RIPARIAN BUFFER RESTORATION PLAN

NORWOOD GAINEY SITE

Wayne County, North Carolina

Project ID No. D06058S

Prepared for:

NCDENR-Ecosystem Enhancement Program

Raleigh, North Carolina

March 2006

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Project Engineer

I HEREBY CERTIFY THAT THE REPORT CONTAINED HEREIN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

SIGNED, SEALED AND DATED THIS 13TH DAY OF MARCH 2006
R. KEVIN WILLIAMS, PE, PLS, CPESC

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EXECUTIVE SUMMARY

The Norwood Gainey Riparian Buffer Restoration Site is located South of Goldsboro in Wayne County, North Carolina within a generally rural watershed. The project site has been historically utilized for crop production, most recently soybeans, where agricultural land use practices have removed the riparian buffer from the project site. Buffer restoration techniques will help improve the water quality of the adjacent ditches and wetlands by reducing erosion and runoff of pollution into the Neuse River. Improvement of the water quality is needed since the receiving stream is listed as Nutrient Sensitive Water (NSW). Nutrient Sensitive Waters require limitations on nutrient outputs. The Norwood Gainey Riparian Buffer Restoration Site provides an opportunity for buffer restoration. The following table summarizes and footages and acreages for the site.

Table 1. Project Restoration/Enhancement Structure and Objectives
Project Number D06058S (Norwood Gainey Site)

Mitigation Section ID	Mitigation Type	Existing Linear Footage or Acreage	Designed Liner Footage or Acreage	Comment
Riparian Buffer Zone 1	Riparian Buffer Restoration	0 ft; 0 acres	13,660 ft; 14.0 acres	440 trees proposed to be planted per acre
Riparian Buffer Zone 2	Riparian Buffer Restoration	0 ft; 0 acres	11,900 ft; 7.6 acres	440 trees proposed to be planted per acre; 260 shrubs proposed to be planted per acre
Riparian Buffer Herbaceous Zone	Riparian Buffer Restoration	0 acres	26.2 acres	Herbaceous zone is located beyond Zone 2
Wetland Enhancement Area	Wetland Enhancement	7.7 acres	5.4 acres	2.3 acres of the existing wetland consists of open water borrow area that will remain undisturbed

The Norwood Gainey site provides an excellent opportunity for restoration of the riparian buffer. Restoring ecological functions at this site will:

1) Improve water quality;
2) Reduce the amount of sediment and pollutants entering the system;
3) Provide landscape continuity.

Overall, the project will provide a variety of habitats from open water to uplands. The project will greatly increase the future habitat and food sources for a variety of wildlife species. Restoration of the riparian buffer will help improve water quality in the Neuse River.

1.0 PROJECT DESCRIPTION

It is the intent of the North Carolina Ecosystem Enhancement Program (NCEEP) to restore forested riparian buffers along the existing surface water features located on the Norwood Gainey tract in order to provide riparian buffer mitigation credit. Riparian buffer restoration is defined as restoring those riparian buffer areas where woody vegetation is absent or sparse (<100 stems/acre that are ≥ 5 inches at breast height) measured within 50 feet of surface waters. The buffer restoration plan should be consistent with NCWRP's "Guidelines for Riparian Buffer Restoration" where practicable or otherwise approved in writing by the N.C. Division of Water Quality (DWQ). Where riparian buffers are restored along ditches, the ditch must not be actively eroding. The water table within the ditch should be within three feet of the surface.

1.1 Project Site Location

The Norwood Gainey Riparian Buffer Restoration Site is located south of Goldsboro in Wayne County, North Carolina. Care Road and residential housing border the project study area to the north. Undeveloped land consisting of timberland and Bouge Swamp borders the project study area to the west, south and east.

1.2 Directions to Project Site

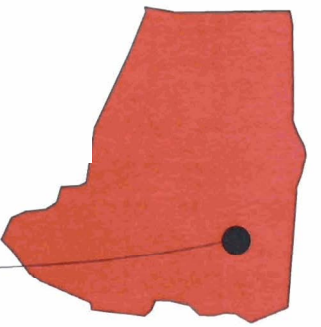
Directions to the project study area from Goldsboro are as follows: From U.S. Highway 70, take State Highway 111 south for 3.5 to 4.0 miles. Take a right on Care Road (dirt road). Follow Care Road until you reach a metal gate; take a left before the gate. The project study area consists of the fallow soybean fields and the existing borrow pit located along the southern project boundary.

1.3 USGS Hydrologic Unit Code and NCDWQ River Basin Designations

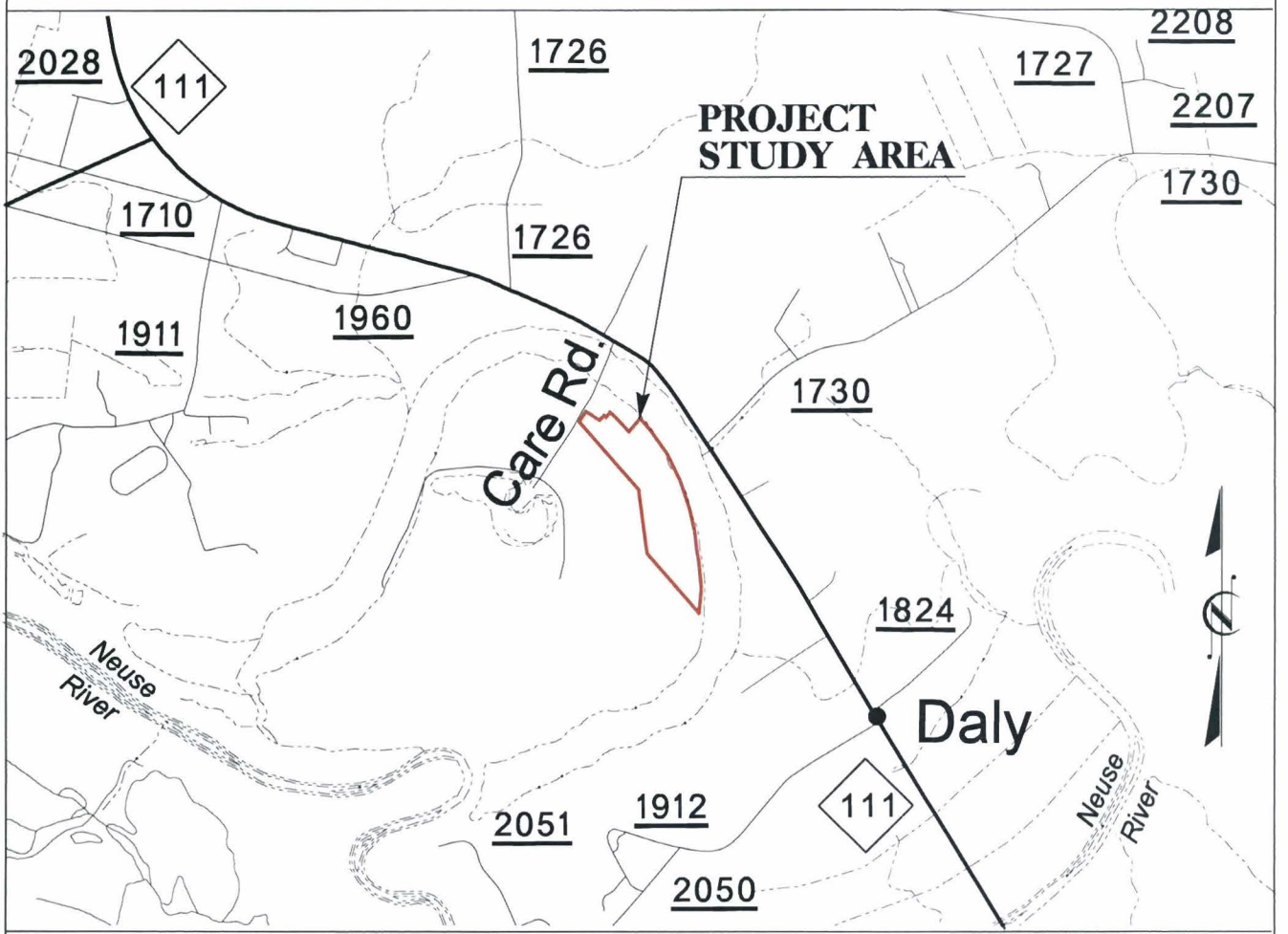
The project study area is located within United States Geologic Survey (USGS) Hydrologic Unit Code (HUC) 03020202 (USGS 1974) and is located within the Neuse River Basin (sub-basin 05).

Sign
Seth Worley's
Creative Studio

Wayne County
North Carolina



PROJECT STUDY AREA



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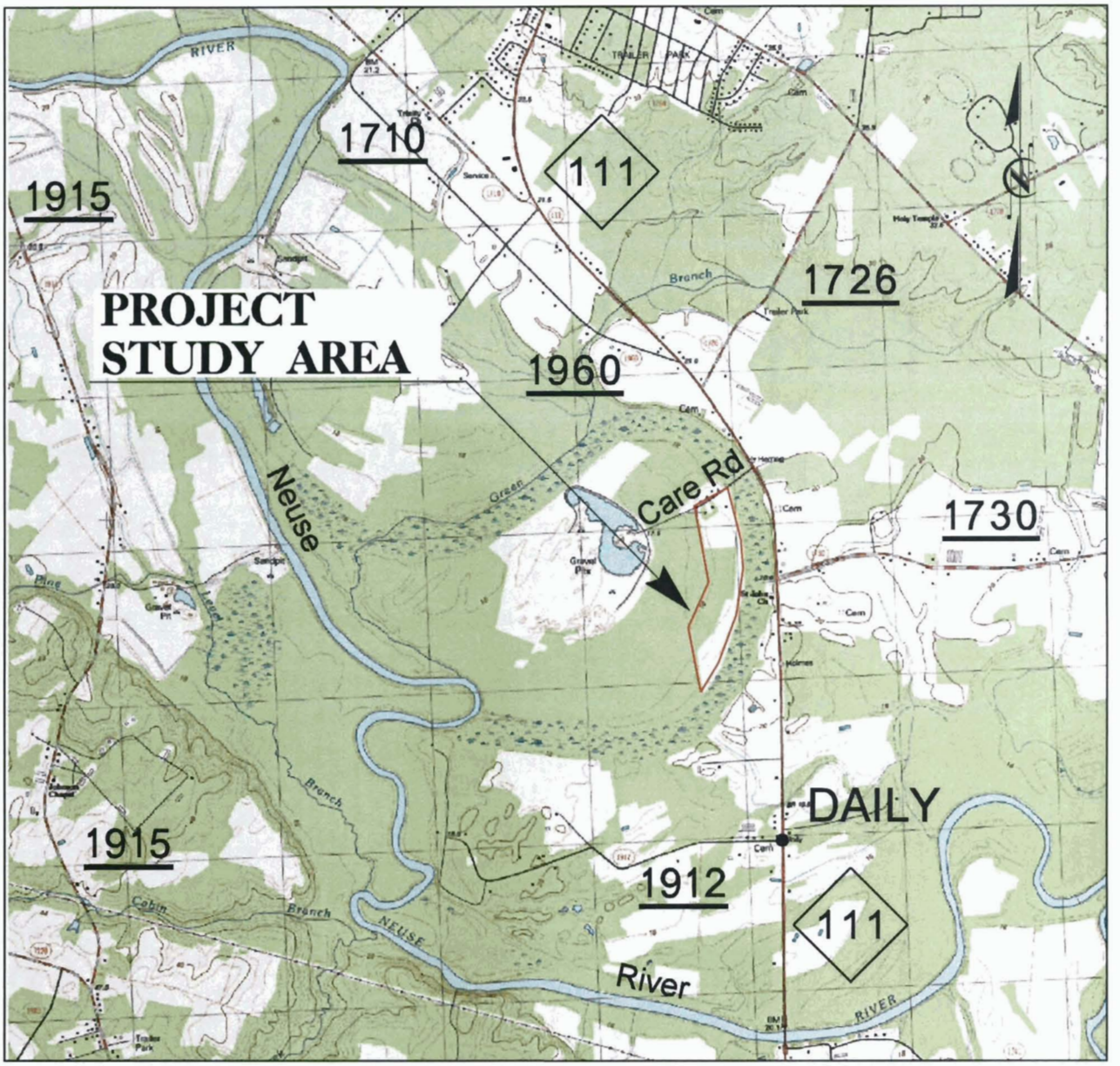
Vicinity Map

