Bank Parcel Development Package

North Fork Little River Nutrient Offset and Buffer Mitigation Bank Parcel

Upper Falls Lake Watershed of the Neuse River Basin

March 2016

WILDLANDS
ENGINEERING

PREPARED BY:
1430 South Mint Street, Suite 104
Charlotte, NC 28203
Phone: (704) 332-7754
Fax: (704) 332-3306

Bank Parcel Development Package

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Bank Parcel Development Package

North Fork Little River Nutrient Offset and Buffer Mitigation Bank Parcel

Falls Lake Watershed in the Neuse River Basin

The North Fork Little River Nutrient Offset and Buffer Mitigation Bank Parcel ("Parcel") is proposed under the terms and conditions of the Wildlands North Fork Little River Nutrient Offset and Buffer Mitigation Banking Instrument (MBI), made and entered into by Wildlands Holdings II, LLC, acting as Bank Sponsor (Sponsor), and the North Carolina Department of Environmental Quality (NCDEQ) on MONTH, DAY, 2016. The Parcel shall be planned and designed according to the MBI, 15A NCAC 02B.0240 and the Consolidated Mitigation Rule 15A NCAC 02B.0295 which became effective on November 1, 2015.

The project encompasses land along unnamed tributaries to the North Fork of the Little River in Durham County, NC. One purpose of the Bank is to provide riparian buffer mitigation credits to compensate for unavoidable buffer impacts in the 03020201 Hydrologic Unit Code of the Neuse River Basin as depicted in Figure 1. The second purpose of the Bank is to provide nutrient offset credits for stormwater requirements with new and existing development requiring nitrogen and phosphorous offsets within the Falls Lake Watershed as depicted in Figure 1.

1.0 Project Location and Description

1.1 Introduction

The Parcel involves restoring Neuse riparian buffers and other riparian areas adjacent to streams and ditches onsite in order to help reduce non-point source contaminant discharges to downstream waters in the Falls Lake Watershed. Approximately 33.4 acres of the project area will be protected with a permanent conservation easement. Out of the 33.4 acres, 15 acres of riparian areas will be restored for Neuse riparian buffer credit and 17.3 acres (39,323.25 lbs-N and 2,532.72 lbs-P) of riparian areas will be restored for nutrient offset credit. One point one (1.1) acres will not generate mitigation credit (0.4 acre of stream, 0.3 acre of ditch, 0.2 acre does not qualify for mitigation credit due to distance from project features, 0.2 acre does not qualify for mitigation credit due to lack of diffuse flow entering the feature).

In general, riparian buffer restoration area widths on streams will extend out to 100 feet from top of bank for Neuse buffer credits and out to 200 feet for nutrient offset credits. Riparian restoration widths on ditches will extend out to 50 feet from top of bank for Neuse buffer credits and out to 200 feet for nutrient offset credits.

1.2 Parcel Location

The Parcel is located in northwestern Durham County, approximately 14 miles north of the City of Durham (36° 10' 9.48" N and 78° 55' 49.44" W) in a rural watershed within the Neuse River Basin (HUC 03020201) and within Division of Water Resources (DWR) sub-basin 02-00-10. To get to the Parcel from downtown Durham, travel north on U.S. Highway 501 North for approximately 12.7 miles. Turn left onto S. Lowell Road and continue west for approximately 1.9 miles to the intersection with Johnson Mill Road. The Parcel will be on the north side of S. Lowell Road at this intersection (Figure 2).

2.0 Project Area - Existing Conditions

2.1 Parcel Features

The project includes restoring the riparian areas along eight identified features (A-H): three unnamed tributaries to the North Fork of the Little River and five ditches (Figure 3). All Parcel features flow into unnamed tributary Feature A, which then flows into another unnamed tributary to the North Fork of the Little River, the Little River, the Little River Reservoir, the Eno River, and ultimately into Falls Lake. All of the intermittent streams on the Parcel are classified as Nutrient Sensitive Waters (NSW) by DWR. The Little River Reservoir is a major source of drinking water for the City of Durham; Falls Lake is a major source of drinking water for the City of Raleigh. To protect these reservoirs, the Little River and its waters are also classified as Water Supply II (WS-II) and as a High Quality Water (HQW) by DWR.

