

LMG

**Neuse River Riparian Buffer Restoration Project
McCotter/Raines Farm Tract**

Jones County, North Carolina

Contract # AW03011-3

Prepared for:
North Carolina Wetlands Restoration Program
Raleigh, NC

Prepared by:
Land Management Group, Inc.
Wilmington, NC

January 2003

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I. INTRODUCTION

The proposed restoration project is intended to provide suitable, high-quality riparian buffer restoration as compensatory mitigation for riparian buffer impacts authorized through the North Carolina Division of Water Quality (NC DWQ). Under contract with the NC Wetland Restoration Program (WRP), Land Management Group, Inc. (LMG) will restore 24.4 acres of riparian buffer habitat along Beaver Creek (a tributary of the Trent River) and contiguous surface-waters (i.e. field ditches) in Jones County, NC.

Riparian buffer restoration is most critical in surface waters susceptible to water quality impairments associated with non-point source discharges of nutrient-rich runoff. Nutrient loading (in the form of excess nitrogen and/or phosphorous) may manifest in a variety of water quality problems including hypoxia/anoxia, aquatic weed infestations, and toxic algal blooms. The Trent River and its tributaries, in particular, have exhibited significant water quality impairments. According to data from the NC DWQ's Neuse River Basinwide Plan, 87% of the monitored streams in the Trent River portion of USGS Cataloging Unit 03020204 are impaired. DWQ has cited agricultural runoff as the primary source of this impairment.

The objective of the proposed project is to restore riparian buffer vegetation and diffuse flow conditions to help reduce non-point source discharge of contaminants into adjacent water bodies. The primary function of the riparian buffer project outlined in this document will be to restore the nitrogen (N) removal capacity of those areas situated adjacent to surface waters. In addition, the project will provide ancillary benefits to aquatic and wildlife habitat via enhanced niche habitat, microclimate modification and shade, and increased food-web support. The following comprehensive restoration plan provides site information related to existing conditions and sources of N. In addition, more specific information regarding project implementation and monitoring is enclosed.

II. PROJECT LOCATION

As approved by the WRP, LMG has targeted 24.4 acres of farmland located adjacent to Beaver Creek (a tributary of the Trent River) and a series of contiguous surface waters (i.e. field ditches). The project area is part of the “McCotter/Raines Farm”, located approximately 5.5 miles northwest of Trenton in Jones County, NC (refer to Figure 1). The site is bordered to the north by State Route 1317 and to the south by Beaver Creek (refer to Figure 2). The property is situated within subbasin NEU-11 of the lower Neuse River Basin (USGS Cataloging Unit 03020204).

III. SITE CONDITIONS

The 24.4-acre riparian buffer restoration area represents a portion of a larger 211-acre tract (“McCotter/Raines Farm”) actively farmed for the production of soybean and cotton. Land use practices (including herbicide, pesticide, and fertilizer application) serve as potential contributors to decreased water quality of adjacent surface waters (i.e. ditches and ‘blue-line’ streams). Application of nitrogen-rich fertilizer represents the most significant non-point source of nitrogen within the immediate project area. Woody vegetation along ditches of proposed riparian buffer restoration is either absent or sparse (less than 100 stems per acre that are > 5 inches diameter at breast height). As a result, nutrient-laden runoff is currently discharged from agricultural fields directly into surface waters with little or no nutrient filtration/transformation. Photographs documenting pre-project conditions are provided in Appendix A.

Drainage features of the site are typically located within slightly lower topographic areas mapped as Muckalee loam (refer to Figure 3). Muckalee loam is a nearly level, poorly drained soil exhibiting moderate permeability and slow surface runoff. Areas adjacent to these drainage features are mapped as Norfolk loamy sand and Autryville loamy fine sand. The Norfolk series consists of well-drained soils occurring near major drainageways of the county. Norfolk soils exhibit moderate permeability with a seasonal high water table occurring at a depth of 4 to 6 feet. Surface runoff is medium. The Autryville series consists of well-drained soils with moderately rapid permeability and slow surface runoff. The high water table typically occurs at a depth of 4 to 6 feet.

Site evaluations of selected soil profiles confirmed the presence of the three major soil series. Soil indicators (including texture, chroma, and redoxymorphic features) indicate that seasonal

high water tables varied from 12” to 50” below the soil surface prior to anthropogenic impacts (i.e. ditch excavation). Refer to Appendix B for soil profile descriptions of selected locations within the project area.

A topographic survey map of the project area and immediate vicinity is enclosed as Appendix C. Elevations of the project area range from 33.6 ft to 45.9 ft above mean sea level (MSL). Ditches located within the project area range from 2’ to 6’ in depth. LMG met with the US Army Corps of Engineers (USACOE) to review existing conditions and proposed restoration activities. The USACOE representative has confirmed that ditches within the project area are jurisdictional waters of the U.S. Please refer to Appendix C for a copy of the wetland boundary map depicting jurisdictional wetlands/waters.

IV. LAND ACQUISITION AND PROTECTION

LMG has arranged for the execution of the conservation easement deed that will ensure the protection of the riparian buffer restoration area in perpetuity. The easement will prohibit any activities (e.g. timbering, farming, building, etc.) that would alter the environmental state of the restoration project. Post-restoration management will be consistent with allowable activities as identified in the Neuse Buffer Rule (15A NCAC 02B.0233). The North Carolina Cooperative Extension Service Foundation (NCCESF) has been selected as the beneficiary/grantee of the project’s conservation easement deed.

