single-aged loblolly pine stands and lack of canopy gaps have been problems for this habitat type and the wildlife species that utilized them. The lack of canopy gaps affects bird species that rely on those gaps for foraging areas such as nightjars, eastern wood-pewee, northern flicker, and red-headed woodpecker. Also, the potential and realized impacts by gypsy moths and other non-native plants and animals are becoming a growing concern throughout the hardwood dominated communities.

C. Conservation actions necessary to conserve the species and habitat and priorities for implementation

Use of infrequent prescribed fire and canopy gap management may be needed to improve forest structural heterogeneity because frequent fire will limit shrub and understory development necessary to breeding bird species. Management and protection of mixed hardwoods/pine stands to promote future large, unfragmented tracts is especially important for amphibians, reptiles, small mammals and bats.

This cover type on Suggs Mill Pond should be dedicated to old growth habitat. Within the oak-mixed hardwoods/pine habitat, we must attempt to retain as many of the embedded habitats as possible. However, in the event of destructive impacts from catastrophic events such as hurricanes or wildfires, mixed hardwood stands should be considered for conversion back to longleaf pine habitat where appropriate.

D. Desired future conditions

Our desired future condition for this habitat type is to dedicate these lands to old growth habitat, which include cavity trees, dead and downed woody debris, and snags. As stated earlier, prescribed fire has been absent for at least the last two decades. The implementation of an infrequent prescribed fire regime will be considered based on other burning priorities and feasibility. To minimize damage to older hardwoods, prescribed fires would be conducted during the dormant season and would ideally be cool fires with low intensity.

Mirroring the location and condition of these habitats across North Carolina, these communities on Suggs Mill Pond are in small patches that are isolated and fragmented by roads, trails, and pine plantations. Without the application of prescribed fire, canopy gaps could be created by selective removal of trees that have contributed to midstory canopy closure. If burning these areas proves to be feasible, determination of fire return interval would be based on results achieved by the initial burn and fuels loads relative to the ability to carry fire through these stands.

E. Future forest management

In order to maintain perpetual mixed hardwood/pine habitats on Suggs Mill Pond, no timber harvests will take place over the next ten year planning horizon. Specific burning prescriptions will be made in the annual forest management plans developed each year. Field staff will determine if the need of selective, non-commercial removal of trees is conducive to opening the midstory canopy for foraging areas, which will also be addressed in the annual forest management plan, if applicable.

Floodplain Forest

The Coastal Plain floodplain forest habitat includes several different community types, two of which are found on Suggs Mill Pond; bottomland hardwoods and blackwater cypress-gum swamps. Floodplain forests are typically located near rivers, lakes, and streams, but some of this property's floodplain forests are simply low-lying areas or depressions where water naturally collects after rain events or occurs within wetland habitats.

These forest systems of the Coastal Plain are now only small fragments and sections of the original millions of acres present before European settlement and have been lost or altered by development, drainage, agriculture, and logging (Weller and Stegman 1977). Several wildlife species that once occupied large floodplain systems are gone or greatly reduced in numbers.

Bottomland hardwoods in blackwater systems occur on high parts of the floodplain away from channels and may be dominated by laurel oak, water oak, willow oak, red maple, sweetgum, and loblolly pine (Schafale and Weakley 1990). They are characterized and maintained by a natural hydrologic regime of alternating wet and dry periods generally following seasonal flooding events. Shrub layers can be very dense and switch cane can be common. Vines can be dense and the herb layer is usually sparse. Flooding occurs in these sites occasionally but they are seldom disturbed by flowing water. They are important natural communities for maintenance of water quality, providing a very productive habitat for a variety of fish and wildlife species, and are important in regulating flooding and stream recharge. Blackwater rivers carry little inorganic sediment so flooding does not provide a substantial nutrient input (Schafale and Weakley 1990). These areas may carry fires (due to dense lower layers of vegetation) when dry and the occurrence of fire would affect the plant community composition and structure.

Blackwater Cypress-Gum Swamps contain just a few tree species tolerant of nearly permanent flooding: bald cypress, pond cypress, and swamp black gum. These communities get little input of nutrients due to the poor inorganic sediment load carried by blackwater rivers and the infertile acidic soils and wetness produce slow growth in the trees (Schafale and Weakley 1990). The difference between cypress and gum dominance is probably related to logging history, but environmental factors such as flooding frequency and depth, water chemistry, soil type and latitude also contribute (Schafale and Weakley 1990). Since cypress-gum swamps flood for long periods of time, their vegetational diversity is usually low but they may serve as important habitat for some aquatic animals and plants. Hollow cypress and swamp black gum are particularly important for bats, chimney swifts and other cavity dwelling species. Additionally, several colonial waterbird species rely on swamp forests for nesting habitat.

A. Location and condition of habitat (see Map 11)

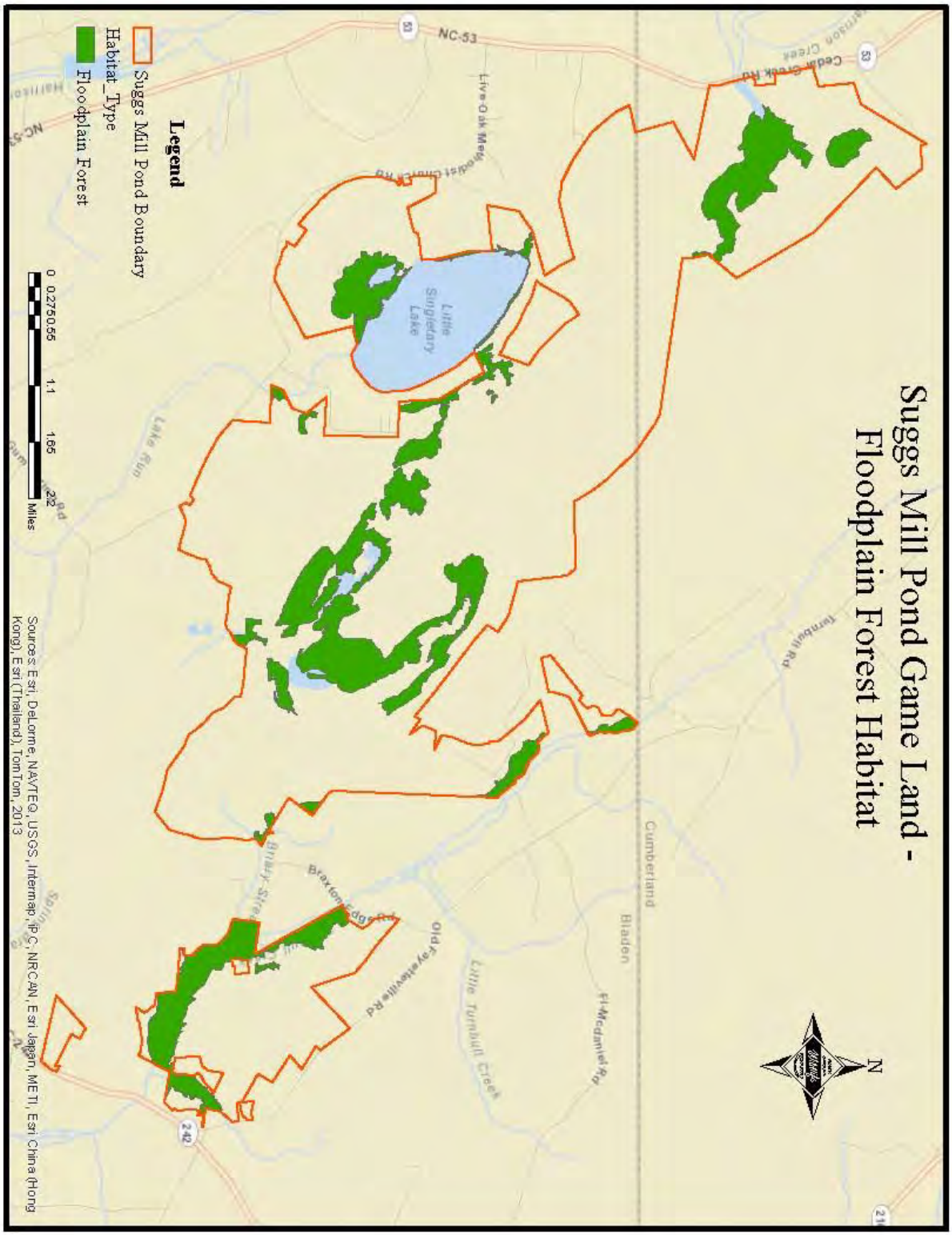
Approximately 1,510 acres (13.8%) of floodplain forests occur on Suggs Mill Pond. The condition of Coastal Plain floodplain forests of all types have been greatly reduced in recent

years throughout North Carolina and the entire southeast (Weller and Stegman 1977, Schafale and Weakley 1990) by a variety of anthropogenic factors.

Factors that impact these systems include flooding regime patterns that have been changed by dams and other development, habitat fragmentation, changes in water chemistry and organic matter loads, increased nitrogen from agricultural and development-related runoff, exotic species and high-grading of stands and logging that reduces wide buffers. All of these factors individually or interactively produce abrupt or gradual changes in floodplain plant and wildlife communities. Schafale and Weakley (1990) stated that blackwater systems in the Coastal Plain have high sediment loads, which is a major problem.

Non-point source and point source pollution from a variety of human introduced activities has greatly increased in many drainages due to growing human population. Untreated stormwater runoff from large cities and towns is a major problem that impacts both aquatic life and terrestrial wildlife associated with floodplain forests.

There are currently 91 acres of floodplain forest communities on Suggs Mill Pond with a fire return interval of 3-4 years. The vast majority of these habitats are unburnable because of wet fuels. Sites that are burned consist of transitional areas between upland sites and the wetter bottomlands and are areas included into active burn compartments.



Map 11 – Floodplain forest habitat on Suggs Mill Pond Game Land.

Priority non-game species associated with floodplain forest habitat

Taxonomic Group	Common Name	Scientific Name	State Status (Federal Status)	Natural Heritage Program State and Global Rank
Birds	Anhinga	*Anhinga anhinga*	SR	
	Mississippi Kite	*Ictinia mississippiensis*	SR	
Mammals	Star-nosed Mole	*Condylura cristata*	SC	S_2, G_5T_2Q
	Rafinesque's Big-eared Bat	*Corynorhinus rafinesquii*	T	S_3,$G_3G_4T_3$
Amphibians	Mabee's Salamander	*Ambystoma mabeei*	SR	S_2, G_4
	Dwarf Salamander	*Eurycea quadridigitata*	SC	S_2, G_5
	Four-toed Salamander	*Hemidactylium scutatum*	SC	S_3, G_5
Reptiles	Timber (Canebrake) Rattlesnake	*Crotalus horridus*	SC	S_3, G_5

Priority game species associated with floodplain forest habitat

Taxonomic Group	Common Name	Scientific Name
Birds	American Woodcock	*Scolopax minor*
	Wood Duck	*Aix sponsa*
	Hooded Merganser	*Lophodytes cucullatus*
	Eastern Wild Turkey	*Meleagris gallopavo silvestris*
Mammals	North American River Otter	*Lontra canadensis*
	American Beaver	*Castor canadensis*
	White-tailed Deer	*Odocoileus virginianus*
	American Black Bear	*Ursus americanus*
	Raccoon	*Procyon lotor*
	Bobcat	*Lynx rufus*
	Eastern Gray Squirrel	*Sciurus carolinensis*

B. Problems affecting species and habitat

Lack of old growth characteristics (canopy gaps, vine tangles, hollow trees, dead and downed woody debris) and fragmentation of stands are concerns for floodplain forest communities on Suggs Mill Pond. A lack of standing dead or older trees has impacted the availability of quality bat and chimney swift roosting and breeding sites and nesting productivity for species such as wood duck and hooded merganser. Lack of downed woody material has impacted a variety of amphibians and reptiles.

Fragmentation of stands throughout the last century has contributed to the loss of intact, large riparian corridors and the width of many corridors has been greatly reduced. Breeding area-sensitive bottomland hardwood birds have likely been impacted by the loss of intact woodland systems. High-grading of stands has changed plant species diversity and stand vegetative structure. Forestry activities (e.g., logging) have reduced colonial waterbird and eagle nesting areas. Increases in amounts of non-native plants (e.g., privet, Japanese grass, Chinaberry,

Japanese honeysuckle) and the overall loss of large canebreaks are partly due to the lack of infrequent fire and also certain logging practices. Understory vegetative diversity has declined in many areas due to modified flooding regimes and increases in invasive non-native plant species.

Drainage of wetlands has exacerbated the problems in and adjacent to floodplain forest habitats. This habitat loss impacts all floodplain species, including furbearers, breeding amphibians, overwintering birds, and migrant species that use these areas as stopover sites. Water quality is also an issue in certain major river drainages that negatively affects many invertebrates, fish, amphibians and reptiles.

C. Conservation actions necessary to conserve the species and habitat and priorities for implementation

Efforts should be made to retain mature floodplain forests which would provide large trees that could potentially contain natural cavities and provide food beneficial to wildlife. Large tracts of mature bottomland forests will naturally provide quality food and cover without human efforts.

One of the most important resources bottomland forests provide for wildlife is mast produced by mature trees. Production of hard mast from trees such as oaks and hickories, and soft mast from plants such as black gum and wild grapes can be increased by clearing small areas around individual trees and shrubs. This will reduce competition and increase vigor, resulting in greater mast production. Natural events such as tree falls and wind storms will create small disturbed openings where many plants that provide food for wildlife can thrive

There is a need to monitor floodplain forests for non-native plant and animal species such as nutria, Chinese privet, multiflora rose, Chinaberry and Japanese honeysuckle. Invasive plants are usually characterized by fast growth rates, high fruit production, rapid vegetative spread and efficient seed dispersal and germination. Not being native to North Carolina, they lack the natural predators and diseases which would naturally control them in their native habitats. The rapid growth and reproduction of invasive plants allows them to overwhelm and displace existing vegetation and, in some cases, form dense one-species stands. Invasive exotic plants and animals disrupt the ecology of natural ecosystems, displace native plant and animal species, and degrade biological resources. Aggressive invaders reduce the amount of light, water, nutrients and space available to native species.

To control invasion of these habitats by non-native species, efforts should be made to prevent accidental introductions, eradicate existing infestations, and minimized disturbance to these habitats.

D. Desired future condition

The desired future condition of floodplain forests on Suggs Mill Pond is to allow them to grow to maturity and contain old growth characteristics. This includes cavity trees located throughout

the stands for cavity nesting birds and dens for mammals, dead and stressed trees throughout the stand for future cavities and structure for insect foraging birds, vines that provide foraging habitat for songbirds, and coarse debris (10 inches in diameter or greater) on the ground to provide den sites and habitat for invertebrates, amphibians and reptiles.

Buffers of 300-600 feet will be maintained along streams and their adjacent wetlands, floodplain, and slopes. Buffer width will be adjusted to include contiguous, sensitive areas such as slopes or erodible soils where disturbance may adversely affect water quality, streams, wetlands, or other water bodies.

E. Future forest management

To reach the desired future condition of mature stands with old growth characteristics, no timber harvests will occur in floodplain forests on Suggs Mill Pond. Where a floodplain forest occurs within a burn compartment, prescribed fire will be allowed to run through the stand. If invasive plant species become a problem and prescribed fire does not prove to be an effective method of control, mechanical and/or chemical controls may be employed to remove the invasive species.

Non-forested Early Successional Habitat

This cover type is represented best by land where most trees have been removed either through natural means or by human activity. These communities form soon after a disturbance and generally consist of herbaceous annuals and perennials that quickly occupy disturbed sites. They reproduce seeds that are disturbance-adapted or can be widely dispersed by wind, water, or animals. Early successional habitat can be a mix of grasses, legumes, wildflowers, vines, shrubs and saplings. In general, sod-forming grasses such as fescue and bermudagrass provide minimal wildlife value; while grasses that grow in individual clumps, such as switch grass and broomstraw, provide greater value for wildlife. Small patches of vines or shrubs contribute to habitat value, but woody vegetation should not shade out the grasses and forbs.

These communities are characterized by high productivity and provide habitat for many disturbance-adapted wildlife species. Early successional habitats are highly ephemeral and in the absence of further disturbance, the attractiveness and productivity of these habitats declines. Across the nation, the single category of wildlife experiencing the most declines is consists of those that depend on natural early successional habitats.

This habitat type requires frequent disturbances that suppress or reset ecological succession. These disturbances include activities such as timber harvests, mechanical treatments, burning, and herbicide treatments to maintain this condition. However, environmental factors such as weather events, climate, and natural fires play a role in creation and maintenance of this habitat as well. Without these disturbances or active management, natural plant succession will limit the longevity of many of these habitats.

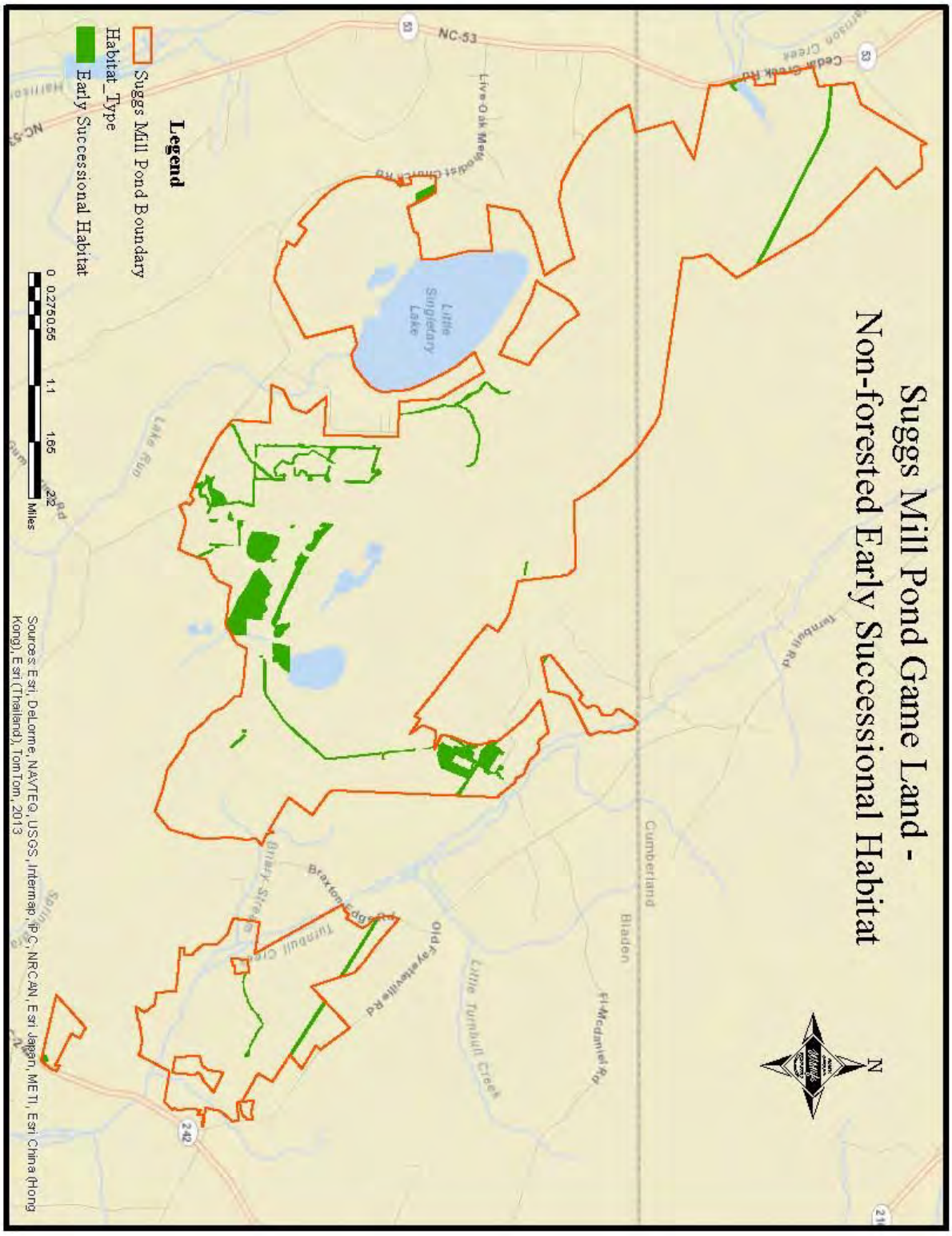
Historically, both large and small areas of these habitats were created by catastrophic natural fires, anthropogenic fires, large-scale wind events, insect pests, or pathogens such as fungal diseases that all cause significant canopy loss in forests.

A. Location and condition of habitat (see Map 12)

Approximately 300 acres of early successional habitat occurs on Suggs Mill Pond and makes up 2.8% of the property. The enrollment of this game land into the NCWRC's CURE Program obligates that it be managed to create and provide early successional habitat for the declining wildlife species associated with this cover type. This area exists in a forest-dominated landscape and poses challenges to accomplishing objectives set forth by the CURE Program. Currently, it is often found at the transition between agricultural fields and nearby woodlands, exists as developed linear opening amongst other habitats, or is created by disturbances. The 300 acres of early successional habitat on this game land consist of non-forested wildlife openings. Although not included in the acreages for this cover type, important early successional habitat also occurs and is managed for in the understory of frequently burned open pine habitats.

Quality early successional habitats have declined significantly over the past half-century and were nearly non-existent on Suggs Mill Pond when purchased by the NCWRC. This was due to the suppression of fire, over-stocked pine plantations, and the fragmentation of this habitat. The majority of upland sites on Suggs Mill Pond consist of pine plantations. Consequently, there are more frequent disturbances to the forests and soils and from cutting and replanting; all of which could benefit quail (Cobb et al. 2002), and other early successional wildlife species. Since its purchase by the NCWRC, many activities have occurred to increase the quantity and quality of this cover type. These activities include but are not limited to the creation of wildlife openings, implementation of field border management, prescribed burning, seeding of native ground cover, and herbicide applications to control undesirable vegetation.

A large portion of Suggs Mill Pond has quality early successional habitat. However, there are areas that require activities more involved than regular maintenance. Some wildlife openings are dominated by bermudagrass and other sod-forming grasses, all of which are invasive and/or non-native, providing very little habitat value.



Map 12 – Non-forested early successional habitat on Suggs Mill Pond Game Land.

Priority non-game species associated with early successional habitat

Taxonomic Group	Common Name	Scientific Name	State Status (Federal Status)	Natural Heritage Program State and Global Rank
Birds	Bachman's Sparrow	*Peucaea aestivalis*	SC	
	Loggerhead Shrike	*Lanius ludovicianus*	SC	S_3B, S_3N, G_4
Mammals	Star-nosed Mole	*Condylura cristata*	SC	S_2, G_5T_2Q
Reptiles	Eastern Diamondback Rattlesnake	*Crotalus adamanteus*	E (E)	S_1, G_4
	Eastern Coachwhip	*Masticophis flagellum*	SR	S_3, G_5

Priority game species associated with early successional habitat

Taxonomic Group	Common Name	Scientific Name
Birds	Northern Bobwhite Quail	*Colinus virginianus*
	Mourning Dove	*Zenaida macroura*
	Eastern Wild Turkey	*Meleagris gallopavo silvestris*
	American Woodcock	*Scolopax minor*
Mammals	White-tailed Deer	*Odocoileus virginianus*
	Raccoon	*Procyon lotor*
	Gray Fox	*Urocyon cinereoargenteus*
	Red Fox	*Vulpes vulpes*
	Eastern Cottontail Rabbit	*Sylvilagus floridanus*

B. Problems affecting species and habitat

The biggest challenge is providing this habitat in a forested landscape, which requires intensive and constant management through multiple land management practices such as prescribed burning, herbicide treatments, timely soil disturbance, and planting of native grasses and forbs. These activities maintain non-forested openings that provide this habitat in a mosaic with other communities throughout the game land.

Invasive species can cause problems in early successional habitats. Fire ants kill newly hatched ground nesting birds, reptiles, and new born mammals. Brown-headed cowbirds parasitize bird nests and many exotic plant species take advantage of the light conditions in early successional habitats. Invasive plant species such as tall fescue, bermudagrass, and other sod-forming grasses form a dense structure at ground level. This makes it difficult for young wildlife to travel through these areas, limits seed and invertebrate availability, and precludes the native seedbank from germinating.

Early successional habitats in the powerline right-of-ways and roadsides on this game land can be adversely affected by too frequent or poorly timed mowing and herbicide treatments (Bramble et al. 1992). Suggs Mill Pond has 5.9 miles of power line right-of-ways and approximately 40 miles of roads and trails. Some of the road shoulders have been widened to allow quicker drying

of the roadbed and to also provide this habitat component. Improper management of these areas could potentially cause more harm than benefit.

C. Conservation actions necessary to conserve the species and habitat, and priorities for implementation

The creation of additional non-forested linear openings should occur. There are focal areas that were identified in the initial CURE Plan for linear opening development that have not been created for various reasons. These areas should be targeted for conversion to this cover type.

Plantings of native grass and forb mixtures to support breeding birds, small mammals, and herpetofauna should continue to be implemented into the management practices for this cover type when needed. If field borders and other wildlife openings prove to have little or no native grasses and forbs in their seedbank, consideration should be given to mechanically planting these areas with a native plant mixture.

Connecting smaller patches of habitat with corridors should be given priority. Non-forested openings should continue to be maintained with fire/and or timely disking and rotations of fallow areas. Non-native, sod-forming grasses should be controlled through the application of herbicide and restored to native vegetation. Areas where these grasses have encroached should be identified and implementation of herbicide application should occur. Other invasive, non-native species should be dealt with on a case-by-case basis.

D. Desire future condition

A field analysis was conducted as part of the initial stages of the CURE Program on Suggs Mill Pond which indicated that 2,800 acres of upland habitat could be potentially managed for upland small game. Of those 2,800 acres, a goal was set to establish and maintain 15%, or 420 acres, as non-forested early successional habitat. Since that time, 1,764 acres have been added to Suggs Mill Pond which includes an additional 183 upland acres identified with the potential to be managed for upland small game, bringing the total upland acres to 2,983.

As stated earlier, there are currently 300 acres in this cover type. It is our desire to increase the total acreage of early successional habitat on Suggs Mill Pond by 10%, or 30 acres, over the ten-year planning horizon for a total of 330 acres. It should be noted that due to limited actions allowed by North Carolina Natural Heritage Program dedications on the game land, the creation of additional non-forested early successional habitat is challenging. See *Appendix XVI* for these articles of dedication.

Eradication of non-native grasses found in some of the wildlife openings mentioned earlier should be completed. Encroachment of these grasses in field borders should also be eliminated.

Game land managers should continue to use no-till agriculture practices. Hedgerows will be maintained by pruning soft mast producing trees every 3-5 years in order to produce less woody

material and more leaves and fruits. Invasive grasses, shrubs, and trees within hedgerows will be removed to allow for desirable, native vegetation to grow. To allow for a variety of plant growth stages within the hedgerows, trees and shrubs will be selectively cut.

These habitats should be highly dynamic and highly productive seral stages. This consists of a great diversity of vigorously growing grasses, forbs, shrubs, and young trees that provide excellent food and cover for wildlife. They would be managed with fire, rotational disking, or some other type of disturbance.

E. Future forest management

Because this cover type does not consist of any timber, no future forest management will occur.

Lakes and Reservoirs

There are 22 natural lakes in the Coastal Plain of North Carolina with basins ranging from Carolina bays to peatland depression. Most of the State's natural lakes are acidic and therefore have relatively low productivity.

Reservoirs tend to be small on the Coastal Plain because the topography is so flat. Millponds, farm ponds, Carolina bays, and impoundments are quite common and provide key habitat for lentic aquatic and semi-aquatic wildlife species. These areas (and the immediate shoreline vegetation) are also important areas for many bird species (nesting, roosting, and feeding sites) and provide habitat for fish, reptiles, amphibians, and aquatic or semi-aquatic mammals.

In particular, these sites and immediately adjacent cover (especially the smaller ponds) are habitat for wading birds and shorebirds for foraging, and also important sites for breeding species. Common yellowthroat and red-winged blackbird are typical nesters in vegetation along shorelines, and swallows and swifts often forage over lakes and ponds. Bald eagle and osprey nest and/or forage at these sites, and waterfowl roost, loaf and feed during migration and winter. Double-crested cormorants are becoming common year-round residents at most coastal lakes. Anhinga are sometimes seen during summer, nesting at millponds and/or natural lakes.

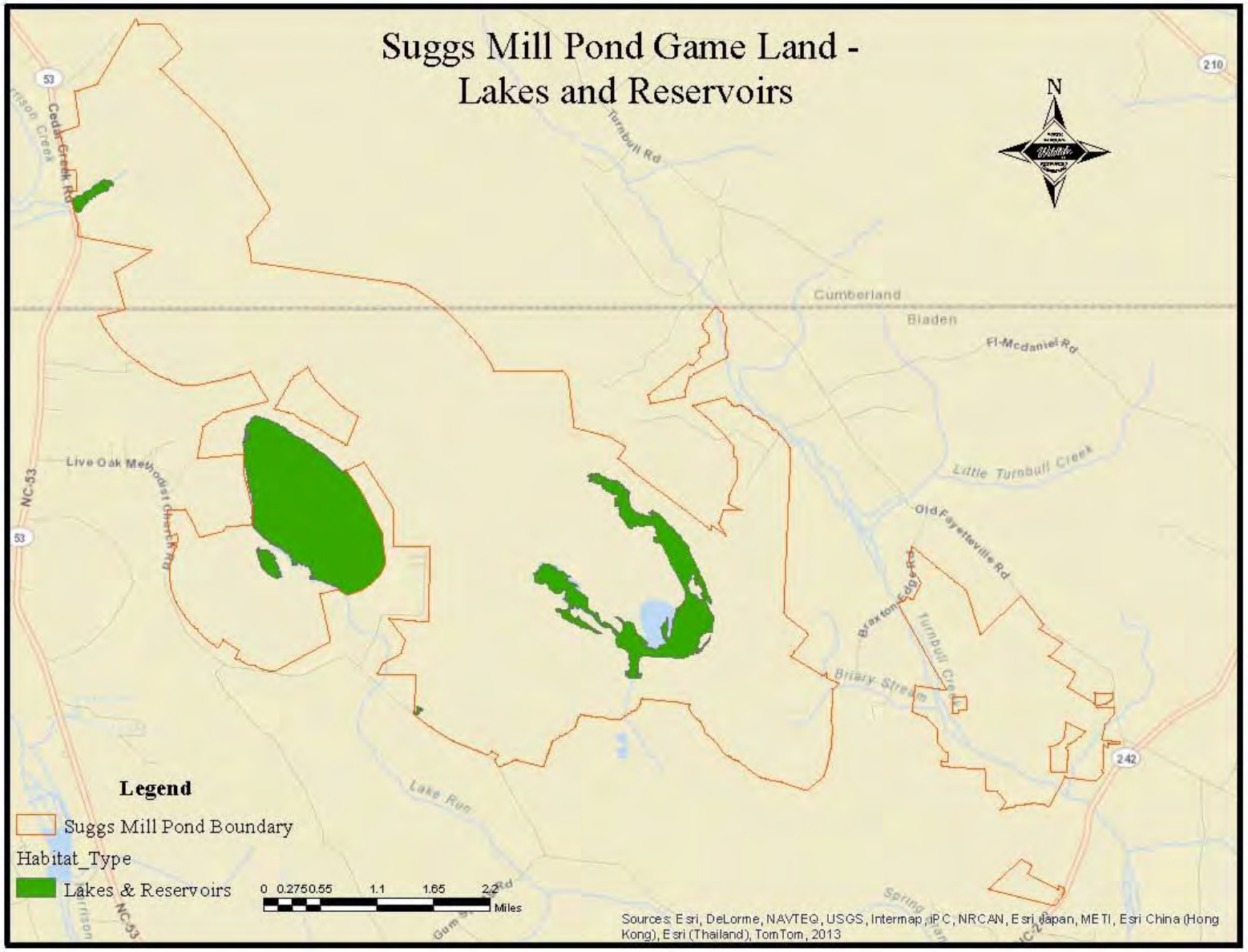
A. Location and condition of habitat (see Map 13)

As identified in Map 13, there are 4 lakes and reservoirs on Suggs Mill Pond; Jessup's Millpond, Little Singletary Lake, Horseshoe Lake (also known as Suggs Mill Pond), and a small, unnamed body of water southwest of Little Singletary Lake. The open, non-forested areas cover 942 (8.6%) of this property. The shorelines and water quality of these communities are very well protected. They are surrounded almost entirely by protected lands and the minimal nearby developed areas (residences and agriculture) currently have little to no influence on water quality. These sites are important waterfowl, wading bird, and shorebird wintering and migration stopover areas.

Carolina bay lakes, like the lakes found on Suggs Mill Pond Game Land, are typically shallow, acidic, and have low productivity which results in a unique fish assemblage that can tolerate these unfavorable conditions. Some popular game fish such as largemouth bass and several species of sunfish may survive in these conditions but typically do not thrive, so numbers and size of game fish are less than other natural lakes in the Coastal Plain or the Piedmont. Some common game fish that do occur in these conditions are chain pickerel, redfin pickerel, yellow perch, flier, and bullhead catfish. Anglers at Suggs Mill Pond report catching largemouth bass occasionally but typically catch flier as well as chain and redfin pickerel, also known as jacks. Anglers also report catching flier in the canals that run through the game land.

Suggs Mill Pond is also utilized as a water source to inundate five impoundments on Suggs Mill Pond as well as other impoundments on private land adjacent to the property in order to provide

additional waterfowl habitat during fall, winter, and early spring. Fall and winter drawdowns will likely not have negative consequences on the fish assemblage but could become adverse during periods of drought if water levels do not return to normal levels during the spring. Lower water levels in the spring could result in less spawning habitat for some fish species.



Map 13 – Lakes and reservoir habitats on Suggs Mill Pond Game Land.

Priority non-game species associated with lakes and reservoir habitats

Taxonomic Group	Common Name	Scientific Name	State Status (Federal Status)	Natural Heritage Program State and Global Rank
Birds	Anhinga	Anhinga anhinga	SR	
	Little Blue Heron	Egretta caerulea	SC	S_3B, S_3N, G_5
	Wood Stork	Mycteria americana	E(E)	S_1B,S_1N, G_4
Reptiles	American Alligator	Alligator mississippiensis	T(T)	S_3, G_5
	Eastern Chicken Turtle	Deirochelys reticularia	SR	S_3, G_5
	Glossy Crayfish Snake	Regina rigida	SR	S_2, S_3, G_5

Priority game species associated with lakes and reservoir habitats

Taxonomic Group	Common Name	Scientific Name
Birds	Wood Duck	Aix sponsa
	Hooded Merganser	Lophodytes cucullatus
	Mallard	Anas platyrhynchos
	Ring-necked Duck	Aythya collaris
	Lesser Scaup	Aythya affinis
	Redhead	Aythya americana
	Green-winged Teal	Anas crecca
	Blue-winged Teal	Anas discors
Mammals	North American River Otter	Lontra canadensis
	American Beaver	Castor canadensis

Priority aquatic species associated with lakes and reservoir habitats

Taxonomic Group	Common Name	Scientific Name	Classification
Fish	Largemouth Bass	Micropterus salmoides	Game Fish
	Chain Pickerel	Esox niger	Game Fish
	Redfin Pickerel	Esox americana	Game Fish
	Flier	Centrarchus macropterus	Game Fish
	Yellow Perch	Perca flavescens	Game Fish
	Warmouth	Lepomis gulosus	Game Fish

B. Problems affecting species and habitat

Several fish species found in Suggs Mill Pond have consumption advisories because of elevated levels of mercury. Mercury bioaccumulation can be more common in coastal plain waters because of the reduced buffering capacity of coastal plain soil types. Current management for game fish on Suggs Mill Pond is the statewide regulations with no unique regulations imposed. These include largemouth bass minimum size limit of 14 inches except two may be less than 14

inches and a creel limit of five fish per day. For sunfish, there is no minimum size limit and the daily creel limit is 30 in combination with no more than 12 redbreast sunfish.

C. Conservation actions necessary to conserve the species and habitat and priorities for implementation

Preventing invasions of exotics, especially aquatic plants, is imperative. Native vegetative composition and structure are important to the seasonal migrations of many wetland-related reptiles and amphibians (Bailey et al. 2004). Retention of buffers surrounding these areas is also critical and disturbances along lakeshores need to be limited to reduce pollution. Natural structures, in the form of logs, rocks, and snags, should be retained. Disturbances near bald eagle nest trees needs to be controlled.

There is a need to continue management of beaver ponds and their potential damage in order to minimize impacts to the quality of these communities. Beaver ponds are important habitat for many birds, mammals, amphibians and reptiles. Coordination with waterbird working groups should continue and future recommendations from the North American Waterbird Conservation Plan should be followed (Kushlan et al. 2002).

Acquisition and protection of other natural lakes and ponds is a high priority. There are still a few such lakes in the Bladen Lakes region that are in private, unprotected ownership. Protection of some millponds is also warranted, though this is a lower priority than protection of natural water bodies.

The fishery in all water bodies found on Suggs Mill Pond Game Land should continue to be managed under the current regulations as described above. Efforts should be made to sample the fisheries in Little Singletary Lake and Jessup's Mill Pond to determine species composition and abundance.

Several metrics to monitor the fish assemblage would be size distribution of each species to insure successful reproduction, relative weight for game fish to measure overall condition, and a determination of catch per unit of effort to monitor relative abundance of each species. These are easily attainable and may help guide future regulations for these fisheries.

Chain Pickerel and Yellow Perch should not be consumed by women of childbearing age, pregnant women, nursing mothers and children under 15. For all other people, only one meal per week should be consumed. Other species that fall within these advisories that are likely to occur in Suggs Mill Pond are largemouth bass, bowfin (blackfish), catfish, and warmouth. Sunfish, which include flier bream, should not be consumed more than two meals per week for women of childbearing age, pregnant women, nursing mothers and children under 15 and no more than four meals per week for all other people (see *Appendix XIII*).

Due to the habitat restrictions (i.e., shallow, acidic water with low productivity) utilizing management tools (e.g., stocking or herbicide treatment) to enhance the fishery are likely cost prohibitive. Managing the pond for what it is and what it is used for, which is a small Carolina bay pond with a local fishery, may be the best long-term management plan. Although not recently sampled, other water bodies on and adjacent to the Suggs Mill Pond are likely similar in water quality and should be managed in a similar fashion.

D. Desired future condition

The desired future condition for lakes and reservoirs on Suggs Mill Pond Game Land is to maintain the current condition. Water levels on Jessup's Millpond and Horseshoe Lake are currently maintained with water control structures for maximum water depth. Water levels in the other two lake communities are solely dependent on rainfall and inflow.

Shorelines and their immediately adjacent cover receive minimal disturbance and the vast majority of the perimeters have extensive buffers that help filter inflow and provide valuable habitat in these transitional areas.

As stated earlier, these community types are typically acidic and have low productivity, resulting in a unique fishery that can tolerate these unfavorable conditions. Current management for game fish on Suggs Mill Pond Game Land includes the statewide regulations with no unique regulations imposed.

E. Future forest management

Forest management and silviculture practices do not apply to this habitat type.

INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE

Assessments of existing infrastructure throughout the Suggs Mill Pond Game Land were conducted by Division of Engineering & Lands Management staff in 2013. The infrastructure maps included in *Appendix III* to this document show the locations of existing public roads, administrative access roads, trails, parking areas, dams and gates within the Suggs Mill Pond Game Land. The results of the assessments along with recommendations for maintenance and improvements are discussed by category below.

ROAD ASSESSMENT

The Suggs Mill Pond Game Land has a limited network (due to extensive wetlands and marsh) of over 20 miles of road. These roads were inspected by Engineering staff over several days in August of 2013. In addition, Coastal Region field staff and Engineering staff met in August to discuss the current infrastructure conditions and future needs.

Good access is provided to the majority of the game land. There are two main types of roads located on the game land; roads open to public travel and fire lines/breaks. For the purposes of this infrastructure assessment, the fire lines/breaks have not been inspected, but are further described in other portions of the Plan. The roads on Suggs Mill Pond are used by NCWRC staff to access the game land for maintenance and conservation work. They are also used by the public for hunting, hiking, geocaching, wildlife viewing, and other outdoor recreational purposes.

Existing Road Conditions

Most of the major roads within the Suggs Mill Pond Game Land are in good condition. The major roads in the best condition include the following:

Campground Road (north/south section)

This is the main road that provides access from Live Oak Methodist Road into the central portion of game land. In addition, it provides the most direct access to the Suggs Mill Pond Wildlife Depot. This road is in good condition, as it provides a one lane gravel surface with no drainage problems.

Campground Road (east/west)

This portion of Campground Road is from where it tees with the above described section of Campground Road and runs east towards SMP Lake. This road is in good condition and

provides a one lane gravel surface. The shoulders are adequate for the passage of oncoming traffic.

Future Road Improvements

Maintenance and needs for future improvements were identified on the remaining existing sections of NCWRC access roads. The recommended road improvements discussed in this section are grouped by priority as follows:

HIGH PRIORITY

While the above mentioned roads are in good condition, there are many more roads that need different levels of upgrades. Over the next ten years, the highest priority roads for upgrade are the following:

- Sand Ridge Road
- Wild Turkey Road
- Gallberry Road (to Gate)

Sand Ridge Road

Sand Ridge Road is located in the southeastern portion of Suggs Mill Pond Game Land. The road experiences high usage from hunters. It is an existing one lane sand road, with limited gravel coverage. During certain conditions, portions of the road require four-wheel drive vehicles, or are impassible. This road needs to be designed and constructed to provide a one lane, gravel road with shoulders sufficient for the passage of oncoming vehicles. Portions of the road also need improved drainage.

The section of road needing upgrade is the entire loop, which ties into Campground Road. This road is approximately 2.3 miles and will have an estimated upgrade cost of $460,000.

Wild Turkey Road

Wild Turkey Road is located in the far eastern portion of the Suggs Mill Pond Game Land, on what is referred to as the Ammon Tract. This road is the primary road used by hunters to access this portion of the game land. It is currently in poor condition and is a dirt road with sparse vegetation. This road needs to be designed and constructed to provide a one lane, gravel road with shoulders sufficient for the passage of oncoming vehicles.

The section of road needing upgrade is the entire loop. This road is approximately 1.1 miles and will have an estimated upgrade cost of $220,000.

Gallberry Road (to Gate)

Gallberry Road is located in the northern portion of the game land, near Jessups Pond. The road is in fair condition. The road is a one lane, sand road with limited amounts of gravel coverage. It is an existing one lane, sand road with vegetated shoulders. The road bed is compacted and simply needs the addition of gravel. The road can remain a one lane road, but the shoulders need to be cleared of vegetation in order for oncoming vehicles to pass.

The section of road needing upgrade is from its intersection with NC-53 to the gate. This road is approximately 0.9 miles and will have an estimated upgrade cost of $900,000.

MEDIUM PRIORITY

The above mentioned roads have been rated as having the highest priority for repair over the next ten years. However, they are not the only roads in need up upgrade. The following roads are considered medium priority and should be repaired after the high priority projects are completed.

- Loop Road
- Quail Road

Loop Road

Loop Road is located in the southeastern portion of the Suggs Mill Pond Game Land, and provides access off of Sand Ridge Road. It is an existing one lane sand road, with limited gravel coverage, and is in poor condition. This road needs to be designed and constructed to provide a one lane, gravel road with shoulders sufficient for the passage of oncoming vehicles. This road construction should happen only after Sand Ridge Road has been improved.

The section of road needing upgrade is the entire loop, which ties into Sand Ridge Road. This road is approximately 2.0 miles and will have an estimated upgrade cost of $400,000.

Quail Road

Quail Road is centrally located in the game land and provides access west of Campground Road and the Suggs Mill Pond Wildlife Depot. It is an existing one land sand road, with limited gravel coverage. It also has significant vegetation growing along the shoulders of the road. The road is in fair condition, but should be improved by adding gravel. In addition, the shoulders should be cleared of vegetation in order to allow oncoming vehicles to more easily pass.

The section of road needing upgrade is the entire loop, which ties into Campground Road. This road is approximately 0.8 miles and will have an estimated upgrade cost of $80,000.

LOW PRIORITY

Other roads on the Suggs Mill Pond Game Land that need upgrade, but are considered the lowest priority include the following:

- Gallberry Road Extension
- Turnbull Road

Gallberry Road Extension

The Gallberry Road Extension is the additional portion of the above mentioned Gallberry road (listed in high priority projects), beyond the existing gate. This is an existing sand path that is in poor condition. This road needs to be designed and constructed to provide a one lane, gravel road with adequate shoulders and proper drainage. This road construction should happen only after the first portion of Gallberry Road has been improved.

The section of road needing upgrade is from the existing gate to the end at the hunter access trail. This road is approximately 0.9 miles and will have an estimated upgrade cost of $180,000.

Turnbull Road

Turnbull Road is located the far eastern portion of the Suggs Mill Pond Game Land, and provides access off of Wild Turkey Road. It is currently in poor condition and is a dirt road with sparse vegetation. This road needs to be designed and constructed to provide a one lane, gravel road with shoulders sufficient for the passage of oncoming vehicles.

The section of road needing upgrade is the entire loop, which ties into Wild Turkey Road. This road is approximately 1.0 miles and will have an estimated upgrade cost of $200,000.

New Road Construction

As previously mentioned, there is an extensive road network currently in the Suggs Mill Pond Game Land. In addition, much of the game land is located in wetlands and swamps, which are not allowed to be disturbed. Due to these two factors, there are few areas where new road construction is recommended. These include the following:

- Access to Little Singletary Lake

- Access to Jessups Pond
- Extension of Campground Road around SMP Lake

All three of these roads would require construction in wetlands or wetland buffers and are designated as Primary Areas by the Natural Heritage Program. Any construction would require additional feasibility study, conceptual design and approval by the Natural Heritage Program.

Access to Little Singletary Lake

There is currently trail access off of Live Oak Methodist Church Road to Little Singletary Lake, but no vehicular access. A new road should be designed and constructed to provide angler access to the pond. The existing trail can be upgraded to a one lane gravel road with adequate shoulders to allow the passage of oncoming vehicles. When this road is constructed, a parking area should also be included at the end close to the pond.

Access to Jessups Pond

There is currently trail access off of NC-53 to Jessups Pond, but no vehicular access. A new road should be designed and constructed to provide angler access to the pond. The existing trail can be upgraded to a one lane gravel road with adequate shoulders to allow the passage of oncoming vehicles. When this road is constructed, a parking area should also be included at the end close to the pond.

Extension of Campground Road around SMP Lake

The eastern end of the existing Campground Road is gated off, with a trail on the far side. This trail should be upgraded to a road to allow vehicular access farther around Horseshoe Lake. The existing gate could then be removed, or relocated to the new end of the road.

Road Maintenance

All roads require inspection and maintenance to function well and avoid damage and deterioration. Maintenance should be performed regularly, as the longer the delay in needed maintenance, the more damage will occur and the more costly the repairs will be.

Typical Road Maintenance Practices

- Inspect roads regularly, especially before the winter season and following heavy rains.
- Keep ditches and culverts free from debris (see also Culvert Maintenance Section of this Plan).
- Remove sediment from the road or ditches where it blocks normal drainage.

