
RESTORATION PLAN (FINAL)

**NICHOLLS FARM WETLAND ENHANCEMENT SITE
BERTIE COUNTY, NORTH CAROLINA
CHOWAN RIVER BASIN CATALOGING UNIT 03010203**



PREPARED FOR:



NC DENR - ECOSYSTEM ENHANCEMENT PROGRAM

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EXECUTIVE SUMMARY

The North Carolina Ecosystem Enhancement Program (EEP) is currently evaluating wetland and stream enhancement and preservation opportunities at the Nicholls Farm Wetland Enhancement Site (Site) in Bertie County, North Carolina. During the initial Site evaluation, several initiatives were proposed that were anticipated to become part of the overall goals and objectives of the project. The two primary initiatives were 1) to provide full restoration of the riparian headwater system located on what is currently referred to as the eastern parcel of the Site and 2) the removal and restoration of the stockpiled organic waste area associated with the cotton gin, located immediately off-site along the northeast Site boundary. Based on groundwater gauge data, soil data, and considerations presented in “Information Regarding Stream Restoration with Emphasis on the Coastal Plain” (United States Army Corps of Engineers [USSACE] and North Carolina Division of Water Quality [NCDWQ], unpublished), it was concluded that none of the conditions met the criteria of appropriate riparian headwater mitigation. However, subsequent discussions and on-site meetings with EEP have proposed the removal of a ditch feeding the headwater system in order to provide functional lift to the existing headwater system. The headwater system remains in the conservation easement providing wetland enhancement and upland plant community restoration opportunities. The removal of the cotton gin compost has been postponed until results from further testing, evaluation of waste removal options, and subsequent discussions with Tarheel Cotton, the owners of the cotton gin.

The Site, delimited by an EEP-owned conservation easement, encompasses approximately 72.6 acres and is located approximately 10 miles east of Windsor. Site acquisition was made through a fee simple purchase in 2007. The Site is located within the Chowan River Basin in Hydrologic Cataloging Unit 03010203. The Site is situated within the watershed of a UT to Salmon Creek. The Site outfall within the western parcel supports a drainage area of approximately 1.4 square miles. The Site supports a variety of agricultural, silvicultural, light residential, and light commercial/industrial land uses. Land use within the Site is primarily forested and agricultural.

Under existing conditions, the Site contains approximately 4,719 linear feet of perennial streams and 24.2 acres of riparian and non-riparian jurisdictional wetlands, a portion of which have been recently used for timber production. As a consequence, vegetative community biodiversity within jurisdictional areas was adversely affected, resulting in lower species diversity and fewer niche habitat opportunities for area wildlife.

Proposed Site restoration activities include ditch backfill activities as well as riparian and non-riparian wetland enhancement via Site plantings. Areas of upland forest will also be planted to establish or enhance existing forest buffers that will further protect water and wildlife resources. Additionally, the conservation easement will encompass and preserve existing riparian wetlands, headwater systems, and significant length of first and second order stream channels. Planting units within the enhancement areas have been designed to best recreate the pre-disturbance vegetative communities present within each wetland and upland type. Preserving and enhancing Site plant communities will increase vegetative diversity, improve channel shading in riparian

wetland areas, filter pollutants from adjacent agricultural runoff, and diversify wildlife habitat and food sources.

The primary goal of this project is to enhance historic wetland and stream functions that existed at the Site prior to major anthropogenic disturbances that have come from large scale agriculture, road construction, and forestry activities. After implementation, restoration activities are expected to provide the following design units:

- Enhancement of approximately 12.7 acres of riparian wetlands
- Enhancement of approximately 7.3 acres of non-riparian wetlands
- Preservation of approximately 3.9 acres of riparian wetlands
- Preservation of approximately 4719 linear feet of stream channel

Project monitoring will be performed over a five year period (i.e., five growing seasons) following Site restoration activities (or thereafter until success criteria are achieved).

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RESTORATION PLAN

NICHOLLS FARM WETLAND ENHANCEMENT SITE BERTIE COUNTY, NORTH CAROLINA CHOWAN RIVER BASIN CATALOGING UNIT 03010203

1.0 INTRODUCTION

1.1 Restoration Project Description

The North Carolina Ecosystem Enhancement Program (EEP) proposes to perform wetland enhancement at the Nicholls Farm Wetland Enhancement Site (hereafter referred to as the Site) in Bertie County. The 72.6-acre Site, which is delimited by an EEP-owned conservation easement, is located approximately 10 miles east of Windsor (Figure 1, Appendix A). The Site is bordered to the south by North Carolina State Road 1502 (SR 1502 [Avoca Farm Road]) and to the east by SR 1540 (Old Merry Hill Road) between the communities of Midway and Merry Hill. North Carolina Highway 45 (NC 45 [Sans Souci Road]) bisects the Site into two parcels: an eastern parcel containing approximately 16.2 acres and a western parcel containing approximately 56.4 acres (Figure 2, Appendix A).

The eastern parcel consists primarily of a fallow agricultural field bisected by a drainage ditch and a headwater drainage feature bordered by vegetated buffers that have recently been timbered. Features of note within the eastern parcel include a first-order unnamed tributary (UT) to Salmon Creek (Figure 1, Appendix A), a linear drainage ditch, and a small farm pond. The sparsely forested (recently timbered) wetlands adjacent to the UT to Salmon Creek and within a nearby riparian headwater system in the eastern parcel, offer the riparian wetland enhancement opportunities.

The western parcel consists primarily of forested uplands and wetlands, freshwater marsh wetlands, several UTs to Salmon Creek, and a borrow pit adjacent to an off-site cotton gin. An extensive beaver impoundment is located in the northwestern portion of this parcel. Jurisdictional areas within the western parcel offer opportunities for riparian and non-riparian wetland enhancement, as well as stream and riparian wetland preservation.

1.2 Restoration Project Goals and Objectives

The primary goals of future restoration and conservation management at the Site are to restore and improve natural resources within the stream buffers and wetlands to provide a wide variety of opportunities for water quality improvements and protection, outdoor recreation, environmental education and open space for a rapidly developing area of North Carolina. Restoration activities will be designed to restore historic wetland and stream functions that existed at the Site prior to major anthropogenic disturbances that have come from large scale agriculture, road construction, and forestry activities. Many ecological benefits are anticipated as a result of on-site enhancement activities including:

- Improvements to water quality within the watershed by reducing sediment and nutrient loading via enhanced forested buffers and wetlands.

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- Filling the existing ditch feeding into the riparian headwater system to provide enhancement of the functions benefiting existing headwater wetlands.
 - Diversification and improvement of terrestrial and aquatic habitat.
 - Implementation of an invasive plant control program, to minimize.
 - The reestablishment of native forested riparian plant community with an upland buffer area.
 - Increasing local vegetation biodiversity.
 - Preserve and enhance the existing forest corridor to provide an unimpeded regional wildlife corridor between the natural areas located in and around the Site, and between the ecological resources of Salmon Creek and the greater Albemarle Sound ecosystem.

After implementation, objectives for the restoration project are expected to provide the following design units (Table 1, Appendix B):

- Enhancement of approximately 12.7 acres of riparian wetlands.
- Enhancement of approximately 7.3 acres of non-riparian wetlands.
- Preservation of approximately 3.9 acres of riparian wetlands.
- Preservation of approximately 4,719 linear feet of stream channel.

2.0 EXISTING CONDITIONS

2.1 Physiography, Topography, and Land Use

The Site is located within sub-basin 03-01-04 of the Chowan River Basin (NCDWQ 2002a). This sub-basin is part of United States Geologic Survey (USGS) Hydrologic Cataloguing Unit 03010203 of the South Atlantic-Gulf Region (Figure 3, Appendix A). The Site is located within the Mid-Atlantic Flatwoods ecoregion of North Carolina (Griffith et al. 2001) in the Middle Coastal Plain physiographic province. This ecoregion is characterized by low elevations, slight topographic relief, and broad interstream flats. Site topography is characterized by generally flat to mildly sloping landscapes with the exception of moderate relief on valley escarpments leading down to UTs to Salmon Creek. Elevations within the Site range from approximately 36 feet National Geodetic Vertical Datum (NGVD) in the highest portions of the Site east of Highway 45 to approximately 10 feet NGVD along a UT to Salmon Creek floodplain (Figure 4, Appendix A).

The Site is comprised of two parcels: an eastern parcel containing approximately 16.2 acres and a western parcel containing approximately 56.4 acres (Figure 2, Appendix A). The eastern parcel includes a fallow agricultural field bisected by a linear, drainage ditch extending from SR 1540 to the top of a headwater drainage feature in the center of the parcel. The drainage ditch currently is not connected to the road ditch but rather drains a depressional, hydric soil feature located adjacent to SR 1540 (Figure 4, Appendix A). The hydric soils feature was historically part of an adjacent headwater system which flowed east (rather than west) but has been severed by the construction of SR 1540. Most of the hydric soils associated with this feature are not contained within the easement. The watershed divide for the on-site headwater system bisects the conservation easement as shown on Figure 4 (Appendix A). The entire catchment area at the ditch outflow is less than 5 acres. Wetlands associated with the headwater system coalesce into a perennial stream that flows west for approximately 500 feet before entering a culvert beneath NC 45. The slopes of the headwater drainage are vegetated with secondary undergrowth following a recent timber harvest. Other features of note include a first-order unnamed tributary (UT) to Salmon Creek, a small farm pond, and old tobacco barn (Photos 1-5, Appendix C).

The western parcel consists primarily of forested uplands and wetlands, freshwater marsh wetlands, several UTs to Salmon Creek, and a naturalized borrow pit. An extensive beaver impoundment is located in the northwestern portion of this parcel. Water levels within the beaver pond also regulate the water elevation within the borrow pit. A cotton gin is located northeast corner of the parcel. The cotton gin produces a residual organic waste which is composted on the side-slope of the borrow pit. A portion of the stockpile location is located within the Site (Photos 6-10, Appendix C).

2.2 Historical Land Use and Development Trends

Land uses within and adjacent to the Site has historically been dominated by rural uses, including large scale silvicultural and agriculture operations, scattered home sites, and state roads with limited commercial development occurring in the vicinity of small towns and communities in the area. Buckleberry Pocosin, a large area (approximately 6,000 acres) of managed forest is located west of the Site. Based on USGS mapping forests occupy approximately 65 percent of the land area, while agriculture occurs within approximately 30 percent of the surrounding area.

The coastal regions of North Carolina including the Albemarle and Pamlico Sound waterfronts have become highly desirable for development in recent years. Increased development pressure in the vicinity is anticipated as large scale residential developments are established near or adjacent to the Albemarle Sound. With the suburbanization of the surrounding rural areas, the demand for infrastructure will also increase including road improvements, shopping centers, and various public services. Indeed, access to the area has improved with the recent completion of US 64 directly to the south. US Highways 13 and 17 run through the center of Bertie County providing direct connection with US 64, which leads to the Outer Banks going east and Raleigh, going west. US Highway 11 connects the county to southern Virginia to the north and Greenville to the south. With the impending development, the area surrounding the Site, including the associated watershed, is expected to undergo land use changes in the next several decades to more urban, residential, and infrastructural uses.

2.3 Soils

Based on Natural Resource Conservation Service (NRCS) soil mapping for Bertie County (NRCS 1990), the Site is underlain by eight soil mapping units: Craven fine sandy loam (*Aquic Hapludults*), Lenoir fine sandy loam (*Aeric Paleaquults*), Wehadkee loam (*Typic Fluvaquents*), Leaf loam (*Typic Albaquults*), Goldsboro sandy loam (*Aquic Paleudults*), Winton fine sandy loam (*Aquic Hapludults*), Bibb-Johnston loam complex, and Udorthents (Figure 5, Appendix A). The Bibb-Johnston, Leaf, and Wehadkee series have been designated hydric soils by the NRCS (NRCS 1997).

The Craven series (Cr) consists of moderately well drained soils occurring on rounded ridges and on side slopes of main drainage ways. Permeability is slow to very slow and the seasonal high water table occurs at a depth of 1.5 to 3 feet. The Craven series is considered non-hydric, with hydric inclusions of Bibb and Johnston series in Bertie County (NRCS 1997). The Craven series makes up approximately 70 percent of the Site.

The Lenoir series (Ln) consists of nearly level, somewhat poorly drained soils with slow permeability. Lenoir occurs on low ridges in uplands. The seasonal high water is 1 to 2 feet below the land surface. The Lenoir series is considered non-hydric with hydric inclusions of Leaf series in Bertie County (NRCS 1997). The Lenoir series makes up approximately 8 percent of the Site.

The Wehadkee series (We) consists of nearly level, poorly drained, moderately permeable soils. Wehadkee occurs on floodplains adjacent to larger streams. The seasonal high water table is located at or near the surface, and the soil is frequently flooded. The Wehadkee series is considered hydric in Bertie County (NRCS 1997). The Wehadkee series makes up approximately 5 percent of the Site.

The Leaf series (Lf) consists of nearly level, poorly drained soils with slow permeability. Leaf soils usually occur on broad flats and in depressions. The seasonal high water table is located at or near the surface. The Leaf series is considered hydric in Bertie County (NRCS 1997). The Leaf series comprises approximately 5 percent of the Site.

The Goldsboro series (Go) consists of moderately well drained, moderately permeable soils that occur on smooth ridges and flats in uplands. The seasonal high water table occurs at a depth of 2 to 3 feet. The Goldsboro series is considered non-hydric in Bertie County (NRCS 1997). The Goldsboro series makes up approximately 4 percent of the Site.

The Bibb and Johnston loams (BB) were not separated in mapping because use and management of them are similar. The Bibb series makes up approximately 50 percent of the mapping unit, and the Johnston series comprises approximately 35 percent, with other soil inclusions making up the remaining 15 percent. These soils are poorly to very poorly drained, with moderate to rapid permeability. They occur on floodplains. The Bibb soil has a seasonal high water table that occurs at a depth of 0.5 to 1.5 feet, and the Johnston soil has a seasonal high water table that occurs at or above the surface. The Bibb and Johnston loams are considered hydric in Bertie County (NRCS 1997). The Bibb and Johnston loams make up approximately 4 percent of the Site.

The Udorthents (Ud) soil mapping unit consists of borrow pits from which the surface layer and most of the subsoil have been removed and areas of fill or dredged material. The Udorthents mapping unit consists of a farm pond (located in the center of the eastern Site parcel) and lagoon located in the northwestern portion of the western Site parcel. Udorthents make up approximately 3 percent of the Site.

The Winton series (Wt) consists of moderately well drained, moderately permeable soils that occur on side slopes. The seasonal high water table occurs at a depth of 2 to 4 feet. The Winton series is considered non-hydric with hydric inclusions of Bibb and Johnston loams in Bertie County (NRCS 1997). The Winton series comprises less than one percent of the Site.

2.4 Hydrology

2.4.1 Surface Water Hydrology

The Site is situated within the watershed of a larger UT to Salmon Creek (Figure 6, Appendix A). The Site outfall within the western parcel supports a drainage area of approximately 1.4 square miles. The watershed is comprised of approximately 2000 linear feet of main stem stream channel upstream of the Site and approximately 4719 linear feet of perennial stream within the Site. Although some evidence of past impacts and alteration is apparent, no on-Site stream reaches were identified as candidates for restoration.

On-Site stream reaches are generally classifiable as E-type streams (Rosgen 1996). E-type streams, which are common in the Coastal Plain, usually occur within flat (section-wise), low gradient alluvial valleys (Valley Type VIII) (Rosgen 1996). E-type streams are characteristically sinuous with low bankfull slopes. In order to effectively transmit watershed materials, they have a low width-to-depth ratio, which results in hydraulically efficient sediment transport dynamics.

At the time of field investigations, on-Site streams were assessed in order to evaluate channel stability. In general, all on-Site stream reaches were observed to be both vertically and laterally stable, with adjacent intact vegetated (though recently timbered) riparian buffers.

2.4.2 Groundwater Hydrology

Site groundwater hydrology is driven primarily by inputs from precipitation, sheet flow/runoff, and overbank flooding of Site stream channels. Removal of forest vegetation, conversion of adjacent forest to agriculture fields, ditching and other surface water feature manipulations, and leveling of soil surfaces decreases water infiltration and accelerates the rate of near-surface groundwater discharge from the Site. Ditching of the land surface also results in an increased rate of groundwater discharge into the receiving drainage, thereby lowering the adjacent water table.

Site groundwater hydrology was initially investigated to provide evidence in support of wetland restoration opportunities associated with the riparian headwater system located within the eastern parcel. The single drainage ditch that bisects the agricultural fields above the headwater system was specifically targeted for evaluation to ascertain whether the hydric soils directly adjacent to the ditch were affected by lateral drainage effects.

Groundwater Monitoring

To investigate the potential degradation to wetland caused by the drainage ditch bisecting the headwater system, six continuous recording gauges were installed in February 2006. Groundwater gauge locations are provided in Appendix D. Nested gauges (Gauges 2-3 and Gauge 4-6) were placed perpendicular to the ditch to measure lateral drainage effects.

The ground elevations of the nested gauges (relative to each other) were surveyed and found to differ by less than 0.2 feet. Therefore, the depths to groundwater shown in the hydrographs are vertically relative to each other within the nested transect. A single gauge (Gauge 1) was placed with a hydric soils area adjacent to Old Merry Hill Road to verify wetland hydrology. The gauges were initially monitored for six months beginning in February 2006. However, due to prolonged landowner negotiations and project delays, more recent attempts to download the gauges resulted in additional monitoring data that extends through the 2006 and 2007 growing seasons.

Groundwater Monitoring Results

Gauge 3 malfunctioned in April 2006 and was not replaced. As evidenced in the hydrographs, the Site experienced abnormally dry conditions during the 2007 growing season. All gauges exhibited a major drawdown at the beginning of the 2007 growing season; therefore analysis is confined to the 2006 growing season data.

Nested groundwater gauges (Gauges 4-6) installed at the Site show a modest groundwater drawdown in locations directly adjacent to the drainage ditch. Gauge hydrographs are provided in Appendix D. The current on-site trend shows a decrease in the depth of groundwater table from Gauge 6 (furthest from the ditch) to Gauge 4 (closest to the drainage ditch). However, while the data shows a lateral drainage affect from the ditch, the results suggest that these effected areas continue to exhibit wetland hydrology above jurisdictional limits. This finding is corroborated by the jurisdictional delineation performed at this location. The gauge data results in combination with the jurisdictional confirmation has discounted these hydric soil areas from wetland restoration consideration. However, the proposed removal (i.e. filling) of the drainage ditch may increase the existing wetland hydroperiod and provide a functional lift to the headwater system including increase in water storage capacity, residence times, and aquatic resources.

Gauge 1 provides evidence that the water table frequently saturates or floods soils within the top 12 inches of the surface inside the hydric soil represented by this gauge. However, minor enhancement is anticipated in this area post project because the restorable area is less than 0.1 acres (Figure 4, Appendix A).

2.4.3 Albemarle Sound

The Albemarle Sound is one of the least urban of America's major estuaries and consequently one of the least polluted. However, the Albemarle Sound still has numerous water pollutions problems including primarily sedimentation and nutrient loading.

Sedimentation is the erosion and runoff of soil into waterways. It occurs naturally, but clearing land for development and agriculture has caused an excess in many streams that flow into the Albemarle Sound. Excess sediment clouds water (turbidity), which depresses aquatic life by smothering habitat, reducing oxygen, and stressing health. Though it is the single biggest cause of water quality degradation in local waterways, sedimentation is easily reduced by leaving buffer strips of vegetation between waterways and cleared areas.

Nutrient loading refers to the over-enrichment of nutrients into waterways. Nutrients (i.e., nitrogen and phosphorus) are natural and necessary for plankton growth, but excess amounts cause algae blooms. As the blooms die, oxygen-using bacteria decompose them. Heavy blooms cause these bacteria to multiply rapidly, resulting in a depletion of oxygen in the surrounding water that can kill fish. Excess nutrients get into waterways from human and animal wastes, and agricultural/residential fertilizers. Vegetated buffers and wetlands are a simple and effective way to filter out nutrients before they reach the waterways.

2.5 Jurisdictional Wetlands and Streams

Jurisdictional areas are defined using the criteria published in the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual (USACE 1987). Wetlands are defined by the presence of three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology (USACE 1987).

Site jurisdictional delineation located 4719 linear feet of perennial streams, 24.2 acres of vegetated wetlands, and 2.0 acres of open water. Jurisdictional areas were delineated and mapped using GPS technology on February 9, 10, and 14, 2006. Section 404 jurisdictional areas are depicted on Figure 7 (Appendix A). The delineation was approved by the USACE (Mr. Josh Pelletier, regional field office representative) on May 5, 2006. USACE Routine Wetland Determination data forms and NCDWQ Stream Identification Forms are provided in Appendix E and F, respectively.

2.6 Water Resources

The Site is located within sub-basin 03-01-04 of the Chowan River Basin (NCDWQ 2002a) and part of USGS Hydrologic Unit 03010203 (USGS 14-digit Hydrologic Unit 03010203090040) of the South Atlantic-Gulf Region. Salmon Creek is the closest named stream to the Site and has been assigned Stream Index Number 25-24 by the North Carolina Division of Water Quality (NCDWQ [NCDWQ 2002a]). Salmon Creek is a major tributary to the Albemarle Sound. The

Site includes one primary, unnamed tributary to Salmon Creek (UT1) and four associated unnamed tributaries (UT2 to UT5) (Figure 7, Appendix A).

Classifications are assigned to waters of the State of North Carolina based on the existing or contemplated best usage of various streams or segments of streams in the basin. A Best Usage Classification of C, along with the supplemental classification of Nutrient Sensitive Waters (NSW) has been assigned to all UTs to Salmon Creek within the Site (UT1, UT2, UT3, UT4, and UT5) (NCDWQ 2002a). Class C waters are suitable for aquatic life propagation and protection, agriculture, and secondary recreation. Secondary recreation includes wading, boating, and other uses not involving human body contact with waters on an organized or frequent basis. The supplemental classification of Nutrient Sensitive Waters (NSW) indicates waters that require additional nutrient management due to excessive growth of microscopic or macroscopic vegetation. Management strategies for point and nonpoint source pollution control require control of nutrients (nitrogen and/or phosphorus usually) so that excessive growth of vegetation are reduced or prevented. Management strategies are site-specific. Within waters with the NSW supplemental classification, NCDWQ enforces the state in-stream standards and wastewater discharge rules. No Outstanding Resource Waters (ORW), Water Supply I (WS-I), Water Supply II (WS-II) waters, or watershed Critical Areas (CA) occur within 1.0 mile of the Site (NCDWQ 2002a).

NCDWQ has initiated a whole-basin approach to water quality management for the 17 river basins within the state. Water quality for the Site is summarized in the Chowan River Basinwide Water Quality Plan (NCDWQ 2002b). Salmon Creek is currently listed by NCDWQ as Not Rated. The closest benthic macroinvertebrate monitoring station occurs 1.3 miles upstream from the confluence of UT1 and Salmon Creek (NCDWQ 2002b). With respect to temperature regimes, UT1 is designated as a warm water stream (USACE et al. 2003).

2.7 Plant Communities

Plant community descriptions are based on a classification system used by the North Carolina Natural Heritage Program (NCNHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names follow nomenclature found in Radford et al. (1968) with adjustments for updated nomenclature (Kartesz 1998).

Four plant communities were identified within the Site: 1) Coastal Plain Small Stream Swamp; 2) disturbed/maintained land; 3) mixed pine/hardwood forest; and 4) Coastal Plain Semi-Permanent Impoundment. These communities are described below. Wildlife directly observed within plant communities or determined to be present through field evidence (i.e., calls, tracks, scat, burrows, etc.) during field investigations are indicated with an asterisk (*).

Coastal Plain Small Stream Swamp – Approximately 35 percent of the Site is Coastal Plain Small Stream Swamp. This plant community includes wetlands adjacent to UT1 and all its associated tributaries (UT2, UT3, UT4, UT5, and UT6). Areas of this plant community located in the eastern parcel of the Site have been recently timbered. Canopy species identified during field investigations include tulip popular (*Liriodendron tulipifera*), swamp tupelo (*Nyssa biflora*), red maple (*Acer rubrum*), sweet gum (*Liquidambar styraciflua*), river birch (*Betula nigra*), swamp

chestnut oak (*Quercus michauxii*), ironwood (*Carpinus caroliniana*), pond pine (*Pinus serotina*), and loblolly pine (*Pinus taeda*). Shrubs observed include American holly (*Ilex opaca*), titi (*Cyrilla racemiflora*), tag alder (*Alnus serrulata*) and fetter-bush (*Leucothoe racemosa*). Vines are common and include poison ivy (*Toxicodendron radicans*), common greenbrier (*Smilax rotundifolia*), laurel-leaf greenbrier (*Smilax laurifolia*), and muscadine grape (*Vitis rotundifolia*).

No mammals were observed during field investigations; however, white tailed deer* (*Odocoileus virginianus*) tracks were observed throughout the Site. Amphibian species observed in this plant community during field investigations include southern chorus frog* (*Pseudacris nigrita*) and southern cricket frog (*Acris gryllus*). Other reptile and amphibian species expected to be found include cottonmouth (*Agkistrodon piscivorus*), spotted turtle (*Clemmys guttata*), green tree frog (*Hyla cinerea*), and eastern mud salamander (*Pseudotriton monachus*).

Birds observed utilizing habitat within this plant community include the blue jay* (*Cyanocitta cristata*) and American cardinal* (*Cardinalis cardinalis*), which are omnivorous birds that feed on insects, fruits, and seeds. Two open water predators were observed during field visits, a great blue heron* (*Ardea herodias*), which feeds on fish, amphibians, and reptiles, and a belted kingfisher* (*Ceryle alcyon*), which feeds on small fish, amphibians, and insects.

Disturbed/Maintained Land – Approximately 30 percent of the Site is disturbed/maintained land. This community includes agriculture fields, roadside shoulders, and residential lots. Within disturbed/maintained land, grasses and herbs dominate the vegetation, with scattered trees within residential yards. Agricultural fields present within the Site were not planted at the time of field investigations and were dominated by common field weeds including fescue (*Festuca* spp.), Carolina geranium (*Geranium carolinianum*), chickweed (*Cerastium* spp.), and dog fennel (*Eupatorium capillifolium*). Representative species along roadside shoulders include fescue, red clover (*Trifolium pretense*), white clover (*T. repens*), wild onion (*Allium canadense*), Carolina geranium, soft rush (*Juncus effusus*), and *Carex* spp. Trees that occur in recently timbered areas as saplings include winged elm (*Ulmus alata*), red maple, loblolly pine, American beech (*Fagus grandifolia*), American holly, swamp chestnut oak, sweet gum, sourwood (*Oxydendrum arboreum*), green ash (*Fraxinus pennsylvanica*), and tulip poplar. Shrubs include giant cane (*Arundinaria gigantea*), Chinese privet (*Ligustrum sinense*), persimmon (*Diospyros virginiana*), elderberry (*Sambucus canadensis*), and sweetbay (*Magnolia virginiana*). Herbaceous and vine understory vegetation includes cross vine (*Anisostichus capreolata*), St. John's wort (*Hypericum perforatum*), laurel-leaf greenbrier, Japanese honeysuckle (*Lonicera japonica*), yellow jessamine (*Gelsemium sempervirens*), and meadow beauty (*Rhexia* sp.).

Although this community is primarily comprised of maintained fields, some mammalian and avian species are expected to use this community because of the low residential density and light vehicular traffic in the area. Terrestrial herbivorous mammals observed during field investigations include eastern cottontail* (*Sylvilagus floridanus*) and white-tailed deer*. There are several species well-adapted to using the ecotone of the disturbed/maintained land and adjacent forest communities. Opportunistic omnivores consume a wide variety of food such as wild fruit, fish, small mammals, reptiles, and birds. Omnivorous species with such adaptations that would utilize the Site include red fox (*Vulpes vulpes*), striped skunk (*Mephitis mephitis*), and Virginia opossum (*Didelphis virginiana*). Insectivorous species expected to occur within open

portion of the Site include eastern mole (*Scalopus aquaticus*), red bat (*Lasiurus borealis*), and meadow vole (*Microtus pennsylvanicus*). The bobcat (*Lynx rufus*) is a carnivorous species that uses disturbed/maintained land for predation.

One omnivorous terrestrial reptile was noted during field visits, eastern box turtle* (*Terrapene carolina*). No amphibians were observed. Additional terrestrial reptiles and amphibians expected to occur in this plant community include rat snake (*Elaphe obsoleta*), green frog (*Rana clamitans*), and green anole (*Anolis carolinensis*).