DWR performed a stream determination on the site which is documented in a Stream Determination Letter dated August 5, 2013. Per the Letter, Features A, D, and E are classified as intermittent streams and Features B, C, F and G are classified as ditches (Appendix). Feature H was classified as a ditch by DWR staff during a July 9, 2015 site visit. Feature A is shown as a blue line on the Rougemont USGS 7.5' Quadrangle map (Figure 2).

DWR visited the Parcel to assess the viability of implementing a buffer and nutrient offset bank. The results are documented in a Site Viability Letter dated December 16, 2015. Per the letter, features A, D, and E are viable for riparian restoration and suitable for either buffer mitigation or nutrient offset credits (Appendix). Features B, C, F, G, and H are also viable for buffer mitigation or nutrient offset credits assuming they comply with 15A NCAC 02B.0295 (o)(8)(A-E). The Buffer Interpretation /Clarification Memo #2008-019 applies to Features H and F where maintenance of diffuse flow onsite is unattainable.

Photos showing site conditions of the Parcel at the time the BPDP was submitted are provided in the appendix. Figures 3 and 4 demonstrate how each of the five features is in compliance with the five components of this rule. Features B, C, F, G, and H:

1. Directly connect with and drain towards intermittent streams (Features A, D, or E);
2. Are contiguous with the rest of the mitigation site and will be protected under a conservation easement;
3. Receive overland stormwater runoff;
4. Are between one and three feet in depth (depths are outlined on Figure 3 and included in the appendix); and
5. Were in place prior to the effective date of the buffer rule (see Figure 4, a 1976 Durham County Soils Survey that depicts the features).

2.2 Parcel Soils

The soils on the Parcel are mapped by the Durham County Soil Survey. There are four main soil types on the Parcel: Georgeville silt loam, Lignum silt loam, Mecklenburg loam, and Wehadkee silt loam. These soils are described below in Table 1. The 1976 Soils Survey Map is provided in Figure 4.

Table 1: Project Soil Types and Descriptions - *North Fork Little River BPDP*

Soil Name	Location	Description
Georgeville silt loam (GeC)	Southern exterior of the Parcel.	Well-drained upland soils, gently to strongly sloping. Permeability is moderate. Shrink-swell potential is low.

Soil Name	Location	Description
Lignum silt loam (LgB)	Northern portion of the Parcel.	Moderately well drained soils, gently sloping. Permeability is slow. Shrink-swell potential is moderate.
Mecklenburg loam (MuB)	Northeastern section of the Parcel.	Well-drained upland soils, gently sloping. Permeability is slow. Shrink-swell potential is moderate.
Wehadkee silt loam (Wn)	Immediately adjacent to Features A, B, C, D, E, F, G, and H.	Poorly drained, nearly level, frequently flooded soils. Permeability is moderate. Shrink-swell potential is low.

Source: Durham County Soil Survey, 1976 USDA-NRCS

2.3 Existing Vegetative Communities

Parcel vegetation consists primarily of open agricultural fields in row crop production for corn. The Parcel streams and ditches have little to no existing riparian buffer. The riparian area adjacent to most of the Parcel streams and ditches are mowed annually.

While the Parcel consists of agricultural fields, there are some forested areas on the opposite site of S. Lowell Road. The nearby forested areas were assessed on December 18, 2015, for existing vegetation conditions. This area is dominated by sweetgum (*Liquidambar styraciflua*) but contains some loblolly pine (*Pinus taeda*), black willow (*Salix nigra*), red maple (*Acer rubrum*), and sycamore (*Platanus occidentalis*). This forested area is generally characterized as a Piedmont Bottomland Forest, according to the North Carolina Natural Heritage Program (NHP) classification system (Schafale, 2012).

2.4 Threatened and Endangered Species

The US Fish and Wildlife Service (USFWS) database was searched for federally listed threatened and endangered plant and animal species for Durham County, NC. Three federally listed species, the bald eagle (*Haliaeetus leucocephalus*), Michaux's sumac (*Rhus michauxii)*, and the smooth coneflower (*Echinacea laevigata*), are currently listed in Durham County (Table 2).