- Regrade and shape the road surface periodically to maintain proper surface drainage.
    - Typical road should be crowned at approximately 4%, or ½" per foot.
    - Some roads may not require a crown, but should have a constant cross slope (super-elevation).
    - Gravel should be distributed at an even depth across the road.
    - Gravel should have an even distribution of fine and course materials.
    - Keep downhill side of the road free of berms, unless intentionally placed to control drainage.
    - Proper maintenance and grading of the road will require a motorgrader and a roller.
- Avoid disturbing soil and vegetation in ditches, shoulders, and cut/fill slopes to minimize erosion.
- Maintain shoulders on both sides of the road to ensure oncoming vehicles have enough room to pass. Shoulders should be relatively flat, with a mowed grass surface.
- Maintain erosion-resistant surfacing such as grass or rip rap in ditches.
- If it is determined that a road needs major repairs or upgrades, contact Regional Supervisor and Design Services to schedule an assessment.

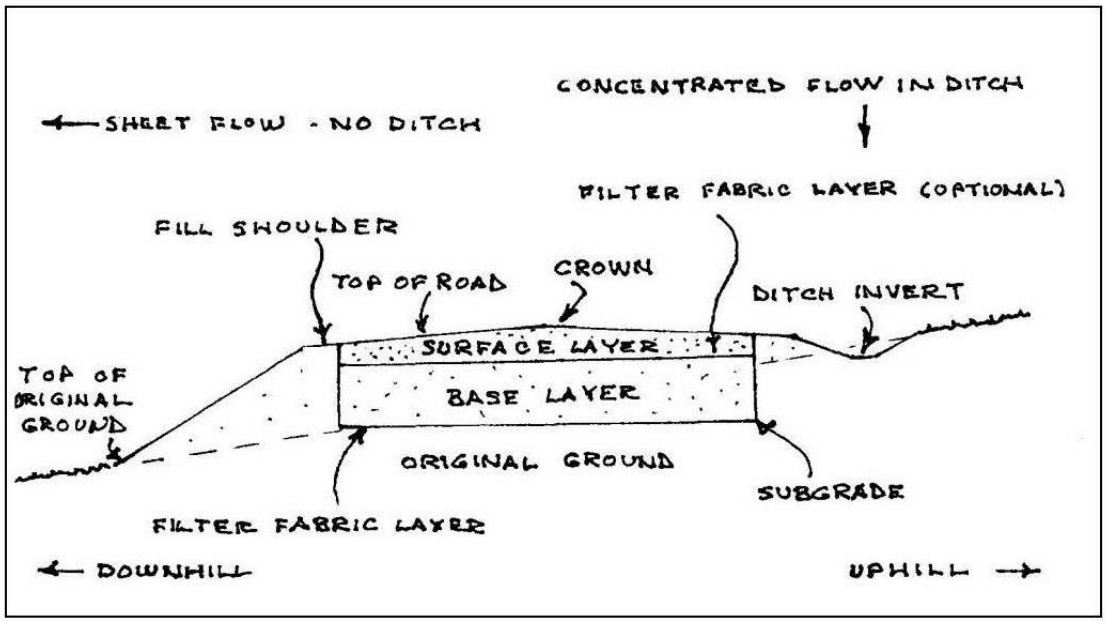


Figure 1 - Typical Road Cross-Section – Canaan, NH Highway Department

Road Safety Features

- Remove trees and other vegetation as necessary to provide adequate sight distance and clear travel way.
- Install and maintain road signage. This includes:

    - Stop signs –Should be installed at every intersection, with the signs on the minor roads.
    - Warning signs – Should be installed to warn the public of any road closures or problems in the game land.
    - Road/Route signs – Should be installed at every road intersection on a game land.
    - Information kiosks with game land road map – Entry signs should be installed at every entrance to a game land off of a DOT road. Information kiosks should be located near the entrances and in parking areas.

Gates

Gates should be used on game lands for maintenance and habitat conservation. For maintenance purposes, gates should be used to limit access to roads that are unsafe or are in disrepair, or to limit use on roads to certain times a year in order to minimize the wear and deterioration of the road. If a road is considered unsafe or in disrepair, field staff should contact an engineer. The engineer will perform an inspection to determine the best course of action to repair or upgrade the road.

All gates installed on game lands should the standard swing gate and painted orange for maximum visibility. No cable gates should be installed, and any existing cables should be replaced.

TROUBLESHOOTING

Road Surface Problems

Problem: Longitudinal erosion of the road surface
Possible Causes:

- Flat or U-Shaped road. A crown or super-elevation of the road is needed to shed water laterally off the outer edges of the road surface
- Small ridge of soil or grass growth along the outer edge of the road is preventing water from draining off the road surface. Edge needs to be graded to remove this ridge.
- Water is traveling in a wheel rut. Road needs to be regarded. This problem often results from soft roads.

- Road ditch is not large enough and overflows onto road surface. Install more frequent turnouts to get water away from the road or increase the size of the ditch.

Problem: Lateral erosion cutting across the road surface
Possible Causes:

- Most often occurs at a low spot in the road or where a ditch filled in and no longer functions. Water builds up and overtops and erodes the road surface. A culvert should be installed in this location.

Problem: Potholes
Possible Causes:

- Potholes are typically caused by insufficient crown or road cross slope. The road should be re-graded to remove the potholes, then re-crown or super-elevate the road as necessary.

Ditch Problems

Problem: Bottom of ditch is eroding
Possible Causes:

- Slope of ditch is too steep to handle the flow without additional protective measures, which include addition vegetation, erosion control mats, rip rap, check dams, etc.
- Ditch is too small to handle the volume of water flowing through it. May need to install periodic turnouts to reduce flow through the ditch.
- Bottom of ditch is too narrow and needs to be widened to a parabolic shape.

Problem: Sides of ditches are slumping or eroding
Possible Causes:

- Side slopes are too steep and need to be lessened by digging the back.
- Side slopes need to be stabilized with additional vegetation, erosion control mat, or rip rap.

Parking Areas

The Suggs Mill Pond Game Land consists of many miles of roads, but no designated parking areas. Currently, users of the game land park on the shoulders of roads, which can present several problems, ranging from blocking access to safety. The game land road network has been

reviewed with field staff and numerous locations have been identified for the addition of parking areas (see *Appendix III*). These parking areas are generally located the intersection of roads and at ADA (Americans with Disabilities Act) hunter locations.

Some of the proposed parking areas would be located in Primary Areas as designated by the North Carolina Natural Heritage Program. Any construction would require additional feasibility study, conceptual design and approval by the North Carolina Natural Heritage Program.

The following areas have been identified as the highest priority for development of new parking areas:

ADA Hunter Access off of Campground Road

The existing ADA access is in poor condition and does not meet ADA guidelines. A parking lot and accessible route should be designed and constructed at this access point before any others are constructed.

Any new parking area should provide a gravel surface (approximately 6" layer of compacted ABC stone) and provide enough parking for three to five vehicles. Depending on the amount of clearing and grading required, it is estimated that each parking area will cost between $5,000 and $15,000.

Gates

There are several gates located throughout the game land, which limit access to certain roads and portions of the game land. The majority of the gates on the game land are swing gates and appear to be in good condition. The main gate off of Live Oak Methodist Church Road is open year round providing access to the central portion of the game land off of Campground Road. There are 25 gates that are closed year round, with the remainder being opened for specific hunting seasons. A Controlled Access Map has been included in this report (*Appendix III*), which identifies the times of the year when each gate/road is open to the public.

DRAINAGE STRUCTURE ASSESSMENT

Dams

Of the four large lakes and ponds on Suggs Mill Pond Game Land, there are three that have constructed dams with outlet structures and emergency outlets. There are several smaller ponds consisting of beaver ponds, natural low areas, and small impoundments. These water bodies and outlet works have not been included in this section of the assessment. For the purpose of this

assessment, the existing outlet works and dam embankment have been investigated to determine the type, material, and the overall condition of the structure. Recommendations for maintenance and possible future construction needs have also been included.

Horseshoe Lake

Horseshoe Lake Dam Information (from Dam Safety)	
Identification	BLADE-008 / NC01173
Hazard Classification	Low
Year Built	1962
Dam Height (ft)	10
Hydraulic Height (ft)	8
Freeboard (ft)	2
Crest Length (ft)	300
Crest Width (ft)	N/A
Upstream Slope	N/A
Downstream Slope	N/A
Normal Pool Elevation	N/A
Normal Pool Area (ac)	N/A
Normal Pool Storage Capacity (ac-ft)	1920
Max. Storage Capacity (ac-ft)	2304
Drainage Area (ac)	3072
Maximum Discharge (cfs)	36
Condition Assessment	Satisfactory
Last Inspection Date	2/20/2013

Horseshoe Lake is the only dam that is classified by Dam Safety and show in the NC Dam Safety Inventory. The lake is located just north of Campground Road in the central portion of the Suggs Mill Pond Game Land. The outlet structure of the pond is located at 34° 48' 29.6" N, 78° 39' 5.1" W. The dam consists of an earthen embankment. At the time of inspection, there was vegetation but no large trees on the embankment. The alignment of the dam seemed to be straight and no erosion, undermining, ruts, slides, cracks, seepage, wetness, or rodent burrows were observed. However, it is recommended to mow the embankment to eliminate the chance of trees to grow large enough to negatively impact the dam.

The pond outlet consists of a concrete flashboard riser and concrete outlet pipe. The outlet structure and pipe appear to be in working condition, however the flashboards are leaking and should be replaced. However, the outlet box is currently a safety hazard as there is no cover/grate closing off the top. It is currently possible for someone to fall in the box and suffer severe injuries. This problem needs to be resolved as soon as possible by either installing a grate

on the top of the box, or a fence around the box. It is estimated that this upgrade will cost less than $5,000.

The existing emergency spillway is located in a low point in the road and is armored with 4-inch geo-webbing and #4 stone. During large rain events, water overtops the existing Campground Road, through this spillway, and flows toward the impoundments. If the existing outlet structure is ever replaced, the capacity of this spillway should be checked and modified as necessary.

Little Singletary Lake

Little Singletary Lake is not classified by Dam Safety and does not appear in the NC Dam Safety Inventory. The lake is located on the western portion of the game land, just north of Live Oak Methodist Church Road. The lake itself is located within the game land, however the dam and outlet are on private property. The outlet structure of the pond is located at 34° 49' 0.0" N, 78° 41' 28.5" W. The dam consists of an earthen embankment. At the time of inspection, there was thick vegetation but no large trees.

The pond outlet consisted of a CMP pipe that appeared to be in fair condition. This pipe drained water directly from the lake into the connecting stream (no riser/barrel system). In addition, this lake did not appear to have an emergency spillway. During times of high flows, it appears that water would overtop the dam and completely inundate the area of the outlet pipe. Ideally, this lake would have a concrete riser/barrel in place of the CMP, as well as a rip rap/concrete emergency spillway. The addition of these would cost an estimated $200,000. However, as the embankment and outlet are on private property, no work by our agency is recommended at this time.

Jessups Pond

Jessups Pond is not classified by Dam Safety and does not appear in the NC Dam Safety Inventory. The lake is located on the western portion of the game land, just east of NC-53. The outlet structure of the pond is located at 34° 51' 46.2" N, 78° 43' 46.5" W. The dam consists of an earthen embankment.

At the time of inspection, there was thick vegetation and a few large trees on the embankment. The alignment of the dam seemed to be straight and no erosion, undermining, ruts, slides, cracks, seepage, wetness, or rodent burrows were observed. However, it is recommended to mow the embankment and remove the few large trees in order to avoid future seepage problems.

The pond outlet consists of a concrete flashboard riser and concrete outlet pipe. The outlet structure is out in the water and can only be reached by boat. The outlet structure and pipe appear to be in working condition, however there is no trash rack on the box. At the time of inspection, there were several large limbs caught in the box that should be removed. A metal

trash rack should be installed on the box to eliminate this problem in the future. It is estimated that this upgrade will cost less than $5,000.

The outlet pipe flows to a box culvert under NC-53. The outlet is protected by a concrete headwall. The outlet pipe and headwall are in good condition.

There is currently no emergency spillway. During large rain events, water overtops the dam and flows toward NC-53. A new emergency spillway should be designed and constructed in order to allow large flows to leave the pond without overtopping the road. This spillway can be rip rap or concrete, and would have an estimated cost of $30,000.

Waterfowl Impoundments

Suggs Mill Pond has five waterfowl impoundments, and are designated as SMP-1, SMP-2, etc. The impoundments are centrally located on the game land and are fed by Horseshoe Lake. Each impoundment has an outlet structure consisting of aluminum risers and barrels. All outlets are in good condition, however they should be regularly inspected in the future. When this aluminum structure is replaced in the future, it is recommended to be replaced with a reinforced concrete riser and barrel. The estimated cost of installing each new outlet structure is approximately $30,000

The berms/dikes around the impoundment are in good shape and currently need no improvements. Routine maintenance and inspections should be conducted annually to ensure that the berms stay in good condition.

Dam and Waterfowl Impoundment Maintenance

Dams are complex structures that consist of many parts (see Figure 2). In order to prevent failures, dams must be inspected to identify potential problems, and maintenance must be performed to prevent deterioration of the structure that may result in failures. Because of their complexity, dams can fail in many ways including, but not limited to, overtopping, seepage failure, and structural failure.

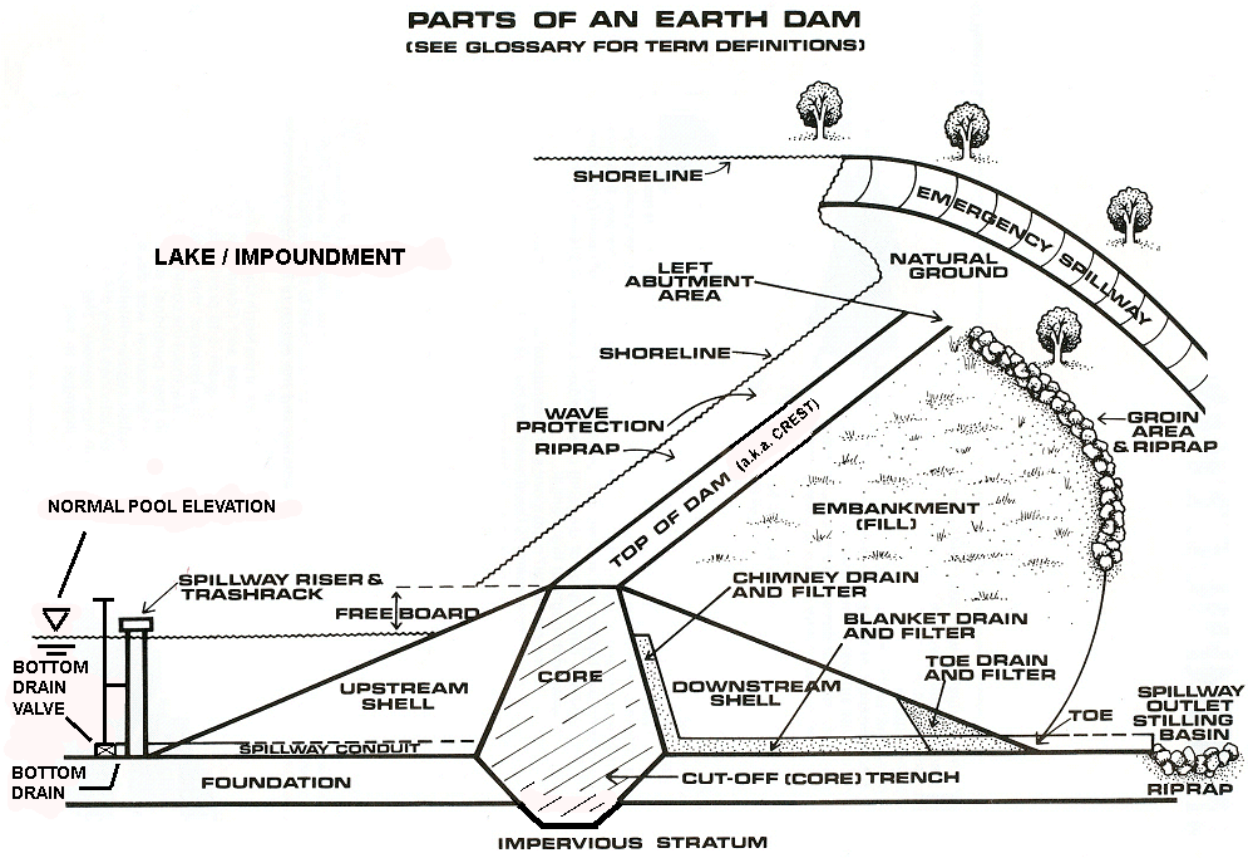


Figure 2 – Parts of an Earthen Dam (from Dam, Operation, Maintenance, and Inspection Manual – NCDENR Land Quality Section)

Periodic Inspection of dams is very important. Dams should be thoroughly visually inspected by technician staff at least twice a year, once in the summer and once in the winter. A closer inspection of the embankment can be made in the winter when the vegetation is dormant and in the summer after the embankment has been mowed. An engineer should be contacted after the embankment has been mowed. Ideally, an engineer will inspect the dam once per year. An engineer should be contacted any time of the year if a problem is observed. Each component of the dam should be inspected for problems, and corrective action should be taken as necessary. Records of inspections and corrective measures should be kept on hand to monitor any problems that may be observed. Checklists for inspections are available in the "Dam, Operation, Maintenance, and Inspection Manual" published by the NC Department of Environment and Natural Resources.

A healthy stand of grass should be maintained on the dam embankment, toe, groin, top (if a road is not present), and in the emergency spillway to prevent erosion. Shrubs and woody vegetation should not be allowed on the embankment or in the spillway. Roots can cause seepage paths,

and trees that fall can leave large holes that can weaken the dam. Brush and trees can also make it difficult to visually inspect the embankment for other issues, and they also provide a haven for burrowing rodents. They also prevent grass growth. As such, all trees, shrubs, and bushy vegetation should be removed from the dam. Embankments should be mowed at least once a year with equipment capable of navigating the potentially steep slopes and capable of removing small woody growth. Emergent vegetation on the shoreline of the embankment should also be controlled. Commercial herbicides can be used in these areas, however all application instructions, environmental precautions, and safety practices should be followed.

Any and all erosion observed on the embankment, on the groin, and in the emergency spillway should be addressed immediately. Vegetation should be re-established in the eroded area by adding soil as necessary and installing topsoil and fertilizer if necessary prior to seeding. Turf reinforcing mat may also be required to stabilize the repair. The cause of the erosion should also be addressed. The upstream face/shoreline of the embankment should also be checked for erosion. This may be caused by wave action. These areas should be repaired immediately by excavating out the eroded material and installing filter fabric and rip rap to prevent further damage.

Dam inspections should also address seepage that is observed. Seepage can occur anywhere on the downstream face, around principal spillway pipes, or beyond the toe of the dam. Seepage may vary in appearance from a soft, wet area to a flowing spring. These areas may show up as areas where the vegetation is more lush and darker green. Marsh or wetland vegetation may also be present in these areas. Seepage can lead to weakening of the embankment evidenced by slides caused by soil saturation or pressures in the soil pores. Seepage can also lead to piping, or the movement of soil particles, which can lead to dam failure. A continuous or sudden drop in the water level may also be an indication that seepage is occurring. Regular inspections and record keeping (seepage flow rates, water levels, content of flow, size of wet areas, and type of vegetation growth) are important to monitor the seepage conditions to determine whether the seepage is steady or in a state of change. If seepage is observed, an engineer should be notified.

The embankment should also be inspected for cracks, slides, sloughing, and settlement. Short, isolated cracks are not usually significant, however larger (wider than ¼ inch), well-defined cracks indicate problems. Transverse cracks that appear across the embankment may be due to differential settlement, and they can provide paths for seepage and piping. Longitudinal cracks that appear parallel to the embankment may indicate the early stages of a slide. Small cracks should be filled to prevent water intrusion. Slides are serious threats to dam safety as they can lead to instability of the embankment and failure. If a slide develops, the water level should be lowered to investigate of the cause and facilitate the construction of a repair. An engineer should be contacted to examine all cracks, slides, and settlements observed.

During the dam inspection, evidence of rodents (groundhogs, muskrat, and beavers) should be noted. Burrows can weaken the embankment and serve as pathways for seepage. Beavers can

also plug spillways causing the water level to rise above the design level. Rodents should be removed from the dam by acceptable means and burrows should be filled. Trash racks, spillways, and other outlets should be inspected for clogging and cleaned as necessary.

Roads on top of dams should be maintained to prevent damage to dam embankments. They should be constructed using a proper base and wearing surface. If a wearing surface is not constructed, traffic should not be allowed on the dam during wet conditions. Water trapped in ruts can lead to saturation and weakening of the embankment. A wearing surface will prevent or minimize ponding water and infiltration. A wearing surface should be constructed to drain into the impoundment, and stormwater runoff should not be concentrated at one point.

Principal spillway pipes should be inspected thoroughly once a year. They should be inspected for improper alignment (sagging), elongation and displacement at joints, cracks, leaks, surface wear, loss of protective coating, corrosion, and blockage. Special attention should be paid to pipe joints. The pipe should also be checked for signs of water seeping along the outside. Small or minor problems can be patched, however major problems may require replacement of the pipe. An engineer should be contacted if problems with the pipe are observed. Erosion at the pipe outlet should also be inspected. Severe undermining can lead to pipe joint displacement and weakening of the dam embankment. Rip rap may be installed to mitigate against continued erosion, however an engineer should be contacted if there is severe erosion. Inspection reports should be kept to monitor the progression of any observed problems.

Riser structures should be thoroughly inspected at least once a year. They should be examined for spalling and deterioration. Any cracking, staining, exposed reinforcing bars, and broken out sections that are observed should be further examined as this may lead to structural instability. They should also be checked for alignment and settlement. Mechanical equipment such as valves, gates, stems, and couplings should be inspected for corrosion, broken, or worn parts. It would also be good to operate these devices at least once a year to ensure that they are functioning and seating properly. An engineer should be contacted if problems in riser structures are observed, and they should be addressed immediately.

Trash racks and flashboards should be inspected on a more frequent basis. Clogging of these features can lead to higher water levels that may compromise the stability of the dam. Clogs should be cleared and all trash should be removed. If possible, the cause of the clogging should be identified and addressed. Broken trash racks and boards should be repaired or replaced. Broken trash racks can allow trash and debris to enter the riser and/or principal spillway pipe and can lead to clogging of these features.

Vegetated emergency spillways should be inspected at least twice per year (at the same time as the embankment). Spillway should be mowed to prevent trees, brush, and weeds from becoming established and to promote the growth of grass. Any erosion should be repaired immediately,

and any obstructions should be removed. Periodic reseeding and fertilization may be necessary to avoid erosion and bare areas.

Concrete and other lined emergency spillways should be thoroughly inspected at least once a year. Concrete should be inspected for floor or wall movement, improper alignment, settlement, joint displacement, undermining, and cracking. Structural repairs should begin by removing all unsound concrete. Cracks must be repaired carefully to prevent water intrusion. An engineer should be notified if any structural problems are observed with the spillway. Rip rap lined spillways should be inspected for erosion and displacement of stone. All woody vegetation should be removed, and any obstructions should be removed. Inspection forms and notes should be kept to monitor the progression of any observed deficiencies.

It is important to keep detailed and accurate records of all observations, inspections, maintenance, rainfall and pool levels, drawdowns, and other operational procedures. These records can aid in monitoring the progression of deficiencies as well as diagnosing problems. More information on dam inspections, operation, and maintenance can be found in the "Dam, Operation, Maintenance, and Inspection Manual" prepared by NCDENR Division of Land Resources Land Quality Section.

CULVERT ASSESSMENT

At the time of inspection, no culverts were identified as needing immediate repair or replacement. This does not mean that all culverts are in good condition, only that none were found. Maintenance personnel should routinely inspect the culverts on the game land and notify engineering staff if any problems are identified.

Culvert Maintenance

Culvert maintenance is performed to extend the life and ensure proper function of the installed drainage structure. The accumulation of sediment and/or debris at the inlet or outlet of a culvert or damage such as crimping of the pipe effectively reduces the diameter and flow capacity of the pipe.

Culvert maintenance includes removal of accumulated sediment and/or debris that prevents passage of water (and organisms) through culvert inlets, outlets and connected drainage ways. It may also include reinforcement of eroding inlets and outlets by installing riprap or other erosion control measures. Damaged culverts and culverts requiring frequent repeat maintenance should be considered for future remediation via redesign and reinstallation.

The following items should be checked for and addressed as part of routine maintenance inspections:

- partial or complete blockage of the inlet or outlet of the pipe with sediment, stone, leaves, woody debris, refuse or any other items that could affect flow through the culvert
- evidence of scour, bank or channel bed erosion near the inlet or outlet of the culvert
- evidence of flow overtopping the road at the culvert location
- damage to the pipe including crimping of the inlet or outlet, crushing or piercing of the pipe
- severe corrosion of the pipe
- damage to headwalls

Staff should inspect ditches and culverts as part of their regular road maintenance activities. This inspection is especially important during leaf fall and following periods of heavy rain. Staff should consider the location of the culvert before performing maintenance using heavy equipment. Culverts located in active stream channels, dedicated or critical habitat areas may require special permission or installation of erosion control measures before maintenance can commence.

Leaves and woody debris that have accumulated in or around the inlet of the culvert should be removed immediately using hand tools if possible. Removal of accumulated silt and/or gravel from ditches approaching the culvert inlet should be performed using a small excavator, backhoe or a tractor equipped with a scrape blade. Sediment in or around the immediate vicinity of the pipe inlet or outlet should be removed using hand tools to prevent damaging the culvert. Cleaned out material is to be pulled away from the culvert then hauled and spread at a site where it cannot be washed back to the culvert area.

Repeat problems with sediment collecting around the inlet may indicate the existence of an erosion problem originating from the slopes, streams or ditch lines in the vicinity of the culvert. Identification and stabilization of these problem areas through practices such as seeding or matting could improve performance of the culvert and reduce maintenance requirements.

Flow overtopping the road at the culvert location generally indicates that the pipe is undersized and could warrant resizing and replacement. Any damage to the culvert, as described above, may also necessitate replacement of the pipe. If maintenance staff identifies any culverts that may need replacement, they should contact engineering staff to calculate the peak flow capacity and diameter of the new pipe.

RECREATIONAL FACILITIES

The Suggs Mill Pond Game Land experiences a wide range of recreational uses. These include hunting, boating, fishing, and recreational shooting. Other non-traditional uses also occur on the game land, such as hiking.

Boating Access Areas

There is currently a boating access on Horseshoe Lake, just off of Campground Road (34° 28' 29.8" N, 78° 39' 5.9" W). This access consists of a gravel ramp and fixed dock, which are both in poor condition. There is also limited maneuvering area, however due to the location of the lake and impoundment, expansion is not possible. This access area should be improved by installing a new concrete ramp and floating dock. The estimated cost of this upgrade is $30,000.

A separate small boat/canoe access would be beneficial at the far end of Campground Road, also providing access to Horseshoe Lake (34° 48' 53.3" N, 78° 38' 24.5" W). This would be a new access area consisting of a single concrete ramp and a floating dock. The estimated cost of this upgrade is $25,000.

Both of the above mentioned areas provide access to Horseshoe Lake. This lake is used for both hunting and recreational canoeing/kayaking.

Public Fishing Areas

The Suggs Mill Pond Game Land currently has no designated Public Fishing Areas. There are three lakes located in the game land, which include Horseshoe Lake, Little Singletary Lake, and Jessups Pond. Public fishing areas could feasibly be constructed on all three of these water bodies. Each pond should be investigated by Fisheries Biologists in order to determine the quality of fishing before proceeding with any pier design. In addition, any PFA constructed within a designated Primary Area must be reviewed and approved by the Natural Heritage Program.

Horseshoe Lake

This lake has a stable water surface elevation, which is perfect for a floating fishing pier. If installed, the ideal location would be near the dam and existing boating access area. A small parking area could be provided on the west side of SMP-5 impoundment. The estimated cost of the floating pier and parking area is $30,000

Little Singletary Lake

Little Singletary Lake is the largest water body on the game land and only has a single trail access. Earlier in this report, it is proposed to convert the existing trail into a new road. A parking area and public fishing area should be considered at the end of this road. Due to the stable water surface elevation, a floating pier would be ideal. The estimated cost of the floating pier and parking area is $30,000.

Jessups Pond

Jessups Pond is the most easily accessible pond on the game land as it is located directly off of NC-53. A floating pier could easily be installed near the dam of the pond, with a small parking lot just off the highway. This would be a very visible pier and would potentially see a lot of use by the public. The estimated cost of the floating pier and parking area is $30,000.

Shooting Ranges

There are currently no designated shooting ranges located on the Suggs Mill Pond Game Land. The majority of the game land is wetland and marsh and there is limited high ground that could be used for construction. At the time of inspection, no potential areas for a shooting range were identified, however the feasibility of constructing a range should be further investigated.

The game land currently has no rules limiting target practice or recreational shooting, and the public can shoot anywhere they like outside of designated safety zones. This is not an ideal situation and presents safety concerns. By constructing a shooting range, the public would be required to use this facility and halt the unregulated recreational shooting on the game land. This will eliminate safety concerns and also help Enforcement Officers in policing the game land. A shooting range should also reduce the amount of trash related to recreational shooting on the game land, which includes spent ammunition and paper targets.

Non-Traditional Uses

Hiking/Camping

The Suggs Mill Pond Game Land currently has one designated camping area. It is located just off of Campground Road, near the Suggs Mill Pond Depot and is a primitive site that is typically used by hunters. However, as non-traditional uses are becoming more popular, it is recommended that we investigate locations for additional recreational campsites to be designated in the future.

Suggs Mill Pond also contains several miles of trails, which have typically been for hunter access. As with camping, hiking is becoming a more popular activity and will continue to be a demand on the game land. It is recommended that a staff work on a long term plan on building additional trails, which can be used for both hunter access and recreational hikers.

RECREATIONAL FACILITY MAINTENANCE

Maintenance of recreational facilities is critical to the overall operation of the game land program. Typical use of the game lands is dispersed, however, recreational facilities concentrates users on a specific area or feature. This concentration of users, whether it is a boating access, fishing access, shooting range, or other use, results in a need to ensure the facility is safe and functional. Routine site visits for inspection and maintenance will accomplish this goal. Site visits should consist of two actions: (1) Inspection for safety issues and functionality; (2) Actual maintenance activities.

1. Inspections should examine the following items

    a. Safety inspection items:

        Facility components
        - Decking
        - Handrails
        - Structural supports (piles, substructure, and floats)
        - Fasteners (bolts, screws, and nails)

        Slip or trip hazards
        - Uneven walking surfaces
        - Mud on walking surfaces
        - Ponded water on walking surfaces
        - Drop offs

        Overhead
        - Dead trees or limbs
        - Overhead utilities

    b. Functionality Inspection Items

        Parking
        - Surface condition (ruts, potholes, gravel)
        - Delineation (wheel stops, paint)

Ramp
- Blockages (sediment, wood)
- Surface condition

Pier/Dock
- Bollards
- Wooden components
- Bumpers

Shooting range
- Berms
- Target area
- Benches
- Shelter (roof, structure, and floor)

Signage
- Kiosk (entrance, regulation and information)
  - ADA (Americans with Disabilities Act)
  - No Parking
  - Keep Ramp Clear

2. Maintenance activities should include routine and corrective activities

   a. Routine Activities include:
      - Litter and debris removal
      - Grass mowing
      - Woody vegetative growth control

   b. Corrective activities can include but not be limited to:
      - Lumber replacement
      - Sign replacement
      - Minor grading
      - Tree or limb removal

Over time recreational facilities degrade to the point that routine maintenance activities cannot provide corrective action. Examples of this level of degradation include but are not limited to: structural problems, persistent and/or severe erosion issues, and broken/or severely degraded concrete. Once this level of degradation is reached, supervisory personnel should inspect the

facility and determine the scope of the needed repairs. If major repairs are required supervisor personnel should contact an engineer for assistance.

PUBLIC USES

As stated previously in the Game Lands Program Mission Statement, primary public uses of North Carolina game lands are hunting, fishing, trapping, and wildlife viewing. However, the NCWRC recognizes the desirability of providing opportunities for other activities on state-owned game lands that are feasible and consistent with the agency's mission, and compatible with these traditional uses.

As the human population of North Carolina has rapidly grown, state-owned game lands have received increasing pressure to provide public outdoor recreation opportunities. These uses include traditional activities such as hunting, fishing, trapping, and wildlife viewing, as well as other outdoor recreation pursuits. While hunting, fishing, trapping and wildlife viewing are the primary public uses of state-owned Game Lands, the NCWRC has always allowed and supported other dispersed and non-developed recreational activities. The funding sources of the NCWRC, however, are focused on natural resources management rather than recreational development. Because of this, the NCWRC must exercise care in providing for recreational activities that may not be compatible with the natural resources for which the lands are valued and the primary management objectives of these lands.

As a response to these increasing pressures, the NCWRC developed a Game Lands Use Evaluation Procedure to provide a statewide framework for determining appropriate uses for NCWRC-owned or controlled game land properties (see *Appendix XI*).

DIFFERENT USER GROUPS OF SUGGS MILL POND GAME LAND

Based off of anecdotal information and input received from the public input processes that occurred from 15 July to 31 August 2013, we have made our best determination of different user groups that occur on Suggs Mill Pond. A copy of the public input meeting announcement can be seen in the Appendices Section, *Appendix IX*. They are listed below and are discussed in greater detail following their listing.

Traditional game land users:

- Hunters
- Trappers
- Anglers
- Wildlife viewers

DISCUSSION OF TRADITIONAL GAME LAND USERS

Hunters, anglers, trappers, and wildlife viewers make up the vast majority of groups that use Suggs Mill Pond. Hunters make up largest number of traditional users with anglers, wildlife viewers, and trappers consisting of the remainder, in order of numbers, respectively.

As discussed earlier in the Plan, Suggs Mill Pond is enrolled in the Permit Hunt Opportunities Program, which allows for managed participation and provides for unique hunting opportunities for special areas or species. During the public comment period, only four comments (3.4%) were received that expressed dissatisfaction with permitted hunting on Suggs Mill Pond. Overall, we believe that traditional users are satisfied with permit hunting opportunities provided on this game land.

Waterfowl hunters

This game land is probably best known for its waterfowl hunting opportunities. It has five waterfowl impoundments and four lakes and ponds providing approximately 1,100 acres of habitat suitable for waterfowl and waterfowl hunters. It provides opportunity to harvest a variety of waterfowl species including but not limited to; wood duck, hooded merganser, green and blue-winged teal, ring-necked duck, mallard, redhead, lesser scaup, and gadwall.

Access to waterfowl hunting areas is believed to be satisfactory with the exception of access to Little Singletary Lake. Six comments were received during the public input session expressing dissatisfaction with access to waterfowl hunting areas; five of those six comments were specific to Little Singletary Lake. The road that provides administrative access to this body of water has been closed to public vehicular traffic due to the fact that it cannot sustain a high volume of traffic and maintenance would prove costly and very time consuming. The soil structure and hydrology of this site is unconducive to this use without substantial upgrades. However, this road has been designated to receive substantial upgrades in order to improve access for game land users, pending approval from Natural Heritage Program and wetland regulations (see Infrastructure Section and *Appendix III*).

During the public input session, 20.8% (*24 of 115*) of the comments received made a specific reference to waterfowl. Of that 6 comments stated that they used this game land to hunt waterfowl, 14 stated that waterfowl species and/or their habitat were the most important to protect and/or improve, and 4 comments requested improvements related to waterfowl in the form of better water level management and the installation of waterfowl hunting blinds.

In response to the comments received about the management of water levels in our lakes, we would like to recognize the fact that the water levels in these bodies of water are solely dependent on rainfall. Water from Horseshoe Lake is used to flood approximately 105 acres of waterfowl impoundments, but it should be noted that this water is received from the lake during traditionally wetter times of the year. Once target water levels are reached in the impoundments, outflow is stopped and water levels in the lake are allowed to recover.

Currently, we believe that adequate infrastructure exists to satisfy waterfowl hunters and did not receive any comments that indicated additional needs for this user group. Additionally, we believe that our current level of habitat and species management for waterfowl is appropriate. As stated earlier, there is nearly 1,100 acres of waterfowl habitat available and management of

waterfowl impoundments is based on the best available science, expertise of veteran land managers, and recommendations made by natural resources conservation groups, *i.e*., Ducks Unlimited, North American Waterfowl Management Plan, and Atlantic Coast Joint Venture.

To better manage and improve the quality of permitted waterfowl hunts, a survey is in the processes of being adopted by the NCWRC (see *Appendix VII*). From the information gathered from this survey, we will be able to determine the number of different species harvested, the level of effort that was put forth during the hunts, and the level of satisfaction of each hunter based on several criteria.

Deer hunters

Deer hunting opportunities on this property are thought to be good. Based off of game land hunter harvest data collected when big game animals are registered, an average of 26 deer has been killed over the past 5 years (2008-2012); 28, 19, 31, 31, and 21 respectively. Realistically, these numbers are open to interpretation because we don't know the amount of effort that was put forth to harvest these numbers of deer. Anecdotal information based on the fact that access and use is allowed through permits and the fact that nearly half of the habitat on this game land is very dense, almost inaccessible pocosin habitat, leads us to conclude that deer hunters do well.

6.9% (8 *out of 115*) of the comments received during the public input session made references specific to deer on Suggs Mill Pond. One of those comments requested improvements to the existing skinning rack, one comment requested that deer hunting with dogs be prohibited, and two comments requested more or better food plot management for deer. The remaining four comments were in reference to questions in the questionnaire that asked how people used the game land and what species and habitats were the most important to protect and/or enhance.

Overall, we currently believe that deer hunting opportunities, which include hunter access, supplemental plantings, habitat management, and the numbers of deer are adequate to satisfy this user group. However, we recognize the desire of some deer hunters that would like to see more plantings of annual and perennial crops and believe that this would improve the opportunity to harvest deer. It should be noted that additional effort has been made lately to establish more annual and perennial crops available to deer and deer hunters. Improvements to the existing skinning rack or the addition of a new skinning rack for deer hunters have currently been requested and approval is pending its determined compatibility and funding.

To better manage and improve the quality of permitted deer hunts, a survey is in the processes of being adopted by the NCWRC (see *Appendix VI*). From the information gathered from this survey, we will be able to determine how many deer were observed, harvested, and the level of effort that was put forth during the hunts. This survey also gives the hunter an opportunity to express their level of satisfaction and the causes that determined it.

Turkey hunters

Turkey hunting opportunities on Suggs Mill Pond are thought to be good. Based off of game land hunter harvest data collected when big game animals are registered, an average of 6.6 turkeys has been killed over the past 5 years (2009-2013); 3, 5, 8, 11, and 6 respectively. Realistically, these numbers are open to interpretation because we don't know the amount of effort that was put forth to harvest these numbers of turkeys. Anecdotal information based on the fact that access and use is allowed through permits and the fact that nearly half of the habitat on this game land is very dense, almost inaccessible pocosin habitat, leads us to conclude that turkey hunters do well.

13.9% (*16 out of 115*) of the comments received during the public input session were specific to wild turkeys. Nine of those comments stated that turkeys and/or their habitat were the most important to enhance or protect. Three comments simply stated that they used this game land to turkey hunt and four comments requested better food plot management for turkeys.

We currently believe that turkey hunting opportunities on Suggs Mill Pond are sufficient. We believe that infrastructure, supplemental plantings, habitat management, and the numbers of turkeys available to harvest are at levels to satisfy this user group. Each year approximately four acres of chufa is planted specifically for the benefit of turkeys and turkey hunters. Chufa is a small, nut-like tuber that is relished by turkeys and is the most popular crop planted for turkeys.

To better manage and improve the quality of permitted turkey hunts, a survey is in the processes of being adopted by the NCWRC (see *Appendix V*). From the information gathered from this survey, we will be able to determine how many gobbling turkeys were heard, harvested, and the level of effort that was put forth during the hunts. This survey also gives the hunter an opportunity to express their level of satisfaction and the causes that determined it.

Small game hunters

Small game hunting opportunities are thought to be good on this property. This determination is made off of anecdotal information alone because hunters are not required to report the harvest of small game. Currently, small game hunters are allowed the opportunity to harvest quail, rabbits, gray and fox squirrels, opossums, bobcat, coyote, and beaver. Raccoon and fox hunting are currently prohibited on this game land. Raccoon hunting is prohibited because of the great potential for hounds to disturb roosting waterfowl while in the act of chasing raccoons. Fox hunting is currently prohibited and has never been allowed because of the perceived lack of interest of fox hunters.

15.6% (*18 out of 115*) of the comments received during the public input session were specific to small game species. Ten of those comments stated that small game species and habitat were the most important to enhance and protect. The other eight comments stated that they currently use

this game land to hunt small game or requested the ability to hunt foxes and raccoons, both of which are currently prohibited from hunting.

We currently believe that there exists ample infrastructure on Suggs Mill Pond to satisfy this user group. However, we also believe that providing opportunities to pursue foxes would be a strategy to increase the use of this property by small game hunters. We recommend that this hunting opportunity be incorporated into the permit hunting program in order to manage use and provide quality opportunities.

Additionally, we believe that hunting raccoons on Suggs Mill Pond should remain a prohibited activity. These disturbances may compel roosting waterfowl to change their feeding habits, potentially resulting in weight loss. Prolonged and extensive disturbance may cause migrating waterfowl to abandon these managed wetlands and migrate elsewhere, limiting the use of waterfowl habitat below carrying capacity. Because so much effort is put into providing and managing habitat for migrating waterfowl on this property, we strongly believe that hunting of raccoons should remain prohibited.

Webless migratory game bird hunters

Webless migratory game bird hunting opportunities on this property are thought to be very good. Anecdotal information gathered from personal experiences, observations, and conversations with hunters leads us to make this determination. Approximately 30 acres of annual grains are planted each year as an attractant for doves, providing opportunities for dove hunters. Dove hunts are managed through the Permit Hunting Opportunities Program and can be obtained through a random selection for hunts occurring during the first two weeks and through point-of-sale for the remainder of the seasons.

Hunting of other webless migratory game birds on Suggs Mill Pond is thought to occur at very low levels. These species include woodcock, snipe, rails, gallinules, and moorhens. Rails, gallinules, and moorhens rarely occur in this part of North Carolina. Strategies to increase the use of this game land by this user group may include a newsletter that identifies game lands that offer this opportunity or an article in the North Carolina Wildlife magazine that promotes opportunities for hunters to harvest these species.

We believe that there is no additional infrastructure needed to satisfy the needs of this user group. Additionally, we believe that our current level of species and habitat management is sufficient for webless migratory game birds.

Trappers

Trapping of furbearers currently occurs at low levels and any management strategies that promote trapping should be implemented. No public comment was received that indicated

satisfaction, or the lack of, with trapping opportunities on Suggs Mill Pond. It should be noted that this game land lies partially in Cumberland County, which does not have a fox trapping season. State-wide trapping regulations apply to this property and local laws in Cumberland County prohibits the trapping of foxes on the portion that lies within it. The vast majority of this game land is in Bladen County, which does have a fox trapping season.

We are currently unaware of any specific infrastructure needs that would provide better opportunities for trappers. Additionally, we believed that ample opportunity is provided to trappers and there are no additional strategies we could implement to increase the use of Suggs Mill Pond by trappers.

Anglers

Fishing opportunities on Suggs Mill Pond exist on the three large water bodies and in the deep water canals in the waterfowl impoundments. Horseshoe Lake, Little Singletary Lake, and Jessup's Millpond support only a unique fishery that can tolerate the acidic, shallow, unproductive waters found on these sites. Flier bream are the most sought after fish species but other sunfish along with bowfin (blackfish), catfish, and chain pickerels (jack) are caught in these waters as well. Current management for game fish on Suggs Mill Pond includes the statewide regulations with no unique regulations imposed. These include a largemouth bass minimum size limit of 14 inches except two which may be less than 14 inches and a creel limit of five fish per day. For sunfish, there is no minimum size limit and the daily creel limit is 30 in combination with no more than 12 redbreast sunfish. Refer to the most recent NCWRC's Inland Fishing, Hunting, and Trapping Regulations Digest to identify these rules.

Due to the habitat restrictions (*i.e.,* shallow, acidic water with low productivity) utilizing management tools (e.g., stocking or herbicide treatment) to enhance the fishery are likely cost prohibitive. Managing these waters for what they are and what they're used for, which are small Carolina bay lakes and mill ponds with a local fishery, may be the best long-term management plan.

Since all game fish species that are currently targeted in Suggs Mill Pond have some level of consumption advisory associated with them, a sign or kiosk placed by the boat ramp providing this information would be beneficial.

Installation of pubic fishing areas and the upgrades of unimproved boating accesses may be strategies that would increase the use of these resources by the public. These actions have been proposed and are discussed in detail in the Infrastructure Section of this Plan.

Non-traditional game land users:

- Paddlers
- Hikers and runners

- Horseback riders
- Researchers, universities, and museums
- Photographers and artists
- Sight seers
- ATV riders and off-road vehicles
- Campers
- Stargazers
- Target shooters
- Bicyclists
- Geocachers

DISCUSSION OF NON-TRADITIONAL GAME LAND USERS

We have attempted to determine all game land users of Suggs Mill Pond and have made determinations of appropriateness and compatibility for each use based on the fact that hunting, fishing, trapping, and wildlife viewing are the primary uses. As long as non-traditional uses do not negatively influence the wildlife resources that the NCWRC manages or negatively impact traditional uses, they may be determined as appropriate and compatible.

Currently on Suggs Mill Pond, during scheduled permit hunts, only hunters and trappers with valid permits may enter the game land, except the public may use Campground Road to access Horseshoe Lake.

Of all the known non-traditional uses that currently occur on Suggs Mill Pond, only one activity is considered to be inappropriate and incompatible. However, some other non-traditional uses require special consideration and are only considered to be appropriate and compatible under certain circumstances. These conditions are outlined in the following sections of the Plan.

Non-traditional users are strongly encouraged to refer to the NCWRC's Inland Fishing, Hunting, and Trapping Regulations Digest to identify hunting and trapping seasons as well as specific days and times that hunting and trapping occurs on the game land. Out of safety concerns, all game land users are also strongly encouraged to wear blaze orange while using game lands. This will ensure that they are easily seen by other game land users.

In reference to the previous statement about designated hunting and trapping days, waterfowl are hunted on Tuesdays, Saturdays, opening and closing days of seasons, and major holidays. Deer and turkey hunting occurs on Thursdays, Fridays, and Saturdays with the exception of disabled sportsman blinds which occur on Tuesdays and Wednesdays in two designated locations. Small game hunting occurs during their designated seasons on Mondays, Tuesdays, and Wednesday from the beginning to the end of deer season and Monday through Saturday starting the day after the end of deer season. No hunting is allowed on Sundays.

Paddlers

Based off of anecdotal information, paddlers primarily use Horseshoe Lake because of its larger size and ease of access. Jessup's Millpond is also used by paddlers and is easily accessed but does not offer much opportunity for extended periods of use because of its small size. Little Singletary Lake is thought to also be used by paddlers but is much harder to access because of limited access.

The use of these lakes by paddlers is considered compatible because it does not interfere with or detract from the Game Lands Program objectives, and as long as it doesn't interfere with or displace traditional uses during the times that they are taking place, should not be problematic. Impacts to hunters, anglers, trappers and wildlife viewers are considered minimal and avoidable.