Riparian Buffer Planting Plans
Norwood Gainey Property
Wayne County, North Carolina

Date:	1/27/06	Figure:	1.4.1



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USGS Topographic Map

SOUTHEAST GOLDSBORO
1982

Riparian Buffer Planting Plans
Norwood Gainey Property
Wayne County, North Carolina

Date: 1/27/06	Figure: 1.4.2

2.0 WATERSHED CHARACTERIZATION

2.1 Drainage Area

The drainage area of the 58.38-acre project study area is approximately 67 acres. Man-made drainage ditches surrounding most the project study area intercept much of the water flow before it reaches the areas proposed for riparian buffer restoration. The extent of these drainage ditches is depicted in figure 7.0.1 Existing Conditions.

2.2 Surface Water Classification / Water Quality

The project study area is adjacent to Bouge Swamp, which is a historic oxbow swamp system of the Neuse River. Bouge Swamp does not have an individual Stream Index Number (SIN) or a Best Usage Classification according to the North Carolina Waterbodies Report website provided by North Carolina Department of Environment and Natural Resources (DENR). The ditches located in the project study area flow generally in a southerly direction into adjacent Bouge Swamp and then into the Neuse River. This particular section of the Neuse River [SIN 27-(56)] has been assigned a Best Usage Classification (BUC) of **C**; **NSW**. Class **C** waters are freshwaters protected for secondary recreation, fishing, aquatic life (including propagation and survival), and wildlife. Secondary recreation is any activity involving human body contact with water on an infrequent or incidental basis. The supplemental classification **NSW** indicates Nutrient Sensitive Waters, which require limitations on nutrient inputs.

2.3 Physiography, Geology and Soils

The project study area is located in the Coastal Plain physiographic province. The topography in the project study area is generally characterized as nearly level to gently sloping. Surface elevations in the project study area range from 55 feet to 58 feet mean sea level. The ditch elevations range between 52 feet and 54.5 feet mean sea level.

Soils development is dependent upon biotic and abiotic factors which include past geologic activities, nature of parent material, environmental and human influences, plant and animal activity, age of sediments, climate, and topographic position. General soils associations incorporate areas with distinctive patterns of soils, relief, and drainage. Overall, soils within the project study area have been significantly disturbed by agricultural or borrow pit development. Increased runoff and its associated elevated water velocities contribute to higher erosion potential. The Soil Survey of Wayne County, North Carolina (USDA 1974) lists the following soil mapping units as occurring within the project study area: Dragston loamy sand, Lumbee sandy loam, and Leaf loam (figure 3.0.2). Lumbee sandy loam and Leaf loam are considered to be hydric soils. Dragston loamy sand is a non-hydric soil that may contain hydric inclusions. More detailed soil information is provided in later sections of this report.

2.4 Existing and Historical Land Use

The project study area is rural in nature and with the surrounding landscape dominated by a mixture of forested communities and agricultural land.

The project study area has been historically utilized for crop production. The most recent crops planted were soybeans. A small borrow pit has been excavated along the southern boundary of the project study area. A portion of this borrow area has become naturalized with the remainder consisting of open water. Adjacent land use consists of timberland, Bouge Swamp, and residential homes. The USDA Farm Service does not identify the agricultural land within the project study area as prior converted cropland

2.5 Endangered/Threatened Species

Species with the federal classification of Endangered (E), Threatened (T) or officially Proposed (P) for such listing are protected under the Endangered Species Act (ESA) of 1973 (16 USC 1531 *et seq.*). Within Wayne County these species include: red-cockaded woodpecker (*Picoides borealis*). Records held by the N.C. Natural Heritage Program (NHP) were reviewed on December 8, 2005. No federally protected species have been documented within 3.0 miles of the project study area. Habitat for the red-cockaded woodpecker does not occur within the project study area. Adjacent property to the west contains a significant amount of planted pine, however the groundcover is relatively thick and the pines do not appear to be old enough to support either nesting or foraging habitat for the RCW.

2.6 Cultural Resources

A letter dated 12 December 2005 was submitted to the State Historic Preservation Office (SHPO) requesting comments on the proposed project with regard to cultural and historical resources. A response from SHPO dated 19 December 2005 was received and is included in Appendix C. Additional SHPO coordination will occur upon NCEEP Project Manager approval.

2.7 Potential Constraints

No site constraints that would compromise this project have been identified as of the date of this draft report.

3.0 PROJECT SITE RIPARIAN BUFFER (existing conditions)

The existing riparian buffers adjacent to the onsite agriculture ditches and the borrow pit consist of soybean fields and a dirt access road. Crop cultivation has occurred up to the edge of these ditches in most locations. No areas of concentrated flow were observed along the onsite ditches.

These agriculture ditches average approximately 8 to 10 feet wide and their elevations range from 52 feet to 54.5 feet above mean sea level. Overall, the project study area contains 13,660 linear feet of agriculture ditches. Of this total, 7,471 linear feet occur along the perimeter of the project study area and 6,189 linear feet occur in the

LEGEND

- PROJECT WATERSHED LIMITS
- FOREST
- AGRICULTURAL
- RESIDENTIAL

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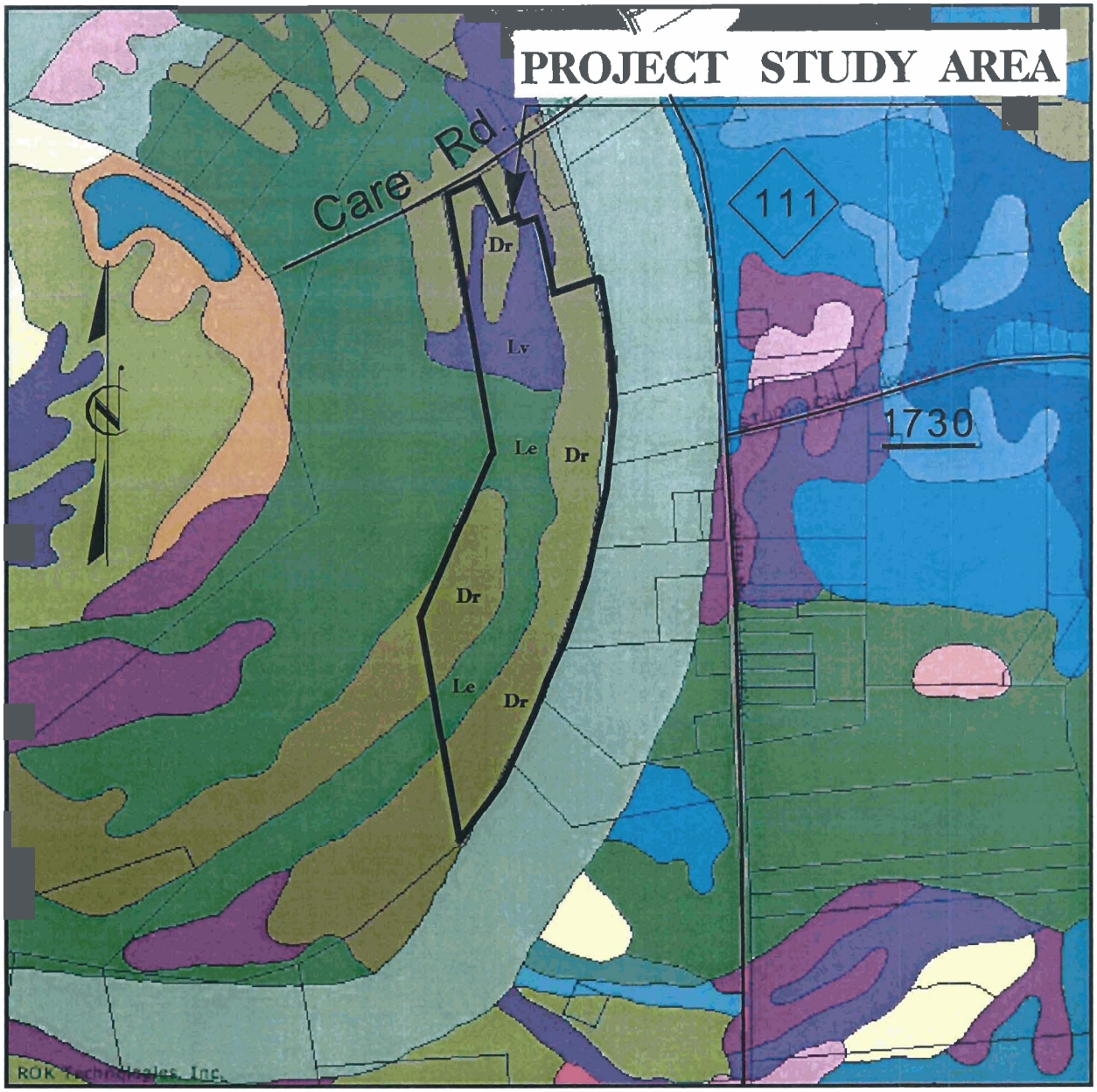
Land Use Map

Riparian Buffer Planting Plans
Norwood Gainey Property
Wayne County, North Carolina

Date: 1/27/06

Figure: 3.0.1



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LEGEND

Symbol	Name
Le –	Leaf loam
Lv –	Lumbee sandy loam
Dr –	Dragston loamy sand

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Soil Survey Map

Riparian Buffer Planting Plans
Norwood Gainey Property
Wayne County, North Carolina

Date: 1/27/06

Figure: 3.0.2

interior of the project site. The proposed riparian buffer restoration plan proposes to buffer all 13, 660 linear feet of ditches.

3.1 Plant Community Characterization

The existing riparian buffers that are adjacent to the onsite agriculture ditches consist of previously harvested soybeans. Native herbaceous vegetation occurring within the actual ditches includes such species as softrush (*Juncus effusus*), cattail (*Typha* sp.), giant cane (*Arundinaria gigantea*), and tearthumb (*Polygonum* sp.). Sapling size tree species also occur sporadically within the ditches and consists of red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), and black willow (*Salix nigra*).

