Davis Farm Wetland Mitigation Bank

Draft Prospectus

Prepared for:

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1.0 EXECUTIVE SUMMARY

Southern Environmental Group, Inc. (SEGi), on behalf of Jack Stocks, is submitting the following prospectus to develop the Davis Farm Wetland Mitigation Bank (DFWMB). The purpose of the material contained herein is to present an overview of the mitigation potential for the proposed DFWMB. The DFWMB would serve as a wetland mitigation bank providing effective and ecological mitigation utilized by private and public projects, where unavoidable losses of non-riparian wetlands, resulting from activities authorized by the U.S. Corps of Engineers (USACE) under Section 404 of the Clean Water Act, will take place.

The DFWMB is approximately 3,400 acres in size and is located south of Ashton Road, north of NC210, east of Little Kelly Road, and west of NC117, just outside Rocky Point, North Carolina (see Figure 1 – Vicinity Map). The proposed mitigation bank would serve the Cape Fear River Basin (USGS 8-digit hydrologic unit 03030007).

The DFWMB is comprised primarily of non-riparian pocosin wetlands degraded by historical drainage ditches created as part of intensive silvicultural management that started in the early 1960's (see Appendix A). Kelley's Creek bounds the site on the north. The majority of the ditches within the site drain to this tributary of the Northeast Cape Fear River. There are riparian areas of this creek system within the tract that have the potential for restoration and enhancement. It is anticipated that 2,685 acres of non-riparian wetland restoration, 55 acres of riparian wetland restoration, 8,732 l.f. of stream restoration, 220 acres of riparian and non-riparian wetland preservation, and 24 acres of non-riparian preservation is available within the project boundaries. Mitigation site work will involve thinning of planted pines, plugging or filling the existing ditches, removal of select soil roads, and the planting of native woody wetland species. This work will result in the re-establishment of a natural hydrologic regime, and restoration of a diverse native vegetative composition.

The intent of this prospectus is to provide the general information regarding the existing site conditions, as well as preliminary acreages of restoration and preservation available within the project boundaries. A final mitigation bank prospectus will be submitted after comments are received from the Interagency Review Team (IRT).

2.0 INTRODUCTION

The proposed DFWMB site (approximately 3,400 acres) consists of pocosin and mixed hardwood non-riparian and riparian wetlands that drain to Kellys Creek along the tract's northern boundary, and south to an unnamed tributary to Riley's Creek. The broad interstream flats are comprised of broad leaved, evergreen pocosin vegetation. Approaching adjacent downgrade riparian areas, a more complex mixed hardwood vegetative community arises. These wetlands have been historically ditched and managed for silviculture since the early 1960's (see Appendix A). This extensive network of ditches have effectively lowered groundwater tables within a majority of the site, thereby eliminating the pocosin's and riparian areas ability to filter pollutants, and retain excess sediment and nutrients before reaching the adjacent creeks. It is estimated that 2,685 acres of non-riparian wetland restoration, 55 acres of riparian wetland restoration, 8,732 l.f. of stream restoration, 220 acres of riparian and 24 acres of non-riparian preservation is available within the project boundaries.

SEGi was retained by an out-of-state client to delineate all wetlands and waters within the site, beginning in 2007. A wetland delineation performed by SEGi and surveyed by Stroud Engineering on 80 percent of the site revealed that there were 244 acres of wetlands remaining on the site. There are also 2.5 miles of jurisdictional ditches within the tract. Only depressional areas and flats farthest from ditches, and areas along the creeks remain as jurisdictional wetlands. SEGi received final concurrence with our findings of no wetlands present on a 300-acre portion in 2008, and preliminary concurrence on the other 2,100-acre portion of the site, before the client stopped pursuit of a final determination. An 800-acre portion remains undetermined, but is identical in landscape position, soils composition, vegetative profile, and ditching presence, and it can be assumed that very little wetlands remain within this portion of the site.

There remains 2,685 acres suitable for non-riparian restoration, 55 acres of riparian restoration, and 8,732 l.f. of stream restoration possible at the DFWMB, along with 220 acres of riparian preservation and 24 acres of non-riparian preservation. Based upon the proposed mitigation scenario, the site will produce 2,685 non-riparian restoration mitigation banking units, 55 acres riparian restoration mitigation banking units, 4,366 stream restoration mitigation banking units, 22 riparian preservation mitigation banking units, and 2.4 non-riparian preservation mitigation banking units (see Table 1).

The DFWMB is in the Middle Atlantic Coastal Plain (Ecoregion 63) as determined by Griffith et al. (2002) "Ecoregions of North Carolina" (see Appendix B). This ecoregion encompasses the area defined as the 'Carolina Flatwoods' – a subregion occurring along nearly level, poorly drained areas in the outer Coastal Plain including the Cape Fear River Basin. For additional site details, please refer to the USGS topographic quadrangle map (Figure 2), Light Detection and Ranging (LiDAR) map (Figure 3), the Soil Survey of Pender County map (Figure 4), and a 2010 aerial for reference (Figure 5).

3.0 PURPOSE, NEED AND FEASIBILITY

The purpose of the DFWMB is to provide mitigation for unavoidable losses of wetlands and waters of the United States through effective and ecological beneficial management practices. Restoration and preservation activities at the DFWMB will focus on improving water quality as well as restoring aquatic and terrestrial habitat within the immediate area of the project site, which in turn will benefit the Northeast Cape Fear River watershed. Expected improvements to water quality consist of restoring or enhancing ecological processes such as biochemical cycling and hydrologic regeneration. In addition, the project is anticipated to increase terrestrial and aquatic animal habitat

by removal of artificial edges along old roads.

The implementation of the DFWMB project would ensure the perpetual protection and future conservation of a substantial amount of land in an area that will soon experience the effects of the urban sprawl of New Hanover and Pender Counties. In addition, given the geographic location, the perpetual protection is significant to protect the land from mining for limestone, sand and marl, which would result in additional losses of wetlands within the North East Cape Fear watershed.

The DFWMB is a prime candidate for restoration and preservation. The size of the site, and its hydrologic relationship to such a large area of the county, in such close relationship to the Northeast Cape Fear River and its tributaries, makes this an especially important project for the region. Minor modifications to the extensive drainage system would have a very significant effect on, and would assure the success of, a vigorous and sustainable interstream divide wetland system. Weighing the effort to implement this mitigation plan against the potentially benefits to the environment as a whole, makes this project one that would have far reaching benefits for the county in the future.

Table 1: Davis Farm Wetland Mitigation Bank, Mitigation Type and Quantity

Mitigation Type	Size	Ratio	Mitigation Banking Units (MBU)	Current Credit Value	Potential Overall Credit Value
Restoration (Non-Riparian)	2,685 ac.	1:1	2,685	\$50,313/ac.	\$135,090,405
Restoration (Riparian)	55 ac.	1:1	55	\$69,736/ac.	\$3,835,480
Restoration (Riparian, Stream)	8,732 l.f.	1:1	8,732	\$381/l.f.	\$3,326,892
Preservation (Riparian)	220 ac.	10:1	22	\$69,736/ac.	\$1,534,192
Preservation (Non-Riparian)	24 ac.	10:1	2.4	\$50,313/ac.	\$167,366
				Total	\$143,954,335

4.0 SITE LOCATION

The Davis Farm Tract is located approximately 2 miles northwest of the intersection of Highway 117 and Highway 210, just northwest of the town of Rocky Point, North Carolina. Kellys Creek flows along the northern boundary of the site. Rural residences, agricultural fields, and silvicultural land surround the tract.