However, the occurrence of these two uses at the same time poses threats to the safety of paddlers. Waterfowl are harvested on these lakes with shotguns and lethal ranges of shotgun pellets can exceed 65 yards (195 feet). Secondly, paddlers using these lakes during waterfowl hunts would have dramatic impacts to the quality of the hunts experienced by waterfowl hunters. The disturbance created would potentially scare off waterfowl and decrease the opportunity for hunters to harvest birds.

The implementation of a rule that restricts the use of these lakes to only waterfowl hunters from November 1st to March 1st would avoid problems between hunters and paddlers. This rule would also greatly minimize the disturbance to wintering and migrating waterfowl that use these areas for feeding, resting, roosting, and pair bonding. Alternatively, the implementation of a rule that allows only waterfowl hunters to use these lakes on permitted waterfowl hunt days until 1:00 PM. Under current law, waterfowl hunters must be out of waterfowl impoundments and off of lakes by 1:00 PM. This rule would simply restrict the use of these lakes to waterfowl hunters up until that time, and restrict the use of these lakes to paddlers after that time.

Hikers and runners

The use of Suggs Mill Pond by hikers and runners is considered compatible because it creates minimal disturbance to the natural resources and is consistent with the NCWRC's policies and objectives. Hikers and runners traditionally stick to established roads and trails and their impact to the road systems is essentially non-existent.

In response to the public comment that requested pedestrian trails on this game land, we believe that the existing 40 miles of roads and trails provide adequate areas for hikers and runners. These areas are not currently designated specifically for pedestrians but can be used by both traditional and non-traditional game land users. These areas can be used by non-traditional users outside of designated hunting seasons and the designated hunt days during those seasons.

Out of safety concerns and respect for traditional game land users, hikers and runners should realize and be considerate of all hunting activities on Suggs Mill Pond and the times that they are likely to occur.

Horseback riders

Horseback riding on Suggs Mill Pond is considered compatible as long as riders stay on trails that are deemed compatible and designated for this use. Riders are encouraged to not venture outside of these areas because of potential negative impacts to wildlife habitat.

It is our recommendation that this activity be regulated through our permit system in order to manage use. Concerns about the use of this game land by horseback riders stems from the potential negative impacts to the natural resources of game lands. Newsome et. al (2002) conducted a study on the effects of horse riding on national parks and other natural ecosystems in Australia and determined that environmental impacts include but are not limited to soil degradation and compaction, erosion, loss of vegetation height and cover, change in plant species composition, degradation of existing roads and trails, the introduction of invasive grass and weed species, accidental transport of fungal pathogens, and the loss of vegetation, which are all common problems associated with horse use.

Researchers, universities, and museums

The use of Suggs Mill Pond by researchers, universities, and museums is considered compatible and does not impact management objectives of the Game Lands Program. These entities' uses of game lands usually involve the collection of data for research and educational purposes. It poses very minimal threats to traditional game land users and does not interfere with or disturb the natural resources of this property. These activities are usually handled through NCWRC's permitting process.

Photographers and artists

The use of Suggs Mill Pond by photographers and artists is considered compatible. Photographers and artists create very little impact to the natural resources of the game land and their impacts to roads and trails is minimal.

Sight seers

Joy riding and sightseeing on Suggs Mill Pond is considered a compatible use as long as they stay on designated roads and trails open to vehicular traffic. These include open gated and ungated roads and trails. Impacts to natural resources are essentially non-existent and impacts to roads and trails are minimal as long as drivers adhere to ethical and practical driving behaviors.

ATV riders and other off-road vehicles

The use ATV's and other off-road vehicles on Suggs Mill Pond is considered an inappropriate use. More times than not, these vehicles create disturbance and cause destruction to valuable resources on game lands. They greatly degrade roads and trails and create erosion and water quality concerns when driven in and around streams. Because these vehicles are very agile and

maneuverable, riders tend to stray away from developed roads and trails and into areas that land managers desire to be undisturbed. These actions can be detrimental to various plant and animal communities and offset previous efforts made to conserve and manage these areas.

It should be noted that ATV use is currently allowed only by disabled sportsman that have been deemed eligible for this use. This activity is handled through NCWRC's permitting process.

Because ATV's and other off-road vehicles have such a great potential to cause harm and create disturbance to natural resources and other game land users, their use on Suggs Mill Pond is prohibited, except as excluded by regulations designated for permitted hunts.

Campers

Camping on Suggs Mill Pond is considered a compatible use. There is one existing camping area on the property near the wildlife management depot. Because camping is restricted to September 1 through February 28 and March 31 through May 14, and access is restricted to hunters and trappers with valid permits during these designated times, camping causes no conflicts with the interests and management objective of the NCWRC.

Additionally, camping opportunities are offered year-round on nearby State Parks.

Stargazers

Stargazing is considered a compatible use on Suggs Mill Pond. Because the window of opportunity for this activity is restricted to nighttime hours, it has very little potential to create conflict with traditional users. Its impacts to natural resources are non-existent and impacts to infrastructure are minimal. These activities are usually handled through special use permits.

Target shooters

There are currently no restrictions to target shooting on Suggs Mill Pond outside of designated safety zones. It is considered a compatible activity as long as it does not create safety concerns for the shooter or other game land users and staff, does not cause destruction to NCWRC property, and shell casings are retrieved after being discharged.

The NCWRC is currently involved in the design and implementation of shooting ranges on game lands. Upon implementation of a designated shooting range on Suggs Mill Pond, all target and recreational shooting activities will be limited to that area.

Bicyclists

Bicycling on Suggs Mill Pond is considered compatible as long as bicyclists stay on designated roads and trails. Impacts to natural resources can be minimized by regulating use through numbers, timing, and conditions of trails.

We strongly believe that if this activity becomes problematic through overuse, it should be managed through NCWRC's permitting process in order to regulate use. Our concerns of overuse stem from potential negative impacts of biking. Cessford (1995) reviewed the off-road impacts of mountain bikes and found that environmental impacts included but were not limited to injury and destruction of ground-level vegetation, change in plant species composition along biking trails, compaction and reduced water infiltration-capacity of well drained soils, increased occurrence of runoff, excessive erosion from enhanced water flows, development of multiple parallel tracks, and the development of informal tracks including shortcuts and switchbacks.

The use of Suggs Mill Pond by bicyclists is currently very low but it continues to grow in popularity and should therefore be monitored and periodically evaluated.

Geocachers

We are currently unaware of any geocaching activities that take place on this game land. However, geocaching is considered a compatible activity as long as the NCWRC's geocaching policy is adhered to (see *Appendix VIII*).

INFORMATION NEEDS

Our current state of knowledge about wildlife occurrences on Suggs Mill Pond is somewhat limited. Our best knowledge is of big game species, northern bobwhite quail, and songbirds. Successful big game hunters are required to identify the game land from which they harvest big game during the registration process. Distributions and occurrences of quail and songbirds are

well documented due to extensive monitoring protocols mandated by the NCWRC's CURE Program. However, distributions and occurrences of cryptic species such as reptiles, amphibians, and small mammals (including bats) are under-surveyed and their relative distribution and abundance are unknown and misunderstood. It would seem appropriate to work closely with the Natural Heritage Program to develop a biological inventory similar to the Bladen County Natural Area Inventory conducted by LeBlond and Grant in 2005.

Our current knowledge of game animals is limited, even though we know the number of harvested big game on Suggs Mill Pond. Currently, there are no surveys in place to track changes in population trends of even the most sought after big game animals (deer, bear, and turkey). At present we must make assumptions based on hunter harvest data and county-wide deer density estimates. Management practices and regulations should not be based on assumptions, but on best available science.

The following is our current knowledge of our priority species. These priority species were identified because they are game animals that are hunted or trapped on Suggs Mill Pond or they have a state or federal status. They are either known or thought to occur on this game land. Included in this information are inventory and management needs, and research recommendations for the future. The appropriateness of tracking population trends for some wildlife species will be evaluated and appropriate techniques will be identified when it is determined such actions are warranted and only when appropriate levels of staff and finances are available.

The identification of game land hunters (or other users) would allow the NCWRC to generate a general observation survey in which data on the observations of multiple species could be collected by hunters or any game land user interested in recording the requested information. This cooperation of game land users would supplement our survey efforts and potentially reduce workloads required by NCWRC staff to collect this information. The use of other surveys is proposed to target hunters in order to determine hunter effort. Information derived from these surveys coupled with other information collected by field staff will give NCWRC biologists the ability to better estimate and track population trends. This valuable information will help staff determine the best management techniques to implement in order to achieve our desired future conditions.

Reports of diseased animals (regardless of species) should be investigated and, when possible, attempts will be made to diagnose the cause of infection. Also, as specific disease surveillances are conducted (Chronic Wasting Disease, Lymphoproliferative Disease Virus, etc.), the game land will be incorporated into the effort when appropriate.

NON-GAME WILDLIFE SPECIES

- *BIRDS:*

BACHMAN'S SPARROW

Current knowledge

Bachman's sparrows occur within the game land in areas managed with fire and sufficient ground cover. They are year-round residents and are present in longleaf pine stands, and likely the adjacent power line right-of-ways. Populations have seen a declining trend since the early to mid-1900s. The loss and degradation of longleaf pine ecosystems seems to be the primary cause for their decline. This species is of special concern in North Carolina.

Inventory and monitoring needs

North Carolina Breeding Bird Surveys have been conducted annually in conjunction with CURE surveys on Suggs Mill Pond since 2002. These surveys should continue. Playback surveys during the non-breeding season may help determine numbers but, as of now, not enough data exist to estimate density. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Management needs

Generally, management of open longleaf pine stands through the use of prescribed fire provides adequate habitats for Bachman's sparrows. Plentovich et al. (1995) found that more frequent fire earlier in the growing season provided the herbaceous layer favored by Bachman's sparrows while reducing the hardwood midstory.

Research needs

There are currently no known research needs.

ANHINGA

Current knowledge

Suggs Mill Pond lies near the extreme northern edge of the anhinga's summer breeding range. The anhinga lives in shallow, slow-moving, sheltered waters (swamps) and uses nearby perches and banks for drying and sunning. It feeds primarily on fish and is rarely found away from freshwater, except during severe droughts. It is generally not found in extensive areas of open water, though it may nest on edges of open bays and lakes. The anhinga breeds near freshwater, often in association with other waterbirds such as herons, egrets, ibises, storks, and cormorants. This species is considered significantly rare in North Carolina.

Inventory and monitoring needs

North Carolina Breeding Bird Surveys have been conducted annually in conjunction with CURE surveys on Suggs Mill Pond since 2002. These surveys should continue. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Management needs

Continued management of the waterfowl impoundments, millponds, and lakes on Suggs Mill Pond will meet the nesting and feeding needs of the anhinga.

Research needs

There are currently no known research needs.

MISSISSIPPI KITE

Current knowledge

Mississippi kites are likely to occur around blackwater areas on Suggs Mill Pond such as Horseshoe Lake, Little Singletary Lake, Jessup's Mill Pond, and the waterfowl impoundments. However, occurrences are thought to be rare. This species is migratory and primarily eat insects, with a preference for grasshoppers, cicadas, and dragonflies. They prefer to nest in tall trees in open woodlands near water. This species is considered significantly rare in North Carolina.

Inventory and monitoring needs

North Carolina Breeding Bird Surveys have been conducted annually in conjunction with CURE surveys on Suggs Mill Pond since 2002. These surveys should continue. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Management needs

The protection and management of open pine woodlands should continue, especially sites near open water. Not enough data currently exist to make detailed management recommendations at this time.

Research needs

There are currently no known research needs.

COOPER'S HAWK

Current knowledge

Cooper's hawks are known to occur on Suggs Mill Pond. They are known to breed in a variety of forest types found on the Coastal Plain of North Carolina and favor a mix of forests or woodlots interspersed with fields. This species is not normally found inside deep forests. Cooper's hawks are of special concern in North Carolina.

Inventory and monitoring needs

North Carolina Breeding Bird Surveys have been conducted annually in conjunction with CURE surveys on Suggs Mill Pond since 2002. These surveys should continue. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Management needs

Cooper's hawks occupy a variety of habitats and are predatory birds, feeding mainly on medium-sized birds. This game land consists of 9 different habitat types. Current and continued management of habitat beneficial to small game will provide benefit for this species. However, not enough data currently exists to make detailed management recommendations at this time.

Research needs

There are currently no known research needs.

LITTLE BLUE HERON

Current knowledge

A small (18 nests) nesting colony of great blue herons was identified on the Suggs Mill Pond in 2009 by NCWRC biologists during aerial surveys. Little blue herons were not detected, but may have been missed due to their small size, cryptic coloration, and habit of nesting closer to the bole of trees and shrubs rather than in large nests in the canopy. However, nesting little blue herons have not been detected on this game land during previous surveys, and likely nest only on islands within North Carolina's sounds and the lower Cape Fear River. There have been no well-designed surveys for little blue herons on Suggs Mill Pond. This species is of special concern in North Carolina.

Inventory and monitoring needs

Seasonal surveys of swamps, marshes, and impoundments should be conducted to determine use of these habitats by little blue herons on Suggs Mill Pond. Ground surveys along established transects conducted regularly would provide needed data on presence of little blue herons within this game land and their use of various habitats. These efforts should be incorporated into NCWRC's Wildlife Diversity Program.

North Carolina Breeding Bird Surveys have been conducted annually in conjunction with CURE surveys on Suggs Mill Pond since 2002. These surveys should continue. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Management needs

Management practices that would benefit little blue herons include protection of marshes and forested swamplands, gradual drawdown of water levels in impoundments during early spring , and slow increases in water levels in the fall. Impoundments should be managed for diverse water levels to benefit the greatest number of waterbirds and waterfowl.

Research needs

There are currently no known research needs.

WOOD STORK

Current knowledge

Nesting wood storks have not been detected on this game land during aerial surveys conducted in the mid-2000s or during ground counts. Wood storks are conspicuous because of their white color, large size, and are not difficult to detect when nesting if nesting occurs. They nest in trees and shrubs within swamps. Only 4 confirmed nesting colonies have been recorded in North Carolina, and those colonies are not active each year. Currently, there are no known occurrences of wood storks on Suggs Mill Pond. The NCWRC and other entities conduct regular surveys for wood storks. They are considered endangered in North Carolina.

Inventory and monitoring needs

Seasonal surveys of swamps, marshes, and impoundments should be conducted to determine use of these habitats by wood storks on Suggs Mill Pond. Ground surveys along established transects conducted regularly would provide needed data on presence of wood storks within this game land and their use of various habitats. Because wood storks migrate south during the winter, no detections of them would be expected during this season.

North Carolina Breeding Bird Surveys have been conducted annually in conjunction with CURE surveys on Suggs Mill Pond since 2002. These surveys should continue. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Management needs

Management practices that would benefit wood storks include protection of marshes and forested swamplands, gradual drawdown of water levels in impoundments during early spring, and slow increases in water levels in the fall. Impoundments should be managed for diverse water levels to benefit the greatest number of waterbird and waterfowl species. Shallow (10-30 cm) water levels in mid- to late summer would increase density of fish in impoundments and greatly benefit wood storks. Wood storks are tactile feeders and increase their foraging success by feeding in shallow ponds and ditches with high densities of fish. In mid- to late summer, wood storks are feeding chicks and teaching fledglings to obtain their own food. If impoundments on Suggs Mill Pond provided optimum feeding conditions, wood storks may use these areas.

Research needs

There are currently no known research needs.

LOGGERHEAD SHRIKE

Current knowledge

Loggerhead shrikes are not known to occur on Suggs Mill Pond. This species is however, predicted to occur in this area of the State, according to the North Carolina Gap Analysis Project. The decline of loggerhead shrikes is attributed to the decline in farmland to development and the loss of high quality early successional habitat. Shrikes nest in the Piedmont and the western and southern parts of the Coastal Plain, and their wintering range is similar. Favored habitats are extensive pastures and farmland, with thorny trees or shrubs or barbed wire fences for impaling prey, an activity that this species is known for. Loggerhead shrikes breed in open areas dominated by grasses and/or forbs, interspersed with shrubs or trees and bare ground. Sandy soil areas are favored over wetter or more clay-like soils. This species is of special concern in North Carolina.

Inventory and monitoring needs

North Carolina Breeding Bird Surveys have been conducted annually in conjunction with CURE surveys on Suggs Mill Pond since 2002. These surveys should continue. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Management needs

In addition to maintaining non-forested early successional habitat on this game land, a key element for providing habitat for loggerhead shrike is to maintain hedgerows with a component of scattered and clumped trees and shrubs adjacent to and within open areas. Continuous linear strips of woody vegetation should be avoided.

Prescribed burning and other methods to control plant succession and maintain early successional habitat are viable practices.

Research needs

There are currently no known research needs.

- *MAMMALS:*

RAFINESQUE'S BIG-EARED BAT

Current knowledge

Rafinesque's big-eared bats are not known to occur on Suggs Mill Pond. This species is however, predicted to occur in this area of the State, according to the North Carolina Gap Analysis Project. Unlike many other bat species that are crepuscular, this bat species is nocturnal. It nests in tree cavities and man-made structures that provide refuge such as abandoned building and bridges. They are insectivores and are moth-specialists. The best available evidence indicates that this species has declined drastically. They are considered a threatened species in North Carolina.

Management needs

Protection and management of the floodplain forests should continue. Coastal Plain habitats of this species for roosting and foraging include many of the floodplain forest communities on Suggs Mill Pond but foraging has also been documented in young pine plantations. They roost in hollow trees, under loose bark, old buildings, and beneath bridges, at least in the warmer months. Foraging habitat may be critical to species survival and should therefore be protected.

Inventory and monitoring needs

If manpower is available, a series of mist-netting surveys should be implemented in an attempt to collect information to close gaps in the distribution data of this bat species. A cooperative biological inventory should be conducted with the assistance of the Natural Heritage Program to explore and update the small mammal communities on Suggs Mill Pond. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

STAR-NOSED MOLE

Current knowledge

The star-nosed mole is not known to occur on Suggs Mill Pond. This species is however, predicted to occur in this area of the State, according to the North Carolina Gap Analysis Project. The coastal and Sandhills habitats for star-nosed moles include pocosins, wetlands, saturated bottomlands, and longleaf pine habitat. Neither forest age nor successional stage has been reported as a critical factor determining habitat suitability for this species (Laerm et al. 2007). This species is of special concern in North Carolina.

Management needs

Not enough data currently exist to make detailed management recommendations at this time. However, we believe that protection and management of the previously mentioned habitats are suitable actions for management of star-nosed moles.

Inventory and monitoring needs

A cooperative biological inventory should be conducted with the assistance of the Natural Heritage program to explore and update the vertebrate communities on Suggs Mill Pond. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

- *AMPHIBIANS:*

MABEE'S SALAMANDER

Current knowledge

According to the range map provided by North Carolina Gap Analysis Project, the mabee's salamander is known to occur in the vicinity of Suggs Mill Pond and is likely to occur on the property. In North Carolina, Mabee's salamanders occupy the savanna pine woods in the eastern Coastal Plain. They typically spend their adult life in soil near bogs, ponds, and swamps. Some individuals disperse away from breeding sites to meadows or nearby forests while others remain near their larval habitat even after it has dried up, living in the cover of leaves and pine needles on the dried mud. This species is considered significantly rare in North Carolina.

Management needs

This species of salamander requires shallow, still, and fishless ephemeral ponds for reproduction. Therefore, management techniques to maintain or enhance these ponds should be practiced.

Inventory and monitoring needs

The use of cover boards on Suggs Mill Pond should be reestablished, especially during the early spring when breeding occurs to determine the relative abundance of the mabee's salamander on this game land. A cooperative biological inventory should be conducted with the assistance of the Natural Heritage Program to explore and update the vertebrate communities on Suggs Mill Pond. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

DWARF SALAMANDER

Current knowledge

According to the range map provided by North Carolina Gap Analysis Project, the dwarf salamander is known to occur in the vicinity of Suggs Mill Pond and is likely to occur on the property. Dwarf salamanders are commonly found along the margins of ponds in pine forests or savannas. They may also be found around swamps and bottomland hardwood forests. This species is of special concern in North Carolina.

Management needs

This species of salamander requires shallow, still, and fishless ephemeral ponds for reproduction. Therefore, management techniques to maintain or enhance these ponds should be practiced.

Inventory and monitoring needs

The use of cover boards on Suggs Mill Pond should be reestablished, especially during the early spring when breeding occurs to determine the relative abundance of the dwarf salamander on this game land. A cooperative biological inventory should be conducted with the assistance of the Natural Heritage program to explore and update the vertebrate communities on Suggs Mill Pond. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research Needs

There are currently no known research needs.

FOUR-TOED SALAMANDER

Current knowledge

Four-toed salamanders are not currently known to occur on Suggs Mill Pond but are known to occupy habitats found on this property. They generally occur in forests surrounding swamps, bogs, marshes, and ephemeral ponds that are free of fish. Their distribution throughout North Carolina is patchy. Four-toed salamanders are of special concern in North Carolina.

Management needs

This species of salamander requires shallow, still, and fishless ephemeral ponds for reproduction. Therefore, management techniques to maintain or enhance these ponds should be practiced.

Inventory and monitoring needs

The use of cover boards on Suggs Mill Pond should be reestablished, especially during the early spring when breeding occurs to determine the presence or absence and the relative abundance of the dwarf salamander on this game land. A cooperative biological inventory should be conducted with the assistance of the Natural Heritage program to explore and update the vertebrate communities on Suggs Mill Pond. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

OAK TOAD

Current knowledge

The oak toad is not currently known to occur on Suggs Mill Pond but according to the range map provided by North Carolina Gap Analysis Project, the oak toad is likely to occur on this game land. Oak toads are found only in the Coastal Plain of North Carolina and inhabit pine flatwoods, savannas, sandhills, and some pocosins. Once abundant in many parts of the Coastal Plain, oak toads have undergone a dramatic decline in recent years. Habitat destruction is one obvious reason but does not account for their disappearance from areas where good habitat is still present. Other factors contributing to their decline may include disease, acidification of breeding sites due to fire suppression, and predation from the imported red fire ant. This species is considered significantly rare in North Carolina.

Management Needs

This species of frog requires shallow, still, and fishless ephemeral ponds for reproduction. Therefore, management techniques to maintain or enhance these ponds should be practiced. Maintenance of pine habitats with prescribed fire will also benefit the oak toad.

Inventory and monitoring needs

The use of cover boards on Suggs Mill Pond should be reestablished, especially during the early spring when breeding occurs to determine the relative abundance of the oak toad. Call counts conducted by individuals or with the use of frog-loggers should be conducted to determine the presence or absence of the oak toad. A cooperative biological inventory should be conducted with the assistance of the Natural Heritage Program to explore and update the vertebrate communities on Suggs Mill Pond. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

ORNATE CHORUS FROG

Current knowledge

The ornate chorus frog is not currently known to occur on Suggs Mill Pond. However, according to the range map provided by North Carolina Gap Analysis Project, the ornate chorus frog is likely to occur on Suggs Mill Pond. These frogs inhabit longleaf pine stands and pine savannas in the southern Coastal Plain. They are primarily nocturnal and are seldom encountered outside the breeding season. Breeding occurs in temporary ponds, Carolina bays and ditches. Populations of the ornate chorus frog are disappearing in North Carolina, largely due to destruction of temporary wetlands in longleaf pine ecosystems. This species is considered significantly rare in North Carolina.

Management needs

This species of frog requires shallow, still, and fishless ephemeral ponds for reproduction. Therefore, management techniques to maintain or enhance these ponds should be practiced. Maintenance of pine habitats with prescribed fire and increasing the acreage of longleaf pine communities will potentially benefit the ornate chorus frog.

Inventory and monitoring needs

The use of cover boards on Suggs Mill Pond should be reestablished, especially during the early spring when breeding occurs to determine the relative abundance of the ornate chorus frog. Call

counts conducted by individuals or with the use of frog-loggers should be conducted to determine the presence or absence of the ornate chorus frog. A cooperative biological inventory should be conducted with the assistance of the Natural Heritage Program to explore and update the vertebrate communities on Suggs Mill Pond. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

CAROLINA GOPHER FROG

Current knowledge

The Carolina gopher frog is currently not known to occur on Suggs Mill Pond. However, according to the range map provided by North Carolina Gap Analysis Project, the Carolina gopher frog is known to occur in close proximity to this game land and its predicted range includes this property. These rare frogs occur at scattered locations in the Sandhills and southeastern Coastal Plain of North Carolina. Little is known about their natural history outside the breeding season. Gopher frogs hide in stump holes, root tunnels, and mammal and crayfish burrows. Virtually all breeding sites are upland ephemeral ponds in longleaf pine savannas.

Carolina gopher frogs have suffered tremendously from habitat loss and alteration. They are considered endangered, threatened or of special concern in all states within their range. This species is considered threatened in North Carolina.

The gopher frog has been the object of significant survey effort by the NCWRC in recent years. Efforts to relocate historic breeding ponds on and off of the public lands have been met with little success. All of these historic ponds have been altered, drained or the surrounding habitat has been significantly altered.

Management needs

Protection of all known Carolina gopher frog sites is critical. Sites on the game land that historically contained this species should be inventoried and monitored for possible repopulation.

This species of frog requires shallow, still, and fishless ephemeral ponds for reproduction. These sites should be located and monitored. The construction of new ephemeral ponds on this game land should be evaluated. Maintenance of pine habitats with growing season fires will benefit the Carolina gopher frog.

Inventory and monitoring needs

The use of cover boards on Suggs Mill Pond should be reestablished, especially during the early spring when breeding occurs to determine the presence or absence of the Carolina gopher frog on this property. Call counts conducted by individuals or with the use of frog-loggers should be conducted to determine the presence/absence of the Carolina gopher frog. A cooperative biological inventory should be conducted with the assistance of the Natural Heritage Program to explore and update the vertebrate communities on Suggs Mill Pond. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

- *REPTILES:*

EASTERN CHICKEN TURTLE

Current knowledge

Very little is currently known about the eastern chicken turtle. The North Carolina Gap Analysis Project identifies a range of this turtle's predicted presence which includes Suggs Mill Pond. It is known to occur in close proximity to this game land. Eastern chicken turtles can be found in canals, marshes, cypress ponds, and other bodies of still or sluggish water. Very little is known about their diet. This species is considered significantly rare in North Carolina.

Management needs

Beneficial management practices for eastern chicken turtles include maintaining and protecting wetlands on Suggs Mill Pond and their associated riparian areas. Maintaining native vegetation and controlling undesirable vertebrate species in these habitats are also viable practices.

Inventory and monitoring needs

There is a need for presence/absence surveys for this species. These surveys could be conducted with baited and unbaited hoop nets with leads within suitable aquatic habitats. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

MIMIC GLASS LIZARD

Current knowledge

According to a range map provided by the North Carolina Gap Analysis Project, the mimic glass lizard is likely to occur on Suggs Mill Pond. This species is most common is pine flatwoods and open woodlands. Little is known about the reproductive habits of this species. This species is of special concern in North Carolina.

Management needs

Open longleaf pine forests that are periodically burned provide optimal habitat for the mimic glass lizard.

Inventory and monitoring needs

The use of cover boards on Suggs Mill Pond should be reestablished, especially during the early spring when breeding occurs to determine the presence or absence of the Carolina gopher frog on this property. A cooperative biological inventory should be conducted with the assistance of the Natural Heritage program to explore and update the vertebrate communities on Suggs Mill Pond. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

GLOSSY CRAYFISH SNAKE

Current knowledge

The glossy crayfish snake is currently not known to occur on Suggs Mill Pond. North Carolina Gap Analysis Project range maps identify this area of the state where they are predicted to occur. These snakes are very secretive and live in canals, swamps, and other wetlands in the lower Coastal Plain. Because they are so secretive and infrequently encountered, very little is known about them. This species is considered significantly rare in North Carolina.

Management needs

The maintenance and protection of the aquatic habitats, including canals will benefit this aquatic snake.

Inventory and monitoring needs

The use of cover boards on Suggs Mill Pond should be reestablished, especially during the early spring when breeding occurs to possibly help determine the presence or absence of the glossy crayfish snake. A cooperative biological inventory should be conducted with the assistance of the Natural Heritage program to explore and update the vertebrate communities on Suggs Mill

Pond. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

PIGMY RATTLESNAKE

Current knowledge

Pigmy rattlesnakes are known to occur on Suggs Mill Pond. They inhabit several habitats including, pine flatwoods, dry pine savannas, forested wetlands, and dry coniferous forests. These snakes are so small and well camouflaged that they are rarely seen. Pigmy rattlesnakes eat a variety of prey including lizards, frogs, and small mammals. This species is of special concern in North Carolina.

Management needs

Protection and management of upland forest communities will benefit pygmy rattlesnakes. Techniques include maintaining open canopies of forested areas and the use of prescribed fire. Management of early successional habitat for small game will also prove beneficial for this species.

Inventory and monitoring needs

The use of cover boards on Suggs Mill Pond should be reestablished, especially during the early spring when breeding occurs to possibly help determine their distribution and abundance on this property. A cooperative biological inventory should be conducted with the assistance of the Natural Heritage program to explore and update the vertebrate communities on Suggs Mill Pond. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

TIMBER (CANEBRAKE) RATTLESNAKE

Current knowledge

Timber rattlesnakes are known to occur on Suggs Mill Pond. In the Coastal Plain, their use of habitat varies from pocosins to pine woodlands. They primarily feed on small rodents but adults are capable of consuming small rabbits and squirrels. They are a long lived species with recorded lifespans of up to 28 years in captivity. Declining trends in populations can be

attributed to loss of habitat, wanton killing, road kills, and poaching. This species is of special concern in North Carolina. has a North Carolina status of special concern.

Management needs

Protection and management of upland forest communities will benefit timber rattlesnakes. Techniques include maintaining open canopies of forested areas and the use of prescribed fire. Management of early successional habitat for small game will also prove beneficial for this species.

Inventory and monitoring needs

The use of cover boards on Suggs Mill Pond should be reestablished, especially during the early spring when breeding occurs to possibly help determine their distribution and abundance on this property. A cooperative biological inventory should be conducted with the assistance of the Natural Heritage program to explore and update the vertebrate communities on Suggs Mill Pond. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

AMERICAN ALLIGATOR

Current knowledge

The American alligator is known to occur on Suggs Mill Pond, at least in recent years. There have been occasional reports of alligator sightings on Horseshoe Lake over the past 15 years. Because many game land users feel threatened by alligators, it is thought that they may have been extirpated from this property. However, this is not known to be true. There have been no reports of alligators in very recent years. Because Horseshoe Lake provides excellent cover and refuge for alligators, they may indeed still occur there. This species is considered threatened in North Carolina.

Management needs

Protection and maintenance of the water bodies on Suggs Mill Pond will provide habitat for the American alligator.

Inventory and monitoring needs

Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

GAME ANIMALS

EASTERN WILD TURKEY

Current knowledge

With the increase in habitat enhancements mentioned earlier, available turkey habitat has increased in size and quality, including nesting and brooding habitat. In response, the use of this game land by wild turkeys has increased during that time. However, the lack of baseline data has left gaps in our knowledge of turkey populations on this property. Age and sex data can be derived from harvest reports, and although useful, this minimal information is inadequate for managing turkey on the area.

Over the past 5 seasons (2009-2013), turkey harvests on Suggs Mill Pond have averaged 1.0 gobbler/mile^2. Turkey hunting is currently allowed 3 days per week; Thursday through Saturday. Beginning in 2014, the first 6 hunt days of the spring turkey season will be designated for youth-only hunting, which has previously been limited to opening day of the season. Participation is managed though NCWRC's Permit Hunting Opportunities Program. Statewide daily and seasonal bag limits apply; 1 turkey per day and 2 turkeys per season.

Inventory and monitoring needs

Currently, baseline data for turkey abundance on game lands is minimal. However, several options are available to gather these data. Wild Turkey Summer Observation Surveys could better be utilized by increasing participants, a turkey hunter observation survey, and/or a deer hunter survey that allows deer hunters to report turkey observations in the fall and winter of the year. A survey has currently been proposed that would obtain valuable information from game land turkey hunters (see *Appendix V*). This information would potentially help determine hunter effort and the number of gobbling turkeys heard. Another could be gobbling bird point counts conducted by NCWRC staff. These surveys could provide information used to estimate densities and/or population trends of turkeys.

Management needs

Current levels of hunter harvest should be maintained until better data exists. Primary methods for habitat maintenance and enhancement should be the use of prescribed fire, long timber rotations, and open land management. The maintenance and/or improvement of field borders in agricultural areas will provide nesting and escape cover and areas for bugging.

Research needs

There are currently no known research needs.

NORTHERN BOBWHITE QUAIL

Current knowledge

Northern bobwhite quail inhabit early successional habitat found in non-forested areas and in forest communities with open canopies and an herbaceous understory. Transitional areas found between community types are critical for quail, especially areas between upland sites and pocosin communities in this region of the state. Pocosins provide excellent escape cover when quail flee from predators of other disturbances. Hunting opportunities on this property for quail are provided from late November to late December. Participation is managed through the Permit Hunting Opportunities Program.

Annual breeding call surveys have been conducted since 2002 and fall covey surveys have been conducted since 2001. Based off of these data, quail on Suggs Mill Pond have seen an increasing population trend during this time.

In 2002, an average of 0.79 quail per observation point was heard during breeding call surveys. Conversely, an average of 1.18 quail per observation point was heard during breeding call surveys in 2013.

Numbers from fall covey surveys also indicate an increasing trend with 7 coveys heard in 2001 and 15 coveys heard in 2012. 1 covey was heard in 2002 and no coveys were heard in 2003. The highest number of coveys recorded was in 2010 when 29 coveys were heard. These observations were recorded from 12 designated point locations.

Inventory and monitoring needs

These surveys should continue in order to establish longer term populations trends.

Management needs

Current hunting opportunities should be maintained. Existing land management practices should continue to provide suitable habitat with an emphasis on improving the quality and acreage of early successional habitat. Wide road shoulders, linear openings, and power line right-of-ways should only be treated with herbicide and/or mowing if hardwood or pine encroachment threatens the ecological benefit of these areas. If mowing is the only viable option, it should be done in late winter to minimize the amount of time between the treatments and spring green-up. This specific timing will also minimize negative impacts to quail and other low level nesting birds. Spot treatments with herbicide are recommended over broadcast treatments. Selective herbicides that target woody vegetation should be used as opposed to non-selective herbicides. Where feasible, prescribed burning and/or disking should be given initial consideration for

techniques to control plant succession in these areas. If disking is the most appropriate technique, it should be conducted in fall and winter.

Eradication of non-native, invasive grasses in early successional habitats should be given high priority. Efforts should be made to minimize the encroachment of trees into non-forested openings. Some special consideration should be given to the transitional areas between upland habitats and pososins. When appropriate, these areas should be burned and construction of firebreaks in these areas should be avoided.

Research needs

There are currently no known research needs.

WEBLESS MIGRATORY BIRDS

Current knowledge

Mourning doves and snipe are known to occur on Suggs Mill Pond. However, woodcocks, moorhens, gallinules, and the 4 rail species (clapper, sora, king, and Virginia) are not known to occur on this property. Dove hunting opportunities exist in planted wildlife openings. Opportunities for hunting the other webless migratory birds exist in wetland habitats that are preferred by these species such as the waterfowl impoundments and the lakes and mill ponds. Seasons and frameworks are determined by the United States Fish and Wildlife Service (USFWS), but generally run from September through February.

Inventory and monitoring needs

The dove banding program should continue on Suggs Mill Pond. Efforts should be greatly increased to trap and band an extensive number of doves on and off the game land. In previous years, the number of doves banded in this area has been low.

Management needs

Current hunting opportunities should be maintained following the framework set by the USFWS. Current land management practices should provide suitable habitat for webless migratory birds. These practices include management of wildlife openings, waterfowl impoundments and other wetland habitats, and upland pine woodlands.

Research needs

There are currently no known research needs.

WATERFOWL

Current knowledge

Waterfowl are common on Suggs Mill Pond, especially during their winter and spring migrations. The majority of wood ducks in the Atlantic Flyway are year-round residents but a small percentage is migratory. Waterfowl are probably the most sought after game species on this property. The most common species that occur on Suggs Mill Pond are wood ducks, ring-necked ducks, green-winged teal, and mallards. Other species are known to occur on this game land but their numbers are low.

Hunting is allowed on Tuesdays, Saturdays, opening and closing days of seasons, and holidays. Participation is managed through the Permit Hunting Opportunities Program.

Management needs

Providing quality moist-soil vegetation, cereal grains, abundant open water, and flooded timber should continue to be the primary goals of waterfowl impoundment management.

Techniques to accomplish these goals should include timely and gradual flooding and drawdowns of these areas. Timely soil disturbance is critical to stimulating the seed bank in order to promote highly desirable native vegetation. Special consideration should be given to providing large areas of open water in adjacent to areas used for feeding and cover.

In areas planted with cereal grains, soil samples should be taken prior to planting and appropriated lime and fertilizer applications should be made. Water depths should be considered in the placement of various crops so that seed is readily available to feeding waterfowl. For example, grain sorghum should not be planted in shallow water areas (10-17 inches) and millets should not be planted in deep water (17-30 inches). Whenever possible, placement of crops should be determined based off of responses of native vegetation to soil disturbances each spring. Efforts should be made to minimize the use of herbicides and the use of herbicides with ground water restrictions should be prohibited.

Wood duck boxes should be checked and maintained annually. The condition of the box, predator guard, pole, and all hardware should be inspected and replaced if necessary. Boxes should be cleaned out during inspections and new wood shavings (preferably cedar) should be inserted. The need for additional wood duck boxes should be evaluated by the Southern Coastal Ecoregion Management Biologist. Boxes should only be built out of cypress. The use of treated and untreated pine should be avoided.

Because the lakes and mill ponds on this game land are solely dependent on rainfall, no water level manipulation is warranted on the sites. It can only be recommended that they remain protected and managed for their ecological benefit.

Currently, on select game lands, a system of hunting blinds have been established under the permitting system to alleviate crowding in selected areas, provide more opportunity and a better hunting experience. This should be initiated on Horseshoe Lake and Little Singletary Lake.

Inventory and monitoring needs

Waterfowl hunter harvest surveys should continue at their current intensity, however, additional efforts should be made to survey waterfowl hunters that hunt Little Singletary Lake. Annual vegetation surveys should be conducted during the months of June and July to assess moist soils crops prior to any planting activities and from August through October to evaluate the availability of fall foods. These surveys will help determine habitat suitability for wintering waterfowl. Very little is known about the use of our waterfowl impoundments in relation to the availability of invertebrates. It has been proposed that invertebrate sampling be conducted in order to potentially help guide future management. Additionally, surveys that monitor the use of these areas by waterfowl, wading birds, and shorebirds should be conducted in early spring to during their spring migrations.

The annual mid-winter waterfowl survey conducted by the NCWRC with the assistance of the USFWS should continue to survey waterfowl in major concentration areas, including the Bladen Lakes Region.

Efforts should be made to reestablish a wood duck banding program on this game land. Previous trapping efforts with the use of rocket nets have proven ineffective. Special consideration should be given to the construction and use of swim-in and/or drop-net traps.

Water levels in impoundments should be monitored continually throughout the times that impoundments hold water. Optimum water levels should be maintained. Detailed impoundment management, including water level management, is prescribed annually in the Suggs Mill Pond Waterfowl Impoundment Management Plan.

There is also potential to gather valuable information from game land waterfowl hunters. A mail survey has been proposed that would identify hunter effort, number and species of waterfowl harvested, and gain input on hunter satisfaction (see *Appendix VII*). This information will help guide future management on the area.

Research needs

There are currently no known research needs.

WHITE-TAILED DEER

Current knowledge

White-tailed deer are the most abundant big game species on Suggs Mill Pond with densities ranging from 15-29 deer/mi^2 (see *Appendix IV*). Deer hunting on Suggs Mill Pond follows the

Eastern Deer Season and hunting currently occurs 5 days per week; Tuesday through Saturday. General permitted deer hunts occur 3 days per week; Thursday through Saturday. Disabled sportsman hunts occur in 2 designated locations on Tuesdays and Wednesdays. Participation is managed though NCWRC's Permit Hunting Opportunities Program. Maximum harvest (either sex the entire season) is allowed.

From anecdotal information, hunter success is considered low at Suggs Mill Pond, although deer densities are thought to be adequate for the habitat provided on the game land. Due to the extensive pocosin habitat on this game land (5,237 acres or 48%), the challenges of hunting these areas, and the potential of these areas acting as a refuge for deer, especially during the season when hounds are present, one would suspect that harvest be relatively low.

With the increase in direct habitat enhancement through the creation of planted openings, extensive timber thinning and prescribed burning, available deer habitat in size and quality has increased and the herd should respond accordingly. Taken together, with better access and better habitat, hunter success should increase over time as well.

Derived from Suggs Mill Pond harvest data collected during the big game registration process over the last 3 seasons (2010-2012)

- An average of 1.62 antlered bucks per square mile has been harvested.
- Doe harvests make up 30.1% of the total harvest on Suggs Mill Pond. This falls short of our statewide objective of at least 50% of the total deer harvest consisting of does.
- Doe harvests make up 52.3% of the total deer harvest on Suggs Mill Pond prior to peak breeding season (October 31). This is slightly higher than our statewide objective of at least 50% does in the total harvest prior to peak breeding.
- Antlered buck harvests make up 29.4% of the total deer harvest on Suggs Mill Pond prior to peak breading season (October 31). Our statewide objective is for no more than 20% of antlered bucks to be harvested prior to peak breeding.

Inventory and monitoring needs

To better understand the dynamics of the deer herd on Suggs Mill Pond, there is a great need to collect basic biological data on harvested animals. Sex and age structure are of primary importance. We can identify the individuals that are permitted to hunt deer on this game land, and we have the ability to contact them prior to or after a hunt. At the minimum, we could conduct mail surveys of hunters to determine success rates, hunter effort, and perhaps other pertinent information relative to deer hunting on this property.

The collection of biological data and general harvest information of deer have been poor on Suggs Mill Pond since its inception as a game land. Over the last 3 years, no biological data has been collected from any of the 83 deer harvested on Suggs Mill Pond. With the advent of the electronic big game reporting system that identifies selected game lands, we are currently able to collect basic harvest information (sex, adult-fawn, date) on the deer harvested on this property. Although useful, this minimum information is inadequate in managing deer on the area.

If a survey was developed to target our game land deer hunters, the NCWRC could implement a jawbone/biological data mail survey. We believe other mail surveys that help to determine hunter effort would also be beneficial to increasing our knowledge of deer populations on game lands. We could improve our response rate by offering incentives for hunters to participate in these surveys. Rewards similar to the hats that cooperators of the Bear Cooperator Program receive would suffice. These rewards could be hats, tee shirts, or even decals. The collection of these biological data would allow us to make the science-based regulation changes, and/or changes to management techniques needed to meet the state deer management goals and objectives mentioned earlier.

Other methods to collect baseline information for deer densities and/or population trends on should be implemented. These data could be collected with the use of a Forward Looking Infrared (FLIR) monocular, spotlights, camera trap surveys, or track count surveys.

FLIR is a new tool for the NCWRC. This is a thermal imaging monocular that detects infrared radiation, including body heat. Similar to a spotlight survey, the FLIR camera will allow us to collect deer density and trend data with direct observations. It is our desire to collect density and population trend estimates using this method. A trial run should be conducted to ensure that this application is viable across all habitat types. There is a concern that the FLIR camera will not be effective in very dense plant communities like pocosins because of impenetrability. However, this is yet to be determined.

Track counts could be a substitute for the FLIR survey. Suggs Mill Pond has an extensive road network with soils that are suitable for this type of survey. Although not a direct observation, this is a survey method that has long standing history.

Staff will continue investigating whether new methods may better assist us in monitoring and managing the deer population trends on Suggs Mill Pond.

Management needs

It is our desire to manage deer on Suggs Mill Pond in accordance to with the statewide deer management goals and objectives outlined in the Ad Hoc Deer Evaluation Procedure. This document is available upon request. As a habitat generalist, the white-tailed deer will benefit from the continuation of current land management practices.

The potential exists for improved open land management. This would have limited benefit for the deer population, but would provide better opportunities for hunter harvest. Several requests were made during the public input session to improve wildlife openings on Suggs Mill Pond. These improvements could include the establishment of perennial clover and increased acreages of annual grains such as oats, rye grass, and wheat during the deer hunting seasons.

Other management needs could be derived from the previously mentioned data that is currently lacking, once it is obtained.

Research needs

There are currently no known research needs.

AMERICAN BLACK BEAR

Current knowledge

Current knowledge of black bear populations on Suggs Mill Pond is insufficient. This game land is enrolled in the Black Bear Sanctuary System and hunting of black bears is prohibited. Black bears are concentrated in and around the large pocosin and bay complexes that comprise the majority of the game land.

Inventory and monitoring needs

Currently, baseline density or relative abundance does not exist for Suggs Mill Pond. Track counts could be established using the existing road networks. Photo points could also be utilized to collect baseline data. Efforts should be made to collect sex, weight, and age data from hunter harvested bears near Suggs Mill Pond.

Management needs

Bears on Suggs Mill Pond should be managed following the guidelines outlined in the North Carolina Black Bear Management Plan (NCBBMP) and in conjunction with the sanctuary objectives. The entire NCBBMP can be viewed by visiting www.ncwildlife.org.

Many studies have concluded that black bear habitat preferences are simply a function of food. Therefore, any land management practices to improve or sustain food availability (soft and hard mast) will benefit black bears. Continued long rotation timber harvest, open land management, and prescribed fire will enhance and maintain habitats for black bears on Suggs Mill Pond. Black bears move extensive distances during certain times of the year. It is important for movement to occur between the various subpopulations of bears across the state to help maintain bear numbers and genetic connectivity. Corridors can also assist in reducing human-bear interactions by decreasing the proximity of traveling bears to human development. As such, corridors for movement are important. Continued acquisition of adjacent lands would support efforts to meet the NCBBMP objective 4 (strategies 3, 4, 5, and 6).

As the availability of huntable areas decrease, acquisition of land would also assist in NCBBMP objective 1 and objective 2, strategy 6. NCWRC game lands will become increasingly important in providing bear hunting opportunities and population management via harvest.

During the public input session, 9 comments were received specific to black bears. 2 comments requested the ability to specifically hunt black bears on this game land. 5 comments stated that black bears and/or their habitat were the most important to protect or enhance. One comments stated that Suggs Mill Pond has too many bears and another comment requested that wildlife openings be planted with food desirable to bears. 5 additional comments were received that requested that Suggs Mill Pond be opened to hunting all game species, which includes black bears.

We believe that this property should continue its enrollment in the Black Bear Sanctuary Systems because it provides a core area of outstanding habitat quality that will support a breeding nucleus of bears that will disperse off the area that can be available for hunter harvest.

Research needs

There are currently no known research needs.

FURBEARERS

Current knowledge

Suggs Mill Pond provides hunting opportunities for bobcat and coyote. Trapping opportunities exist for beaver, bobcat, coyote, raccoon, river otter, mink, and long-tailed weasel. Although these resources exist on the game land, they are somewhat under-utilized. Trapping is currently allowed 6 days per week from February 1-28. Bobcat and coyote hunting is currently allowed Monday through Wednesday, October 15 - December 31 during open seasons, and Monday through Saturday, January 1- February 28 during open seasons. Participation is managed through the Permit Hunting Opportunities Program.

Inventory and monitoring needs

Inventory and monitoring should be considered on an as needed basis. Scent stations and track counts could be used for some species.

Management needs

Current trapping seasons should be maintained to allow for trapping opportunities and the harvest of surplus furbearers. Current land management techniques should continue and desired future conditions should be met to benefit furbearers in each habitat type.