Birds observed utilizing habitat within disturbed/maintained land include American Crow (*Corvus brachyrhynchos*), an open area hunter of small animals, birds, and insects; and turkey vulture (*Cathartes aura*), a terrestrial soaring scavenger. Species observed that utilize this community and forage on invertebrates in the summer and fruits, nuts, and seeds in the winter include blue jay*, field sparrow* (*Spizella pusilla*), gray catbird* (*Dumetella carolinensis*) and American cardinal*. Other common species that may occur include common grackle (*Quiscalus quiscula*), eastern bluebird (*Sialia sialis*), red-winged blackbird (*Agelaius phoeniceus*), and eastern meadowlark (*Sturnella magna*).

Mixed Pine/Hardwood Forest – Approximately 29 percent of the Site is mixed pine/hardwood forest. This plant community occurs in the northwestern and southwestern quadrants of the western parcel. This plant community consists of several loblolly pine seed trees over 80 years old. A midstory of loblolly pine, shortleaf pine (*Pinus echinata*) and various hardwood species have grown up around the mature pines. Hardwood species include white oak (*Quercus alba*), laurel oak (*Q. laurifolia*), northern red oak (*Q. rubra*), cherrybark oak (*Q. pagoda*), swamp chestnut oak, black cherry (*Prunus serotina*), green ash, mockernut hickory (*Carya tomentosa*), shagbark hickory (*Carya ovata*), winged elm, red maple, American beech, ironwood, American holly, sweet gum, sourwood, and tulip poplar. Due to the dense canopy, understory vegetation is limited and includes persimmon, bigleaf snowbell (*Styrax grandifolia*), devils walking stick (*Aralia spinosa*), red chokeberry (*Aronia arbutifolia*), Chinese privet, elderberry, yellow jessamine, Japanese honeysuckle, red bay (*Persea palustris*), sweetbay, and cross vine.

No mammals were observed during field investigations; however, white tailed deer* tracks were observed throughout this community. Open sub-canopy habitat that occurs within the this plant community may support little brown myotis (*Myotis lucifugus*), silver-haired bat (*Lasiurus noctivagus*), red bat, and evening bat (*Nycticeius humeralis*), which all forage for insects along streams, fields, occasionally trees, and roost in wooded areas. Other mammals more specialized to inhabit wooded areas are southern flying squirrel (*Glaucomys volans*), gray fox (*Urocyon cinereoargenteus*), and long-tailed weasel (*Mustela frenata*).

No terrestrial reptile or amphibian species were observed in mixed pine/hardwood forest areas during field investigations. Some terrestrial reptiles and amphibians which may occur this community include eastern box turtle, northern fence lizard (*Sceloporus undulatus*), five-lined skink (*Eumeces fasciatus*), southern ringneck snake (*Diadophis punctatus*), copperhead (*Agkistrodon contortrix*), gray treefrog (*Hyla versicolor*), spring peeper (*Pseudacris crucifer*), American toad (*Bufo americanus*), and slimy salamander (*Plethodon glutinosus*).

Birds observed during the field visits include northern cardinal* and Carolina wren* (*Thryothorus ludovicianus*). Many bird species frequent the edges between wooded areas and open fields. Bird species that may utilize this habitat include ruby-throated hummingbird (*Archilochus colubris*), downy woodpecker (*Picoides pubescens*), great crested flycatcher (*Myiarchus crinitus*), eastern wood-pewee (*Contopus virens*), blue jay, tufted titmouse (*Baeolophus bicolor*), white-breasted nuthatch (*Sitta carolinensis*), house wren (*Troglodytes aedon*), blue-gray gnatcatcher (*Polioptila caerulea*), eastern towhee (*Pipilo erythrophthalmus*), and chipping sparrow (*Spizella passerina*).

Coastal Plain Semi-Permanent Impoundment – Approximately 6 percent of the Site is classifiable as Coastal Plain Semi-Permanent Impoundment. This plant community occurs in the extreme northern portions of the western Site parcel. Beaver (*Castor canadensis*) activity in the area is extensive and has led to widespread inundation of the surrounding floodplain. Mortality has ensued to adjacent bottomland and low-lying upland tree communities as evidenced by numerous snags and fallen trees. The pervasive flooding and tree mortality has led to the creation of an extensive freshwater marsh community. This plant community is characterized by permanent inundation near the beaver dam, grading outward to prevailing hydrology in the surrounding area. Several large bald cypresses (*Taxodium distichum*) were the only remnant overstory species observed during field investigations. A dominate herbaceous stratum of floating and submergent aquatic species typically occurs in this plant community. Species identified include arrow arum (*Peltandra virginica*), white water lily (*Nymphaea odorata*), common cattail (*Typha latifolia*), pickerelweed (*Pontederia cordata*), and smartweed (*Polygonum* spp.).

Several mammalian and avian species are expected to utilize this community and adjacent ecotones. Omnivorous mammals noted during field visit include beaver* and raccoon* (*Procyon lotor*). Raccoons are likely to occur near the streams or near man-made structures. Other mammals expected to be found in this community include the river otter (*Lutra canadensis*) and muskrat (*Ondatra zibethicus*). Beaver ponds provide foraging habitat for bats, while dead snags provide roosting habitat. Bat species expected to utilize this habitat include the silver-haired bat, big brown bat (*Eptesicus fuscus*), and red bat.

One amphibian species was observed during the site visit, American bullfrog* (*Rana catesbeiana*). Reptile and amphibian species expected to be found in this community include cottonmouth, brown water snake (*Nerodia taxispilota*), red belly water snake (*N. erythrogaster*), northern water snake (*N. sipedon*), common snapping turtle (*Chelydra serpentina serpentina*), southern cricket frog, southern chorus frog, marbled salamander (*Ambystoma opacum*), and two-toed amphiuma (*Amphinuma means*).

Bird species observed utilizing this habitat include wood ducks* (*Aix sponsa*), which forage on invertebrates in the summer and fruits, nuts and seeds in the winter, and Canada goose* (*Branta canadensis*), a granivore that feeds on grasses. Other bird species expected to be found in this community include mallard duck (*Anas platyrhynchos*), belted kingfisher, and pileated woodpecker (*Dryocopus pileatus*).

2.8 Federally Protected Species

The most current USFWS (2007) listing of federally protected species with ranges extending into Bertie County (July 24, 2007) has been used in support of this document. North Carolina Natural Heritage Program (NCNHP) records documenting the presence of federally or state listed species were consulted before commencing field investigations. A review of NCNHP maps for known populations of protected species was conducted on February 15, 2006. NCNHP record searches produced a historical record of two red-cockaded woodpecker cavity trees in 1978, located approximately 2,200 feet southeast of the Site (NCNHP 1999).

Species with the federal classification of Endangered, Threatened, or officially Proposed for such listing are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). The term “Endangered Species” is defined as, “any species which is in danger of extinction throughout all or a significant portion of its range,” and the term “Threatened Species” is defined as “any species which is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range” (16 U.S.C. 1532). Three federally protected species are listed for Bertie County (USFWS 2007; July 24, 2007): bald eagle (*Haliaeetus leucocephalus*), red cockaded woodpecker (*Picoides borealis*), and shortnose sturgeon (*Acipenser brevirostrum*).

2.9 Constraint Analysis

An Environmental Resources Technical Report (ERTR) has been completed for the Site (EEP 2006). The purpose of the ERTR is to evaluate the suitability of the Site for restoration activities and identify any outstanding issues which may jeopardize the success of the project. Specific tasks performed for the ERTR include 1) a general description of watershed conditions, 2) an assessment of biological features within the Site including descriptions of vegetation, wildlife, protected species, jurisdictional wetlands, and water quality, 3) a delineation of Section 404 jurisdictional areas and subsequent mapping of jurisdictional boundaries, 4) an Environmental Data Resources Report, 5) environmental screening documentation (including the Categorical Exclusion [CE] checklist), and 6) a constraints analysis.

A summary of environmental screening results for the Site is provided below.

- The Site is not located on tribal territory, federal lands, in a federally designated Wilderness Area, or in an estuarine system.
- The Site does not include land purchases or improved with Land and Water Conservation funds.
- This project is not “full-delivery;” however, a limited Phase 1 Site Assessment was scoped and performed.
- A search of available environmental records was conducted by EDR. No mapped sites were found in EDR’s search of available (“reasonably ascertainable”) government records either on the target property or within the search radius around the target property for any databases searched.

-
- No federally Threatened or Endangered species occurrences are documented within a 2.0 mile radius of the Site. No suitable habitat for any federally protected species occurs in the Site.
 - NRCS has determined that the Site includes prime, unique, statewide, or locally important farmland (Farmland Conversion Impact Rating; May 5, 2006).
 - NCWRC had no recommendations regarding the Fish and Wildlife Coordination Act issues.
 - USFWS had no recommendations regarding the Fish and Wildlife Coordination Act or the Migratory Bird Treaty issues.
 - The CE document was submitted and has been approved.
 - Proposed Site restoration activities are not expected to adversely impact any cultural or archaeological resources identified by the North Carolina State Historic Preservation Office (HPO) (see HPO Concurrence Letter in Appendix F). This item had not been resolved as of the time of the NRTR letter is included.
 - Proposed on-Site enhancement activities include the filling of an on-site drainage ditch. No hydrologic trespass is anticipated to occur beyond Site boundaries. No hydraulic modifications are proposed for existing stream channels.

3.0 WETLAND ENHANCEMENT PLAN

The enhancement concepts being developed for the Site follow a watershed-based approach for wetland improvements. Therefore, the Site design takes into account surrounding land use and management practices that could realize benefits from Site restoration activities. This concept also subscribes to the enhancement of all ecosystems within the Site, including upland communities. The design planning units are depicted on Figure 8 (Appendix A). After implementation, enhancement activities are expected to provide the following mitigation planning units (see Table 1, Appendix B).

- Enhancement of approximately 12.7 acres of riparian wetlands
- Enhancement of approximately 7.3 acres of non-riparian wetlands
- Preservation of approximately 3.9 acres of riparian wetlands
- Preservation of approximately 4719 linear feet of stream

Components of the enhancement plan may be modified during the final design stage based on planting, site preparation, or access constraints. Primary activities planned to enhance on-Site wetland complexes included 1) drainage ditch removal, 2) invasive plant control, 3) riparian and non-riparian wetland enhancement, and 4) plant community restoration. Stream channel and wetland preservation will also be provided by the Site. A monitoring plan is proposed to provide the means to evaluate the success on-Site restoration activities.

3.1 Ditch Backfilling

The drainage ditch will be plugged using on-site, earthen material taken from existing spoil piles as depicted on Figure 9 (Appendix A). The plug locations will be cleaned, as needed, to remove unconsolidated sediments within the lower portion and sides of the cross-section. Accumulated sediment within the ditch represents relatively high permeable material that may act as a conduit for continued drainage if not removed. The unconsolidated sediments will be lifted from the channel to expose the underlying, relatively impermeable clay substrate along the ditch. The unconsolidated material will be incorporated into the adjacent soils. The plugs will consist of a core of impervious material and be sufficiently wide and deep to form an imbedded overlap in the existing ditch banks and ditch bed.

The remaining ditch sections will be partially back-filled using adjacent earthen material from excavated depressions located behind each ditch plug as depicted on Figure 9 (Appendix A). Following removal of earthen material, depressional areas shall remain as irregularly shaped depressions with gently graded side slopes and a finished depth of less than one foot. The constructed depressions will provide habitat, flood storage, and energy dissipation. All grading quantities will be field adjusted at the time of construction.

3.2 Invasive Plant Control

Non-native invasive plants and their effect on native plant communities and wildlife are well documented. The Site contains many aggressive invasive including, but not limited to, Chinese privet (*Ligustrum sinense*) and Japanese honeysuckle (*Lonicera japonica*). Invasive plant control entails the complete removal of the most aggressive non-native plants within the Site. Reclamation of existing infestation locations can be achieved by control measures and the

reestablishment of native plant communities. Strategies of surveillance and treatment of new arrivals over the Site monitoring period should help safeguard the Site from severe infestations. Through thoughtful long-term forest management practices the effect of invasive, non-native species can be kept to a minimum.

Invasive plant control will be accomplished through the use of chemical and mechanical means. All stems of Chinese privet and Japanese honeysuckle within the Site will be cut and treated with herbicide. Several areas with large concentration of these species have been identified; and a thorough surveillance of the entire Site will be required. Densities and specific location of Chinese privet populations vary throughout the Site, but are most prevalent along the small drainages. Specific recommended control procedures as recommended by the United State Forest Service (Miller 2003).

3.3 Wetland Enhancement

Timber production and agricultural practices have led to a decrease in vegetative cover diversity and wildlife habitat within many areas on-Site. Enhancement of wetland and upland forest communities provides habitat for area wildlife and allows for development and expansion of characteristic vegetative community types across the landscape. Ecotonal changes between community types contribute to diversity and provide secondary benefits, such as enhanced feeding and nesting opportunities for mammalian, avian, amphibian, and other wildlife species. On-Site riparian and non-riparian wetland enhancement is proposed via supplemental planting with bare-root seedlings to best recreate the suite of species present within historic Site wetland vegetative communities.

Planting Site wetland and adjacent upland buffers will improve vegetative diversity, provide additional channel shading in riparian wetland areas, filter pollutants from adjacent runoff, and diversify wildlife habitat and food sources. Where necessary, scarification of the soil surface within wetland enhancement areas will be performed prior to planting to improve local soil conditions.

3.4 Plant Community Associations

Site-specific environmental factors (e.g. soil moisture regime, landform, and soil type/texture) and community descriptions from Classification of the Natural Communities of North Carolina (Schafale and Weakley 1990) were used to develop the primary plant community associations within wetland enhancement areas and deforested upland communities within the Site. Targeting the appropriate plant communities using this methodology has been endorsed by North Carolina State University and is now a requirement of EEP (Department of Biological and Agricultural Engineering and North Carolina Water Quality Group, Plant Community Workshop, June 2006).

The community associations include: 1) Coastal Plain Small Stream Swamp; 2) Non-Riverine Wet Hardwood Forest; 3) Cypress-Gum Swamp; and 4) Mesic Mixed Hardwood Forest (Figure 10, Appendix A). Species within each planting unit are listed below.

Coastal Plain Small Stream Swamp

1. Swamp Tupelo (*Nyssa biflora*)
2. Bald Cypress (*Taxodium distichum*)
3. Laurel Oak (*Quercus laurifolia*)
4. Overcup Oak (*Quercus lyrata*)
5. Swamp Chestnut Oak (*Quercus michauxii*)
6. American Elm (*Ulmus americana*)
7. Tulip Poplar (*Liriodendron tulipifera*)
8. River Birch (*Betula nigra*)
9. Green Ash (*Fraxinus pennsylvanica*)
10. Ironwood (*Carpinus caroliniana*)
11. American Holly (*Ilex opaca*)
12. Sweetbay Magnolia (*Magnolia virginiana*)
13. Red Bay (*Persea borbonia*)
14. Fetterbush (*Lyonia lucida*)

Non-Riverine Wet Hardwood Forest

1. Cherrybark Oak (*Quercus pagoda*)
2. Swamp Tupelo (*Nyssa biflora*)
3. Laurel Oak (*Quercus laurifolia*)
4. Swamp Chestnut Oak (*Quercus michauxii*)
5. American Elm (*Ulmus americana*)
6. Tulip Poplar (*Liriodendron tulipifera*)
7. Ironwood (*Carpinus caroliniana*)
8. American Holly (*Ilex opaca*)
9. Highbush blueberry (*Vaccinium corymbosum*)
10. Paw-paw (*Asimina triloba*)
11. Pepperbush (*Clethra alnifolia*)
12. Spicebush (*Lindera benzoin*)
13. Red Bay (*Persea borbonia*)

Mesic Mixed Hardwood Forest

1. Tulip Poplar (*Liriodendron tulipifera*)
2. White Oak (*Quercus alba*)
3. Southern Red Oak (*Quercus falcata*)
4. American Beech (*Fagus grandifolia*)
5. Northern Red Oak (*Quercus rubra*)
6. Pignut Hickory (*Carya glabra*)
7. Mockernut Hickory (*Carya tomentosa*)
8. Black Gum (*Nyssa sylvatica*)
9. Cherrybark Oak (*Quercus pagoda*)
10. Ironwood (*Carpinus caroliniana*)
11. Southern Sugar Maple (*Acer floridanum*)
12. American Holly (*Ilex opaca*)
13. Sourwood (*Oxydendron arboretum*)
14. Hop-hornbeam (*Ostrya virginiana*)

3.5 Planting Plan

The purpose of the planting plan is to reestablish vegetative community patterns across the landscape. The plan consists of 1) acquisition of available plant species, 2) implementation of proposed Site preparation, and 3) planting of acquired species.

Species selected for planting will be dependent upon the availability of local seedling sources. Advance notification to plant nurseries will facilitate stock availability of various non-commercial species. Bare-root seedlings or small containerized plant material of the listed species will be planted within specified map areas at a density of 680 stems per acre on 8-foot. Table 2 (Appendix B) details the number of stems and species distributions within each proposed plant community.

Since Site soil conditions are generally favorable for planting, limited Site preparation is anticipated prior to planting. Soil scarification is proposed within deforested areas in the eastern Site parcel. Planting will be performed between December 1 and March 15 to allow bare-root seedlings to stabilize during the dormant period and set roots during the beginning of the growing season. A total of approximately 25,340 tree and shrub specimens will be planted within the Site.

4.0 MONITORING PLAN

Following restoration activities, Site monitoring to meet objectives will be performed over a 5 year period (i.e., five growing seasons), or thereafter until success criteria are achieved. The objectives for wetland enhancement activities will be achieved via two primary parameters: hydrology and vegetation. Wetland and stream preservation objectives will be achieved via site descriptions and photographic documentation.

An invasive species control efficacy evaluation shall be conducted yearly, concurrent with the rest of the site monitoring. The evaluation shall include the surveillance of the Site for the occurrence of invasive species and provide documentation for the presence or absence of known invasive species, location, and recommended control measures for the future.

Monitoring reports will be submitted to EEP at the end of each monitoring year. The report will include a compilation of collected data in spreadsheet, tabular, and graphical format. The reports will follow the most current format provided by EEP (Content, Format and Data Requirements for EEP Monitoring Reports). Monitoring is proposed for wetland enhancement areas only. Monitoring of these areas will entail only vegetation monitoring. The vegetation monitoring task is discussed below.

4.2 Headwater Hydrology Monitoring

Following ditch removal, groundwater monitoring gauges will be placed in accordance with specifications in the USACE Installing Monitoring Wells/Piezometers in Wetlands (WRP Technical Note HY-IA-3.1, August 1993). Monitoring gauges shall be situated in various landscape positions within the headwater system and depressional areas at a frequency sufficient to provide representative coverage. Data collected from these gauges will help determine how the local hydrology responds following ditch removal.

4.3 Vegetation Monitoring

Vegetation monitoring procedures are designed in accordance with the Stream Mitigation Guidelines (USACE *et al.* 2003) and guidelines and procedures developed by the Carolina Vegetation Survey (CVS) (CVS-EEP Protocol for Recording Vegetation, Level 1-2 Plot Sampling Only, Version 4.0, 2006). A general discussion of the plant community restoration-monitoring program is provided.

After planting has been completed in winter, an initial evaluation will be performed to verify planting methods and to determine initial species composition and density. Supplemental planting and additional site modifications will be implemented if necessary. During the first year, vegetation will receive cursory, visual evaluation on a periodic basis to ascertain the degree of overtopping of planted elements by nuisance species.

Collection of the first year data will be performed during the month of September. The second and all subsequent vegetation sampling will be collected between June 1 and September 31 or until the vegetation success criterion is achieved.

As part of the post-project As-built Mitigation Plan, approximately twelve (12), permanent 100-square meter sampling plots (modules) will be established at stratified locations within the Site. The sampling plots will equally represent the various hydrologic regimes and plant communities located within the Site. In each sample plot, protocol Level 1 and 2 will be used to identify and track both planted and volunteer stems. Exotic vegetation will also be noted during data collection. One photograph of each plot will be required.

4.3.1 Vegetation Success Criteria

Success criteria have been established to verify that the wetland vegetation component supports community elements necessary for wetland forest development. Success criteria are dependent upon the density and survival of planted species identified in Plant Community Associations (Section 3.2).

An average density of 320 stems per acre of planted species must be surviving in the first year of monitoring. Subsequently, 290 character tree stems per acre must be surviving in Year 3, and 260 character tree stems per acre in Year 5. This is consistent with USACE Wilmington District guidelines for wetland mitigation (USACE 1993).

4.3.2 Vegetation Contingency

If vegetation success criteria are not achieved based on average density calculations from combined sample plot data, supplemental planting will be performed with the tree species listed in the planting plan. Supplemental planting will be performed thereafter as needed until achievement of vegetation success criteria. No quantitative sampling requirements are proposed for herb assemblages. Development of wetland forests over several decades shall dictate the success in migration and establishment of desired understory and groundcover populations.

5.0 REFERENCES

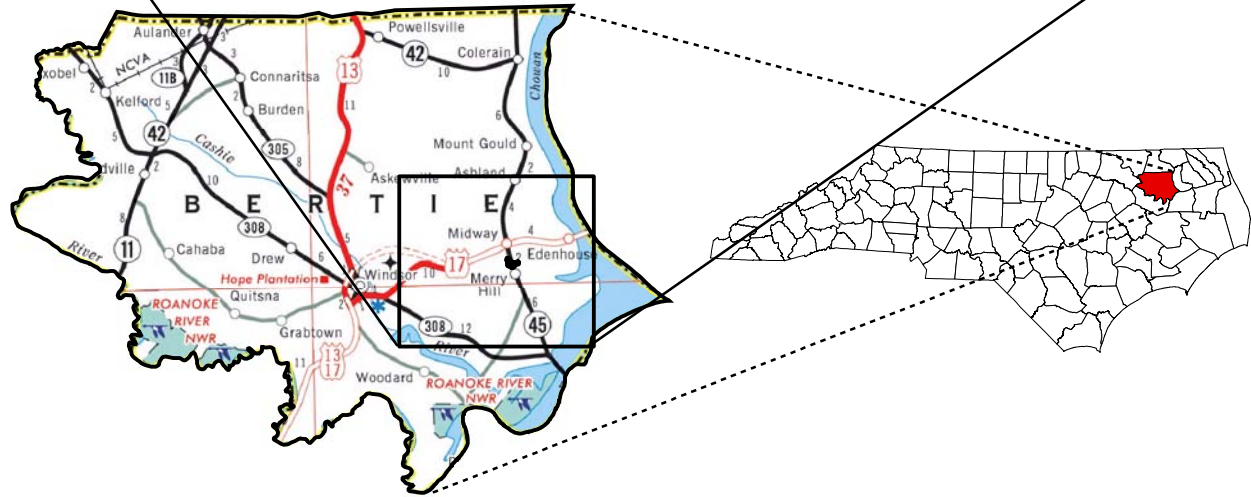
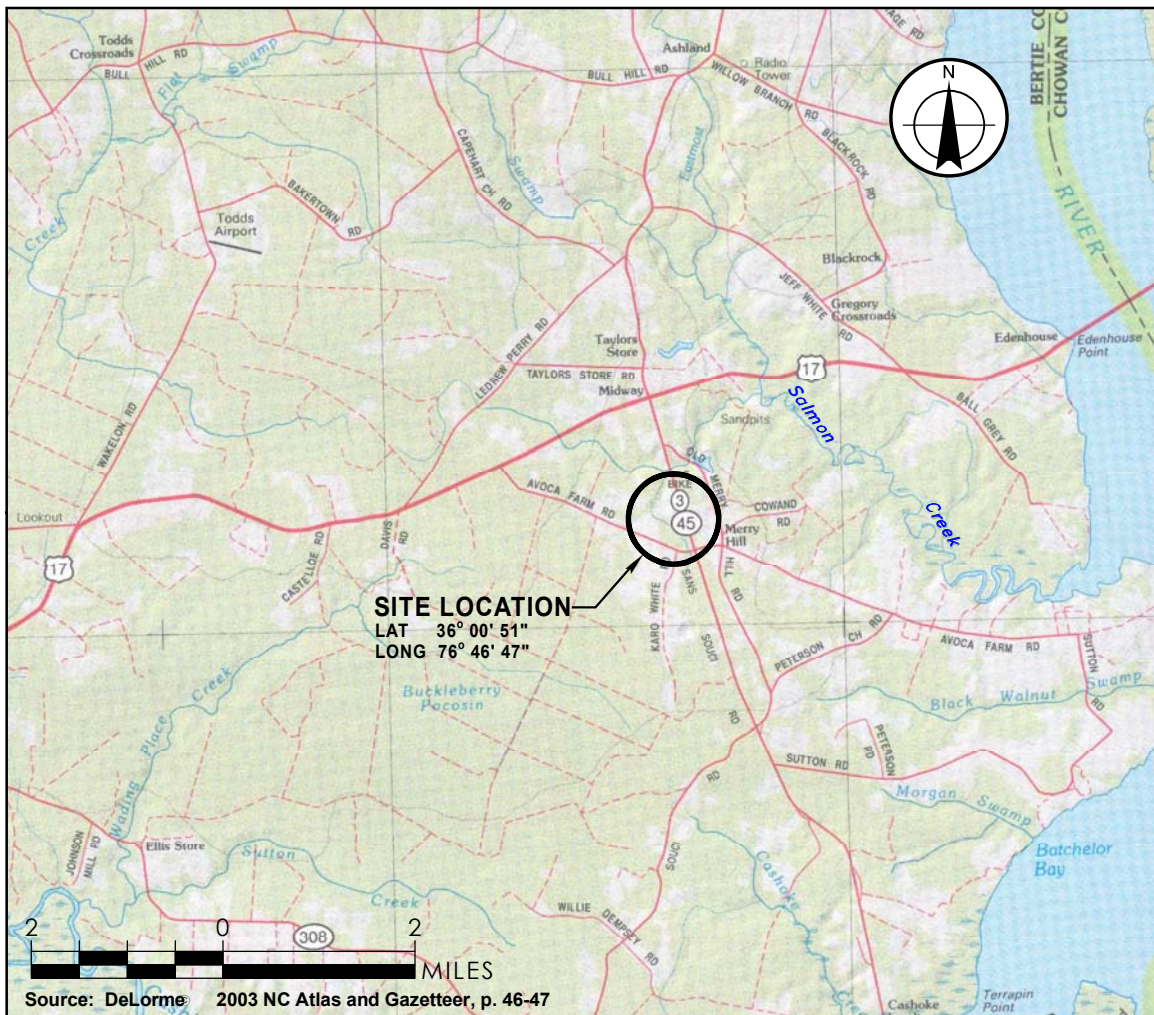
- Environmental Data Resources, Inc. 2006. EDR Radius Map with GeoCheck. Environmental Data Resources, Inc. Milford, CT.
- Griffith, G.E., J.M Omernik, J.A. Comstock, M.P. Schafale, W.H. McNab, D.R. Lenat, T.F. MacPherson,, J.B. Glover, and V.B. Shelburne. 2002. Ecoregions of North Carolina and South Carolina, (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,500,000).
- Kartesz, J. 1998. A Synonymized Checklist of the Vascular Flora of the United States, Puerto Rico, and the Virgin Islands. Biota of North America Program.
- Miller, J. H. 2003. Nonnative Invasive Plants of Southern Forests: A Field Guide for Identification and Control. Revised. Gen. Tech. Rep. SRS-62. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 93 pp.
- Natural Resources Conservation Service (NRCS). 1990. Soil Survey of Bertie County, North Carolina, USDA National Cooperative Soil Survey.
- Natural Resources Conservation Service (NRCS). 1997. U.S. Department of Agriculture. Hydric Soils, Bertie County, N.C. Technical Guide, Section II-A-2.
- North Carolina Division of Water Quality (NCDWQ). 2002a. Chowan River Basinwide Water Quality Plan. North Carolina Department of Environment and Natural Resources, Raleigh.
- North Carolina Division of Water Quality (NCDWQ). 2002b. Chowan River and Pasquotank River Basins – Basinwide Assessment Report. North Carolina Department of Environment and Natural Resources, Raleigh.
- North Carolina Ecosystem Enhancement Program (EEP). 2006. Environmental Resources Technical Report: Nicholls Farm. Raleigh.
- North Carolina Natural Heritage Program (NCNHP). 1999. List of Significant Natural Heritage Areas. North Carolina Division of Parks and Recreation, Department of Environment and Natural Resources. Raleigh, NC.
- Radford, A.E., H.E. Ahles, and C.R. Bell. 1968. Manual of the Vascular Flora of the Carolinas. The University of North Carolina Press, Chapel Hill, NC. 1183 pp.
- Rosgen, D. 1996. Applied River Morphology. Wildland Hydrology (Publisher). Pagosa Springs, Colorado.