Table 2: Listed Threatened and Endangered Species in Durham County, NC - *North Fork Little River BPDP*

Species	Federal Status	Habitat
Vertebrate		
Bald eagle (*Haliaeetus leucocephalus*)	BGPA	Near large open water bodies: lakes, marshes, seacoasts, and rivers
Vascular Plant		
Michaux's sumac (*Rhus michauxii*)	E	Sandy or rocky open woods, best in areas where disturbance has occurred.
Smooth coneflower (*Echinacea laevigata)*	E	Open woods, glades, cedar barrens, roadsides, clearcuts, dry limestone bluffs, and power line right-of-way.

E = Endangered; BGPA=Bald & Golden Eagle Protection Act

A pedestrian survey of the site was performed on December 18, 2015. No individual species or their habitat was found to exist on the site.

2.5 Cultural Resources

Review and comment from the State Historic Preservation Office (SHPO) with respect to any archeological and architectural resources related to the Parcel was requested on January 11, 2016.

SHPO responded on February 4, 2016, and stated they "are aware of no historic resources which would be affected by the project". All correspondence is included in the Appendix.

2.6 Environmental Issues

An EDR Radius Map Report with Geocheck was ordered for the Parcel through Environmental Data Resources, Inc. on October 31, 2013. The target property and the adjacent properties are not listed in any of the Federal, State, or Tribal environmental databases searched by EDR. There were no known or potential hazardous waste sites identified within one mile of the Parcel. The Executive Summary of the EDR report is included in the Appendix.

2.7 FEMA Floodplain / Floodway Mapping

The Parcel is not located with the Federal Emergency Management Association's (FEMA's) designated floodway or approximate 100-year flood boundary. No floodplain impacts associated with the Parcel are anticipated.

3.0 Proposed Neuse Buffer and Nutrient Offset Restoration Plan

Actions required to develop the Parcel for mitigation will require altering current land use practices. Both the Neuse buffer and the nutrient offset restoration areas will involve replanting appropriate native tree species along the project corridors. Intensive vegetation management and a rigorous herbicide schedule will need to be implemented over the first few years of tree establishment in the restoration areas to prevent establishment of invasive species that will attempt to out-compete the planted native vegetation. More detailed descriptions of the proposed restoration activity follow in Sections 3.1 and 3.2.

3.1 Parcel Preparation

The majority of the Parcel slated for Neuse buffer or nutrient offset restoration has been maintained as a cleared agricultural field. These areas will require little site preparation other than select herbicide treatments or limited mechanical clearing to remove undesirable underbrush prior to planting. The restoration area will be planted using hand labor with dibble bars or other acceptable forestry practices. Site preparation and planting is planned to begin in January 2017.

3.2 Planting

The revegetation plan for the site will include planting bare root trees and controlling invasive species growth. Bare root trees selected for the Parcel will be native bottomland hardwood species typical for Piedmont Bottomland Hardwood communities as defined by Schafale (2012). Trees will be planted at a density sufficient to meet the success criteria set forth in the Mitigation Banking Instrument (MBI) of 260 trees per acre at the end of five years. Tree species specified for planting on the North Fork Little River site are detailed in Table 3. All willow oaks will be planted along the stream banks or top of bank as long as soil type and hydrology make for suitable conditions to promote growth and survivability. An appropriate seed mix will also be applied to provide temporary ground cover for soil stabilization and reduction of sediment loss during rain events. Planting is scheduled for January 2017.