NCCESF was created in 1997 to increase the effectiveness and efficiency of the North Carolina Extension Service (CES). The NCCESF is organized and functions under the auspices of the North Carolina Agricultural Foundation, Inc. The North Carolina Agricultural Foundation, Inc. is a non-profit, charitable and educational corporation as defined in the Internal Revenue Service code 501(c)3. The Agricultural Foundation was formed in 1944 to aid and promote, by financial assistance and otherwise, all types of education and research in agriculture at or through the North Carolina State University at Raleigh.¹

¹ Information regarding the NCCESF was obtained through the Foundation’s website address: <http://www.cals.ncsu.edu/foundation/nccesf.html>.

LMG has been coordinating with Mr. David Hays, Executive Director of NCCESF, to arrange for the execution of the conservation easement and transfer of fee simple title. All maps, surveys, and appraisals have been secured for Mr. Hays to present to the NCCESF Board of Directors (Board). The conservation easement deed and fee simple title will be transferred to the NCCESF for long-term protection of the site. Through the NCCESF, the project site will be available to NC State University for research and educational opportunities.

In addition to the 24.4-acre project area, 10.6 acres of wooded land adjacent to Beaver Creek (located immediately adjacent to the project area) will be donated to NCCESF. This additional land has been incorporated into the conservation easement and will be protected under the terms and conditions conveyed with the deed. Two 20-ft access easements have also been granted by the property owner to allow for suitable access to the project site.

Through the NCCESF, the project site will be available to NC State University (NCSU) for research and educational opportunities. The project site will provide unique applied research and educational opportunities related to riparian buffer restoration. Considering this project represents one of the first projects contracted under the state in-lieu fee program, LMG believes that it may provide valuable data relating restored buffer area to enhanced water quality of groundwater and/or surface waters. Since adjacent fields will continue to be actively farmed for soybean and cotton, the McCotter/Raines tract can provide both treatment and control plots within a relatively small and accessible area. LMG has met with Drs. Wendell Gilliam and Deanna Osmond of the College of Agriculture and Life Sciences (NCSU) regarding potential research opportunities at this site. Both Dr. Gilliam and Dr. Osmond expressed the interest and the need for conducting such studies at this location. In support of their research efforts, LMG is pleased to be able to provide a \$5,000 research grant to NCSU for conducting research at this site. LMG will also provide logistical or technical support as necessary for the implementation of site research.

V. PLANNED RESTORATION ACTIVITIES

Based upon site assessments and WRP concurrence, 24.4 acres of riparian buffer habitat will be restored on-site. The enclosed site plan (Figure 4) depicts areas targeted for riparian buffer restoration. Areas of higher topographic relief and incised ditch banks will be graded to 3:1

slopes to provide more stable areas for planting. Grading and installation of flashboard risers in two locations within the north/south field ditch will promote diffuse flow conditions. Refer to the enclosed grading plan (Figure 5) for plan view and cross-sectional renderings (existing and proposed). Restoration activities will reduce peak discharge rates to promote enhanced nutrient uptake and exchange. Pending site conditions prior to planting, some areas will be plowed and disked to reduce compaction and to enhance microtopography. Appropriate sediment and erosion control measures, including silt fences and check dams, will prevent the loss of sediment into surface waters. A sediment and control plan has been submitted to the Division of Land Resources, Land Quality Section as notification of proposed site activities. In addition, a Nationwide Permit (NWP) 27 application for proposed grading work within waters of the U.S. has been submitted to the USACOE and NC DWQ for review and approval.

Bare soil will be stabilized by seeding of rye grain (*Secale cereale*) mix upon completion of grading activities. Pre-planting herbicide application will be applied to control of the spread of invasive, exotic plants. The herbicide will be applied by a licensed applicator according to prescribed quantities and methods. (In addition, any proposed application procedures will be reviewed with the NC DWQ prior to herbicide use.)

The riparian buffer will be planted with characteristic tree species including river birch (*Betula nigra*), sycamore (*Platanus occidentalis*), water oak (*Quercus nigra*), white oak (*Quercus alba*), and green ash (*Fraxinus pennsylvanica*). Bare-root seedlings will be planted at a density of 600 trees per acre. The outer 50 feet of the proposed buffer areas will be planted with characteristic shrub species including wax myrtle (*Myrica cerifera*), American beautyberry (*Callicarpa americana*), elderberry (*Sambucus canadensis*), and winged sumac (*Rhus copallina*). Shrubs will be planted at a density of 1200 plants per acre. The planting regime for the riparian buffer restoration area is detailed in Table 1. Please note modification of planting regime based upon the lack of sufficient quantities of plant material from regional nurseries. Alternative species have been selected based upon the range of soil and hydrologic conditions occurring within the project area. The revised planting regime is more compatible with site conditions since it reflects variation in species composition corresponding to changes in micro-elevation and soil texture. For instance, white oak (adapted for relatively low moisture requirements) will be planted in slightly higher topographic areas. Conversely, river birch and green ash will be planted in lower landscape positions and finer soils – conditions suitable for these species' relatively high moisture