-
- Schafale, M.P. and A.S. Weakley. 1990. Classification of the Natural Communities of North Carolina: Third Approximation. North Carolina Natural Heritage Program, Division of Parks and Recreation, N.C. Department of Environment, Health, and Natural Resources. Raleigh, North Carolina.
- United States Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetland Delineation Manual. Technical Report Y-87-1, US Army Waterways Experiment Station, Vicksburg, Mississippi. 169 pp.
- United States Army Corps of Engineers (USACE). 1993 (unpublished). Corps of Engineers Wilmington District. Compensatory Hardwood Mitigation Guidelines (12/8/93).
- United States Army Corps of Engineers (USACE), U.S. Environmental Protection Agency (USEPA), North Carolina Wildlife Resources Commission (NCWRC), Natural Resources Conservation Service (NRCS), and N.C. Division of Water Quality (NCDWQ). 2003. Stream Mitigation Guidelines, April 2003. State of North Carolina. 26 pp.
- United States Fish and Wildlife Service (USFWS). 2007. Bertie County Endangered Species, Threatened Species, and Federal Species of Concern (online). Available: <http://nc-es.fws.gov/es/cntylist/Bertie.html> [July 24, 2007]. U.S. Fish and Wildlife Service.

APPENDICES



APPENDIX A: FIGURES



SITE LOCATION
EPP NICHOLLS FARM
WETLAND ENHANCEMENT SITE
 BERTIE COUNTY, NORTH CAROLINA

Dwn By:	DGJ
Ckd By:	JWG
Date:	FEB 2008
Project:	06-279.00

FIGURE
1



EcoScience Corporation

Raleigh, North Carolina

REVISIONS

Client:



Project:

**EEP
NICHOLLS FARM
WETLAND
ENHANCEMENT
SITE**

BERTIE COUNTY,
NORTH CAROLINA

Title:

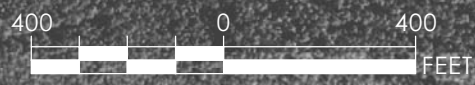
**AERIAL
PHOTOGRAPHY**

Dwn By:	DGJ	Date:	FEB 2008
Ckd By:	JWG	Scale:	1" = 400'

ESC Project No.: 06-279.00

FIGURE

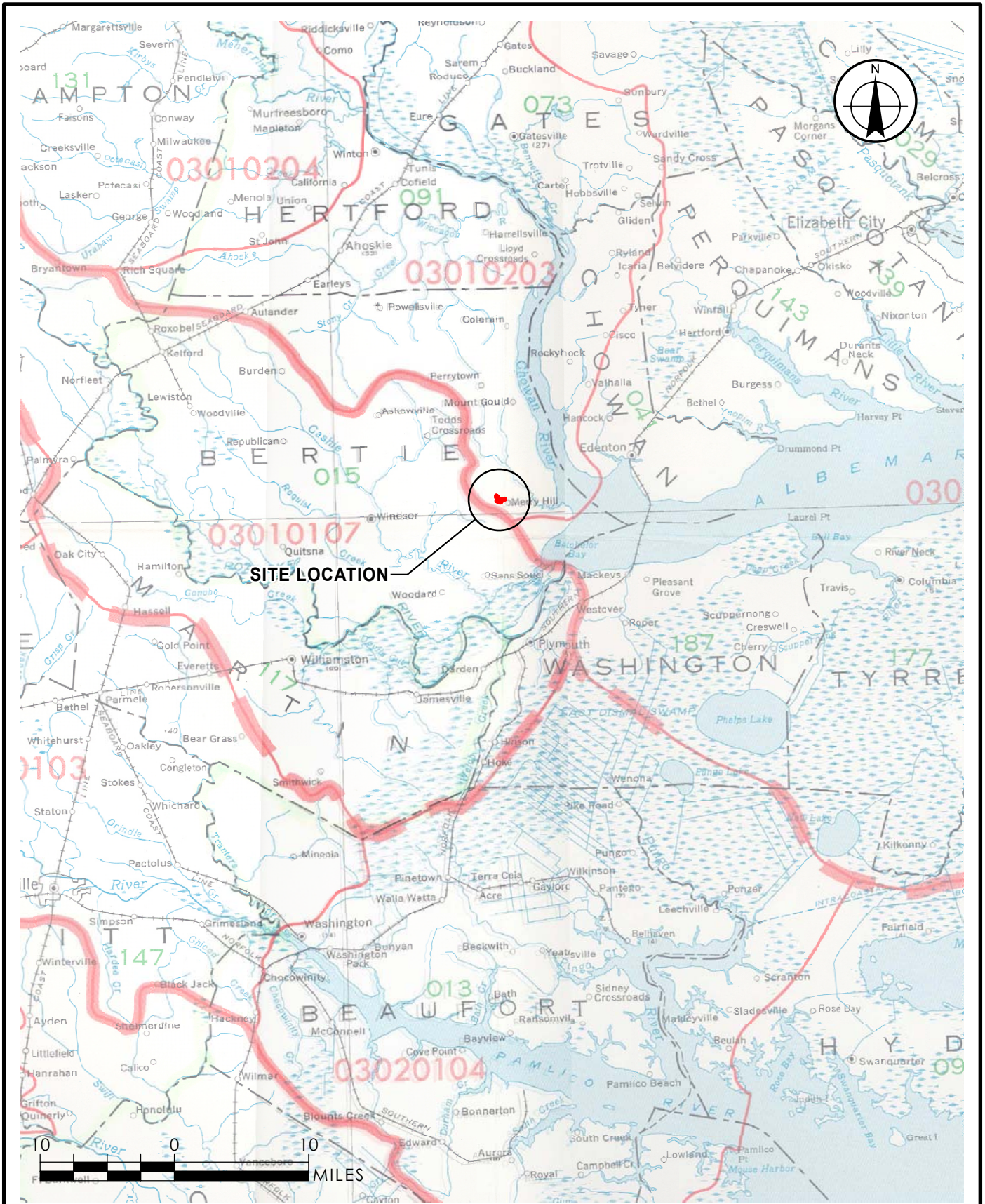
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Imagery Source: USGS

NAD 83

Merry Hill

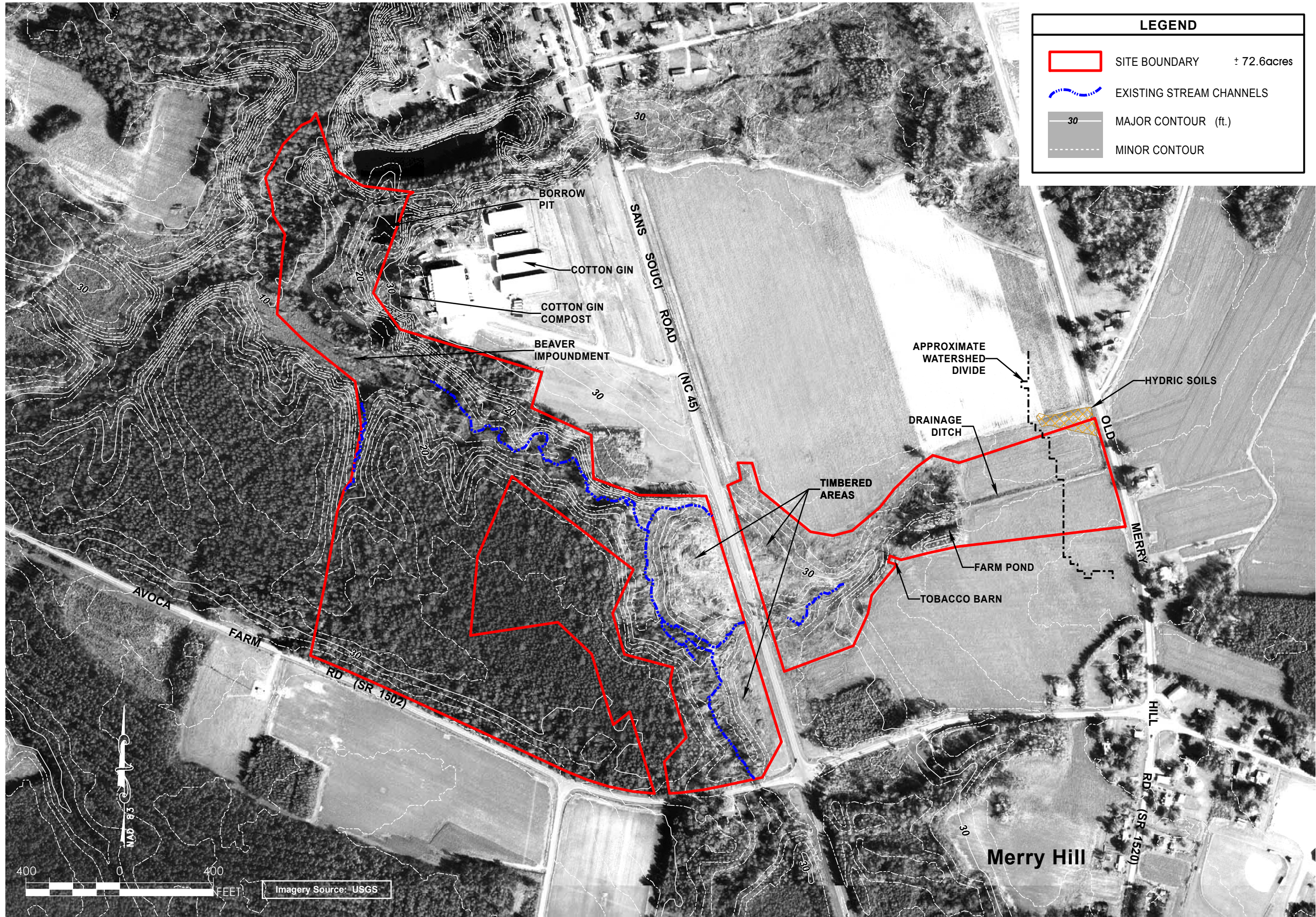


USGS HYDROLOGIC UNIT MAP
EPP NICHOLLS FARM
WETLAND ENHANCEMENT SITE
 BERTIE COUNTY, NORTH CAROLINA

Dwn By:	DGJ
Ckd By:	JWG
Date:	FEB 2008
Project:	06-279.00

FIGURE

3



LEGEND	
	SITE BOUNDARY ± 72.6 acres
	EXISTING STREAM CHANNELS
	MAJOR CONTOUR (ft.)
	MINOR CONTOUR



REVISIONS



Project:

**ECP
NICHOLLS FARM
WETLAND
ENHANCEMENT
SITE**

BERTIE COUNTY,
NORTH CAROLINA

Title:

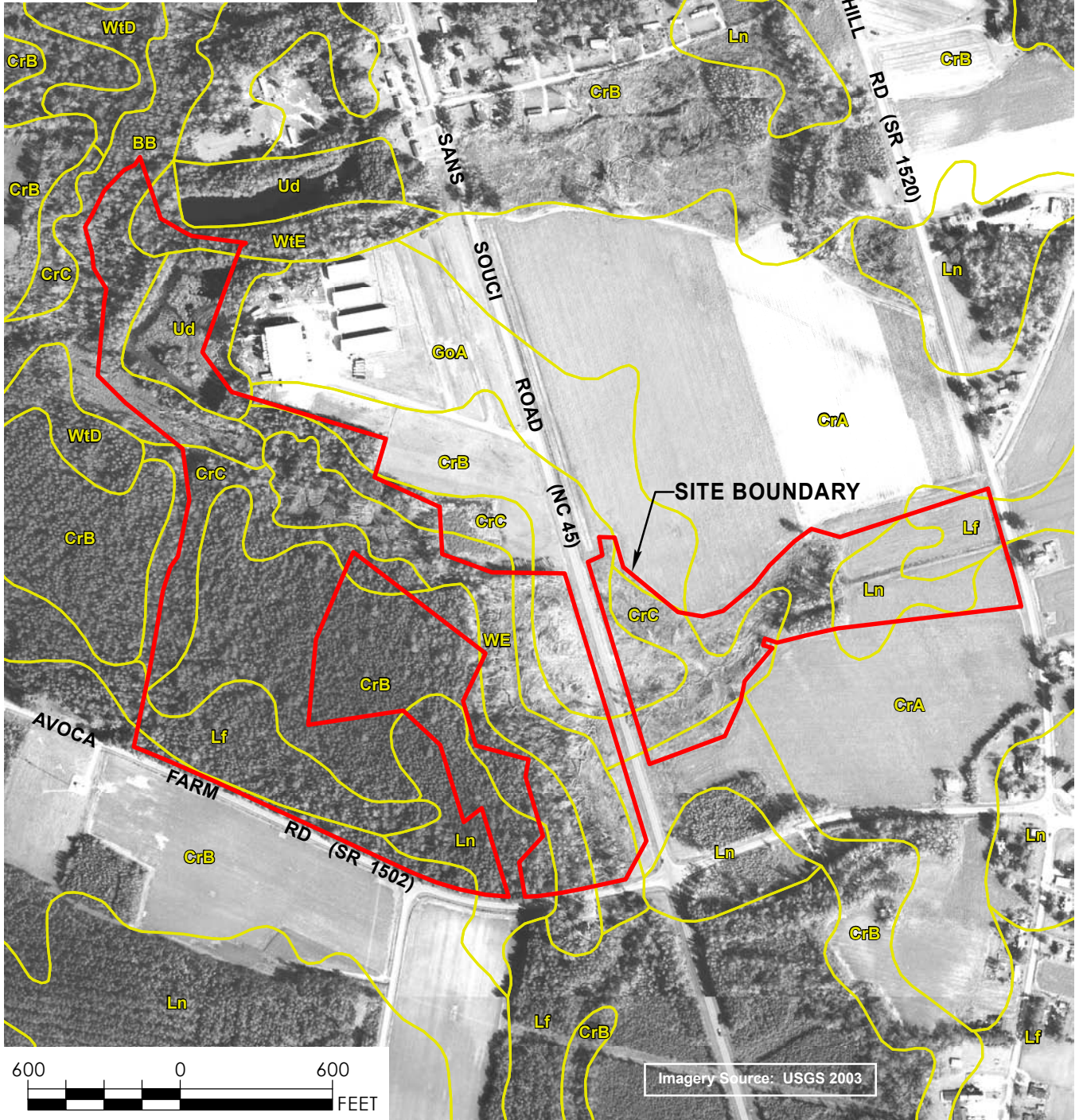
**PHYSIOGRAPHY,
TOPOGRAPHY,
AND LAND USE**

Dwn By:	DGJ	Date:	FEB 2008
Ckd By:	JWG	Scale:	1" = 400'
ESC Project No.:		06-279.00	

FIGURE

4

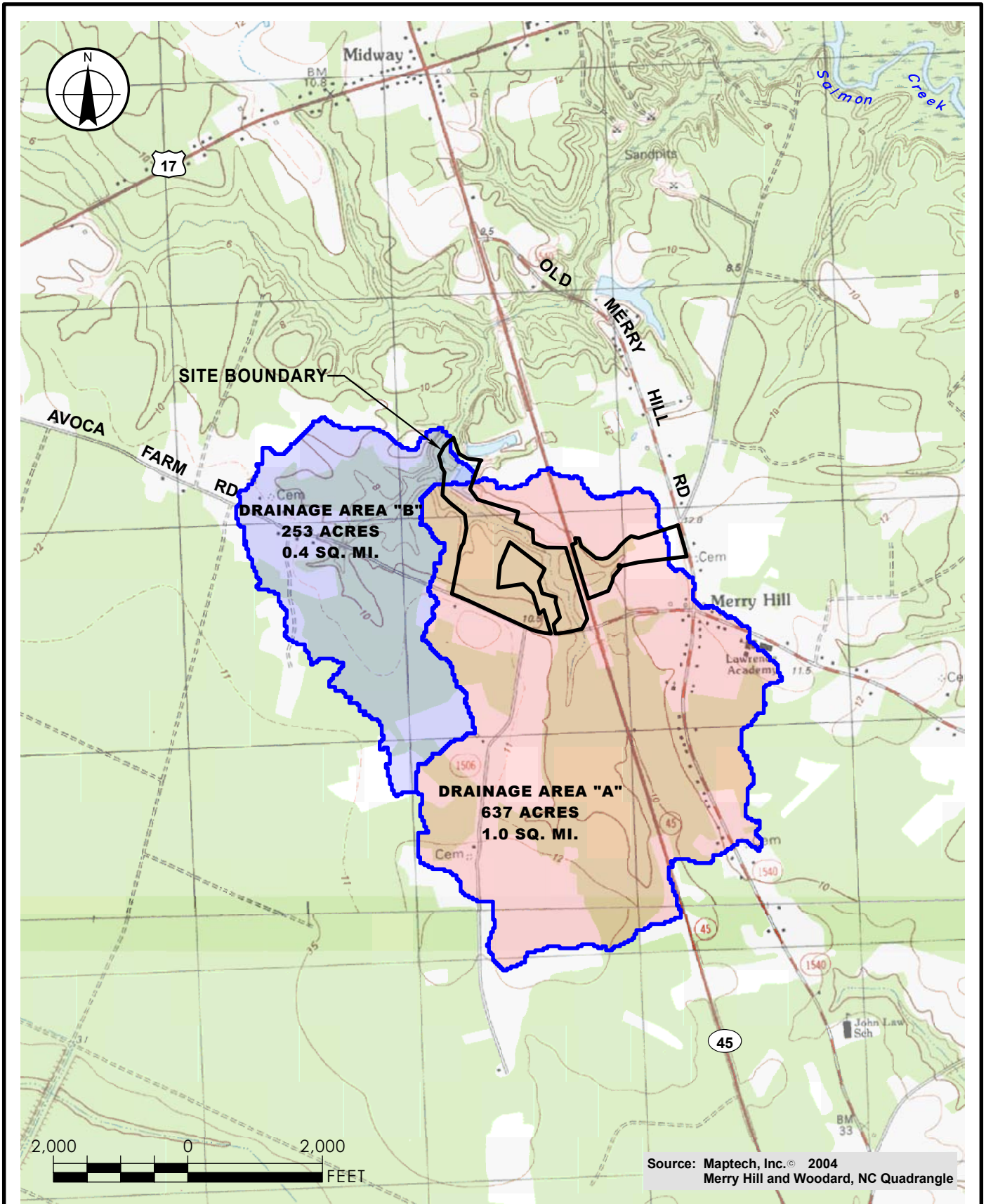
SOIL SERIES			
BB	BIBB AND JOHNSTON LOAMS (FREQUENTLY FLOODED)	Lf	LEAF LOAM
CrA	CrAVEN FINE SANDY LOAM (0-1% SLOPES)	Ln	LENOIR FINE SANDY LOAM
CrB	CrAVEN FINE SANDY LOAM (1-4% SLOPES)	Ud	UDORTHERENTS LOAMY
CrC	CrAVEN FINE SANDY LOAM (4-8% SLOPES)	WE	WEHADKEE LOAM (FREQUENTLY FLOODED)
GoA	GoLDSBORO SANDY LOAM (0-3% SLOPES)	WtE	WINTON FINE SANDY LOAM (15-60% SLOPES)



NRCS SOIL UNITS
EEP NICHOLLS FARM
WETLAND ENHANCEMENT SITE
 BERTIE COUNTY, NORTH CAROLINA

Dwn By:	DGJ
Ckd By:	JWG
Date:	FEB 2008
Project:	06-279.00

FIGURE
5

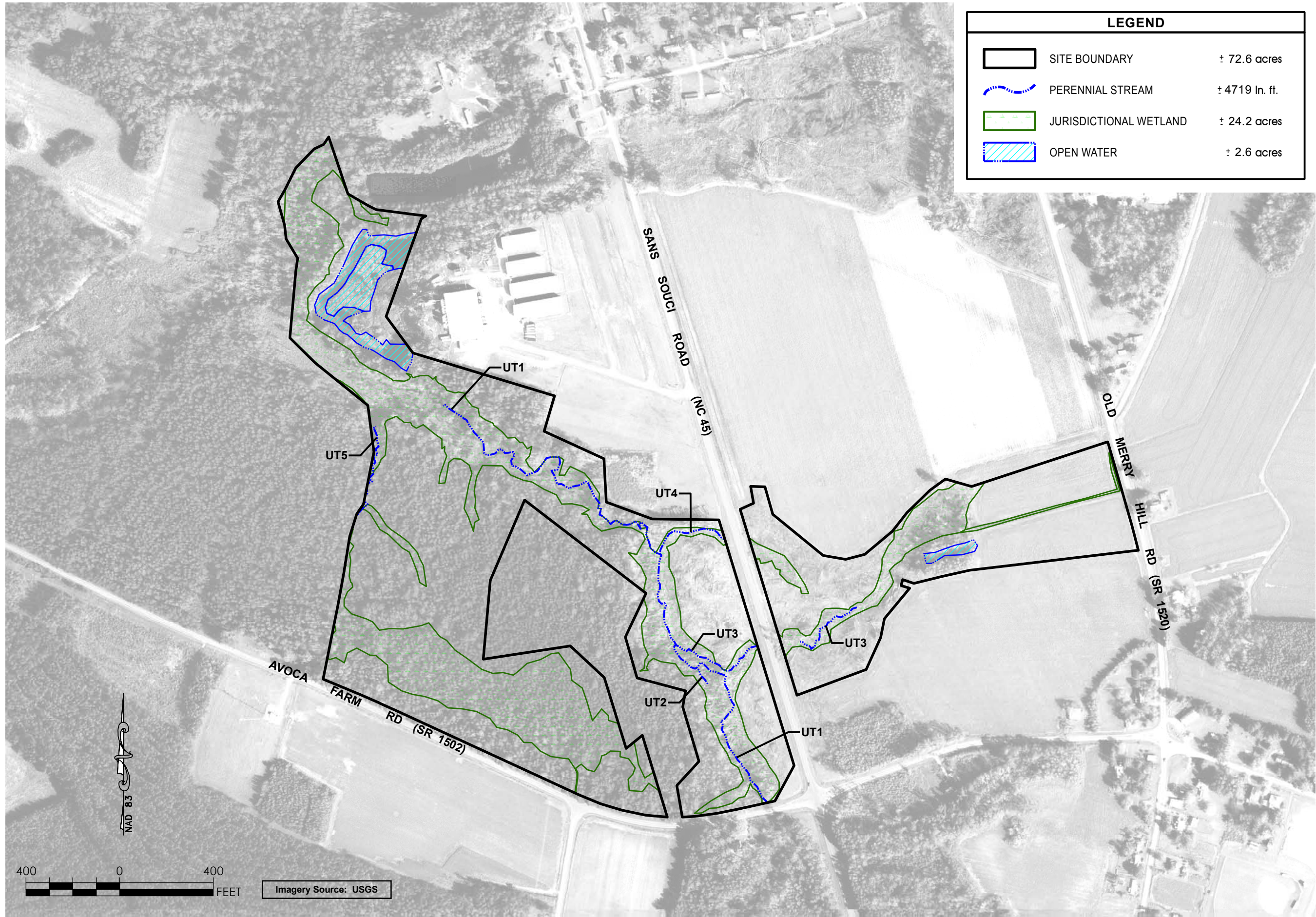


DRAINAGE AREA
EEP NICHOLLS FARM
WETLAND ENHANCEMENT SITE
BERTIE COUNTY, NORTH CAROLINA

Dwn By:	DGJ
Ckd By:	JWG
Date:	FEB 2008
Project:	06-279.00

FIGURE

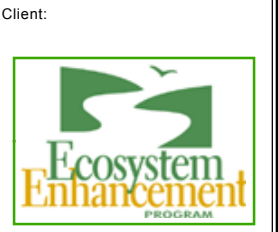
6



LEGEND		
	SITE BOUNDARY	± 72.6 acres
	PERENNIAL STREAM	± 4719 ln. ft.
	JURISDICTIONAL WETLAND	± 24.2 acres
	OPEN WATER	± 2.6 acres



REVISIONS



Project:

**ECP
NICHOLLS FARM
WETLAND
ENHANCEMENT
SITE**

BERTIE COUNTY,
NORTH CAROLINA

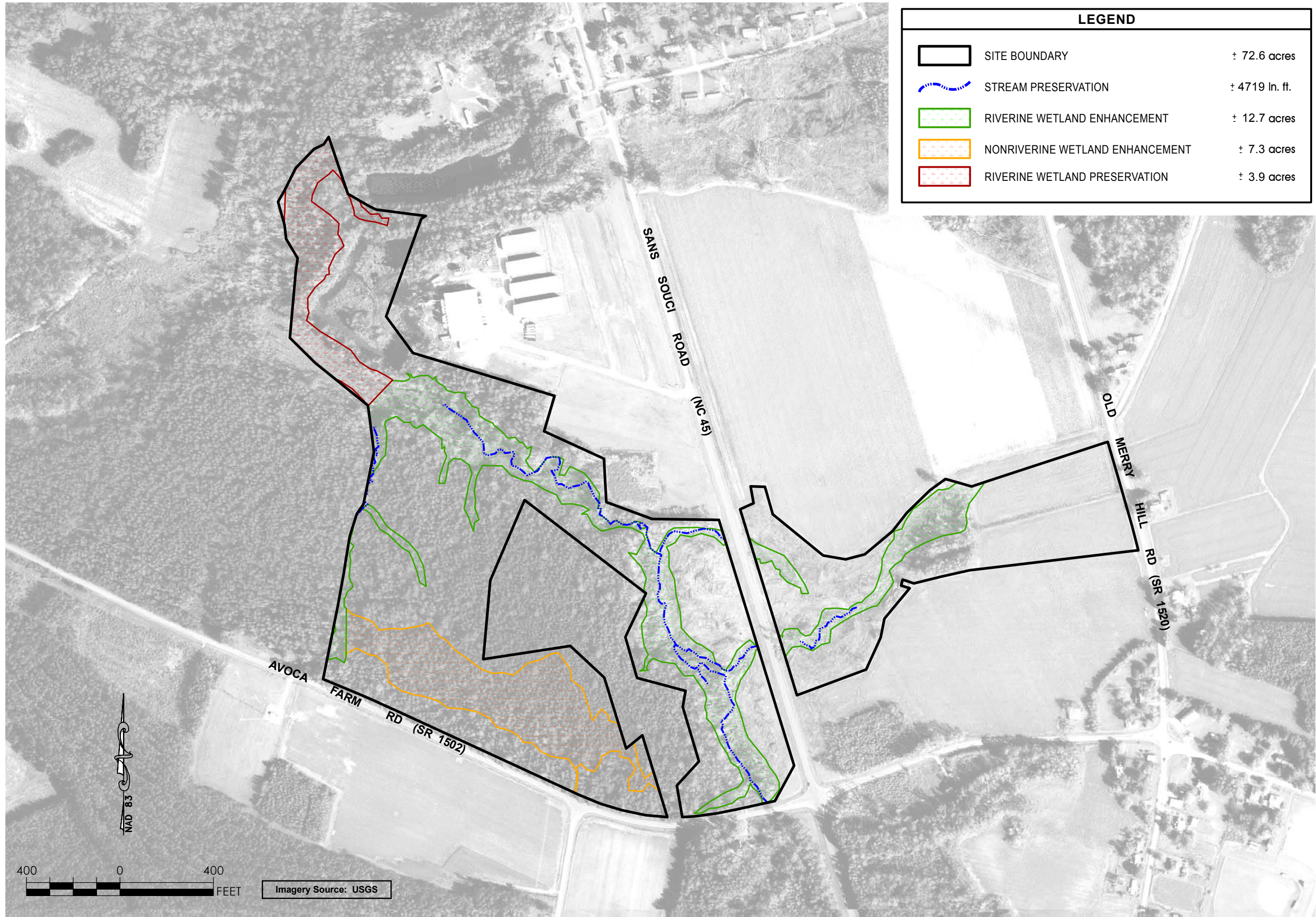
Title:

**JURISDICTIONAL
MAPPING**

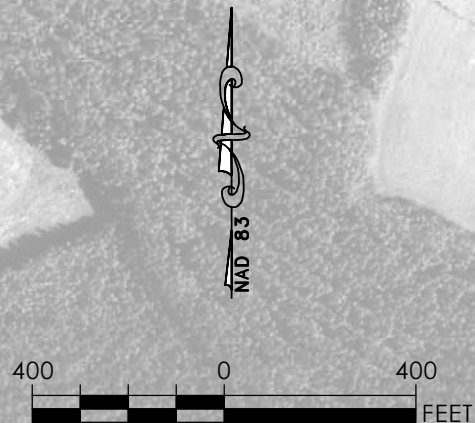
Dwn By:	DGJ	Date:	FEB 2008
Ckd By:	JWG	Scale:	1" = 400'
ESC Project No.:		06-279.00	

FIGURE

7



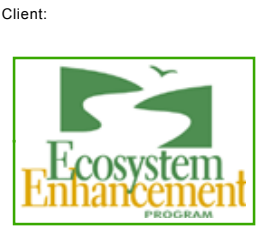
LEGEND		
	SITE BOUNDARY	± 72.6 acres
	STREAM PRESERVATION	± 4719 ln. ft.
	RIVERINE WETLAND ENHANCEMENT	± 12.7 acres
	NONRIVERINE WETLAND ENHANCEMENT	± 7.3 acres
	RIVERINE WETLAND PRESERVATION	± 3.9 acres



Imagery Source: USGS



REVISIONS



Project:

**ECP
NICHOLLS FARM
WETLAND
ENHANCEMENT
SITE**

BERTIE COUNTY,
NORTH CAROLINA






Title:

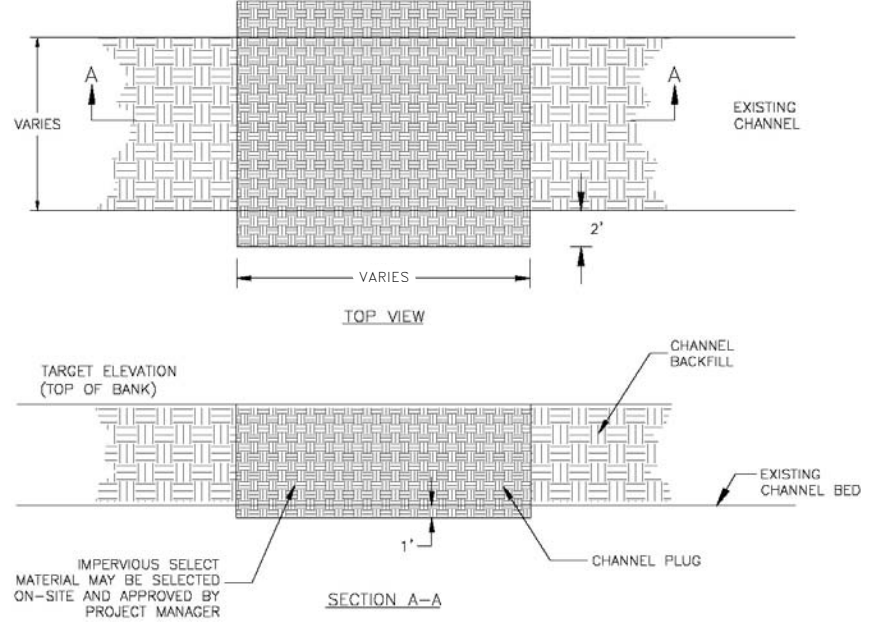
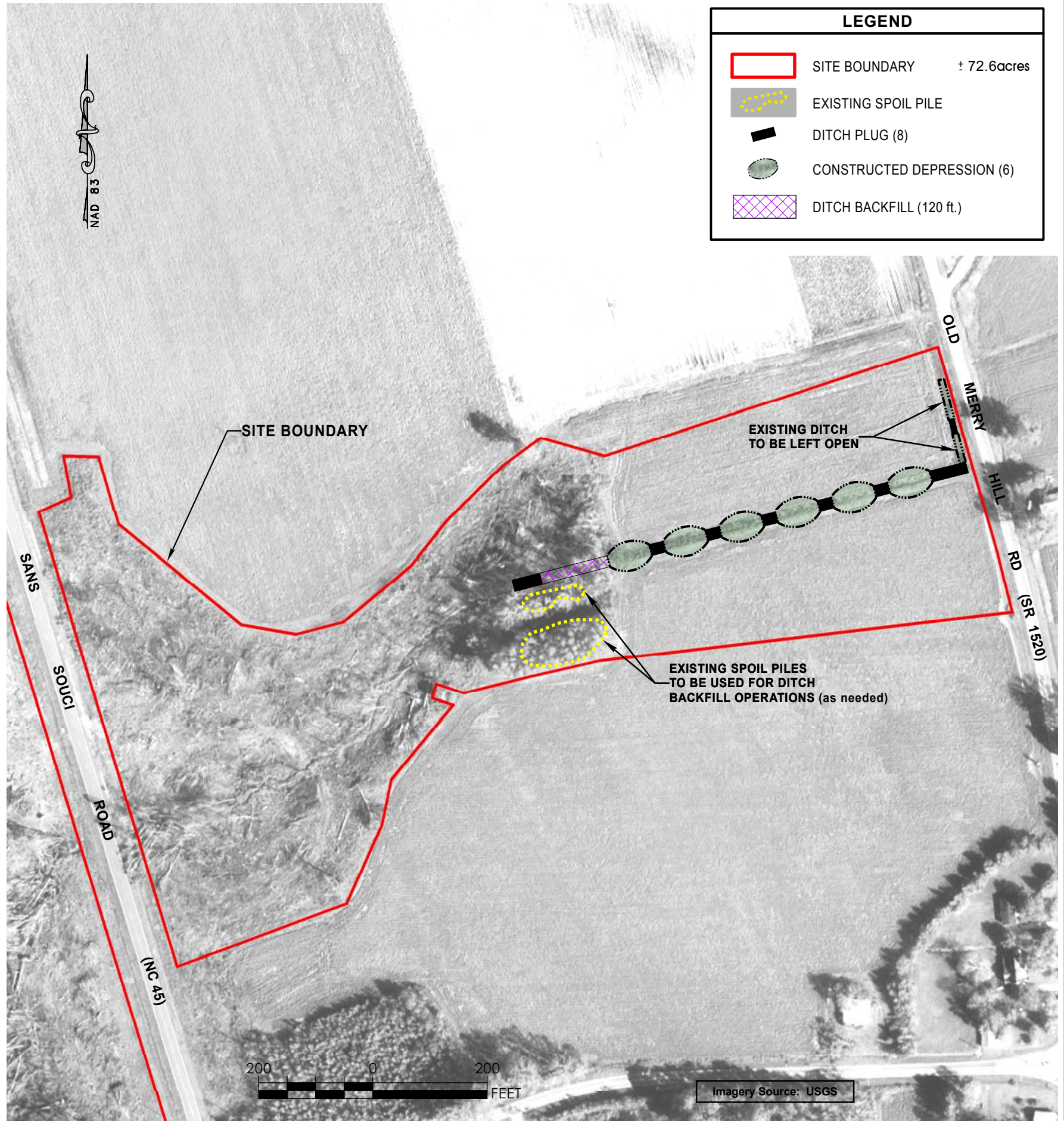
**RESTORATION
DESIGN
UNITS**

Dwn By:	DGJ	Date:	FEB 2008
Ckd By:	JWG	Scale:	1" = 400'
ESC Project No.:		06-279.00	

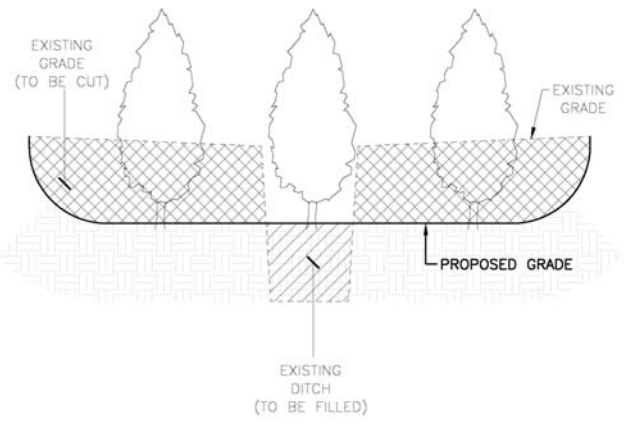
FIGURE

8

LEGEND	
	SITE BOUNDARY ± 72.6 acres
	EXISTING SPOIL PILE
	DITCH PLUG (8)
	CONSTRUCTED DEPRESSION (6)
	DITCH BACKFILL (120 ft.)



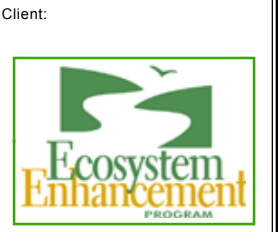
EXAMPLE DITCH PLUG DETAIL



EXAMPLE CONSTRUCTED DEPRESSION



REVISIONS



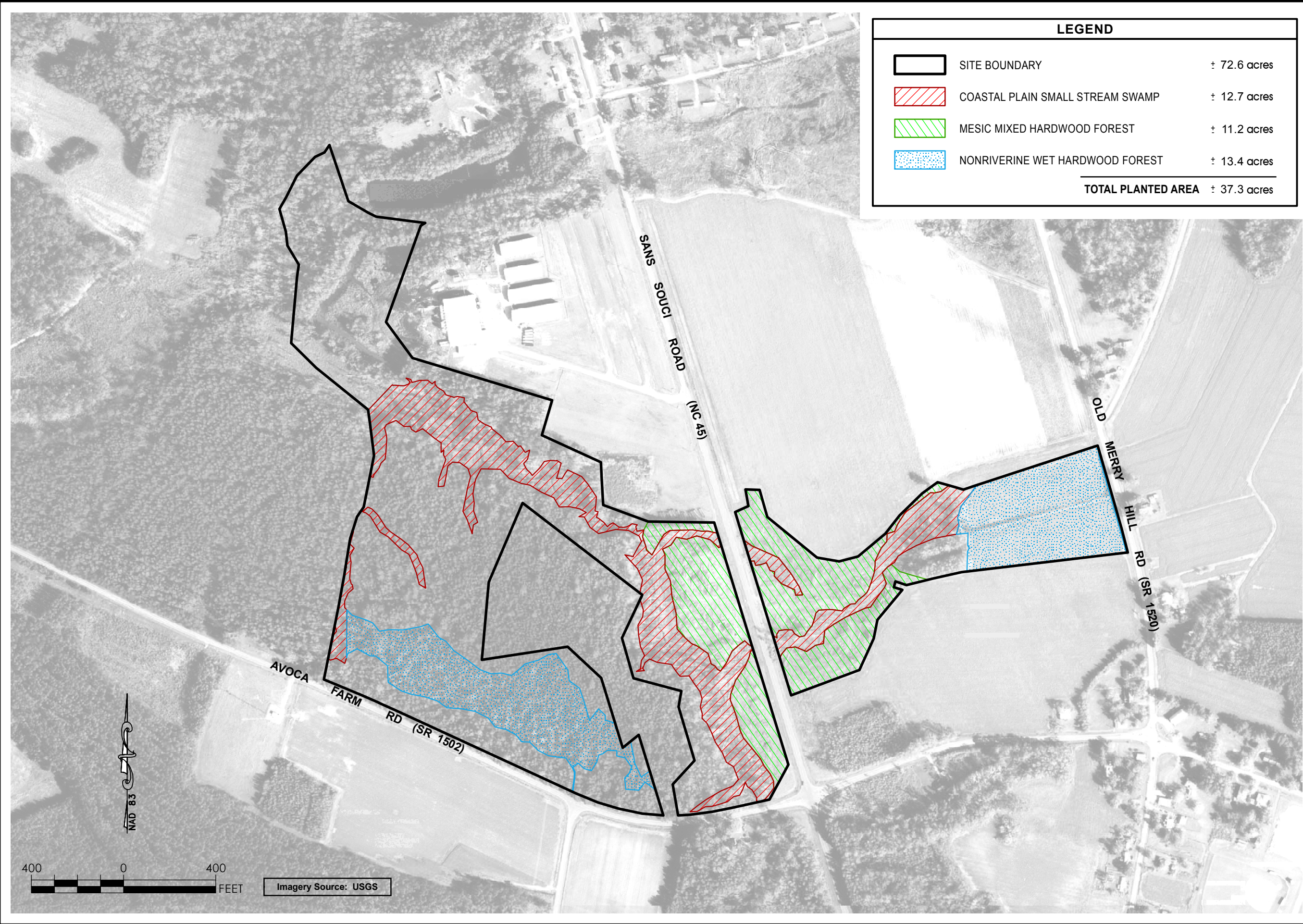
Project:
ECP NICHOLLS FARM WETLAND ENHANCEMENT SITE
BERTIE COUNTY, NORTH CAROLINA





Title:
DITCH REMOVAL

Dwn By: DGJ	Date: FEB 2008
Ckd By: JWJ	Scale: AS SHOWN
ESC Project No.: 06-279.00	

FIGURE
9

Imagery Source: USGS



LEGEND		
	SITE BOUNDARY	± 72.6 acres
	COASTAL PLAIN SMALL STREAM SWAMP	± 12.7 acres
	MESIC MIXED HARDWOOD FOREST	± 11.2 acres
	NONRIVERINE WET HARDWOOD FOREST	± 13.4 acres
TOTAL PLANTED AREA		± 37.3 acres



REVISIONS



Project:

**EEP
NICHOLLS FARM
WETLAND
ENHANCEMENT
SITE**

BERTIE COUNTY,
NORTH CAROLINA

Title:

**PLANTING
PLAN**

Dwn By:	DGJ	Date:	FEB 2008
Ckd By:	JWG	Scale:	1" = 400'
ESC Project No.:		06-279.00	

FIGURE

10



APPENDIX B: TABLES

Table 1: Project Mitigation Structure and Objectives

Project Segment or Reach ID	Mitigation Type	Approach	Restored Acreage(AC) or Linear Footage (LF)	Stationing	Comment
Riparian Wetland Enhancement	E	NA	12.7 AC	NA	Enhancement achieved via Site planting and ditch backfilling
Non-Riparian Wetland Enhancement	E	NA	7.3 AC	NA	Enhancement achieved via Site planting
Riparian Wetland Preservation	P	NA	3.9 AC	NA	
Stream Preservation	P	NA	4719 LF	NA	
<i>R = Wetland Restoration</i> <i>E = Wetland Enhancement</i> <i>P = Preservation</i> <i>NA= Not Applicable</i>					

Table 2. Planting Table

Vegetation Association (Planting area)		Coastal Plain Small Stream Swamp	Non-Riverine Wet Hardwood Forest	Mesic Mixed Hardwood Forest	Total Stems Planted
Area (acres)		12.7	13.4	11.2	37.3
Stem Target (per acre)		680 (8-ft. spacing)	680 (8-ft. spacing)	680 (8-ft. spacing)	--
SPECIES ¹		# planted (% total)	# planted (% total)	# planted (% total)	# planted
Common Name	Scientific Name				
Bald Cypress	<i>Taxodium distichum</i>	690 (8)			690
Swamp Chestnut Oak	<i>Quercus michauxii</i>	690 (8)			690
River Birch	<i>Betula nigra</i>	690 (8)			690
Green Ash	<i>Fraxinus pennsylvanica</i>	690 (8)			690
Sweetbay Magnolia	<i>Magnolia virginiana</i>	345 (4)			345
Fetterbush	<i>Lyonia lucida</i>	345 (4)			345
Swamp Tupelo	<i>Nyssa biflora</i>	690 (8)	730 (8)		1420
Overcup Oak	<i>Quercus lyrata</i>	690 (8)	820 (9)		1510
American Elm	<i>Ulmus americana</i>	690 (8)	820 (9)		1510
Laurel Oak	<i>Quercus laurifolia</i>	690 (8)	820 (9)		1510
Red Bay	<i>Persea borbonia</i>	345 (4)	455 (5)		800
Tulip Poplar	<i>Liriodendron tulipifera</i>	690 (8)	820 (9)	455 (6)	1965
American Holly	<i>Ilex opaca</i>	690 (8)	820 (9)	530 (7)	2040
Ironwood	<i>Carpinus caroliniana</i>	690 (8)	820 (9)	530 (7)	2040
Highbush Blueberry	<i>Vaccinium corymbosum</i>		455 (5)		455
Paw-paw	<i>Asimina triloba</i>		820 (9)		820
Pepperbush	<i>Clethra alnifolia</i>		455 (5)		455
Spicebush	<i>Lindera benzoin</i>		455 (5)		455
Cherrybark Oak	<i>Quercus pagoda</i>		820 (9)	610 (8)	1430
White Oak	<i>Quercus alba</i>			610 (8)	610
Southern Red Oak	<i>Quercus falcata</i>			610 (8)	610
American Beech	<i>Fagus grandifolia</i>			610 (8)	610
Northern Red Oak	<i>Quercus rubra</i>			610 (8)	610
Pignut Hickory	<i>Carya glabra</i>			610 (8)	610
Mockernut Hickory	<i>Carya tomentosa</i>			610 (8)	610
Black Gum	<i>Nyssa sylvatica</i>			455 (6)	455
Southern Sugar Maple	<i>Acer floridanum</i>			455 (6)	455
Sourwood	<i>Oxydendron arboretum</i>			455 (6)	455
Hop-hornbeam	<i>Ostrya virginiana</i>			455 (6)	455
TOTAL		8625	9110	7605	25,340

¹ Some non-commercial elements may not be locally available at the time of planting. The stem count for unavailable species should be distributed among other target elements based on the percent (%) distribution. One year of advance notice to forest nurseries will promote availability some non-commercial elements. However, reproductive failure in the nursery may occur.



APPENDIX C: PHOTOS

Photo 1. Field ditch looking east toward Old Merry Hill Road (SR 1540)



Photo 2. Farm field looking south toward riparian headwater wetland



Photo 3. Farm pond looking west



Photo 4. Tobacco barn



Photo 5. Hydric soils directly east of SR 1540. Note Groundwater Gauge 1 in center of photo



Photo 6. UT5 looking upstream



Photo 7. Wetland located in floodplain of UT1



Photo 8. Semi-permanent impoundment from beaver activity



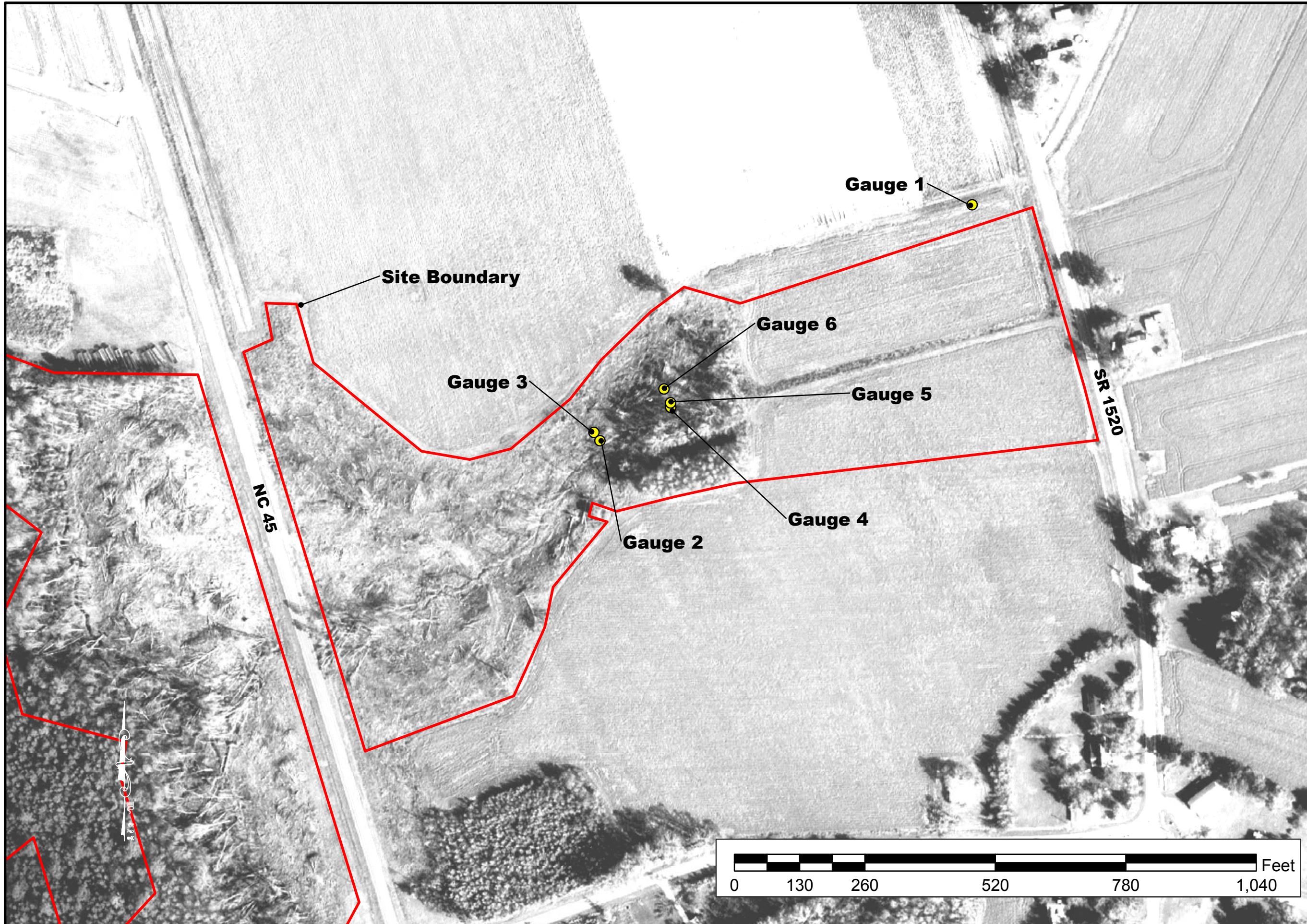
Photo 9. Stockpiled residual organic waste and cotton gin.



Photo 10. Naturalized borrow pit with emergent vegetation. Note stabilized cotton gin waste deposited on side slopes.




APPENDIX D: GROUNDWATER GAUGE LOCATION AND HYDROGRAPHS



REVISIONS

Client:



Project:

EEP NICHOLLS FARM WETLAND ENHANCEMENT SITE

BERTIE COUNTY, NORTH CAROLINA

Title:

GROUNDWATER GAUGE LOCATION

Dwn By:	Date:
JRW	OCT 2007
Ckd By:	Scale:
JWG	As Shown

ESC Project No.: 06-279.00

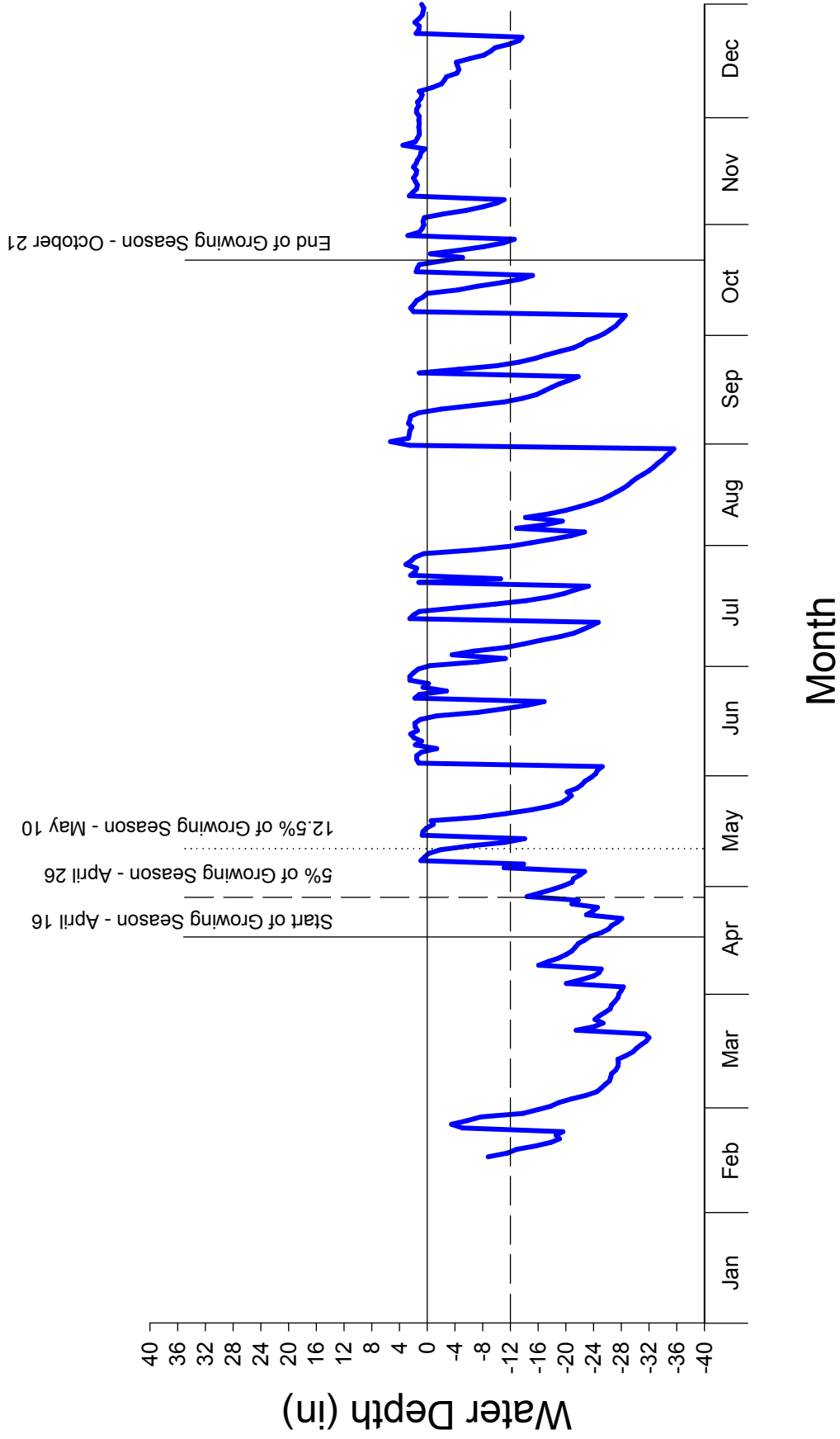
FIGURE

A

Nicholls Farm

2006

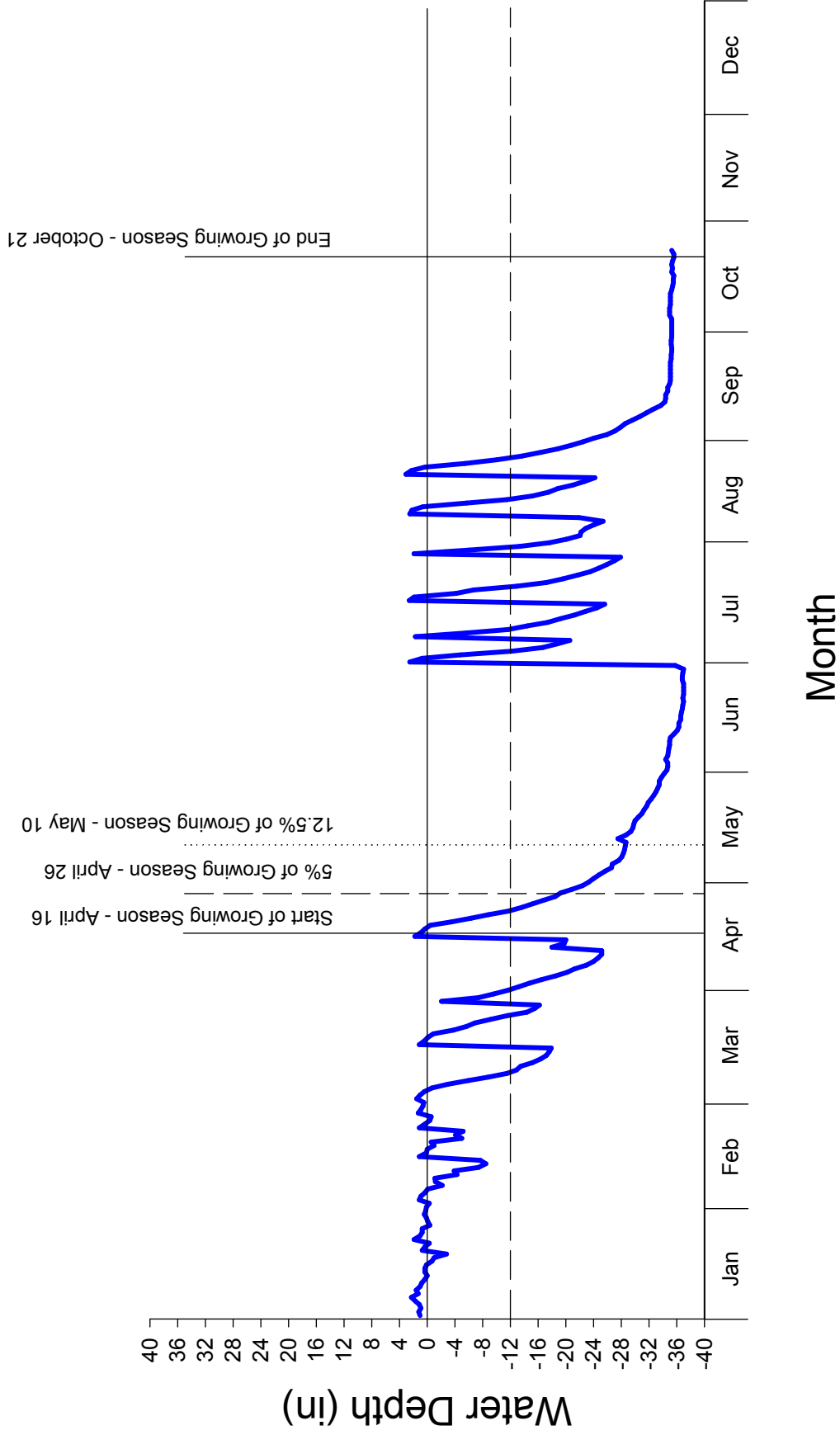
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Nicholls Farm