3.2 Hydrologic Characterization

Site hydrology is driven primarily by precipitation and surface runoff. The network of onsite agriculture ditches intercepts the surface runoff and directs the water offsite toward Bouge Swamp. "Guidelines for Riparian Buffer Restoration" indicate that the existing water table depth on sites proposed for buffer restoration should be between three and four feet below the ground surface based on characteristics of soil cores. The gauge data described below is intended to provide additional water table information in addition to the soil characteristics described in later sections.

Additional DWQ guidance described in Internal DWQ Guidance for the Calculation of Riparian Buffer Mitigation Credits and Criteria for Riparian Buffer Mitigation Projects dated 23 October 2002 indicates that the water table within the ditch should be within three feet of the surface. Normal high water indicators within the onsite ditches were evaluated and it was determined that the water table within the onsite ditches do meet this criteria. These indicators consisted of occasional scour lines and the prevalence of aquatic vegetation.

3.2.1 Gauge Data

Two Ecotone® groundwater monitoring gauges were installed on 21 December 2005 in order to document groundwater levels within the project study area. The locations of these two gauges are depicted in the attached plans. Gauge 1 is located along the eastern boundary near the forested edge of Bouge Swamp. Gauge 1 was installed in an area of Dragston sandy loam. Gauge 2 is more centrally located in the project study area and was installed in an area of Leaf loam. Data collected by these two gauges is being downloaded periodically and is provided in Appendix D.

The results show that groundwater levels at Gauge 1 range from 18.8 inches to 34.2 inches below the ground surface. This is within the range of the published seasonal high water table of 1.5 feet for Dragston loamy sand.

Groundwater levels at Gauge 2 range from 17.8 inches to 23.8 inches below the ground surface as of the latest download event on 16 January 2005. This data shows that during the non-growing season (*i.e.* wet season) the water table is often less than 2 feet below the ground surface.

3.3 Soil Characterization

Mr. Josh Witherspoon of ESI, a North Carolina licensed soil scientist, visited the project study area on 16 January 2006. The purpose was to verify the soil-mapping units that are identified by the county soil survey mapping. Additional data that was collected is described below. Eight soil borings were advanced across the project study area to a minimum of four feet below the ground surface. Two of these borings verified two of the soil-mapping units and are documented on Soil Profile Description data forms provided in Appendix B.

3.3.1 Taxonomic Classification

The Soil Survey of Wayne County, North Carolina (USDA 1974) lists the following soil mapping units as occurring within the project study area: Dragston loamy sand (Aquic Hapludult), Lumbee sandy loam (Typic Ochraquult), and Leaf loam (Typic Albaquult).

Soil borings reveal that the majority of the project study area consists of Dragston loamy sand. Small areas consisting of Leaf loam were confirmed, but it is believed to be a result of inclusions within the Dragston series instead of a discrete mapping unit within the project study area. No borings provided conclusive evidence of Lumbee sandy loam within the project study area. The area mapped as containing Lumbee sandy loam is likely Dragston loamy sand based on boring results. If Lumbee sandy loam occurs, it is likely to consist of small inclusions within the Dragston series.

3.3.2 Soil Characteristics

Dragston loamy sand – Dragston loamy sand consists of somewhat poorly drained, nearly level soils in smooth, flat areas on broad interstream divides on uplands and terraces.

The surface horizons generally extended to depths of 6 to 12 inches below the ground surface (BGS) with textures ranging from loamy sand to fine sandy loam. Soil structure within these horizons was generally weak, medium granular structure. The subsoil horizons extended from 6 to 12 inches to 50 inches BGS with textures ranging from fine sandy loam to sandy clay loam. Soil structure within these horizons generally included weak, fine subangular blocky structure.

Leaf loam – Leaf loam consists of poorly drained, nearly level soils on broad, smooth flats on terraces and in shallow drainages on uplands.

The surface horizons generally extended to depths of 8 to 10 inches BGS with textures ranging from sandy loam to loam. Soil structure within these horizons was generally weak, medium granular structure. The subsoil horizons extended 8 to 10 inches to greater than 45 inches BGS with textures ranging from clay loam to clay. Soil structure within these horizons was generally weak medium subangular blocky structure.

3.3.3 Apparent Seasonal High Water Table

Dragston loamy sand – Identification of the seasonal high water (SHWT) table for this evaluation is based on the presence of low chroma (Munsell color of chroma 2 or less) redoximorphic features present in the soil profile. Based on field observations of low chroma colors present within the soil profile, the SHWT for the Dragston soils was at approximately 18 inches BGS.

Leaf loam - Identification of the SHWT for this evaluation is based on the presence of low chroma (Munsell color of chroma 2 or less) redoximorphic features present in the soil profile. Based on field observations of low chroma colors present within the soil profile, the SHWT for the Leaf soils was at approximately 12 inches BGS.

3.3.4 Chemical Analysis

Subsurface soil samples were obtained from the two representative borings in the Dragston and Leaf series. These samples have been sent to a certified lab for analysis. The following parameters will be analyzed: pH, total nitrogen, and total phosphorus. This data will help determine if certain soil amendments are necessary prior to planting. The results of the lab analysis have not been received as of the date of this report submittal. The two soil samples were analyzed by A&L Eastern Laboratories, Inc. in Richmond, Virginia on 1/24/2006. The analysis tested each sample for the following: organic matter, estimated nitrogen release, available phosphorus, potassium, magnesium, calcium, pH, and cation exchange capacity.

Plant growth is limited by nitrogen more than any other substance except water. Generally, the slower and more consistent a Nitrogen form releases, the better it is and the more value it has for the planted specimens. The sample of Dragston loamy sand consists of 0.4% Organic Matter and has an Estimated Nitrogen Release (ENR) rate of 54 lbs/acre. Leaf loam consists of 0.7% Organic Matter and has an ENR rate of 56 lbs/acre. The slightly higher organic matter percentage corresponds to the slightly higher ENR rate for Leaf loam. Most newly planted trees and shrubs loose some root mass during the transplanting process. High ENR rates may promote accelerated canopy growth and too little root growth. The current ENR rates within the project study area are considered very low and fertilizer may be necessary after the transplanted trees and shrubs have been in the ground for one year after planting. Consultation with EEP on February 28, 2006 indicates that lower nitrogen levels are better for young trees and shrubs and most old agriculture fields can be successfully planted if the soil remains in good condition. Typically, problems are not encountered with the sol

condition unless the analysis reveals parameters that are excessively low or high (*i.e* off the scale).

Leaf loam was found to be more acidic with a pH of 5.0 while Dragston loamy sand had a pH of 6.9. The pH of Dragston loamy sand is slightly higher than estimated by the Soil Survey of Wayne County, which ranges from 4.5 – 5.5. The pH of Leaf loam is within the expected range of 4.5 – 6.5 per the soil survey.

The results of the soil analysis do not reveal any significant problems that, in our professional opinion, will negatively affect planting. The Soil Analysis Report is provided in Appendix B.

4.0 REFERENCE BUFFER

The reference buffer is located along the western boundary along additional drainage ditches that exit the project study area. This area was identified for use as a reference area because it is a non-jurisdictional area more consistent with what is proposed in the project study area. Additionally, the soils appear to be more consistent to what has been verified within the project study area.

4.1 Plant Community Characterization

Several areas along the reference buffer were investigated in order to gain a better understanding of the natural plant community composition. Vegetation occurring along the reference buffer includes such species as red maple, sweetgum, water oak (*Quercus nigra*), river birch, post oak (*Quercus phellos*), loblolly pine (*Pinus taeda*), wax myrtle (*Myrica cerifera*), and horsesugar (*Symplocos tinctoria*).

4.2 Hydrologic Characterization

No groundwater monitoring gauges were installed within the reference buffer. Hydrology appears to be influenced primarily by precipitation and surface runoff.

The ditches adjacent to the reference buffer are approximately 5 feet deep and overbank flooding is not evident in the reference buffer.

4.3 Soil Characterization

4.3.1 Taxonomic Classification

The Soil Survey of Wayne County indicates that Dragston loamy sand and Leaf loam occurs within the reference buffer. This is consistent with the soil-mapping units verified throughout the majority of the project study area.

4.3.2 Soil Characterization

The Soil Survey of Wayne County maps the soil type within the reference buffer areas as Dragstom loamy sand and Leaf loam. This was not confirmed due to the disturbed

nature of this area, although the soil profile does resemble the normal Dragston loamy sand and Leaf loam profiles found in the adjacent fields.

4.3.3 Apparent Seasonal High Water Table

The seasonal high water table for Dragston loamy sand appears to be 18 inches below the ground surface and approximately 12 inches below the ground surface for Leaf loam (USDA 1974). This is assuming normal circumstances. The drainage ditch adjacent to the reference buffer is affecting the seasonal high water table due to its depth. This ditch is deeper than the agriculture ditches occurring in the project study area.

5.0 PROJECT SITE WETLAND

5.1 Jurisdictional Wetlands

One jurisdictional wetland area was identified and delineated within the project study area. The jurisdictional delineation was reviewed and approved by Scott Jones of the U.S. Army Corps of Engineers (ACOE) on 29 December 2005. Mr. Jones did not exert federal jurisdiction over the existing agriculture ditches. ACOE will be sending the project team a Notice of Jurisdictional Determination tear sheet. The Notice of Jurisdictional Determination was received from the Corps of Engineers on of March 13, 2006 and is included within Appendix H.

This wetland consists of a remnant borrow/gravel pit that was excavated an unknown number of years ago. The limits of the jurisdictional wetland area are depicted on Figure 7.0.1. A portion of the borrow area consists of open water with depths exceeding 6.0 feet. This open water area can be characterized as a palustrine, unconsolidated bottom (PUB) wetland pursuant to Cowardin *et.al.* (1979) and encompasses approximately 2.3 acres. The open water portion of the wetland grades up into the second wetland type contained in this borrow area. This second wetland type, which consists of an area that was only slightly excavated, can be characterized as a palustrine emergent (PEM) wetland and encompasses approximately 5.4 acres. A refined wetland delineation will be conducted prior to the final report to more accurately distinguish between the open water and the emergent wetland.

5.2 Hydrological Characterization

No hydrology monitoring is being conducted within the existing wetland area. Hydrology within the jurisdictional wetland area is influenced by precipitation, surface runoff, and groundwater. The remnant borrow area is separated from adjacent Bouge Swamp by a small berm and ditch. No outfall was observed leaving the open water area, therefore the hydrologic connection to adjacent Bouge Swamp is through a groundwater connection.

5.3 Soil Characterization

The Soil Survey of Wayne County maps the soil type within the existing wetland area as Dragstom loamy sand. This was not confirmed due to the disturbed nature of this area resulting from previous borrow activities.