TABLE 1: PLANTING REGIME¹ – NEUSE RIVER RIPARIAN BUFFER PROJECT, McCOTTER/RAINES FARM

Buffer Zone	Zone 1 –Trees	Zone 2 - Shrubs	TOTAL
Stem Target: Area (acres):	600/acre (18.3)	1200/acre (6.1)	(24.4)
SPECIES	# planted (% of total)	# planted (% of total)	#planted
River Birch (<i>Betula nigra</i>)	2,196 (20)		2,196
Sycamore (<i>Platanus occidentalis</i>)	2,196 (20)		2,196
Yellow Poplar (<i>Liriodendron tulipifera</i>)	2,196 (20)		2,196
Willow Oak (<i>Quercus phellos</i>)	2,196 (20)		2,196
Water Oak (<i>Quercus nigra</i>)	2,196 (20)		2,196
Loblolly Bay (<i>Gordinia lasianthus</i>)		1,464 (20)	1,464
Sweet Pepperbush (<i>Clethra alnifolia</i>)		1,464 (20)	1,464
Gallberry (<i>Ilex glabra</i>)		1,464 (20)	1,464
Fetterbush (<i>Lyonia lucida</i>)		1,464 (20)	1,464
Highbush blueberry (<i>Vaccinium corymbosum</i>)		1,464 (20)	1,464
TOTAL TREES/SHRUBS	10,980	7,320	18,300

¹Please note final species composition dependent upon nursery quality and availability at the time of plant ordering.

requirements. These same considerations were used to select appropriate shrub species for the project site.

All species selected for the restoration project naturally occur on the site within undisturbed riparian buffer areas. These species are considered to be well-suited for site-specific conditions (including soil characteristics and moisture regimes). In addition, each of these species is listed within WRP's "Guidelines for Riparian Buffer Restoration" as appropriate species for use in riparian buffer restoration projects.

VI. MONITORING PLAN

Upon completion of the riparian buffer restoration, an 'as-built' survey will be prepared and submitted to the NC WRP to document the extent of riparian buffer restoration. Subsequent annual monitoring will be conducted near the end of each growing season for a period of five years. Vegetative monitoring will include the establishment of twelve (12) 0.10-acre permanent plots corresponding to a total of 1.2 acres (equivalent to 5% of the restoration area). Vegetative planting will be deemed successful if survivorship of plantings and volunteers of desirable species² meets or exceeds 75% within the plots monitored.

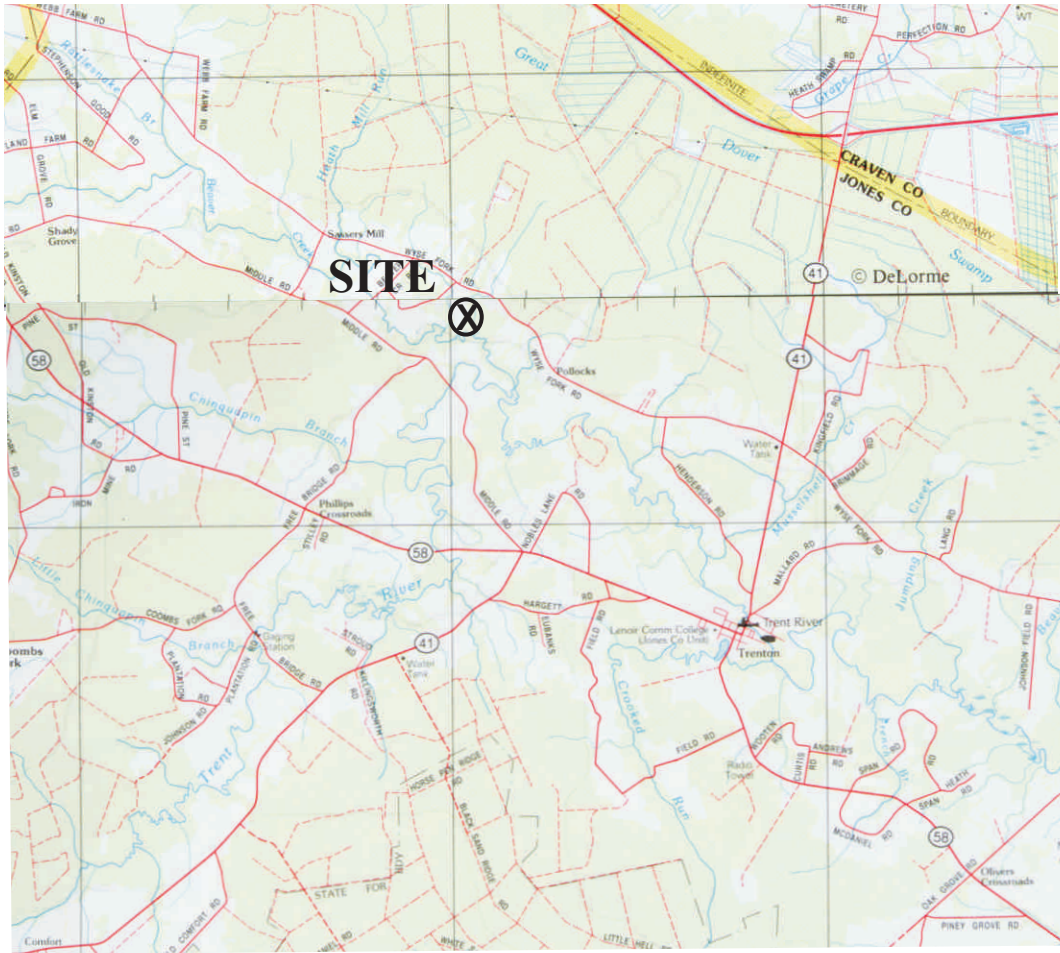
If there is evidence of significant gulley erosion or bank erosion at any point during the five-year monitoring period, supplemental grading will be conducted to promote diffuse flow. Monitoring reports will be submitted annually to the WRP (by January 1 of each year). These reports will include results of vegetative monitoring and photographic documentation of site conditions. Monitoring reports will also identify any contingency measures that may need to be employed to remedy any site deficiencies. For instance, deer browse tubes and fencing may need to be used if evidence of significant herbivory or deer browse is observed.