Research needs

There are currently no known research needs.

GRAY AND FOX SQUIRRELS

Current knowledge

Gray and fox squirrels are common small game species found on Suggs Mill Pond. Gray squirrels inhabit numerous forest types, although they are most abundant in hardwood forests containing a variety of mast-producing trees. On this game land, they commonly occur in the floodplain forests, mixed hardwoods and pine forests, and occasionally in the pine woodlands.

Because fox squirrels are solitary animals, their population densities are generally low, even in areas where they are considered common. Large areas of habitat are needed to support viable populations. They inhabit mostly open, mature pine-oak forests but also occur in pine-dominated habitats as well.

Tree cavities are very important for both squirrel species for rearing young and protection from winter weather.

Squirrel hunting is currently allowed Monday through Wednesday, October 15 - December 31 during open seasons, and Monday through Saturday, January 1- February 28 during open seasons. Participation is managed through the Permit Hunting Opportunities Program.

Inventory and monitoring needs

There are currently no inventory and monitoring needs but they should be considered on an as-needed basis.

Management needs

Current hunting opportunities should be maintained. Protection and maintenance of all forest types on Suggs Mill Pond will provide habitat needs for both squirrel species. Burning of pine woodlands and increased acreage of longleaf pine communities will be most beneficial to fox squirrels. Hard mast producing trees and cavity trees should be protected and maintained.

Research needs

There are currently no known research needs.

EASTERN COTTONTAIL AND MARSH RABBITS

Current knowledge

Eastern cottontail rabbits commonly occur on Suggs Mill Pond in open land where shrubs, grasses, and forbs dominate. Briar patches, brush piles, and other dense vegetation are needed for escape cover. Interspersion of different cover types is ideal for rabbits.

Marsh rabbits, being semiaquatic animals, require dense habitat adjacent to a permanent supply of water, such as the borders of lakes, streams, canals, ditches and marshes.

Rabbit hunting currently occurs at low levels on this property and is allowed Monday through Wednesday, October 15 - December 31 during open seasons, and Monday through Saturday, January 1- February 28 during open seasons. Participation is managed through the Permit Hunting Opportunities Program.

Inventory and monitoring needs

There are currently no inventory and monitoring needs but they should be considered on an as-needed basis.

Management needs

Current hunting opportunities should be maintained. Land management techniques that provide brushy cover will be beneficial for rabbits. These include thinning and burning of pine communities, early successional habitat management, and the creation and/or protection of brush piles and briar thickets.

FISH

WARM WATER FISH

Current knowledge

The fish fauna in Horseshoe Lake has been periodically sampled within the last 20 years and was recently sampled in November of 2013 using boat electrofishing. The sample was restricted to the area near the boat ramp as the majority of the lake is too shallow or the vegetation was too thick to effectively sample with current gear. Four transects that represented all available, accessible habitats were sampled for 10 minutes. These included shoreline emergent vegetation, open water submerged vegetation, nearshore pond cypress complex and open water pond cypress complex, as well as rock rip-rap along dike/road by the water impoundment control gate and boat ramp.

From this sample, the species composition consisted of 44% chain pickerel, 28% yellow perch, 26% flier, and <1% pirate perch. Other species that were not collected in this sample but have

been collected in the past include warmouth, bluespotted sunfish, lake chubsucker, lined topminnow, redfin pickerel, and swamp darter.

Current management for game fish on Suggs Mill Pond are the statewide regulations with no unique regulations imposed. These include a largemouth bass minimum size limit of 14 inches except two that may be less than 14 inches and a creel limit of five fish per day. For sunfish, there is no minimum size limit and the daily creel limit is 30 in combination with no more than 12 redbreast sunfish.

Several fish species found in water of Suggs Mill Pond have consumption advisories because of elevated levels of mercury. Mercury bioaccumulation can be more common in Coastal Plain waters because of the reduced buffering capacity of Coastal Plain soil types. Chain pickerel and yellow perch should not be consumed by women of childbearing age, pregnant women, nursing mothers and children under 15. For all other people, only one meal per week should be consumed. Other species that fall within these advisories that are likely to occur in Suggs Mill Pond water bodies are largemouth bass, bowfin (blackfish), catfish, and warmouth. Sunfish, which include flier, should not be consumed more than two meals per week for women of childbearing age, pregnant women, nursing mothers and children under 15 and no more than four meals per week for all other people.

Horseshoe Lake is also utilized as a water source to inundate five impoundments on Suggs Mill Pond as well as other impoundments on private land adjacent to the property in order to manage for waterfowl during the fall and winter. Fall and winter drawdowns will likely not have negative consequences on the fish assemblage but could become adverse during periods of drought if water levels do not return to normal levels during the spring. Lower water levels in the spring could result in less spawning habitat for some fish species.

Inventory and monitoring needs

Several metrics to monitor the fish assemblages on Suggs Mill Pond would be size distribution of each species to insure successful reproduction, relative weight for game fish to measure overall condition, and the determination of catch-per-unit-of-effort to monitor relative abundance of each species. These are easily attainable and could help guide future regulations.

Management needs

Suggs Mill Pond should continue to be managed under the current regulations as described above. The priority species should be designated as game fish and nongame fish. Since all game fish species that are currently targeted in Suggs Mill Pond waters have some level of consumption advisory associated with them, a sign or kiosk placed by the boat ramp providing this information would be beneficial. Due to the habitat restrictions (i.e., shallow, acidic water with low productivity) utilizing management tools (e.g., stocking or herbicide treatment) to enhance the fishery are likely cost prohibitive.

Although not sampled, other water bodies in and adjacent to the Suggs Mill Pond are likely similar in water quality as Horseshoe Lake and should be managed in a similar fashion.

Little Singletary Lake is the largest body of water on the game land and currently has limited access and an unimproved boat ramp. Improving access to Little Singletary Lake and upgrading the boat ramp would increase accessibility to not only anglers but kayakers, bird watchers, and others interested in activities not related to hunting and fishing. Greater accessibility to all water bodies throughout the gameland will provide not only better fishing opportunities but other opportunities for people to utilize this resource.

Research needs

There are currently no known research needs.

FINANCIAL ASSESTS AND FUTURE NEEDS

The financial assets of Suggs Mill Pond include a variety of assets in the form of infrastructure, personnel, vehicles, and heavy equipment. It should be noted that the large majority of these assets are also used to manage other game lands in the Southern Coastal Ecoregion and some assets, including personnel, are periodically used in other areas of North Carolina where they may be needed by the NCWRC to achieve management objectives in those areas.

Equipment and other asset needs are evaluated annually and operating budgets are allocated annually based on these equipment needs, upcoming projects, the costs of normal operating procedures, and the availability of these funds.

Staffing

The current game land management staff of Suggs Mill Pond includes 3 permanent, full-time technicians and a temporary technician. One of these technicians is the Team Leader and assumes the most responsibility for implementing work duties. Additional staff that assist with management of Suggs Mill Pond includes the Southern Coastal Ecoregion Management Biologist, Southern Coastal Ecoregion Wildlife Forester, and Southern Coastal Ecoregion Technician Supervisor. Overseeing all previously mentioned staff is the Coastal Ecoregion Supervisor that supervises personnel throughout the entire Coastal Region. See Map 14 showing the Southern Coastal Ecoregion work area.

There are currently no needs for additional personnel. However, because the previously mentioned staff also conducts management activities on other game lands and boating access areas within the work area, additional staffing needs will be evaluated if demands for more intensive management increases or additional lands are acquired.

Infrastructure

Suggs Mill Pond includes a wildlife management depot that serves as a headquarters for land management operations. This location includes a large metal building that includes a shop area, offices, restrooms, and room for storage of tools and supplies. Two above-ground 1,000-gallon fuel tanks are on-site that provides the convenient supply of gasoline and diesel fuel for normal operations. It has been determined that this building needs painting as part of preventative maintenance to ensure its longevity.

In compliance with rules for storing hazardous materials, two small storage sheds are on-site for the storage of containerized combustible liquids and herbicides.

Additional buildings include a 6-bay metal building used to house equipment and a building that serves to provide additional offices for two NCWRC private lands biologists. There are

currently plans to add additional open, sheltered structures that would protect equipment from outside elements.

Other infrastructure throughout Suggs Mill Pond includes numerous culverts for drainage, water control structures for the management of water levels in 5 waterfowl impoundments, gates that are used to control access, and two hunting blinds designated for use by disabled sportsman.

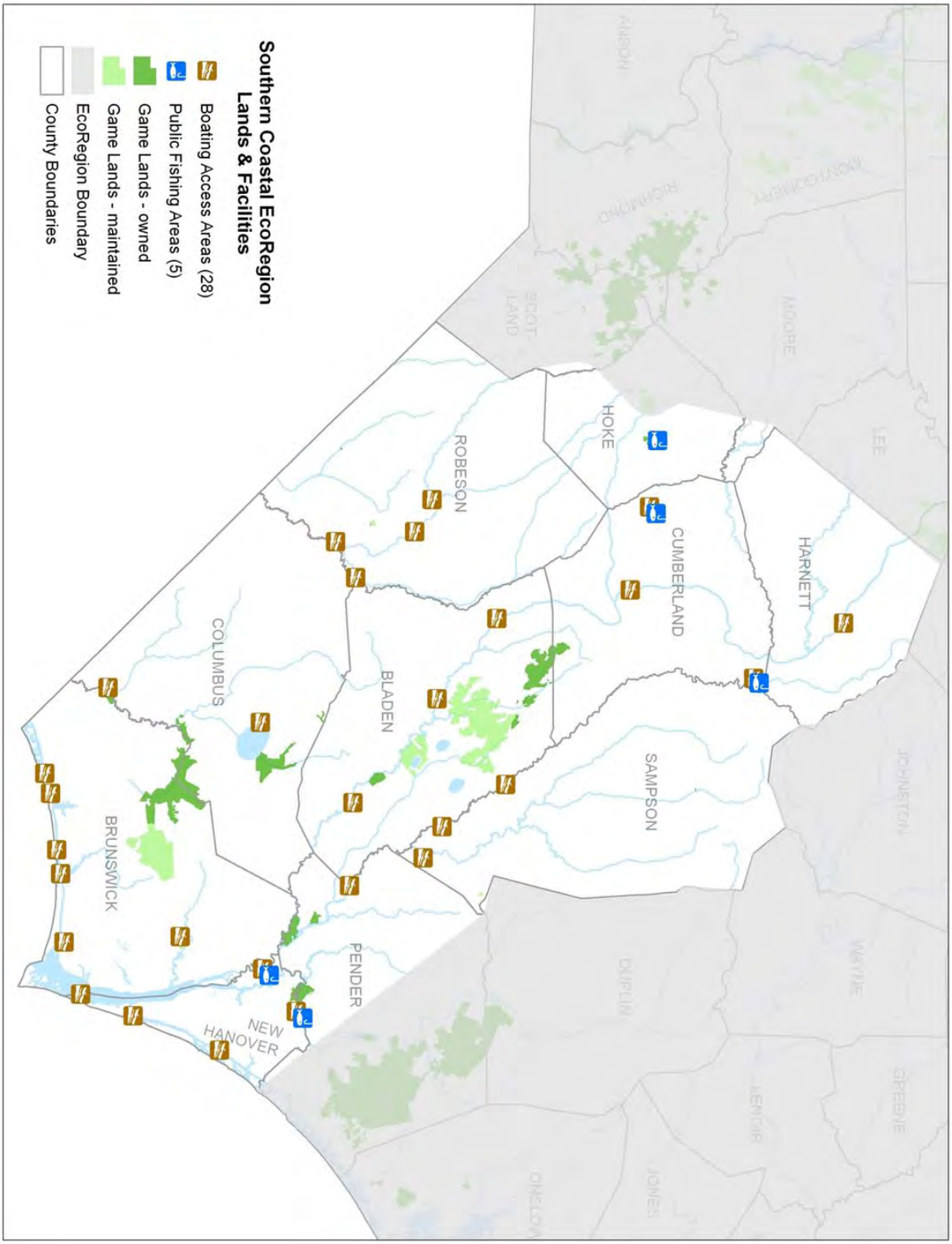
As described in the Infrastructure Section of this Plan, there are major infrastructure upgrades planned over the ten year planning horizon for Suggs Mill Pond.

Heavy equipment and vehicles

There is currently an adequate supply of heavy equipment and vehicles to conduct management activities on Suggs Mill Pond. Heavy equipment includes 3 farm tractors with various implements, 1 backhoe, and 1 bulldozer. Tractor implements include but are not limited to disk harrows, rotary mowers, a no-till grain drill, a 4-row planter, a cultipacker, and box blade. Other equipment includes 2 ATV's, 2 boats, and a canoe.

Personnel at Suggs Mill Pond are currently outfitted with an adequate supply of vehicles. These include 4 pickup trucks, one of which is used for prescribed burning operations and the application of herbicide on roadsides. Additional vehicles include a road tractor and trailer (18-wheeler) and a dump truck.

As previously stated, the replacement or addition of these assets is evaluated annually based off of existing and predicted needs and are acquired if funding is available.



Map 14 – Southern Coastal Ecoregion work area.

ACQUISITION PLAN

The NCWRC's plans for future acquisition will include inholdings, adjacent lands, and critical habitats. Critical habitats that have rare and/or endangered species, provide outstanding ecological benefits, or provide outstanding opportunities for game land users will be given high priority. Special considerations will be given to; lands that provide corridors for the connectivity of key parcels or are critical to enhance the NCWRC's ability to protect rare habitats, the land management needs of a property, and the public access and public uses that a property provides.

Prior to any acquisition, initial land investigations will be conducted by NCWRC staff and evaluations will be submitted by Phase I and II acquisitions forms (see *Appendix X*). Land will only be acquired from willing sellers and/or through donations, and all purchases will be based off of available funding. Furthermore, all potential acquisitions will be evaluated on a case-by-case basis by NCWRC staff.

ENFORCEMENT AND REGULATIONS

Currently there are two Wildlife Enforcement Officers that patrol Suggs Mill Pond Game Land, which is part of their work area. Both are stationed in Bladen County. In addition, there are also two more Wildlife Enforcement Officers and three supervisory staff including a Captain, Lieutenant, and Sergeant which routinely assist with enforcement and enforcement issues pertaining to the game land. Primary enforcement activities on the game land include: aircraft patrols for bait, check points for license and game compliance, foot and boat patrols, remote camera setups on bait and littering sites, nighttime poaching setups and surveillance, and routine road patrols. These activities occur throughout the year across the game land, with the highest frequency of enforcement activities occurring during hunting seasons. Critical times for the Enforcement Division on the game land occur during the first two weeks of dove season, and the deer, waterfowl, and turkey seasons.

As with most game lands, the major enforcement problems on Suggs Mill Pond pertain to littering, regulations violations, dogs running unleashed, license/permit issues, ATV riding, and adjoining landowner issues and conflicts.

The following is a list of regulations specifically related to Suggs Mill Pond:

- Suggs Mill Pond is designated as a permit-only game land
- Suggs Mill Pond is a bear sanctuary and bear hunting is prohibited
- Raccoon hunting is prohibited
- Gun either-sex deer season falls under maximum season regulations
- ATV riding is prohibited except by disabled sportsman with valid permits
- Camping is restricted to September 1 – February 28 and March 31 – May 14
- During scheduled permit hunts, only hunters and trappers with permits may enter the game land, except the public may use Campground Road to access Horseshoe Lake at the dam

PARTNERSHIPS AND COLLABORATIONS

Partnerships and collaborations among various conservation groups, universities, state and federal agencies, non-governmental agencies, non-profit groups, national organizations, clubs, and private citizens have been pivotal to the successful management of Suggs Mill Pond. Newly created and continued partnerships between the NCWRC and these groups will be essential for meeting the goals and needs outlined in this Plan. Below is a list of partners that have assisted with conservation efforts on Suggs Mill Pond.

Ducks Unlimited

> Mission Statement: "*DU conserves, restores and manages wetlands and associated habitats for North America's waterfowl. These habitats also benefit other wildlife and people."*

Delta Waterfowl

> Mission Statement: "*to contribute knowledge, leaders and science-based solutions that efficiently conserve waterfowl and secure the future of waterfowl hunting."*

Quail Unlimited

> Mission Statement: "*Quail Unlimited is a nonprofit conservation organization dedicated to the wise use and management of America's wild quail, doves, upland game birds, and other forms of wildlife."*

North Carolina Clean Water Management Trust Fund

> Mission Statement*: "to clean up pollution in the State's surface waters and to protect, preserve and conserve those waters that are not yet polluted."*

North Carolina Natural Heritage Trust Fund

> Mission Statement: "*to receive and administer gifts, grants, devises and bequests of real and personal property to further conservation, outdoor recreation, historic preservation and waterfront and community revitalization."*

North Carolina Natural Heritage Program

> Mission Statement: "*To provide science and incentives to inform conservation decisions and support conservation of significant natural areas in our state."*

The Nature Conservancy

> Mission Statement: "*To conserve the lands and waters upon which all life depends.*"

National Wild Turkey Federation

Mission Statement: "*Dedicated to the conservation of the wild turkey and the preservation of our hunting heritage."*

North Carolina Forest Service

Mission Statement: "*To protect, manage and promote forest resources for the citizens of North Carolina."*

National Fish and Wildlife Federation

Mission Statement: "*to protect and restore the nation's wildlife and habitats."*

United States Fish and Wildlife Service

Mission Statement: "W*orking with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.*"

North Carolina State University

Mission Statement: "As a research-extensive land-grant university, North Carolina State University is dedicated to excellent teaching, the creation and application of knowledge, and engagement with public and private partners. By uniting our strength in science and technology with a commitment to excellence in a comprehensive range of disciplines, NC State promotes an integrated approach to problem solving that transforms lives and provides leadership for social, economic, and technological development across North Carolina and around the world."

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APPENDIX II – GLOSSARY OF TERMS

Burn compartment – a designated area that can be safely and effectively managed with the application of prescribed fire.

Basal area – a term that defines the total area of a given section of land that is occupied by the cross-section of all trees at a height of 4 ½ feet.

Chronic Wasting Disease – a fatal neurological disease of deer and elk characterized by microscopic empty spaces in the brain matter.

Clearcutting – a forestry practice in which most or all of the trees in an area are uniformly cut down.

Crepuscular – occurring or active during twilight hours.

Cryptic – used in science, groups of species that are very difficult to distinguish from one another.

Juxtaposed – the placement and location of objects side by side.

Lymphoproliferative Disease Virus – a cancer of turkey and chickens caused by a retrovirus.

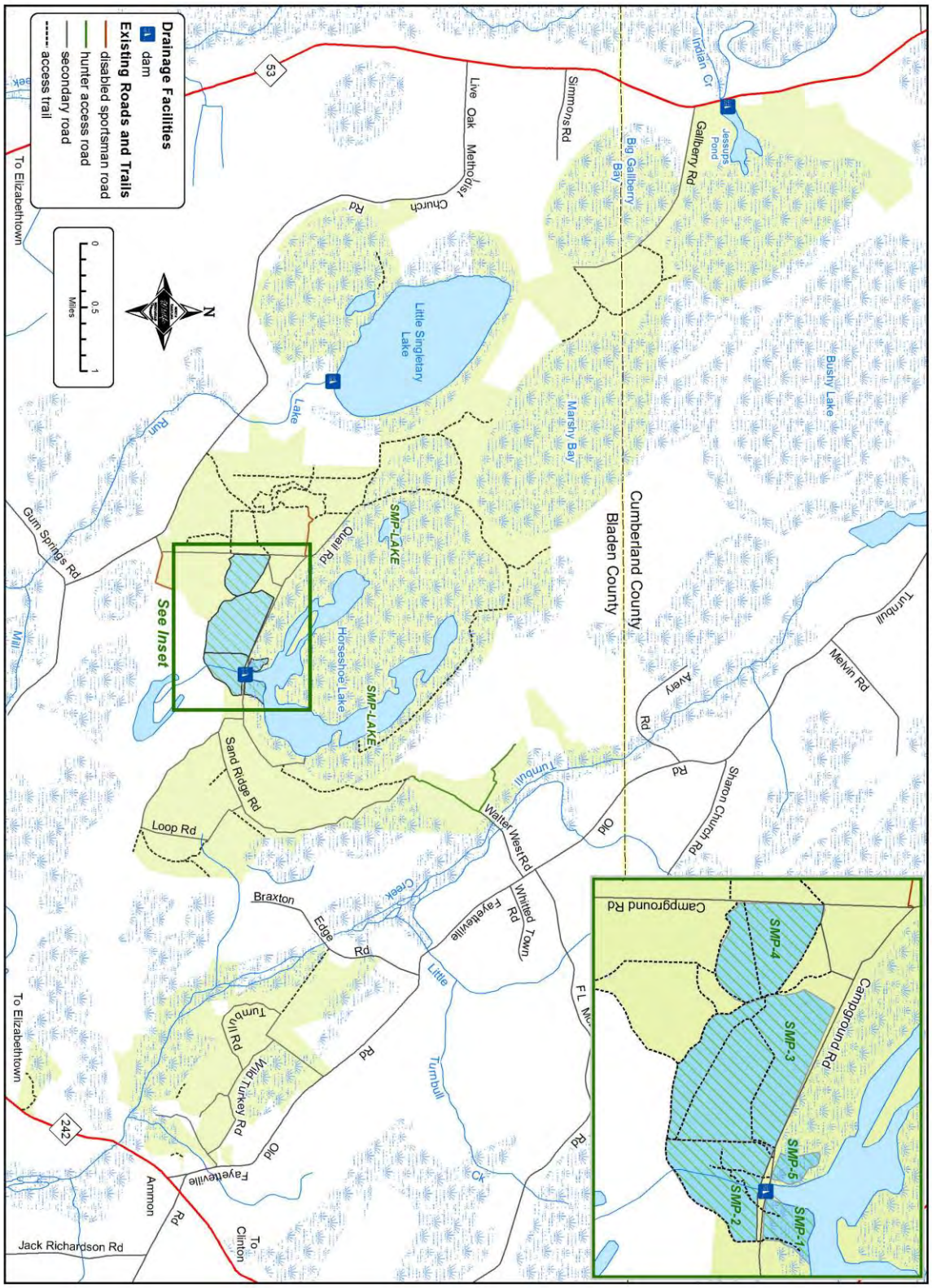
Moist Soil - a technique used in waterfowl habitat management that simulates seasonal wetland hydrology by adding and removing water, most often artificially, in a systematic way to maximize food production for waterfowl and shorebirds.

Selection Harvest – in forestry, the technique of harvesting trees in a way that moves a forest stand towards and uneven-aged or even-aged condition. This technique manages the establishment, continued growth, and final harvest of multiple age classes of trees.

Stocking – a quantitative measure of the area within a forested stand that is occupied by trees.

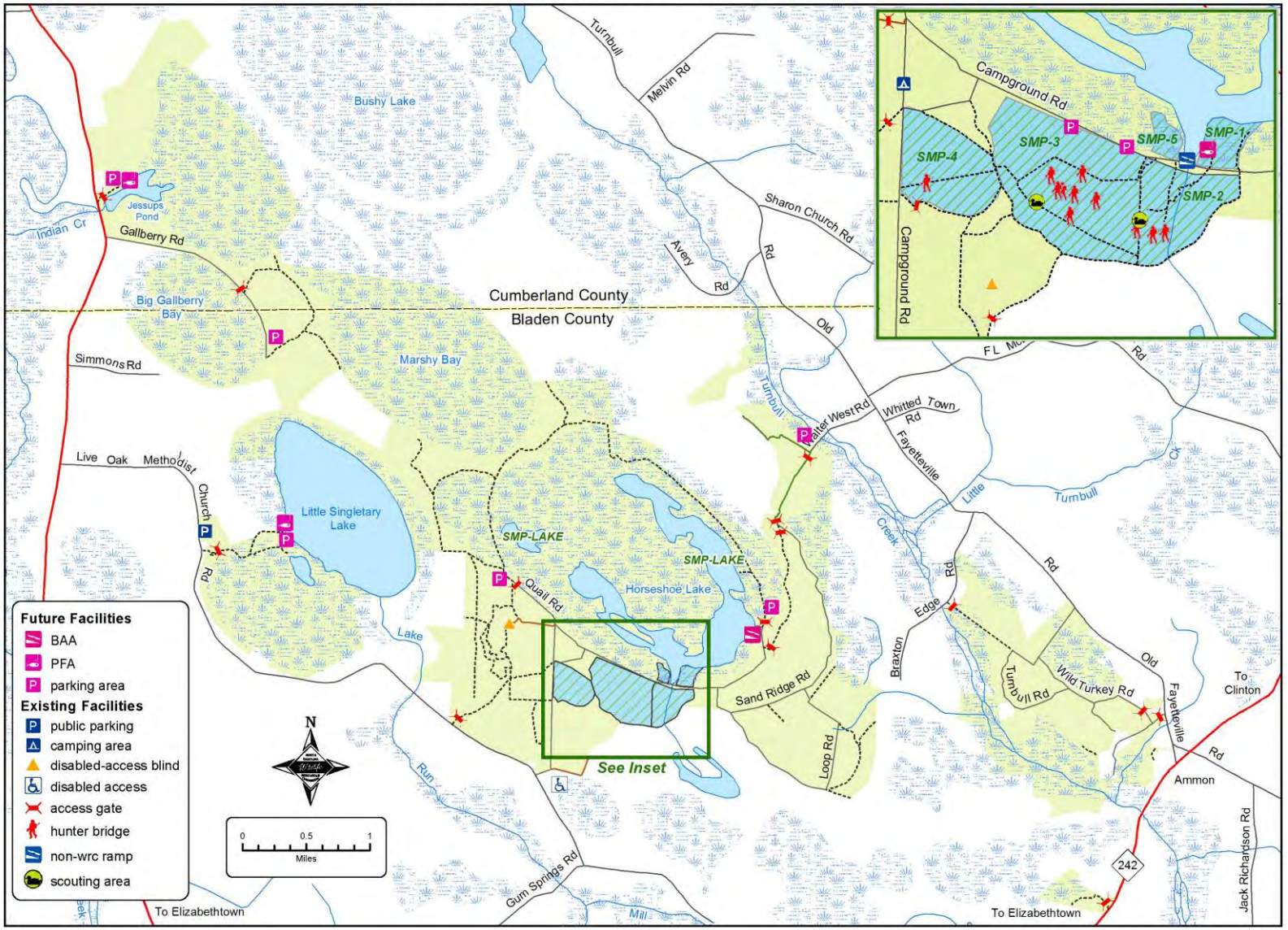
Thinning – a forestry practice in which only a portion of trees in an areas are cut down and removed. This practice is conducted to provide more growing space for the remaining trees and to allow sunlight to reach the forest floor.

APPENDIX III – INFRASTRUCTURE MAPS



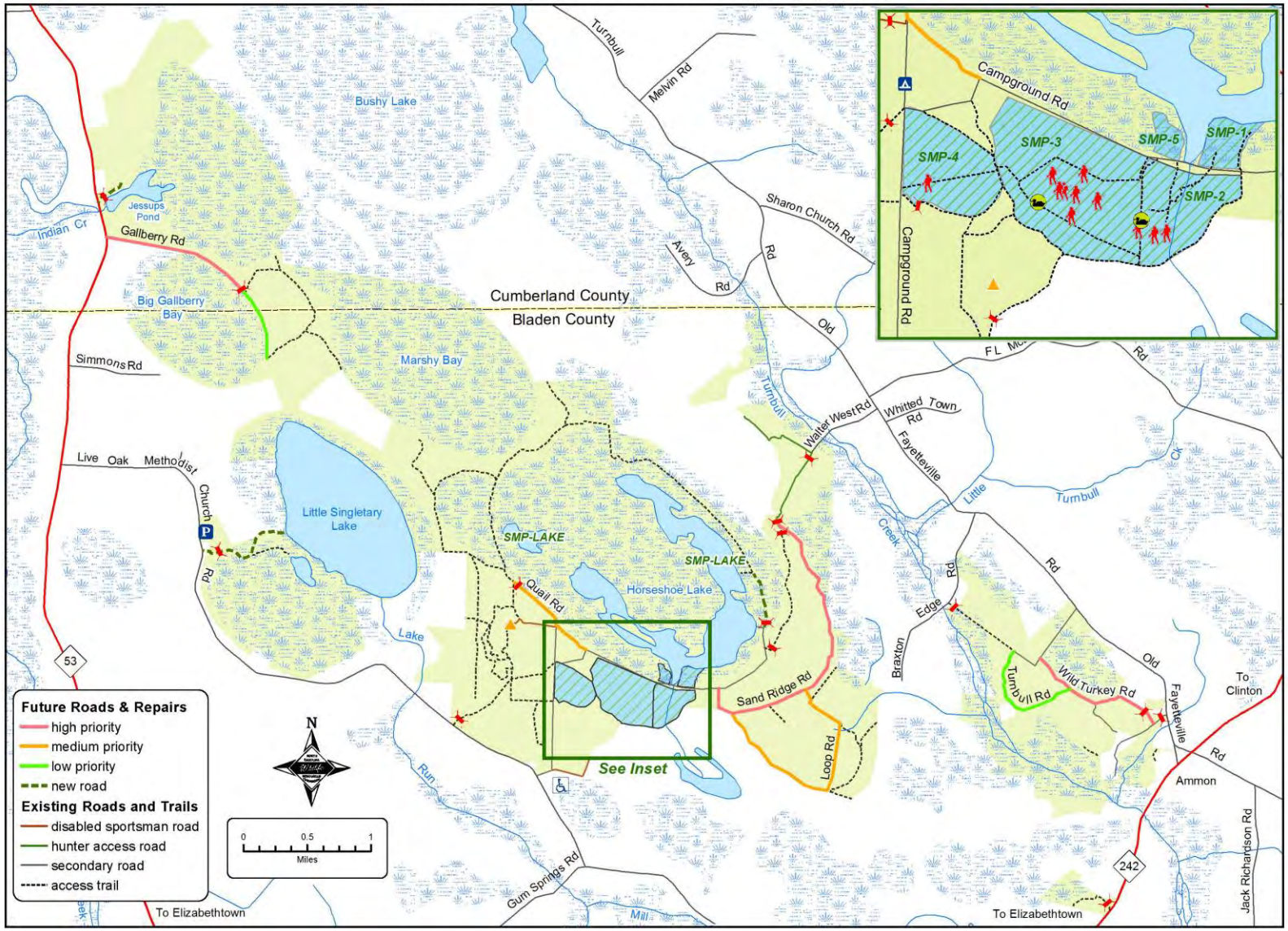
SUGGS MILL GAME LAND - RECREATIONAL FACILITIES

Southern Coast Ecoregion, Bladen and Cumberland Counties (10,838 acres)



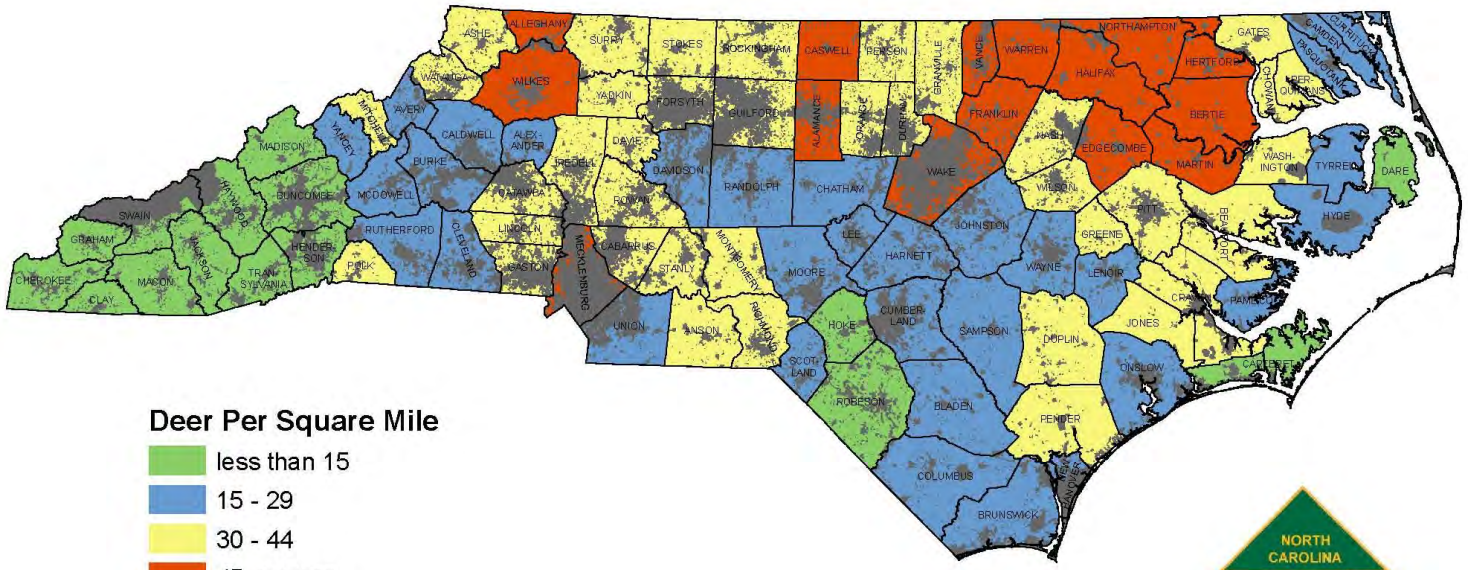
SUGGS MILL GAME LAND - ROAD NETWORK AND FUTURE REPAIRS

Southern Coast Ecoregion, Bladen and Cumberland Counties (10,838 acres)



APPENDIX IV – 2010 STATEWIDE DEER DENSITY MAP

2010 North Carolina White-tailed Deer Density Map



Deer Per Square Mile

- less than 15
- 15 - 29
- 30 - 44
- 45 or more

No Density Estimate

Where harvest data are not available to produce density estimates because hunting is limited or prohibited: includes federal and state parks, municipal boundaries, water bodies, and human density greater than 1 person per 2 acres.

NORTH CAROLINA Wildlife RESOURCES COMMISSION

Division of Wildlife Management

APPENDIX V – WILD TURKEY HUNTER SURVEY

2011-12 «Item_Name» (Item # «Item_Number») Survey

The North Carolina Wildlife Resources Commission requests that you complete this 2-page survey (front/back) and return it using the enclosed postage-paid envelope or submit your response online at www.ncwildlife.org. This survey provides an opportunity for you to let us know about hunting experiences you may or may not have had using the «Item_Name» permit. Your responses are used by the Commission to better manage and improve the quality of permit hunts. **We ask that you respond even if you did not hunt using this permit.**

«CustomerID»
«First_Name» «Middle_Name» «Last_Name» «Suffix»
«Address_1»
«Address_2»
«City», «State» «Zip» «Zip4»

Permit Number: «PermitID»

Submit your response online at www.ncwildlife.org

1. Did you hunt during at least one day using the «Item_Name» permit?

☐ Yes

☐ No **Indicate the reason(s) you did not hunt and return the survey in the postage-paid envelope:**

☑ **all that apply**

- ☐ Not enough turkeys or turkey sign
- ☐ Weather was poor for turkey hunting
- ☐ My hunting partner(s) could not go
- ☐ I had no more turkey tags left or was saving my last turkey tag
- ☐ I hunted somewhere else during the day(s) I had a permit for
- ☐ I could not afford to make the trip(s)
- ☐ Work or family obligations or health problems
- ☐ Other (please specify):

_____

2. Please indicate which hunt(s) listed below you hunted using the permit. List the number of days and total number of hours hunted. (**Check the box if you did not hunt during a particular hunt choice date**)

Hunt Choice and Date	Number of Days Hunted	Total Number of Hours Hunted	Did Not Hunt
«HuntChoice_1»			☐
«HuntChoice_2»			☐

3. Please indicate the number of turkeys you *personally* harvested using the permit during the hunt(s) listed below. (**Check the box if you did not harvest any turkeys during a particular hunt choice date**)

Hunt Choice and Date	Number of Turkeys Harvested		Did Not Harvest any Turkeys
	Beard less than 7 inches	Beard 7 inches or greater	
«HuntChoice_1»			☐
«HuntChoice_2»			☐

CONTINUE ON REVERSE SIDE ➔

Permit Number: «PermitID»

4. Please indicate the number of gobblers you heard using the permit during the hunt(s) listed below. (**Check the box if you did not hunt during a particular hunt choice date**)

Hunt Choice and Date	Number of Gobblers Heard	Did Not Hunt
«HuntChoice_1»		☐
«HuntChoice_2»		☐

5. Overall, how dissatisfied or satisfied were you with your hunt(s) using this permit? (☑ **one**)

Very Dissatisfied ⟷ **Very Satisfied**

1	2	3	4	5
☐	☐	☐	☐	☐

6. Which of the following were important in determining how dissatisfied or satisfied you were with your hunts using this permit? (☑ **all that apply**)

- ☐ Accessibility of hunting area
- ☐ Quality of turkey habitat
- ☐ Number of turkeys seen or heard
- ☐ Whether or not I harvested a turkey(s)
- ☐ Weather
- ☐ Behavior or courtesy of other hunters
- ☐ Other (please specify):_____

7. Do you think the number of other hunters during your hunt(s) using the permit was…. (☑ **one for each hunt choice date listed**)

Hunt Choice and Date	Number of Other Hunters			
	Too Few	Just Enough	Too Many	Did Not Hunt
«HuntChoice_1»	☐	☐	☐	☐
«HuntChoice_2»	☐	☐	☐	☐

8. How far did you travel (one way) for a hunt using the permit? (☑ **one**)

   ☐ 0 to 60 miles

   ☐ 61 to 120 miles

   ☐ 121 to 180 miles

   ☐ More than 180 miles

If you have any questions regarding this survey, please call us at (888) 248-6834. Thank you for your time and support of our wildlife programs.

STAY INFORMED….

Start receiving e-mails regarding permit hunting opportunities, application and survey reminders, draw status information, and N.C. Wildlife Update.

Sign up at www.ncwildlife.org/enews or give us your e-mail address (print neatly): _____

APPENDIX VI – DEER HUNTER SURVEY

2011-12 «Item_Name» Survey - Respond Immediately

The North Carolina Wildlife Resources Commission requests that you complete this 2-page survey (front/back) and return it using the enclosed postage-paid envelope or submit your response online at www.ncwildlife.org. This survey provides an opportunity for you to let us know about hunting experiences you may or may not have had using the «Item_Name» permit. Your responses are used by the Commission to better manage and improve the quality of permit hunts. **We ask that you respond even if you did not hunt using this permit.**

«CustomerID»
«First_Name» «Middle_Name» «Last_Name» «Suffix»
«Address_1»
«Address_2»
«City», «State» «Zip» «Zip4»

Permit Number: «PermitID»

Submit your response online at www.ncwildlife.org

9. Did you hunt during at least one day using the «Item_Name» (Item # «Item_Number») permit?

☐ Yes

☐ No **Indicate the reason(s) you did not hunt and return the survey in the postage-paid envelope:**

☑ **all that apply**

☐ Not enough deer or deer sign
☐ Weather was poor for deer hunting
☐ My hunting partner(s) could not go
☐ I had no more deer tags left or was saving my last deer tag
☐ I hunted somewhere else during the day(s) I had a permit for
☐ I could not afford to make the trip(s)
☐ Work or family obligations or health problems
☐ Other (please specify):

_____

10. What hunting method did you *primarily* use during your hunt(s) using the permit?

☐ Still
☐ Dog

11. Please indicate which hunt(s) listed below you hunted using the permit. List the number of days and total number of hours hunted. (**Check the box if you did not hunt during a particular hunt choice date**)

Hunt Choice and Date	Number of Days Hunted	Total Number of Hours Hunted	Did Not Hunt
«HuntChoice_1»			☐

«HuntChoice_2»			☐
«HuntChoice_3»			☐
«HuntChoice_4»			☐
«HuntChoice_5»			☐

12. Please indicate the number of antlered bucks, does, and button bucks you *personally* harvested using the permit during the hunt(s) listed below. (**Check the box if you did not harvest any deer during a particular hunt choice date**)

Hunt Choice and Date	Number of Deer Harvested			Did Not Harvest Any Deer
	Antlered Bucks	Does	Button Bucks	
«HuntChoice_1»				☐
«HuntChoice_2»				☐
«HuntChoice_3»				☐
«HuntChoice_4»				☐
«HuntChoice_5»				☐

CONTINUE ON REVERSE SIDE ➔

Permit Number: «PermitID»

13. Please indicate the number of deer you saw using the permit during the hunt(s) listed below. (**Check the box if you did not hunt during a particular hunt choice date**)

Hunt Choice and Date	Number of Deer Seen	Did Not Hunt
«HuntChoice_1»		☐
«HuntChoice_2»		☐
«HuntChoice_3»		☐
«HuntChoice_4»		☐
«HuntChoice_5»		☐

14. Overall, how dissatisfied or satisfied were you with your hunt(s) using this permit? (☑ **one**)

Very Dissatisfied ⟷ **Very Satisfied**

1	2	3	4	5
☐	☐	☐	☐	☐

15. Which of the following were important in determining how dissatisfied or satisfied you were with your hunts using this permit? (☑ **all that apply**)

- ☐ Accessibility of hunting area
- ☐ Quality of deer seen
- ☐ Number of deer seen
- ☐ Whether or not I harvested deer
- ☐ Weather
- ☐ Behavior or courtesy of other hunters
- ☐ Other (please specify):_____

8. Do you think the number of other hunters during your hunt(s) using the permit was…. (☑ **one for each hunt choice date listed**)

Hunt Choice and Date	**Number of Other Hunters**			
	Too Few	**Just Enough**	**Too Many**	**Did Not Hunt**
«HuntChoice_1»	☐	☐	☐	☐
«HuntChoice_2»	☐	☐	☐	☐
«HuntChoice_3»	☐	☐	☐	☐
«HuntChoice_4»	☐	☐	☐	☐
«HuntChoice_5»	☐	☐	☐	☐

9. How far did you travel (one way) for a hunt using the permit? (☑ **one)**

- ☐ 0 to 60 miles
- ☐ 61 to 120 miles
- ☐ 121 to 180 miles
- ☐ More than 180 miles

If you have any questions regarding this survey, please call us at (888) 248-6834. Thank you for your time and support of our wildlife programs.

STAY INFORMED….

Start receiving e-mails regarding permit hunting opportunities, application and survey reminders, draw status information, and N.C. Wildlife Update.

Sign up at www.ncwildlife.org/enews or give us your e-mail address (print neatly): _____

APPENDIX VII – WATERFOWL HUNTER SURVEY

2011-12 «Item_Name» (Item # «Item_Number») Survey

The North Carolina Wildlife Resources Commission requests that you complete this 2-page survey (front/back) and return it using the enclosed postage-paid envelope or submit your response online at www.ncwildlife.org. This survey provides an opportunity for you to let us know about hunting experiences you may or may not have had using the «Item_Name» permit. Your responses are used by the Commission to better manage and improve the quality of permit hunts. **We ask that you respond even if you did not hunt using this permit.**

«CustomerID»
«First_Name» «Middle_Name» «Last_Name» «Suffix»
«Address_1»
«City», «State» «Zip» «Zip4»

Permit Number: «PermitID»

Submit your response online at www.ncwildlife.org

16. Did you hunt during at least one day using the «Item_Name» permit?

☐ Yes

☐ No **Indicate the reason(s) you did not hunt and return the survey in the postage-paid envelope:**

☑ **all that apply**

- ☐ Not enough waterfowl
- ☐ Weather was poor for waterfowl hunting
- ☐ Not enough water in impoundment
- ☐ My hunting partner(s) could not go
- ☐ I hunted somewhere else during the day(s) I had a permit for
- ☐ I could not afford to make the trip(s)
- ☐ Work or family obligations or health problems
- ☐ Other (please specify):

_____

17. Please indicate which hunt(s) listed below you hunted using the permit. List the number of days and total number of hours hunted. (**Check the box if you did not hunt during a particular hunt choice date**)

Hunt Choice and Date	Number of Days Hunted	Total Number of Hours Hunted	Did Not Hunt
«HuntChoice_1»			☐
«HuntChoice_2»			☐
«HuntChoice_3»			☐

«HuntChoice_4»			☐
«HuntChoice_5»			☐

18. Please indicate the number of each waterfowl species you *personally* harvested using the permit during the hunt(s) listed below. (**Check the box if you did not harvest any waterfowl during a particular hunt choice date**)

Hunt Choice and Date	Number Harvested						Did Not Harvest Any Waterfowl
	Tundra Swan	Ducks	Mergansers	Coots	Canada Geese	Snow Geese	
«HuntChoice_1»							☐
«HuntChoice_2»							☐
«HuntChoice_3»							☐
«HuntChoice_4»							☐
«HuntChoice_5»							☐

CONTINUE ON REVERSE SIDE ➔

Permit Number: «PermitID»

19. Did you scout any hunt area(s) listed on the permit prior to the hunt date(s)?

☐ Yes

☐ No

5. Using the rating scale shown below, enter one rating in every box for each hunt listed.

Rating Scale: Very Dissatisfied (1) – Very Satisfied (5) / Hunt Choice and Date	Rating						
	Accessibility of hunting area	Satisfaction with number of waterfowl seen	Satisfaction with number of waterfowl harvested	Quality of waterfowl habitat	Weather	Behavior or courtesy of other hunters	Overall hunting experience
Rating Example	***1***	***4***	***2***	***4***	***2***	***3***	***2***
«HuntChoice_1»							
«HuntChoice_2»							
«HuntChoice_3»							
«HuntChoice_4»							
«HuntChoice_5»							

6. Do you think the number of other hunters during your hunt(s) using the permit was…. (☑ **one for each hunt choice date listed**)

Hunt Choice and Date	Number of Other Hunters			
	Too Few	Just Enough	Too Many	Did Not Hunt
«HuntChoice_1»	☐	☐	☐	☐
«HuntChoice_2»	☐	☐	☐	☐

«HuntChoice_3»	☐	☐	☐	☐
«HuntChoice_4»	☐	☐	☐	☐
«HuntChoice_5»	☐	☐	☐	☐

7. How far did you travel (one way) for a hunt using the permit? (☑ **one**)

- ☐ 0 to 60 miles
- ☐ 61 to 120 miles
- ☐ 121 to 180 miles
- ☐ More than 180 miles

If you have any questions regarding this survey, please call us at (888) 248-6834. Thank you for your time and support of our wildlife programs.

STAY INFORMED….

Start receiving e-mails regarding permit hunting opportunities, application and survey reminders, draw status information, and N.C. Wildlife Update.

Sign up at www.ncwildlife.org/enews or give us your e-mail address (print neatly): _____

APPENDIX VIII – NCWRC GEOCACHING POLICY

GEOCACHING POLICY

November 20, 2013

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INTRODUCTION

Geocaching is a real-world, outdoor treasure hunting game using GPS-enabled devices. Participants navigate to a specific set of GPS coordinates and then attempt to find the geocache (container) hidden at that location (http://www.geocaching.com/guide). Individuals who participate are known as geocachers.

OBJECTIVES

- Minimize potential impacts of geocaching on WRC-allocated lands.
- Where appropriate and compatible, support geocaching as a means of providing for additional recreational use of WRC-allocated lands and to increase awareness of WRC and its mission.

APPLICATION

This policy applies to all WRC-allocated lands and those WRC-managed properties where the landowner has ceded authority for the management of recreational uses to WRC. On those lands which WRC manages under cooperative agreements which do not cede authority for management of recreational uses in general, permission to engage in geocaching must be obtained from the landowner of the property in question.