5.4 Plant Community Characterization

The plant community occurring in this wetland results from past disturbance associated with borrow activities. It does not represent a natural (*i.e.* undisturbed) plant community that can be easily classified according to Schafale and Weakley (1990) or NatureServe. The wetland community can be characterized primarily as PEM pursuant to Cowardin. Dominant herbaceous species include woolgrass (*Scirpus cyperinus*), softrush, meadow beauty (*Rhexia* sp.), seedbox, beakrush (*Rhynchospora* sp.), and pennywort (*Hydrocotyle umbellata*). Some woody species have recruited into this wetland area and include false willow (*Bacharris angustifolia*) along with red maple and sweetgum seedlings. An area of open water approximately 6 inches deep is present between two adjacent areas of herbaceous vegetation. Small hummocks occur throughout this wetland area and offer topographic gradients that are beneficial to the ecological value of the wetland.

6.0 REFERENCE WETLAND

Bouge Swamp will serve as the reference wetland for the proposed onsite wetland enhancement area.

6.1 Locations and General Description

The reference wetland (Bouge Swamp) is located along the eastern boundary of the project study area. Bouge Swamp consists of a historic oxbow of the Neuse River that has been partially ditched. National Wetlands Inventory (NWI) mapping describes the portion of Bouge Swamp adjacent to the project study area as palustrine, forested, broad-leaved deciduous (PFO1).

6.2 Hydrological Characterization

No groundwater monitoring gauges were installed within the reference wetland. Hydrology in Bouge Swamp is influenced by precipitation, surface runoff and groundwater. Saturation at the surface and inundation has been directly observed within Bouge Swamp on several occasions during field visits. NWI mapping depicts this portion of Bouge Swamp as having a hydrologic regime defined as seasonally flooded and partially ditched.

6.3 Soil Characterization

The Soil Survey of Wayne County indicates that Bibb sandy loam (Typic Fluvaquent) is the primary soil mapping unit within this portion of Bouge Swamp. Bibb sandy loam is a poorly drained soil found on floodplains. Slopes are typically 0 to 2 percent. Infiltration

is moderate and surface runoff is slow. Unless artificially drained, this soil has severe limitations for most uses. Most acreage is in mixed hardwoods and pines (USDA 1974).

6.4 Plant Community Characterization

Dominant woody vegetation occurring within Bouge Swamp includes such species as red maple, sweetgum, sweet bay (*Magnolia virginiana*), ironwood, (*Carpinus caroliniana*), water oak, river birch, and titi (*Cyrilla racemiflora*). Scattered bald cypress (*Taxodium distichum*) was also present. The herbaceous layer is sparse and consist of black stem chain fern (*Woodwardia virginica*), giant cane, and sphagnum moss (*Sphagum* sp.). This natural plant community can be classified as a Coastal Plain Bottomland Hardwood Forest based on Schafale and Weakley (1990). This portion of Bouge Swamp is an abandoned oxbow that appears to have possibly reverted from an oxbow lake off the Neuse River to a mature hardwood wetland community over possibly hundreds of years.

7.0 PROJECT SITE RESTORATION PLAN

7.1 Restoration Project Goals and Objectives

The objective is to effectively restore forested riparian buffers along the onsite agriculture ditches that are conveying surface runoff toward Bouge Swamp and ultimately into the Neuse River. It is anticipated that approximately 13,660 linear feet of riparian buffer encompassing approximately 31.36 acres (based on 50-foot buffer on each side of ditch) can be restored along the onsite agriculture ditches. These restored buffers will consist of forested communities extending a minimum of 50 feet from the edge of each agriculture ditch. Zones of herbaceous buffer (grassland) may be incorporated beyond the initial 50-foot buffer. These grassland buffers will encompass approximately 26.2 acres. The buffers will provide habitat protection as a result of the restoration (e.g., food for foraging wildlife). There will also be removal of nutrient source as a result of elimination of agricultural practices.

Wetland enhancement will be accomplished by establishing native wetland trees and shrubs within the suitable portion of the existing borrow area. This borrow area has been determined to be jurisdictional by the ACOE. However, a portion of this borrow area currently consists of open water and cannot effectively be used for wetland enhancement under the current project goals and objectives. The open water area will remain in its current condition. It is anticipated that approximately 5.4 acres of riparian wetland enhancement will result from this project.

7.1.1 Target Wetland Communities

The target wetland community resulting from the wetland enhancement activities will comprise tree and shrub species found in the adjacent Bouge Swamp system. Bouge Swamp is classified as a PFO1C wetland and is consistent with a Coastal Plain Bottomland Hardwood Forest. Hydrology within the wetland enhancement area will be

influenced by precipitation, surface runoff, groundwater, and overbank flooding from the adjacent open water area. The hydrologic influences are consistent with what would be expected from a natural bottomland hardwood system.

7.1.2 Target Riparian Buffer Communities

The target community for the riparian buffer restoration is a Mesic Mixed Hardwood Forest (Coastal Plain Subtype) based on Schafale and Weakley (1990). This community type often borders Coastal Plain Bottomland Hardwoods such as Bouge Swamp. Soils typically consist of moist upland soils such as those in the taxonomic subgroup of Aquic Hapludults, which includes Dragston loamy sand.

7.2 Soil Preparation and Amendment

Onsite soil preparation may include plowing or ripping the soil surface to improve compacted soil and promote micro-topography per the Guidelines for Riparian Buffer Restoration. Earthwork activities will be very minor and will not cause any alterations to the existing floodplain elevations. Possible soil amendments are not known at this time. Results of the lab analysis have not been received as of the date of this draft report.

7.3 Natural Plant Community Restoration

The restoration of the riparian buffers and the enhancement of the wetland area will be accomplished through planting desirable native vegetation at appropriate densities per the Guidelines for Riparian Buffer Restoration.

Ecosystem Enhancement Program

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EXISTING 10' SOIL ACCESS ROAD

EXISTING 10' SOIL ACCESS ROAD

PROPOSED CONSTRUCTION LIMITS

REFERENCE BUFFER

REFERENCE BUFFER

BOGUE SWAMP – REFERENCE WETLAND

GAUGE 2 ■ EXISTING DITCHES ARE NON-JURISDICTIONAL PER 12-29-05 ACOE SITE VISIT

GAUGE 1 ■

JURISDICTIONAL PER 12-29-05 ACOE SITE VISIT

EXISTING WATER GRAVEL PIT

5 6 7 8 2 4 3 1

UNITED STATES STEEL AND CARNEGIE PENSION FUND PROPERTY db 507 pg 362 PLAT CABINET B SLIDE 234

JAMES DERWOOD DAWSON, ET UX PROPERTY db 807 pg 747

DURWOOD R. KENNEDY PROPERTY db 755 pg 146

ALVIN SINGLETON, ET UX PROPERTY db 705 pg 157

DURWOOD P. HOLMES, ET UX PROPERTY db 1919 pg 34

NORWOOD A. GAINEY, JR ESTATE FILE 90E-636

DURWOOD R. KENNEDY PROPERTY db 1070 pg 352 PLAT CABINET C SLIDE 380 TRACT NO. 2

DURWOOD R. KENNEDY PROPERTY db 1083 pg 356 PLAT CABINET C SLIDE 380 TRACT NO. 1

COUNTY OF WAYNE PROPERTY db 1903 pg 325 PLAT CABINET K SLIDE 73-H TRACT NO. 3

COUNTY OF WAYNE PROPERTY db 1903 pg 325 PLAT CABINET K SLIDE 73-H TRACT NO. 1

NORTH JETH WORLEY, II PROPERTY db 1824 pg 251

EXISTING DITCH

EXISTING UTILITY POLE (TYPICAL)

50' RIPARIAN BUFFER (FROM EDGE OF WEST BANK OF BOGUE SWAMP)

WEST EDGE OF BOGUE SWAMP

POINT WITHIN DITCH

LEGEND

● - Soil Boring

■ - Groundwater Monitoring Gauges

150 0 150 300

SCALE

Existing Conditions

Riparian Buffer Planting Plans
Norwood Gainey Property
Wayne County, North Carolina

Date: 1/27/06

Figure: 7.0.1

Ecosystem Enhancement PROGRAM

KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE #202 RALEIGH, N.C. 27606
(919) 851-6066

RIPARIAN BUFFER ZONE 1

RIPARIAN BUFFER HERBACEOUS ZONE

EXISTING 10' SOIL ACCESS ROAD

EXISTING 10' SOIL ACCESS ROAD

RIPARIAN BUFFER ZONE 2

PROPOSED CONSTRUCTION LIMITS

OPEN WATER

EXISTING WATER GRAVEL PIT

UNITED STATES STEEL AND CARNEGIE PENSION FUND PROPERTY db 507 pg 362 PLAT CABINET B SLIDE 234

JAMES DERWOOD DAWSON, ET. UX. PROPERTY db 807 pg 747

DURWOOD R. KENNEDY PROPERTY db 705 pg 146

ALVIN SINGLETON, ET. UX. PROPERTY db 705 pg 157

DURWOOD P. HOLMES, ET. UX. PROPERTY db 1919 pg 34

NORWOOD A. GAINEY, JR. PROPERTY ESTATE FILE: 90E-636

DURWOOD R. KENNEDY PROPERTY db 1070 pg 352 PLAT CABINET Q SLIDE 380 TRACT NO. 2

DURWOOD R. KENNEDY PROPERTY db 1083 pg 356 PLAT CABINET Q SLIDE 380 TRACT NO. 1

COUNTY OF WAYNE PROPERTY db 1903 pg 325 PLAT CABINET K SLIDE 73-H TRACT NO. 3

COUNTY OF WAYNE PROPERTY db 1903 pg 325 PLAT CABINET K SLIDE 73-H TRACT NO. 1

WORTH JETH WORLEY, II PROPERTY db 1624 pg 251

WORTH JETH WORLEY, II PROPERTY db 1624 pg 251

NORWOOD A. GAINEY, JR. PROPERTY ESTATE FILE: 90E-636 SEE db 149 pg 159

EXISTING UTILITY POLE (TYPICAL)

POINT WITHIN DITCH

WEST EDGE OF BOUGE SWAMP

50' RIPARIAN BUFFER (FROM EDGE OF WEST BANK OF BOUGE SWAMP)

ZONE 1

ZONE 2

WETLAND ENHANCEMENT AREA

RIPARIAN BUFFER HERBACEOUS ZONE

RIPARIAN BUFFER ZONE 2

RIPARIAN BUFFER ZONE 1

PROPOSED CONSTRUCTION LIMITS

150 0 150 300
SCALE

Proposed Conditions

Riparian Buffer Planting Plans
Norwood Gainey Property
Wayne County, North Carolina

Date: 1/27/06 | Figure: 7.0.2

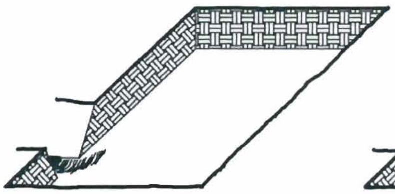
PLANTING DETAILS

SEEDLING / LINER BAREROOT PLANTING DETAIL

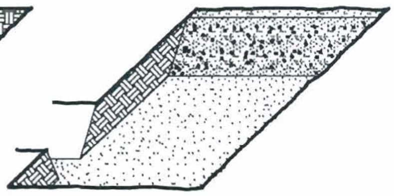
HEALING IN

1. Locate a healing-in site in a shady, well protected area.

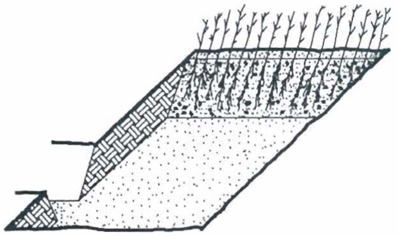
2. [illegible] a sloping angle.