² Desirable species are considered as noninvasive species characteristic of riparian habitats. Those species considered desirable will be agreed upon by LMG and NCDWQ prior to project planting.

VII. CONCLUSION

Upon acceptance of this restoration plan (and receipt of all applicable state/federal permits), LMG will initiate site restoration activities that will culminate in the restoration of 24.4 acres of riparian buffer located in subbasin NEU-11 of the lower Neuse River Basin. Reversion of agricultural land to wooded riparian buffer will decrease source nutrient loading and concurrently increase nutrient removal capacity. In addition, the project will provide ancillary benefits to aquatic and wildlife habitat via enhanced niche habitat, microclimate modification and shade, and increased food-web support. By doing so, the proposed project will help to effectively mitigate for authorized loss of riparian buffers within the Neuse River Basin.

FIGURES

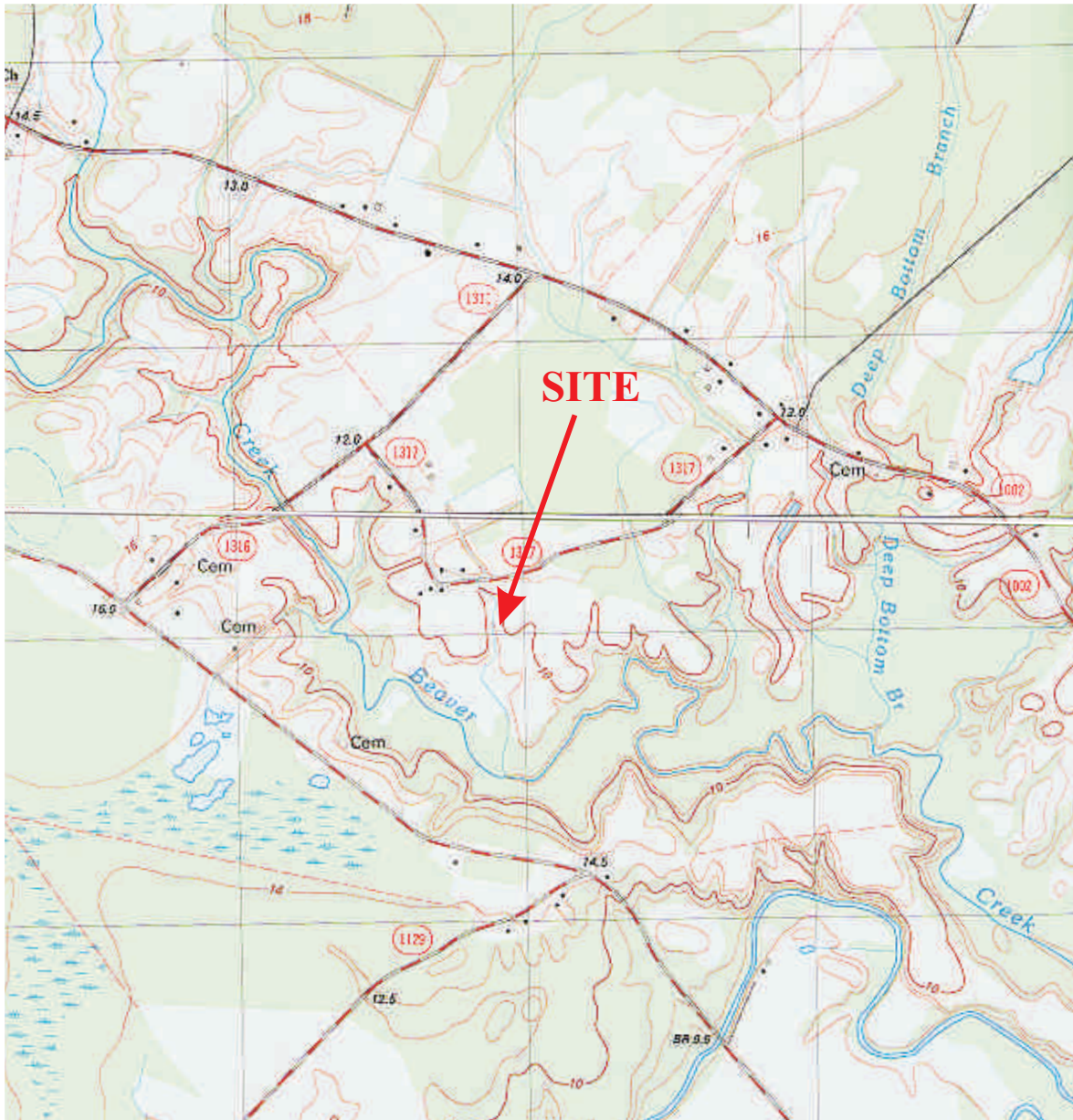


SCALE 1" = 2.4 miles

McCotter/Raines Farm
 Neuse River Riparian Buffer
 Restoration Project
 Jones County, NC