5.0 BASELINE CONDITIONS

A. Community Types

There are several community types represented within the DFWMB. The majority of the site is former pocosin wetland type, which according to the Cowardin Classification of Wetland and Deepwater Habitats of the United States (Cowardin et al. 1979), is Palustrine Forested Wetland (needle-leaved and broad-leaved evergreen). This type is the target type for restoration of the non-riparian area. The riparian and stream restoration areas are former wetlands which can be classified by Cowardin as Palustrine Forested Wetland (broad-leaved deciduous).

B. Soils

The soil series composition of the site is complex, but characteristic of coastal plains interstream divides. The soils within the site are comprised primarily of hydric soils commonly found within pocosins and broad

interstream divides on the coastal plain. Torhunta fine sand is the dominant mapping unit on this site. This very poorly drained soil is found on broad interstream divides and on stream terraces. There are smaller areas of Leon fine sand intermixed within the Torhunta unit on the broad flats. As you approach the surrounding streams, the hydric soil unit Woodington fine sandy loam is encountered, before transitioning into the non-hydric units Norfolk loamy fine sand and Foreston loamy fine sand. The riparian areas are mapped as Muckalee loam, a poorly drained, frequently flooded soil found on flood plains. The majority of the more than 50 miles of ditches exist within the Torhunta mapping unit, and have effectively drained a majority of the wetlands in these areas.

C. Vegetation

The dominant wetland vegetation found within the tract consists primarily of planted loblolly pine (*Pinus taeda*). The dominant understory composition is characteristic of pocosin wetlands and contains pond pine (*Pinus serotina*), red bay (*Persea palustris*), red maple (*Acer rubrum*), sweet bay (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), green brier (*Smilax species*), fetterbush (*Lyonia lucida*), tall gallberry (*Ilex coriacea*), pepper bush (*Clethra alnifolia*), titi (*Cyrilla racemiflora*), high bush blueberry (*Vaccinium corymbosum*), and sweet gum (*Liquidambar styraciflua*). There are several fern species, including cinnamon fern (*Osmunda cinnamomea*) and Virginia chain fern (*Woodwardia virginiana*). The riparian areas were largely left undisturbed by the silvicultural operations, and contained vegetation commonly encountered in coastal plain creeks, including red maple, sweet gum, tulip poplar (*Liriodendron tulipifera*), and swamp black gum (*Nyssa aquatica*).

The vast network of ditches has caused a reduction in water tables across the site, which is evident by a noticeable trend of plant species adapted to drier conditions, such as horse sugar (*Symplocos tinctoria*), bracken fern (*Pteridium aquilinum*), winged sumac (*Rhus copallinum*), and yellow jasmine (*Gelsemium sempervirens*).

D. Hydrology

The hydrology of the site has a whole has been drastically modified by historic drainage ditches, averaging 4 feet deep, dating back to the early 1960s. These ditches have been well maintained throughout the years, which is typical for large-scale timber operations. Drainage effects are evidenced by the presence of low chroma soils with a high percentage of uncoated sand grains, and diminished organic content at the surface, where a thick organic layer would normally be encountered in this community type. Recendence of the soil surface is evident in the former riparian zones proposed for restoration. The lateral effect of the ditches in the soil types found within the site can be as much as 400-500 feet, depending on the depth of the ditch and the adjacent microtopography.

6.0 ESTABLISHMENT & OPERATION OF BANK

A. Service Area

The DFWMB will provide mitigation credits to individuals required to offset wetland impacts authorized by federal permits associated with the Clean Water Act, Section 404 (b)(1). The bank will serve the USGS Hydrologic Unit Code (HUC) 03030007 of the Cape Fear River Basin (see Figure 6).

B. Implementation

The DFWMB project will entail restoration of non-riparian and riparian wetlands and streams within an approximately 3,400 acre tract of timberland.

1. Hydrologic Restoration

Site work necessary to restore hydrologic functions to the site will involve several types of earthwork. To implement the restoration of the non-riparian pocosin wetlands, 50 foot long clay plugs will be installed in ditches at locations to be determined during the design phase, after review by the IRT. Select roads and culverts will be removed, and restored to match surrounding grades, to allow sheet flow to move across natural contours.

Restoration of hydrology in the riparian areas will involve limited backfill of historic channelized stream features. A detailed stream restoration plan will be formulated later, which will include details on the required environmental permits that will be required to implement this plan.

By reducing and eliminating flow from drainage ditches within the site, and restoring historic contours and hydrology to on-site streams, retention of storm water from this site, and from adjacent parcels, will largely reduce or eliminate sediment and nutrient rich runoff to adjacent receiving waters, within the Cape Fear River Basin

2. Vegetative Restoration

As part of vegetative restoration of the site, the planted loblolly pines will be thinned, to a density of 260 trees per acre, which is the number that the USACE requires of an acceptable mitigation site. The site contains existing vegetation characteristic of the target pocosin habitat. The road beds that will be removed, and any areas where ditch spoils are removed will be planted with site appropriate wetland species. These species will include pond pine, sweet bay, red bay, bald cypress (*Taxodium distichum*), and black gum (*Nyssa sylvatica*). Volunteer native shrubs and forbs will colonize the restoration areas without the need for planting.

3. Habitat Restoration

Restoration of the non-riparian wetlands will turn intensively managed forest, with extensive unbroken monotypic forest habitat, which fails to meet the needs of many wildlife species, back into the richly diverse pocosin and flatwoods habitat it once was. Removal of roads will reconnect long-ago disconnected habitat and eliminate artificial edges, which have broad influence on species diversity and composition, among other factors.