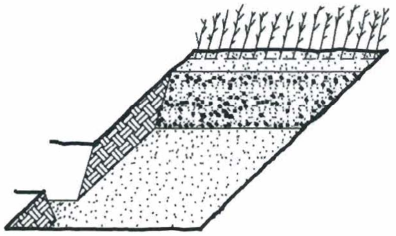
3. Backfill the trench with 2IN. of compost. Place a 2IN. layer of compost at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.



5. Place a 2IN. layer of compost over the roots maintaining a sloping angle.



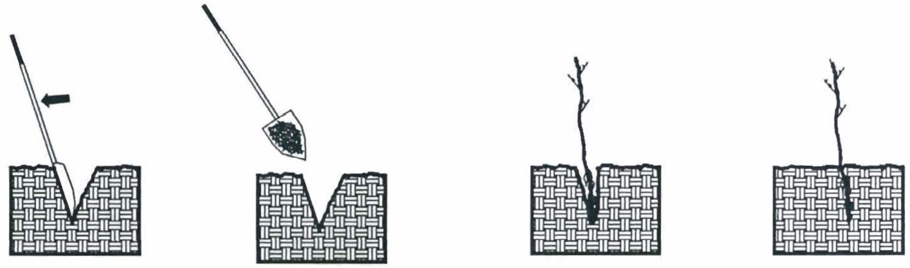
6. Repeat layers of plants and compost as necessary and water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 24inches (24IN.) below the root collar.

PLANTING METHOD USING A SHOVEL



1. Dig hole with shovel to appropriate depth and width for seedling.
2. Remove soil from hole with shovel. Hole shall not be made by compacting soil away from the hole.
3. Remove shovel and place seedling at correct depth.
4. Fill hole with soil. Tamp soil to remove air pockets. Water Thoroughly.

SCALE: Not To Scale

Ecosystem Enhancement PROGRAM

KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE #202 RALEIGH, N.C. 27606
(919) 851-6066

Details

Riparian Buffer Planting Plans
Norwood Gainey Property
Wayne County, North Carolina

Date: 1/27/06	Figure: 7.3.1

7.3.1 Riparian Buffer Restoration

The 50-foot riparian buffers adjacent to the onsite agriculture ditches will be planted with native bare root tree species on 10-foot centers providing a density of approximately 440 trees per acre. A density of 320 surviving trees per acre is necessary for success at the end of the anticipated 5-year monitoring period. Zones 1 and 2 of the restored riparian buffers will be planted with the following tree species: persimmon (*Diospyros virginiana*), river birch, water oak, swamp chestnut oak (*Quercus michauxii*), winged elm (*Ulmus alata*), sassafras (*Sassafras albidum*), black cherry (*Prunus serotina*), horsesugar, and flowering dogwood (*Cornus florida*).

Native shrub species will be incorporated into the Zone 2 planting plan in order to provide more diversity and to enhance wildlife habitat. Shrubs will be planted on 13-foot centers providing a density of approximately 260 shrubs per acre. Although these shrubs will be monitored, they will not contribute to the required 320 stems/acre necessary for success of the planted trees. The following shrub species are proposed for planting within Zone 2: highbush blueberry (*Vaccinium corymbosum*), red chokeberry (*Aronia arbutifolia*), American beautyberry (*Calicarpa americana*), sweet pepperbush (*Clethra alnifolia*), and winged sumac (*Rhus copallina*).

A seed mixture of perennial native grasses is proposed for use in the herbaceous areas outside the immediate 50-riparian buffer. This native grass seed mixture will also be spread throughout the Zone 1 and Zone 2 in order to provide additional cover and increase the overall effectiveness of the riparian buffer. The native grass mixture will consist of a mixture of several of the following native grass species: broomsedge (*Andropogon virginicus*), deertongue (*Panicum clandestinum*), switchgrass (*Panicum virgatum*), indiangrass (*Sorghastrum nutans*), purple-top (*Tridens flavus*).

It is anticipated that the riparian buffer planting will occur either outside the normal growing season or very early in the growing season to reduce the chance of stressing the plants. The normal growing season for Wayne County is identified as March 17 – November 14 by the county soil survey.

7.3.2 Wetland Enhancement

The 5.4 acre wetland enhancement area will be planted with native bare root wetland trees on 10-foot centers providing a density of approximately 440 per acre. A density of 320 surviving trees per acre is necessary for success at the end of the anticipated 5-year monitoring period. Tree species proposed for planting include the following: red maple, sweet bay, river birch, and green ash (*Fraxinus pennsylvanica*). Shrub species proposed for planting include Virginia willow (*Itea virginica*) and red chokeberry (*Aronia arbutifolia*).

7.3.3 On-site Invasive Species Management

The monitoring plan will address noxious or invasive species by conducting bi-annual inspections of the restoration site. One inspection will occur early in the growing season and the second will occur concurrently with the annual monitoring report that is typically conducted in the fall. Occurrences of invasive species will immediately be reported to NCEEP. There are currently no problems with invasive weed within the limits of proposed planting; however there is a possibility that invasive species could recruit into the area during the growing season if the field lies fallow until future planting occurs. A temporary cover of rye grass may help suppress invasive weeds during the 2006 growing season.

8.0 PERFORMANCE CIRTERIA AND MONITORING PLAN

8.1 Riparian Buffers

Success criteria for riparian buffer restoration are outlined in the Guidelines for Riparian Buffer Restoration. The restored riparian buffers will be considered successful if a density of 320 trees per acre can be demonstrated at maturity. It is assumed that the normal monitoring period for a mitigation site such as this will be five years. The shrub planting is proposed as supplemental to the tree planting and will not be included in the documented success criteria. However, the survival rates of the planted shrubs will be documented throughout the monitoring period concurrently with the tree monitoring. As with the shrubs, the herbaceous planting zone outside of Zone 2 will not be tied directly to success criteria although total herbaceous coverage of 80 percent is desirable at the end of the monitoring period. The herbaceous zone will also be monitored concurrently with the forested buffer.

Mitigation monitoring guidelines require that 5 percent of the total mitigation type must be sampled. Therefore, 5 percent of the total area restored as a forested riparian buffer will be sampled by establishing the appropriate number of 10 meter (m) x 10m plots. The sample plot locations will be marked with sections of metal conduit and flagging tape. Surviving trees and shrubs within these plots will be counted during each monitoring event to document surviving density within the mitigation site. Representative photographs of each sample plot will be taken and included with the monitoring report. No hydrology monitoring is proposed within the riparian buffer restoration areas.

Five percent of the herbaceous zone will also be sampled via 10m x 10m sample plots. Percent coverage of planted and naturally recruited vegetation will be estimated. Representative photographs of each sample plot will be taken and included with the monitoring report.

8.2 Wetland Enhancement

Success of the wetland enhancement area also requires 320 trees to be surviving at the end of the five-year monitoring period. Shrubs will be documented during monitoring, but will not be included as part of the success criteria. The two monitoring wells currently located in the existing fields will be relocated to the wetland enhancement area in order to document seasonal hydrologic conditions. No success criteria are proposed for the open water area that is to remain adjacent to the wetland enhancement area.

Mitigation monitoring guidelines require that 5 percent of the total mitigation type must be sampled. An appropriate number of 10m x 10m sample plots will be established in the wetland enhancement area. The sample plot locations will be marked with sections of metal conduit and flagging tape. Surviving trees and shrubs within these plots will be counted during each monitoring event to document surviving density within the mitigation site. Representative photographs of each sample plot will be taken and included with the monitoring report. Hydrology data will be downloaded from the monitoring wells located in the wetland enhancement area monthly during the growing season and every two months during the non-growing season. No monitoring is proposed for the open water area adjacent to the wetland enhancement area.

8.3 Schedule / Reporting

The appropriate number of sample plots will be immediately established onsite following planting of the riparian buffers and the wetland enhancement area. The location of each of these plots will be located with GPS and depicted in subsequent monitoring reports. A baseline (as-built) report will be prepared that documents the number of planted trees and shrubs within each of the established sample plots. Results from subsequent monitoring events will be compared back to these baseline numbers to document percent survival and density. The first annual monitoring event will occur after one complete growing season. The results of the first annual monitoring event will be compiled into a report suitable for submittal to NCEEP. Subsequent annual monitoring reports will be completed at approximately the same time each year to provide consistency in data collection and reporting.

APPENDIX A
PROJECT SITE PHOTOGRAPHS

Top of Existing Wetland Area Southeastern Corner of Property

Northern Section of Planting Area

Southern Section of Planting Area

Existing Channel along Western Property Boundary

Existing Open Water Borrow Area

Swale Connecting Enhancement Area to Open Water

Existing Wetland Enhancement Area

Existing Wetland Enhancement Area

APPENDIX B
SOIL PROFILE DESCRIPTIONS

ENVIRONMENTAL SERVICES, INC.
SOIL PROFILE DESCRIPTIONS

Client: NCEEP / Ko + Assoc. Date: 1-16-06
Project Name: Norwood Gainey Project No.: ERO5-148
County: Wayne State: NC
Location: Site/Field No.: Boring # 1
Soil Series: Dragston loamy sand
Apparent Water Table: 48" Seasonal High Water Table: 18"
Vegetation: cut soybean field Slope: 0-2
Boring Terminated At: 60"

Horizon	Depth (inches)	Matrix	Color	Mottles	Color	Texture	Struct	Consistence	Boundary
A_p	0-6	10YR 3/2				fsl	1 fsbk	mvfr	
B1	6-18	10YR 5/6		C 2 F	10YR 5/8	fsl	1 fsbk	mvfr	c/w
B_2	18-22	10YR 5/8		C 2 D	10YR 6/2	fsl	1 fsbk	mvfr	c/w
B_3	22-28	10YR 5/4		C 2 D	10YR 6/2	fsl	1 fsbk	mvfr	c/w
				C 2 D	10YR 5/8	fsl	1 fsbk	mvfr	c/w
B_{g1}	28-34	2.5Y 6/2		C 3 D	10YR 5/8	fsl	1 fsbk	mvfr	g/w
B_{g2}	34-45	2.5Y 6/2		C 3 D	10YR 5/8	scl	1 fsbk	mvfr	g/w
B_{g3}	45-52	10YR 6/2			10YR 5/4	fsl	1 fsbk	mvfr	g/w
Cg	52-60+	2.5Y 6/2		F 2 D	10YR 5/6	sl	1mgr	mvfr	g/w

COMMENTS:

DESCRIBED BY: Josh W.