Table 3: Selected Tree Species Appropriate for Buffer Restoration - *North Fork Little River BPDP*

Species	Common Name	Max Spacing	Unit Type	Min. Caliper Size	Stratum	Indiv. Spacing	# of Stems
Diospyros virginiana	Persimmon	12 ft.	R	0.25”-1.0”	Canopy	6-12 ft.	3500
Liriodendron tulipifera	Tulip Poplar	12 ft.	R	0.25”-1.0”	Canopy	6-12 ft.	3500
Quercus phellos	Willow Oak	12 ft.	R	0.25”-1.0”	Canopy	6-12 ft.	3500
Plantus occidentalis	Sycamore	12 ft.	R	0.25”-1.0”	Canopy	6-12 ft.	3500
Betula nigra	River Birch	12 ft.	R	0.25”-1.0”	Canopy	6-12 ft.	3500
Quercus michauxii	Swamp Chestnut Oak	12 ft.	R	0.25”-1.0”	Canopy	6-12 ft.	3500
Fraxinus pennsylvanica	Green Ash	12 ft.	R	0.25”-1.0”	Canopy	6-12 ft.	3500
						Subtotal	**24,500**

“Character Trees” are defined as planted or volunteer species identified from a survey of local vegetation on less degraded sections of the specified stream and from reference literature that details native species. A list of Character Tree species other than the species specified for planting is listed in Table 4. Loblolly pines will not be considered towards success criteria and will be managed accordingly if volunteers become over populated in areas and are expected to out-compete the hardwoods.

Table 4: Character/Existing Tree Species - *North Fork Little River BPDP*

(Piedmont Bottomland Hardwood Communities*)

Scientific Name	Common Name	Wetland Indicator Status
Carya aquatica	Water Hickory	OBL
Quercus shumardii	Shumard Oak	FACW-
Celtis laevigata	Sugarberry	FACW
Ilex decidua	Deciduous Holly	FACW-
Nyssa aquatica	Water Tupelo	OBL
Salix nigra	Black Willow	OBL
Fraxinus caroliniana	Water Ash	OBL
Nyssa sylvatica	Blackgum	FAC
Diospyros virginiana	Persimmon	FAC
Acer rubrum	Red Maple	FAC
Liquidambar styraciflua	Sweetgum	FAC+
Pinus taeda	Loblolly Pine	FAC
Quercus rubra	Red Oak	FACU
Juniperus virginiana	Eastern Red Cedar	FACU-

*Source: Schafale (2012)

4.0 Monitoring and Maintenance Plan

4.1 Monitoring Protocol

Vegetation monitoring plots will be installed and evaluated within the restoration areas to measure the survival of the planted trees. The number of monitoring quadrants required was determined in accordance with the Carolina Vegetative Sampling Protocol (CVS) Levels 1 & 2. A total of 27 plots will be established within the credit generation area. The size of individual quadrants will be 10 square meters for woody tree species. Vegetation assessments will be conducted following the Carolina Vegetation Survey (CVS) Level 2 Protocol for Recording Vegetation (2008). A reference photo will be taken from the southwestern corner of each of the 27 plots. Photos will be taken from all photo points each monitoring year and provided in the annual reports. All planted stems will be marked with flagging tape and recorded.

Planting is scheduled for January 2017. The first annual monitoring activities will commence at the end of the first growing season, at least five months after planting has been completed. Species composition, density, and survival rates will be evaluated on an annual basis by plot and for the entire site. The Sponsor shall submit an annual monitoring report to DWR by December 31st of each year for five consecutive years and will follow the terms and conditions of the MBI. Success criteria within the Neuse buffer and nutrient offset restoration areas will be based on the survival of a minimum density of 260 planted stems per acre after five years of monitoring.

4.2 Parcel Maintenance

Adaptive measures will be developed or appropriate remedial actions will be implemented in the event that the Parcel or a specific component of the Parcel fails to achieve the success criteria outlined in Section 4.1. Site maintenance will be performed to correct any identified problems on the Parcel that have a high likelihood of affecting project success. Such items include, but are not limited to, excess tree mortality caused by fire, flooding, drought, or insects. Any actions implemented will be designed to achieve the success criteria and will include a work schedule and updated monitoring criteria. Any parcel maintenance performed will be included in the monitoring report for that year. A rigorous herbicide schedule will need to be implemented over the first few years of tree establishment in the restoration areas to prevent establishment of invasive species that will attempt to out-compete the planted native vegetation. The only herbicides used on the Parcel will be aquatic approved herbicides and will be applied in accordance with North Carolina Department of Agriculture rules and regulations.