C. Mitigation Monitoring Plan

1. Proposed Success Criteria

Once the DCWMB plan has be approved by the IRT, restoration activities will be started. SEGi staff will oversee all earthwork activities until completion. After completion of restoration activities, an as-built survey will be prepared to illustrate that all work was done according to the approved mitigation plan. The mitigation site will be monitored for a period of 7 years, as outlined in the "Monitoring Requirements and Performance Standards for Compensatory Mitigation in North Carolina, North Carolina Interagency Review Team – February 8, 2013".

a. Non-riparian Restoration Areas

According to Section V (A) of the "Monitoring Requirements and Performance Standards for Compensatory Mitigation in North Carolina, North Carolina Interagency Review Team – February 8, 2013", the success criteria for the non-riparian areas of the mitigation bank are:



- (i) Within planted portions of the site, a minimum of 320 three year old planted stems per acre must be present at year three; a minimum of 260 five year old planted stems per acre must be present at year five; and a minimum of 210 seven year old planted stems per acre must be present at year seven.¹
- (ii) Planted vegetation in each plot must average 7 feet in height at year five and 10 feet in height at year seven.
- (iii) No single planted or volunteer species shall comprise more than 50% of the total composition within any plot at year three, year five, or year seven. If this occurs, remedial action as specified in the Adaptive Management Plan or as directed by the USACE may be required. Exceptions to this requirement may be provided on a case-by-case basis for sites with conditions that limit the planting list. All exceptions to this requirement shall be specifically noted in the approved Mitigation Plan.
- (iv) If performance standards a through c are fully successful through year five and no other problems with planted vegetation have been identified during the visual monitoring of the site at year five, monitoring of vegetation on the site may cease with written approval from the USACE. In the event that the termination of vegetation monitoring is approved, all other forms of monitoring and future credit releases shall continue as originally scheduled until project closeout.

b. Riparian Restoration Areas

These areas must meet the success criteria outlined in Section VIII (b) of the "Monitoring Requirements and Performance Standards for Compensatory Mitigation in North Carolina, North Carolina Interagency Review Team – February 8, 2013". The details regarding this mitigation type are much more exhaustive, and can be found within the above referenced document.

2. Vegetative Monitoring

The vegetation monitoring protocol is based upon accepted methods found within the "Monitoring Requirements and Performance Standards for Compensatory Mitigation in North Carolina, North Carolina Interagency Review Team – February 8, 2013". Specifically, 2% of the planted non-riparian wetland areas will be monitored by the establishment of permanent 0.02-acre minimum size plots. This area includes the removal of existing road beds. The total number of plots will be determined after comment has been received from the IRT, since the project is so large.

3. Hydrologic Monitoring

Shallow groundwater hydrology will be monitored by automatic pressure transducer-type monitoring wells located within the restoration and preservation areas. Wells will be installed in accordance with the Wetlands Regulatory Assistance Program (WRAP) Technical Note 00-02 (Sprecher 2000). Data will be recorded once daily, and will be manually downloaded quarterly. The data will then be plotted in graphs to illustrate the change in water tables over a period of time.

D. Operation of the Bank

The Bank Sponsor, Mr. Jack Stocks, et al, will own fee simple title for the land included within the mitigation bank. All ditches planned for plugging and filling are controlled by the Sponsor. All water rights necessary for

¹ Volunteer plants growing within plots may be considered by the USACE on a case-by case basis in determining whether a project has met the overall goal of reestablishing the target vegetation community; however, volunteer plant data shall be presented separately from planted vegetation in the monitoring reports.

sustainability of the bank are secured through fee simple ownership, since the restoration is based on reestablishment of groundwater hydrology by elimination of ditch drainage.

The tentative schedule for establishment of the bank site is outlined in Table 2. The final, approved credit release schedule will be identified in the banking instrument prior to execution by IRT members and the Sponsor.

Table 2: Credit Release Table

Task	Percentage of Credit Released (% cumulative)		
Site Establishment - Execution of MBI, approval of final Mitigation Plan, delivery of Financial Assurances, recordation of Conservation Easement, 404 Permit	15 (15)		
Construction Phase Complete - All initial physical and biological improvements made pursuant to the Mitigation Plan	15 (30)		
Year 1 Monitoring	10 (40)		
Year 2 Monitoring	20 (60)		
Year 3 Monitoring	10 (70)		
Year 4 Monitoring	5 (75)		
Year 5 Monitoring	10 (85)		
Year 6 Monitoring	5 (90)		
Year 7 Monitoring	10 (100)		
Total	100		

7.0 SPONSORS QUALIFICATIONS

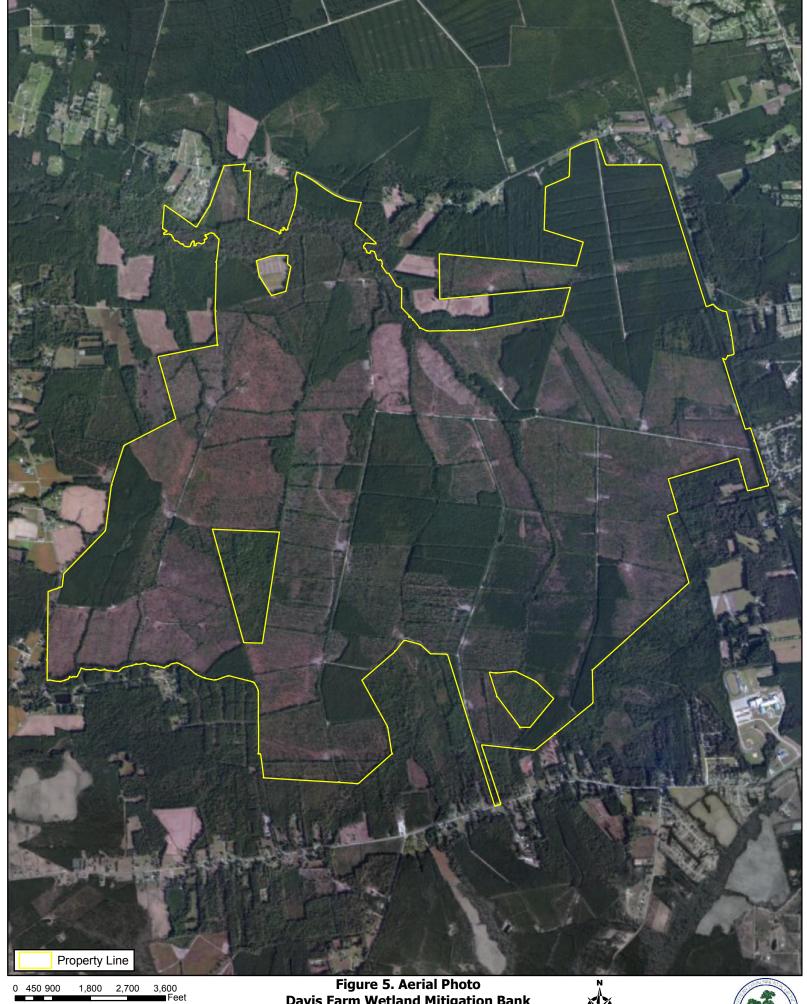
Mr. Stocks has previously been involved with the startup of the Shaw Highway Mitigation Bank. Although he does not currently own or operate that bank his does understand the structure and requirements of mitigation banking. It is Mr. Stocks intent to have the DFWMB managed by a third party that is familiar with mitigation banking and approved by the agencies.

8.0 PROPOSED OWNERSHIP & LONG TERM MANAGEMENT STRATEGY

The long term operation of the DWFMB will be handled by a qualified and agency approved third party entity. The DWFMB operating firm will be responsible for long term monitoring and agency reporting. This will include monitoring of the success criteria as well as post approval monitoring of the sites well-being.