ENVIRONMENTAL SERVICES, INC.
SOIL PROFILE DESCRIPTIONS

Client: NCEEP / KO + Assoc. Date: 1-16-06
Project Name: Norwood Gainey Site Project No.: EP05-148
County: Wayne State: NC
Location: Site/Field No.: Boring # 2
Soil Series: Leaf loam
Apparent Water Table: 32" Seasonal High Water Table: <12"
Vegetation: cut soy beans Slope: 0-2%
Boring Terminated At: 60"

Horizon	Depth (inches)	Matrix	Color	Mottles	Color	Texture	Struct	Consistence	Boundary
Ap	0-8	10YR3/2				SL	1fsbk	mfr	c/w
B1g	8-14	10YR3/1		C2P	5YR3/4	CL		mf	g/w
Btg1	14-22	10YR5/2		C2P	7.5YR5/8	C	1abk	MVf	g/w
Btg2	22-35	10YR4/1		C2P	7.5YR5/8	C	1abk	(massive)	g/w
Btg3	35-46	10YR5/1		C2P	7.5YR5/6	C	1abk	(massive)	g/w
Cg1	46-60+	10YR5/2				S	1mgr	MVfr	

COMMENTS:

DESCRIBED BY: Josh W.

ENVIRONMENTAL SERVICES, INC.
SOIL PROFILE DESCRIPTIONS

Client: NCEEP / Ko + Associates
Project Name: Norwood Gainey Site
County: Wayne
Location: Norwood Gainey Site
Soil Series: Dragston loamy sand
Apparent Water Table: 44"
Vegetation: Fallow soy bean field
Boring Terminated At: 60"

Date: 1-16-06 / 3-7-06
Project No.: EP05-148
State: NC
Site/Field No.: Boring # 3
Seasonal High Water Table: 16"
Slope: 0-2%

Horizon	Depth (inches)	Matrix	Color	Mottles	Color	Texture	Struct	Consistence	Boundary
Ap	0-6	10YR 3/3				fsl	1fsk bk	mufr	
B1	6-14	10YR 5/6				fsl	↓	↓	c/w
B2	14-22	10YR5/8		C 2 F	10YR6/3	fsl	↓	↓	c/w
B3	22-30	10YR5/4		C 2 D	10YR6/2	fsl	↓	↓	c/w
Bg1	30-34	2.5Y 6/2		C 3 D	10YR5/8	fsl	↓	↓	c/w
Bg2	34-45	2.5Y6/2		C 3 D	10YR5/8	scl	↓	↓	g/w
Bg3	45-52	10YR6/2		C 3 D	10YR5/3	fsl	↓	↓	g/w
Cg	52-60+	2.5Y6/2		F 2 D	10YR5/6	sl	1 mgr	↓	g/w

COMMENTS:

DESCRIBED BY: JW / JH

ENVIRONMENTAL SERVICES, INC.
SOIL PROFILE DESCRIPTIONS

Client: NCEEP / Kot Associates
Date: 1-16-06 / 3-7-06
Project Name: Norwood Gainey Site
Project No.: EP05-148
County: Wayne
State: NC
Location: Norwood Gainey Site
Site/Field No.: Boring # 4
Soil Series: Leaf loam
Apparent Water Table: 32"
Seasonal High Water Table: < 12"
Vegetation: fallow soy bean field
Slope: 0-2%
Boring Terminated At: 60

Horizon	Depth (inches)	Matrix	Color	Mottles	Color	Texture	Struct	Consistence	Boundary
A_p	0-9	10YR3/2				SL	lfsbk	mfr	c/w
Bt_g	9-14	10YR4/1		C2P	10YR5/6	CL	lfsbk	mf	g/w
Btg_2	14-22	10YR5/2		C2P	7.5YR5/8	C	labk	mvf	g/w
Btg_2	22-36	10YR4/1		C2P	7.5YR5/8	C	labk	mvf	g/w
Btg_3	36-48	10YR5/1		C2P	7.5YR5/6	C	labk	mvf	g/w
Cg_1	48-60+	10YR5/2				S	1 sgr	mvfr	

COMMENTS:

DESCRIBED BY: JW / JH

ENVIRONMENTAL SERVICES, INC.
SOIL PROFILE DESCRIPTIONS

Client: NCEEP / KD + Associates
Project Name: Norwood Gainey Site
County: Wayne
Location: Norwood Gainey Site
Soil Series: Dragston loamy sand
Apparent Water Table: 44"
Vegetation: Fallow soy bean field
Boring Terminated At: 60"

Date: 1-16-06 / 3-7-06
Project No.: EP05-148
State: NC
Site/Field No.: Boring # 5
Seasonal High Water Table: 16"
Slope: 0-2%

Horizon	Depth (inches)	Matrix	Color	Mottles	Color	Texture	Struct	Consistence	Boundary
Ap	0-8	10YR 3/2				fsl	1fskb	mvfr	
B1	8-18	10YR5/6		c2F	10YR5/8	fsl			c/w
B2	18-25	10YR5/8		c2D	2.5Y6/3	S			c/w
	25-30	10YR5/8		c2P	2.5Y6/3	S			c/w
Bg1	30-34	10YR5/4		c2D	10YR6/2	LS			c/w
Bg2	34-45	2.5Y6/2		c2D	10YR6/8	LS			g/w
Bg3	45-50	10YR6/2		c2D	10YR5/4	LS			g/w
Cg	50-60	10YR6/2		f2D	10YR5/6	LS	1mgr		g/w

COMMENTS:

DESCRIBED BY: JW / JH

ENVIRONMENTAL SERVICES, INC.
SOIL PROFILE DESCRIPTIONS

Client: NCEEP / K&A Associates
Date: 1-16-06 / 3-7-06
Project Name: Norwood Gainey Site
Project No.: EP05-148
County: Wayne
State: NC
Location: Norwood Gainey Site
Site/Field No.: Boring # 6
Soil Series: Leaf loam
Apparent Water Table: 34"
Seasonal High Water Table: ∠12
Vegetation: Fallow soy bean field
Slope: 0-2%
Boring Terminated At: 60"

Horizon	Depth (inches)	Matrix	Color	Mottles	Color	Texture	Struct	Consistence	Boundary
AP	0-10	10YR 3/2				SL	1fsbk	mfr	a/w
Btg1	10-14	10YR 3/1		C 2 D	10YR 3/6	CL	1fsbk	mf	g/w
Btg1	14-22	10YR 4/2		C 2 P	7.5YR 5/8	C	1cbk	mvf	
Btg2	22-35	10YR 4/1		C 2 P	7.5YR 5/8	C	↓	mvf	
Btg3	35-45	10YR 5/1		C 2 P	7.5YR 5/6	C	↓	mvf	
Cg	45-60+	10YR 5/2				S	1mgr	mvfr	↓

COMMENTS:

DESCRIBED BY: JW / JHA

ENVIRONMENTAL SERVICES, INC.
SOIL PROFILE DESCRIPTIONS

Client: NCEEP / Kot Associates
Date: 1-16-06 / 3-7-06
Project Name: Norwood Gainey Site
Project No.: EP05-148
County: Wayne
State: NC
Location: Norwood Gainey Site
Site/Field No.: Boring # 7
Soil Series: Dragston loamy sand
Apparent Water Table: 46"
Seasonal High Water Table: 18"
Vegetation: Fallow soy bean field
Slope: 0-2%
Boring Terminated At: 60"

Horizon	Depth (inches)	Matrix	Color	Mottles	Color	Texture	Struct	Consistence	Boundary
A_p	0-8	10YR3/2				fsl	lfsbk	mfr	c/w
B_1	8-18	10YR5/6		c2F	10YR5/8	fsl			
B_2	18-24	10YR5/8		c2F	10YR6/2	fsl			
B_3	24-28	10YR5/5		c2D	10YR6/1	fsl			
B_{g1}	28-35	2.5Y6/2		C3D	10YR5/8	fsl			g/w
B_{g2}	35-45	2.5Y6/2		C3D	10YR5/8	scl			
B_{g3}	45-50	10YR6/1		F2D	10YR5/4	fsl			
C_g	50-60+	2.5Y6/2		F2D	10YR5/8	fsl	lmgr		

COMMENTS:

DESCRIBED BY: JW / JH

ENVIRONMENTAL SERVICES, INC.
SOIL PROFILE DESCRIPTIONS

Client: NCEEP / Kci + Associates
Date: 1-16-06 / 3-7-06
Project Name: Norwood Gainey Site
Project No.: EE05-148
County: Wayne
State: NC
Location: Norwood Gainey Site
Site/Field No.: Boring # 8
Soil Series: Dragston loamy sand
Apparent Water Table: 46"
Seasonal High Water Table: 18"
Vegetation: Fallow soy bean field
Slope: 0-2%
Boring Terminated At: 60"

Horizon	Depth (inches)	Matrix	Color	Mottles	Color	Texture	Struct	Consistence	Boundary
A_p	0-6	10YR3/2				fsl	1fsbk	mvfr	C/W
B_1	6-16	10YR5/6		C2F	10YR5/8	fsl	↓	↓	↓
B_2	16-22	10YR5/6		C2D	10YR5/8	fsl	↓	↓	↓
B_3	22-28	10YR5/4		C2D	10YR6/2	fsl	↓	↓	↓
				C2D	10YR5/6	fsl	↓	↓	
B_{g1}	28-35	2.5Y6/2		C3D	10YR5/6	fsl	↓	↓	g/w
B_{g2}	35-45	2.5Y6/2		C3D	10YR5/8	scl	↓	↓	↓
B_{g3}	45-54	10YR6/2		F2D	10YR5/4	fsl	↓	↓	↓
C_g	54-60+	10YR6/1		F2D	10YR5/4	sl	1mgr	↓	↓

COMMENTS:

DESCRIBED BY: JW / JH

APPENDIX C
SHPO 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

February 23, 2006

Scott Siebel
Environmental Services, Inc.
524 South New Hope Road
Raleigh, NC 27610

Re: Ecosystem Enhancement Program, Norwood Gainey Site, Wayne County, ER 05-2870

Dear Mr. Siebel :

Thank you for your letter of February 10, 2006, providing additional information concerning the above project.

We have conducted a review of the project and are aware of no historic resources that would be affected by the project. Therefore, we have no comment on the project as proposed.

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, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above-referenced tracking number.

Sincerely,

Renee Gledhill-Earley

Peter Sandbeck

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

December 19, 2005

Scott Seibel, RPA
Senior Archaeologist
Environmental Services, Inc.
524 South New Hope Road
Raleigh, NC 27610

Re: Riparian Buffer, Norwood Gainey Site, Wayne County, North Carolina, ER 05-2870

Dear Mr. Seibel:

Thank you for your letter of December 12, 2005, concerning the above project. Before we can adequately review and address your request, we need the following information:

- Any information regarding wetland delineation surveys that have been conducted in association with this project, specifically the extant soil types and slope percentage
- If applicable, drainage patterns
- Information pertaining to the depth below surface of any earth moving activities that are anticipated in conjunction with this project

This information will assist us in determining if an archaeological survey is warranted for this proposed undertaking.