Land Management Group, Inc.
 Environmental Consultants
 Wilmington, N.C.
 January 2003

Vicinity Map

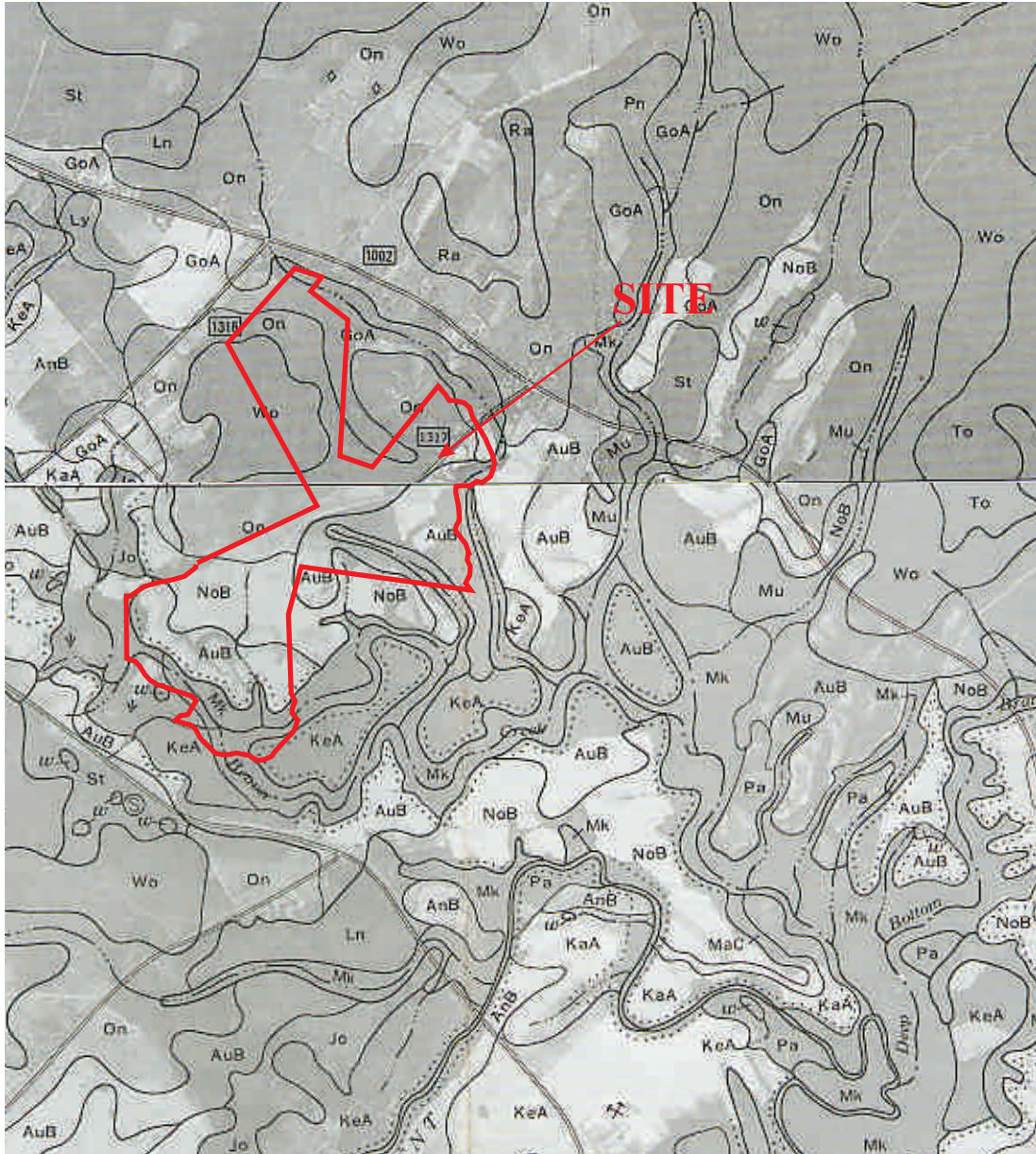


SCALE 1" = 2000'

McCotter/Raines Farm
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 January 2003

U.S.G.S. 7.5' Quad Sheet
 Site is located within the
 Phillips Crossroads quad.