FIGURES





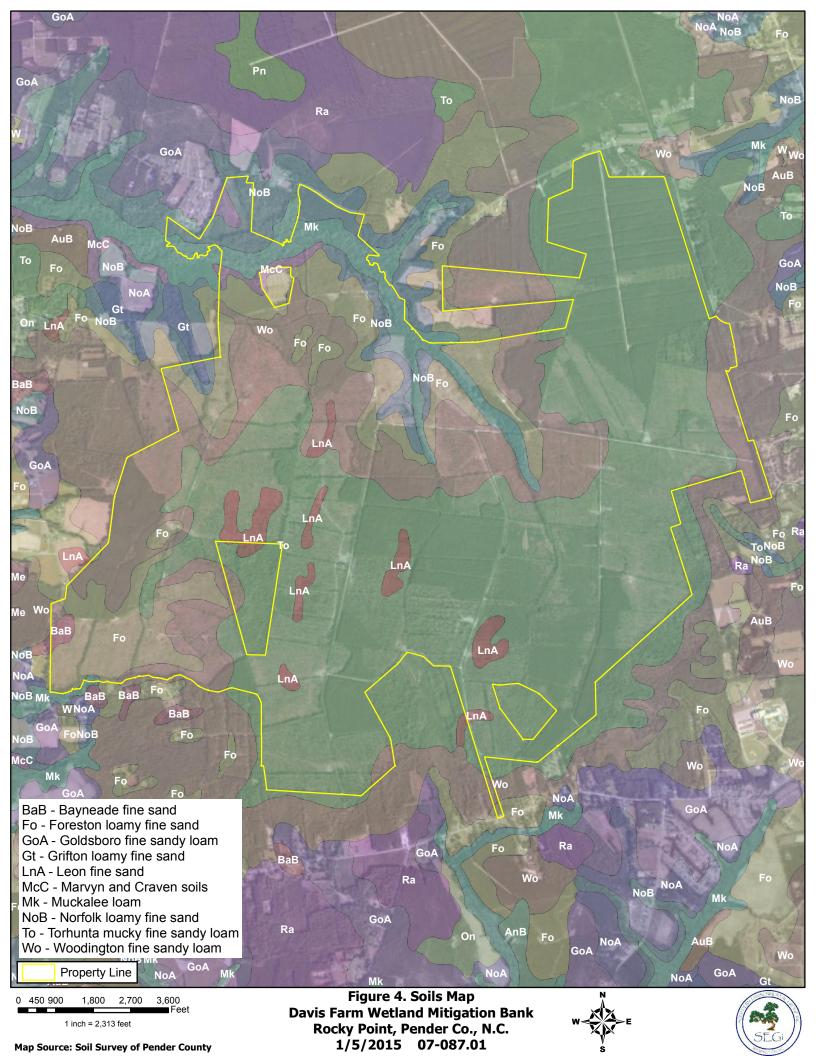
Map Source: ESRI World Imagery, 2010

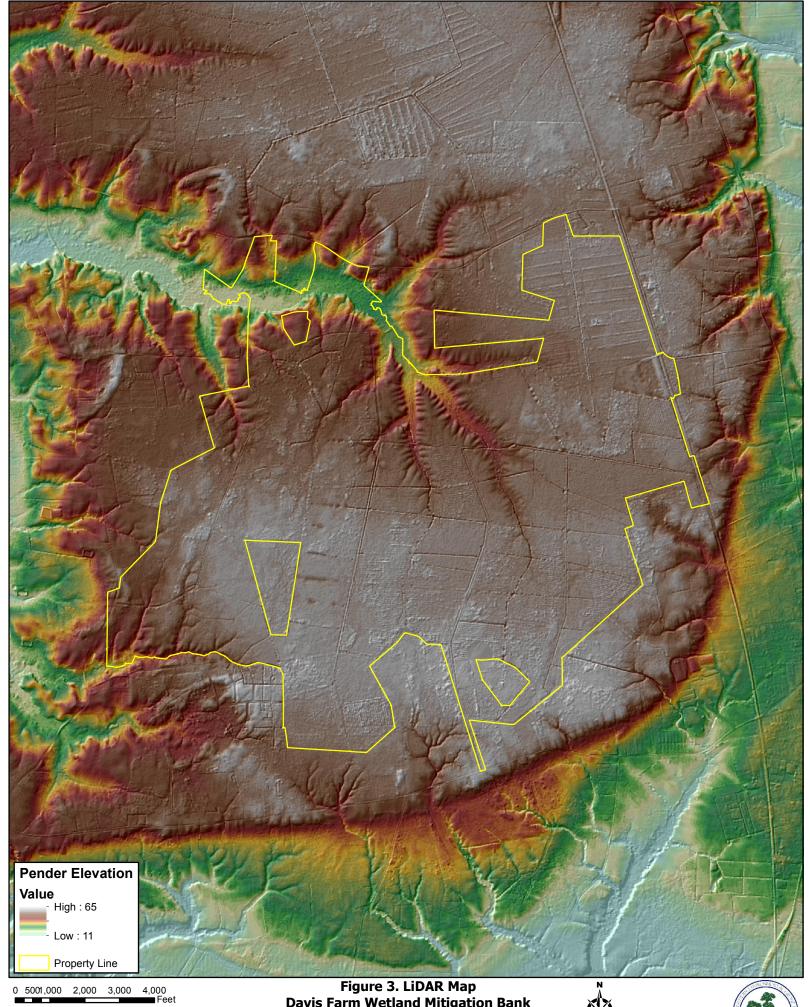
1 inch = 2,313 feet

Pigure 5. Aerial Photo
Davis Farm Wetland Mitigation Bank
Rocky Point, Pender Co., N.C.
1/5/2015 07-087.01