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 considerations. If you have any questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919.733.4763. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

Peter Sandbeck

APPENDIX D
HYDROLOGICAL GAUGE DATA

Ecotone Unit: Level Logger
Gauge No. 1 Norwood Gainey Site
Serial Number: 00000AB373DD
Probe Number: 000001D34FAC
Log Read: 12/21/2005 12:44:53
Soil Series: Dragston loamy sand

Date	Time	Level	Units
12/21/2005	18:00	-25	in
12/22/2005	18:00	-27	in
12/23/2005	18:00	-28.6	in
12/24/2005	18:00	-30	in
12/25/2005	18:00	-18.8	in
12/26/2005	18:00	-25.1	in
12/27/2005	18:00	-28.3	in
12/28/2005	18:00	-29.5	in
12/29/2005	18:00	-20	in
12/30/2005	18:00	-25.2	in
12/31/2005	18:00	-27.4	in
1/1/2006	18:00	-30.2	in
1/2/2006	18:00	-26.9	in
1/3/2006	18:00	-15.4	in
1/4/2006	18:00	-20.5	in
1/5/2006	18:00	-23.5	in
1/6/2006	18:00	-26.1	in
1/7/2006	18:00	-29	in
1/8/2006	18:00	-30.7	in
1/9/2006	18:00	-31.7	in
1/10/2006	18:00	-32.8	in
1/11/2006	18:00	-32.9	in
1/12/2006	18:00	-33.9	in
1/13/2006	18:00	-34.2	in
1/14/2006	18:00	-28.5	in
1/15/2006	18:00	-32.9	in

Ecotone Unit: Level Logger
Gauge No. 2 - Norwood Gainey Site
Serial Number: 00000B651738
Probe Number: 000001D328EF
Log Read: 12/21/2005 13:24:13
Soil series: Leaf loam

Date	Time	Level	Units
12/21/2005	18:00	-22.7	in
12/22/2005	18:00	-23.3	in
12/23/2005	18:00	-23.5	in
12/24/2005	18:00	-23.8	in
12/25/2005	18:00	-20.1	in
12/26/2005	18:00	-22.4	in
12/27/2005	18:00	-22.7	in
12/28/2005	18:00	-22.5	in
12/29/2005	18:00	-20.1	in
12/30/2005	18:00	-21.4	in
12/31/2005	18:00	-22.2	in
1/1/2006	18:00	-23.1	in
1/2/2006	18:00	-19.2	in
1/3/2006	18:00	-17.8	in
1/4/2006	18:00	-19.3	in
1/5/2006	18:00	-20.5	in
1/6/2006	18:00	-21.7	in
1/7/2006	18:00	-22.4	in
1/8/2006	18:00	-23	in
1/9/2006	18:00	-23.3	in
1/10/2006	18:00	-23.5	in
1/11/2006	18:00	-23.3	in
1/12/2006	18:00	-23.7	in
1/13/2006	18:00	-23.3	in
1/14/2006	18:00	-21.8	in
1/15/2006	18:00	-23.8	in

APPENDIX E
PROJECT SITE USACE WETLAND DATA FORMS

Enhancement Area

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

Project/Site: Norwood Gainey Site	Date: 1/23/2005
Applicant/Owner: NCEEP	County: Wayne
Investigator: Environmental Services, Inc. (ESI)	State: NC
Do normal circumstances exist on the site? ☐ Yes ☑ No	Community ID: remnant borrow area
Is the site significantly disturbed (atypical situation)? ☑ Yes ☐ No	Transect ID: emergent wetland
Is the area a potential problem area (If needed, explain)? ☐ Yes ☑ No	Plot ID: Wetland

VEGETATION

DOMINANT PLANT SPECIES	STRATUM	INDICATOR	DOMINANT PLANT SPECIES	STRATUM	INDICATOR
1. *Juncus effusus*	herb	FACW+	7.		
2. *Scirpus cyperinus*	herb	OBL	8.		
3. *Andropogon virginicus*	herb	FAC-	9.		
4. *Rhynchospora* sp.	herb	NA	10.		
5.			11.		
6.			12.		

Percent of dominant species that are OBL, FACW, or FAC (Excluding FAC-): 66%

Remarks

HYDROLOGY

☐ RECORDED DATA (DESCRIBE IN REMARKS):

- ☐ Stream, Lake, or Tide Gage
- ☐ Aerial Photographs
- ☐ Other

☑ NO RECORDED DATA AVAILABLE

FIELD OBSERVATIONS

Depth of Surface Water: 6"

Depth to Free Water in Pit: 0"

Depth to Saturated Soil: 0"

WETLAND HYDROLOGY INDICATORS

Primary Indicators:

- ☑ Inundated
- ☑ Saturated in Upper 12 Inches
- ☑ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks:

SOILS

MAP UNIT NAME (Series and Phase):	DRAINAGE CLASS:
Mapped as Dragston Series	somewhat poorly drained
TAXONOMY (SUBGROUP):	FIELD OSERVATIONS: Confirm Mapped Type?
Aquic Hapludults	☐ Yes ☑ No

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 - 18		2.5Y 7/6			silty clay loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Concretions
- ☐ Histic Epipedon
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Reducing Conditions
- ☐ Aquic Moisture Regime
- ☐ Sulfidic Odor
- ☐ Organic Streaking in Sandy Soils
- ☐ Listing on National Hydric Soils List
- ☐ Listed on State or Local Hydric Soils List
- ☐ Gleyed or Low Chroma
- ☐ Color
- ☐ Other (Explain in Remarks)

Remarks: Non-hydric soil but in an atypical situation. ACOE exerted jurisdiction on 12-29-05 using vegetation and hydrology.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☑ Yes	☐ No	Is this Sampling Point Within a Wetland? ☑ Yes ☐ No
Wetland Hydrology Present?	☑ Yes	☐ No	
Hydric Soil Present?	☐ Yes	☑ No	

Remarks: Atypical situation

Enhancement Area

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

Project/Site: Norwood Gainey Site	Date: 1/23/2006
Applicant/Owner: NCEEP	County: Wayne
Investigator: Environmental Services, Inc. (ESI)	State: NC
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community ID: adjacent to ag. field
Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No	Transect ID:
Is the area a potential problem area (If needed, explain)? ☐ Yes ☑ No	Plot ID: upland

VEGETATION

DOMINANT PLANT SPECIES	STRATUM	INDICATOR	DOMINANT PLANT SPECIES	STRATUM	INDICATOR
1. dog fennel *Eupatorium capillifolium*	herb	FACU	7. *#N/A*	#N/A	#N/A
2. broomsedge *Andropogon virginicus*	herb	FAC-	8. *#N/A*	#N/A	#N/A
3. *#N/A*	#N/A	#N/A	9. *#N/A*	#N/A	#N/A
4. *#N/A*	#N/A	#N/A	10. *#N/A*	#N/A	#N/A
5. *#N/A*	#N/A	#N/A	11. *#N/A*	#N/A	#N/A
6. *#N/A*	#N/A	#N/A	12. *#N/A*	#N/A	#N/A

Percent of dominant species that are OBL, FACW, or FAC (Excluding FAC-): 0%

Remarks: The hydrophytic vegetation criterion has not been met.

HYDROLOGY

☐ RECORDED DATA (DESCRIBE IN REMARKS):

- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☑ NO RECORDED DATA AVAILABLE

FIELD OBSERVATIONS

Depth of Surface Water: 0

Depth to Free Water in Pit: >18"

Depth to Saturated Soil: >18"

WETLAND HYDROLOGY INDICATORS

Primary Indicators:

- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks: The hydrologic criterion has not been met.

SOILS

MAP UNIT NAME (Series and Phase): Mapped as Dragston Series	DRAINAGE CLASS: somewhat poorly drained
TAXONOMY (SUBGROUP): Aquic Hapludults	FIELD OBSERVATIONS: Confirm Mapped Type? ☐ Yes ☑ No

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-5		2.5Y 6/6			loamy sand
5 - 18		2.5Y 5/6	2.5Y 6/2	common/faint	loamy sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Concretions
- ☐ Histic Epipedon
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Reducing Conditions
- ☐ Aquic Moisture Regime
- ☐ Sulfidic Odor
- ☐ Organic Streaking in Sandy Soils
- ☐ Listing on National Hydric Soils List
- ☐ Listed on State or Local Hydric Soils List
- ☐ Gleyed or Low Chroma
- ☐ Color
- ☐ 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 Soil Present?	☐ Yes	☑ No	

Remarks:

APPENDIX F
REFERENCE SITE PHOTOGRAPHS

Bouge Swamp – Looking Towards Field

Bouge Swamp – Reference Wetland

Reference Buffer

Reference Buffer

APPENDIX G
REFERENCE SITE USACE WETLAND DATA FORMS

Ref. wetland

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

Project/Site: Norwood Gainey Site	Date: 1/23/2005
Applicant/Owner: NCEEP	County: Wayne
Investigator: Environmental Services, Inc. (ESI)	State: NC
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community ID: Bottomland hardwood forest
Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No	Transect ID: Bouge Swamp
Is the area a potential problem area (If needed, explain)? ☐ Yes ☑ No	Plot ID: Wetland

VEGETATION

DOMINANT PLANT SPECIES	STRATUM	INDICATOR	DOMINANT PLANT SPECIES	STRATUM	INDICATOR
1. *Acer rubrum*	tree	FAC	7. *Woodwardia virginica*	herb	OBL
2. *Liquidambar styraciflua*	tree	FAC+	8. *Arundinaria gigantea*	herb	FACW
3. *Quercus nigra*	tree	FAC	9.		
4. *Magnolia virginica*	tree	FACW+	10.		
5. *Betula nigra*	tree	FACW	11.		
6. *Cyrilla racemiflora*	tree	FACW	12.		

Percent of dominant species that are OBL, FACW, or FAC (Excluding FAC-): 100%

Remarks: Sphagnum moss present

HYDROLOGY

☐ RECORDED DATA (DESCRIBE IN REMARKS):

- ☐ Stream, Lake, or Tide Gage
- ☐ Aerial Photographs
- ☐ Other

☑ NO RECORDED DATA AVAILABLE

FIELD OBSERVATIONS

Depth of Surface Water: 2"

Depth to Free Water in Pit: 0"

Depth to Saturated Soil: 0"

WETLAND HYDROLOGY INDICATORS

Primary Indicators:

- ☑ Inundated
- ☑ Saturated in Upper 12 Inches
- ☑ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized Root Channels in Upper 12 Inches
- ☑ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks:

SOILS

MAP UNIT NAME (Series and Phase): Mapped as Bibb Series	DRAINAGE CLASS: poorly drained
TAXONOMY (SUBGROUP): Typic Fluvaquents	FIELD OSERVATIONS: Confirm Mapped Type? ☐ Yes ☑ No

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 - 6		10YR 2/1			fine sandy loam

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Concretions
- ☐ Histic Epipedon
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Reducing Conditions
- ☐ Aquic Moisture Regime
- ☐ Sulfidic Odor
- ☐ Organic Streaking in Sandy Soils
- ☐ Listing on National Hydric Soils List
- ☐ Listed on State or Local Hydric Soils List
- ☑ Gleyed or Low Chroma
- ☐ Color
- ☑ Other (Explain in Remarks)

Remarks: Muck present at surface. Unable to retreive soil past 6 inches due to water.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☑ Yes	☐ No	Is this Sampling Point Within a Wetland?	☑ Yes ☐ No
Wetland Hydrology Present?	☑ Yes	☐ No		
Hydric Soil Present?	☑ Yes	☐ No		

Remarks:

Ref. wetland

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

Project/Site: Norwood Gainey Site	Date: 1/23/2005
Applicant/Owner: NCEEP	County: Wayne
Investigator: Environmental Services, Inc. (ESI)	State: NC
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community ID: soybean field
Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No	Transect ID:
Is the area a potential problem area (If needed, explain)? ☐ Yes ☑ No	Plot ID: upland

VEGETATION

DOMINANT PLANT SPECIES	STRATUM	INDICATOR	DOMINANT PLANT SPECIES	STRATUM	INDICATOR
1.			7.		
2.			8.		
3.			9.		
4.			10.		
5.			11.		
6.			12.		