5.0 Financial Assurance

Following approval of the North Fork Little River BPDP, the Sponsor shall provide a Performance Bond from a surety that is rated no less than an “A-“ as rated by A.M. Best. The Performance Bond amount shall be 100% of the estimated cost for implementation of the project as described in the approved BPDP, but not less than $150,000.00. In lieu of posting the performance bond, the Sponsor may elect to construct the project prior to the first credit release. In that case no performance bond will be necessary.

After completion of the restoration/construction, a separate Performance/Maintenance Bond will be secured for 100% of the estimated cost to implement the monitoring and maintenance plan but not less than $100,000.00. The Performance/Maintenance Bond shall apply at the inception of the monitoring period for a term of one year, to be extended annually for a minimum of five years. Upon DWR approval, this may be lowered each year based on the adjusted cost to complete the monitoring.

6.0 Mitigation Potential

Approximately 33.4 acres of land will be protected with a permanent conservation easement. Out of the 33.4 acres, 15.0 acres will be restored for Neuse buffer credit and 17.3 acres will be restored for nutrient offset credit. One point one (1.1) acres will not generate mitigation credit (0.4 acre of stream, 0.4 acre of ditch, 0.2 acre does not qualify for mitigation credit due to distance from project features, and 0.2 acre does not qualify for mitigation credit based on lack of diffuse flow). The North Fork Little River Parcel will generate a total of 17.3 acres (39,323.24 lbs-Nitrogen and 2,532.72 lbs- Phosphorus) of nutrient offset credits. Additionally, it will also generate 15.0 acres (653,400 ft^2) of Neuse buffer credits. Credit generating mitigation activities per drainage feature is outlined in Table 5. Overall credit generation on the Parcel is summarized in Table 6.

The Sponsor may use the 15.0 acres (653,400 ft^2) for either Neuse buffer credits or nutrient offset credits, but not both. The Sponsor must request and receive approval from DWR prior to any credit conversions and transfers to the credit ledgers. With each conversion and transfer request submitted to the DWR, the Sponsor will provide all updated credit ledgers showing all transactions that have occurred up to the date of the request.

Table 5: Credit Generating Mitigation Activities by Drainage Feature - *North Fork Little River BPDP*

Drainage Feature	Drainage Feature Classification	Riparian Buffer Restoration Credits (Acre) Top of Bank -100'max	Riparian Restoration Nutrient Credits (Acre) Top of Bank-200' max	% Total Area
A	stream	10.2	9.0	**59.5%**
B	ditch	1.3	2.6	**12.1%**
C	ditch	1.1	2.0	**9.6%**
D	stream	1.0	0.5	**4.6%**
E	stream	0.0	0	**0%**
F*	ditch	0.2	0	**0.6%**
G	ditch	1.0	3.2	**13%**
H*	ditch	0.2	0	**0.6%**
	% Total Area	**47%**	**53%**	**100%**

***Buffer Clarification/Interpretation Memo #2008-019 has been applied to the riparian buffer restoration credits on Features F and H. A reduction of 4350 ft^2per feature has been applied**

Table 6: Credit Generation Summary - *North Fork Little River BPDP*

Mitigation Type	Buffer Zone	Credit Type	Total Acreage	Credit Ratio	Credit Per Acre	Mitigation Credit
Restoration	Zone A: Top of Bank – 50'	Riparian Buffer	9.5	1:1	43,560 ft^2	413,820 ft^2
	Zone B: 51'-100'	Riparian Buffer	5.5	1:1	43,560 ft^2	239,580 ft^2
					Subtotal	**653,400 ft^2**
Restoration	Zone B: 51' – 100'	Nitrogen	3.2	1:1	2,273.02 lb./acre	7,273.66 lbs.
	Zone C: 101'-200'	Nitrogen	14.1	1:1	2,273.02 lb./acre	32,049.58 lbs.