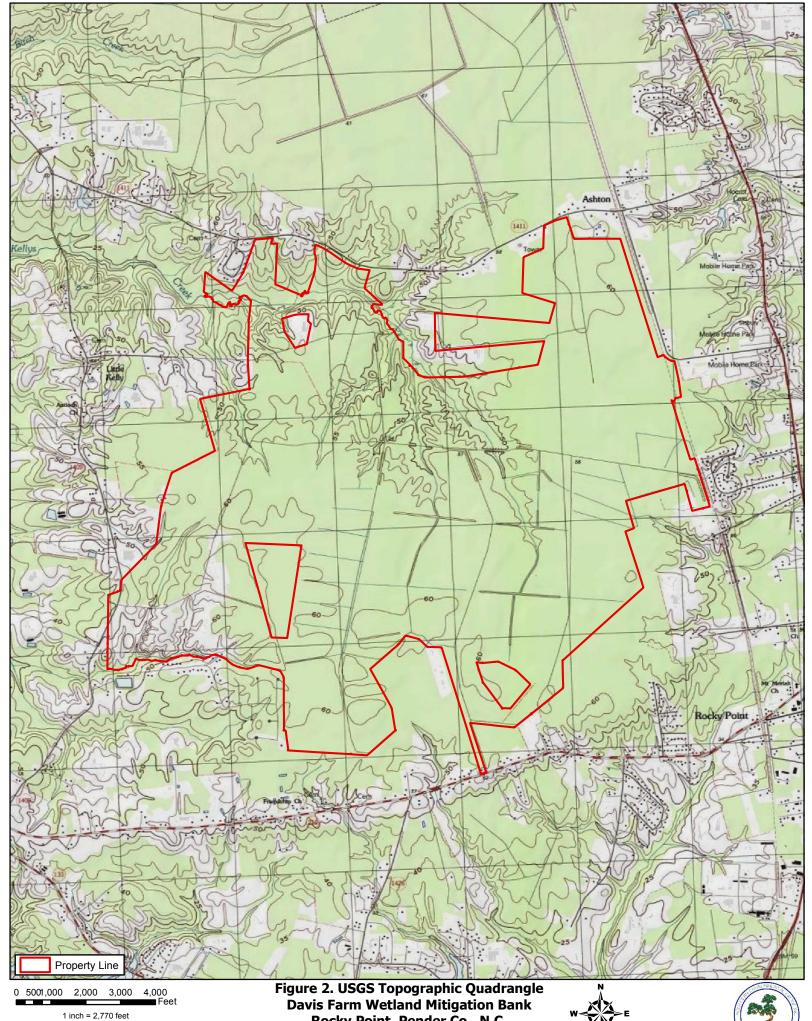


1 inch = 2,770 feet Map Source: NC Floodplain Mapping Program LiDAR Data

Davis Farm Wetland Mitigation Bank Rocky Point, Pender Co., N.C. 1/5/2015 07-087.01





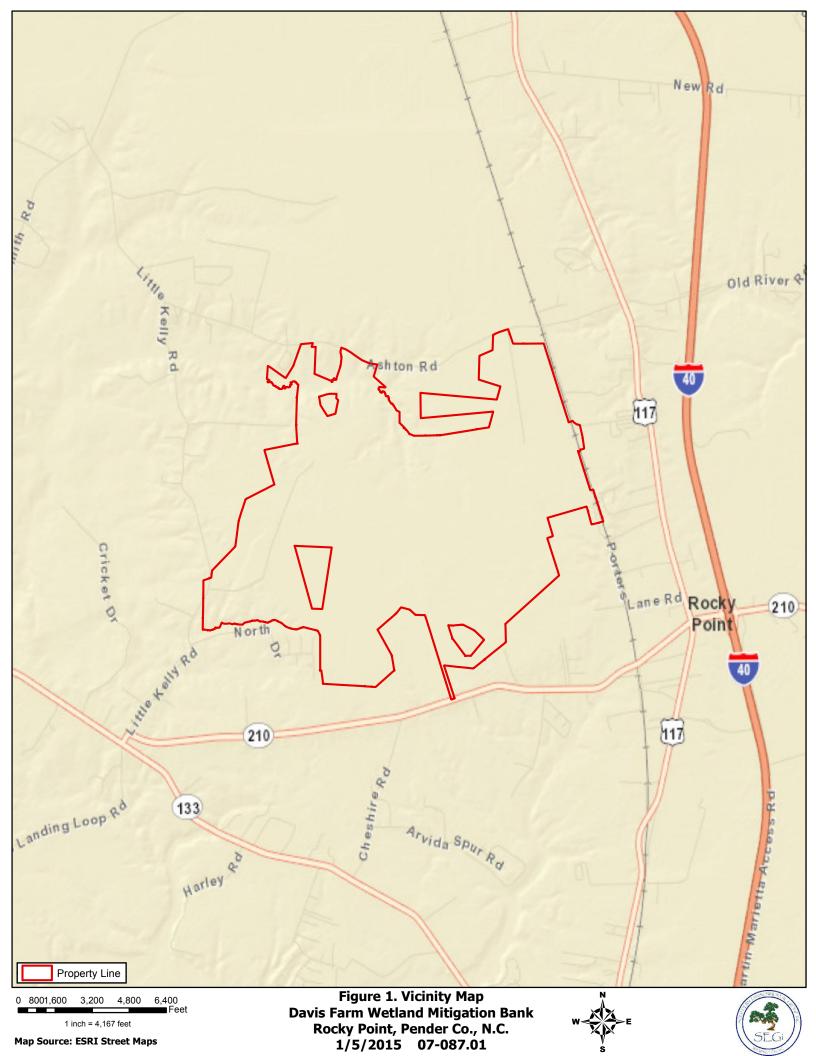


Map Source: USA Topo Maps, 1:24,000 scale

Davis Farm Wetland Mitigation Bank Rocky Point, Pender Co., N.C. 1/5/2015 07-087.01