— Property Boundary



SCALE 1" = 2000'

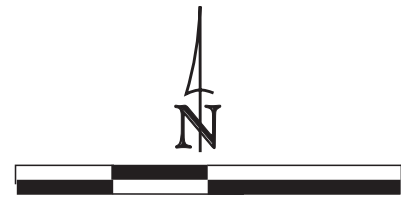
McCotter/Raines Farm
 Neuse River Riparian Buffer
 Restoration Project
 Jones County, NC

Land Management Group, Inc.
 Environmental Consultants
 Wilmington, N.C.
 January 2003

Figure 3. Jones County
 Generalized Soils Map



- Property Boundary
- Project Boundary (24.4 acres)
- - - Waters of the U.S.
- 200' Riparian Buffer
- 10.6 acres donated as part of conservation easement



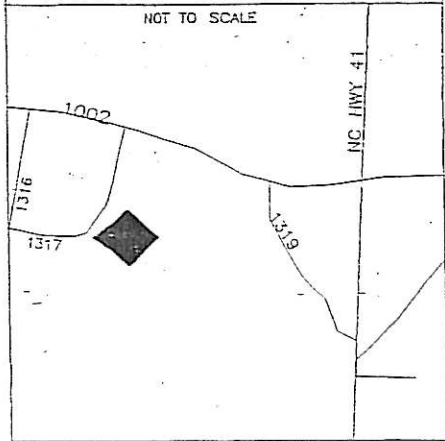
SCALE 1" = 600'

McCotter/Raines Farm
 Neuse River Riparian Buffer
 Restoration Project
 Jones County, NC

Land Management Group, Inc.
 Environmental Consultants
 Wilmington, NC
 January 2003

Figure 4. Site plan.

VICINITY SKETCH -



REVISIONS

Figure 5

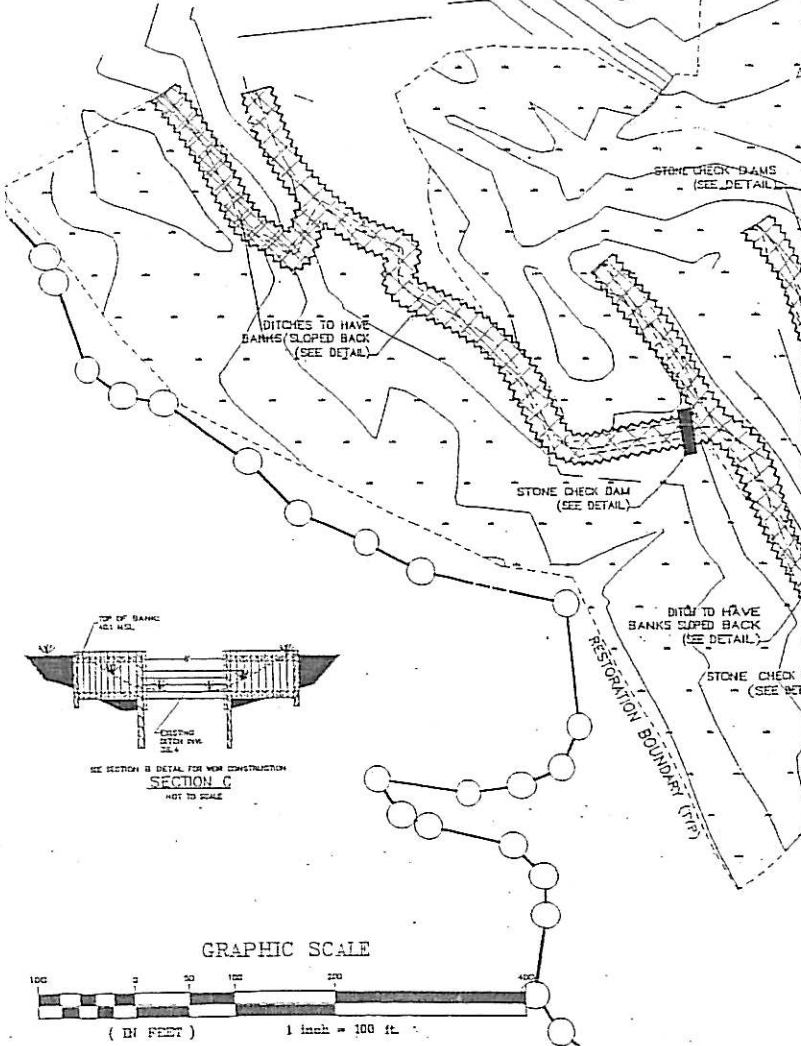
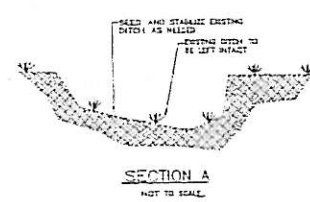
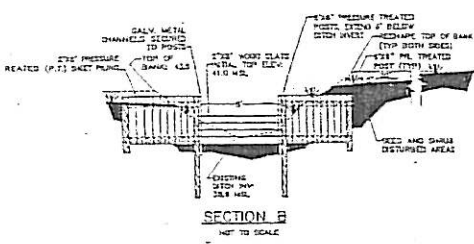
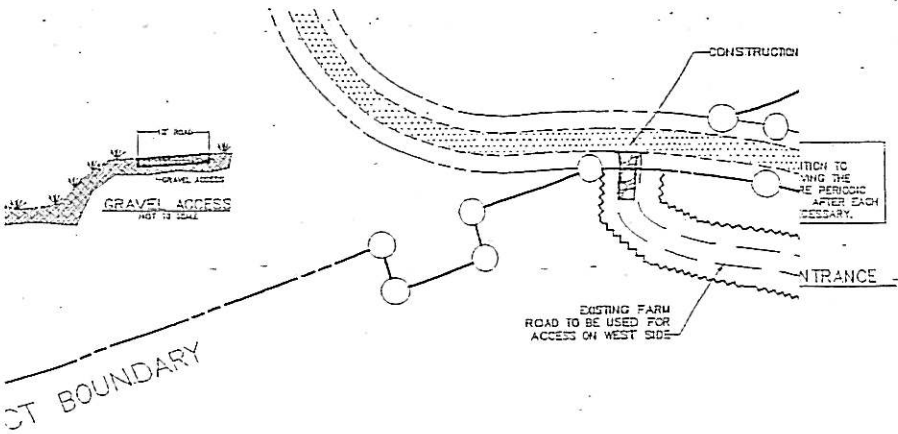
APPLICANT
 LAND MANAGEMENT GROUP, INC.
 P.O. BOX 2522
 WILMINGTON, NC 28402
 (910) 452-0001