Percent of dominant species that are OBL, FACW, or FAC (Excluding FAC-): 0%

Remarks: No vegetation growing in this section plowed soy bean field

HYDROLOGY

☐ RECORDED DATA (DESCRIBE IN REMARKS):

- ☐ Stream, Lake, or Tide Gage
- ☐ Aerial Photographs
- ☐ Other

☑ NO RECORDED DATA AVAILABLE

FIELD OBSERVATIONS

Depth of Surface Water: NA

Depth to Free Water in Pit: >18

Depth to Saturated Soil: >18

WETLAND HYDROLOGY INDICATORS

Primary Indicators:

- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks:

SOILS

MAP UNIT NAME (Series and Phase): Mapped as Dragston Series	DRAINAGE CLASS: somewhat poorly drained
TAXONOMY (SUBGROUP): Aquic Hapludults	FIELD OSERVATIONS: Confirm Mapped Type? ☐ Yes ☑ No

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 - 6		2.5Y 6/6			loamy sand
18-Jun		2.5Y 6/6	2.5Y 6/2	common/faint	loamy sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Concretions
- ☐ Histic Epipedon
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Reducing Conditions
- ☐ Aquic Moisture Regime
- ☐ Sulfidic Odor
- ☐ Organic Streaking in Sandy Soils
- ☐ Listing on National Hydric Soils List
- ☐ Listed on State or Local Hydric Soils List
- ☐ Gleyed or Low Chroma
- ☐ Color
- ☐ **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 Soil Present?	☐ Yes	☑ No		

Remarks:

APPENDIX H
NOTIFICATION OF JURISDICTIONAL DETERMINATION

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

Action Id. 200610636 County: Wayne U.S.G.S. Quad: Southeast Goldsboro

NOTIFICATION OF JURISDICTIONAL DETERMINATION

Property Owner/Agent: North Carolina Ecosystem Enhancement Program - Norwood Gainey Site
Address: c/o Mr. Jeff Harbour, PWS
Environmental Services, Incorporated
524 South New Hope Road, Raleigh, North Carolina 27610
Telephone No.: (919) 212-1760

Property description:
Size (acres) 58.38 acres Nearest Town Goldsboro
Nearest Waterway Neuse River River Basin Neuse
USGS HUC 03020202 Coordinates N 35.288361 W -77.9136388
Location description A 58.38 acre parcel located off Care Road on the west side of NC Highway 111 approximately 0.5 miles south of the intersection with Ditchbank Road adjacent to the Neuse River south of the City of Goldsboroin Wayne County, North Carolina.

Indicate Which of the Following Apply:

A. Preliminary Determination

_ 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).

B. Approved Determination

_ 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.

X 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 Washington, NC, at (252) 946-6481 to determine their requirements.

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 **Mr. Scott Jones** at **(252) 975-1616 extension 27**.

C. Basis For Determination

This site exhibits wetland criteria as described in the 1987 Corps Wetland Delineation Manual and is part of a broad continuum of wetlands connected to the Neuse River.

D. Remarks

E. Appeals Information (This information applies only to approved jurisdictional determinations as indicated in B. above)

This correspondence constitutes an approved jurisdictional determination for the above described site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the South Atlantic Division, Division Office at the Following address:

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

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **May 10, 2006**.

It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this correspondence.

Corps Regulatory Official: Scott Jones

Date **03/10/2006** Expiration Date **03/10/2011**

Copy furnished:

JURISDICTIONAL DETERMINATION

Revised 8/13/04

U.S. Army Corps of Engineers

DISTRICT OFFICE: CESAW-RG-W
FILE NUMBER: 200610636

PROJECT LOCATION INFORMATION:

State: NC
County: Wayne
Center coordinates of site (latitude/longitude): 35.288361 / -77.913689
Approximate size of area (parcel) reviewed, including uplands: 58.38 acres.
Name of nearest waterway: Neuse River
Name of watershed: Neuse

JURISDICTIONAL DETERMINATION

Completed: Desktop determination ▣ Date:
Site visit(s) ☒ Date(s): 12/29/2005

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:

☒ *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: approximately 10 acres.

▣ *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 wetlands[1].
▣ (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 adjacent[2] 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 Wetland Delineation Manual and is part of a broad continuum of wetlands connected to the Neuse River.

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

- [x] 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:
- [x] High Tide Line indicated by:
  - [ ] oil or scum line along shore objects
  - [ ] fine shell or debris deposits (foreshore)
  - [ ] physical markings/characteristics
  - [ ] tidal gages
  - [ ] other:

- [x] Mean High Water Mark indicated by:
  - [ ] survey to available datum; [ ] physical markings; [ ] vegetation lines/changes in vegetation types.

- [x] Wetland boundaries, as shown on the attached wetland delineation map and/or in a delineation report prepared by: Environmental Services, Incorporated

Basis For Not Asserting Jurisdiction:

- [x] 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 JURSIDICTIONAL DETERMINATION (mark all that apply):

- [x] Maps, plans, plots or plat submitted by or on behalf of the applicant.
- [x] Data sheets prepared/submitted by or on behalf of the applicant.
  - This office concurs with the delineation report, dated 12/20/2005, prepared by (company): Environmental Services, Inc.
  - [ ] 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:
- [x] U.S. Geological Survey 7.5 Minute Topographic maps:
- [ ] U.S. Geological Survey 7.5 Minute Historic quadrangles:
- [ ] U.S. Geological Survey 15 Minute Historic quadrangles:
- [x] USDA Natural Resources Conservation Service Soil Survey: Wayne
- [ ] National wetlands inventory maps:
- [ ] State/Local wetland inventory maps:
- [ ] FEMA/FIRM maps (Map Name & Date):
- [ ] 100-year Floodplain Elevation is: (NGVD)
- [x] Aerial Photographs (Name & Date): CESAW
- [ ] Other photographs (Date):
- [ ] Advanced Identification Wetland maps:
- [x] Site visit/determination conducted on: 12/29/2005
- [ ] Applicable/supporting case law:
- [ ] Other information (please specify):

[1]Wetlands 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).

[2]The 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: NC Ecosystem Enhancement Program	File Number: 200610636	Date: 03/10/2006
Attached is:		See Section below
☐ INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
☐ PROFFERED PERMIT (Standard Permit or Letter of permission)		B
☐ PERMIT DENIAL		C
☒ APPROVED JURISDICTIONAL DETERMINATION		D
☐ 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.

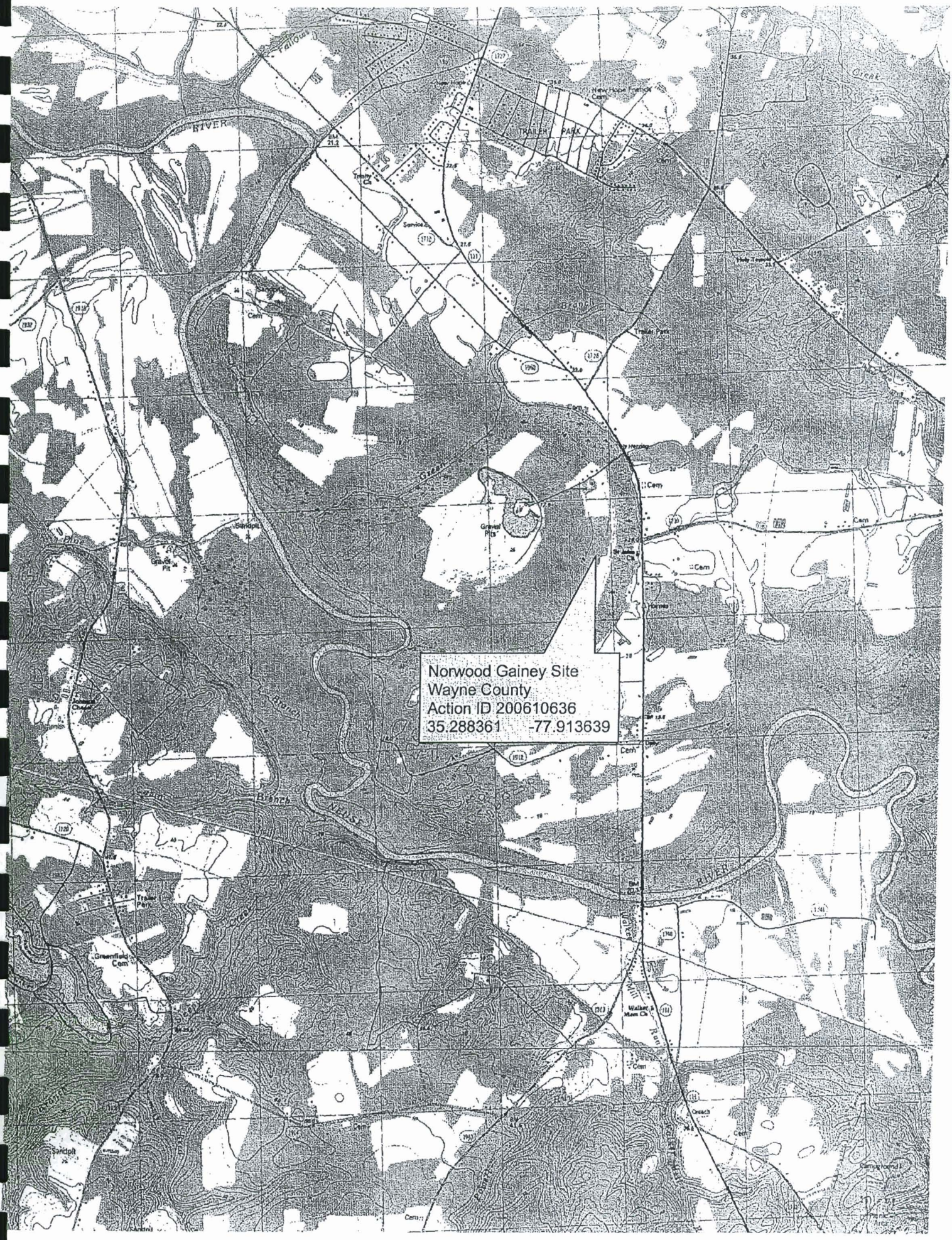
POINT OF CONTACT FOR QUESTIONS OR INFORMATION

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
Mr. Scott Jones, PWS Project Manager, CESAW-RG-W Post Office Box 1000 Washington, North Carolina 27889	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.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

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


Norwood Gainey Site
Wayne County
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