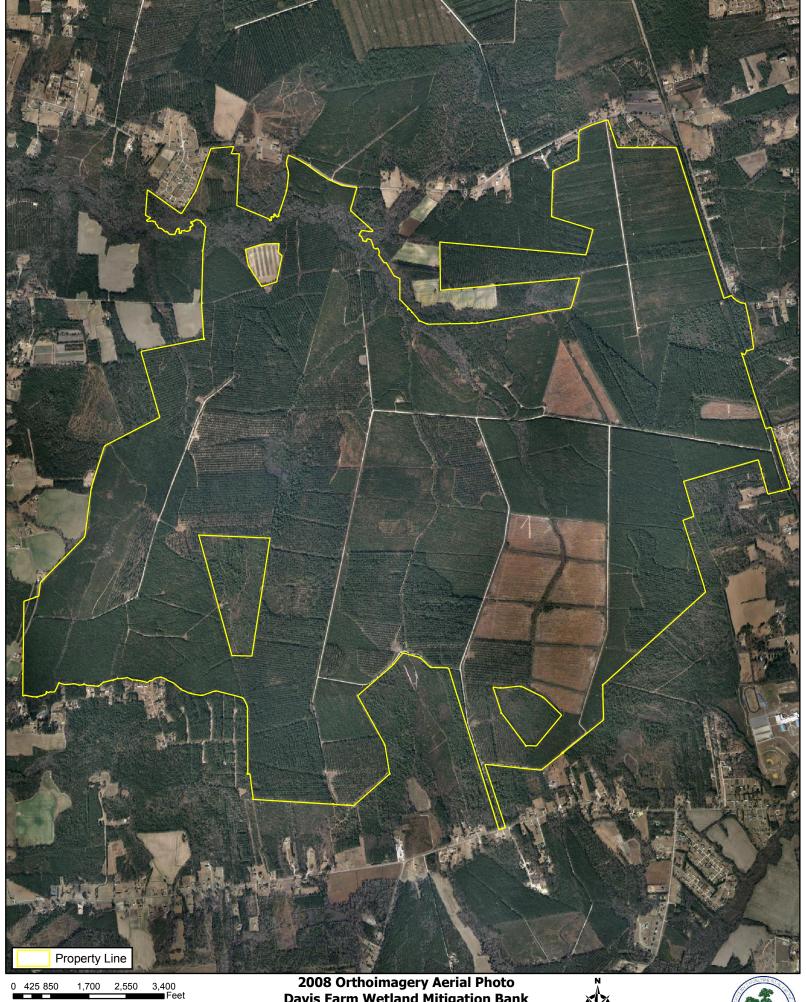






Appendix A

Historic Aerial Photographs



1 inch = 2,174 feet

Map Source: NCOneMap

2008 Orthoimagery Aerial Photo Davis Farm Wetland Mitigation Bank Rocky Point, Pender Co., N.C. 1/5/2015 07-087.01







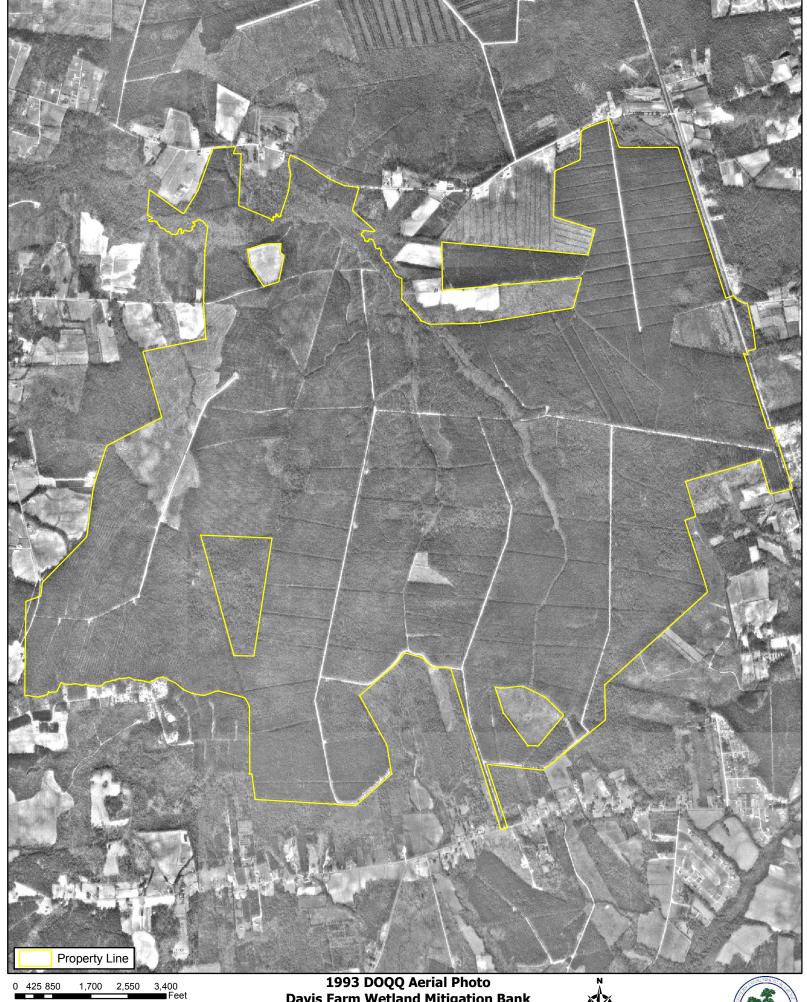
1 inch = 2,174 feet

Map Source: NCOneMap

1998 DOQQ Aerial Photo
Davis Farm Wetland Mitigation Bank
Rocky Point, Pender Co., N.C.
1/5/2015 07-087.01







Map Source: NCOneMap

1 inch = 2,174 feet

1993 DOQQ Aerial Photo
Davis Farm Wetland Mitigation Bank
Rocky Point, Pender Co., N.C.
1/5/2015 07-087.01







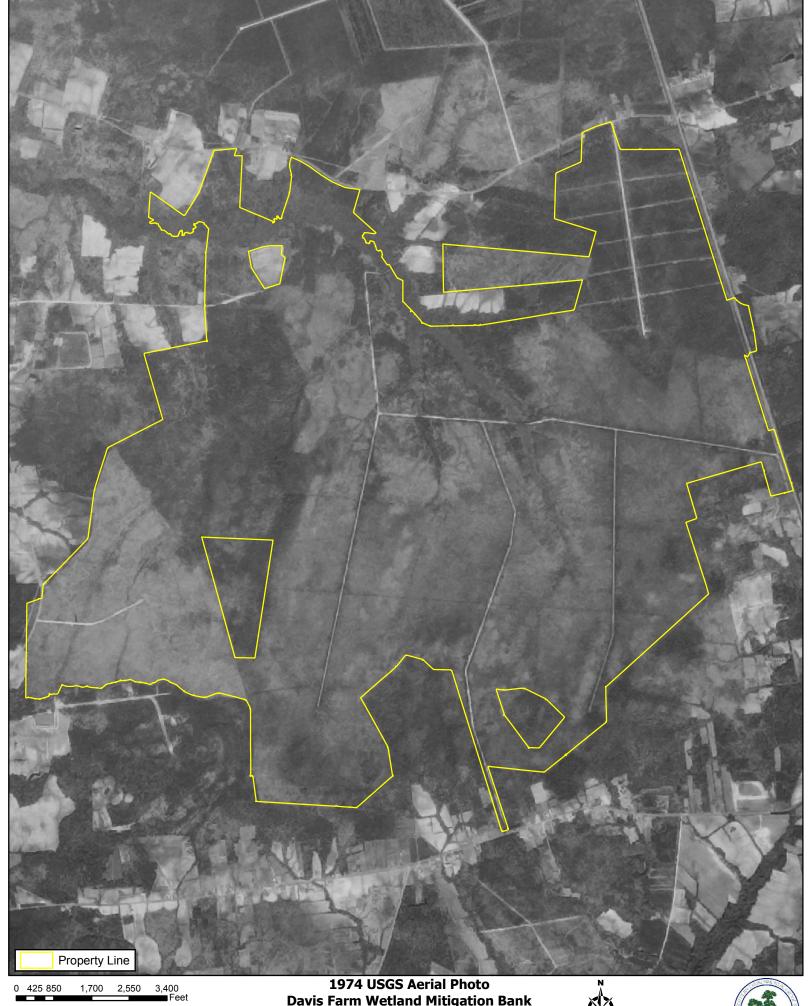
1 inch = 2,174 feet