2007

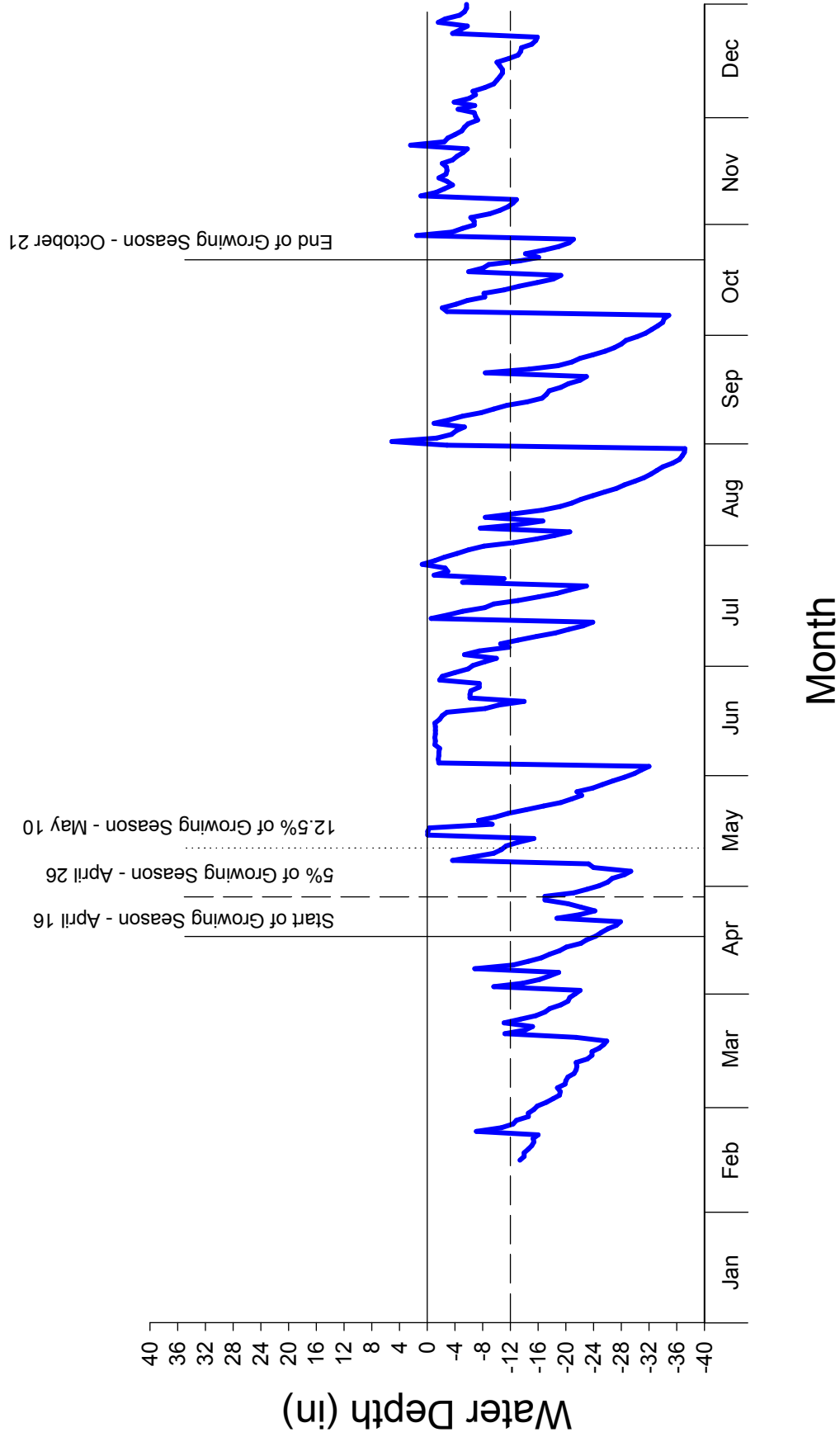
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Nicholls Farm

2006

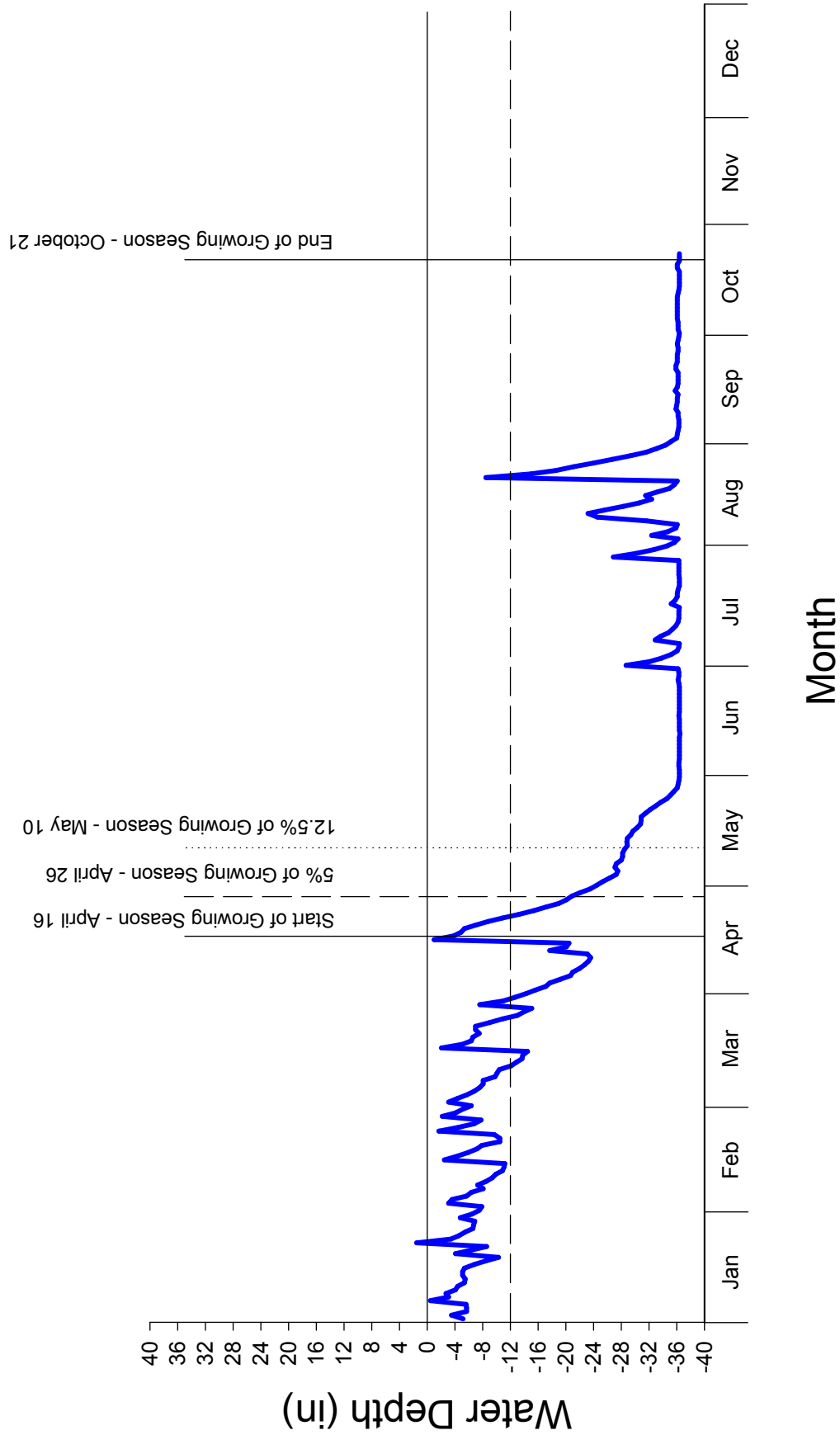
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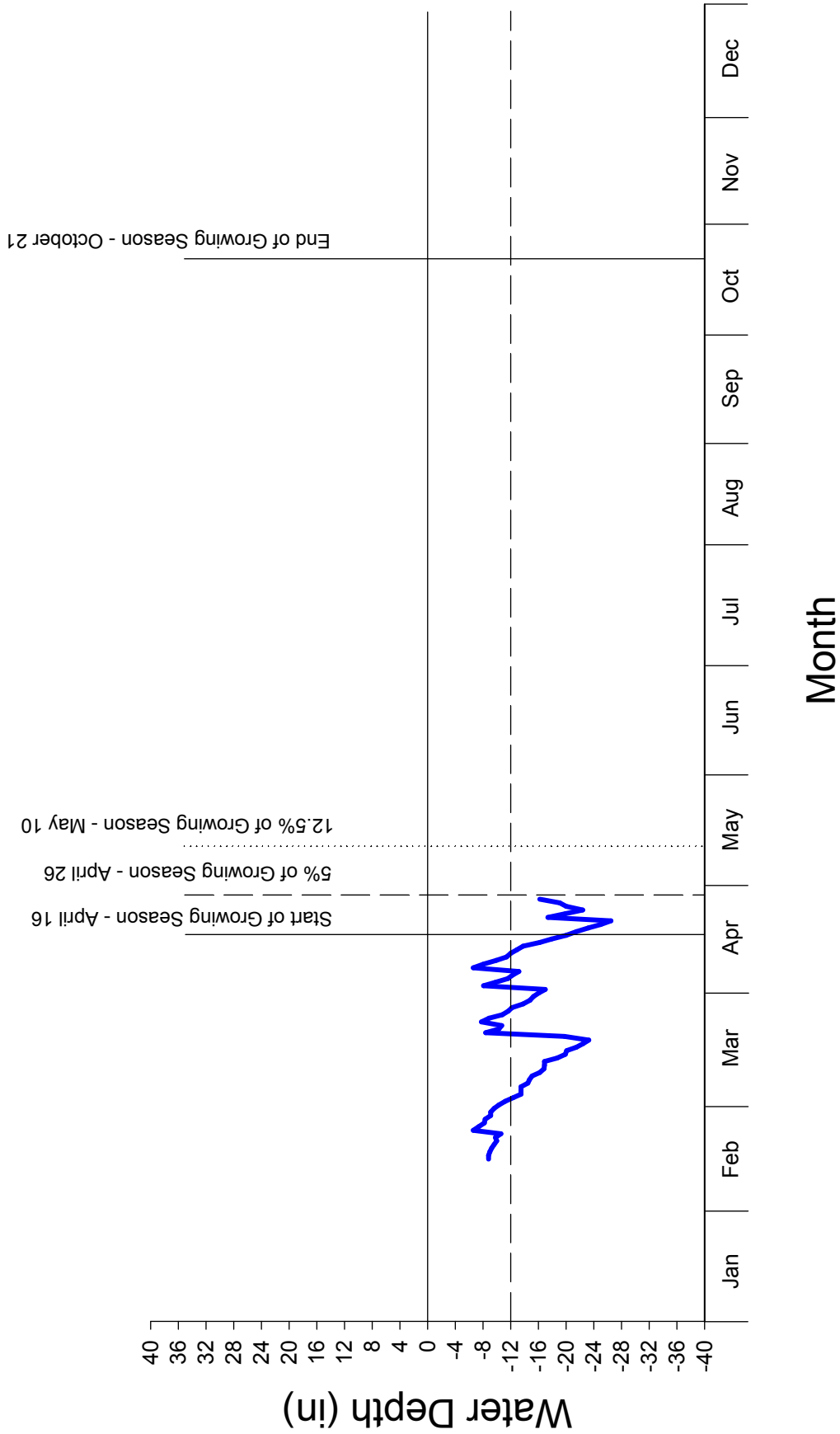
Nicholls Farm

2007

Monitoring Gauge 2 - AB3604C

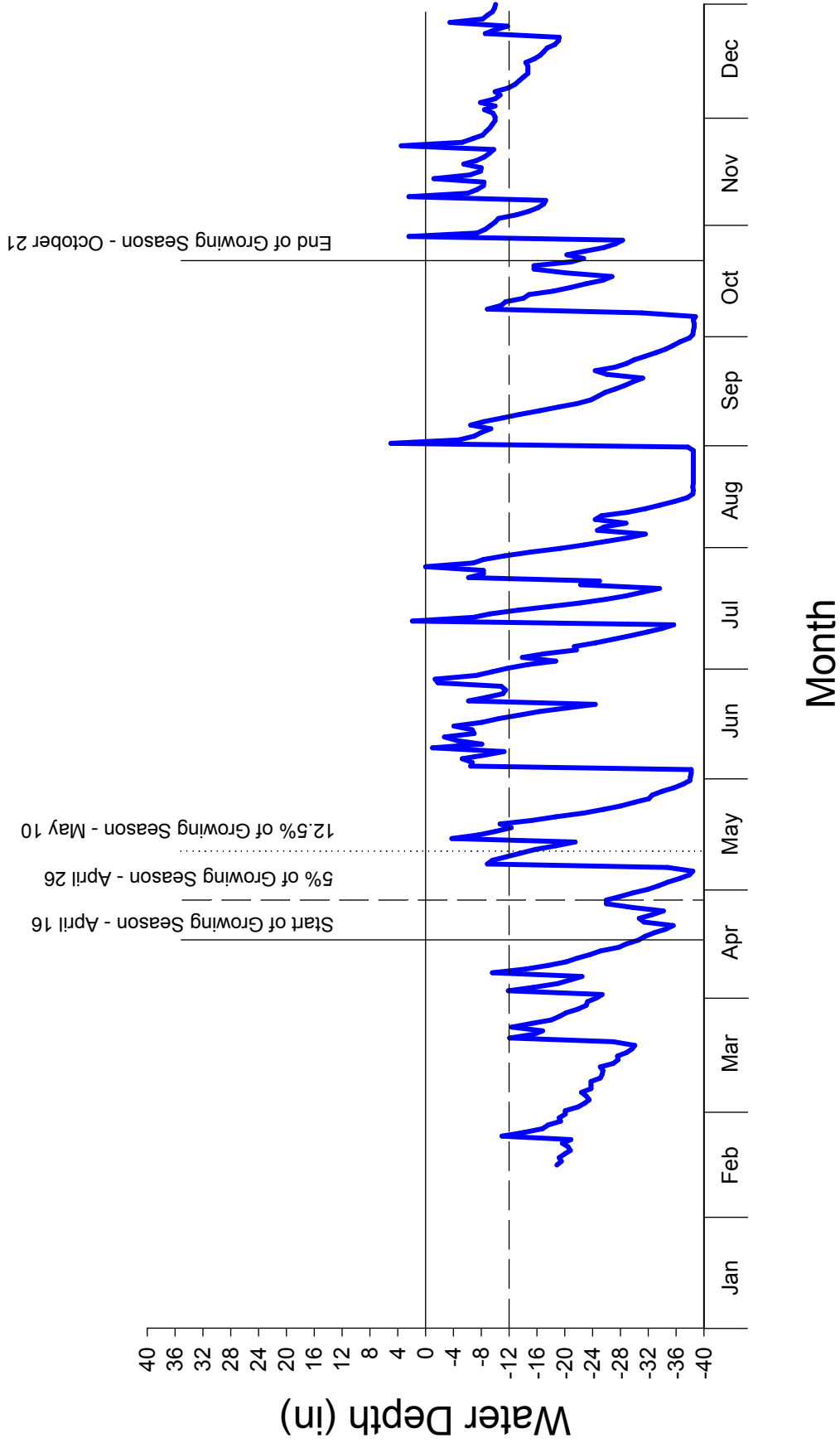


**Nicholls Farm
2006
Monitoring Gauge 3 - A3BF9DF**



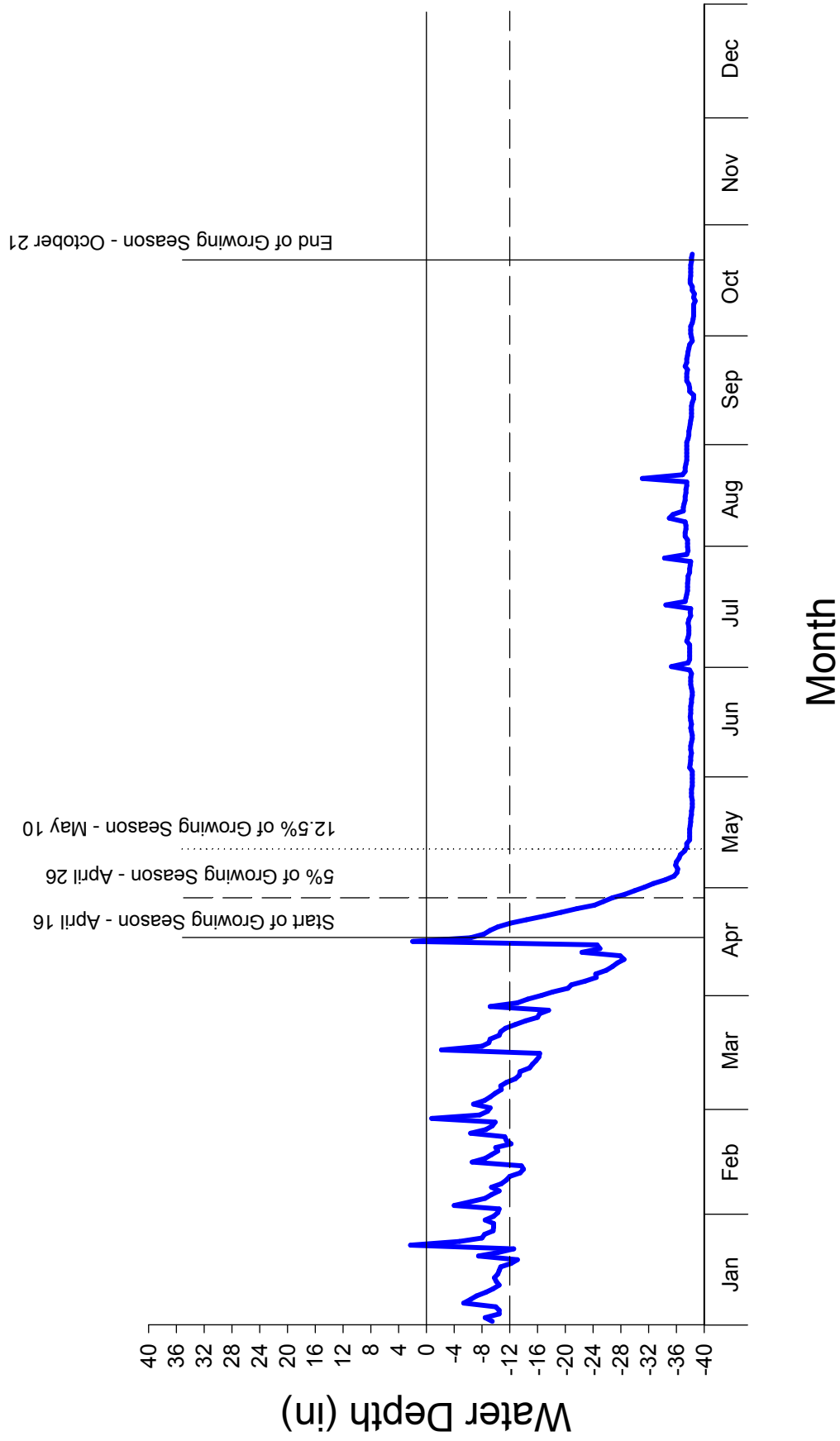
Nicholls Farm 2006

Monitoring Gauge 4- A27C004



Nicholls Farm 2007

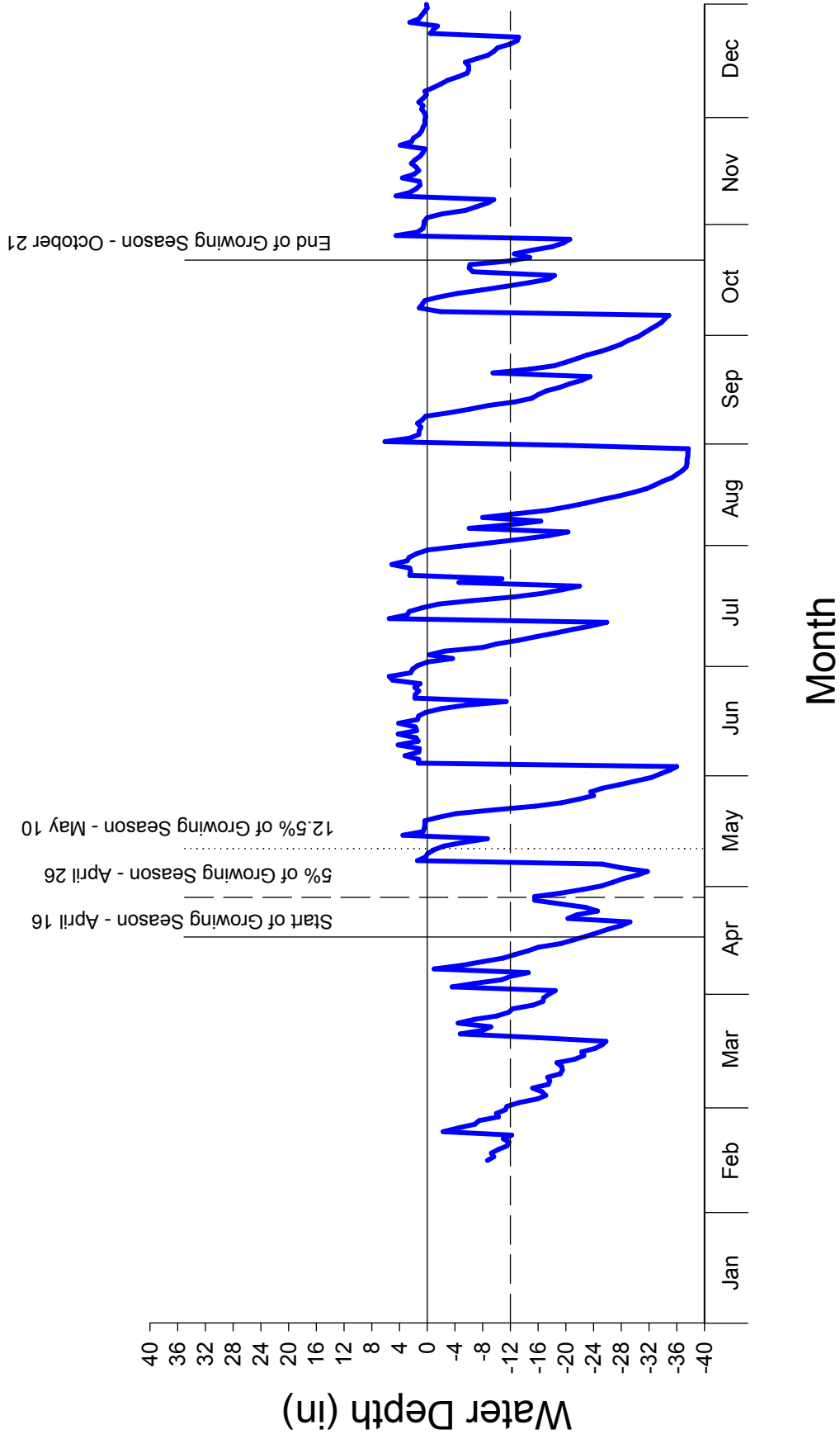
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Nicholls Farm

2006

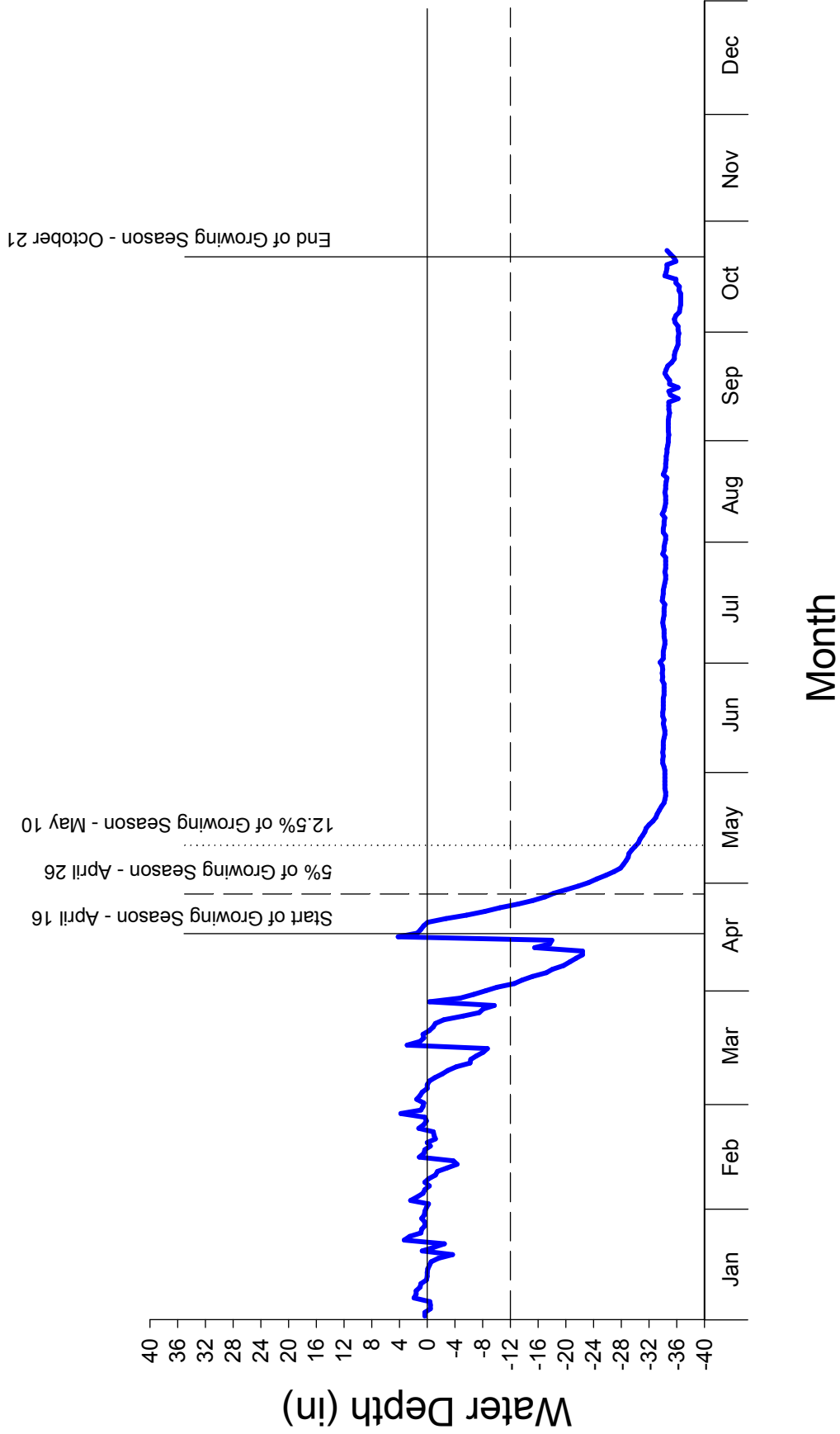
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Nicholls Farm

2007

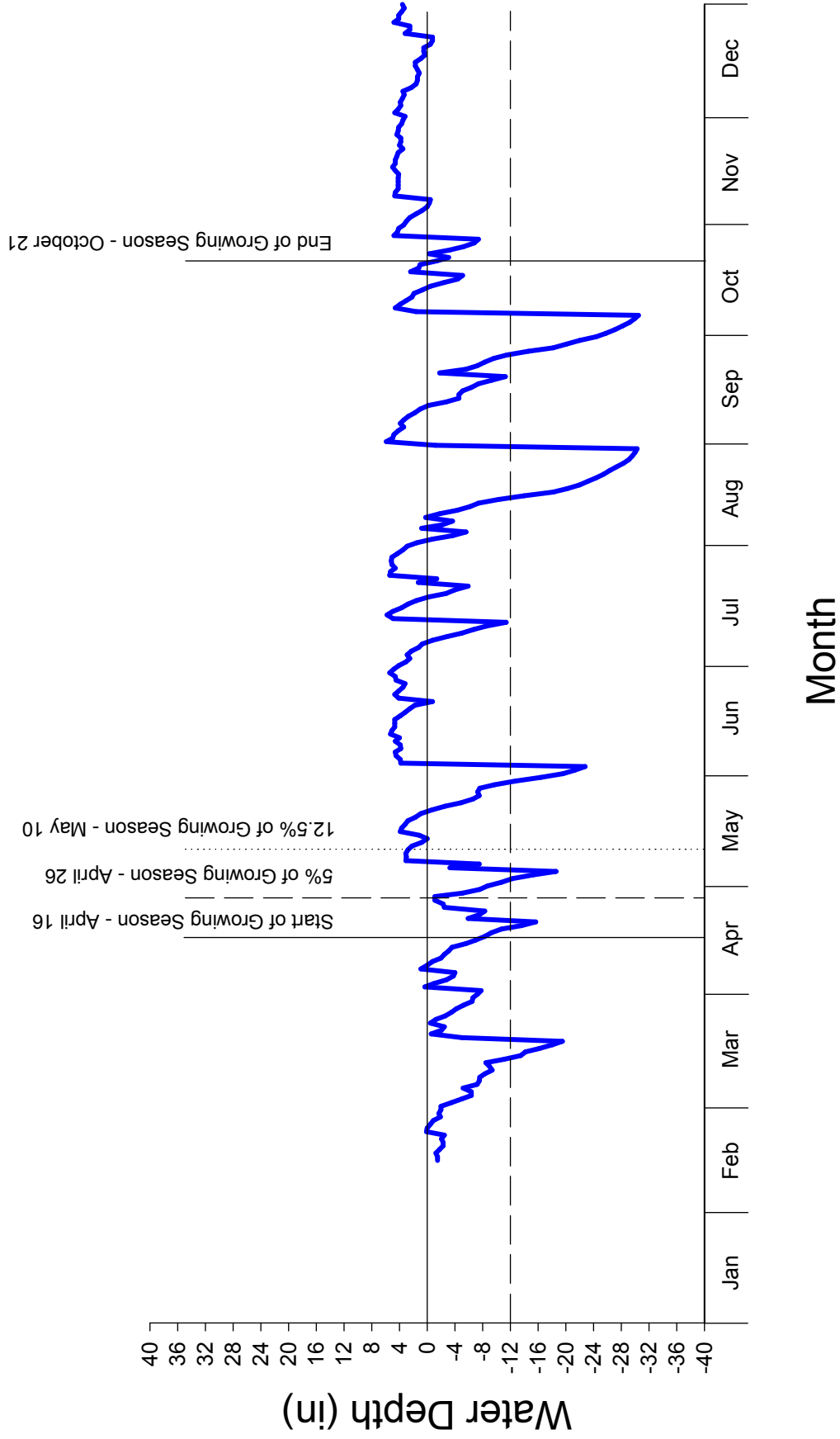
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Nicholls Farm