CONSENT

On WRC-allocated lands, and those WRC-managed properties where the landowner has ceded authority for the management of recreational uses to WRC, blanket permission is granted for the placement of geocaches which comply with the provisions of this policy. No special license, permit or fee is required.

DEFINITIONS

Archive - Archiving a cache removes the listing from public view on Geocaching.com.

Cache (Geocache) – A hidden container that includes, at minimum, a logbook for geocachers to sign.

EarthCache - An EarthCache is a special place that people can visit to learn about a unique geoscience feature of our Earth. EarthCache pages include a set of educational notes along with cache coordinates. Visitors to EarthCaches can see how our planet has been shaped by geological processes, how we manage its resources and how scientists gather evidence to learn about the Earth.

Geocachers – Individuals who participate in placing and/or seeking geocaches.

GPS - GPS stands for Global Positioning System. It is a system of satellites that work with a GPS receiver to determine your location on the planet.

Multi-Cache (Offset Cache) - A Multi-Cache ("multiple") involves two or more locations. The final location is a physical container. There are many variations, but most Multi-Caches have a hint to find the second cache, and the second cache has a hint to the third, and so on. An offset cache (where you go to a location and get hints to the actual cache) is considered a Multi-Cache.

Physical Cache – Cache consisting of a sealed container and containing at least a logbook and pen or pencil.

Stash Note - In geocaching, a stash note is a note left in a cache container to explain geocaching to any non-cachers who might stumble across the cache.

Virtual Cache – Cache that exists in the form of a location where no physical object is left.

WRC – Wildlife Resources Commission

GENERAL GUIDELINES

1. WRC will seek to foster a cooperative partnership with the geocaching community to promote the objectives of this policy

2. Geocachers are encouraged to practice principles of Leave no Trace outdoor ethics.

3. The cache owner must assume all responsibility for the accuracy of online content.

4. WRC accepts no responsibility for the security or maintenance of physical caches.

5. Geocachers are encouraged to wear blaze orange in areas where hunting is allowed.

6. All caches must be registered and comply with www.geocaching.com guidelines.

7. Caches may not be used for purposes of advertising, commercial gain, or promotion of political or other social agendas.

8. Acceptable caches include physical caches, virtual caches, multi-caches, and EarthCaches.

CACHE PLACEMENT

8. Caches may not be placed in areas of known archaeological, historical, or ecological significance.

9. Caches may not be placed in locations that present a safety risk to those subsequently attempting to locate the cache. Examples include, but are not limited to caves, rock outcrops, top of ledges, base of overhanging cliffs, elevated positions that require climbing above ground level, blind curves adjacent to roadways, etc.

10 Caches may not be placed within 100 feet of any lake, pond, or waterway.

11. Caches may not be placed in locations where public access is prohibited.

12. Cache placement may not involve alternation of the nature environment, such as digging, cutting, or removal of vegetation from its present location except that dead and down vegetation may be used to help with concealment.

13. Caches may not be placed within or attached to any man-made amenity such as buildings, piers, docks, kiosks, signs, sign posts, or wildlife nest box structures and may not be attached to any other feature by use of nails, screws, bolts, or wire.

14. Caches may not be placed within cavities of any tree.

15 Marks may not be placed on any natural or man-made feature to aid in locating a cache.

16. Caches may not be placed in maintained landscaped areas, wildlife openings, or areas containing agricultural crops, and areas containing blackened tree trucks which indicate frequent application of prescribed fire should be avoided.

CACHE CONTAINERS

17. Containers must be clearly labeled on the exterior as a "geocache", along with the name of the cache as it appears at: http://www.geocaching.com/

18. Containers must include contact information of the cache owner, to include at a minimum a daytime phone number or email address.

19. All cache containers should contain a standard geocache "stash note" explaining the activity to an unintentional finder (see ATTACHMENT).

20. Containers should be waterproof or sealable.

21. Containers may not exceed a volume greater than 1 cubic foot.

22. Clear (see through) containers are preferred.

23. Containers may not consist of PCV or metal pipe.

CACHE CONTENTS

24. Contents must be family friendly and appropriate for all ages.

25. Caches may not contain items that are inappropriate, offensive, dangerous, or illegal. Examples of such items include, but are not limited to firearms, weapons, ammo, alcohol, drugs, explosives, items of an adult nature, etc.

26. Caches may not contain food items.

27. The cache should contain a log book and pen or pencil for finders of the cache to log their visit.

28. Trade items are acceptable, provided such items are in compliance with this policy.

ENFORCEMENT

WRC supports responsible non-traditional use of WRC lands and recognizes the enjoyment and recreational value associated with Geocaching. However, we reserve the right to remove, without prior notice, any cache:

- deemed to be in an inappropriate or potentially unsafe location,
- found to be causing or having the potential to cause undue impact to archaeological, historical, or ecological resources,
- containing inappropriate, offensive, dangerous, or illegal items, or
- determined for any other reason to be in non-compliance with the provisions of this policy.

An immediate attempt will be made to contact the owner of any cache that is removed to provide the owner with an opportunity to retrieve the cache and to alert the owner of the need to archive the cache as quickly as possible.

ATTACHMENT – GEOECACHE STASH NOTE

GEOCACHE SITE – PLEASE READ

Congratulations, you've found it! Intentionally or not!

What is this hidden container sitting here for? What is this thing doing here with all these things in it?

It is part of a worldwide game dedicated to GPS (Global Positioning System) users, called Geocaching. The game basically involves a GPS user hiding "treasure" (this container and its contents) and publishing the exact coordinates so other GPS users can come on a "treasure hunt" to find it. The only rules are: if you take something from the cache, you must leave something for the cache, and you must write about your visit in the logbook. Hopefully, the person that hid this container found a good spot that is not easily found by uninterested parties. Sometimes, a good spot turns out to be a bad spot, though.

IF YOU FOUND THIS CONTAINER BY ACCIDENT:

Great! You are welcome to join us! We ask only that you:

- Please do not move or vandalize the container. The real treasure is just finding the container and sharing your thoughts with everyone else who finds it.
- If you wish, go ahead and take something. But please also leave something of your own for others to find, and write it in the logbook.
- If possible, let us know that you found it, by visiting the web site listed below.

Geocaching is open to everyone with a GPS and a sense of adventure. There are similar sites all over the world. The organization has its home on the Internet. Visit our website if you want to learn more, or have any comments

http://www.geocaching.com

If this container needs to be removed for any reason, please let us know. We apologize, and will be happy to move it.

APPENDIX IX – PUBLIC INPUT MEETING ANNOUNCEMENT

Media Contact: DO YOU WANT TO BE MEDIA CONTACT
PHONE
EMAIL

FOR IMMEDIATE RELEASE

Wildlife Commission Seeks Public Input for Suggs Mill Pond Game Land Planning

DUBLIN, N.C. (DATE GOES HERE) — The N.C. Wildlife Resources Commission is holding a public meeting July 24, at 7 p.m., in Dublin to seek input in developing a management plan for Suggs Mill Pond Game Land. The meeting will be held in the auditorium at Bladen Community College.

Wildlife Commission staff will use public input from the meeting to help guide management and user activities on Suggs Mill Pond Game Land for the next 10 to 15 years. Suggs Mill Pond Game Land is located in Bladen and Cumberland Counties and totals 11,044 acres in size. It's one of four game lands in the CURE Program and is primarily managed for early successional habitat. Some of the most popular game species are deer, turkey, waterfowl, and small game. Suggs Mill Pond Game Land is also a bear sanctuary that serves to protect core areas of habitat that encompass the relatively small home ranges of breeding females.

"We are seeking input from all users of Suggs Mill Pond Game Land and others who are interested in how the property is managed," said Lands Program Manager Isaac Harrold. "This meeting is not just for hunters and anglers. It is for wildlife watchers and photographers, birding groups, hikers, kayakers and others who have interest in Suggs Mill Pond Game Land. Everyone is encouraged to provide input."

Harrold encourages the public to arrive a few minutes early so the meeting can begin promptly.

The Wildlife Commission also is accepting comments and suggestions from people who do not attend the meeting. Submit comments regarding the Suggs Mill Pond Game Land management plan at www.ncwildlife.org. Click on "Comment on Game Land Plans" on the slider bar at bottom of page. Comments also can be e-mailed to gamelandplan@ncwildlife.org. Type "Suggs Mill Pond Plan" on the subject line.

The Wildlife Commission will provide updates on development of the new management plan for the Suggs Mill Pond Game Land on Facebook and Twitter.

About the N.C. Wildlife Resources Commission
Since 1947, the N.C. Wildlife Resources Commission has been dedicated to the conservation and sustainability of the state's fish and wildlife resources through research, scientific management, wise use, and public input. The Commission is the state regulatory agency responsible for the enforcement of fishing, hunting, trapping and boating laws and provides programs and opportunities for wildlife-related educational, recreational and sporting activities. To learn more, visit www.ncwildlife.org.

Get **N.C. Wildlife Update** — news including season dates, bag limits, legislative updates and more — delivered free to your Inbox from the N.C. Wildlife Resources Commission. Go to www.ncwildlife.org/enews.

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APPENDIX X – PHASE I & II LAND INVESTIGATION FORMS

North Carolina Wildlife Resources Commission
Land Acquisition Investigation Form

- INITIAL INVESTIGATION-

WRC Staff Contact:

Date First Presented to WRC:

Tract Name:

Acreage:

County:

Estimated Value:

Property Owner or Representative:

Phone:

Address:

Status: ☐ High Interest ☐ Moderate Interest ☐ Low Interest ☐ No Interest

Grant Potential: ☐ NHTF ☐ CWMTF
☐ OTHER (explain):

Resources Assessment and Biological Benefits (brief):

Additional Comments:

Program Potential: ☐ Game Land
☐ Waterfowl Blind Area ☐ Wildlife Conservation Area ☐ Fishing Access Area
☐ None

Potential Source(s) of Stewardship Funds (indicate federal:state match rates):

Relative Priority Evaluation Score (attach worksheet): ☐

Recommendation: ☐ Pursue Acquisition ☐ Defer ☐ Do not Pursue Acquisition

Map Attached: ☐ Yes ☐ No

WORKSHEET
Relative Priority Evaluation for Conservation Lands

Tract Name _____ Location _____

Criterion	Score (1-5) 5=Excellent 1=Poor
1. Augments existing protected lands by addressing an inholding or adjacent tract, provides key access, buffers or connects existing WRC-managed lands.	_____
2. Represents good hunting, fishing, wildlife viewing, and other resource-based recreational opportunities.	_____
3. No conflicting surrounding land uses.	_____
4. Serves as a wildlife corridor between areas already protected for conservation purposes and provides connectivity to priority Wildlife Action Plan habitats.	_____
5. Augments land conservation efforts on a landscape scale by providing nuclei ("anchors") for regional conservation efforts, corridors, key linkages between conservation areas, or keystone tracts.	_____
6. Fills a need identified by the Wildlife Action Plan, such as critical, rare or unique habitats; natural heritage elements; or significant aquatic/terrestrial resources.	_____
7. Is this an area in which we would like to establish a new game land, wildlife conservation area, or fishing access?	_____
8. Is it large enough to be a new game land, and if not, are there possibilities for expansion (goal 3,000-5,000 minimum)?	_____
9. Is area adequate for fishing access development with suitable parking, and if not, are there possibilities for expansion?	_____

TOTAL SCORE

North Carolina Wildlife Resources Commission
Land Acquisition Investigation Form

-PHASE II: FINAL ACQUISITION DETAILS-

WRC Action/Approval to Pursue (Date):

Acquisition Plan (specify total project cost, each source, and amount of OBLIGATED funds):

Based on Appraisal: ☐ Yes ☐ No

If Yes, Name of Appraiser:

Date of Appraisal:

Appraisal Handled by State Property Office: ☐ Yes ☐ No

Acquisition Plan Includes Bargain Sale: ☐ Yes ☐ No

If Yes, Explain Details:

Source(s) of Stewardship Funds (indicate federal:state match rates):

Five Year Stewardship Costs & Revenue Projection Evaluation (attach worksheet)

Five Year Estimate of Total Stewardship Expenditures:	$:	
Five Year Estimate of Total Projected Revenue:	$:	

Additional Comments:

APPENDIX XI – GAME LANDS USE EVALUATION PROCEDURE

North Carolina Wildlife Resources Commission
Game Lands Use Evaluation Procedure

I. PURPOSE

The North Carolina Wildlife Resources Commission (NCWRC) is the principal advocate for and steward of the wildlife resources of North Carolina and is the primary custodian of numerous tracts of state-owned lands in the Game Lands Program. As the human population of North Carolina continues to grow at a rapid rate, state-owned Game Lands will be subject to increasing pressure to provide public outdoor recreation opportunities. These uses will include traditional activities such as hunting, fishing, trapping, and wildlife viewing, as well as other outdoor recreation pursuits. While hunting, fishing, trapping and wildlife viewing are the primary public uses of state-owned Game Lands, the NCWRC has always allowed and supported other dispersed and non-developed recreational activities. The funding sources of the NCWRC, however, are focused on natural resources management rather than recreational development and there is no on-site staff stationed at each Game Land. Because of this, the NCWRC must exercise care in providing for recreational activities that may not be compatible with the natural resources for which the lands are valued and the primary management objectives of those lands. This document will establish a process to evaluate such activities as they are considered by NCWRC staff, or are requested by the public, on state-owned Game Lands where NCWRC is the primary custodian. These activities will first be evaluated to determine if they are "appropriate" and second to determine whether they are "compatible" with respect to the following management objectives of the Game Lands program:

1. To provide, protect, and actively manage habitats and habitat conditions to benefit aquatic and terrestrial wildlife resources,
2. To provide public opportunities for hunting, fishing, trapping, and wildlife viewing,
3. To provide for other resource-based game land uses to the extent that such uses are compatible with the conservation of natural resources and can be employed without displacing primary users,
4. To provide an optimally sustainable yield of forest products where feasible and appropriate and as directed by wildlife management objectives.

This document provides a statewide framework for determining appropriate uses of NCWRC-owned or controlled Game Land properties (NCWRC Game Lands). In addition, it provides the procedure for determining if appropriate uses are compatible on a particular property.

II. ENABLING LEGISLATION

Statement of Purpose NCGS § 143-239. The purpose of this article is to create a separate State agency to be known as the North Carolina Wildlife Resources Commission, the function, purpose, and duty of which shall be to manage, restore, develop, cultivate, conserve, protect, and regulate the wildlife resources of the State of North Carolina, and to administer the laws relating to game, game and freshwater fishes, and other wildlife enacted by the General Assembly to the end that there may be provided a sound, constructive, comprehensive, continuing, and economical game, game fish, and wildlife program directed by qualified, competent, and representative citizens, who shall have knowledge of or training in the protection, restoration, proper use and management of wildlife resources. (1947, c. 263, s. 3; 1965, c. 957, s. 13)

III. APPLICATION OF PROCEDURE

This procedure must be considered within the context of the Game Lands Program Mission Statement (GLPMS):

> "Consistent with the original establishment legislation for the WRC, the mission of the game lands program is to enhance, facilitate, and augment delivery of comprehensive and sound wildlife conservation programs. Inherent in delivery of a lands program consistent with this mission is the feasibility and desirability of multiple uses on lands owned by the state within the system. In addition to hunting, fishing, trapping, and wildlife viewing as primary uses, we recognize the desirability of providing opportunities for other activities on state-owned game lands that are feasible and consistent with the agency's mission, and compatible with these traditional uses." (*From motion made December 5, 2007 by Doug Parsons, Chairman, WRC Use and Lands Committee and unanimously approved).*

This procedure applies to all proposed and existing recreational uses of NCWRC Game Lands. It does not apply to the following circumstances:

A. **Situations where reserved rights or legal mandates provide that certain uses must, or must not, be allowed**. For example, there may be prescriptive purposes or other uses that are specifically required or not allowed in the deed or grant that conveyed the property to the state.

B. **Property management activities**. Property management activities are specified in Federal Assistance Work Plans for lands NCWRC purchases or manages with federal assistance, and are updated every five years. These plans specify wildlife, fish, and forest management activities that are not subject to this procedure when conducted by NCWRC staff or an approved cooperator.

C. **Emergencies**. The Director (or a designee) may temporarily suspend, allow or initiate any use of a property if it is determined necessary to immediately act in order to protect the health and safety of the public or any plant, fish or wildlife population.

D. **Specialized uses**. There are many uses (most of them non-recreational) that require specific authorization from NCWRC in the form of a special use permit, letter of authorization or other permit document. Some of the specialized uses that may be considered include scientific research or collections, educational pursuits, field trial use, use of buildings or other facilities, rights-of-way and other encroachments, telecommunications facilities, military, national defense uses, and public safety training. Requests for specialized uses are covered by other NCWRC policies, procedures, or rule, and are subject to separate review procedures. (*See NC Administrative Code, Title 15A,*

Chapter 10, Subchapter 10D - Game Land Regulations, Rule .0102; General Statutes 113-264).

E. **Other NCWRC properties.** The NCWRC owns and/or manages lands outside of the Game Land program (e.g., boat ramps and Wildlife Conservation Areas). The use and

management of those properties are covered by other NCWRC policies, procedures, or rule and are subject to separate review procedures. (*See NC Administrative Code, Title 15A Chapter 10, Subchapter 10E - Fishing and Boating Access Areas, Rule .0104; NC Administrative Code, Title 15A Chapter 10, Subchapter 10J - Wildlife Conservation Area Regulations, Rule .0102; General Statues 113-264*).

If a proposed use falls under one of the above five circumstances, it is exempt from review under this procedure. Any other Game Land use requests, whether originating from the public or from NCWRC staff, must be reviewed under this procedure and with consideration of the following guidance:

- **Natural resources-dependent recreational uses** (see definitions below), when compatible with each other, should be considered the priority general public uses of Game Land properties.
- **Other general public uses** that are not natural resources-dependent recreational uses as described herein, and do not contribute to the fulfillment of property purposes or goals or objectives, as described in the GLPMS, are lower priorities for consideration. These uses may conflict with priority general public uses, and may divert property management resources away from priority general public uses or from the responsibility of the NCWRC to protect and manage fish, wildlife, plants and their habitats. Therefore, procedure and practice have a general presumption against allowing such uses on Game Land properties. Regardless of how often they occur or how long they last, appropriateness and compatibility determinations for each use request must be made, as defined in Section V and VI of this procedure.

IV. DEFINITIONS

A. **Natural resources-dependent recreational use** is a use of a property involving: (1) hunting; (2) fishing; (3) trapping; (4) wildlife or other natural resource observation/ education.

B. **Property managers** are the officials employed by NCWRC who direct the management of a property, or the authorized representatives of such officials.

C. **Professional judgment** is a finding, determination or decision that is consistent with the principles of fish and wildlife management and administration, and that makes use of all available science and resources.

V. DETERMINING APPROPRIATE USE

A property use is appropriate if it meets Criterion A ***or*** if it meets all of Criteria B – F (and G, when applicable).

A. It is a natural resources-dependent recreational use of a property. These are: (1) hunting; (2) fishing; (3) trapping; (4) wildlife or other natural resource observation/education.

B. The NCWRC has jurisdiction over the use and, therefore, authority to allow or not allow the use.

C. The use complies with all laws and regulations (federal, state and local).
D. The use is consistent with NCWRC policies and objectives.

E. The use is consistent with public safety. *If the use creates an unreasonable level of risk to visitors or NCWRC staff, or if the use requires NCWRC staff to take unusual safety precautions to assure the safety of the public or other NCWRC staff, the use is not appropriate*.

F. Proceeds of revenue generating uses, by for-profit entities, will be provided to the NCWRC.

G. The use was evaluated under previous administrative review, was deemed inappropriate, and conditions have changed that would now make the use appropriate.

Property managers and other NCWRC staff shall consider the above criteria and complete Exhibit 1 (appended to this document) for each use subjected to the appropriateness test. The findings shall be forwarded to Regional Supervisors and through the chain of supervision to the Director (or a designee) for concurrence. This will serve to promote consistency in determining appropriate uses of NCWRC Game Lands.

VI. DETERMINING COMPATIBILITY

Uses that are determined to be appropriate for Game Land properties will then be evaluated for compatibility to determine if the use will be allowed, and under what conditions the use will be allowed on a specified property. Property managers are required to exercise professional judgment in making these determinations. Compatibility determinations are inherently complex and require the property manager to use field experience and knowledge of land management and of the property's resources, particularly its biological resources. When a property manager is exercising professional judgment, the property manager will use available information that may include consulting with others inside and/or outside the NCWRC. At a minimum, the property manager should consider the following questions.

A. Can the use be accommodated without substantially interfering with or detracting from the fulfillment of Game Lands program management objectives (see page 1, section I)?

B. Is the use compatible with the physical and natural resource characteristics of the property (e.g., topography, soils, plant communities, endangered species concerns)? *The use is generally incompatible if it has a high probability of causing erosion, or sedimentation, or disturbance of plant or animal resources.*

C. Is the use compatible with Natural Heritage Articles of Dedication, Clean Water Management Trust Fund (CWMTF) designations, and/or any deed restrictions or other legal limitations placed upon the property, including those specified for land purchased with Pittman-Robertson Wildlife Restoration Act funds?

D. Is there infrastructure present on the property to support the requested use (e.g., graveled

roads, parking areas, facilities)?

E. Is the requested activity not adequately provided for on other nearby public lands? *If a proposed use is available on other nearby lands, the NCWRC may not feel as strong an obligation to consider that use on Game Lands. Even if a use is not adequately provided for on other nearby public lands, the NCWRC still may not feel such an obligation, but should consider the unique nature of the request.*

F. Will the use necessitate facility, infrastructure development or maintenance and is this use manageable within available budget and staff? *If a proposed use diverts management efforts away from the proper and reasonable management of a property or natural resources-dependent recreational use, the use is generally incompatible.*

G. Will the use be manageable in the future within existing resources? *If the use would lead to recurring requests for the same or similar activities that will be difficult to manage in the future, then the use is generally incompatible. If the use can be managed so that impacts to natural and cultural resources are minimal or inconsequential, or if clearly defined limits can be established, then the use may be compatible.*

H. Is the requesting entity capable of providing any funding, labor, or materials for the development of, and maintenance support for, the activity, if applicable (e.g., trail or road maintenance, rehabilitation to areas that may be damaged by the activity)?

I. If a use is not compatible as initially proposed, can it be made compatible by implementing stipulations that avoid or minimize potential adverse impacts?

Property managers shall consider the above questions, and any other information or issues deemed necessary to make a determination based on professional judgment, and complete Exhibit 2 (appended to this document) for each property use subjected to a compatibility determination. The findings shall be forwarded to the Regional Supervisor and through the chain of supervision to the Director (or a designee) for concurrence. This will serve to promote consistency in determining compatible uses of NCWRC Game Lands.

VII. EVALUATION

The Director (or a designee) shall consider each request and the derived appropriateness and compatibility, and then make a determination as to whether the request will be approved or denied. The Director will forward use requests deemed significant in scope to the Commission's Use and Lands Committee, such as those involving: a) rule change, b) revenue generation, c) expenditure of NCWRC funds, or d) substantial alteration to infrastructure or natural resources.

All approved uses will be evaluated periodically by NCWRC field staff to determine whether such activities remain appropriate and compatible. All efforts will be made by field staff to inform participants of approved uses that issues of incompatibility will be grounds for immediate termination of the approved activity.

This is a living document that may be modified and updated as needed.

EXHIBIT 1
APPROPRIATE USE DETERMINATION

Property Name: _____

Requested or Considered Use: _____ _____ DECISION CRITERIA *(refer to section V)*	YES	NO
A. Is the use a natural resource-dependent recreational use of a property?		
If 'NO' above, then consider the following criteria.		
B. Does the NCWRC have jurisdiction over the use?		
C. Does the use comply with laws and regulations (federal, state or local)?		
D. Is the use consistent with NCWRC policies and objectives?		
E. Is the use consistent with public safety?		
(i). Is the requesting entity a non-profit? (ii). If NO to F(i), will any proceeds of the use be provided to the NCWRC? (*Describe for-profit entity and supply information on proceeds to be provided to the NCWRC in the Comments section below*)		
. If the use was evaluated under previous administrative review and deemed inappropriate, have circumstances changed that would now make the use appropriate? (*leave blank if not applicable*)		

APPENDIX XII – FISH CONSUMPTIVE ADVISORY

FISH CONSUMPTION ADVISORIES

Elevated levels of some pollutants may be found in certain fish caught by the public or sold commercially in the United States. For more information, contact N.C. Dept. of Health and Human Services at 919-707-5900 or see epi.publichealth.nc.gov and click on "Fish Consumption Advisories." The following table lists the current fish consumption advisories for North Carolina inland fishing waters:

Body of Water	*Advisory*	*Pollutant*
Statewide	**Largemouth bass.** No consumption by women of childbearing age, pregnant women, nursing mothers and children under 15. No more than one meal per week for all other people.	Mercury
Statewide	**Bluegill sunfish and trout.** No more than two meals per week for women of childbearing age, pregnant women, nursing mothers and children under 15. No more than four meals per week for all other people.	Mercury
South and east of Interstate 85	**Blackfish (bowfin), Catfish (caught wild), Jack fish (chain pickerel), Warmouth, and Yellow perch.** No consumption by women of childbearing age, pregnant women, nursing mothers and children under 15. No more than one meal per week for all other people.	Mercury
South and east of Interstate 95	**Black crappie.** No consumption by women of childbearing age, pregnant women, nursing mothers and children under 15. No more than one meal per week for all other people.	Mercury
Albemarle Sound from Bull Bay to Harvey Point west to the mouths of the Roanoke and Chowan rivers (Currituck, Camden, Pasquotank, Perquimans, Chowan, Bertie, Washington and Tyrrell counties)	**Carp and catfish.** No consumption by women of childbearing age or children. No more than one meal per month for all other people.	Dioxins
Roanoke River from U.S. Hwy. 17 bridge near Williamston to the mouth of Albemarle Sound (Martin, Bertie and Washington counties)	**Carp and catfish.** No consumption by women of childbearing age or children. No more than one meal per month for all other people.	Dioxins
Welch Creek (Martin, Beaufort and Washington counties)	**Carp and catfish.** No consumption by women of childbearing age or children. No more than one meal per month for all other people.	Dioxins
Brier Creek Reservoir (Wake County), **Brier Creek** –downstream of Brier Creek Reservoir, and **Little Brier Creek** and tributaries downstream of Brier Creek Parkway	**All fish.** No consumption.	PCBs
Lake Crabtree (Wake County)	**Carp and catfish.** No consumption. **All other fish.** No more than one meal per month.	PCBs
Crabtree Creek (Wake County) above and below Lake Crabtree to Neuse River	**Carp, catfish and largemouth bass.** No more than one meal per month.	PCBs
Neuse River (Wake County) downstream of Crabtree Creek to Auburn-Knightdale Road	**Carp and catfish.** No more than one meal per month.	PCBs
Walnut Creek (Wake County) and **Rocky Branch** tributary just upstream of confluence with Neuse River	**Carp and catfish.** No more than one meal per month. **All other fish.** No more than one meal per week.	PCBs
Santeetlah Lake (Graham County) and **Fontana Lake** (Graham and Swain counties)	**Walleye.** No consumption by women of childbearing age, pregnant women or children under 15. No more than one meal per week for all other people.	Mercury
Badin Lake (Stanly and Montgomery counties)	**Catfish and largemouth bass.** No consumption by women of childbearing age, pregnant women or children under 15. No more than one meal per week for all other people.	PCBs Mercury
Lake Gaston (Warren, Halifax, and Northampton counties)	**Walleye and largemouth bass.** No consumption by women of childbearing age, pregnant women or children under 15. No more than one to two meals per month for all other people.	Mercury
Mountain Island Reservoir (Gaston and Mecklenburg counties)	**Channel catfish.** No consumption.	PCBs
Mountain Island Reservoir (Gaston and Mecklenburg counties)	**Largemouth bass.** No consumption by women of childbearing age, pregnant women, nursing women or children under 15. No more than two meals per month for all other people.	PCBs Mercury
Mountain Island Reservoir (Gaston and Mecklenburg counties)	**Blue catfish.** No consumption by women of childbearing age, pregnant women, nursing women or children under 15. No more than one meal per month for all other people.	PCBs Mercury
Lake Wylie (Gaston and Mecklenburg counties)	**Largemouth bass.** No consumption by women of childbearing age, pregnant women, nursing women or children under 15. No more than two meals per month for all other people.	PCBs Mercury
Lake Chatuge (Clay County)	**White bass and largemouth bass.** No consumption by women of childbearing age or children under 15. No more than one meal per week for all other people.	Mercury
Lake Nantahala (Macon County)	**Smallmouth bass, walleye, yellow perch, and largemouth bass.** No consumption by women of childbearing age or children under 15. No more than one meal per week for all other people.	Mercury
Lake Norman (Catawba, Iredell, Lincoln and Mecklenburg counties)	**Striped bass.** No consumption by women of childbearing age, pregnant women, nursing women or children under 15. No more than one meal per week for all other people.	PCBs
Lake Norman (Catawba, Iredell, Lincoln and Mecklenburg counties)	**Largemouth bass.** No consumption by women of childbearing age, pregnant women, nursing women or children under 15. No more than two meals per month for all other people.	PCBs Mercury
Falls Reservoir (Montgomery and Stanly counties), **High Rock Lake** (Davidson and Rowan counties), and **Lake Tillery** (Montgomery and Stanly counties)	**Catfish.** No consumption by women of childbearing age, pregnant women, nursing women or children under 15. No more than one meal per week for all other people.	PCBs Mercury

APPENDIX XIII – ARCHEOLOGICAL RESOURCES PROTECTION ACT

Archaeological Resources Protection Act North Carolina General Statutes Chapter 70, Article 2

This statute applies to all state-owned, occupied or controlled property except for highway rights-of-way.

The purpose of the statute is to provide for the protection of archaeological resources on state lands. Major provisions of the law are as follows:

1. Archaeological resources are defined as any material remains of past human life or activities which are at least 50 years old and which are of archaeological interest, including pieces of pottery, basketry, bottles, weapons, weapon projectiles, tools, structures or portions of structures, rock paintings, rock carvings, intaglios, graves or human skeletal materials.
2. Permits are required in order to conduct archaeological investigations on state lands.
3. (The 1991 amendment to ARPA, effective July 1, 1991, transferred to the Department of Cultural Resources--from Department of Administration--the authority to issue permits under G.S. 70, Article 2.)
4. Information on archaeological site locations is exempted from unrestricted public access may result in damage to or destruction of the archaeological resources
5. All archaeological resources, equipment and vehicles utilized in conjunction with violation of the law are subject to forfeiture.

Prohibitions and penalties under the law are as follows:

1. No person may excavate, remove, damage or otherwise alter or deface any archaeological resource located on state lands without a permit.
2. No person may sell, purchase, exchange, transport, receive or offer to sell, purchase, exchange, transport or receive any archaeological resource excavated or removed from state lands in violation of the law.
3. Any person who knowingly and willfully violates or employs any other person to violate any prohibition of the law, shall upon conviction, be fined not more than $2,000 or imprisoned not more than six months, or both.
4. Each day on which a violation occurs shall be a separate and distinct offense.
5. Civil penalties may also be assessed against any person who violates the provisions of the act.

APPENDIX XIV – DEEDS

BK4892PG0114

Book 0410 Page 0861

Prepared by H. Clifton Hester, Attorney
STATE OF NORTH CAROLINA
COUNTY OF BLADEN

FILED
BLADEN COUNTY NC
07/02/98 3:12 PM
AVA H. EDWARDS
Register Of Deeds
By: _____ Dep./Asst

RECEIVED
7-2-1998 PM 4:29

GEORGE E. TATUM
REGISTER OF DEEDS
CUMBERLAND CO., N.C.

WARRANTY DEED

THIS DEED, made the 17th day of June, 1998, by and between Canal Industries, Inc., party of the first part;

to The State of North Carolina, party of the second part;

* WITNESSETH *

THAT said Grantor, for a valuable consideration paid by the Grantee, the receipt of which is hereby acknowledge, has and by these presents does grant, bargain, sell and convey unto the Grantee in fee simple, all that certain lot or parcel of land situated in the City of White Oak, Turn Bull Township, Bladen County, North Carolina and more particulary described as follows:

As more fully described in Exhibit "A" attached hereto, and incorporated herein by reference.

TO HAVE AND TO HOLD the aforesaid tract or parcel of land and all privileges and appurtenances thereunto belonging to the grantee in fee simple.

AND the Grantor covenants with the Grantee, that Grantor is seized of said premises in fee simple; that the same are free and clear from any and all encumbrances, and that Grantor will warrant and defend the title to the same against the lawful claims of all persons whomsoever.

IN TESTIMONY WHEREOF, the said Grantor has hereto set his hand and seal, or if corporate name by its duly authorized offers and its seal to be hereunto affixed by authority of its Board of Directors, the day and year first above written.

BLADEN COUNTY NC 07/02/98
$7334.00
STATE OF NORTH CAROLINA Real Estate Excise Tax

CANAL INDUSTRIES, INC.

Sidney Zuttel
Vice PRESIDENT

Attest

Sharon C. Smith
Secretary (Corporate Seal)

RECEIVED 7-2-98 MR

BK4892PG0115

Book 0410 Page 0862

STATE OF NORTH CAROLINA
COUNTY OF Bladen

I, Josie M. Carroll, a Notary Public, do hereby certify that Sharon C. Smith personally appeared before me this day and acknowledged that she is _____ Secretary of Canal Industries, Inc., a North Carolina corporation, and that by authority duly given and as the act of the corporation, the foregoing instrument was signed in its name by its President, sealed with its corporate seal and attested by her as its _____, Secretary.

Witness my hand and notarial seal, this the 22nd day of June, 1998.

Josie M. Carroll
NOTARY PUBLIC

My Commission Expires:
9-10-2000

STATE OF NORTH CAROLINA
COUNTY OF BLADEN

The foregoing certificate of Josie M. Carroll N.P. of N.C., is certified to be correct. This instrument and this certificate was presented for registration and duly registered this 2nd day of July, 1998, at 3:12 o'clock P.M. and duly recorded in the office of the Register of Deeds of Bladen County, North Carolina, in Book 410, at Page 861.

Iva H. Edwards
BLADEN COUNTY REGISTER OF DEEDS

BY: Charity C. Lewis, asst.
Register of Deeds

JL 2 1998

Certificate(s) of Josie M. Carroll

be correct. This instrument and this certificate are duly registered at the date and time and in the Book and Page shown on the

GEORGE E. TATUM REGISTER OF DEEDS FOR CUMBERLAND COUNTY.
Eula H. Gore Deputy/Assistant - Register of Deeds NO REVENUE

EXHIBIT "A"

Deed from Canal Industries, Inc. to the State of North Carolina

DESCRIPTION OF SUBJECT PROPERTY:

PARCEL ONE: Known as the Albert Tatum heirs property, containing 127.9 acres more or less as more fully described in two deeds:

i) dated the 21st day of December 1978 from Thelma S. Melvin, et. al. to Canal Industries, Inc. which deed is recorded in Book 232, page 629 of the Bladen County Registry; and,

ii) dated the 29th day of March 1977 from Katherine Melvin Ratley et. al., to Canal Industries, Inc. which deed is recorded in Book 221, page 180 of the Bladen County Registry, to which reference is made.

PARCEL TWO: Known as the Thomas Coble property, containing 21.39 acres more or less as more fully described in a deed dated the 23rd day of May 1983 from Thomas G. Coble and wife Frances W. Coble to Canal Industries, Inc. which deed is recorded in Book 260, page 791 of the Bladen County Registry, to which reference is made.

PARCEL THREE: Known as the Greene Brothers Lumber Company property, containing 250.4 acres more or less as more fully described in a deed dated the 7th day of September 1988 from Greene Brothers Lumber Company to Canal Industries, Inc. which deed is recorded in Book 293, page 246 of the Bladen County Registry, to which reference is made.

PARCEL FOUR: Known as the William J. Wiggs property, containing 72.38 acres more or less as more fully described in a deed dated the 29th day of June 1981 from William J. Wiggs to Canal Industries, Inc. which deed is recorded in Book 249, page 618 of the Bladen County Registry, to which reference is made. See also plat recorded in Map Cabinet A-13, page 123.

PARCEL FIVE: The southwest portion of the tract known as the Motsinger property, as more fully described in a deed dated the 1st day of July 1980 from The Gibson-Wall Company to Canal Industries, Inc. which deed is recorded in Book 244, page 056 of the Bladen County Registry, to which reference is made. The portion conveyed herein is that portion lying south and west of the centerline of S.R. 1002, containing 65.55 acres, more or less, as shown on a plat of survey by Lewis Paschal, R.S. dated January 1979, to which reference is made. A particular metes and bounds description of the property is as follows:

BEGINNING at a nail in the center line of SR 1002, said point being the eastern most corner of the Maude M. Martin tract conveyed to Canal Industries, Inc. and running thence with the center line of SR 1002 South 34 degrees 29 minutes east 549.8 feet to a nail in the said center line; thence south 38 degrees 45 minutes east 242.7 feet to a nail in the center line of said road, also a point in the line of Flossie Coble thence south 41 degrees 12 minutes West 214.2 feet to a concrete monument; thence south 49 degrees 57 minutes east 1125 feet to a concrete monument thence South 55 degree 23 minutes West 1312.0 feet to a concrete monument in the Canal Industries Inc, " Park - Edge" Tract; thence with said tract North 49 degrees 41 minutes West 158.1 feet to a concrete monument; thence South 55 degrees 38 minutes West 1027.4 feet to a concrete monument in the Canal Industries J.S. Melvin Tract; thence with said tract North 29 degrees 20 minutes West 660.7 feet to a concrete monument in the Canal Industries Maude S. Martin Tract; thence with said tract North 28 degrees 40 minutes East 2478.3 feet to the point and place of beginning containing 65.55 acres including the right of way of SR 1002.

PARCEL SIX: Known as the Braxton Edge Tract #2, containing 77.8 acres more or less, as more fully described as the First Tract in a deed dated the 22nd day of May 1973 from Braxton Edge and wife Eva W. Edge, to Canal Industries, Inc. which deed is recorded in Book 199, page 432 of the Bladen County Registry, to which reference is made. Said conveyance is subject to a reserved easement by Braxton Edge over the right of way granted therein.

PARCEL SEVEN: Known as the Janet McLeod or Rossie Wiggs tract, containing 56.5 acres more or less as more fully described in a deed dated the 10th day of April 1981 from Janet W. McLeod, single to Canal Industries, Inc. which deed is recorded in Book 248, page 226 of the Bladen County Registry, to which reference is made.

PARCEL EIGHT: Known as the Walter Bryan tract, containing 170.52 acres more or less as more fully described in a deed dated the 16th day of April 1986 from Bay Woods, Inc. to Canal Industries, Inc. which deed is recorded in Book 278, page 204 of the Bladen County Registry, to which reference is made.

PARCEL NINE: Known as the L.G. Paschal tract, containing 25 acres more or less as more fully described in a deed dated the 6th day of March 1962 from Lewis G. Paschal to Cape Fear Wood Corporation which deed is recorded in Book 152, page 603 of the Bladen County Registry, to which reference is made. See Articles of merger dated 23 August, 1969 in Corporations Book 3 Page 312, Office of the Register of Deeds of Bladen County.

PARCEL TEN: Tract Two known as the **Cecil Bullard** tract No. 2, White Oak Township, containing 35.69 acres more or less as more fully described in a deed dated the 8th day of September 1976 from C. Grattis Bullard, Jr. et. al., to Canal Industries, Inc. which deed is recorded in Book 217, page 007 of the Bladen County Registry, to which reference is made. See also recorded plats in Map Book 12, page 112.

PARCEL ELEVEN: **The E.C. Johnson Tract** described in a deed to Cape Fear Wood Corporation dated the 28th day of August 1964 and recorded in book 161, page 492 of the Bladen County Public Registry and more fully described as follows:

Situated approximately 200 feet east of Little Singletary Lake, Beginning at a T Iron and old pointers , a corner of the Greene Brothers Lumber Company Tract in the G. W. Rudisill line, located on Goose Island, and running thence with G.W. Rudisill line North 84 degrees 40 minutes West 608 feet to old pointers, concrete marker No. 16; thence along an old marked line North 7 degrees 10 minutes West 496 feet to an old pointer, concrete marker no. 24; thence North 26 degrees West 2350 feet to concrete marker no. 23; thence north 28 degrees west 730 feet to concrete marker no. 20 in the May Co Lumber Co. line; thence with May Co Lumber Co. tract North 70 degrees East 900 feet to an old iron pipe, concrete marker no. 19, in the line of Green Brothers Lumber Company tract; thence with said tract South 33 degrees East 2256 feet to a T Iron, Concrete marker no. 18; thence continuing with Greene Brothers Lumber Company line South 1 degree West 1713 feet to the point and place of beginning, containing 78.5 acres, more or less and more fully described on a plat of survey by Stuart Gooden dated August 13-18, 1966, to which reference is also made.

PARCEL TWELVE: TORRENS TRACT: All that certain tract or parcel of land lying and situate in Turnbull and White Oak Townships, Bladen County, North Carolina, and in Beaver Dam Township, Cumberland County, North Carolina, the title to which is registered in the name of CANAL INDUSTRIES, INC., pursuant to that certain OWNER'S CERTIFICATE OF TITLE, filed for registration on June 14, 1983 and recorded in Torrens Book 1, Page 126, Office of the Register of Deeds of Bladen County, and also filed for registration on December 17, 1981 and recorded in Torrens Book 1, Page 1, Office of the Register of Deeds of Cumberland County, and which is more particularly described in that certain map recorded in Map Book 10, Pages 40 and 41, Bladen County Registry, and in Map Book A-73, Pages 732 & 773, Bladen County Registry.

Also conveyed with this PARCEL TWELVE is an easement of ingress, egress, and regress, which easement runs along existing roads generally **from Point D** as shown on "SUGGS MILLPOND SOUTH, MAP 1 OF 2, FOR DOHN BROADWELL" (hereinafter "Map 1") **to point G** as shown on "SUGGS MILLPOND SOUTH, MAP 2 OF 2, FOR DOHN BROADWELL" (hereinafter "Map 2") both by Stuart Gooden, Registered Surveyor, dated February 25, 1998 and recorded in Map Cabinet A-154, Pages 1543 and 1544, respectively, Bladen County Registry, reference to which plats is incorporated herein for greater certainty of description.

Also conveyed is a non-exclusive easement of ingress, egress, and regress, which easement is 50 feet in width and runs from N.C. Hwy. 242 at Point E along an existing road to Point F and Point G, thence along the west side of an existing canal to Points H, I, and J, said canal being the eastern boundary of said easement from Point G to Point J, as shown on the plat referenced above, recorded in Map Cabinet A-154, Page 1544, Bladen County Registry, reference to which plat is incorporated herein for greater certainty of description. Point J represents the southern boundary of property conveyed by a deed of even date herewith to the State of North Carolina.

All the easements conveyed herein are to be used by the State of North Carolina solely in the maintenance and conservation of lands described herein conveyed from Canal Industries, Inc. to the State of North Carolina.

SAID PARCEL TWELVE IS CONVEYED SUBJECT, HOWEVER, to the following exceptions as hereinafter set forth:

EXCEPTION 12.1: All those same exceptions from the lands described in said CERTIFICATE OF TITLE, recorded in Torrens Book 1, Page 126, Bladen County Registry, which exceptions are identified in said CERTIFICATE OF TITLE as the W.E. STAFFORD TRACT, the E.P. ELKINS TRACT, the BERNARD MORGAN TRACT, the WALTER BRYAN TRACT, (Parcel eight conveyed herein) and part of the BESSIE MARTIN TRACT.

EXCEPTION 12.2: CAMDEN COMPANY, INC. TRACT - all that certain tract containing 23.84 acres, more or less, as described in that certain deed dated June 19, 1974 from Canal Industries, Inc. to THE CAMDEN COMPANY, INC., recorded in Deed Book 206, Page 819, Bladen County Registry.

EXCEPTION 12.3: G. W. RUDISILL AND E.C. JOHNSON TRACTS (Parcel elven above)

All of two tracts containing, respectively, 469 and 78.5 acres, more or less, as described in that certain deed dated June 15, 1993 from Canal Industries, Inc. to W.F. Sledge, recorded in Deed Book 329, Page 253, of the Bladen County Registry and that certain deed dated June 15, 1993 from W.F. Sledge to Canal Industries, Inc. recorded in Book 329 Page 250 of the Bladen County Registry.

EXCEPTION 12.4 BLADEN UNITED METHODIST CHARGE

All of that 1.93 acre tract or parcel described in a Quitclaim deed dated 12 November 1985 by and between Canal Industries, Inc. and Trustees of Bladen United Methodist Charge, which deed is recorded in Book 275, page 806 of the Bladen County Registry, to which reference is made.

EXCEPTION 12.5: DOHN BROADWELL CONVEYANCE

All of those certain tracts of land designated as Tract A, Tract B, and Tract C on those certain plats of survey, captioned "SUGGS MILLPOND SOUTH, MAP 1 OF 2, FOR DOHN BROADWELL" (hereinafter "Map 1") and "SUGGS MILLPOND SOUTH, MAP 2 OF 2, FOR DOHN BROADWELL" (hereinafter "Map 2") both by Stuart Gooden, Registered Surveyor, dated February 25, 1998 and recorded in Map Cabinet A-154, Pages 1543 and 1544, respectively, Bladen County Registry, reference to which plats is incorporated herein for greater certainty of description.

EXCEPTION 12.6: The above-described PARCEL TWELVE is conveyed further subject to the following easements, which Grantor retains for purposes of conveying same to Dohn Broadwell by deed of even date herewith:

a. A non-exclusive easement of ingress, egress, and regress, that is more particularly described as being 50 feet in width, lying north of, parallel with and contiguous to the northern boundary of Tract A and Tract B as designated on Map 1 referenced above, said easement to run with an existing road that generally runs from Point A to Point B, and from Point C to Point D, as designated on Map 1 referenced above, recorded in Map Cabinet A-154, Page 1543, Bladen County Registry, reference to which plat is incorporated herein for greater certainty of description.

b. A non-exclusive easement of ingress, egress, and regress, along existing roads that run generally from Point B north to Suggs Mill Pond, east with the edge of said pond, and south to Point C, as shown on Map 1 referenced above, recorded in Map Cabinet A-154, Page 1543, which said existing road is a continuation of the road running from Point A to Point B and from Point C to Point D as shown on said plat, reference to which plat is incorporated herein for greater certainty of description.

BLADEN COUNTY NC
1

12/18/2003
$1130.00

STATE OF NORTH CAROLINA

Real Estate
Excise Tax

Book 0535 Page 0993

FILED
BLADEN COUNTY NC
12/19/2003 12:10 PM
CHARITY C. LEWIS
Register Of Deeds
By: BJP Deputy/[illegible].

09-30.5

NORTH CAROLINA SPECIAL WARRANTY DEED

Excise Tax: $1,130.00

Parcel Identifier No _____ Verified by _____ County on the _____ day of _____, 20___

By: _____

Mail/Box to: Wilbert M. Faircloth, Attorney At Law, P O Box 346, Clinton, NC 28329

This instrument was prepared by: Wilbert M. Faircloth, Attorney at Law, P O Box 346, Clinton, NC 28329

Brief description for the Index: 609 acres and 1.01 acres, White Oak Township, Bladen County, NC

THIS DEED made this 11th day of December, 2003 by and between

GRANTOR	GRANTEE
THE NATURE CONSERVANCY, a Non-Profit Corporation organized under the laws of District of Columbia One University Place, Suite 290 4705 University Drive Durham, NC 27707	STATE OF NORTH CAROLINA c/o State Property Office 1321 Mail Service Center Raleigh, NC 27699-1321

The designation Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine or neuter as required by context.