LEGEND:

EXISTING	ITEM	PROPOSED
	PAVEMENT	
	RIGHT-OF-WAY OR PROPERTY LINE	
	CONTOUR	
	GRADING LIMITS	
	CONSTRUCTION ENTRANCE	
	SPOT GRADE	
	RESTORATION BOUNDARY	

ABBREVIATIONS:

	FINISHED GRADE
	INV INVERT ELEVATION



GENERAL NOTES:

- THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING CONDITIONS AND WORKING CONDITIONS. ANY DISCREPANCIES WITH THE DRAWINGS SHALL BE BROUGHT TO THE OWNER'S REPRESENTATIVE.
- CLEARING: CONTRACTOR SHALL NOT REMOVE ANY TREES AND VEGETATION WITHIN THE LIMITS OF CONSTRUCTION UNLESS AUTHORIZED BY OWNER'S AGENT. DISPOSAL, CLEARED, GRUBBED, STRIPPED OR OTHER WASTE MATERIAL SHALL BE REMOVED FROM SITE AND DISPOSED OF IN A PROPERLY PERMITTED FACILITY.
- THE CONTRACTOR SHALL NOTE THAT THE GRADING PLAN MAY NOT REPRESENT A BALANCED EARTHWORK CONDITION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CUT AND FILL QUANTITIES AND COMPLETE INSTALLATION TO THE SPECIFIED GRADES.
- THE CONTRACTOR SHALL FURNISH SUITABLE BORROW MATERIAL FROM AN OFF-SITE PERMITTED BORROW FACILITY/AREA AS REQUIRED.
- THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION. BEFORE COMMENCING ANY EXCAVATIONS IN OR ALONG ROADWAY RIGHT-OF-WAYS, PUBLIC AREAS OR IN PRIVATE EASEMENTS, THE CONTRACTOR SHALL PROVIDE PROPER NOTICE TO ALL UTILITY COMPANIES IN CONFORMANCE WITH THE "UNDERGROUND DAMAGE PREVENTION ACT", LATEST REVISION. UTILITIES LISTED ON THE DRAWINGS, MAY OR MAY NOT REPRESENT ALL UTILITIES WITHIN THE LIMITS OF CONSTRUCTION.
- EXISTING SURVEY PERFORMED BY HERBERT J. NOBLES, JR., RLS. SURVEY PROVIDED TO ENGINEER BY OWNER'S REPRESENTATIVE.

PLANTATION AND EROSION CONTROL NOTES:

- CONSTRUCTION SHALL BE IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS.
- EROSION CONTROL PRACTICES MUST BE INSTALLED AND MAINTAINED TO PREVENT SEDIMENT WITHIN THE BOUNDARIES OF THE SITE. ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION ON-EROSIVE AND STABLE WITHIN THIRTY (30) WORKING DAYS OR 120 CALENDAR DAYS AFTER COMPLETION OF THE ACTIVITY, WHICHEVER IS SHORTER. ALL GRADED SLOPES SHALL BE STABLE ON-EROSIVE AFTER FIFTEEN (15) DAYS.
- CONSTRUCTION SEQUENCE:
 - ALL GRAVEL CONSTRUCTION ENTRANCE
 - ALL TEMPORARY CHECK DAMS WHERE INDICATED.
 - MADE MAIN DITCH AND FILL DITCHES WHERE INDICATED.
 - SEED AND FERTILIZER:
 - SEED AND FERTILIZER:
 - APPLY GROUND AGRICULTURAL LIMESTONE, 2 TONS PER ACRE
 - FERTILIZER - APPLY 10-10-10 AT 1000 POUNDS PER ACRE
 - INCORPORATE BOTH LIME AND FERTILIZER INTO TOP 4" TO 6" OF SOIL
 - SEEDING: SEE NARRATIVE
 - MAINTENANCE: ALL EROSION AND SEDIMENT CONTROL PRACTICES TO BE INSPECTED WEEKLY AND AFTER EVERY RUNOFF PRODUCING RAINFALL EVENT. NEEDED REPAIRS WILL BE MADE IMMEDIATELY.
 - MAXIMUM GRADED SLOPE SHALL NOT EXCEED TWO (2) HORIZONTAL TO ONE (1) VERTICAL UNLESS OTHERWISE INDICATED OR DIRECTED.

DATE: 1-15-03

BY: JKK
 GRADING PLAN
 McCotter Rains Tract
 Buffer Restoration

Wrightsville Engineering Services
 3410 Wrightville Avenue
 Wilmington, N.C. 28403
 (910) 799-7967

SHEET: C-1
 OF: 1

APPENDIX A. SITE PHOTOGRAPHS

↓ View of main channel.