2006

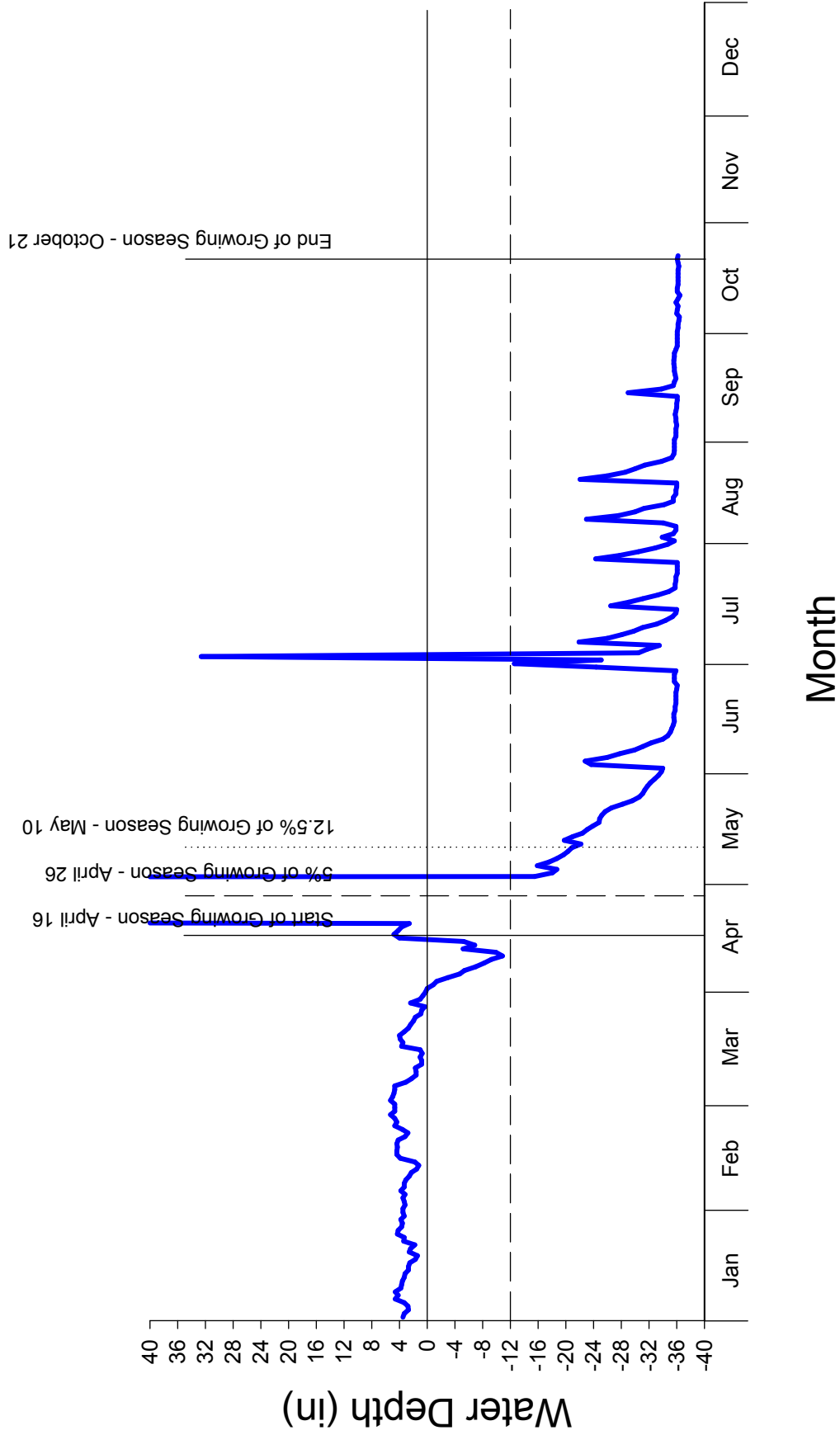
Monitoring Gauge 6- A28A308



Nicholls Farm

2007

Monitoring Gauge 6- A28A308



*Well malfunction 4/21/07-5/2/07

APPENDIX E: USACE ROUTINE WETLAND DATA FORMS

U.S. ARMY CORPS OF ENGINEERS

WILMINGTON DISTRICT

ORM Id. 200632292-108

County: Bertie

U.S.G.S. Quad: Merry Hill

NOTIFICATION OF JURISDICTIONAL DETERMINATION

Property Owner/Agent: Windsor Methodist Church

Address: P.O. Box 238
Windsor, NC 27983

Telephone No.: _____

Property description:

Size (acres) 87.00 acres

Nearest Town Merry Hill

Nearest Waterway UT to Salmon Creek

River Basin Albemarle Sound

USGS HUC 03010203

Coordinates N 36.0116 W 76.7771

Location description Property is located approximately 1.5 miles south of intersection of NC HWY 17 and NC HWY 45, east of Merry Hill, Bertie County, North Carolina.

Indicate Which of the Following Apply:

- Based on preliminary information, there may be wetlands on the above described property. We strongly suggest you have this property inspected to determine the extent of Department of the Army (DA) jurisdiction. To be considered final, a jurisdictional determination must be verified by the Corps. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331).
- There are Navigable Waters of the United States within the above described property subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- There are wetlands on the above described property subject to the permit requirements of Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
 - We strongly suggest you have the wetlands on your property delineated. Due to the size of your property and/or our present workload, the Corps may not be able to accomplish this wetland delineation in a timely manner. For a more timely delineation, you may wish to obtain a consultant. To be considered final, any delineation must be verified by the Corps.
 - The wetland on your property have been delineated and the delineation has been verified by the Corps. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.
 - The wetlands have been delineated and surveyed and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on _____. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
 - There are no waters of the U.S., to include wetlands, present on the above described property which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- The property is located in one of the 20 Coastal Counties subject to regulation under the Coastal Area Management Act (CAMA). You should contact the Division of Coastal Management in Elizabeth City, NC, at (252) 264-3901 to determine their requirements.

ORM Id. 200632292-108

Placement of dredged or fill material within waters of the US and/or wetlands without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). If you have any questions regarding this determination and/or the Corps regulatory program, please contact Josh Pelletier at 252-975-1616 extension 34.

Basis For Determination: This site exhibits wetland criteria as described in the 1987 Corps of Engineers Wetland Delineation Manual and is a part of a broad continuum of wetlands associated with Salmon Creek, a tributary to the Chowan River.

Remarks: _____

Corps Regulatory Official: _____



Date May 22, 2006

Expiration Date May 22, 2011

Copy Furnished:
Matthew Thomas
EcoScience Corporation
1101 Haynes Street Suite 101
Raleigh, NC 27604

JURISDICTIONAL DETERMINATION
U.S. Army Corps of Engineers

Revised 8/13/04

DISTRICT OFFICE: CESAW-RG-W
FILE NUMBER: 200632292-108

PROJECT LOCATION INFORMATION:

State: North Carolina
County: Bertie
Center coordinates of site (latitude/longitude): 36.0116N, 76.7771W
Approximate size of area (parcel) reviewed, including uplands: 95 acres.
Name of nearest waterway: Salmon Creek
Name of watershed: Albemarle Sound

JURISDICTIONAL DETERMINATION

Completed: Desktop determination Date:
Site visit(s) Date(s): April 28, 2006

Jurisdictional Determination (JD):

- Preliminary JD - Based on available information, *there appear to be (or)* *there appear to be no* "waters of the United States" and/or "navigable waters of the United States" on the project site. A preliminary JD is not appealable (Reference 33 CFR part 331).
- Approved JD - An approved JD is an appealable action (Reference 33 CFR part 331).
Check all that apply:
- There are* "navigable waters of the United States" (as defined by 33 CFR part 329 and associated guidance) within the reviewed area. Approximate size of jurisdictional area: 25.47 acres.
- There are* "waters of the United States" (as defined by 33 CFR part 328 and associated guidance) within the reviewed area.
Approximate size of jurisdictional area:
- There are* "isolated, non-navigable, intra-state waters or wetlands" within the reviewed area.
 Decision supported by SWANCC/Migratory Bird Rule Information Sheet for Determination of No Jurisdiction.

BASIS OF JURISDICTIONAL DETERMINATION:

A. Waters defined under 33 CFR part 329 as "navigable waters of the United States":

- The presence of waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

B. Waters defined under 33 CFR part 328.3(a) as "waters of the United States":

- (1) The presence of waters, which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
- (2) The presence of interstate waters including interstate wetlands¹.
- (3) The presence of other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate commerce including any such waters (check all that apply):
- (i) which are or could be used by interstate or foreign travelers for recreational or other purposes.
 - (ii) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
 - (iii) which are or could be used for industrial purposes by industries in interstate commerce.
- (4) Impoundments of waters otherwise defined as waters of the US.
- (5) The presence of a tributary to a water identified in (1) - (4) above.
- (6) The presence of territorial seas.
- (7) The presence of wetlands adjacent² to other waters of the US, except for those wetlands adjacent to other wetlands.

Rationale for the Basis of Jurisdictional Determination (applies to any boxes checked above). *If the jurisdictional water or wetland is not itself a navigable water of the United States, describe connection(s) to the downstream navigable waters. If B(1) or B(3) is used as the Basis of Jurisdiction, document navigability and/or interstate commerce connection (i.e., discuss site conditions, including why the waterbody is navigable and/or how the destruction of the waterbody could affect interstate or foreign commerce). If B(2, 4, 5 or 6) is used as the Basis of Jurisdiction, document the rationale used to make the determination. If B(7) is used as the Basis of Jurisdiction, document the rationale used to make adjacency determination:* : **This site exhibits wetland criteria as described in the 1987 Corps of Engineers Wetland Delineation Manual and is a part of a broad continuum of wetlands associated with Salmon Creek, a tributary to the Chowan River.**

Lateral Extent of Jurisdiction: (Reference: 33 CFR parts 328 and 329)

- Ordinary High Water Mark indicated by:
- clear, natural line impressed on the bank
 - the presence of litter and debris
 - changes in the character of soil
 - destruction of terrestrial vegetation
 - shelving
 - other:
- High Tide Line indicated by:
- oil or scum line along shore objects
 - fine shell or debris deposits (foreshore)
 - physical markings/characteristics
 - tidal gages
 - other:
- Mean High Water Mark indicated by:
- survey to available datum; physical markings; vegetation lines/changes in vegetation types.
- Wetland boundaries, as shown on the attached wetland delineation map and/or in a delineation report prepared by:

Basis For Not Asserting Jurisdiction:

- The reviewed area consists entirely of uplands.
- Unable to confirm the presence of waters in 33 CFR part 328(a)(1, 2, or 4-7).
- Headquarters declined to approve jurisdiction on the basis of 33 CFR part 328.3(a)(3).
- The Corps has made a case-specific determination that the following waters present on the site are not Waters of the United States:
- Waste treatment systems, including treatment ponds or lagoons, pursuant to 33 CFR part 328.3.
 - Artificially irrigated areas, which would revert to upland if the irrigation ceased.
 - Artificial lakes and ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.
 - Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.
 - Water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States found at 33 CFR 328.3(a).
 - Isolated, intrastate wetland with no nexus to interstate commerce.
 - Prior converted cropland, as determined by the Natural Resources Conservation Service. Explain rationale:
 - Non-tidal drainage or irrigation ditches excavated on dry land. Explain rationale:
 - Other (explain):

DATA REVIEWED FOR JURISDICTIONAL DETERMINATION (mark all that apply):

- Maps, plans, plots or plat submitted by or on behalf of the applicant.
- Data sheets prepared/submitted by or on behalf of the applicant.
- This office concurs with the delineation report, dated March 1, 2006, prepared by (company): EcoScience Corporation
- This office does not concur with the delineation report, dated _____, prepared by (company): _____
- Data sheets prepared by the Corps.
- Corps' navigable waters' studies:
- U.S. Geological Survey Hydrologic Atlas:
- U.S. Geological Survey 7.5 Minute Topographic maps: Merry Hill Quad
- U.S. Geological Survey 7.5 Minute Historic quadrangles:
- U.S. Geological Survey 15 Minute Historic quadrangles:
- USDA Natural Resources Conservation Service Soil Survey:
- National wetlands inventory maps:
- State/Local wetland inventory maps:
- FEMA/FIRM maps (Map Name & Date): _____
- 100-year Floodplain Elevation is: _____ (NGVD)
- Aerial Photographs (Name & Date): _____
- Other photographs (Date): _____
- Advanced Identification Wetland maps:
- Site visit/determination conducted on: April 28, 2006
- Applicable/supporting case law:
- Other information (please specify): _____

¹Wetlands are identified and delineated using the methods and criteria established in the Corps Wetland Delineation Manual (87 Manual) (i.e., occurrence of hydrophytic vegetation, hydric soils and wetland hydrology)

²The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes, and the like are also adjacent.

**NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND
REQUEST FOR APPEAL**

Applicant: Windsor Methodist Church	File Number: 200632292-108	Date: May 22, 2006
-------------------------------------	----------------------------	--------------------

Attached is:	See Section below
--------------	-------------------

<input type="checkbox"/> INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
<input type="checkbox"/> PROFFERED PERMIT (Standard Permit or Letter of permission)	B
<input type="checkbox"/> PERMIT DENIAL	C
<input type="checkbox"/> APPROVED JURISDICTIONAL DETERMINATION	D
<input type="checkbox"/> PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <http://www.usace.army.mil/inet/functions/cw/cecwo/reg> or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Josh Pelletier
US Army Corps of Engineers
Post Office Box 1000
Washington, North Carolina 27889

If you only have questions regarding the appeal process you may also contact:

Mr. Michael F. Bell, Administrative Appeal Review Officer
CESAD-ET-CO-R
U.S. Army Corps of Engineers, South Atlantic Division
60 Forsyth Street, Room 9M15
Atlanta, Georgia 30303-8801

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.

Date:

Telephone number:

DIVISION ENGINEER:
Commander
U.S. Army Engineer Division, South Atlantic
60 Forsyth Street, Room 9M15
Atlanta, Georgia 30303-3490

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Nicholls Farm</u>	Date: <u>2/10/06</u>
Applicant/Owner: <u>EEP</u>	County: <u>Bertie</u>
Investigator: <u>EcoScience/O'Loughlin</u>	State: <u>NC</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>upland</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: <u>DOB</u>
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>DOB06</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Fagus grandifolia</u>	<u>Subcanopy</u>	<u>FACU</u>	9. _____	_____	_____
2. <u>Ilex opaca</u>	<u>Subcanopy</u>	<u>FAC-</u>	10. _____	_____	_____
3. <u>Eupatorium capillifolium</u>	<u>Herb</u>	<u>FACU</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0

Remarks:

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>>18</u> (in.) Depth to Saturated Soil: <u>>18</u> (in.)	
Remarks:	

SOILS

Map Unit Name (Series and Phase):		<u>Craven fine sandy loam</u>	Drainage Class:		<u>MWD</u>
Taxonomy (Subgroup):		<u>Aquic Hapludults</u>	Field Observations		
			Confirm Mapped Type?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-4	A	10YR 5/4			loam
4-18	B	2.5Y 5/4			loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Remarks	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Nicholls Farm</u>	Date: <u>2/10/06</u>
Applicant/Owner: <u>EEP</u>	County: <u>Bertie</u>
Investigator: <u>EcoScience/O'Loughlin</u>	State: <u>NC</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>wetland</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: <u>DOB</u>
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>DOB06</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Juncus effusus</u>	<u>Herb</u>	<u>FACW+</u>	9. _____	_____	_____
2. <u>Ludwigia sp.</u>	<u>Herb</u>	<u>FACW</u>	10. _____	_____	_____
3. <u>Acer rubrum</u>	<u>Canopy</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Liriodendron tulipifera</u>	<u>Canopy</u>	<u>FACU</u>	12. _____	_____	_____
5. <u>Arundinaria gigantea</u>	<u>Herb</u>	<u>FACW</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC
(excluding FAC-). >50

Remarks:

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>>12</u> (in.) Depth to Saturated Soil: <u>8</u> (in.)	
Remarks:	

SOILS

Map Unit Name (Series and Phase):		<u>Craven fine sandy loam</u>		Drainage Class:	<u>MWD</u>
Taxonomy (Subgroup):		<u>Aquic Hapludults</u>		Field Observations	
				Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
<u>0-6</u>	<u>A</u>	<u>10YR 3/3</u>			<u>clay</u>
<u>6-18</u>	<u>B</u>	<u>10YR 6/1</u>	<u>7.5YR 6/6</u>	<u>common</u>	<u>loam</u>

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: Hydric soil indicator F3

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check) Wetland Hydrology Present? <input type="checkbox"/> Yes <input type="checkbox"/> No Hydric Soils Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	(Check) Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Nicholls Farm</u>	Date: <u>2/10/06</u>
Applicant/Owner: <u>EEP</u>	County: <u>Bertie</u>
Investigator: <u>EcoScience/O'Loughlin</u>	State: <u>NC</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>upland</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: <u>DOE</u>
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>DOE10</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Baccharis halimifolia</u>	<u>Shrub</u>	<u>FAC</u>	9. _____	_____	_____
2. <u>Lonicera japonica</u>	<u>Vine</u>	<u>FAC-</u>	10. _____	_____	_____
3. <u>Eupatorium capillifolium</u>	<u>Herb</u>	<u>FACU</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). <50

Remarks:

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>>18</u> (in.) Depth to Saturated Soil: <u>>18</u> (in.)	
Remarks:	

SOILS

Map Unit Name (Series and Phase):		<u>Craven fine sandy loam</u>	Drainage Class:		<u>MWD</u>
Taxonomy (Subgroup):		<u>Aquic Hapludults</u>	Field Observations		
			Confirm Mapped Type?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions: Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-4	A	10YR 3/2			loam
4-18	B	2.5Y 6/6	5YR 5/8	common	loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Remarks	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Nicholls Farm</u>	Date: <u>2/10/06</u>
Applicant/Owner: <u>EEP</u>	County: <u>Bertie</u>
Investigator: <u>EcoScience/O'Loughlin</u>	State: <u>NC</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>wetland</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: <u>DOE</u>
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>DOE10</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Scirpus cyperinus</u>	<u>Herb</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Juncus effusus</u>	<u>Herb</u>	<u>FACW+</u>	10. _____	_____	_____
3. <u>Arundinaria gigantea</u>	<u>Herb</u>	<u>FACW</u>	11. _____	_____	_____
4. <u>Lonicera japonica</u>	<u>Vine</u>	<u>FAC-</u>	12. _____	_____	_____
5. <u>Pinus taeda</u>	<u>Sapling</u>	<u>FAC</u>	13. _____	_____	_____
6. <u>Quercus pagoda</u>	<u>Sapling</u>	<u>FAC+</u>	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). >50

Remarks:

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>>18</u> (in.) Depth to Saturated Soil: <u>>12</u> (in.)	
Remarks: <u>vegetation removed recently</u>	

SOILS

Map Unit Name (Series and Phase):		<u>Craven fine sandy loam</u>		Drainage Class:	<u>MWD</u>
Taxonomy (Subgroup):		<u>Aquic Hapludults</u>		Field Observations	
				Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
<u>0-5</u>	<u>A</u>	<u>10YR 3/2</u>			<u>loam</u>
<u>5-18</u>	<u>B</u>	<u>10YR 6/2</u>	<u>7.5YR 6/6</u>	<u>common</u>	<u>clayey loam</u>

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: Hydric soil indicator F3

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Remarks

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Nicholls Farm</u>	Date: <u>2/10/06</u>
Applicant/Owner: <u>EEP</u>	County: <u>Bertie</u>
Investigator: <u>EcoScience/O'Loughlin</u>	State: <u>NC</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>upland</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: <u>DOE</u>
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>DOE02</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Baccharis halimifolia</u>	<u>Shrub</u>	<u>FAC</u>	9. _____	_____	_____
2. <u>Lonicera japonica</u>	<u>Vine</u>	<u>FAC-</u>	10. _____	_____	_____
3. <u>Eupatorium capillifolium</u>	<u>Herb</u>	<u>FACU</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). <50

Remarks:

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>>18</u> (in.) Depth to Saturated Soil: <u>>18</u> (in.)	
Remarks:	

SOILS

Map Unit Name (Series and Phase):		<u>Craven fine sandy loam</u>	Drainage Class:		<u>MWD</u>
Taxonomy (Subgroup):		<u>Aquic Hapludults</u>	Field Observations		
			Confirm Mapped Type?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-6	A	10YR 3/2			clayey loam
6-18	B	10YR 5/6			clayey loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Remarks	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Nicholls Farm</u>	Date: <u>2/10/06</u>
Applicant/Owner: <u>EEP</u>	County: <u>Bertie</u>
Investigator: <u>EcoScience/O'Loughlin</u>	State: <u>NC</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>wetland</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: <u>DOE</u>
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>DOE02</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Juncus effusus</u>	<u>Herb</u>	<u>FACW+</u>	9. <u>Quercus pagoda</u>	<u>Subcanopy</u>	<u>FAC+</u>
2. <u>Diospyros virginiana</u>	<u>Canopy</u>	<u>FAC</u>	10. <u>Scirpus cyperinus</u>	<u>Herb</u>	<u>OBL</u>
3. <u>Acer rubrum</u>	<u>Canopy</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Liriodendron tulipifera</u>	<u>Canopy</u>	<u>FACU</u>	12. _____	_____	_____
5. <u>Carpinus caroliniana</u>	<u>Subcanopy</u>	<u>FAC</u>	13. _____	_____	_____
6. <u>Fraxinus pennsylvanica</u>	<u>Canopy</u>	<u>FACW</u>	14. _____	_____	_____
7. <u>Ulmus rubra</u>	<u>Subcanopy</u>	<u>FAC</u>	15. _____	_____	_____
8. <u>Quercus michauxii</u>	<u>Subcanopy</u>	<u>FACW-</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC
(excluding FAC-). >50

Remarks:

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>10</u> (in.) Depth to Saturated Soil: <u>5</u> (in.)	
Remarks:	

SOILS

Map Unit Name (Series and Phase):		<u>Craven fine sandy loam</u>		Drainage Class:	<u>MWD</u>
Taxonomy (Subgroup):		<u>Aquic Hapludults</u>		Field Observations	
				Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
<u>0-4</u>	<u>A</u>	<u>10YR 3/2</u>			<u>loam</u>
<u>4-18</u>	<u>B</u>	<u>10YR 4/1</u>	<u>7.5YR 6/6</u>	<u>common</u>	<u>clayey loam</u>

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: Hydric soil indicator F3

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check) Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	(Check) Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Nicholls Farm</u>	Date: <u>2/10/06</u>
Applicant/Owner: <u>EEP</u>	County: <u>Bertie</u>
Investigator: <u>EcoScience/O'Loughlin</u>	State: <u>NC</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>upland</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: <u>DOF</u>
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>DOF05</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Carya ovata</u>	<u>Canopy</u>	<u>FACU</u>	9. _____	_____	_____
2. <u>Liriodendron tulipifera</u>	<u>Canopy</u>	<u>FACU</u>	10. _____	_____	_____
3. <u>Platanus occidentalis</u>	<u>Canopy</u>	<u>FACW-</u>	11. _____	_____	_____
4. <u>Juniperus virginiana</u>	<u>Subcanopy</u>	<u>FACU-</u>	12. _____	_____	_____
5. <u>Fagus grandifolia</u>	<u>Subcanopy</u>	<u>FACU</u>	13. _____	_____	_____
6. <u>Quercus alba</u>	<u>Canopy</u>	<u>FACU</u>	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). <50

Remarks:

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>>18</u> (in.) Depth to Saturated Soil: <u>>18</u> (in.)	
Remarks:	

SOILS

Map Unit Name (Series and Phase):		<u>Craven fine sandy loam</u>	Drainage Class:		<u>MWD</u>
Taxonomy (Subgroup):		<u>Aquic Hapludults</u>	Field Observations		
			Confirm Mapped Type?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions: Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-4	A	10YR 4/2			loam
4-18	B	2.5Y 5/6			loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Remarks	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Nicholls Farm</u>	Date: <u>2/10/06</u>
Applicant/Owner: <u>EEP</u>	County: <u>Bertie</u>
Investigator: <u>EcoScience/O'Loughlin</u>	State: <u>NC</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>wetland</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: <u>DOF</u>
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>DOF05</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Ulmus rubra</u>	<u>Canopy</u>	<u>FAC</u>	9. _____	_____	_____
2. <u>Acer rubrum</u>	<u>Canopy</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Liquidambar styraciflua</u>	<u>Subcanopy</u>	<u>FAC+</u>	11. _____	_____	_____
4. <u>Sambucus canadensis</u>	<u>Shrub</u>	<u>FACW-</u>	12. _____	_____	_____
5. <u>Juncus effusus</u>	<u>Herb</u>	<u>FACW+</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC
(excluding FAC-). 100

Remarks:

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>4</u> (in.) Depth to Saturated Soil: <u>4</u> (in.)	
Remarks: <u>vegetation removed recently</u>	

SOILS

Map Unit Name (Series and Phase):		<u>Craven fine sandy loam</u>	Drainage Class:		<u>MWD</u>
Taxonomy (Subgroup):		<u>Aquic Hapludults</u>	Field Observations		
			Confirm Mapped Type?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
<u>0-2</u>	<u>A</u>	<u>10YR 3/2</u>			<u>loam</u>
<u>2-18</u>	<u>B</u>	<u>10YR 5/1</u>	<u>7.5YR 6/6</u>	<u>common</u>	<u>clayey loam</u>

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: Hydric soil indicator F3

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check) Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	(Check) Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Nicholls Farm</u>	Date: <u>2/10/06</u>
Applicant/Owner: <u>EEP</u>	County: <u>Bertie</u>
Investigator: <u>EcoScience/O'Loughlin</u>	State: <u>NC</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>upland</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: <u>DO</u>
Is the area a potential Problem Area? (If needed, explain on reverse.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Plot ID: <u>DO02</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Festuca sp.</u>	<u>Herb</u>		9. _____		
2. _____			10. _____		
3. _____			11. _____		
4. _____			12. _____		
5. _____			13. _____		
6. _____			14. _____		
7. _____			15. _____		
8. _____			16. _____		
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). <u><50</u>					
Remarks: <u>mown field</u>					

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>>18</u> (in.) Depth to Saturated Soil: <u>>18</u> (in.)	
Remarks:	

SOILS

Map Unit Name (Series and Phase):		<u>Wehadkee loam</u>	Drainage Class:	<u>PD</u>
Taxonomy (Subgroup):		<u>Fluvaquentic Endoaquepts</u>	Field Observations	
			Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions: Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-3	A	10YR 3/2			loamy clay
3-18	B	10YR 4/2			loamy clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Check)	
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	(Check)
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Nicholls Farm</u>	Date: <u>2/10/06</u>
Applicant/Owner: <u>EEP</u>	County: <u>Bertie</u>
Investigator: <u>EcoScience/O'Loughlin</u>	State: <u>NC</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: <u>wetland</u>
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: <u>DO</u>
Is the area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse.)	Plot ID: <u>DO02</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Acer rubrum</u>	<u>Canopy</u>	<u>FAC</u>	9. _____	_____	_____
2. <u>Liriodendron tulipifera</u>	<u>Canopy</u>	<u>FACU</u>	10. _____	_____	_____
3. <u>Liquidambar styraciflua</u>	<u>Subcanopy</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Quercus michauxii</u>	<u>Subcanopy</u>	<u>FACW-</u>	12. _____	_____	_____
5. <u>Carpinus caroliniana</u>	<u>Subcanopy</u>	<u>FAC</u>	13. _____	_____	_____
6. <u>Arundinaria gigantea</u>	<u>Herb</u>	<u>FACW</u>	14. _____	_____	_____
7. <u>Lonicera japonica</u>	<u>Vine</u>	<u>FAC-</u>	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). >50

Remarks:

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>8</u> (in.) Depth to Saturated Soil: <u>8</u> (in.)	
Remarks:	

SOILS

Map Unit Name (Series and Phase):		<u>Wehadkee loam</u>	Drainage Class:	<u>PD</u>
Taxonomy (Subgroup):		<u>Fluvaquentic Endoaquepts</u>	Field Observations	
			Confirm Mapped Type?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Profile Descriptions:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-3	A	10YR 3/2			clay
3-18	B	10YR 4/1	7.5YR 6/6	common	clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: Hydric soil indicator F3

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Check)	(Check)
Wetland Hydrology Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Hydric Soils Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Nicholls Farm	Date: 2/9/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland/Farm field
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: JA33
Is the area a potential problem area? Yes No	Plot ID: Wetland

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Juncus effuses</i>	H	FACW+	9. _____	_____	_____
2. <i>Rhynchospora</i> sp.	H	N/A	10. _____	_____	_____
3. <i>Geranium maculatum</i>	H	FACU	11. _____	_____	_____
4. <i>Typha latifolia</i>	S	OBL	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 67%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><input checked="" type="checkbox"/> No Recorded Data Available</p> <p>Field Observations:</p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: <u>8</u> (in.)</p>	<p>Primary Wetland Hydrology Indicators:</p> <p>_____ Inundated</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p>_____ Drift Lines</p> <p>_____ Sediment Deposits</p> <p>_____ Drainage Patterns in Wetlands</p> <p>Secondary Indicators: (2 or more required):</p> <p><input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p>_____ Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p>_____ FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
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Remarks: ponding noted.