WITNESSETH, that the Grantor, for a valuable consideration paid by the Grantee, the receipt of which is hereby acknowledged, has and by these presents does grant, bargain, sell and convey unto the Grantee in fee simple, all that certain lot or parcel of land situated in the City of _____, White Oak Township, Bladen County, North Carolina and more particularly described as follows:

(Legal description attached hereto on Schedule "A")

The property hereinabove described was acquired by Grantor by instrument recorded in Book 532, page 893.

A map showing the above described property is recorded in Plat _____ page ___.

12-19-03
BY TAX REVENUE MBC

TO HAVE AND TO HOLD the aforesaid lot or parcel of land and all privileges and appurtenances thereto belonging to the Grantee in fee simple.

And the Grantor covenants with the Grantee, that Grantor has done nothing to impair such title as Grantor received, and Grantor will warrant and defend the title against the lawful claims of all persons claiming by, under or through Grantor, except for the exceptions hereinafter stated.
Title to the property hereinabove described is subject to the following exceptions: ALL MATTERS OF RECORD.

IN WITNESS WHEREOF, the Grantor has duly executed the foregoing as of the day and year first above written.

THE NATURE CONSERVANCY

By: _____
Michael L. Andrews
Title: Vice President

Attest By: _____
David Bland
Title: Assistant Secretary

State of _____ - County of _____

I, the undersigned Notary Public of the County and State aforesaid, certify that _____ personally appeared before me this day and acknowledged the due execution of the foregoing instrument for the purposes therein expressed. Witness my hand and Notarial stamp or seal this ___ day of _____, 2002.

My Commission Expires: _____

_____
Notary Public

State of North Carolina - County of Durham

I, the undersigned Notary Public of Orange County and State aforesaid, certify that Michael L. Andrews personally came before me this day and acknowledged that he is the Vice President of THE NATURE CONSERVANCY, a non-profit D.C. corporation, and that by authority duly given and as the act of such entity, he signed the foregoing instrument in its name on its behalf as its act and deed. Witness my hand and Notarial stamp or seal, this 11th day of December, 2003.

My Commission Expires: 02/10/2007

Dorothy Gerard
Notary Public Dorothy Gerard

State of North Carolina – County of _____

I, the undersigned Notary Public of the County and State aforesaid, certify that _____

Witness my hand and Notarial stamp or seal, this ____ day of _____, 20____.

My Commission Expires: _____

_____
Notary Public

The foregoing Certificate(s) of Dorothy Gerard, a Notary Public of Orange County, NC is certified to be correct. This instrument and this certificate are duly registered at the date and time and in the Book and Page shown on the first page hereof.

Charity Lewis Register of Deeds for Bladen County
By: Beverly J Parks Deputy/~~Assistant~~ Register of Deeds

DEC 19 2003

SCHEDULE "A"

All those certain tracts or parcels of land lying and being in White Oak Township, Bladen County, North Carolina, and more particularly described as follows:

TRACT ONE: Beginning at an existing iron pipe, said iron pipe being a common corner of the original tract of which this is a part with lands now or formerly owned by Ralph E. Walters, Jr. (Deed Book 288, Page 815) and M.K. Edge (Deed Book 111, Page 381 and Will File 86-E-097), and runs from said point of beginning with M. K. Edge's line, North 78 degrees 30 minutes East 1025.22 feet to an existing iron pipe; thence again with Edge's line, North 43 degrees 54 minutes 23 seconds East 190.61 feet to an existing iron pipe; thence again with Edge's line, North 11 degrees 16 minutes 12 seconds East 60.36 feet to an existing iron axle; thence again with Edge's line, North 83 degrees 35 minutes 58 seconds East 1074.49 feet to an existing iron pipe on the west side of Little Singletary Lake, a corner of the 818 Acre Tract owned by The Nature Conservancy (Deed Book 430, Page 42); thence with The Nature Conservancy's line, South 05 degrees 52 minutes 46 seconds West 497.32 feet to a set iron stake; thence again with The Nature Conservancy's line, South 45 degrees 11 minutes 40 seconds East 3811.72 feet to an existing concrete monument; thence with the line of lands now or formerly owned by Marcia M. Langston (Deed Book 390, Page 393), South 09 degrees 38 minutes 23 seconds East 2045.53 feet to an existing iron rod; thence again with Langston's line, South 65 degrees 45 minutes 41 seconds West 2743.90 feet to an existing concrete monument near the northeastern right-of-way line of Secondary Road No. 1327; thence North 76 degrees 23 minutes 14 seconds West 494.81 feet to an existing concrete monument near the northeastern right-of -way line of Secondary Road No. 1327; thence as the following calls copied from Map Book 5, Page 146 and Deed Book 160, Page 299, North 56 degrees 55 minutes West 325.50 feet, North 89 degrees 10 minutes West 174.20 feet, North 64 degrees 45 minutes West 377.80 feet, North 47 degrees 40 minutes West 185.80 feet, North 74 degrees 25 minutes West 201 feet, North 32 degrees 55 minutes East 453 feet, North 53 degrees 02 minutes West 865 feet, South 32 degrees 55 minutes West 453 feet, North 44 degrees 40 minutes West 252 feet, North 55 degrees 50 minutes West 367 feet, North 40 degrees 40 minutes West 576 feet, North 46 degrees 35 minutes West 250 feet, North 35 degrees 10 minutes West 686 feet, North 19 degrees 45 minutes West 422 feet, North 30 degrees 35 minutes West 194 feet, North 12 degrees 15 minutes West 377 feet, North 19 degrees West 220 feet, North 04 degrees West 312 feet, North 11 degrees 20 minutes West 212 feet, North 12 degrees 15 minutes West 542 feet, North 23 degrees 30 minutes East 591 feet and North 70 degrees 54 minutes East 1164 feet to the point of beginning, containing approximately 609 acres, more or less, subject to an actual complete field survey.

This being a portion of the lands described in Deed Book 417, Page 820, Bladen County Registry. See also Map Book 5, Page 146, Bladen County Registry. This legal description was compiled from a partial field survey in September 1998, a partial field survey in March 1999, Map Book 5, Page 146, Map Book 6, Pages 124 and 127, and several maps prepared by Stuart Gooden and Charles Hall, Jr.

TRACT TWO: Beginning at an iron stake set in the centerline of Secondary Road No. 1327 in the line of William D. Smith, Jr. (Deed Book 349, Page 506, Bladen County Registry); and runs North 87 degrees 32 minutes 49 seconds West 3.69 feet to an existing iron pipe in Secondary Road No. 1327; thence with a line in Secondary Road No. 1327, North 02 degrees 32 minutes 07 seconds West 99.55 feet to an iron stake set in the centerline of Secondary Road No. 1327, a new corner with Joanne W. Ford (Deed Book 429, Page 495, Bladen County Registry); thence a new line with Joanne W. Ford, North 85 degrees 38 minutes 44 seconds East 330.62 feet to an iron stake set in the line of Ralph E. Waters, Jr. (Deed Book 288, Page 813, Bladen County Registry);thence with the line of Ralph E. Waters, Jr. (Deed Book 288, Page 813, Bladen County Registry), South 07 degrees 48 minutes 51 seconds East 187.77 feet to an existing iron pipe in the line of the lands of Jerry Michael Townsend (Deed Book 417, Page 820, Bladen County Registry); thence with the line of Jerry Michael Townsend (Deed Book 417, Page 820, Bladen County Registry), South 72 degrees 56 minutes 02 seconds West 110.50 feet to an existing iron pipe, a corner with William D. Smith, Jr. (Deed Book 349, Page 506, Bladen County Registry); thence with the lands of William D. Smith, Jr., as follows: North 04 degrees 37 minutes 39 seconds West 83.96 feet to an existing iron pipe and North 87 degrees 32 minutes 49 seconds West 334.92 feet to the beginning, containing 1.01 acres, more or less, as shown on Survey For Jerry Michael Townsend, dated July 21, 1999, prepared by Stuart Gooden, Registered Surveyor, which map is recorded in Deed Book 433, at Page 896, Bladen County Registry.

This being the same lands conveyed to Jerry Michael Townsend and wife, Vi S. Townsend, by deed from Joanne W. Ford and husband, Ralph Ford, dated July 22, 1999, recorded in Deed Book 433, at Page 894, of the Bladen County Registry.

The above subject tracts being conveyed to N&M, LLC, by deed from Jerry Michael Townsend and wife, Vi S. Townsend, dated April 24, 2001, recorded in Deed Book 466, at Page 473, of the Bladen County Registry. The above subject tracts also being conveyed to The Nature Conservancy by deed from N & M, LLC, dated October 29, 2003, recorded in Deed Book 532, at Page 893, of the Bladen County Registry.

FILED
NOV 14 2005
SECRETARY OF STATE

FILED
BLADEN COUNTY
CHARITY C. LEWIS
REGISTER OF DEEDS

BLADEN COUNTY 08-12-2005
NORTH CAROLINA
Real Estate
Excise Tax $160.00

FILED	Aug 12, 2005
AT	04:13:29 pm
BOOK	00574
START PAGE	0762
END PAGE	0765
INSTRUMENT #	15765

Excise Tax: $ 160.00

Prepared By: Michael H. Stephens, Attorney At Law

NORTH CAROLINA GENERAL WARRANTY DEED

STATE OF NORTH CAROLINA
COUNTY OF BLADEN

This deed made and entered into this 12th day of August, 2005 by and between JOHN P. McFADYEN and Wife, MAXINE MOORE McFADYEN, (hereafter GRANTORS); and STATE OF NORTH CAROLINA (hereafter GRANTEES) c/o STATE PROPERTY OFFICE 1321 Mail Service Center, Raleigh, North Carolina 27699-1321.

The designation Grantors and Grantees as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine or neuter as required by context.

W I T N E S S E T H:

That the GRANTORS, for a valuable consideration paid by the GRANTEES, the receipt of which is hereby acknowledged, have bargained and sold and by these presents do bargain sell and convey to the said GRANTEES, that certain tract or parcel of land located in WHITE OAK TOWNSHIP, BLADEN COUNTY, NORTH CAROLINA, described as follows:

RECEIVED 8.12.05
BY TAX REVENUE MBC

SEE ATTACHED SCHEDULE "A"

The attorney preparing this instrument has made no record search or title examination as to the property herein mentioned, unless same is shown by written and signed certificate.

To have and to hold the aforesaid tract or parcel of land and all privileges or appurtenances thereunto belonging to the GRANTEES, their heirs and assigns forever.

And the GRANTORS do hereby covenant that the GRANTORS are seized of said premises in fee simple and have the right to convey the same in fee simple; that the same is free of encumbrances, except those herein stated; and that GRANTORS will warrant and defend the said title to the same against the lawful claims of all persons whomsoever.

IN TESTIMONY WHEREOF, the GRANTORS have hereunto set their hands and seals the day and year first above written.

John P. McFadyen (SEAL)
JOHN P. McFADYEN

Maxine Moore McFadyen (SEAL)
MAXINE MOORE McFADYEN

STATE OF NORTH CAROLINA
COUNTY OF BLADEN

I, Annette Acosta, a notary public of said County and State aforesaid do hereby certify that JOHN P. McFADYEN and Wife, MAXINE MOORE McFADYEN, personally appeared before me this day and acknowledged the execution of the foregoing instrument.

Witness my hand and official stamp or seal, this 12th day of August 2005.

Annette Acosta (SEAL)
Notary Public

My Com. Exp.: 10/28/06
(NOTARY STAMP/SEAL)

ANNETTE ACOSTA
NOTARY PUBLIC
COLUMBUS COUNTY, N. C.

BK:00574 PG:0764

NORTH CAROLINA - BLADEN COUNTY
The foregoing certificate(s) of

ANNETTE ACOSTA

**Notary Public is (are) certified to be correct.
Duly registered this date and hour shown
on the first page hereof.**

CHARITY C. LEWIS
Register of Deeds

By Durcee K. Ryan

~~Assistant~~ Deputy Register of Deeds

AUG 12 2005

SCHEDULE "A"

SAID BEGINNING Point being an existing iron pipe located in the center line of SR 1327 approximately 2500 feet more or less South from the intersection of SR 1327 and SR 1353, said point being further identified as being a common corner with Terry West (N/F) and Ralph E. Walters, Jr.; thence running South 89 degrees 51 minutes 31 seconds East 694.80 feet to a new iron stake a common corner with M. K. Edge (N/F); thence running as the line of Edge (N/F) South 21 degrees 47 minutes 13 seconds East 1420.00 feet to an existing iron pipe a common corner with Edge (N/F) and located in the line of Maco Lumber Company (N/F); thence running as the line of Maco Lumber Company (N/F) South 75 degrees 02 minutes 15 seconds West 932.79 feet to an existing iron pipe; thence running North 05 degrees 43 minutes 12 seconds West 490.41 feet to an existing concrete monument; thence running South 84 degrees 16 minutes 48 seconds West 328.00 feet to a new iron stake located in SR 1327; thence running North 06 degrees 26 minutes 48 seconds West 232.13 feet to an iron stake in SR 1327; thence running North 01 degree 11 minutes 17 seconds East 91.76 feet to an iron stake in SR 1327; thence running North 01 degree 11 minutes 16 seconds East 60.74 feet to an iron stake; thence running North 44.74 feet with the center line of SR 1327 to an iron stake; thence running North 06 degrees 26 minutes 25 seconds East 577.36 feet to existing iron stake located in SR 1327; thence running North 04 degrees 13 minutes 00 seconds East 104.73 feet to an existing pipe, a common corner with Terry West (N/F) being the point and place of Beginning according to a map entitled "Property of John P. McFadyen," White Oak Township, Bladen County, North Carolina dated April 16, 2001, drafted by W. Stanton Massengill, P.L.S.

Being a 31.30 acre tract, more or less, subject to a 30-foot road easement recorded in Deed Book 427 Page 526, Bladen County Registry.

For a back deed reference see Deed Book 288, Page 813, Bladen County Registry of which this tract is a portion thereof.

FILED

APR 15 2004

SECRETARY OF STATE

BLADEN COUNTY NC
2

12/18/2003

$1100.00

STATE OF NORTH CAROLINA

Real Estate Excise Tax

Book 0535 Page 0996

FILED
BLADEN COUNTY NC
12/19/2003 12:10 PM
CHARITY C. LEWIS
Register Of Deeds
By: _____ Deputy/~~Asst.~~

09-30.4

NORTH CAROLINA SPECIAL WARRANTY DEED

Excise Tax: $ 1,100.00

Parcel Identifier No _____ Verified by _____ County on the _____ day of _____, 20___

By: _____

Mail/Box to: Wilbert M. Faircloth, Attorney At Law, P O Box 346, Clinton, NC 28329

This instrument was prepared by: Wilbert M. Faircloth, Attorney at Law, P O Box 346, Clinton, NC 28329

Brief description for the Index: 818 acres, White Oak Township, Bladen County, NC

THIS DEED made this 11th day of December, 2003 by and between

GRANTOR	GRANTEE
THE NATURE CONSERVANCY, a Non-Profit Corporation organized under the laws of District of Columbia One University Place, Suite 290 4705 University Drive Durham, NC 27707	STATE OF NORTH CAROLINA c/o State Property Office 1321 Mail Service Center Raleigh, NC 27699-1321

The designation Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns; and shall include singular, plural, masculine, feminine or neuter as required by context.

WITNESSETH, that the Grantor, for a valuable consideration paid by the Grantee, the receipt of which is hereby acknowledged, has and by these presents does grant, bargain, sell and convey unto the Grantee in fee simple, all that certain lot or parcel of land situated in the City of _____, White Oak Township, Bladen County, North Carolina and more particularly described as follows:

(Legal description attached hereto on Schedule "A")

The property hereinabove described was acquired by Grantor by instrument recorded in Book 430, page 42.

A map showing the above described property is recorded in Plat _____ page ___.

PROVED 12-19-03
K REVENUE MBC

O HAVE AND TO HOLD the aforesaid lot or parcel of land and all privileges and appurtenances thereto belonging to the Grantee in e simple.

nd the Grantor covenants with the Grantee, that Grantor has done nothing to impair such title as Grantor received, and Grantor will arrant and defend the title against the lawful claims of all persons claiming by, under or through Grantor, except for the exceptions ereinafter stated.
itle to the property hereinabove described is subject to the following exceptions: ALL MATTERS OF RECORD.

IN WITNESS WHEREOF, the Grantor has duly executed the foregoing as of the day and year first above written.

HE NATURE CONSERVANCY

y: _____
Michael L. Andrews
Title: Vice President

ttest By: _____
David Bland
Title: Assistant Secretary

tate of _____ - County of _____

I, the undersigned Notary Public of the County and State aforesaid, certify that _____ personally appeared before me this day and acknowledged the due xecution of the foregoing instrument for the purposes therein expressed. Witness my hand and Notarial stamp or seal this ___ day of _____, 2002.

ly Commission Expires: _____

_____
Notary Public

tate of North Carolina - County of Durham

the undersigned Notary Public of Orange County and State aforesaid, certify that Michael L. Andrews personally came before me this ay and acknowledged that he is the Vice President of THE NATURE CONSERVANCY, a non-profit D.C. corporation, and that by uthority duly given and as the act of such entity, he signed the foregoing instrument in its name on its behalf as its act and deed. Witness y hand and Notarial stamp or seal, this 11th day of December, 2003.

ly Commission Expires: 02/10/2007

Dorothy Gerard
Notary Public Dorothy Gerard

tate of North Carolina – County of _____

I, the undersigned Notary Public of the County and State aforesaid, certify that _____

_____

_____

/itness my hand and Notarial stamp or seal, this ____ day of _____, 20____.

ly Commission Expires: _____

_____
Notary Public

he foregoing Certificate(s) of Dorothy Gerard, a Notary Public of Orange County, NC is certified to e correct. This instrument and this certificate are duly registered at the date and time and in the Book and Page shown on the first page ereof.

Charity Lewis Register of Deeds for Bladen County
y: Beverly Parks Deputy/~~Assistant~~ – Register of Deeds

DEC 19 2003

SCHEDULE "A"

A tract of land containing 818 acres, more or less, located in White Oak Township, Bladen County, North Carolina, northeast of but not adjoining Soil Secondary Road 1327. The Property includes all of Little Singletary Lake, and is the northeasterly portion of a 1429 acre tract of land shown on a map entitled "Property of Dr. E. N. Smith, A. B. Carr and Others" by H. L. Willis, Jr., dated June 1954 and recorded in Map Book 5, Page 146, of the Bladen County Registry (the "Smith Tract").

BEGINNING at an existing iron pipe, said iron pipe being the most northern corner of the Smith Tract as shown on the above referenced map, said point also being a point in the line of Earl Faircloth, and runs from said point of beginning (with the line of Faircloth until otherwise noted) South 51 degrees 49 minutes 35 seconds East 80.16 feet to an existing lightwood stake; thence South 52 degrees 35 minutes 53 seconds East 529.66 feet to an existing lightwood stake; thence South 71 degrees 17 minutes 12 seconds East 820.64 feet to an existing angle iron; thence South 52 degrees 21 minutes 11 seconds East 472.44 feet to an existing angle iron; thence South 60 degrees 58 minutes 29 seconds East 745.95 feet to an existing iron pipe; thence South 52 degrees 26 minutes 50 seconds East 581.85 feet to an existing iron rod; thence South 52 degrees 31 minutes 33 seconds East 229.97 feet to an existing iron rod; thence South 60 degrees 35 minutes 10 seconds East 421.57 feet to an existing iron pipe; thence South 48 degrees 41 minutes 49 seconds East 215.53 feet to an existing iron axle, a corner with land believed to be owned by the State of North Carolina; thence (with the line of the State of North Carolina until otherwise noted) South 48 degrees 42 minutes 34 seconds East 813.65 feet to an existing iron pipe; thence South 25 degrees 19 minutes 10 seconds East 197.17 feet to an existing iron pipe; thence South 69 degrees 37 minutes 50 seconds West 899.58 feet to a calculated point near the shoreline of Little Singletary Lake; thence with the shoreline of Little Singletary Lake and bordering lands owned by the State of North Carolina the following chords: South 34 degrees 00 minutes 03 seconds East 934.07 feet, South 27 degrees 00 minutes 40 seconds East 705.05 feet, South 22 degrees 34 minutes 38 seconds East 570.78 feet, South 22 degrees 50 minutes 55 seconds East 353.72 feet, South 21 degrees 39 minutes 54 seconds East 241.85 feet, South 17 degrees 19 minutes 34 seconds East 414.57 feet, South 00 degrees 41 minutes 44 seconds West 350.44 feet to an existing iron rod, a corner with Marcia Langston; thence continuing with the shoreline of Little Singletary Lake and bordering the lands of Marcia Langston, the following chords: South 2 degrees 12 minutes 52 seconds East 769.38 feet, South 29 degrees 58 minutes 43 seconds West 519.43 feet, South 49 degrees 10 minutes 51 seconds West 499.57 feet, South 57 degrees 03 minutes 53 seconds West 570.72 feet, South 77 degrees 24 minutes 26 seconds West 585.51 feet, North 53 degrees 36 minutes 20 seconds West 466.76 feet, South 80 degrees 16 minutes 54 seconds West 789.41 feet to an existing concrete monument, a new corner with land being retained by Grantor; thence continuing with the shoreline of Little Singletary Lake and bordering the land retained by Grantor the following chords: North 45 degrees 11 minutes 40 seconds West 3811.72 feet, North 5 degrees 52 minutes 46 seconds East 497.32 feet to an existing iron pipe, a corner with M.K. Edge; then continuing with the shoreline of Little Singletary Lake and bordering the land of M. K. Edge the following chords: North 5 degrees 52 minutes 46 seconds East 535.34 feet, North 9 degrees 29 minutes 14 seconds West 1472.39 feet and North 2 degrees 07 minutes 46 seconds East 898 feet to a point near the shoreline of Little Singletary Lake; thence leaving the shoreline of Little Singletary Lake and with the line of M. K. Edge, South 88 degrees 38 minutes 46 seconds West 1958 feet to a point, a corner with Cecil Smith; thence with the line of Cecil Smith, North 14 degrees 40 minutes 46 seconds East 1353.5 feet to an existing iron pipe; thence leaving the line of Cecil Smith, North 59 degrees 33 minutes 34 seconds East 522.82 feet to an existing concrete monument; thence North 59 degrees 15 minutes 07 seconds East 478.84 feet to an existing iron stake; thence North 76 degrees 48 minutes 09 seconds East 1696.88 feet to the point of beginning. Being a portion of the lands described in Deed Book 417, Page 820, Bladen County Registry. This legal description was prepared from a map prepared for Grantee by Powers Land Surveying, P.A., dated December 15, 1998 and revised May 3, 1999. This being the same lands conveyed to The Nature Conservancy by deed from Jerry Michael Townsend and wife, Vi S. Townsend, dated May 21, 1999, recorded in Deed Book 430, at Page 42, of the Bladen County Registry.

Note: The Powers map referenced above depicts the shoreline of Little Singletary Lake as being the property line for most of the tract. However, the deed in to Grantor is unclear as to whether the property line is the shoreline or a line inland from the shoreline. To clarify this point and to make sure no strips of land belonging to Grantor are left between the Property and adjoining landowners, it is hereby stated that the Property as conveyed by this deed includes all of Grantor's right, title and interest in land (if any) between the shoreline of Little Singletary Lake and lands noted above as belonging now or formerly to The State of North Carolina, Marcia Langston and M.K. Edge.

TURNBULL TWP., BLADEN COUNTY, N.C. SURVEY JULY 1, 1996
BY LEWIS G. PASCHAL, L-2446, P.O. BOX 322 ELIZABETHTOWN, N.C. 28337

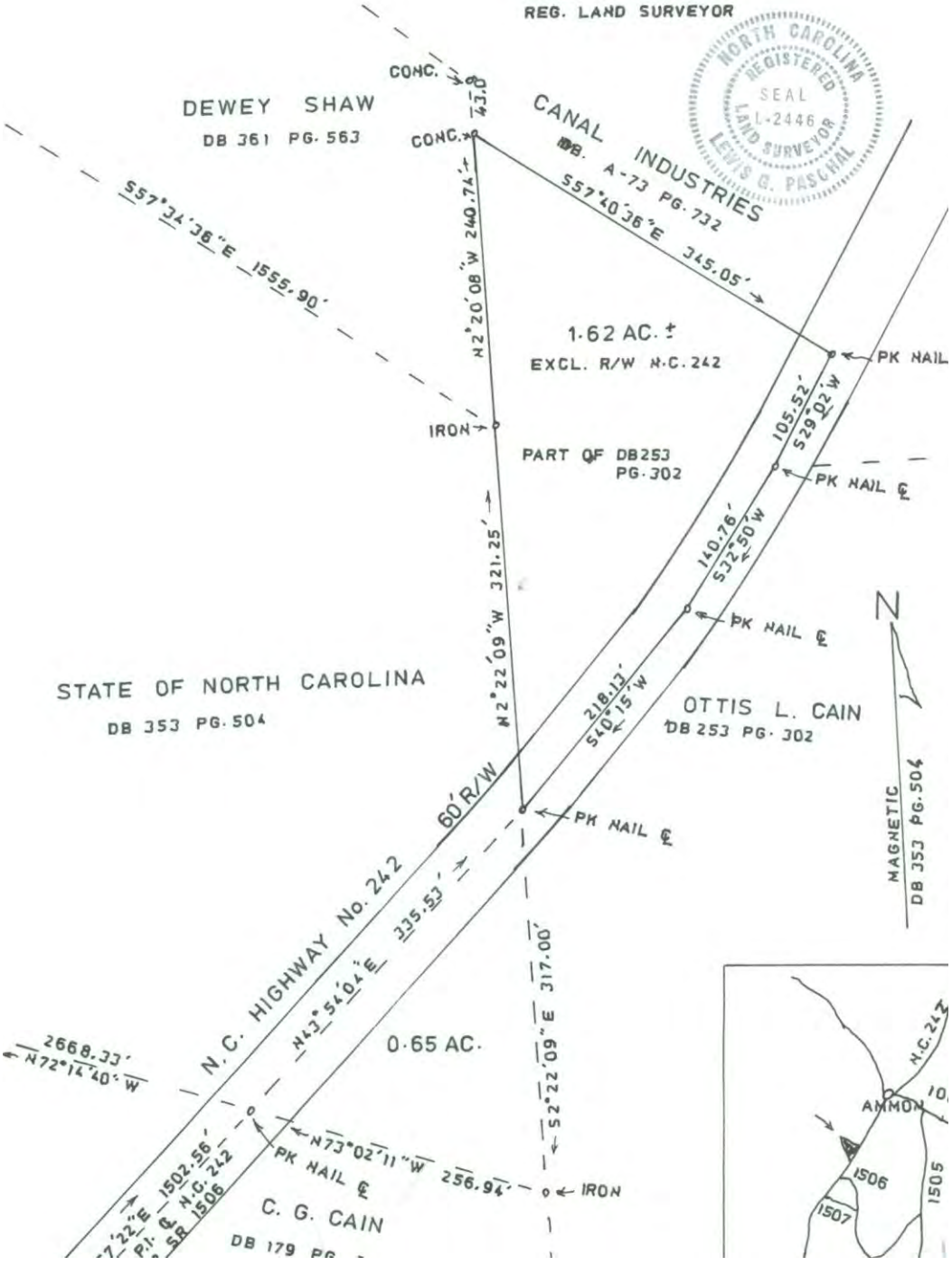
0 100' 200'

I, LEWIS G. PASCHAL, CERTIFY THAT THIS SURVEY IS LOCATED IN SUCH PORTION OF A COUNTY THAT IS UNREGULATED AS TO AN ORDINANCE THAT REGULATES PARCELS OF LAND AND THE RATIO OF PRECISION AS CALCULATED BY LATITUDE AND DEPARTURES IS 1/7,500.

Lewis G. Paschal

LEWIS G. PASCHAL
REG. LAND SURVEYOR

NORTH CAROLINA REGISTERED SEAL L-2446 LAND SURVEYOR LEWIS G. PASCHAL



Book 0409 Page 0867

FILED
BLADEN COUNTY NC
06/16/98 3:49 PM
AVA H. EDWARDS
Register Of Deeds
By: [illegible]

DEED PREPARED BY: D. David Steinbock
Assistant Attorney General
P.O. Box 629
Raleigh, N.C. 27602-0629

FILED
SEP 1 1998
SECRETARY OF STATE

STATE OF NORTH CAROLINA

COUNTY OF BLADEN

DEED

THIS DEED, made and entered into this the 16th day of June, 1998, by and between **OTTIS L. CAIN and wife, LINDA W. CAIN**, GRANTORS, and the **STATE OF NORTH CAROLINA**, c/o State Property Office, 116 West Jones Street, Raleigh, North Carolina 27603, GRANTEE:

WITNESSETH:

THAT the said Grantors, in consideration of the sum of ONE ($1.00) DOLLAR to them paid by the Grantee, receipt of which is hereby acknowledged, have bargained and sold and by these presents do bargain, sell and convey, unto the said Grantee, its successors and assigns, all of that certain tract or parcel of land situate, lying and being in Turnbull Township, Bladen County, North Carolina, and being more particularly described as follows:

> BEGINNING at a PK nail at the point of intersection of centerlines of N.C. Highway No. 242 and SR 1506 and runs thence North 42 degrees 57 minutes 22 seconds East 1502.56 feet to a PK nail in the centerline of N.C.Highway No. 242; thence North 43 degrees 54 minutes 04 seconds East 335.53 feet to a PK nail in the centerline of N.C. Highway No. 242, the Beginning corner of the tract herein described and runs THENCE FROM SAID BEGINNING North 2 degrees 22 minutes 09 seconds West 321.25 feet with the line of the State of North Carolina to an iron; thence North 2 degrees 20 minutes 08 seconds West 240.74 feet with the Dewey Shaw line to a concrete monument; thence South 57 degrees 40 minutes 36 seconds East 345.05 feet with the Canal Industries line to a PK nail in the

RECEIVED 6-16-98
BY TAX REVENUE SB

centerline of N. C. Highway No. 242; thence South 29 degrees 02 minutes West 105.52 feet to a PK nail in the centerline of N.C. Highway No. 242; thence South 32 degrees 50 minutes West 140.76 feet to a PK nail in the centerline of N.C. Highway No. 242; thence South 40 degrees 15 minutes West 218.13 feet to the Beginning, containing 1.62 acres, more or less, excluding right-of-way of N.C. 242.

Being a part of a tract conveyed to Ottis L. Cain by deed recorded in Book 253 Page 302 of the Bladen County Registry.

Restrictive Covenants are as follows:

1. The land shall not be subdivided.
2. The land shall be perpetually managed for the maintenance of fish and wildlife habitat, the conservation of soil and water, and maintenance of the natural plant species and ecology of the area.
3. The nonwetlands areas of property shall be maintained in a manner consistent with the intended conservation uses of the property as outlined in the attached conservation management plan agreed to by the grantee, the grantor, and the U. S Fish and Wildlife Service or its successors.
4. Public use and recreation may be allowed on the area consistent with the dominant uses for fish and wildlife and the conservation of the natural environment of the area.
5. Structures and improvements shall not be placed on the property except as are consistent with the purposes of the easement and these general covenants.

AVE AND TO HOLD the aforesaid tract or parcel of land and all privileges and hereunto belonging to the State of North Carolina, its successors and assigns, forever. he said Grantors do covenant that they are seized of the said premises in fee simple ght to convey the same in fee simple; that the same are free from any encumbrances; vill warrant and defend the said title to the same against the claims of all persons

IN TESTIMONY WHEREOF, the said Grantors have hereunto set their hands and seals, all on the day and year first above written.

Ottis Lacy Cain (SEAL)
OTTIS LACY CAIN

Linda W. Cain (SEAL)
LINDA W. CAIN

NO REVENUE STAMP

STATE OF NORTH CAROLINA
COUNTY OF BLADEN

I, Beverly A. Mote, a Notary Public in and for the aforesaid County and State do hereby certify that OTTIS LACY CAIN and wife, LINDA W. CAIN, personally appeared before me this date and acknowledged the due execution of the foregoing instrument for the purposes therein expressed.

WITNESS my hand and Notarial Seal, this the 16th day of June, 1998.

Beverly A. Mote
Notary Public

BEVERLY A. MOTE NOTARY PUBLIC BLADEN COUNTY, NC

My Commission Expires:

January 30, 2002

Profile No. 2940
File - 09-F

STATE OF NORTH CAROLINA BLADEN County
The foregoing certificate(s) of
Beverly A. Mote
Notary Public of North Carolina is certified to be correct. This instrument was presented for registration the 16 day of June 1998 at 3:49 o'clock P. M. and recorded in this office in Book 409 Page 867
Dora H. Edwards
REGISTER OF DEEDS

By _____
ASSISTANT OR DEPUTY, REG. OF DEEDS

BLADEN COUNTY
CHARITY C. LEWIS
REGISTER OF DEEDS

FILED
JUL 03 2007
SECRETARY OF STATE

FILED	May 09, 2006
AT	11:23:14 am
BOOK	00589
START PAGE	0943
END PAGE	0945
INSTRUMENT #	01952

BLADEN COUNTY
NORTH CAROLINA
05-09-2006

Real Estate
Excise Tax $922.00

09-30-7

NORTH CAROLINA GENERAL WARRANTY DEED

Excise Tax:

Parcel Identifier No. _____ Verified by _____ County on the ____ day of _____, 20__
By: _____

Mail/Box to: _____

This instrument was prepared by: JAMES W. HILL, III

Brief description for the Index: _____

THIS DEED made this 9TH day of MAY, 2006, by and between

GRANTOR	GRANTEE
STEPHEN N. OWEN, DIVORCED	STATE OF NORTH CAROLINA C/O STATE PROPERTY OFFICE 1321 MAIL SERVICE CENTER RALEIGH, NC 27699-1321

Enter in appropriate block for each party: name, address, and, if appropriate, character of entity, e.g. corporation or partnership.

The designation Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine or neuter as required by context.

WITNESSETH, that the Grantor, for a valuable consideration paid by the Grantee, the receipt of which is hereby acknowledged, has and by these presents does grant, bargain, sell and convey unto the Grantee in fee simple, all that certain lot or parcel of land situated in the City of _____, TURNBULL Township, BLADEN County, North Carolina and more particularly described as follows:

FOR DESCRIPTION SEE EXHIBIT "A" ATTACHED HERETO AND INCORPROATED HEREIN BY REFERENCE.

The property hereinabove described was acquired by Grantor by instrument recorded in Book 478 (364, 435) page 121 (547, 280).

A map showing the above described property is recorded in Plat Book 6 (6) page 89 (87).

RECEIVED 5-9-06
BY TAX REVENUE

And the Grantor covenants with the Grantee, that Grantor is seized of the premises in fee simple, has the right to convey the same in fee simple, that title is marketable and free and clear of all encumbrances, and that Grantor will warrant and defend the title against the lawful claims of all persons whomsoever, other than the following exceptions:

IN WITNESS WHEREOF, the Grantor has duly executed the foregoing as of the day and year first above written.

_____ (Entity Name)

By: _____
Title: _____

By: _____
Title: _____

By: _____
Title: _____

Stephen N. Owen (SEAL)
STEPHEN N. OWEN, DIVORCED

_____ (SEAL)

_____ (SEAL)

_____ (SEAL)

USE BLACK INK ONLY

REBECCA M. WHITE NOTARY PUBLIC COLUMBUS COUNTY, N.C.

USE BLACK INK ONLY

State of North Carolina - County of BLADEN

I, the undersigned Notary Public of the County (Columbus) and State aforesaid, certify that STEPHEN N. OWEN, DIVORCED ------ personally appeared before me this day and acknowledged the due execution of the foregoing instrument for the purposes therein expressed. Witness my hand and Notarial stamp or seal this 9TH day of MAY, 2006

My Commission Expires: 7/31/2010

Rebecca M. White
Notary Public

USE BLACK INK ONLY

State of North Carolina - County of _____

I, the undersigned Notary Public of the County and State aforesaid, certify that _____ personally came before me this day and acknowledged that _he is the _____ of _____, a North Carolina or _____ corporation/limited liability company/general partnership/limited partnership (strike through the inapplicable), and that by authority duly given and as the act of each entity, _he signed the forgoing instrument in its name on its behalf as its act and deed. Witness my hand and Notarial stamp or seal this _____ day of _____, 20__.

My Commission Expires: _____

_____
Notary Public

USE BLACK INK ONLY

State of North Carolina - County of _____

I, the undersigned Notary Public of the County and State aforesaid, certify that _____ personally appeared before me this day and acknowledged the due execution of the foregoing instrument for the purposes therein expressed. Witness my hand and Notarial stamp or seal this _____ day of _____, 20__.

My Commission Expires: _____

_____
Notary Public

The foregoing Certificate(s) of _____ is/are certified to be correct. This instrument and this certificate are duly registered at the date and time and in the Book and Page shown on the first page hereof.

_____ Register of Deeds for _____ County

By: _____ Deputy/Assistant - Register of Deeds

EXHIBIT "A"

Lying and being in Turnbull Township, Bladen County, North Carolina and being more particularly described as follows:

TRACT ONE: BEGINNING at a concrete monument #57, being the southeastern corner of a tract of land conveyed to Roy H. Park, by Deed recorded in Book 133, Page 481, and a corner of Canal industries, Inc. as shown by map entitled "Horseshoe Lake Complex", said map recorded in Map Book 10, Page 41 of the Bladen County Public Registry, and runs thence from said beginning South 21 degrees 00 minutes West 897.6 feet with the line of Canal Industries, Inc. to concrete monument #11; thence with said line North 50 degrees 20 minutes West 1320.00 feet to concrete monument #64; thence with said line North 21 degrees 00 minutes East 897.6 feet to concrete monument #54 in the line of Roy H. Park; thence South 50 degrees 20 minutes East 1320.00 feet with said Park line to the beginning, containing 25.77 acres, more or less.

TRACT TWO: All that certain tract or parcel of land, containing 66.00 acres, more or less, as shown on a Map of survey dated August 8, 1960 by Stuart Gooden, Registered Land Surveyor, as recorded in Map Book 6, Page 89 in the Bladen County Public Registry.

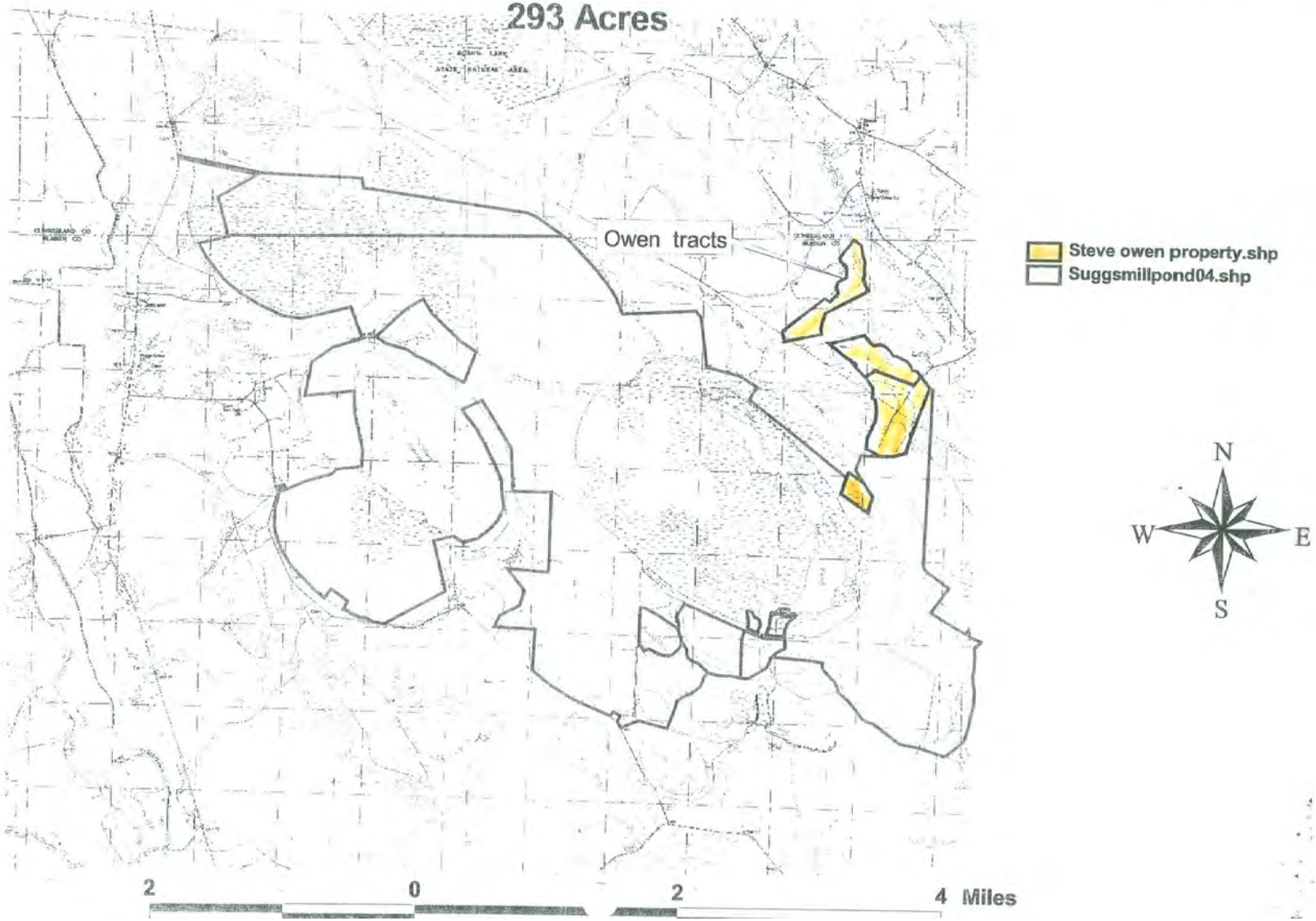
TRACT THREE: All that certain tract or parcel of land, containing 85.20 acres, more or less, as shown on a Map of Survey dated May, 1960 by Clarence Hall, Jr., Surveyor, as recorded in Map Book 6, Page 87 in the Bladen County Public Registry.

Grantor also conveys herewith to Grantee all of Grantor's right, title, and interest in and to that certain 60 foot wide right of way described in an Easement Deed to the Gibson-Wall Company as recorded in Book 308, Page 20 in the Bladen County Public Registry.

TRACT FOUR: All that certain tract or parcel of land, containing 118.00 acres, more or less, as shown on a Map of Survey dated August 8, 1960, by Stuart Gooden, Registered Land Surveyor, recorded in Map Book 6, Page 89 in the Bladen County Public Registry.

OWENS
293 ACRES

Proposed Land Acquisition
Suggs Millpond Game Land
Owen tracts
293 Acres



DEED TO A STATE AGENCY 9-30-1

JUL ... SECRETARY OF STATE

THIS DEED made this 24th day of October, 1994, by and between the UNITED STATES OF AMERICA by the SECRETARY OF AGRICULTURE acting through the Farmers Home Administration (hereafter "Grantor"), and the STATE OF NORTH CAROLINA (hereafter "Grantee").

FEB 1995 Received Property Utility Office

BY AUTHORITY conferred on the Grantor by Section 364 of the Consolidated Farm and Rural Development Act (7 U.S.C. 2006d) providing for the transfer, without reimbursement, of fee title or other interest therein of inventory lands to any Federal or State agency for conservation purposes; Executive Order 11990 providing for the protection of wetlands; and Executive Order 11988 providing for the management of floodplains; and,

THE GRANTOR ACKNOWLEDGES, by this instrument, the determination that the rights of all prior owners and operators of the lands described below have expired, that the land is determined to be suitable or surplus, and that is has marginal value for agricultural production, is environmentally sensitive, or has special management importance, and that this transfer and conveyance comports with and is in furtherance of said authority,

THE GRANTEE ACKNOWLEDGES, by this instrument, that the agreed upon purposes of this conveyance include the preservation and maintenance of wetlands and floodplain areas existing as of the date of this conveyance, as well as protection and enhancement of plant and animal habitat and populations.

NOW THEREFORE, for and in consideration of the Congressionally mandated purposes as authorized by the above referenced authorities and other conservation benefits conferred by the transfer of these lands pursuant to federal law, the Grantor does transfer and quitclaim to the Grantee the following described lands:

BEGINNING at a P.K. masonry nail in the center of North Carolina Highway 242, said nail being located North 42 degrees 57 minutes 22 seconds West 1502.56 feet from P.K. masonry nail at the intersection of the center lines of North Carolina Highway 242 and Secondary Road 1524; thence from the BEGINNING North 72 degrees 14 minutes 40 seconds West 2,668.33 feet to an iron pipe, the northwest corner of lot one of the O.L. Cain Division (Map Book A68, Page 690); thence North 72 degrees 07 minutes 16 seconds West 288.00 feet to an iron pipe, a corner in the property of Shirley Cain (Deed Book 271, Page 307); thence North 53 degrees 15 minutes 00 seconds East 384.34 feet to a concrete monument, the northeast corner of the Shirley Cain property and also being a corner in property of Canal Industries; thence North 53 degrees 37 minutes 00 seconds East 1509.79 feet to a concrete monument; thence South 51 degrees 48 minutes 56 seconds East 545.76 feet to an iron pipe; thence South 38 degrees 13 minutes 38 seconds West 373.41 feet to an iron pipe; thence South 57 degrees 34 minutes 36 seconds East 1,555.90 feet to an old axle; thence South 02 degrees 22 minutes 09 seconds East 638.25 feet crossing N.C. Highway 242 to an iron bar, the northeast corner of the C.G. Cain property (Deed Book

RECEIVED 2-13-95
BY TAX REVENUE

179, Page 243); thence North 73 degrees 02 minutes 11 seconds West 256.94 feet to the BEGINNING, containing 62.16 acres.

And being (part of) the same land conveyed from Richard M. Stearns, Trustee to United States of America by deed dated 28th of September 1987 and recorded in Book 288, Page 192 of the land records of Bladen County (Borough, Parish, City) in the State (Commonwealth) of North Carolina.

The above described land shall hereafter be administered by the STATE OF NORTH CAROLINA in accordance with State laws governing the conservation of fish and wildlife, and the protection of floodplains and wetlands.

SUBJECT TO the enumerated restrictive covenants and rights reserved in the Grantor, which covenants and reservations shall run with the land and constitute a servitude on it.

RESTRICTIVE COVENANTS: The property shall be managed for conservation purposes...

General Covenants:

1. The land shall not be subdivided.
2. The land shall be perpetually managed for the maintenance of fish and wildlife habitat, the conservation of soil and water, and maintenance of the natural plant species and ecology of the area.
3. The nonwetland areas of the property shall be maintained in a manner consistent with the intended conservation uses of the property as outlined in the attached conservation management plan agreed to by the grantee, the grantor, and the U.S. Fish and Wildlife Service or its successors.
4. Public use and recreation may be allowed on the area consistent with the dominant uses for fish and wildlife and the conservation of the natural environment of the area.
5. Structures and improvements shall not be placed on the property except as are consistent with the purposes of the easement and these general covenants.