Map Source: USGS Earth Explorer

1980 USGS Aerial Photo
Davis Farm Wetland Mitigation Bank
Rocky Point, Pender Co., N.C.
1/5/2015 07-087.01







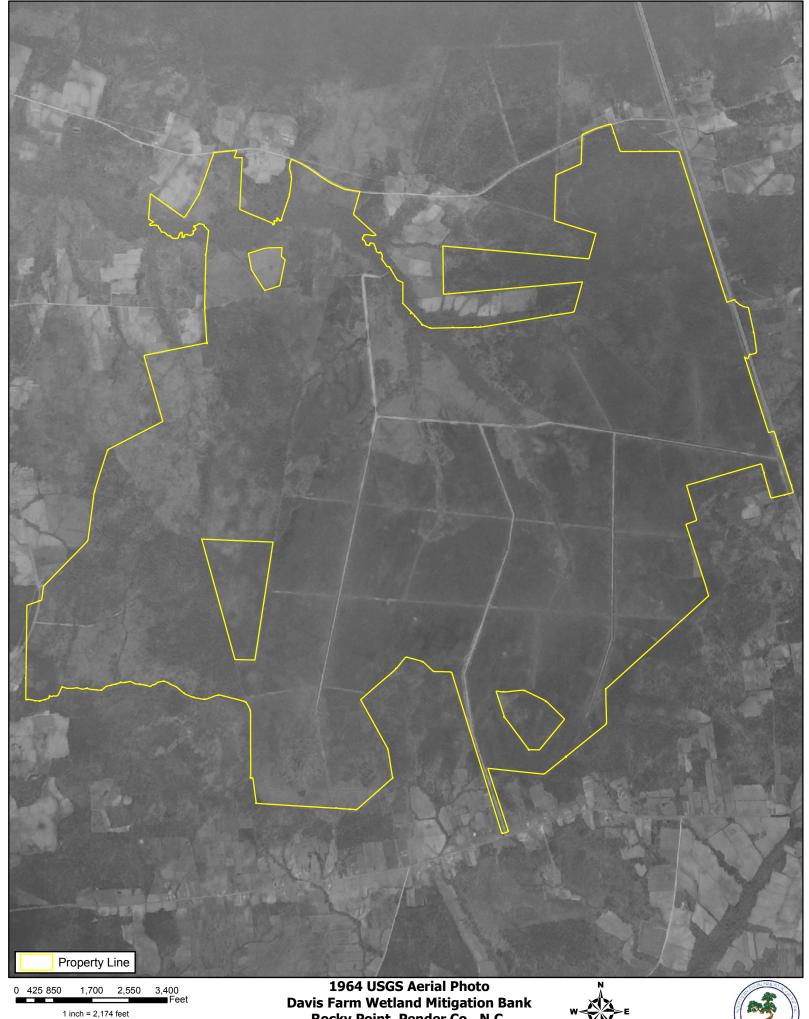
1 inch = 2,174 feet

Map Source: USGS Earth Explorer

Davis Farm Wetland Mitigation Bank Rocky Point, Pender Co., N.C. 1/5/2015 07-087.01





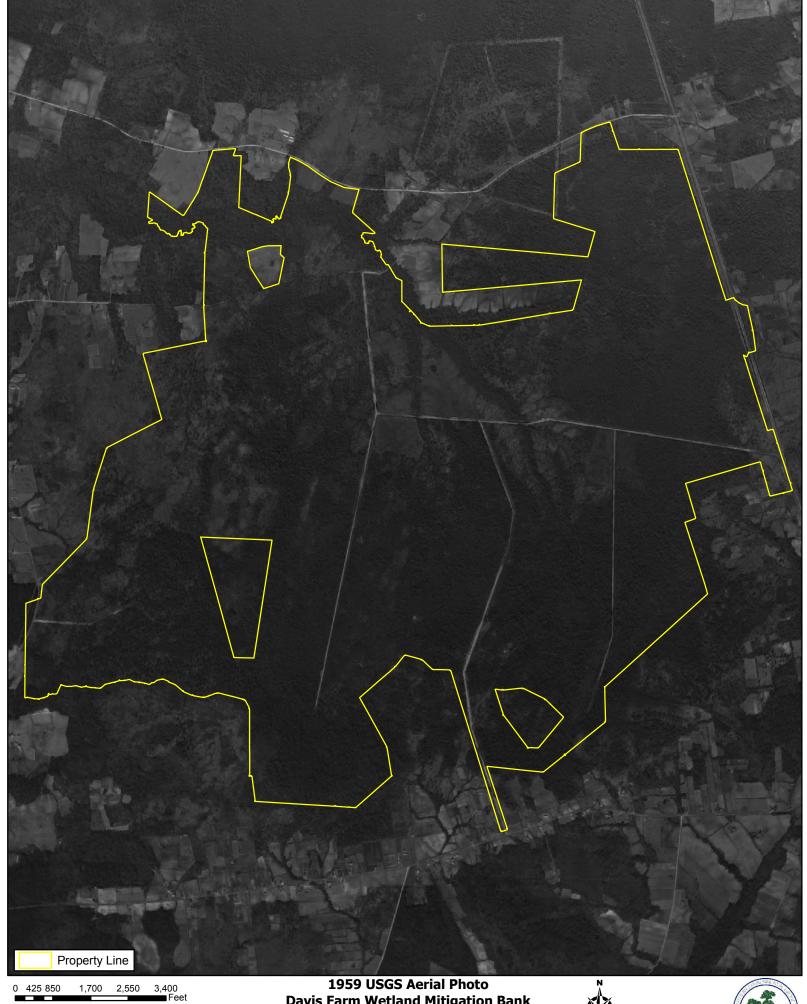


Map Source: USGS Earth Explorer

Davis Farm Wetland Mitigation Bank Rocky Point, Pender Co., N.C. 1/5/2015 07-087.01







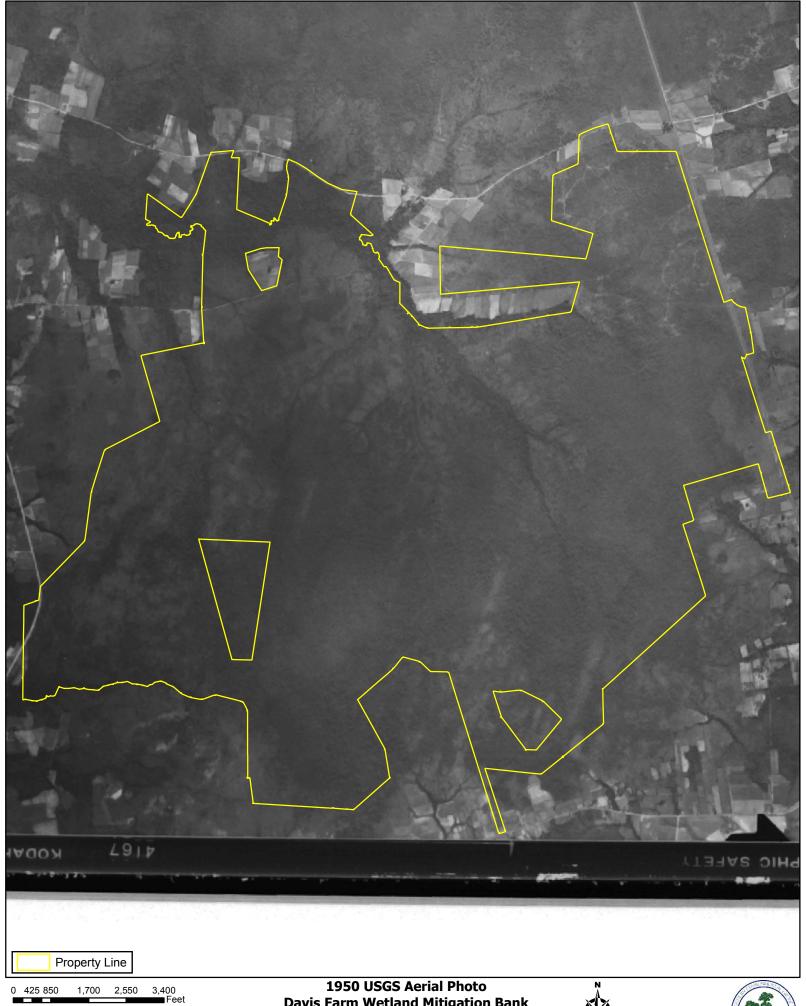
Map Source: USGS Earth Explorer

1 inch = 2,174 feet

Davis Farm Wetland Mitigation Bank Rocky Point, Pender Co., N.C. 1/5/2015 07-087.01