SOILS

Map Unit Name (Series and Phase): Craven fine sandy loam, 0 to 1 percent slopes

Taxonomy (Subgroup): Aquic Hapludult

Drainage Class: MWD

Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth</u> <u>(inches)</u>	<u>Horizon</u>	<u>Matrix Color</u> <u>(Munsell Moist)</u>	<u>Mottle Colors</u> <u>(Munsell Moist)</u>	<u>Mottle</u> <u>Abundance/Contrast</u>	<u>Texture, Concretions</u> <u>Structure, etc.</u>
0 - 10	A	10YR 5/2	10YR 5/6	Common, Prominent	Fine, Clay loam
10 - 12+	B	10YR 6/1	10YR 6/6; 10YR 5/6	Common, Prominent; Few, Faint	Fine, Clay loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input checked="" type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	
Remarks: Area adjacent to active farm field.	

**DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)**

Project/Site: Nicholls Farm	Date: 2/9/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: JA46
Is the area a potential problem area? Yes No	Plot ID: Upland

VEGETATION

<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>	<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>
1. <u>Panicum sp.</u>	H	N/A	9. _____	_____	_____
2. <u>Rubus sp.</u>	H	N/A	10. _____	_____	_____
3. <u>Andropogon virginicus</u>	H	FAC-	11. _____	_____	_____
4. <u>Lonicera japonica</u>	V	FAC-	12. _____	_____	_____
5. <u>Ulmus alata</u>	S	FACU+	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 0%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><u> x </u> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: <u> > 12 </u> (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p>_____ Inundated</p> <p>_____ Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p>_____ Drift Lines</p> <p>_____ Sediment Deposits</p> <p>_____ Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p>_____ Oxidized Root Channels in Upper 12 Inches</p> <p>_____ Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p>_____ FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
Remarks:	

SOILS

Map Unit Name (Series and Phase): Craven fine sandy loam, 4 to 8 percent slopes

Taxonomy (Subgroup): Aquic Hapludult

Drainage Class: MWD

Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
0 - 8	A	10YR 5/3	10YR 4/4	Few, Prominent	Fine, Clay loam
8 - 12+	B	2.5Y 5/3	10YR 6/6	Few, Faint	Fine, Clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Nicholls Farm	Date: 2/9/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: JA46
Is the area a potential problem area? Yes No	Plot ID: Wetland

VEGETATION

<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>	<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>
1. <i>Juncus effuses</i>	H	FACW+	9. <i>Carex</i> sp.	H	N/A
2. <i>Eupatorium capillifolium</i>	H	FACU	10. _____	_____	_____
3. <i>Lonicera japonica</i>	H	FAC-	11. _____	_____	_____
4. <i>Scirpus cyperinus</i>	H	OBL	12. _____	_____	_____
5. <i>Arundinaria gigantea</i>	S	FACW	13. _____	_____	_____
6. <i>Ligustrum sinense</i>	S	FAC	14. _____	_____	_____
7. <i>Rosa multiflora</i>	S	UPL	15. _____	_____	_____
8. <i>Rhexia</i> sp.		N/A	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 80%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><input checked="" type="checkbox"/> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: <u>12</u> (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p>_____ Inundated</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p>_____ Drift Lines</p> <p>_____ Sediment Deposits</p> <p>_____ Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p><input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p>_____ Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p>_____ FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
Remarks:	

SOILS

Map Unit Name (Series and Phase): Craven fine sandy loam, 4 to 8 percent slopes

Taxonomy (Subgroup): Aquic Hapludult

Drainage Class: MWD

Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
0 - 12	A	10YR 5/2	10YR 5/6	Few, Prominent	Fine, Clay loam
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input checked="" type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input checked="" type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	
Remarks:	

**DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)**

Project/Site: Nicholls Farm	Date: 2/9/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: JC04
Is the area a potential problem area? Yes No	Plot ID: Upland

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Arundinaria gigantea</i>	S	FACW	9. _____	_____	_____
2. <i>Ilex opaca</i>	S	FAC-	10. _____	_____	_____
3. <i>Scirpus cyperinus</i>	H	OBL	11. _____	_____	_____
4. <i>Lonicera japonica</i>	V	FAC-	12. _____	_____	_____
5. <i>Eupatorium capillifolium</i>	H	FACU	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 66%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><u> x </u> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: <u> > 12 </u> (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p>_____ Inundated</p> <p>_____ Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p>_____ Drift Lines</p> <p>_____ Sediment Deposits</p> <p>_____ Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p>_____ Oxidized Root Channels in Upper 12 Inches</p> <p>_____ Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p>_____ FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
Remarks:	

SOILS

Map Unit Name (Series and Phase): Craven fine sandy loam, 4 to 8 percent slopes

Taxonomy (Subgroup): Aquic Hapludult

Drainage Class: MWD

Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
0 - 6	A	10YR 5/2			Course, Sandy loam
6 - 12+	B	10YR 6/3	7.5YR 5/8	Few, Prominent	Fine, Sandy clay loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	
Remarks:	

**DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)**

Project/Site: Nicholls Farm	Date: 2/9/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: JC04
Is the area a potential problem area? Yes No	Plot ID: Wetland

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Liquidambar styraciflua</i>	S	FAC+	9. _____	_____	_____
2. <i>Liriodendron tulipifera</i>	S	FAC	10. _____	_____	_____
3. <i>Arundinaria gigantea</i>	S	FACW	11. _____	_____	_____
4. <i>Typha latifolia</i>	S	OBL	12. _____	_____	_____
5. <i>Ludwigia alternifolia</i>	H	OBL	13. _____	_____	_____
6. <i>Scirpus cyperinus</i>	H	OBL	14. _____	_____	_____
7. <i>Carex sp.</i>	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 100%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><input checked="" type="checkbox"/> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: <u>5</u> (in.)</p> <p>Depth to Saturated Soil: _____ (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p>_____ Inundated</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p>_____ Drift Lines</p> <p>_____ Sediment Deposits</p> <p><input checked="" type="checkbox"/> Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p>_____ Oxidized Root Channels in Upper 12 Inches</p> <p>_____ Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p><input checked="" type="checkbox"/> FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
<p>Remarks:</p>	

SOILS

Map Unit Name (Series and Phase): Craven fine sandy loam, 4 to 8 percent slopes

Taxonomy (Subgroup): Aquic Hapludult

Drainage Class: MWD

Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
0 - 4	A	10YR 3/2			Fine, Loam
4 - 12+	B	10YR 5/1	7.5YR 6/8	Few, Prominent	Fine, Clay loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	
Remarks:	

**DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)**

Project/Site: Nicholls Farm	Date: 2/14/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: JO06
Is the area a potential problem area? Yes No	Plot ID: Upland

VEGETATION

<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>	<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>
1. <i>Pinus taeda</i>	C	FAC	9. <i>Woodwardia areolata</i>	H	OBL
2. <i>Liquidambar styraciflua</i>	C	FAC+	10. <i>Symplocos tinctoria</i>	H	FAC
3. <i>Fagus grandifolia</i>	C, SC	FACU	11.		
4. <i>Ilex opeca</i>	SC	FAC-	12.		
5. <i>Acer rubrum</i>	SC	FAC	13.		
6. <i>Oxydendrum arboretum</i>	SC	NI	14.		
7. <i>Arundinaria gigantea</i>	S	FACW	15.		
8. <i>Gelsemium sempervirens</i>	H	FAC	16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 87.5%

Remarks:

HYDROLOGY

<p>Recorded Data (Describe in Remarks)</p> <p><input type="checkbox"/> Stream, Lake or Tide Gauge</p> <p><input type="checkbox"/> Aerial Photographs</p> <p><input type="checkbox"/> Other</p> <p><input checked="" type="checkbox"/> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: <u>> 12</u> (in.)</p> <p>Depth to Saturated Soil: _____ (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p><input type="checkbox"/> Inundated</p> <p><input type="checkbox"/> Saturated in Upper 12 Inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input type="checkbox"/> Drift Lines</p> <p><input type="checkbox"/> Sediment Deposits</p> <p><input type="checkbox"/> Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p><input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input type="checkbox"/> Local Soil Survey Data</p> <p><input type="checkbox"/> FAC-Neutral Test</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
Remarks:	

SOILS

Map Unit Name (Series and Phase): Leaf loam

Taxonomy (Subgroup): Typic Albaquults

Drainage Class: PD

Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
0 - 4	A	10YR 3/2			Fine, Loam
3 6 12+	B	2.5Y 6/3	10YR5/8	Many, Prominent	Fine, Clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	
Remarks:	

**DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)**

Project/Site: Nicholls Farm	Date: 2/14/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: JO06
Is the area a potential problem area? Yes No	Plot ID: Wetland

VEGETATION

<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>	<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>
1. <i>Acer rubrum</i>	C	FAC	9. <i>Sphagnum</i> Sp.	H	N/A
2. <i>Liquidambar styraciflua</i>	C	FAC+	10. _____	_____	_____
3. <i>Myrica cerifera</i>	S	FAC+	11. _____	_____	_____
4. <i>Smilax rotundifolia</i>	S	FAC	12. _____	_____	_____
5. <i>Vaccinium corymbosum</i>	S	FACW	13. _____	_____	_____
6. <i>Lonicera japonica</i>	H	FAC-	14. _____	_____	_____
7. <i>Bignonia capreolata</i>	H	FAC	15. _____	_____	_____
8. <i>Woodwardia areolata</i>	H	OBL	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 100%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><input checked="" type="checkbox"/> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: <u>6</u> (in.)</p> <p>Depth to Saturated Soil: _____ (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p>_____ Inundated</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p>_____ Drift Lines</p> <p>_____ Sediment Deposits</p> <p>_____ Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p>_____ Oxidized Root Channels in Upper 12 Inches</p> <p><input checked="" type="checkbox"/> Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p>_____ FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
Remarks:	

SOILS

Map Unit Name (Series and Phase): Leaf loam

Taxonomy (Subgroup): Typic Albaquults

Drainage Class: PD

Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
0 - 3	A	10YR 3/2			Fine, Loam
3 ó 6	E	10YR 3/2	7.5YR 5/8	Few, Prominent	Fine, Clay loam
6 ó 12ó+	Bg	10YR 6/1	10YR 6/8	Many, Prominent	Fine, Clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input checked="" type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	
Remarks:	

**DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)**

Project/Site: Nicholls Farm	Date: 2/9/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: TC07
Is the area a potential problem area? Yes No	Plot ID: Upland

VEGETATION

<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>	<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>
1. <i>Liriodendron tulipifera</i>	SC	FAC	9. _____	_____	_____
2. <i>Quercus falcate</i>	SC	FACU-	10. _____	_____	_____
3. <i>Lonicera japonica</i>	V	FAC-	11. _____	_____	_____
4. <i>Arundinaria gigantea</i>	S	FACW	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 66%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><u> x </u> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: <u> > 12 </u> (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p>_____ Inundated</p> <p>_____ Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p>_____ Drift Lines</p> <p>_____ Sediment Deposits</p> <p>_____ Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p>_____ Oxidized Root Channels in Upper 12 Inches</p> <p>_____ Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p>_____ FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
Remarks:	

SOILS

Map Unit Name (Series and Phase): Craven fine sandy loam, 4 to 8 percent slopes

Taxonomy (Subgroup): Aquic Hapludult

Drainage Class: MWD

Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
0 - 2	A	10YR 5/3			Course, Loam
2 ó 12+	B	2.5Y 6/3	10YR 3/4	Few, Prominent	Fine, Clay loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	
Remarks:	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Nicholls Farm	Date: 2/09/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: TC07
Is the area a potential problem area? Yes No	Plot ID: Wetland

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Liriodendron tulipifera</i>	S	FAC	9. _____	_____	_____
2. <i>Fagus grandifolia</i>	S	FACU	10. _____	_____	_____
3. <i>Carpinus caroliniana</i>	S	FAC	11. _____	_____	_____
4. <i>Scirpus cyperinus</i>	H	OBL	12. _____	_____	_____
5. <i>Lonicera japonica</i>	V	FAC-	13. _____	_____	_____
6. <i>Arundinaria gigantea</i>	S	FACW	14. _____	_____	_____
7. <i>Gelsemium sempervirens</i>	V	FAC	15. _____	_____	_____
8. <i>Juncus effusus</i>	H	FACW+	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 100%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><u> x </u> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: <u> 4 </u> (in.)</p> <p>Depth to Saturated Soil: _____ (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p>_____ Inundated</p> <p><u> x </u> Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p>_____ Drift Lines</p> <p>_____ Sediment Deposits</p> <p><u> x </u> Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p>_____ Oxidized Root Channels in Upper 12 Inches</p> <p><u> x </u> Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p><u> x </u> FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
Remarks:	

SOILS

Map Unit Name (Series and Phase): Craven fine sandy loam, 4 to 8 percent slopes

Taxonomy (Subgroup): Aquic Hapludult

Drainage Class: MWD

Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
<u>0 - 4</u>	<u>A</u>	<u>10YR 5/2</u>	<u>10YR 5/8</u>	<u>Few, Prominent</u>	<u>Fine, Clay loam</u>
<u>4 ó 12+</u>	<u>B</u>	<u>10YR 6/1</u>	<u>10YR 6/8</u>	<u>Many, Prominent</u>	<u>Fine, Clay</u>

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	
Remarks:	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Nicholls Farm	Date: 2/10/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: TF14
Is the area a potential problem area? Yes No	Plot ID: Upland

VEGETATION

<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>	<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>
1. <i>Pinus taeda</i>	C	FAC	9. <i>Vitis rotundifolia</i>	H	FAC
2. <i>Acer rubrum</i>	C	FAC	10. _____	_____	_____
3. <i>Fagus grandifolia</i>	C	FACU	11. _____	_____	_____
4. <i>Juniperus virginiana</i>	SC	FACU-	12. _____	_____	_____
5. <i>Ilex opaca</i>	SC	FAC-	13. _____	_____	_____
6. <i>Arundinaria gigantea</i>	S	FACW	14. _____	_____	_____
7. <i>Lonicera japonica</i>	H	FAC-	15. _____	_____	_____
8. <i>Smilax rotundifolia</i>	H	FAC	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 60%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><u> x </u> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: <u> > 12 </u> (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p>_____ Inundated</p> <p>_____ Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p>_____ Drift Lines</p> <p>_____ Sediment Deposits</p> <p>_____ Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p>_____ Oxidized Root Channels in Upper 12 Inches</p> <p>_____ Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p>_____ FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
Remarks:	

SOILS

Map Unit Name (Series and Phase): Wehadkee loam, frequently flooded
 Taxonomy (Subgroup): Fluvaquentic Endoaquepts
 Drainage Class: PD, VPD
 Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
0 - 4	A	10YR 4/3			Fine, Clay loam
4 ó 8	Bt1	10YR 6/4			Fine, Clay loam
8 ó 12+	Bt2	2.5Y 6/6			Fine, Clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	
Remarks: Active floodplain for UT to Salmon Creek.	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Nicholls Farm	Date: 2/10/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: TF14
Is the area a potential problem area? Yes No	Plot ID: Wetland

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Liquidambar styraciflua</i>	C	FAC+	9. _____	_____	_____
2. <i>Acer rubrum</i>	C	FAC	10. _____	_____	_____
3. <i>Pinus serotina</i>	C	FACW+	11. _____	_____	_____
4. <i>Arundinaria gigantea</i>	S	FACW	12. _____	_____	_____
5. <i>Juncus effuses</i>	H	FACW+	13. _____	_____	_____
6. <i>Microstegium vimineum</i>	H	FAC+	14. _____	_____	_____
7. <i>Carex</i> Sp.	H	N/A	15. _____	_____	_____
8. <i>Smilax rotundifolia</i>	H	FAC	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 100%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><input checked="" type="checkbox"/> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: <u>2</u> (in.)</p> <p>Depth to Saturated Soil: _____ (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p>_____ Inundated</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p>_____ Drift Lines</p> <p>_____ Sediment Deposits</p> <p><input checked="" type="checkbox"/> Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p><input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p><input checked="" type="checkbox"/> Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p><input checked="" type="checkbox"/> FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
Remarks:	

SOILS

Map Unit Name (Series and Phase): Wehadkee loam, frequently flooded
 Taxonomy (Subgroup): Fluvaquentic Endoaquepts
 Drainage Class: PD, VPD
 Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
0 - 6	A	10YR 4/1	10YR 4/6	Few, Faint	Fine, Loam
6 ó 12+	B	10YR 4/1	10YR 4/6	Many, Prominent	Fine, Clay loam

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	

Remarks: Active floodplain for UT to Salmon Creek.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Nicholls Farm	Date: 2/10/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: TG02
Is the area a potential problem area? Yes No	Plot ID: Wetland

VEGETATION

<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>	<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>
1. <i>Pinus taeda</i>	C	FAC	9. _____	_____	_____
2. <i>Liriodendron tulipifera</i>	C	FAC	10. _____	_____	_____
3. <i>Quercus laurifolia</i>	C	FACW	11. _____	_____	_____
4. <i>Ilex opeca</i>	SC	FAC-	12. _____	_____	_____
5. <i>Liquidambar styraciflua</i>	S	FAC+	13. _____	_____	_____
6. <i>Smilax rotundifolia</i>	H	FAC	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 100%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><u> x </u> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: <u> 8 </u> (in.)</p> <p>Depth to Saturated Soil: _____ (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p>_____ Inundated</p> <p><u> x </u> Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p><u> x </u> Drift Lines</p> <p>_____ Sediment Deposits</p> <p>_____ Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p>_____ Oxidized Root Channels in Upper 12 Inches</p> <p><u> x </u> Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p>_____ FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
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Remarks: Crawfish holes

SOILS

Map Unit Name (Series and Phase): Craven fine sandy loam, 1 to 4 percent slopes

Taxonomy (Subgroup): Aquic Hapludults

Drainage Class: MWD

Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
0 - 4	A	10YR 4/3			Fine, Loam
4 ó 8	Bt1	10YR 5/1	10YR 4/6	Few, Faint	Fine, Sandy loam
8 ó 12+	Bt2	10YR 5/1	10YR 4/6	Many, Prominent	Fine, Clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input checked="" type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	
Remarks:	

**DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)**

Project/Site: Nicholls Farm	Date: 2/10/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: TG02
Is the area a potential problem area? Yes No	Plot ID: Upland

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Fagus grandifolia</i>	C, SC	FACU	9. _____	_____	_____
2. <i>Liquidambar styraciflua</i>	C	FAC+	10. _____	_____	_____
3. <i>Pinus taeda</i>	C	FAC	11. _____	_____	_____
4. <i>Ilex opeca</i>	SC	FAC-	12. _____	_____	_____
5. <i>Arundinaria gigantea</i>	S	FACW	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 75%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><u> x </u> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: <u> > 12 </u> (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p>_____ Inundated</p> <p>_____ Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p>_____ Drift Lines</p> <p>_____ Sediment Deposits</p> <p>_____ Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p>_____ Oxidized Root Channels in Upper 12 Inches</p> <p>_____ Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p>_____ FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
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Remarks: Crawfish holes

SOILS

Map Unit Name (Series and Phase): Craven fine sandy loam, 1 to 4 percent slopes

Taxonomy (Subgroup): Aquic Hapludults

Drainage Class: MWD

Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
0 - 2	A	10YR 4/3			Fine, Loam
2 ó 10	Bt1	2.5Y 6/4			Fine, Clay loam
10 ó 12+	Bt2	2.5Y 6/6			Fine, Clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	

Remarks: wetland disturbed from former logging, many skid ruts in ground.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Nicholls Farm	Date: 2/10/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: TF40
Is the area a potential problem area? Yes No	Plot ID: Upland

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Liquidambar styraciflua</i>	C	FAC+	9. _____	_____	_____
2. <i>Pinus taeda</i>	C	FAC	10. _____	_____	_____
3. <i>Acer rubrum</i>	SC	FAC	11. _____	_____	_____
4. <i>Cornus florida</i>	SC	FACU	12. _____	_____	_____
5. <i>Ilex opaca</i>	SC	FAC-	13. _____	_____	_____
6. <i>Juniperus virginiana</i>	SC	FACU-	14. _____	_____	_____
7. <i>Carpinus caroliniana</i>	SC	FAC	15. _____	_____	_____
8. <i>Lonicera japonica</i>	H	FAC-	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 67%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><u> x </u> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: <u> 11 </u> (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p>_____ Inundated</p> <p><u> x </u> Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p>_____ Drift Lines</p> <p>_____ Sediment Deposits</p> <p>_____ Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p>_____ Oxidized Root Channels in Upper 12 Inches</p> <p>_____ Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p>_____ FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
Remarks:	

SOILS

Map Unit Name (Series and Phase): Wehadkee loam, frequently flooded
 Taxonomy (Subgroup): Fluvaquentic Endoaquepts
 Drainage Class: PD, VPD
 Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
0 - 3	A	2.5Y 6/4			Fine, Clay loam
3 ó 12+	Bt	2.5Y 6/6	10YR 5/8	Few, Faint	Fine, Clay

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Concretions |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Aquic Moisture Regime | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	

Remarks:

**DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)**

Project/Site: Nicholls Farm	Date: 2/10/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: TF40
Is the area a potential problem area? Yes No	Plot ID: Wetland

VEGETATION

<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>	<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>
1. <i>Liriodendron tulipifera</i>	C, SC	FAC	9. <i>Lonicera japonica</i>	H	FAC-
2. <i>Acer rubrum</i>	SC	FAC	10. <i>Vitis rotundifolia</i>	H	FAC
3. <i>Alnus serrulata</i>	SC	FACW+	11. <i>Smilax rotundifolia</i>	H	FAC
4. <i>Ligustrum sinense</i>	S	FAC	12. <i>Athyrium asplenoides</i>	H	FAC
5. <i>Microstegium vimineum</i>	H	FAC+	13. _____	_____	_____
6. <i>Juncus effuses</i>	H	FACW+	14. _____	_____	_____
7. <i>Carex Sp.</i>	H	N/A	15. _____	_____	_____
8. <i>Impatiens pallida</i>	H	FACW	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 100%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><input checked="" type="checkbox"/> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: <u>0</u> (in.)</p> <p>Depth to Saturated Soil: _____ (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p>_____ Inundated</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p>_____ Drift Lines</p> <p>_____ Sediment Deposits</p> <p><input checked="" type="checkbox"/> Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p><input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p><input checked="" type="checkbox"/> Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p><input checked="" type="checkbox"/> FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
Remarks:	

SOILS

Map Unit Name (Series and Phase): Wehadkee loam, frequently flooded

Taxonomy (Subgroup): Fluvaquentic Endoaquepts

Drainage Class: PD, VPD

Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
0 - 4	A	10YR 5/1	10YR 4/6	Few, Faint	Fine, Loam
4 ó 12+	B	10YR 4/1	10YR 4/6	Many, Prominent	Fine, Clay loam
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input checked="" type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	
Remarks: Active floodplain for UT to Salmon Creek.	

**DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)**

Project/Site: Nicholls Farm	Date: 2/10/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: TF84
Is the area a potential problem area? Yes No	Plot ID: Upland

VEGETATION

<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>	<i>Dominant Plant Species</i>	<i>Stratum</i>	<i>Indicator</i>
1. <i>Quercus rubra</i>	C	FACU	9. _____	_____	_____
2. <i>Pinus taeda</i>	C	FAC	10. _____	_____	_____
3. <i>Prunus serotina</i>	C	FACU	11. _____	_____	_____
4. <i>Cornus florida</i>	SC	FACU	12. _____	_____	_____
5. <i>Acer rubrum</i>	SC	FAC	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 40%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><u> x </u> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: <u> > 12 </u> (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p>_____ Inundated</p> <p>_____ Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p>_____ Drift Lines</p> <p>_____ Sediment Deposits</p> <p>_____ Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p>_____ Oxidized Root Channels in Upper 12 Inches</p> <p>_____ Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p>_____ FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
Remarks:	

SOILS

Map Unit Name (Series and Phase): Wehadkee loam, frequently flooded

Taxonomy (Subgroup): Fluvaquentic Endoaquepts

Drainage Class: PD, VPD

Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
0 - 4	A	2.5Y 6/4			Fine, Clay loam
4 ó 12+	Bt	2.5Y 6/6	2.5Y 6/8	Few, Faint	Fine, Clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	
Remarks:	

**DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)**

Project/Site: Nicholls Farm	Date: 2/10/06
Applicant/Owner: EEP	County: Bertie
Investigator: M. Thomas - EcoScience	State: North Carolina
Do Normal Circumstances Exist on the Site? Yes No	Community ID: Riparian Wetland
Is the site significantly disturbed (Atypical)? Yes No	Transect ID: TF84
Is the area a potential problem area? Yes No	Plot ID: Wetland

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <i>Liriodendron tulipifera</i>	C	FAC	9. _____	_____	_____
2. <i>Pinus taeda</i>	C	FAC	10. _____	_____	_____
3. <i>Liquidambar styraciflua</i>	SC	FAC+	11. _____	_____	_____
4. <i>Acer rubrum</i>	SC	FAC	12. _____	_____	_____
5. <i>Ilex opeca</i>	SC	FAC-	13. _____	_____	_____
6. <i>Carpinus caroliniana</i>	SC	FAC	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 100%

Remarks:

HYDROLOGY

<p>_____ Recorded Data (Describe in Remarks)</p> <p>_____ Stream, Lake or Tide Gauge</p> <p>_____ Aerial Photographs</p> <p>_____ Other</p> <p><u> x </u> No Recorded Data Available</p> <p><i>Field Observations:</i></p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: <u> 10 </u> (in.)</p>	<p><i>Primary Wetland Hydrology Indicators:</i></p> <p>_____ Inundated</p> <p><u> x </u> Saturated in Upper 12 Inches</p> <p>_____ Water Marks</p> <p>_____ Drift Lines</p> <p>_____ Sediment Deposits</p> <p>_____ Drainage Patterns in Wetlands</p> <p><i>Secondary Indicators: (2 or more required):</i></p> <p>_____ Oxidized Root Channels in Upper 12 Inches</p> <p><u> x </u> Water-Stained Leaves</p> <p>_____ Local Soil Survey Data</p> <p>_____ FAC-Neutral Test</p> <p>_____ Other (Explain in Remarks)</p>
Remarks:	

SOILS

Map Unit Name (Series and Phase): Wehadkee loam, frequently flooded

Taxonomy (Subgroup): Fluvaquentic Endoaquepts

Drainage Class: PD, VPD

Field Observations Confirm Mapped Type: Yes **No**

Profile Description:

<u>Depth (inches)</u>	<u>Horizon</u>	<u>Matrix Color (Munsell Moist)</u>	<u>Mottle Colors (Munsell Moist)</u>	<u>Mottle Abundance/Contrast</u>	<u>Texture, Concretions Structure, etc.</u>
0 - 2	A	10YR 4/2			Fine, Clay loam
2 ó 12+	B	10YR 5/1	10YR 5/6	Many, Prominent	Fine, Clay loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input checked="" type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present? Yes No	
Hydric Soils Present? Yes No	
Remarks: Active floodplain for UT to Salmon Creek.	