Convenants Pertaining to Wetlands and Floodplains:

1. All wetlands and associated buffer areas of not less than 100 feet in average width surrounding each wetland shall have the boundary permanently monumented and described and shall be protected and restored by the grantee or its successor and assigns in accordance with the attached wetland restoration and management plan agreed to by the grantee, the grantor, and the U.S. Fish and Wildlife Service or its successors.
2. Except as provided for in the wetland restoration plan in 1 above, the wetland characteristics of the land shall not be altered by draining, dredging, channeling, filling, discing, pumping, diking, impounding and related activities.
3. Dwelling, barns, outbuildings or other structures shall not be built within the 100 year floodplain of the area (except those useful or necessary to achieve conservation objectives).

4. The vegetation or hydrology of any wetland within the area shall not be altered in any way or by any means including cutting or mowing, cultivation, grazing, harvesting wood products, burning, placing of refuse and wastes, provided that manipulation of the vegetation and water levels to maintain wildlife habitat or other conservation objectives is permitted if done pursuant to the wetland restoration plan in 1 above. The plan must have as its primary purpose, the protection and restoration of the wetlands and be agreed to by FmHA or its successor, the U.S. Fish and Wildlife Service or its successor, and the grantee.

5. The following described area is a wetland/floodplain:

DESCRIPTION OF U.S. FISH & WILDLIFE CONSERVATION EASEMENT

Commencing at a P.K. masonry nail in the center of North Carolina Highway 242, said nail being located North 42 degrees 57 minutes 22 seconds West 1502.56 feet from a P.K. masonry nail at the intersection of the center lines of North Carolina Highway 242 and Secondary Road 1524; thence N. 72 degrees 14 minutes 40 seconds West 1896.33 feet to an iron pipe, the POINT OF BEGINNING; thence North 72 degrees 14 minutes 40 seconds West 772.00 feet to an iron pipe; thence North 72 degrees 07 minutes 16 seconds West 288.00 feet to an iron pipe; thence North 53 degrees 15 minutes 00 seconds East 384.34 feet to a concrete monument; thence North 53 degrees 37 minutes 00 seconds East 1509.79 feet to a concrete monument; thence South 51 degrees 48 minutes 56 seconds East 545.76 feet to an iron pipe; thence South 38 degrees 13 minutes 38 seconds West 373.41 feet to an iron pipe; thence South 57 degrees 34 minutes 36 seconds East 800.00 feet to an iron pipe; thence South 74 degrees 18 minutes 32 seconds West 1441.03 feet to the POINT OF BEGINNING, CONTAINING 37.96 ACRES AND BEING A PORTION OF THE 62.16 ACRES DESCRIBED ABOVE.

Edward S. Kilmon
Registered Land Surveyor
L-2661

RIGHTS OF ENFORCEMENT AND RIGHT OF REENTRY: The Grantor reserves the following rights of enforcement:

Upon breach of any enumerated restrictive covenant, the United States of America, acting through the United States Fish and Wildlife Service or its successor, may seek legal and equitable remedies to abate the breach, restore the area to its prior condition, and secure compensation for the costs of this enforcement action, including reasonable attorney's fees.

Additionally, upon any such breach, the Fish and Wildlife Service or its successor may, at its discretion, treat such breach as an occurrence of a condition subsequent giving rise to a right of reentry. Upon a showing of any breach, the United States may reenter the property and take possession and title. In the event that the United States exercises its right of reentry, no compensation shall be due the Grantee or its successors or assigns.

BOOK 353 PAGE 504

TO HAVE AND TO HOLD the herein described land to the Grantee forever. WITNESS, the signature of the authorized officer of the Grantor.

UNITED STATES OF AMERICA
THE SECRETARY OF AGRICULTURE
BY:

NO REVENUE STAMP

JAMES C. KEARNEY, State Director
Farmers Home Administration

State of North Carolina
County of Wake, S.S.

I, Patricia E. Faulk, Notary Public in and for the above State and County do certify that James C. Kearney, State Director, being a duly authorized agent of the Secretary of Agriculture, did acknowledge this instrument before me this 24th day of October, 1994.

Notary Public

Acceptance by the U.S. Fish and Wildlife Service:

The transfer of land management functions by this instrument to the Secretary of the Interior is herby accepted on behalf of the U.S. Fish and Wildlife Service on the _____ day of _____, 1994.

U.S. Fish and Wildlife Service

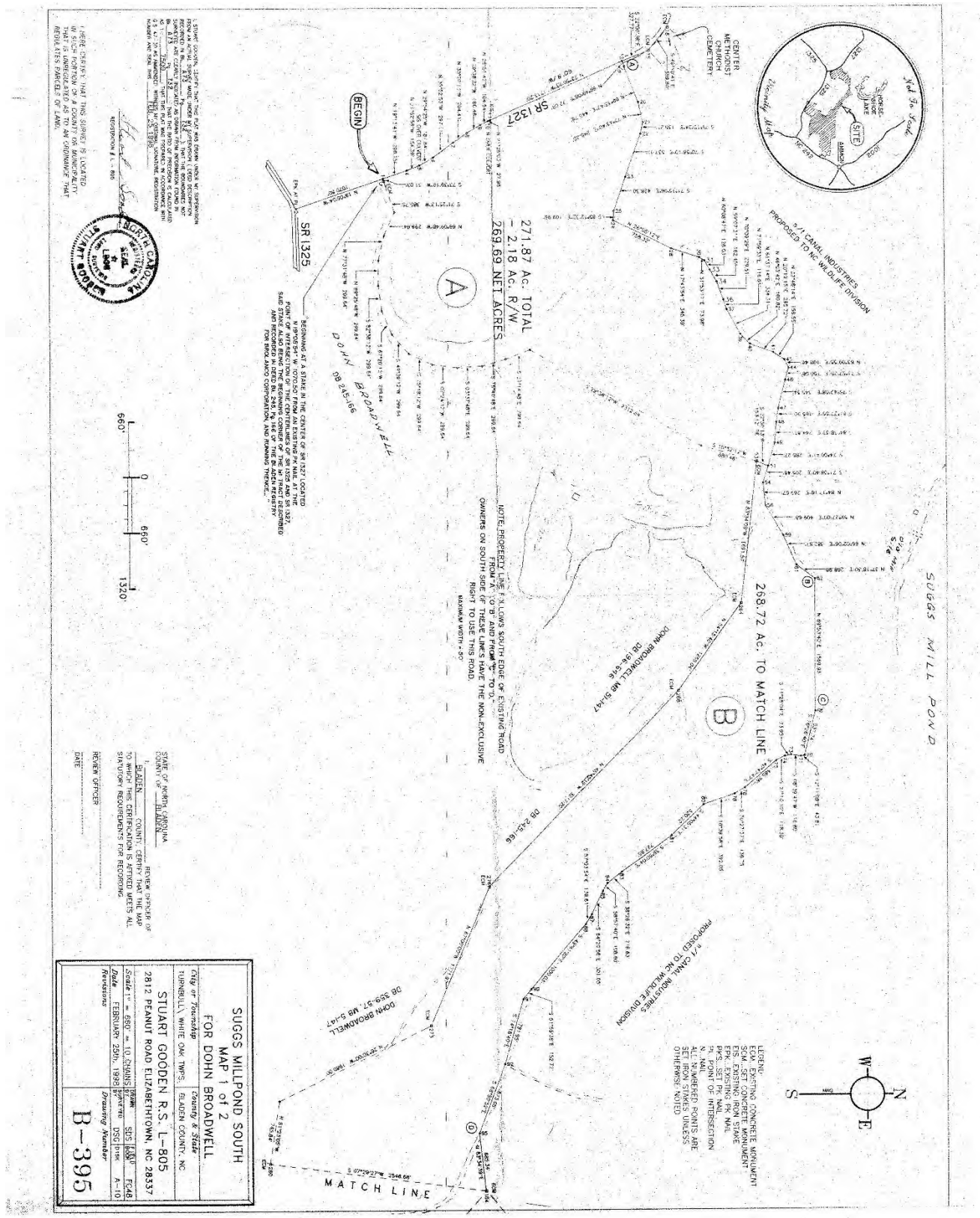
Note: The written acceptance by the U.S. Fish and Wildlife Service on this deed is for administrative purposes only, and the lack of acceptance shall not be construed to defeat or reduce the estate conveyed by the deed.

STATE OF NORTH CAROLINA BLADEN County
The foregoing certificate(s) of
Patricia E. Faulk
Notary Public of North Carolina is certified to be correct. This instrument was presented for registration the 13 day of February 1995 at 8:30 o'clock A. M. and recorded in this office in Book 353 Page 504
David H. Edwards
REGISTER OF DEEDS

By _____
ASSISTANT OR DEPUTY, REG. OF DEEDS

FEB 13 1995

APPENDIX XV – PLATS



SUGGS MILLPOND SOUTH
MAP 1 of 2
FOR DOHN BROADWELL

City or Township	County & State
TURNBULL, WHITE OAK TWPS.	BLADEN COUNTY, NC

STUART GOODEN R.S. L-805
2812 PEANUT ROAD ELIZABETHTOWN, NC 28337

Scale	Drawn	Checked	Job #
1" = 660' = 10 CHAINS	SDS	SDS	FC48
Date	Surveyed	Plotted	Book #
FEBRUARY 25th, 1998	DSC	DSC	A-10
Revisions	Drawing Number		
	B-395		

I, STUART GOODEN, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION, (DEED DESCRIPTION RECORDED IN BK. 245 PG. 166 ETC.) THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND IN BK. 245 PG. 166 ETC.; THAT THE RATIO OF PRECISION IS CALCULATED AS 1:10000+; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS FEBRUARY 25, 1998.

SEAL L-805 REGISTERED LAND SURVEYOR STUART GOODEN

DESCRIPTION # L - 805

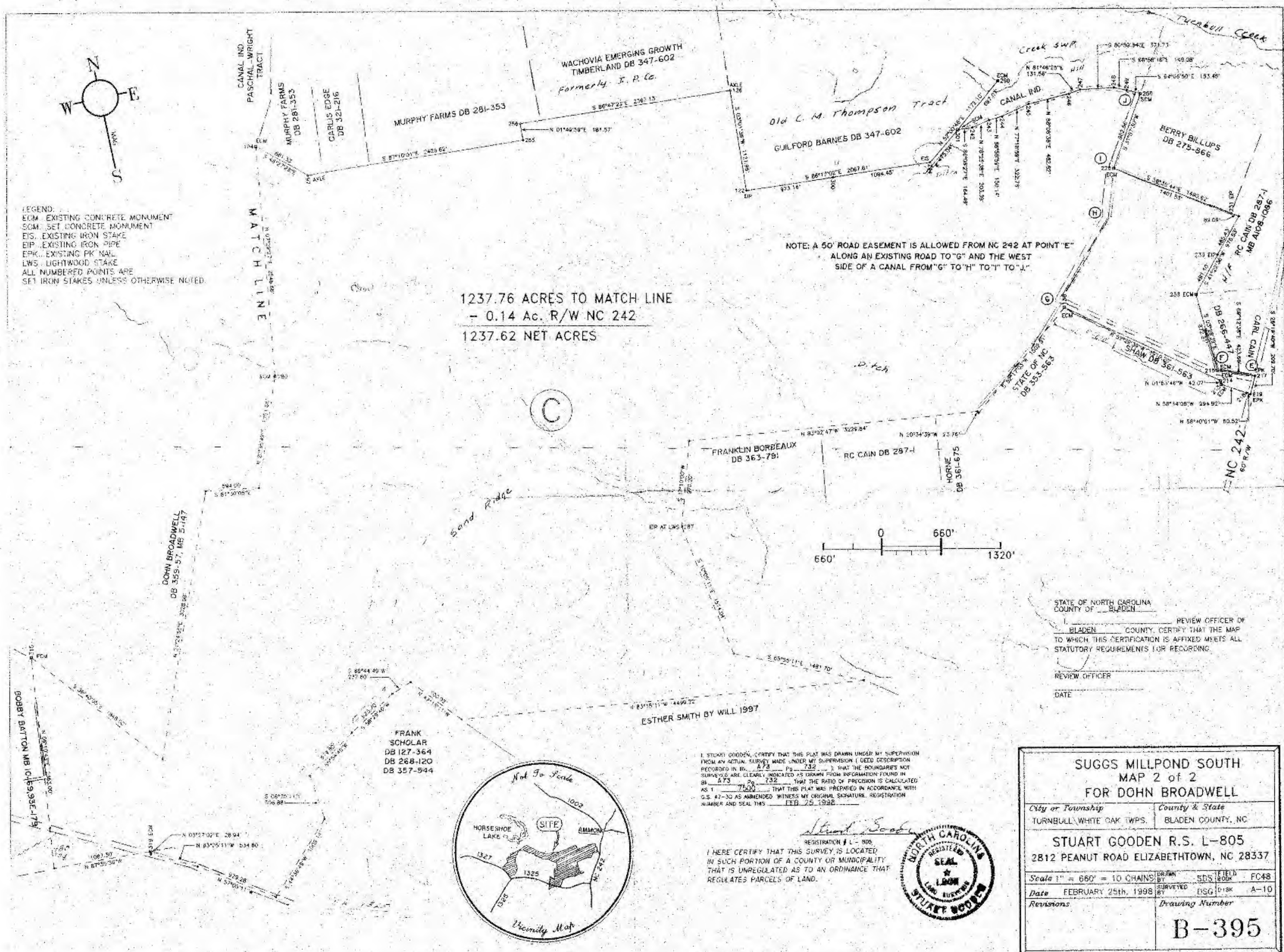
I HEREBY CERTIFY THAT THIS SURVEY IS LOCATED IN SUCH PORTION OF A COUNTY OR MUNICIPALITY THAT IS UNREGULATED AS TO AN ORDINANCE THAT REGULATES PARCELS OF LAND.

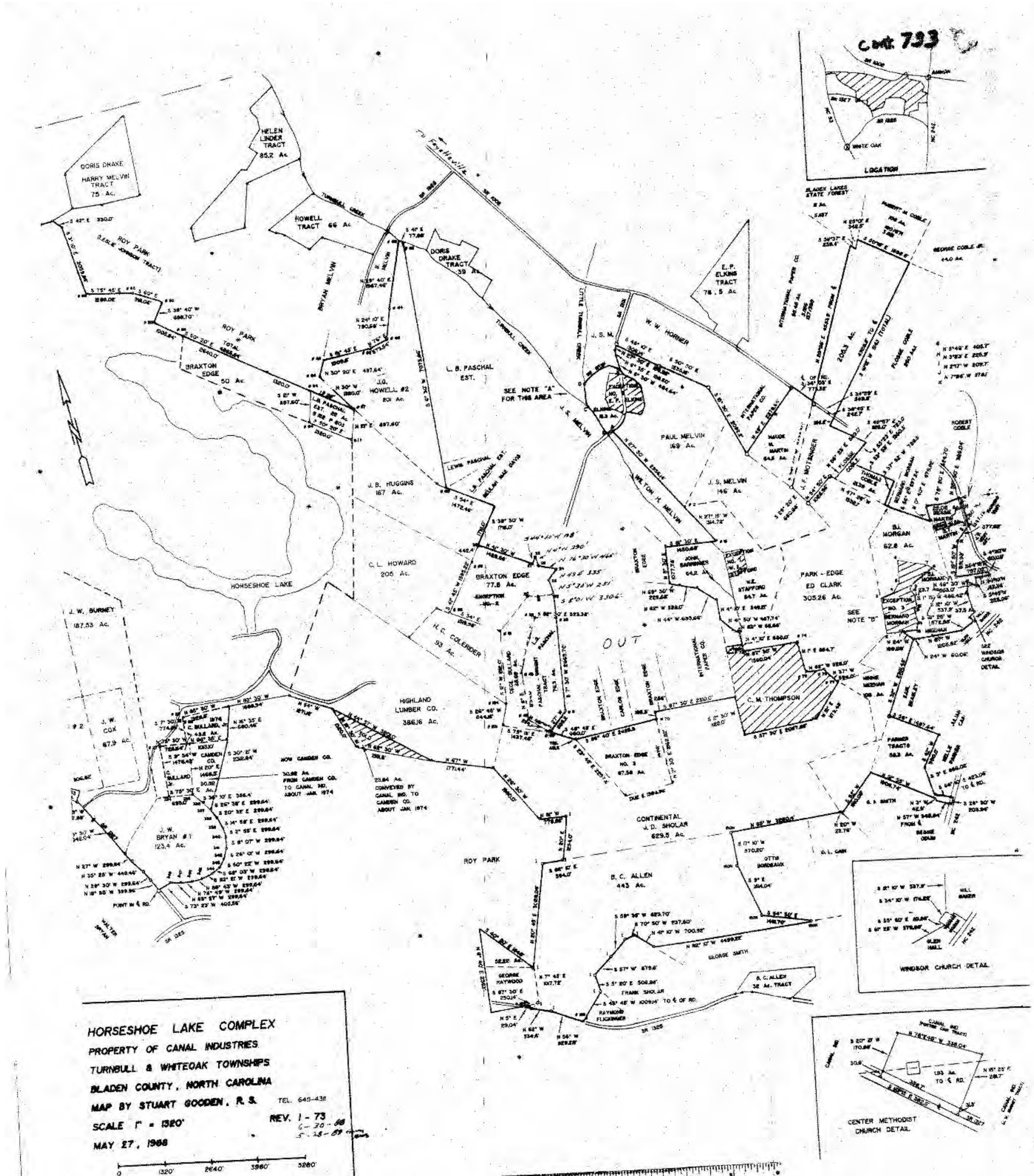
STATE OF NORTH CAROLINA
COUNTY OF BLADEN

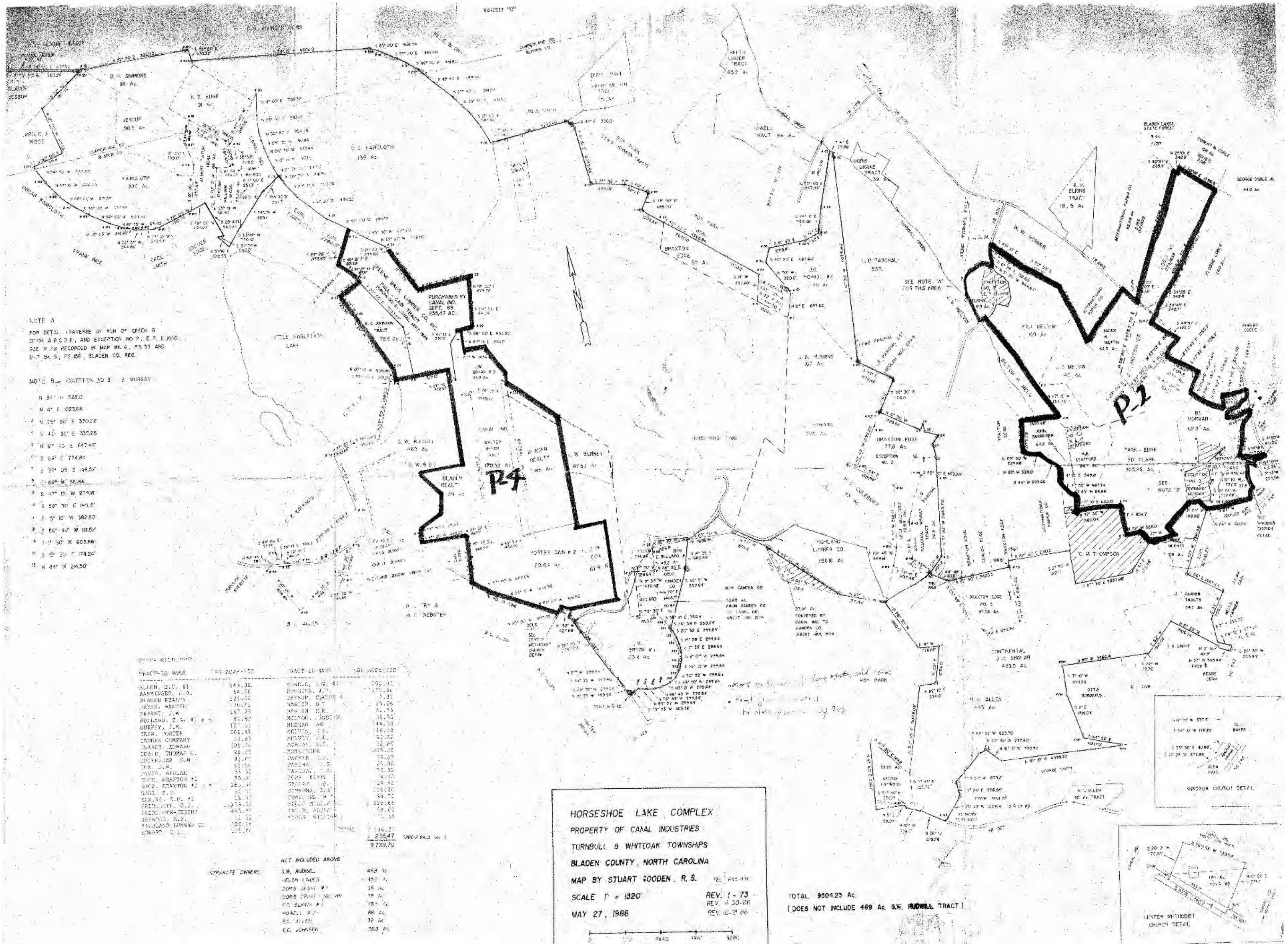
I, _____, REVIEW OFFICER OF BLADEN COUNTY, CERTIFY THAT THE MAP TO WHICH THIS CERTIFICATION IS ATTACHED MEETS ALL STATUTORY REQUIREMENTS FOR RECORDING.

REVIEW OFFICER _____

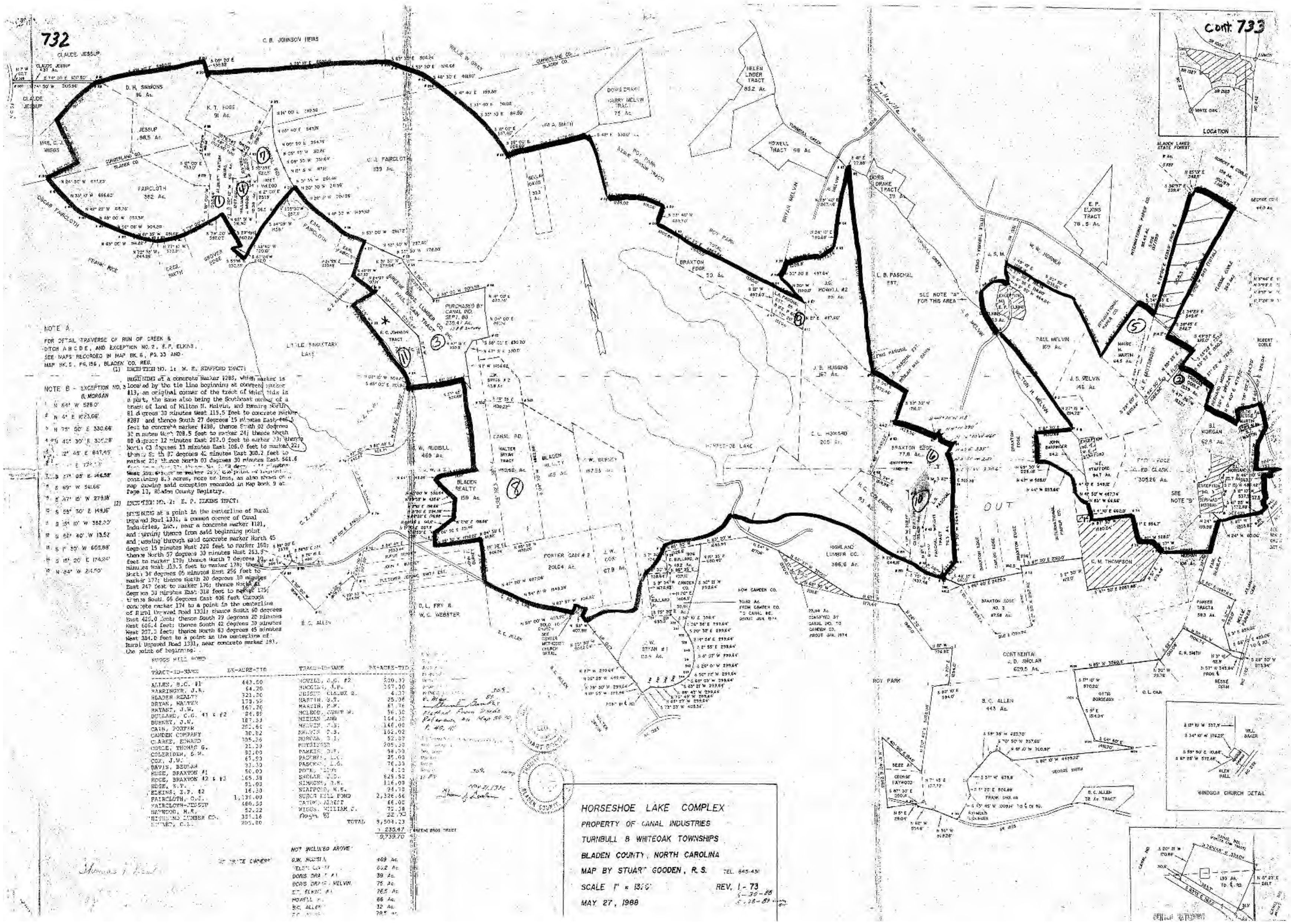
DATE _____

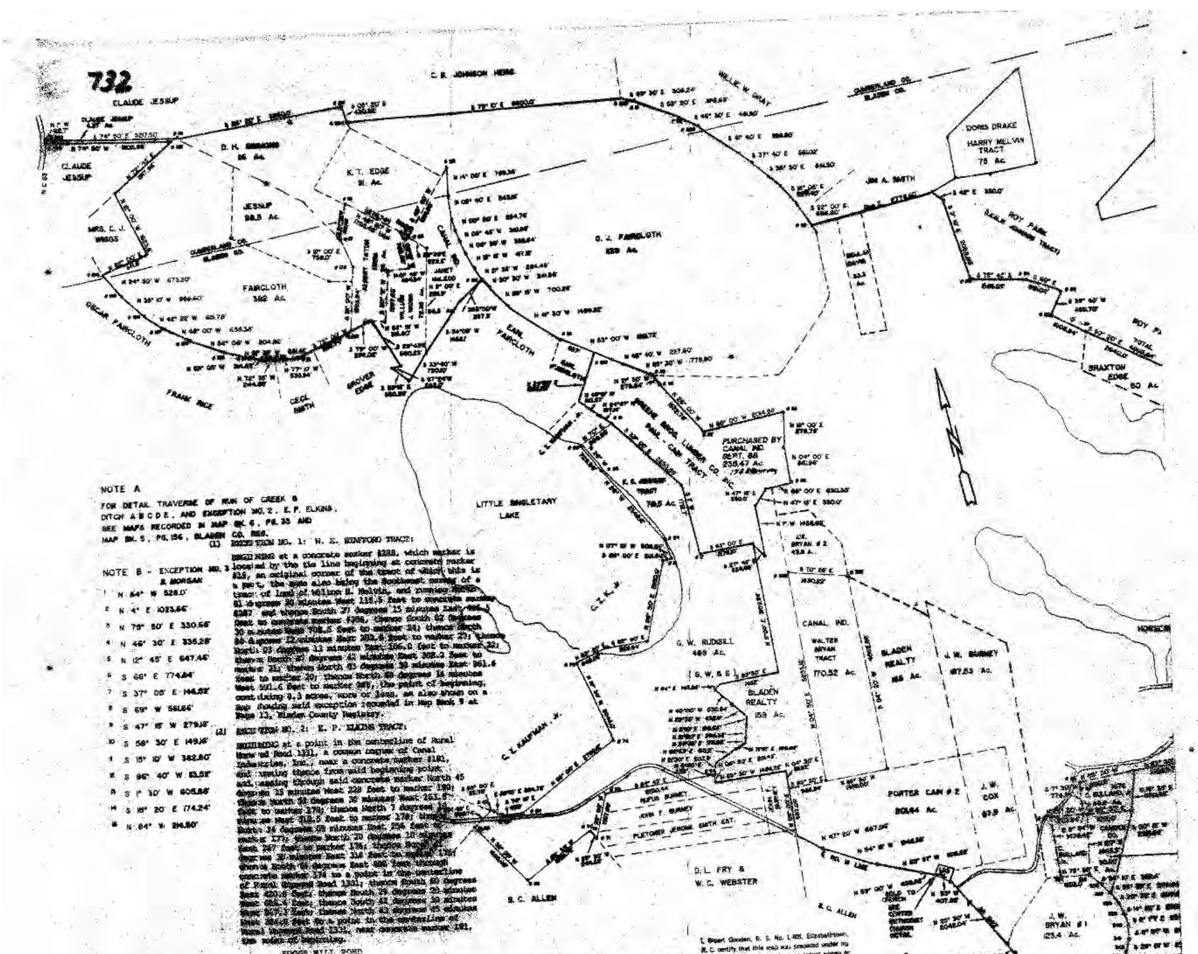

N
E
S
W
LEGEND:
ECM - EXISTING CONCRETE MONUMENT
SCM - SET CONCRETE MONUMENT
EIS - EXISTING IRON STAKE
EIP - EXISTING IRON PIPE
EPK - EXISTING PK NAIL
LWS - LIGHTWOOD STAKE
ALL NUMBERED POINTS ARE
SET IRON STAKES UNLESS OTHERWISE NOTED
CANAL IND. PASCHAL-WRIGHT TRACT
MURPHY FARMS DB 281-353
CARLIS EDGE DB 321-216
MURPHY FARMS DB 281-353
WACHOVIA EMERGING GROWTH TIMBERLAND DB 347-602
Formerly I. P. Co.
Old C. M. Thompson Tract
GUILFORD BARNES DB 347-602
CANAL IND.
Creek SWP.
Turnbull Creek
BERRY BILLUPS DB 275-866
RC CAIN DB 287-I MB A108-1086
CARL CAIN
NOTE: A 50' ROAD EASEMENT IS ALLOWED FROM NC 242 AT POINT "E" ALONG AN EXISTING ROAD TO "G" AND THE WEST SIDE OF A CANAL FROM "G" TO "H" TO "I" TO "J".
MATCH LINE
1237.76 ACRES TO MATCH LINE
- 0.14 Ac. R/W NC 242
1237.62 NET ACRES
C
Ditch
SHAW DB 361-563
STATE OF NC DB 353-563
DB 266-447
NC 242
60' R/W
FRANKLIN BORBEAUX DB 363-791
RC CAIN DB 287-I
HORNE DB 361-675
Sand Ridge
DOHN BROADWELL DB 359-57, MB 5-147
660'
0
660'
1320'
STATE OF NORTH CAROLINA
COUNTY OF BLADEN
I, ______ REVIEW OFFICER OF BLADEN COUNTY, CERTIFY THAT THE MAP TO WHICH THIS CERTIFICATION IS AFFIXED MEETS ALL STATUTORY REQUIREMENTS FOR RECORDING.
REVIEW OFFICER
DATE
ESTHER SMITH BY WILL 1997
FRANK SCHOLAR DB 127-364 DB 268-120 DB 357-944
BOBBY BATTON MB 10-169,93E-179
Not To Scale
SITE
HORSESHOE LAKE
AMMON
1003
1327
1325
NC 242
Vicinity Map
I, STUART GOODEN, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION (DEED DESCRIPTION RECORDED IN Bk. A73 Pg 732); THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND IN Bk A73 Pg 732 THAT THE RATIO OF PRECISION IS CALCULATED AS 1 : 7500 ; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMMENDED. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS FEB 25 1998
REGISTRATION # L - 805
I HERE CERTIFY THAT THIS SURVEY IS LOCATED IN SUCH PORTION OF A COUNTY OR MUNICIPALITY THAT IS UNREGULATED AS TO AN ORDINANCE THAT REGULATES PARCELS OF LAND.
NORTH CAROLINA REGISTERED SEAL L-805 LAND SURVEYOR STUART GOODEN
SUGGS MILLPOND SOUTH
MAP 2 of 2
FOR DOHN BROADWELL
City or Township: TURNBULL\WHITE OAK TWPS.
County & State: BLADEN COUNTY, NC
STUART GOODEN R.S. L-805
2812 PEANUT ROAD ELIZABETHTOWN, NC 28337
Scale 1" = 660' = 10 CHAINS
DRAWN BY SDS
FIELD BOOK FC48
Date FEBRUARY 25th, 1998
SURVEYED BY DSG
DISK A-10
Revisions
Drawing Number
B-395


Cont. 733
LOCATION
WHITE OAK
HELEN LINDER TRACT 85.2 Ac.
DORIS DRAKE HARRY MELVIN TRACT 75 Ac.
ROY PARK
HOWELL TRACT 66 Ac.
DORIS DRAKE TRACT 39 Ac.
To Fayetteville
TURNBULL CREEK
BRYAN MELVIN
BRAXTON EDGE 50 Ac.
J.G. HOWELL #2 201 Ac.
L. B. PASCHAL EST.
SEE NOTE "A" FOR THIS AREA
E. P. ELKINS TRACT 78.5 Ac.
J. S. M.
W. W. HORNER
INTERNATIONAL PAPER CO.
PAUL MELVIN 169 Ac.
J. S. MELVIN 146 Ac.
MELTON H. MELVIN
J. B. HUGGINS 167 Ac.
LEWIS PASCHAL
C. L. HOWARD 205 Ac.
HORSESHOE LAKE
BRAXTON EDGE 77.8 Ac.
H. C. COLERIDER 93 Ac.
OUT
PARK - EDGE ED CLARK 305.26 Ac.
SEE NOTE "B"
B.I. MORGAN 62.8 Ac.
ROBERT COBLE
C. M. THOMPSON
J. W. BURNEY 187.53 Ac.
J. W. COX 67.9 Ac.
HIGHLAND LUMBER CO. 386.6 Ac.
NEW CAMDEN CO.
J. W. BRYAN #1 123.4 Ac.
CONTINENTAL J. D. SHOLAR 629.5 Ac.
ROY PARK
B. C. ALLEN 443 Ac.
GEORGE SMITH
FRANK SHOLAR
GEORGE HAYWOOD
RAYMOND FLICKINGER
B. C. ALLEN 32 Ac. TRACT
SR 1320
WINDSOR CHURCH DETAIL
CENTER METHODIST CHURCH DETAIL
HORSESHOE LAKE COMPLEX
PROPERTY OF CANAL INDUSTRIES
TURNBULL & WHITEOAK TOWNSHIPS
BLADEN COUNTY, NORTH CAROLINA
MAP BY STUART GOODEN, R. S.
TEL. 645-438
SCALE 1" = 1320'
REV. 1-73
MAY 27, 1968
0 1320' 2640' 3960' 5280'



HORSESHOE LAKE COMPLEX
PROPERTY OF CANAL INDUSTRIES
TURNBULL & WHITEOAK TOWNSHIPS
BLADEN COUNTY, NORTH CAROLINA
MAP BY STUART GOODEN, R.S.
SCALE 1" = 1320'
MAY 27, 1988
REV. 1-73
TOTAL 9504.23 Ac.
(DOES NOT INCLUDE 469 Ac. G.W. RUDNILL TRACT)
NOTE A
FOR DETAIL TRAVERSE OF RUN OF CREEK B
LITTLE SINGLETARY LAKE
PURCHASED BY CANAL IND. SEPT. 66 235.47 AC.
P4
P2
SEE NOTE "A" FOR THIS AREA
C. M. THOMPSON
GOODSON CHURCH DETAIL
CENTER METHODIST CHURCH DETAIL
NOT INCLUDED ABOVE
9,739.70


732
Cont. 733
HORSESHOE LAKE COMPLEX
PROPERTY OF CANAL INDUSTRIES
TURNBULL & WHITEOAK TOWNSHIPS
BLADEN COUNTY, NORTH CAROLINA
MAP BY STUART GOODEN, R. S. TEL. 645-431
SCALE 1" = 1320' REV. 1-73
MAY 27, 1988
NOTE A.
FOR DETAIL TRAVERSE OF RUN OF CREEK & DITCH A B C D E, AND EXCEPTION NO. 2, E.P. ELKINS, SEE MAPS RECORDED IN MAP BK. 6, PG. 33 AND MAP BK. 5, PG. 156, BLADEN CO. REG.
NOTE B - EXCEPTION NO. 3 B. MORGAN
(1) EXCEPTION NO. 1: W. R. STAFFORD TRACT:
(2) EXCEPTION NO. 2: E. P. ELKINS TRACT:
HORSESHOE LAKE
LITTLE SINGLETARY LAKE
LOCATION
WINDSOR CHURCH DETAIL
OUT



TRACT-ID-NAME	BK-ACRE-TID	TRACT-ID-NAME	BK-ACRE-TID
ALLEN, B.C. #1	443.00	HOWELL, J.G. #2	280.07
BARRINGER, J.A.	64.20	HUGGINS, J.P.	167.00
BLADEN REALTY	321.00	JESSUP, CLAUDE B.	4.37
BRYAN, WALTER	170.52	MARTIN, B.T.	25.86
BRYANT, J.W.	167.20	MARTIN, M.M.	61.76
BULLARD, C.G. #1 & #2	84.89	MCLEOD, JANET W.	56.50
BURNEY, J.W.	187.53	MEEHAN LAND	144.50
CAIN, PORTER	201.64	MELVIN, J.S.	146.00
*CAMDEN COMPANY	30.82	MELVIN, P.B.	162.02
CLARKE, EDWARD	305.26	MORGAN, B.I.	62.60
COBLE, THOMAS G.	21.39	MOTSINGER	205.30
COLERIDER, S.W.	93.00	PARKER, D.F.	58.30
COX, J.W.	67.90	PASCHAL, L.G.	25.00
DAVIS, BEULAH	33.30	PASCHAL, L.G.	76.30
EDGE, BRAXTON #1	50.00	POPE, KIRBY	4.10
EDGE, BRAXTON #2 & #3	165.38	SHOLAR, J.D.	629.50
EDGE, K.T.	91.00	SIMMONS, D.H.	116.00
ELKINS, E.P. #2	16.30	STAFFORD, W.E.	94.70
FAIRCLOTH, O.J.	1,139.00	SUGGS MILL POND	2,326.66
FAIRCLOTH-JESSUP	480.50	TATUM, ALBERT	66.00
HAYWOOD, M.K.	52.22	WIGGS, WILLIAM J.	72.38
HIGHLAND LUMBER CO.	386.16		
HOWARD, C.L.	205.96		
		TOTAL	9,504.23
			+ 235.47
			9,739.70

(SEPARATE OWNERS)

NOT INCLUDED ABOVE:

G.W. RUDSILL	469 Ac.
HELEN LINDER	65.2 Ac.
DORIS DRAKE # 1	39 Ac.
DORIS DRAKE - MELVIN	75 Ac.
E.P. ELKINS # 1	76.5 Ac.
HOWELL # 2	86 Ac.
B.C. ALLEN	32 Ac.
E.C. JOHNSON	98.5 Ac.

HORSESHOE LAKE COMPLEX
PROPERTY OF CANAL INDUSTRIES
TURNBULL & WHITEOAK TOWNSHIPS
BLADEN COUNTY, NORTH CAROLINA
MAP BY STUART GOODEN, R. S.
SCALE 1" = 1320'
MAY 27, 1986

0 1320' 2640' 3960'

APPENDIX XVI – ARTICLES OF DEDICATION

North Carolina
Department of Administration

Beverly Eaves Perdue, Governor

Britt Cobb, Secretary

January 19, 2010

Secretary Dee Freeman
Department of Environment and Natural Resources
1615 Mail Service Center
Raleigh, North Carolina 27699-1615

Mr. Gordon S. Myers, Executive Director
N.C. Wildlife Resources Commission
1701 Mail Service Center
Raleigh, North Carolina 27699-1701

Re: Dedication of Portions of **Suggs Millpond Game Land**, Bladen County

Dear Secretary Freeman and Mr. Myers:

Pursuant to Article 9A, Chapter 113A of the North Carolina General Statutes, this letter of allocation is executed for the purpose of dedicating the State-owned lands hereinafter described as a North Carolina Nature Preserve. These articles of dedication replace the articles of dedication dated November 9, 2000. The articles were amended to reflect additions of property to the preserve.

These real properties are currently administered by the North Carolina Wildlife Resources Commission as a portion of the Suggs Millpond Game Land and consist of approximately 10,408 acres located in Bladen County and composed of:

1. Suggs Millpond Game Land (Primary Area)	7,928 acres
2. Suggs Millpond Game Land (Buffer Area)	2,480 acres

Mailing Address:
1301 Mail Service Center
Raleigh, NC 27699-1301

Telephone: (919) 807-2425
Fax (919) 733-9571
State Courier #51-01-00
e-mail britt.cobb@doa.nc.gov
An Equal Opportunity Affirmative Action Employer

Location Address:
116 West Jones Street
Raleigh, North Carolina 27603

all or which are specifically described in Exhibit A, attached hereto and by reference made a part hereof. The dedicated lands shall be known collectively as the **Suggs Millpond Nature Preserve**.

Dedication of the qualified portions of the tracts fulfills the terms of any prior grant agreement, including that of the Natural Heritage Trust Fund and the Clean Water Management Trust Fund.

The Governor and Council of State have approved the dedication of the State-owned lands hereinabove described as the Suggs Millpond Game Land Dedicated Nature Preserve to be held in trust by the Custodian for the uses and purposes expressed in the Nature Preserves Act at a meeting held in the City of Raleigh, North Carolina, on the 4th day August, 2009.

Sincerely,

Britt Cobb

BC:ke

Attachment

CONSENTED AND AGREED TO:

Secretary Dee Freeman
Department of Environment and Natural Resources

Gordon S. Myers, Executive Director
Wildlife Resources Commission

EXHIBIT A

SUGGS MILLPOND GAME LAND
DEDICATED NATURE PRESERVE

COUNTY: Bladen TOPOGRAPHIC QUAD: Jerome, Ammon

PHYSIOGRAPHIC PROVINCE: Coastal Plain

SIZE OF AREA: ca. 10,408 acres total (primary area 7,928 acres, including restoration areas of 386 acres; buffer area 2,480 acres, including a special management area of 37 acres)

OWNER/ADMINISTRATOR: State of North Carolina, Wildlife Resources Commission

LOCATION: The Suggs Millpond Game Land is located along the Bladen-Cumberland County line, roughly 6 miles northeast of the town of White Oak and 4 miles west of Ammon. The site lies between NC 53 and Live Oak Church Road (SR 1317) on the west, Gum Springs Road (SR 1325) on the south, Old Fayetteville Road (SR 1002) on the east and Bushy Lake State Natural Area on the north. Access is by gated dirt roads from NC 53, Live Oak Church Road, Old Fayetteville Road, and West Road. The site includes Suggs Millpond Bay, Marshy Bay, Big Gallberry Bay, Little Gallberry Bay, Little Singletary Lake and the unnamed bay west of it, Round Pond Bay, White Pond Bay and Jessups Pond, and several segments of the swamp along Turnbull Creek.

DESCRIPTION: The Suggs Millpond site lies in the Bladen Lakes region, a distinctive portion of North Carolina known for its high concentration of Carolina bays. The site encompasses five large bays and several smaller ones, all peat-filled. It includes Little Singletary Lake and a smaller natural pond, as well as the old impoundments Suggs Mill Pond and Jessups Pond. It also includes sections of the undulating sandy landscape between the bays and several segments of stream swamp along Turnbull Creek. It includes good examples of some of the typical natural communities of the region, and also some very distinctive communities, along with a cluster of rare plant and animal species.

Little Singletary Lake is one of the handful of large natural lakes in North Carolina. It has a sandy bed, and a Natural Lake Shoreline community dominated by titi (*Cyrilla racemiflora*), with a scattered pond cypress (*Taxodium ascendens*). The smaller pond near it is boggy in character, with a muck bed and a shoreline dominated by leatherleaf (*Chamaedaphne calyculata*), honeycup (*Zenobia pulverulenta*), and *Sphagnum* moss.

Suggs Millpond itself is an old mill pond formed by damming a large peat-filled bay. Though of artificial origin, the upper portions of the pond are believed to resemble the natural vegetation of a mature beaver pond in such a setting. This is notable, because no natural examples of beaver ponds are known in peat-filled bays or other peatlands, and the interaction of the impounded water with the peat produces vegetation quite different from ponds along streams. The pond is a complex of open water, beds of floating-leaved aquatic plants (water lilies - - *Nymphaea odorata*), quaking bog mats, cypress thickets, and vegetation resembling Low Pocosin. The quaking bog mats, composed of floating vegetation over water, include plants such as maiden cane (*Panicum hemitomum*), bushy broomsedge (*Andropogon glomeratus*), leatherleaf (*Chamaedaphne calyculata*), pitcher plants (*Sarracenia flava*), and the rare northern white beaksedge (*Rhynchospora alba*). Quaking bog mats of any kind are known from

only a handful of locations in North Carolina. The Low Pocosin areas are dominated by leatherleaf and honeycup (*Zenobia pulverulenta*), themselves often in mats floating over water. They probably represent the vegetation that filled much of the bay before the impoundment. Other rare species associated with the pond, besides the northern white beaksedge, include alligators (*Alligator mississippiensis*) and anhinga (*Anhinga anhinga*).

Jessups Pond is another old mill pond. It was formed by damming a creek, but backs water up into White Pond Bay. The lower part of the pond has fairly deep open water, while the extensive upper part has a canopy of cypress (*Taxodium distichum*) and swamp black gum (*Nyssa biflora*). Though it lacks well-developed floating mats, it has extensive aquatic peat moss (*Sphagnum* spp.) and bladderwort (*Utricularia* spp.), and its edges illustrate the interaction of ponded water with existing pocosin. Rare species include chicken turtle (*Dierochelyls reticularia*) and anhinga.

Marshy Bay, Big Gallberry Bay, and Little Gallberry Bay contain high quality natural peatland communities. Low Pocosin fills much of Big Gallberry Bay, with knee-high honeycup, fetterbush (*Lyonia lucida*), sheep laurel (*Kalmia carolina*), and scattered, stunted pond pine (*Pinus serotina*). Scattered in the bay are patches of Peatland Atlantic White Cedar Forest, dominated by Atlantic white cedar (*Chamaecyparis thyoides*) with pocosin shrubs beneath. High Pocosin occurs around the edge of this bay, and fills much of Little Gallberry Bay and Marshy Bay. The shrub layer is head-high or taller. Fetterbush and sweet gallberry (*Ilex coriacea*) dominate. An uncommon deciduous form of High Pocosin, dominated by smooth holly (*Ilex laevigata*), honeycup, and sweet pepperbush (*Clethra alnifolia*), occurs in southeastern Marshy Bay. Pond Pine Woodland fills the bay west of Little Singletary Lake, the small bays in the southern part of the site, Round Pond Bay, and the edges of the other bays. It is dominated by an open to closed canopy of pond pine (*Pinus serotina*) over a dense layer of evergreen pocosin shrubs. Loblolly bay (*Gordonia lasianthus*) is abundant in some, but not in others. White wicky (*Kalmia cuneata*) occurs on the edges of Pond Pine Woodlands in a couple of areas. Additional areas of Pond Pine Woodland are present around the edges of White Pond Bay and in Round Pond Bay.