1 inch = 2,174 feet

Map Source: USGS Earth Explorer

1950 USGS Aerial Photo
Davis Farm Wetland Mitigation Bank
Rocky Point, Pender Co., N.C.
1/5/2015 07-087.01





Appendix B

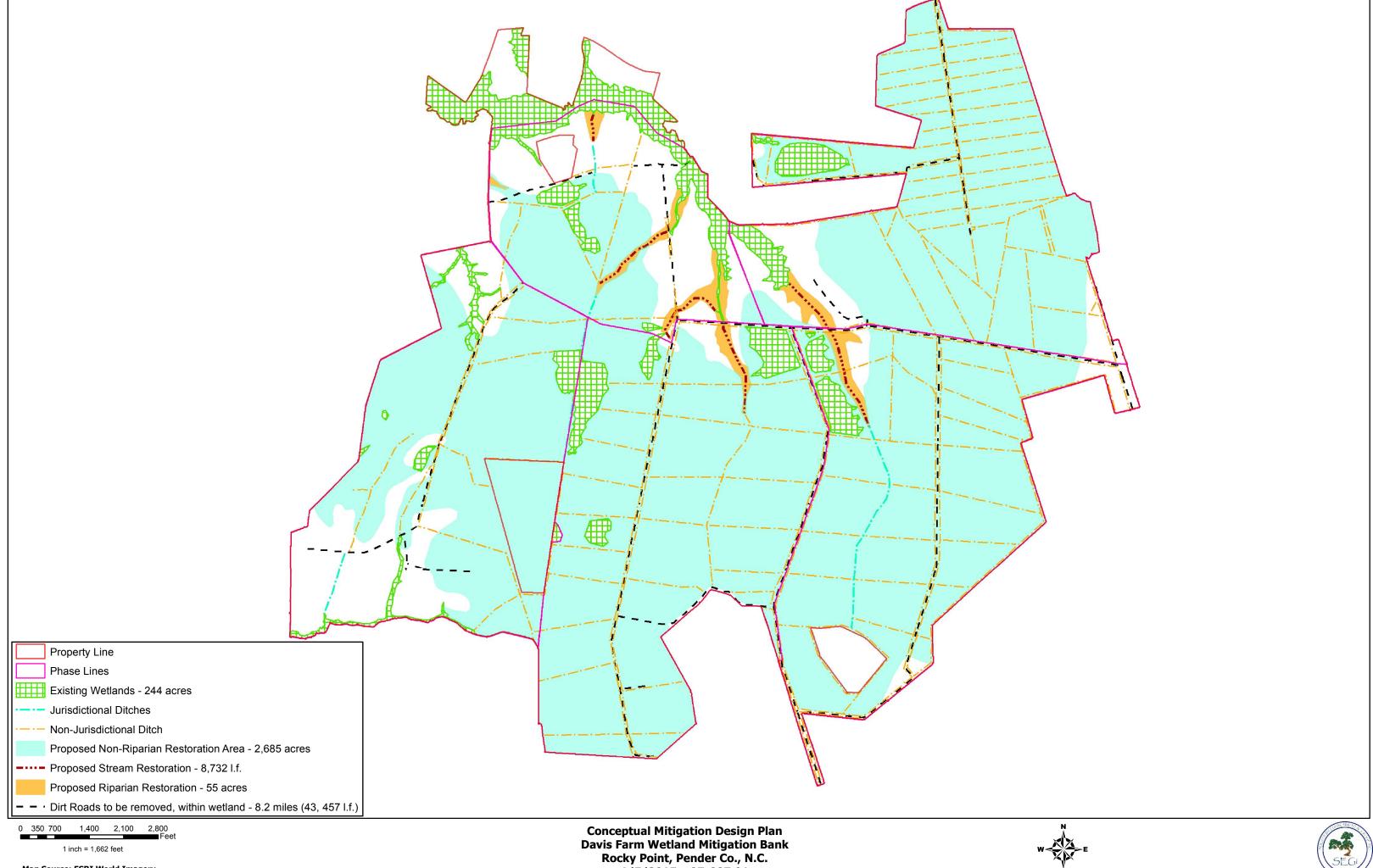
Ecoregions of North Carolina

Ecoregions of North Carolina Raleigh 45b ATLANTIC OCEAN O Athens 45 Piedmont 65 Southeastern Plains Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. They 45a Southern Inner Piedmont 65c Sand Hills are designed to serve as a spatial framework for the research, 651 Atlantic Southern Loam Plains 45b Southern Outer Piedmont Level III ecoregion assessment, management, and monitoring of ecosystems and 45c Carolina Slate Belt 65m Rolling Coastal Plain ecosystem components. The approach used to compile this map is Level IV ecoregion 65p Southeastern Floodplains and Low Terraces 45e Northern Inner Piedmont based on the premise that ecological regions can be identified County boundary 45f Northern Outer Piedmont through the analysis of the patterns of biotic and abiotic --- State boundary 66 Blue Ridge phenomena that reflect differences in ecosystem quality and 45g Triassic Basins 66c New River Plateau integrity. These phenomena include geology, physiography, 45i Kings Mountain 66d Southern Crystalline Ridges and Mountains vegetation, climate, soils, land use, wildlife, and hydrology. The 63 Middle Atlantic Coastal Plain 66e Southern Sedimentary Ridges relative importance of each characteristic varies from one ecological region to another regardless of the hierarchical level. 66g Southern Metasedimentary Mountains 63b Chesapeake-Pamlico Lowlands and Tidal Marshes The Ecoregions of North Carolina map was compiled at a scale of 63c Nonriverine Swamps and Peatlands 66i High Mountains 1:250,000. Compilation of this map is part of a collaborative 63d Virginian Barrier Islands and Coastal Marshes 66i Broad Basins project primarily between the US EPA, USDA-NRCS, NC DENR, 63e Mid-Atlantic Flatwoods 66k Amphibolite Mountains as well as with other state and federal agencies. Comments and Albers Equal Area Projection 63g Carolinian Barrier Islands and Coastal Marshes 661 Eastern Blue Ridge Foothills suggestions regarding this map should be addressed to Glenn Griffith, USDA-NRCS, 200 SW 35th Street, Corvallis, OR 97333, 63h Carolina Flatwoods 66m Sauratown Mountains (541) 754-4465, email: griffith.glenn@epa.gov, or to James 63n Mid-Atlantic Floodplains and Low Terraces

Omernik, U.S. EPA - NHEERL, 200 SW 35th Street, Corvallis, OR 97333, (541) 754-4458, email: omernik.james@epa.gov.

Appendix C

Conceptual Mitigation Design Plan



1/5/2015 07-087.01