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

1. Applicant's name: EEP
2. Evaluator's name: ESC/C. Terwilliger
3. Date of evaluation: 2/9/06
4. Time of evaluation: 12 p.m.
5. Name of stream: UT to Salmon Creek
6. River basin: Chowan
7. Approximate drainage area: 1.75 mi²
8. Stream order: 2nd
9. Length of reach evaluated: 50'
10. County: Bertie
11. Site coordinates (if known): 36.0119°N, 76.7778°W
12. Subdivision name (if any): _____
13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location):
North of Avoca Farm Rd, west of NC 45
14. Proposed channel work (if any): None
15. Recent weather conditions: above avg temps, avg. ppt.
16. Site conditions at time of visit: Sunny, 50°F
17. Identify any special waterway classifications known:

Section 10	Tidal Waters	Essential Fisheries Habitat	
Trout Waters	Outstanding Resource Waters	<i>Nutrient Sensitive Waters</i>	Water Supply Watershed ____ (I-IV)
18. Is there a pond or lake located upstream of the evaluation point? **YES** **NO** If yes, estimate the water surface area: _____
19. Does channel appear on USGS quad map? **YES** **NO**
20. Does channel appear on USDA Soil Survey? **YES** **NO**
21. Estimated watershed land use:

<u>05%</u> Residential	<u> </u> % Commercial	<u> </u> % Industrial	<u>35%</u> Agricultural
<u>45%</u> Forested	<u>15%</u> Cleared / Logged	<u> </u> % Other (_____)	
22. Bankfull width: 6'
23. Bank height (from bed to top of bank): 2 -3'
24. Channel slope down center of stream: **Flat (0 to 2%)** Gentle (2 to 4%) Moderate (4 to 10%) Steep (>10%)
25. Channel sinuosity: Straight Occasional bends **Frequent meander** Very sinuous Braided channel

Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristics identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.

Total Score (from reverse): 66 **Comments:** moderate flow, silt/sand/gravel substrate, perennial.

Evaluator's Signature _____ **Date** _____

This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06/03. To Comment, please call 919-876-8441 x 26.

STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0 – 5	0 – 4	0 – 5	4
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	2
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	3
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	4
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	3
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0 – 4	0 – 4	0 – 2	3
	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	4
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0 – 4	0 – 2	5
	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	3
	10	Sediment input (extensive deposition = 0; little or no sediment = max points)	0 – 5	0 – 4	0 – 4	3
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	NA
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0 – 5	0 – 4	0 – 5	4
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0 – 5	0 – 5	0 – 5	4
	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0 – 3	0 – 4	0 – 5	3
	15	Impact by agriculture, livestock, or timber production (substantial impact = 0; no evidence = max points)	0 – 5	0 – 4	0 – 5	2
HABITAT	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0 – 3	0 – 5	0 – 6	3
	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	4
	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0 – 5	0 – 5	2
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0 – 4	0 – 4	NA
BIOLOGY	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	3
	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	3
	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	0
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	4
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						66

* These characteristics are not assessed in coastal streams.



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

1. Applicant's name: EEP
2. Evaluator's name: ESC/C. Terwilliger
3. Date of evaluation: 2/9/06
4. Time of evaluation: 12 pm
5. Name of stream: UT to Salmon Creek
6. River basin: Chowan
7. Approximate drainage area: 2.5 ac
8. Stream order: 1st
9. Length of reach evaluated: 30'
10. County: Bertie
11. Site coordinates (if known): 36.0134°N, 76.7778°W
12. Subdivision name (if any): _____
13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location):
North of Avoca Farm Rd., west of NC Hwy 45
14. Proposed channel work (if any): none
15. Recent weather conditions: above avg temps, avg ppt.
16. Site conditions at time of visit: 50°F
17. Identify any special waterway classifications known:

Trout Waters	Section 10	Tidal Waters	Essential Fisheries Habitat
Outstanding Resource Waters	<i>Nutrient Sensitive Waters</i>	Water Supply Watershed _____(I-IV)	
18. Is there a pond or lake located upstream of the evaluation point? **YES** **NO** If yes, estimate the water surface area: 0.2 ac
19. Does channel appear on USGS quad map? **YES** **NO**
20. Does channel appear on USDA Soil Survey? **YES** **NO**
21. Estimated watershed land use:

____% Residential	____% Commercial	____% Industrial	70% Agricultural
____% Forested	30% Cleared / Logged	____% Other (_____)	
22. Bankfull width: 3'
23. Bank height (from bed to top of bank): 1'
24. Channel slope down center of stream: **Flat (0 to 2%)** Gentle (2 to 4%) Moderate (4 to 10%) Steep (>10%)
25. Channel sinuosity: Straight **Occasional bends** Frequent meander Very sinuous Braided channel

Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristics identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.

Total Score (from reverse): 53 **Comments:** moderate flow, silt substrate, perennial

Evaluator's Signature _____ **Date** _____

This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06/03. To Comment, please call 919-876-8441 x 26.

STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0 – 5	0 – 4	0 – 5	3
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	2
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	2
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	2
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	3
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0 – 4	0 – 4	0 – 2	3
	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	3
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0 – 4	0 – 2	5
	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	3
	10	Sediment input (extensive deposition = 0; little or no sediment = max points)	0 – 5	0 – 4	0 – 4	3
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	NA
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0 – 5	0 – 4	0 – 5	4
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0 – 5	0 – 5	0 – 5	4
	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0 – 3	0 – 4	0 – 5	3
	15	Impact by agriculture, livestock, or timber production (substantial impact = 0; no evidence = max points)	0 – 5	0 – 4	0 – 5	2
HABITAT	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0 – 3	0 – 5	0 – 6	2
	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	2
	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0 – 5	0 – 5	1
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0 – 4	0 – 4	NA
BIOLOGY	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	1
	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	2
	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	0
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	3
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						53

* These characteristics are not assessed in coastal streams.

USACE AID# _____

DWQ # _____

Site #GB (S2)



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

1. Applicant's name: EEP
2. Evaluator's name: M. Thomas – EcoScience Corporation
3. Date of evaluation: 2/10/06
4. Time of evaluation: 9 am
5. Name of stream: UT to Salmon Creek
6. River basin: Chowan
7. Approximate drainage area: 1.8 ac
8. Stream order: 1st
9. Length of reach evaluated: 50'
10. County: Bertie
11. Site coordinates (if known): 36.0130°N, 76.7786°W
12. Subdivision name (if any): _____
13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location):
North of Avoca Farm Road, west of NC 45
14. Proposed channel work (if any): Easement
15. Recent weather conditions: Above avg temps, avg ppt
16. Site conditions at time of visit: sunny, 30°F
17. Identify any special waterway classifications known:

Trout Waters	Section 10	Tidal Waters	Essential Fisheries Habitat
Outstanding Resource Waters	Nutrient Sensitive Waters	Water Supply Watershed _____(I-IV)	
18. Is there a pond or lake located upstream of the evaluation point? YES **NO** If yes, estimate the water surface area: _____
19. Does channel appear on USGS quad map? YES **NO**
20. Does channel appear on USDA Soil Survey? YES **NO**
21. Estimated watershed land use:

____% Residential	____% Commercial	____% Industrial	____% Agricultural
<u>75%</u> Forested	<u>25%</u> Cleared / Logged	____% Other (_____)	
22. Bankfull width: 2'
23. Bank height (from bed to top of bank): 0.5'
24. Channel slope down center of stream: **Flat (0 to 2%)** Gentle (2 to 4%) Moderate (4 to 10%) Steep (>10%)
25. Channel sinuosity: Straight **Occasional bends** Frequent meander Very sinuous Braided channel

Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristics identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.

Total Score (from reverse): 64 **Comments:** stream begins as seep from upland, low flow until confluence with GA/CA.

Evaluator's Signature _____ **Date** _____

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STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0 – 5	0 – 4	0 – 5	2
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	6
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	4
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	5
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	3
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0 – 4	0 – 4	0 – 2	4
	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	5
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0 – 4	0 – 2	6
	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	3
	10	Sediment input (extensive deposition = 0; little or no sediment = max points)	0 – 5	0 – 4	0 – 4	2
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	NA
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0 – 5	0 – 4	0 – 5	5
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0 – 5	0 – 5	0 – 5	5
	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0 – 3	0 – 4	0 – 5	3
	15	Impact by agriculture, livestock, or timber production (substantial impact = 0; no evidence = max points)	0 – 5	0 – 4	0 – 5	2
HABITAT	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0 – 3	0 – 5	0 – 6	0
	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	2
	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0 – 5	0 – 5	3
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0 – 4	0 – 4	NA
BIOLOGY	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	0
	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	0
	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	0
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	4
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						64

* These characteristics are not assessed in coastal streams.



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

1. Applicant's name: NCDOT
2. Evaluator's name: O'Loughlin/EcoScience Corp.
3. Date of evaluation: 02/10/06
4. Time of evaluation: 8:00 a.m.
5. Name of stream: UT
6. River basin: Chowan
7. Approximate drainage area: 10 ac
8. Stream order: 1st
9. Length of reach evaluated: 350 ft
10. County: Bertie
11. Site coordinates (if known): 36.0147 °N, 76.7782°W
12. Subdivision name (if any): _____
13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location):
Runs east to west from a culvert under NC 45, on the west side of the road.
14. Proposed channel work (if any): _____
15. Recent weather conditions: cool and dry
16. Site conditions at time of visit: partly cloudy, 21°F, low winds
17. Identify any special waterway classifications known:

Section 10	Tidal Waters	Essential Fisheries Habitat	
Trout Waters	Outstanding Resource Waters	Nutrient Sensitive Waters	Water Supply Watershed ____ (I-IV)
18. Is there a pond or lake located upstream of the evaluation point? YES **NO** If yes, estimate the water surface area: _____
19. Does channel appear on USGS quad map? YES **NO**
20. Does channel appear on USDA Soil Survey? YES **NO**
21. Estimated watershed land use:

<u>10 %</u> Residential	<u> </u> % Commercial	<u> </u> % Industrial	80 % Agricultural
<u>10 %</u> Forested	<u>05 %</u> Cleared / Logged	<u> </u> % Other (_____)	
22. Bankfull width: 1'
23. Bank height (from bed to top of bank): 6"
24. Channel slope down center of stream: **Flat (0 to 2%)** Gentle (2 to 4%) Moderate (4 to 10%) Steep (>10%)
25. Channel sinuosity: Straight **Occasional bends** Frequent meander Very sinuous Braided channel

Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristics identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.

Total Score (from reverse): 48 **Comments:** Stream line DOD;

Evaluator's Signature _____ **Date** _____

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STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0 – 5	0 – 4	0 – 5	3
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	1
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	4
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	0
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	3
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0 – 4	0 – 4	0 – 2	3
	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	4
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0 – 4	0 – 2	4
	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	3
	10	Sediment input (extensive deposition = 0; little or no sediment = max points)	0 – 5	0 – 4	0 – 4	4
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	NA*
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0 – 5	0 – 4	0 – 5	3
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0 – 5	0 – 5	0 – 5	3
	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0 – 3	0 – 4	0 – 5	1
	15	Impact by agriculture, livestock, or timber production (substantial impact = 0; no evidence = max points)	0 – 5	0 – 4	0 – 5	5
HABITAT	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0 – 3	0 – 5	0 – 6	1
	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	1
	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0 – 5	0 – 5	4
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0 – 4	0 – 4	NA*
BIOLOGY	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	0
	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	1
	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	0
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	0
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						48

* These characteristics are not assessed in coastal streams.

USACE AID# _____

DWQ # _____

Site #CG (S6)



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

1. Applicant's name: EEP
2. Evaluator's name: ESC/C. Terwilliger
3. Date of evaluation: 2/9/06
4. Time of evaluation: 12 pm
5. Name of stream: UT to Salmon Creek
6. River basin: Chowan
7. Approximate drainage area: 1 ac
8. Stream order: 1st
9. Length of reach evaluated: 40'
10. County: Bertie
11. Site coordinates (if known): 36.0185°N, 76.7837°W
12. Subdivision name (if any): _____
13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location):
North of Avoca Farm Rd., west of NC 45
14. Proposed channel work (if any): none
15. Recent weather conditions: above avg temps., avg. ppt.
16. Site conditions at time of visit: Sunny, 50°F
17. Identify any special waterway classifications known:

Section 10	Tidal Waters	Essential Fisheries Habitat	
Trout Waters	Outstanding Resource Waters	<i>Nutrient Sensitive Waters</i>	Water Supply Watershed ____ (I-IV)
18. Is there a pond or lake located upstream of the evaluation point? **YES** **NO** If yes, estimate the water surface area: 2.4 ac
19. Does channel appear on USGS quad map? **YES** **NO**
20. Does channel appear on USDA Soil Survey? **YES** **NO**
21. Estimated watershed land use:

___% Residential	___% Commercial	35% Industrial	___% Agricultural
30% Forested	35% Cleared / Logged	___% Other (_____)	
22. Bankfull width: 4'
23. Bank height (from bed to top of bank): 1'
24. Channel slope down center of stream: **Flat (0 to 2%)** Gentle (2 to 4%) Moderate (4 to 10%) Steep (>10%)
25. Channel sinuosity: Straight **Occasional bends** Frequent meander Very sinuous Braided channel

Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristics identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.

Total Score (from reverse): 52 **Comments:** low flow, silt substrate

Evaluator's Signature _____ **Date** _____

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STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0 – 5	0 – 4	0 – 5	2
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	2
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	4
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	1
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	3
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0 – 4	0 – 4	0 – 2	3
	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	3
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0 – 4	0 – 2	4
	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	1
	10	Sediment input (extensive deposition = 0; little or no sediment = max points)	0 – 5	0 – 4	0 – 4	3
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	NA
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0 – 5	0 – 4	0 – 5	4
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0 – 5	0 – 5	0 – 5	4
	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0 – 3	0 – 4	0 – 5	2
	15	Impact by agriculture, livestock, or timber production (substantial impact = 0; no evidence = max points)	0 – 5	0 – 4	0 – 5	4
HABITAT	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0 – 3	0 – 5	0 – 6	1
	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	2
	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0 – 5	0 – 5	4
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0 – 4	0 – 4	NA
BIOLOGY	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	1
	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	1
	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	0
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	3
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						52

* These characteristics are not assessed in coastal streams.



STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

1. Applicant's name: EEP
2. Evaluator's name: M. Thomas - EcoScience
3. Date of evaluation: 2/14/06
4. Time of evaluation: 2 pm
5. Name of stream: UT to Salmon Creek
6. River basin: Chowan
7. Approximate drainage area: 51 ac
8. Stream order: 1st
9. Length of reach evaluated: 100'
10. County: Bertie
11. Site coordinates (if known): 36.0151°N, 76.7831°W
12. Subdivision name (if any): _____
13. Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location):
north of Avoca Farm Road, west of NC 45
14. Proposed channel work (if any): Conservation Easement
15. Recent weather conditions: above avg. temps, avg. ppt.
16. Site conditions at time of visit: sunny, 55°F
17. Identify any special waterway classifications known:

Trout Waters	Section 10	Tidal Waters	Essential Fisheries Habitat
Outstanding Resource Waters	Nutrient Sensitive Waters	Water Supply Watershed _____(I-IV)	
18. Is there a pond or lake located upstream of the evaluation point? YES NO If yes, estimate the water surface area: _____
19. Does channel appear on USGS quad map? YES NO
20. Does channel appear on USDA Soil Survey? YES NO
21. Estimated watershed land use:

____% Residential	____% Commercial	____% Industrial	15% Agricultural
75% Forested	10% Cleared / Logged	____% Other (_____)	
22. Bankfull width: 2' - 3'
23. Bank height (from bed to top of bank): 0.5' to 1'
24. Channel slope down center of stream: Flat (0 to 2%) **Gentle (2 to 4%)** Moderate (4 to 10%) Steep (>10%)
25. Channel sinuosity: Straight Occasional bends **Frequent meander** Very sinuous Braided channel

Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristics identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.

Total Score (from reverse): 73 **Comments:** stream begins near Avoca Farm Road as riparian/headwater wetlands, channel forms from wetland with braided stream, then forms clear channel until it reaches the confluence with the wetland complex

Evaluator's Signature _____

Date _____

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STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0 – 5	0 – 4	0 – 5	2
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	6
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	6
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	5
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	3
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0 – 4	0 – 4	0 – 2	2
	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	3
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0 – 4	0 – 2	5
	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	4
	10	Sediment input (extensive deposition = 0; little or no sediment = max points)	0 – 5	0 – 4	0 – 4	4
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	NA
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0 – 5	0 – 4	0 – 5	4
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0 – 5	0 – 5	0 – 5	4
	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0 – 3	0 – 4	0 – 5	3
	15	Impact by agriculture, livestock, or timber production (substantial impact = 0; no evidence = max points)	0 – 5	0 – 4	0 – 5	5
HABITAT	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0 – 3	0 – 5	0 – 6	2
	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	4
	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0 – 5	0 – 5	5
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0 – 4	0 – 4	NA
BIOLOGY	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	2
	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	0
	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	0
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	4
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						73

* These characteristics are not assessed in coastal streams.

APPENDIX F: NCDWQ STREAM IDENTIFICATION FORMS

North Carolina Division of Water Quality – Stream Identification Form; Version 3.1

Date: 2/10/06	Project: NICHOLS FARM	Latitude: 36.0147
Evaluator: ESC/BAKEMAN	Site:	Longitude: 76.7781
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30	County: ROUSE	Other e.g. Quad Name: D30 LINE MDEI 1011

A. Geomorphology (Subtotal = _____)

	Absent	Weak	Moderate	Strong
1 ^a . Continuous bed and bank	0	1	2	3
2. Sinuosity	0	1	2	3
3. In-channel structure: riffle-pool sequence	0	1	2	3
4. Soil texture or stream substrate sorting	0	1	2	3
5. Active/relic floodplain	0	1	2	3
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	1	2	3
9 ^b Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. Second or greater order channel on existing USGS or NRCS map or other documented evidence.	No = 0		Yes = 3	

^a Man-made ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = _____)

14. Groundwater flow/discharge	0	1	2	3
15. Water in channel and > 48 hrs since rain, <u>or</u> Water in channel -- dry or growing season	0	1	2	3
16. Leaf litter	1.5	1	0.5	0
17. Sediment on plants or debris	0	0.5	1	1.5
18. Organic debris lines or piles (Wrack lines)	0	0.5	1	1.5
19. Hydric soils (redoximorphic features) present?	No = 0		Yes = 1.5	

C. Biology (Subtotal = _____)

20 ^b . Fibrous roots in channel	3	2	1	0
21 ^b . Rooted plants in channel	3	2	1	0
22. Crayfish	0	0.5	1	1.5
23. Bivalves	0	1	2	3
24. Fish	0	0.5	1	1.5
25. Amphibians	0	0.5	1	1.5
26. Macroinvertebrates (note diversity and abundance)	0	0.5	1	1.5
27. Filamentous algae; periphyton	0	1	2	3
28. Iron oxidizing bacteria/fungus,	0	0.5	1	1.5
29 ^b . Wetland plants in streambed	FAC = 0.5; FACW = 0.75; OBL = 1.5 SAV = 2.0; Other = 0			

^b Items 20 and 21 focus on the presence of upland plants, Item 29 focuses on the presence of aquatic or wetland plants.

Notes: (use back side of this form for additional notes.)

Sketch:

North Carolina Division of Water Quality - Stream Identification Form; Version 3.1		
Date: <u>2/10/06</u>	Project: <u>06-279, 1</u>	Latitude:
Evaluator: <u>M. Thomas/ESC</u>	Site: <u>Nicholls Farm</u>	Longitude:
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30</i>	County: <u>Bertie</u>	Other: e.g. Quad Name: <u>Merry Hill</u>

A. Geomorphology (Subtotal = 8.5)

	Absent	Weak	Moderate	Strong
1 ^a . Continuous bed and bank	<u>0</u>	1	2	3
2. Sinuosity	0	1	<u>2</u>	3
3. In-channel structure: riffle-pool sequence	<u>0</u>	1	2	3
4. Soil texture or stream substrate sorting	<u>0</u>	1	2	3
5. Active/relic floodplain	0	1	2	<u>3</u>
6. Depositional bars or benches	<u>0</u>	1	2	3
7. Braided channel	0	<u>1</u>	2	3
8. Recent alluvial deposits	0	<u>1</u>	2	3
9 ^a . Natural levees	<u>0</u>	1	2	3
10. Headcuts	<u>0</u>	1	2	3
11. Grade controls	0	0.5	<u>1</u>	1.5
12. Natural valley or drainageway	0	<u>0.5</u>	1	1.5
13. Second or greater order channel on existing USGS or NRCS map or other documented evidence.	No = 0		Yes = 0	

^a Man-made ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 4)

14. Groundwater flow/discharge	0	<u>1</u>	2	3
15. Water in channel and > 48 hrs since rain, or water in channel --dry or growing season	0	<u>1</u>	2	3
16. Leaf/litter	1.5	1	0.5	<u>0</u>
17. Sediment on plants or debris	0	<u>0.5</u>	1	1.5
18. Organic debris lines or piles (Wreck lines)	<u>0</u>	0.5	1	1.5
19. Hydric soils (redoximorphic features) present?	No = 0		<u>Yes = 1.5</u>	

C. Biology (Subtotal = 9.5)

20 ^b . Fibrous roots in channel	3	<u>2</u>	1	0
21 ^b . Rooted plants in channel	3	<u>2</u>	1	0
22. Crayfish	0	0.5	<u>1</u>	1.5
23. Bivalves	<u>0</u>	1	2	3
24. Fish	<u>0</u>	0.5	1	1.5
25. Amphibians	0	0.5	<u>1</u>	1.5
26. Macroinvertebrates (note diversity and abundance)	<u>0</u>	0.5	1	1.5
27. Filamentous algae; periphyton	0	1	<u>2</u>	3
28. Iron oxidizing bacteria/fungus	<u>0</u>	0.5	1	1.5
29 ^c . Wetland plants in streambed	FAC = 0.5; FACW = 0.75; <u>CBL = 1.5</u> 2.0, other = 0			SAV =

^b Items 20 and 21 focus on the presence of upland plants, Item 29 focuses on the presence of aquatic or wetland plants.

Notes: (use back side of this form for additional notes.)

Sketch:

North Carolina Division of Water Quality - Stream Identification Form; Version 3.1		
Date: 2/09/06	Project: 06-279.1	Latitude:
Evaluator: M. Thomas-ESC	Site: Nichalls Farm	Longitude:
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30</i> 26.25	County: Bertie	Other: e.g. Quad Name: Merry Hill

A. Geomorphology (Subtotal = 15)

	Absent	Weak	Moderate	Strong
1 ^a . Continuous bed and bank	0	0	2	3
2. Sinuosity	0	1	2	3
3. In-channel structure: riffle-pool sequence	0	0	2	3
4. Soil texture or stream substrate sorting	0	0	2	3
5. Active/relic floodplain	0	1	2	3
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0	2	3
9 ^a . Natural levees	0	0	2	3
10. Headcuts	0	0	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. Second or greater order channel on existing USGS or NRCS map or other documented evidence.	No = 0		Yes = 0	

^a Man-made ditches are not rated, see discussions in manual

B. Hydrology (Subtotal = 6)

14. Groundwater flow/discharge	0	0	2	3
15. Water in channel and > 48 hrs since rain, or water in channel --dry or growing season	0	1	2	3
16. Leaf/litter	1.5	1	0.5	0
17. Sediment on plants or debris	0	0.5	1	1.5
18. Organic debris lines or piles (Wrack lines)	0	0.5	1	1.5
19. Hydric soils (redoximorphic features) present?	No = 0		Yes = 1.5	

C. Biology (Subtotal = 5.75)

20 ^b . Fibrous roots in channel	3	2	1	0
21 ^b . Rooted plants in channel	3	2	1	0
22. Crayfish	0	0.5	1	1.5
23. Bivalves	0	1	2	3
24. Fish	0	0.5	1	1.5
25. Amphibians	0	0.5	1	1.5
26. Macroinvertebrates (note diversity and abundance)	0	0.5	1	1.5
27. Filamentous algae; periphyton	0	1	2	3
28. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
29 ^b . Wetland plants in streambed	FAC = 0.5; FACW = 0.75; OBL = 1.5 2.0, other = 0			SAV =

^b Items 20 and 21 focus on the presence of upland plants, Item 26 focuses on the presence of aquatic or wetland plants.

Notes: (use back side of this form for additional notes.)

Sketch:

North Carolina Division of Water Quality - Stream Identification Form; Version 3.1		
Date: <u>2/14/06</u>	Project: <u>06-279.1</u>	Latitude:
Evaluator: <u>M. Thomas /ESC</u>	Site: <u>Michells Farm</u>	Longitude:
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30</i>	County: <u>Bertie</u>	Other: <i>e.g. Quad Name:</i> <u>Merry Hill</u>
		<u>24.5</u>

A. Geomorphology (Subtotal = 11.5)

	Absent	Weak	Moderate	Strong
1 ^a . Continuous bed and bank	0	<u>1</u>	2	3
2. Sinuosity	0	1	<u>2</u>	3
3. In-channel structure: riffle-pool sequence	<u>0</u>	1	2	3
4. Soil texture or stream substrate sorting	<u>0</u>	1	2	3
5. Active/relic floodplain	0	1	<u>2</u>	3
6. Depositional bars or benches	<u>0</u>	1	2	3
7. Braided channel	0	1	2	<u>3</u>
8. Recent alluvial deposits	0	<u>0</u>	2	3
9 ^a . Natural levees	<u>0</u>	1	2	3
10. Headcuts	0	<u>0</u>	2	3
11. Grade controls	0	<u>0.5</u>	1	1.5
12. Natural valley or drainageway	0	0.5	<u>1</u>	1.5
13. Second or greater order channel on existing USGS or NRCS map or other documented evidence.	<u>No = 0</u>		<u>Yes = 0</u>	

^a Man-made ditches are not rated, see discussions in manual

B. Hydrology (Subtotal = 4.5)

14. Groundwater flow/discharge	0	<u>1</u>	2	3
15. Water in channel and > 48 hrs since rain, or water in channel --dry or growing season	0	<u>1</u>	2	3
16. Leaf litter	1.5	1	0.5	<u>0</u>
17. Sediment on plants or debris	0	<u>0.5</u>	1	1.5
18. Organic debris lines or piles (Wrack lines)	0	<u>0.5</u>	1	1.5
19. Hydric soils (redoximorphic features) present?	<u>No = 0</u>		<u>Yes = 1.5</u>	

C. Biology (Subtotal = 8.5)

20 ^b . Fibrous roots in channel	3	2	<u>1</u>	0
21 ^b . Rooted plants in channel	3	<u>2</u>	1	0
22. Crayfish	0	0.5	<u>1</u>	1.5
23. Bivalves	<u>0</u>	1	2	3
24. Fish	<u>0</u>	0.5	1	1.5
25. Amphibians	<u>0</u>	0.5	1	1.5
26. Macroinvertebrates (note diversity and abundance)	<u>0</u>	0.5	1	1.5
27. Filamentous algae; periphyton	0	1	<u>2</u>	3
28. Iron oxidizing bacteria/fungus	0	0.5	<u>1</u>	1.5
29 ^b . Wetland plants in streambed	FAC = 0.5; FACW = 0.75; <u>OBL = 1.5</u>			SAV = 2.0, other = 0

^b Items 20 and 21 focus on the presence of upland plants, item 29 focuses on the presence of aquatic or wetland plants.

Notes: (use back side of this form for additional notes.)

Sketch:

APPENDIX G: HPO CONCURRENCE LETTER



North Carolina Department of Cultural Resources
State Historic Preservation Office

Peter B. Sandbeck, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

August 15, 2007

Dawn Reid
Archaeological Consultants of the Carolinas, Inc.
121 E. First Street
Clayton, NC 27520

Re: Archaeological Survey of the Nicholls Property, Bertie County, ER 06-0530

Dear Ms. Reid:

Thank you for your letter of August 13, 2007. We have reviewed the report associated with the project referenced above and offer the comments given below.

An archaeological survey was conducted across the project tract within areas proposed for ground-disturbing activities. No archaeological sites were recorded as a result of this effort. Based on the results of the survey, it is concluded that the proposed undertaking will not impact significant cultural resources. No further work is recommended for the Nichols tract. We concur with these recommendations.

The report meets our office's guidelines and those of the Secretary of the Interior. There are no specific concerns or corrections which need to be addressed in this regard. The present version of the document will serve well as the final report.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-733-4763, ext. 246. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Peter Sandbeck

cc: Matthew Thomas, EcoScience Corporation
Julia Hunt

ADMINISTRATION
RESTORATION
SURVEY & PLANNING

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