The rims of the bays are high sand ridges that support Xeric Sandhill Scrub communities. The areas between and around the bays are mosaics of Xeric Sandhill Scrub, Pine/Scrub Oak Sandhill, Wet Pine Flatwoods, and Pond Pine Woodland. The first two of these communities are dominated by an open canopy of longleaf pine (*Pinus palustris*) with an open understory of scrub oaks. In general, they have a well-developed herb layer dominated by wiregrass (*Aristida stricta*), but the driest of the Xeric Sandhill Scrub on the bay rims have only sparse herb layers with abundant reindeer lichen (*Cladonia* spp.) and bare sand. The Wet Pine Flatwoods communities, on lower sandy soils, are also dominated by longleaf pine, but lack scrub oaks. The ground cover is a dense bed of wiregrass and low shrubs. Several rare species are associated with the longleaf pine communities and their edges: threadleaf sundew (*Drosera filiformis*), southern bog button (*Lachnocaulon beyrichianum*), shortleaf yellow-eyed grass (*Xyris brevifolia*), and Venus flytrap (*Dionaea muscipula*) occur on road beds or other openings in Wet Pine Flatwoods. With more frequent fire, these plants are expected to spread back out into their original habitat within the flatwoods. Of the rare animals found, pine barrens treefrog (*Hyla andersonii*) is also associated with pocosin edges, and eastern fox squirrel (*Sciurus niger*) with the longleaf pine communities. At least one rare moth, Alabama underwing (*Catocala alabamae*) is present in sandhills near Jessups Pond.

The floodplain of Turnbull Creek supports Cypress - - Gum Swamp (Blackwater Subtype) dominated by swamp black gum (*Nyssa biflora*). Portions of the swamp have shallow impoundments created by

beavers, but no large open ponds are known. Turnbull Creek is a major forested connection in the northern Bladen Lakes region, connecting the Suggs Millpond site and Bushy Lake State Natural Area with the state lands farther south in Bladen Lakes State Forest and Jones Lake State Park.

The communities vary in condition. Most of those included in the primary boundary are good examples of their type, though the longleaf pine communities are not extremely mature. Limited areas of longleaf pine plantation that is young, unnaturally dense, and has limited natural ground cover are included in the primary boundary where they are important to the continuity of the primary area. One area of sandhill contains more mature planted longleaf pine, which has been thinned in the past to approximately natural density. The ground cover is in good condition, and this area is included in the primary boundary as an area that has been successfully restored from past limited disturbance. Several areas of planted pine or cut over sandhills are included as primary restoration areas. The natural structure and function of longleaf forests will be restored and perpetuated within these areas.

All of the communities of the site, except the Cypress- - Gum Swamp and the millpond community, naturally depend on fire. Fire has been very limited for many years, and all communities have been altered by its absence. They retain enough of their natural character that they are expected to recover when subjected to prescribed burning.

Communities within the buffer area are generally in poor condition. Much of the buffer is young planted loblolly pine, and part is heavily logged Pond Pine Woodland or other communities. Natural wiregrass ground cover is present locally, but is badly degraded over most of the area due to the combined effects of fire suppression, disturbance by bedding or other site preparation, and shading by the unnaturally dense canopy. There are some young longleaf pine plantations with similarly degraded ground cover. It is hoped that these buffer areas can be restored to more natural character, and so provide additional habitat for species that require larger areas of habitat.

BOUNDARY JUSTIFICATION: The primary boundary is drawn to include the good quality communities and rare species locations. It includes the bays, the stream swamp, and the most intact portions of the bay rims and area between the bays. The latter includes selected areas south and southeast of Suggs Millpond Bay, much of the area northwest of Suggs Millpond Bay, the area between Marshy Bay and Little Gallberry Bay, and the most intact areas around Jessups Pond. Some lower quality areas around Jessups Pond which will recover with fire alone are included in the primary area for their connective value. The primary area also includes most of Suggs Millpond and Jessups Pond, excluding the deep water areas near the dams, which does not resemble a natural beaver pond. The mature longleaf pine plantation which resembles a natural community is included. Primary restoration areas include pine plantation which has high potential for restoration based on current herbaceous layer condition, and contribute to the continuity of the primary area.

The area which supports a rare moth species, the Alabama underwing (*Catocala alabamensis*) is included as a special management portion of the buffer area. The management needed to support and enhance the habitat of this rare moth are not clearly understood. It occurs in longleaf habitat which would normally be managed through prescribed burning, but relies on hawthorns as a food source. The hawthorns may not thrive under a prescribed burning regimen, so the area is going to be managed on an experimental basis for the rare species.

The buffer area includes all the lower quality vegetation which can contribute habitat for wider ranging species, especially if it is restored to a more natural condition. It is primarily pine plantation or recent

clearcuts, with some cut-over Pond Pine Woodland. Excluded from the dedication are the heavily altered areas around the two dams, the old hunting lodge, and the waterfowl impoundments and fields around Suggs Millpond.

MANAGEMENT AND USE: Suggs Millpond Game Land will be used primarily for public hunting, fishing, trapping, and other forms of low intensity recreation. Public use will be limited to foot access other than on existing roads. Prescribed burning will be an important management tool in both the primary and buffer area. Fire management will focus first on longleaf pine communities and easily burned small pocosin areas. As methods for prescribed burning in more extensive pocosins are developed, it is hoped that the burning can be extended into these areas also. Burning will initially focus on hazardous fuel reduction in winter fires, then on restoration of community structure through growing season burns, and finally on ecological maintenance with periodic growing season burns.

Areas of unnaturally dense longleaf plantations or plantations of canopy composition other than longleaf within the primary area will be restored to more closely approximate the natural structure and composition of a longleaf pine community, according to methodology described in a restoration plan developed jointly by Wildlife Resources Commission and Natural Heritage Program staff.

The pine plantations in the buffer areas will be restored over time to longleaf pine and to a more natural vegetation structure and composition, to the extent possible.

THIS DEDICATION OF THE SUGGS MILLPOND GAME LAND NATURE PRESERVE IS MADE SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS:

1. As used in this Letter, the terms "natural area" and "nature preserve" shall have the same meaning as contained in North Carolina General Statutes, section 113A-164.3.

2. Pursuant to North Carolina General Statutes 113-164.8, all State-owned lands lying within the above designated area(s) are hereby dedicated as nature preserve to be known collectively as the Suggs Millpond Nature Preserve (hereinafter "preserve") for the purposes provided in the North Carolina Preserves Act, as amended, and other applicable law, and said State-owned land, shall be held, maintained, and used exclusively for said purposes.

3. **Primary Custodian:** The primary custodian of the Suggs Millpond Nature Preserve will be the North Carolina Wildlife Resources Commission, which will be responsible for managing the preserve in accordance with State Administrative Code 15 NCAC 12H:300.

4. **Primary Classification:** The primary classification and purposes of the preserve will be conservation, nature education, wildlife management, hunting, fishing, trapping, and other recreational uses authorized by the Primary Custodian. The ecological significance of the preserve Is described in Exhibit A.

5. **Management Areas:** For the purposes of management, the preserve shall be considered to consist of a Primary Area (approximately 7,928 acres) including restoration areas (approximately 386 acres), and a Buffer Area (approximately 2,480 acres), including a special management area (approximately 37 acres), as more particularly described in Exhibit A, attached thereto and by this reference made a part hereof. The Primary Area consists essentially of the millpond and surrounding high quality examples of Peatland Atlantic White Cedar Forest, Low Pocosin, High Pocosin, Pond Pine Woodland, Wet Pine Flatwoods, Pine/Scrub Oak Sandhill, Xeric Sandhill Scrub, and Cypress-Gum Swamp natural communities, and the rare species within them.

   The Primary Area is deemed by the Secretary of the North Carolina Department of Environment and Natural Resources to qualify as an outstanding natural area under statutory criteria for nature preserve dedication (G.S. 113A-164.6) and further serves all of the public purposes for a dedicated preserve as stated in Administrative Rules 15 NCAC 12H.0301(b).

   The Buffer Area, which contributes to the management and protection of the Primary Area, consists of all the lower quality communities which can contribute habitat for wider-ranging species, especially if it is restored to a more natural condition.

6. **Rules for Management of the Primary Area(s):**

   A. Character of Visitor Activity: The principal visitor activities in the preserve shall be hunting, fishing, boating with no internal combustion motors, trapping, hiking, research, and wildlife observation. These activities shall be regulated by the Custodian to prevent significant disturbance of the preserve. These activities may specifically be regulated by the Custodian to protect and conserve the natural values of the preserve.

      Activities and uses unrelated to those listed above are prohibited except as otherwise

provided in these Articles or unless necessary to carry out the purposes of the preserve. Prohibited activities include, but are not limited to: construction; commercial activities and development; commercial silviculture except as specified in the longleaf restoration plan; agriculture and grazing; gathering of native species of plants or plant products; the removal, disturbance, molestation, or defacement of minerals, archaeological and natural resources, except for research purposes as approved by the Custodian; and those activities specifically restricted in these Articles.

There shall be no fires, except as necessary for ecological management of the preserve or in conjunction with supervised educational activities of the Custodian, or further excepted as herein provided or otherwise expressly permitted.

B. Consumptive Wildlife Uses: Hunting, fishing, and trapping shall be permitted within the preserve subject to regulations and management by the North Carolina Wildlife Resources Commission.

C. Orientation and Guidance of Visitors: The Custodian reserves the right to orient and guide visitors for educational programs, hunting and fishing uses, scientific research, and for preserve management. Exhibits, programs, and printed materials may be provided by the Custodian in service areas. The Custodian may restrict access to visitors in those instances or in such areas that restrictions may be determined necessary to safeguard sensitive environmental resources in the preserve.

D. Disturbance of Natural Resources: The cutting or removal of trees, dead or alive, or the disturbance of other natural resources is prohibited except as necessary for removal of hazards to visitors, control of disease that would damage or reduce the significance of the preserve, restoration after severe storm damage, trail clearance and maintenance, or for purposes of maintenance or restoration of natural communities or rare species populations as stipulated in the preserve management plan and that which is consistent with the purposes of these Articles.

Specifically, a component of the management plan, the longleaf restoration plan, will address restoration of areas (identified as Primary (Restoration) Areas in the Exhibit A map) which have previously been planted in dense longleaf or in species other than longleaf within the Primary Area. Longleaf restoration will minimally focus on removal of unnatural canopy components and thinning of dense longleaf to enhance the condition of the ground layer. The longleaf restoration plan will be submitted to the Natural Heritage Program for review and approval. Subsequent modification of the longleaf restoration plan may occur through mutual consent of Wildlife Resources Commission and Natural Heritage Program staff, as additional areas in need of restoration or new methods of restoration area determined. Salvage timber cuts which may be necessary due to natural catastrophe will be allowed in the preserve, but in a manner which will contribute to the recovery of the prevailing natural conditions of the forest and in consultation with the North Carolina Natural Heritage Program.

E. Wild Fire Control: Wild fires may mimic natural processes historically occurring in an ecosystem on a landscape level. When the extent of a wild fire does not threaten human life or structures, it may be allowed to burn with minimal control. If wild fire control is

necessary, firebreaks may need to be established. When possible, existing roads and firebreaks will be utilized for wild fire control. When new firebreaks need to be established, environmentally sensitive areas will be avoided when possible. Old firebreaks which affect the natural hydrology of wetlands will be filled and allowed to revegetate. Planning of firebreak restoration should occur in consultation with the North Carolina Natural Heritage Program.

F. Water Control: The purpose of water control shall be to maintain the preserve's natural water regime. Water levels that have been altered by man may be changed if necessary to restore the preserve to its natural condition. In a preserve with a long history of managed hydrology, water levels may be managed to perpetuate the ecosystems that have evolved around the hydrology or may be restored to natural condition. This decision should be made in consultation with the Natural Heritage Program. Millponds are an example of situations in which water levels have been historically managed.

G. Pollution and Dumping: There will be no storage or dumping of ashes, trash, garbage, hazardous substances, toxic waste, other unsightly or offensive material, or fill material, including dredge spoil in, on, or under the preserve. No underground storage tanks may be placed within the preserve. No surface or ground waters of the preserve may have pollutants added within the preserve.

H. Control of Vegetational Succession: Control of vegetational succession may be undertaken if necessary to maintain or restore a particular natural ecosystem type or to preserve endangered, threatened, rare, or unusual species. Controls will be done in the manner that best imitates the natural forces believed responsible for maintaining the natural ecosystem type, or that minimizes unnatural effects on non-target portions of the ecosystem. Prescribed burning is particularly essential to ecosystems where natural fire historically suppressed woody vegetation and promoted herbaceous diversity.

I. Control of Populations: Any control of animal or plant populations on the preserve shall be for the purpose of correcting those situations where those populations are significantly affecting natural conditions on the preserve, and in accordance with the Custodian's established regulations for hunting, trapping, or fishing of designated game animals. The Custodian may, in consultation with the North Carolina Natural Heritage Program, apply biological controls, herbicides and pesticides, and other means deemed necessary or appropriate to control or eradicate exotic or native species of plant or animal that are degrading the natural character of the preserve. Because of potential impacts on native species, no exotic flora or fauna shall be introduced into the preserve.

J. Research and Collecting Permits: Any person wishing to engage in scientific research requiring collecting or otherwise affecting anything within the preserve shall first secure written permission from the Custodian.

K. Roads and Trails: New roads shall not be constructed in the Primary Area. When necessary, the Custodian may construct and maintain access limited to staff use for management purposes, such as service paths (single lane vegetated paths) for patrol, right-of-way maintenance, and other management activities, within the Primary Area. Number and width of new paths will be minimized, and sensitive areas avoided where

possible. Existing roads that occur within or form a boundary of the Primary Area may be maintained by grading of the roadbed, replacing culverts, or adding stone as needed in order to maintain the integrity of the road for vehicular use. Daylighting of roads within the Primary Area should be minimized, but may be used if necessary to maintain the condition of the road. Access management and construction will be part of the overall management planning process and will include consultation with the North Carolina Natural Heritage Program.

L. Other Structures and Improvements: Structures or facilities shall not be erected by the Custodian within a preserve, except as may be consistent with the purposes of the preserve as stated in this dedication. Site selection shall be consistent with this dedication.

M. Management Plan: The Wildlife Resources Commission, as Primary Custodian of the preserve, shall be required to prepare and submit for approval to the Secretary of the Department of Environment and Natural Resources a management plan for the preserve. The management plan will be part of the larger management plan developed for the gamelands. This plan shall be subject to all the provisions of this dedication and shall additionally be consistent with the management principles set forth in the North Carolina Administrative Code 15 NCAC 12H.0300 and such other regulations as may be established from time to time by the Secretary of the Department of Environment and Natural Resources. In any case where contradictions may arise between this instrument of dedication and other management regulations, the terms of this dedication shall take precedence.

7. **Rules for Management of the Buffer Area(s):** Primary area rules also apply except that additional forestry and wildlife management activities may be planned and carried out as needed. Construction and maintenance of roads, trails, and other access structures within buffer area(s) of the preserve will be limited to the level necessary to appropriately manage the preserve. These activities will be conducted in accordance with policy of the N.C. Wildlife Resources Commission and general management philosophy as outlined in Commission planning documents, in addition to providing for the buffer functions in relation to the primary area(s). WRC rules and guidelines require the protection and enhancement of wildlife populations and habitat so that hunting, fishing, trapping and other recreational opportunities are available to citizens of this State. Forest management is primarily conducted to enhance wildlife habitat.

A **special management area** exists within the buffer, south of Jessups Millpond (see Exhibit A, Special Management Area). The area is described in this section of the letter of allocation because rules for management of the buffer generally apply within this zone. However, this area supports a rare moth species, the Alabama underwing (*Catocala alabamae*). The management needed to support and enhance the habitat of this rare moth is not clearly understood. It occurs in longleaf habitat which would normally be managed through prescribed burning, but relies on hawthorns as a food source. The hawthorns may not thrive under a prescribed burning regimen, so the area will be managed on an experimental basis for the rare species. Consultation with the Natural Heritage Program and with other agencies monitoring federally listed species will occur as part of the management planning process.

Buffer functions within the dedicated area may include protecting the primary area(s) from indirect detrimental ecological effects, providing additional area for species and ecological processes that require larger areas, and providing important successional stages and disturbance regimes and other habitat diversity for wildlife. Based on these general objectives, the following buffer functions will be addressed in the management plan.

1) Landscape level function of community type and structure. (Buffer area management may involve timber harvest and other forms of stand manipulation, but will not involve forest canopy type conversion over more than limited areas, other than to restore stands to types suited for the site. Introduction of exotic species known to be invasive in natural communities will be avoided.)
2) Maintenance of habitat connectivity and continuity among primary areas.
3) Providing for habitat diversity.
4) Management needs of rare animal and plant species populations occurring within the buffer area; and
5) Protection of soil and hydrologic resources and processes within the primary area and extending into the buffer. (Buffers will be retained along streams, and watersheds of primary areas will be protected from hydrologic alteration.)

8. **Amendment and Modification:** The terms and conditions of this dedication may be amended or modified upon agreement of the Wildlife Resources Commission and Secretary of the Department of Environment and Natural Resources, and approved by the Council of State. Any portion of the tract dedicated pursuant to this instrument may be removed from dedication in accordance with the provisions of North Carolina General Statutes 113A-164.8.

9. **Permanent Plaque:** The Custodian should erect and maintain a permanent plaque or other appropriate marker at a prominent location within the preserve bearing the following statement: "This Area is Dedicated as a State Nature Preserve."

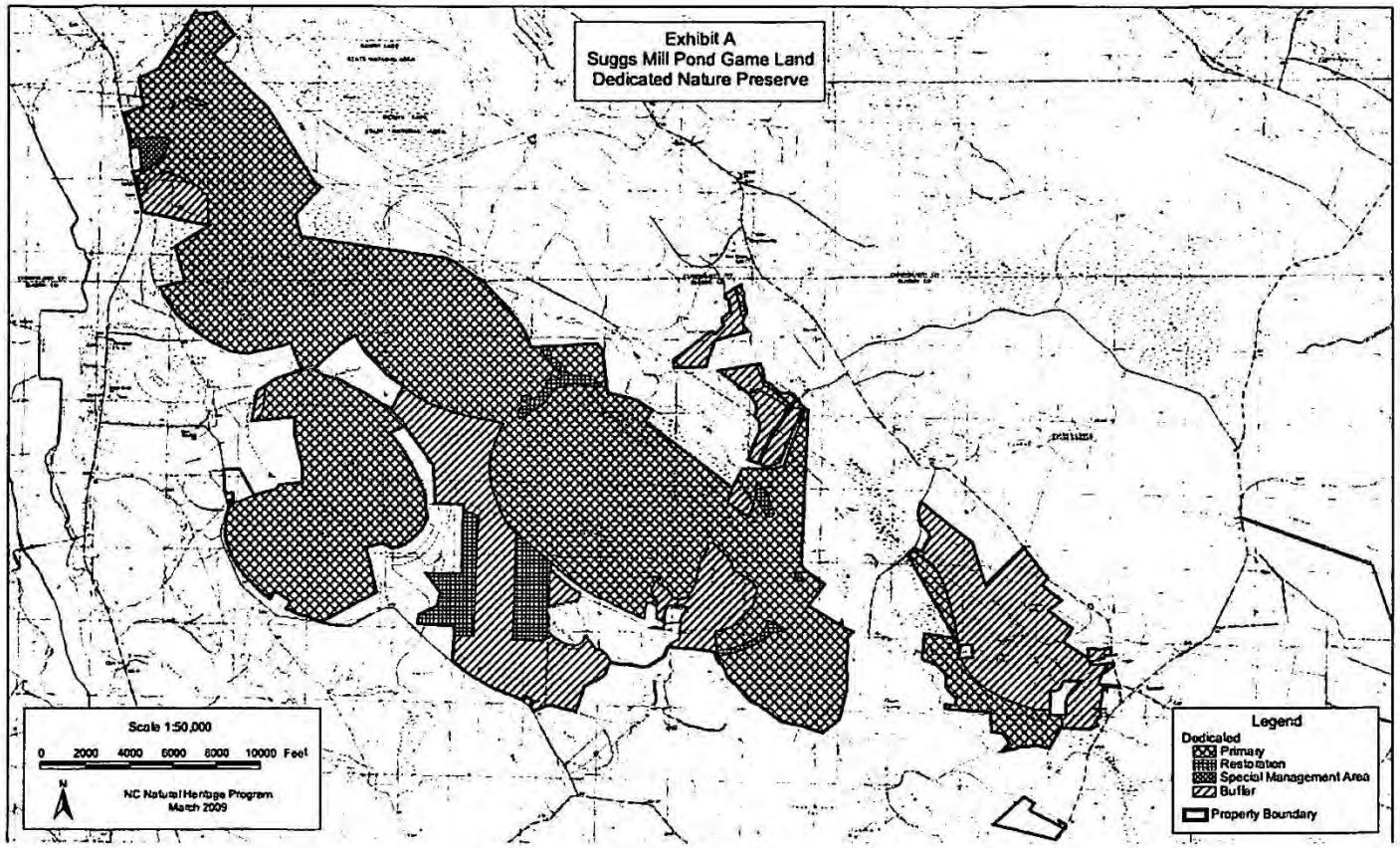


Exhibit A
Suggs Mill Pond Game Land
Dedicated Nature Preserve
Scale 1:50,000
0 2000 4000 6000 8000 10000 Feet
N
NC Natural Heritage Program
March 2009
Legend
Dedicated
Primary
Restoration
Special Management Area
Buffer
Property Boundary

APPENDIX XVII – SUMMARY OF PUBLIC INPUT

As part of the creation of the Suggs Mill Pond Game Land Management Plan, public input was solicited during July and August of 2013. With the idea that the Plan will address all current and potential issues, public input was sought to identify the concerns, desires, and needs of game land users and all interested parties. In order to achieve this, Management Biologists and Supervisory Staff created a series of seven (7) questions that encouraged people to comment on their level of satisfaction, concerns, and desires in relation to WRC game lands. Three methods were used to gather comments; public input meetings, an online comment session, and via email. Public comment was received online and through email from 15 July to 31 August 2013. The public input meeting was held on 24 July 2013 in the auditorium on the campus of Bladen Community College. The following is a summarization of comments received.

SUMMARY OF RESULTS

1. What habitats do you think are most important to protect and/or improve on this game land?

18 comments were received in regards to Question 1. 77% them expressed interest in protecting or improving habitat beneficial to game animals, *i.e.* ducks, deer, bobwhite quail, turkey, etc. The other 23% of the comments specifically named habitat types which included Carolina bays, longleaf pine savannas, xeric sandhill scrub communities, the Cape Fear watershed, and flatwoods.

50% of the habitats mentioned in regards to game animals specifically mentioned the protection and improvement of waterfowl habitat. The remaining 50% referred to habitats beneficial to upland game birds (turkey and bobwhite quail), small game, and mourning doves.

2. Considering those that live on land and in water, what species do you think are most important to protect and/or improve on this game land?

21 comments were received in regards to Question 2. 76% of the comments expressed interest in protecting and/or improving game animals. Waterfowl were mentioned in 10 of the 21 comments (47.6%) and turkeys were mentioned in 5 of the 21 comments (23.8%). Other game animals mentioned are foxes, bears, raccoons, deer, and doves. It should be noted that some people mentioned multiple species.

4 comments stated an interest in protecting non-game animals, 1 comment stated an interest in protecting all animals, and 1 comment was off-subject which mentioned improving food plots. Non-game animals that are thought to need protection and/or improvement include the ornate chorus frog, all upland and aquatic non-game animals, all reptiles and amphibians, and carnivorous plants.

3. *How do you use this game land?*

16 comments were received in regards to Question 3. The vast majority of individuals (75%) stated that they used Suggs Mill Pond Game Land for traditional uses, which include hunting, fishing, and wildlife viewing. 2 individuals didn't specifically mention that they used the game land but stated that they would like to use it to hunt foxes. Another individual stated that they didn't currently use the game land but would if access were improved.

Only one individual stated that they used Suggs Mill Pond for non-traditional uses, which included "learning".

4. *Please explain why you think the current level of access is or is not satisfactory on this game land?*

17 comments were received in regards to Question 4. User satisfaction in regards to access was nearly even, with 7 individuals stating that they were satisfied and 10 individuals stating that they were unsatisfied. It should be noted that 5 of those 10 comments implied dissatisfaction and didn't outright say that they were dissatisfied. The other 5 individuals did, in fact, state that they were dissatisfied with the current level of access on Suggs Mill Pond.

Reasons for dissatisfaction included inadequate access to Little Singletary Lake and upper portions of Horseshoe Lake, inability to get away from dog hunters, too many gates causing inability to retrieve dogs, lack of informative signs and maps, overgrown and clogged waterways to upper waterfowl hunting areas, and limited access due to the permit hunt system.

Satisfied users provided comments stating that they liked the current level of access because it provided areas of the game land to get away from high-disturbance areas.

5. *What suggestions, if any, do you have for changing how this game land is managed and maintained?*

13 comments were received regarding Question 5. The most common topics included the continued and more frequent use of prescribed fire, the improvement of food plots, and more access to currently inaccessible areas of the game land. Other comments included making all game species available to hunting, making hunting available 6 days a week, continuing to limit the number of days that hunting is allowed, building duck blinds on Horseshoe and Singletary Lakes, allowing ATV's, allowing black bear hunting, and having better direction on site.

6. *What would encourage you to start using the game land, or to continue using it more actively?*

20 comments were received regarding Question 6. Individuals gave a wide array of changes that would encourage them to start using or to continue using Suggs Mill Pond. The most common topic was hunting. Individuals stated that they want to be able to hunt game animals that they are currently not allowed to hunt, *i.e.* black bears, foxes, and raccoons. It was also stated that better deer, turkey, and water level management, the exemption of dog hunting, allowing less permit-only activities, greater numbers of wildlife, improved food plots, more access, and pedestrian trails would encourage more use.

7. *What additional comments do you have regarding this game land?*

14 comments were received in regards to Question 7. Many of them reflect comments already made to the other 6 questions but some noteworthy comments include interest in acquiring more land to put into the Game Lands Program to provide more hunting opportunities, opening Suggs Mill Pond to all hunters and all game animals, developing a shooting range, maintaining a high level of funding to manage game lands, and leaving this game land as natural as possible.

1. *What habitats do you think are most important to protect and/or improve on this game land?*

Source of Input	Comment
Online	Turkey and waterfowl habitats.
Online	duck impoundment
Online	Improve dove fields and improve upland habitats....
Online	Xeric sandhill scrub longleaf, longleaf pine savannas & flatwoods,
Online	Waterfowl habitat Upland small game habitat to include turkey and quail habitat
Online	Waterfowl impoundments, lakes/ponds, quail and turkey habitat
Online	waterfowl habitat is the most important to continue to improve upon
Online	Waterfowl habitats.
Online	protect the integrity of the watershed
Online	As many natural habitats as possible for a diversity of both game and nongame species. Prescribed burns are essential for this area!
Online	Waterfowl habitat Carnivorous plant habitat Water level was VERY low last time we paddled it.
Public Input Meeting	Protect heavy brush for small game.
Public Input Meeting	Protect heavy brush for small game.
Public Input Meeting	Upland wildlife - quail, turkey.
Public Input Meeting	Quail. Quail seem to be rapidly declining.
Public Input Meeting	Food plots.
Public Input Meeting	Protect bays.

2. *Considering those that live on land and in water, what species do you think are most important to protect and/or improve on this game land?*

Source of Input	Comment
Online	the game lands should be managed and protected for all wildlife, not just game animals - the amphibians and reptiles in particular are important to me
Online	Please do everything you reasonably can to protect the ornate chorus frog there.
Online	It is such an ideal location for migratory waterfowl it seems that improvements to bring them in are important. Few locations can boast of native carnivorous plants, so it it important to protect/improve habitat for them as well.
Online	TURKEY
Online	Both upland and aquatic nongame species need protection and habitat improvement. Maintaining the natural longleaf pine ecosystem and the open characteristics of wetlands through prescribed burns is the best way to increase diversity.
Online	reptiles and amphibians
Online	Waterfowl
Online	Bear, deer, waterfowl, doves. Plant more dove fields to increase the number of hunters and benefit quail and other small game.
Online	Ringneck, greenwing teal, woodduck, quail, turkey
Online	Turkey on land Waterfowl in water
Online	Deer population is low, too many bears...waterfowl and turkeys seem to be doing fine....
Online	The most important species to protect is the Deer Population.
Online	ducks
Online	More food plots around the back side of the lake.
Online	Turkey and waterfowl.
Public Input Meeting	Fox, bear, and coon.
Public Input Meeting	Bear, fox, coon.
Public Input Meeting	Small wildlife - birds, bears.
Public Input Meeting	Quail.
Public Input Meeting	Deer, turkey, dove.
Public Input Meeting	Fox & bear.

3. *How do you use this game land?*

Source of Input	Comment
Online	Turkey and waterfowl hunting.
Online	duck hunt
Online	Camp, hunt, fish
Online	I use it for waterfowl and turkey hunting opportunities. Sometimes for wildlife observation (waterfowl primarily)
Online	Waterfowl and turkey hunting
Online	Hunting waterfowl and small game.
Online	Dove and Waterfowl.
Online	not a current user, but might if better access via trails
Online	We paddle a canoe and view/photograph wildlife, plants, waterbirds on the days when hunters are not there.
Online	wildlife watching
Public Input Meeting	Would like to fox hunter and coon.
Public Input Meeting	Fox hunting, coon.
Public Input Meeting	Turkey, deer hunting, wildlife viewing.
Public Input Meeting	To learn from.
Public Input Meeting	Deer hunt with dog & bow.
Public Input Meeting	Would like to fox hunt.

4. *Please explain why you think the current level of access is or is not, satisfactory on this game land?*

Source of Input	Comment
Online	access right now very good
Online	I feel the current level of access is satsifactory. It is easily accessible to those who choose to leave the beaten path. For those who don't, they have other more crowded places they can take advantage of.
Online	Access to Little Singletary Lake need to be improved.
Online	A couple of the outlying lakes, including Little Singletary and the smaller lake to its south have walking trails so long that no one can be expected to use them to access them for a permit waterfowl hunt. Either a specific permit hunt allowing parking closer, or improving the trail to shorten the walk.
Online	Insufficient access is provided to Little Singletary. The path back to the lake is nearly impassable when portaging a canoe or kayak.
Online	Access is satisfactory.
Online	Controlled access in the off season and during hunts is a good idea. Controlling dog hunting with permit access is a step in the right direction. Some of the gates like the one on Quail Road could be moved further out...some of the areas up north require 1 hour plus walk
Online	The level of access is less than stellar, since you basically have to have a permit to take a leak. Less permits would improve access.
Online	The current access is good. Continue the no vehicals allowed except on main roads, and for the handcapped.
Online	Somewhat unsatisfactory. Some of the waterfowl hunting areas are very hard to reach even if a canoe is ported due to the walk in only requirement. The paths are usually open but the waterway channels along some of the paths that use to be open are now clogged with logs and overgrown vegetation.
Online	Due to the areas that are swamp. The acess that you have is limited. Everyone goes to same spots.you have handicap areas which keep the hunters out of and the areas for parking at the foot access area are to small to park at. And then you have to far to get around the back of lake to keep out of the hunters ways that hunt all together. We need to allow driving. Farther around the lake on the right and left of the lake. Thanks for l listening to our needs.
Public Input Meeting	Not satisfactory. Need access to protect hounds from highways.
Public Input Meeting	Not good - need more access of roads to protect hounds from highway.
Public Input Meeting	Satisfactory - limiting access after breeding so wildlife can raise young.
Public Input Meeting	There is not much info. Little direction on site like signs.
Public Input Meeting	Is.
Public Input Meeting	Not accessible. Too many gates.

5. *What suggestions, if any, do you have for changing how this game land is managed and maintained?*

Source of Input	Comment
Online	Make it more user friendly with more access with ATV. Online reports of water level conditions during waterfowl seasons with pictures weekly.
Online	Need to have limited bear hunt. More food plots for deer and dove rather than all for turkey and duck management. Additional gate repositioning might aid walk hunters with access.
Online	Re-instate turkey food plots (Chufa) versus the usual rye planting in the greenways which are preferred by bears!
Online	Management of the game land should continue to involve regularly scheduled prescribed burns. These burns are important for a number of habitat types and benefit many kinds of wildlife, both game and non-game. The needs of non-game wildlife should not be ignored, as game lands are crucial for many non-game species.
Online	Build duck blinds on Suggs Mill Pond and Little Singletary Lake.
Online	I saw someone else comment that they would like to see 7 day/week hunting. I would say the opposite, leave a few days open for us who want peace & quiet....and birds/animals/reptiles/plants to view. I hope you will consider the non-hunter's views as heavily as you do the hunter.
Online	I encourage the continued use of prescribed fire as a management tool on the gameland. In the longleaf ecosystem fire is essential to maintain its biotic integrity. If fire is eliminated, or even reduced, from the forest the dynamics of the entire system can change in only a few years. When this occurs many of the rare species that require these open forests, which are created by fire, are pushed out. Bachman's sparrows, gopher frogs, Venus flytraps and many more can/will quickly disappear. Additionally, a 4-5 year fire interval is not enough. Scrub oaks will take over altering the system and making prescribed fires less effective. A fire interval of 2-3 years is needed to maintain this unique collection of plants and animals.
Online	the game lands should be managed and protected for all wildlife, not just game animals - the amphibians and reptiles in particular are important to me
Online	I believe that maintaining a schedule of prescribed burns is essential to the maintenance of proper habitat for the greatest number of species, both plant and animal. It is essential to maintain habitat for non-game species, too.
Public Input Meeting	Open to all species and 6 days without permit.
Public Input Meeting	Open to all species.
Public Input Meeting	Better direction on site.
Public Input Meeting	More access to get dogs up after hunt.
Public Input Meeting	Open to fox hunt.

6. *What would encourage you to start using this game land, or to continue using it more actively?*

Source of Input	Comment
Online	natural surface pedestrian trails, open during times that are closed to hunters (for the safety of the recreational users)
Online	A more easily accessible schedule of days when hunting is and is not allowed would help. It takes a while to load up and get there so being sure of the schedule ahead of time would make me more likely to drop everything to put the canoe in.
Online	MORE TURKEY
Online	Better access to Little Singletary Lake.
Online	Better management of water levels in the Lake. Continue improving crop selections for waterfowl in the impoundments.
Online	Better deer management, a limited bear hunt by drawing...and food plot management for deer...also put porta johns in camping area when camping is allowed..
Online	I would like to see a No Deer Hunting with Dogs policy.
Online	Less permit only activities would encourage my use of Suggs Mill Pond.
Online	duck hunting gets better
Online	Access and huntable numbers of game in more areas.More areas suitable for turkey hunting.
Public Input Meeting	Open to fox hunting!!
Public Input Meeting	Fox hunting added to species.
Public Input Meeting	More info. Improved signage.
Public Input Meeting	Coon hunts.
Public Input Meeting	Fox & coon hunt.

7. *What additional comments do you have regarding this game land?*

Source of Input	Comment
Online	Would like to see a shooting range on the Main Dove Field, that could be used on a limited bases during Deer Season. Example, only shooting between certain hours, such as 11:00 - 13:00
Online	With hunting, fishing, and other recreational activities on the rise gameland management is more important than ever before. I constantly hear " I would buy the license if there was a good place to hunt". Gamelands have dwindled and there is a great need right now for areas for people to get outdoors and hunt. People have, and continue, to turn to hunt clubs for this outlet. It appears to me the WRC could be more connected and responsive to this demographic. People are ready to get behind some public programs that meet these goals but are looking to the WRC for leadership. More urban archery seasons and more hunters for the hungry are examples.
Online	The deer skinning area is handy but could use a better winch and maybe a dusk to dawn light.... nice area and the NCWRC employees that work there are always friendly and helpful
Online	Implement plan to include chufa food plots, better management of water levels, upgrade and dams/spillways and improve access to Little Singletary. Also continue efforts in the acquisition of the Langston property.
Online	Please maintain or increase funding levels to the extent possible.
Online	In my twelve or so years of hunting Suggs my overall experience has been good. The techs do a good job planting and maintaining the lands. Some duck blinds strategically placed on the lakes will help waterfowlers be more successful, which will keep them coming back.
Online	Thank you for taking care of it and leaving it as natural as possible. I hope the low-water level is not permanent...unless that is the natural progression of life at Suggs Mill Pond!
Online	would like to see all game land along the rivers,streams, and ,lakes open for camping.
Public Input Meeting	Taxpayers paid for land. Open to all hunters.
Public Input Meeting	Taxpayers dollars maintain. Open to all hunters.
Public Input Meeting	Would like to know what is available to the public for this site.
Public Input Meeting	Doing a good job.
Public Input Meeting	Open to all species.

APPENDIX XVIII – FINAL DRAFT PUBLIC REVIEW COMMENTS

NCDENR
North Carolina Department of Environment and Natural Resources
Office of Land and Water Stewardship

Pat McCrory
Governor

Bryan Gossage
Director

Donald R. van der Vaart
Secretary

January 16, 2015

Chesley Ward, Management Biologist
Suggs Mill Pond Game Land

Dear Mr. Ward:

The North Carolina Natural Heritage Program appreciates the opportunity to review the draft Suggs Mill Pond Game Land Management Plan. We also welcome a continued partnership with the NC Wildlife Resources Commission (WRC) as it moves forward to implement the final management plan.

The North Carolina Natural Heritage Program (NHP) appreciates the plan's recognition of the importance of fire and the emphasis on prescribed burning in past and intended future management. The frequent burns in longleaf pine habitats, the use of fire in the pocosins, the ongoing practice of burning ecotones whenever possible, and the emphasis on minimizing impacts of firebreaks are all aspects of an excellent fire management program that is bringing many benefits to the game land.

We are pleased with the emphasis on longleaf pine communities and the recognition of their value, including the goal of restoring longleaf pine in plantations and other areas where it has been lost, the goal of restoring ground cover vegetation as well as the tree canopy, and the intent of frequent prescribed burning.

We appreciate the ecosystem management approach that the WRC has historically applied to managing the Game Lands and encourage WRC to continue with this management philosophy, especially as natural habitats across North Carolina are degraded, and habitat fragmentation increases. Maintaining high-quality examples of North Carolina's natural ecosystems is important for native wildlife - including rare species - and for the citizens of our state.

Maintaining the integrity of natural areas and connectivity for wildlife within the Game Lands will provide a much greater opportunity for North Carolina's native diversity to remain viable. Thank you for your contribution to the conservation of our natural resources in North Carolina. Please contact me or other NHP staff if you have any questions, or would like additional information.

Sincerely,

Scott Pohlman

1601 Mail Service Center, Raleigh, North Carolina 27699-1601
Phone: 919-707-8600 \ Internet: www.ncdenr.gov

Plan Response: The NCWRC appreciates and values the partnership that it has with the North Carolina Natural Heritage Program. These comments and the recognition of many aspects of the plan that address resource management are appreciated as well.

North Carolina Department of Agriculture and Consumer Services
N.C. Forest Service

Steven W. Troxler
Commissioner

Scott Bissette
Assistant Commissioner

1/16/15

To: NC Wildlife Resources Commission Staff
From: Sean Brogan, NC Forest Service
Director of Forest Management & Development
919-917-5202 sean.brogan@ncagr.gov
Through: David Lane / Scott Bissette
Re: Input on NCWRC Draft Gamelands Management Plans

To Whom it May Concern:

The following input is respectfully submitted for your consideration as it relates to the NCWRC's draft Gamelands Management Plans. These recommendations were offered by our fieldstaff after their review of the documents. Please contact me if you have any questions or if there are any matters where collaboration of our two agencies is warranted.

Best Wishes,

Sean Brogan

Sean Brogan

Recommendation #1:
Several of the Management Plans (ex. Holly Shelter and Suggs Millpond) indicated that acres would be considered "*restored*" once they had been planted with a certain species (ex. longleaf).

NCFS staff recommend that prior to calling such acreage "restored", a survival count inspection is conducted to confirm that an acceptable number of trees per acre survived.

Recommendation #2:
The Holly Shelter Plan calls for the creation of four new large burn units (greater than 200 acres) in Pocosin type fuels using grinding or chopping methods.

NCFS staff had some concerns about groundfire in the areas described. In such Pocosin areas, our Agency recommendation would be for such fuels to be evaluated ahead of time through a joint NCWRC – NCFS onsite meeting. NCFS County Rangers would typically be the local NCFS point of contact for such a request.

Recommendation #3:
At least one of the Plans (Suggs Millpond Plan) discussed conducting prescribed burns without installing firelines in ecotones. While the NCFS recognizes the ecological importance of ecotones, staff noted some concerns with prescribed burns that would be allowed to burn into Pocosin fuels rather than be contained by installed firelines.

NCFS staff emphasized the benefits of reviewing each prescribed burn on case-by-case basis, where soils, fuels, weather parameters and other factors were taken into consideration prior to deciding on whether or not to use an ecotone as a firebreak. There may some scenarios where fireline installation is warranted.

Recommendation #4:
Pages 117-124 of the Holly Shelter Plan contains the MOU your Agency has with the DENR / Division of Forest Resources. This MOU is dated 12/18/08 and states it is good for a 5-year period from the date of the last signature (thus, it has expired).

I believe this cited MOU is the most recent agreement between our agencies. We recommend this issue be reviewed, and consideration be given to creating an updated MOU between the NCWRC and NCFS.

Recommendation #5:
In Gamelands where much of the forest management approach is to "let it grow" (ex. bottomland hardwood stands in the Lower Roanoke Plan), it is recommended that annual inspections of the forest be conducted in order to more quickly detect insect / disease outbreaks. NCWRC staff should collaborate with local NCFS staff in the event that such issues arise and forest management technical assistance would be helpful. The NCFS also has Forest Health Specialists and Central Office staff that can provide advanced assistance if required.

Plan Response: Response to Recommendation #1; newly established stands are inspected in the years immediately following reforestation. If seedling survival is found to be low, efforts are conducted to replant trees in areas with poor survival. Response to Recommendation #3; careful and deliberate consideration is given to the need to install firelines on individual burn units, especially those that border large pocosin habitat. When conditions are unfavorable to burn without firelines in these ecotones, the decision is made to not burn. Further discussion of this can be found in the Habitat Communities section of the plan.

FINAL DRAFT COMMENT	PLAN RESONSE
What's the chances of equestrian trails on the game lands, a lot of riders need places to ride please consider us.	There are no plans to develop equestrian trails on this game land. It is recommended that horseback riders on this property stay on existing roads and trails and do not ride outside of these areas because of negative impacts to habitat. Many staff are concerned about other negative impacts of horses on game lands and believe that participation should be managed through a permitting systems that regulates and manages use. This topic is further addressed in Public Uses section of the plan.
Only part of the primary users help support the Game Lands through hunting, fishing, trapping, and game lands licenses. Wildlife viewing, hiking, biking, and walking pets are a variety of users who do not have to purchase a license for using game lands. One objective for all game land management plans should be to implement and require all users to purchase a game lands license if the objective is to provide for more public opportunity. This would help generate additional funds to implement objectives. If resources are to be shared by multiple users then those users should have to pay equally.	This is a statewide issue that is not directly addressed in this plan. The comment is noted.
Please remove all dog hunting for deer from NC state game land. Until the wildlife commission and more importantly the state legislature addresses this problem - I will have my son's find other activities besides hunting.	Suggs Mill Pond Game Land allows deer hunting with dogs. Vehicular access is restricted to a small portion of the property and therefore limits the ability to use deer hounds to those portions. A large portion of the property has trails and access is limited to foot travel. These areas are less conducive to hunting with dogs and more appropriate for still hunting.
This is in response not only to the game lands listed but for all. One thing that seems to be burdened on the sportsman using the game lands is that they are the only ones required to pay a use fee. I do not have problem with that at all but believe that all recreational users of game lands should be required to purchase a "habitat stamp". Sportsman do that through licensing requirements but others (hikers, mountain bikers, campers, horseback riders, etc) are using these lands and are for the most part having the most negative impacts to trails and campsites. With budget cuts not going away, the only way to sustain the quality that users expect is to have	This is a statewide issue that is not directly addressed in this plan. The comment is noted.

those same users pay their fair share to maintain these areas. Western states have already adopted this idea and it seems to be working.	
I have not had the chance to read through the Suggs management plan in detail, but from the parts I have skimmed I am impressed. Please consider a few general comments: 1. In the section on the Role and Importance of the game land (pg 14), the regional context of the game land should be emphasized. The Bladen Lakes region once supported a tremendous diversity of species associated with longleaf pine and embedded habitats. Many of these species (e.g. gopher frog, pine barrens tree frog, Bachman's sparrow, red-cockaded woodpecker, bobwhite quail, many others) are greatly reduced in numbers, and most occur in very small, isolated populations or have already been locally extirpated from the region. There is still an opportunity to hang on to some of these species, but it will take aggressive habitat restoration work on a large scale in the Bladen Lakes region. The Bladen Lakes region is important as a linkage for longleaf-associated species between the Sandhills and lower coastal plain conservation areas. Suggs plays a critical role in restoration efforts at both local and regional scales. 2. The summary of important habitats, natural communities, and species is good and should be the driver of management decisions 3. I commend the emphasis that has been placed on prescribed fire in recent years. This emphasis should be continued and the resources to support prescribed fire should be prioritized to continue and to expand the program. In particular, planning should take place to consider how to maintain and expand the capacity for the joint TNC-WRC summer prescribed burn crew once temporary external funding for this crew is no longer available. 4. The principles laid out on page 85 to guide infrastructure projects should be closely followed when it comes to implementation of the plan. Roads and	Edits were made to the Role and Importance section that address the comment #1. Regarding comment #5, we are of the opinion that it is not in our best to name and target specific tracts of land for interest future acquisition. We believe that plans for future acquisition should include inholdings, adjacent lands, and critical habitats. Critical habitats that have rare and/or endangered species, provide outstanding ecological benefits, or provide outstanding opportunities for game land users will be given high priority. Special considerations will be given to; lands that provide corridors for the connectivity of key parcels or are critical to enhance the NCWRC's ability to protect rare habitats, the land management needs of a property, and the public access and public uses that a property provides. These lands can only be acquired from willing sellers and is purchase is largely based on availability of funds.

other built infrastructure should be at the minimum level to meet the needs of wildlife-related recreation, and should not negatively impact habitats and species. "Over-engineering" roads not only costs a lot of money but also can lead to more road-mortality for wildlife and other negative impacts. The amount of money forecast to build new infrastructure and maintain existing infrastructure far exceeds the amount forecast for habitat enhancement work. Maintaining and enhancing habitats and species is the emphasis of the plan and should be the driving force in management and budgeting decisions, and future allocations of funding and manpower should reflect that. 5. The Acquisition Plan needs to be fleshed out. It would be good to develop a more specific and more focused plan that highlights where future acquisitions should be (to meet management, species, and access needs), how much is needed, and a solid strategy for how to achieve that. Thank you for the opportunity to comment.	
Dear Wildlife Commission, I was reading the Suggs Mill Pond Draft and like a lot of what I saw. I own land adjacent to those game lands. I noticed that there was mention of a complaint about hunting deer with dogs from one patron. I must agree with that person as I had a permit to hunt deer a few times this season on the game land but there was so many deer hunters with dogs it was impossible to still hunt. Is it possible that a fourth season could be created for hunting deer with dogs after a three week rifle season or just separate the permits by type of hunt (deer with dogs or deer without dogs) this way the patrons that want to still hunt can. Thanks.	Hunting deer with dogs was addressed in the Public Uses section of the plan. There are large portions of the property that are restricted to foot travel only. These areas traditionally are not hunted with deer dogs because of the difficulty of retrieving dogs and getting in position for deer that are chased by dogs.