↓ Agriculture fields surrounding channel.



McCotter/Raines Farm
Neuse River Riparian Buffer
Restoration Project
Jones County, NC

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Photographs of site.

↓ View of ditches and adjacent fields.



McCotter/Raines Farm
Neuse River Riparian Buffer
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Photographs of site.

APPENDIX B. SOIL PROFILE DESCRIPTIONS

Riparian Buffer Restoration Project
Neuse River Basin
McCotter/Raines Farm (Jones County, NC)
November 12, 2002

Bore hole locations approximated on enclosed map.
Seasonal High Water Estimates based on redoximorphic features.
Prepared by: Tom Gulley (Land Management Group, Inc.)

Bore

<u>Hole #</u>		<u>Description</u>
BH1	Ap	0-10" Fine sandy loam, medium granular, 10YR4/3
	Bt1	10-30" Fine loamy sand, weak medium granular, 10YR4/4
	Bt2	30-50" Fine loamy sand, weak medium granular, 5Y7/3, with common medium faint 5Y7/2 mottles @ 44"
	Bt3	50-60" Fine loamy sand, weak medium granular, 5Y7/3, with few medium prominent 7.5YR5/6 mottles @ 50"
seasonal high water table ~ 50"		
BH2	Ap	0-6" Fine sandy loam, medium granular, 10YR4/4
	Bt1	6-24" Fine loamy sand, weak medium granular, 2.5Y6/4
	Bt2	24-35" Fine loamy sand, weak medium granular, 2.5Y6/4, with few fine distinct 2.5Y7/2 mottles
	Bt3	35-50" Fine loamy sand, weak medium granular, 2.5Y6/4, many medium distinct 7.5YR5/6 mottles
seasonal high water table ~ 35"		
BH3	Ap	0-4" Fine sandy loam, medium granular, 10YR4/4
	Bt	4-16" Fine sandy loam, medium granular, 2.5Y5/4
	Btg1	16-20" Fine sandy loam, medium granular, 5Y6/2
	Btg2	20-36" Sandy clay loam, medium subangular blocky, 2.5Y6/2, many medium distinct 2.5Y6/6 mottles
	Btg3	36-46" Fine sandy loam, medium granular, 5Y6/2, with few fine distinct 2.5Y6/6 mottles
seasonal high water table ~ 20"		
BH4	Ap	0-4" Fine sandy loam, medium granular, 2.5Y4/4
	Bt1	4-10" Sandy clay loam, weak medium subangular blocky, 10YR5/4
	Bt2	10-24" Sandy clay loam, medium subangular blocky, 10YR5/6
	BC	24-34" fine loamy sand, medium granular, 2.5Y5/4, common medium distinct 2.5Y7/2 mottles
	C	34-50" Fine to medium sand, single grained, loose, 2.5Y7/2, with few fine prominent 10YR6/6 mottles @ 40"
seasonal high water table ~ 40"		

BH5 Ap 0-8" Fine sandy loam, medium granular, 10YR4/2
 Ab 8-12" Loam, weak fine subangular blocky, 10YR3/1
 Bt1 12-20" Fine sandy loam, medium granular, 10YR4/3
 Bt2 20-24" Fine sandy loam, medium granular, 2.5Y5/4
 Bt3 24-40" Loamy fine sand, medium granular, 10Y5/3, with common medium distinct
 2.5Y6/2 and 10YR5/6 few fine distinct mottles
 seasonal high water table ~ 24"

BH6 Ap 0-10" Fine sandy loam, medium granular, 2.5Y4/4
 E 10-28" Fine loamy sand, weak medium granular, 2.5Y7/4
 Bt 28-40" Fine loamy sand, weak medium granular, 2.5Y6/4, with few fine distinct
 10YR5/6 and common medium distinct 2.5Y6/2 mottles
 Btg 40"+ Fine loamy sand, weak medium granular, 2.5Y6/2, many medium
 prominent 10YR5/6 mottles
 seasonal high water table ~ 30"

BH7 Ap1 0-4" Fine sandy loam, medium granular, 10YR5/4
 Ap2 4-8" Fine sandy loam, medium granular, 10YR6/4
 Bt1 8-20" Fine sandy loam, weak fine subangular blocky, 10YR5/6
 Bt2 20-44" Loamy fine sand, weak granular, 2.5Y6/4, many medium distinct 2.5Y6/2
 and 2.5Y6/6 mottles
 Bt3 44-50" Fine sandy loam, medium granular, 10YR6/6, with many medium distinct
 10YR5/8 and many medium prominent 2.5Y6/2 mottles
 seasonal high water table ~ 44"

BH8 Ap 0-8" Fine sandy loam, medium granular, 2.5Y4/2
 Bt1 8-22" Sandy clay loam, coarse subangular blocky, 2.5Y5/4, with many common
 distinct 2.5Y6/2 and 10YR5/6 mottles
 Bt2 22-32" Fine sandy loam, medium granular, 2.5Y6/3, with many fine faint 2.5Y6/2
 and many fine prominent 10YR5/6 mottles
 Btg 32-40" Fine sandy loam, medium granular, 2.5Y6/2, with few fine faint 2.5Y6/1
 mottles
 seasonal high water table ~ 28"
 observed water table @ 30"