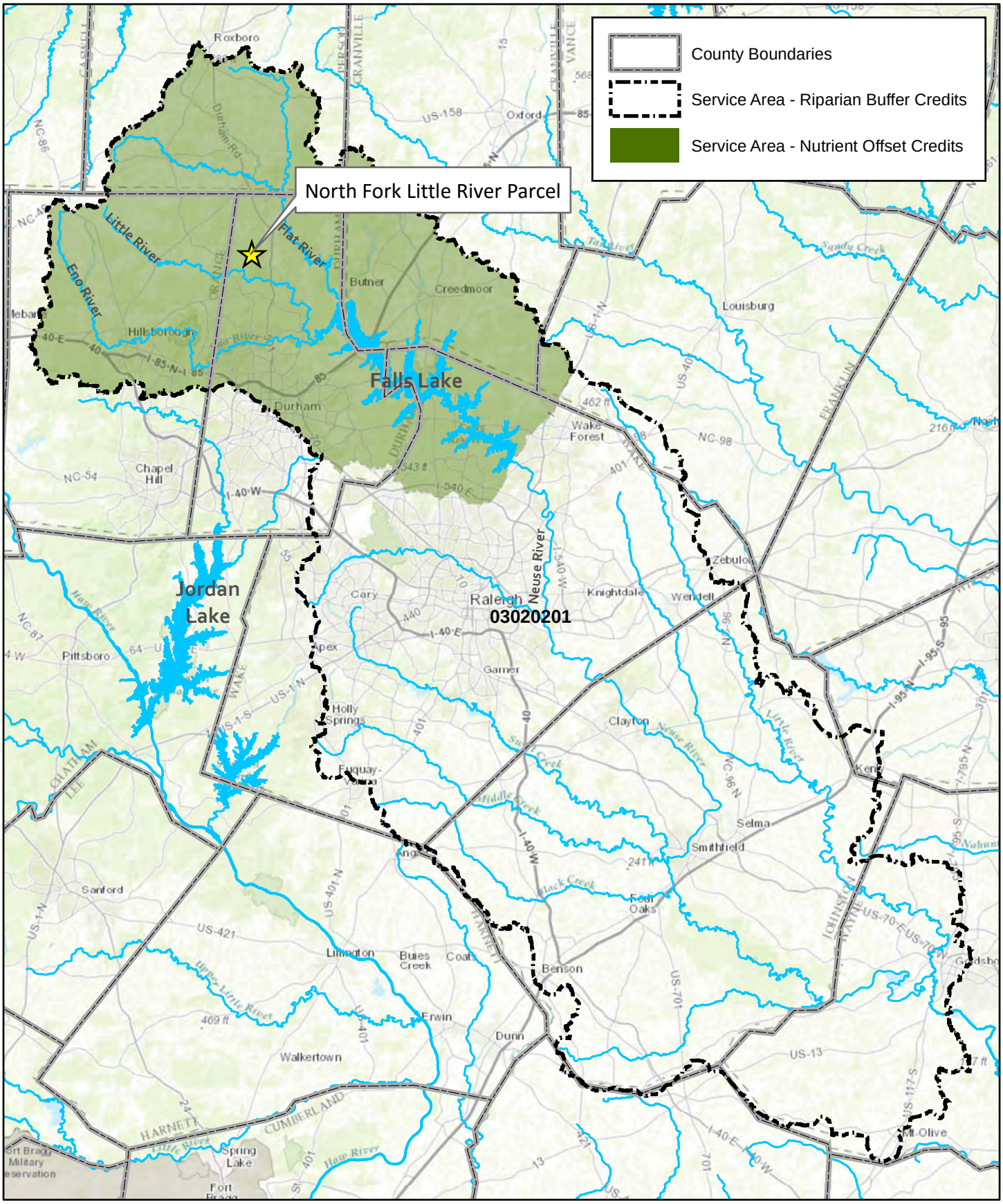
					Subtotal	**39,323.24 lbs.**
Restoration	Zone B: 51’ – 100’	Phosphorous	3.2	1:1	146.4 lb./acre	468.48 lbs.
	Zone C: 101’-200’	Phosphorous	14.1	1:1	146.4 lb./acre	2,064.24 lbs.
					Subtotal	**2,532.72 lbs.**
					Total Buffer Restoration Credits	**653,400 ft²**
					Total Nutrient Offset Credits – Nitrogen	**39,323.24 lbs.**
					Total Nutrient Offset Credits - Phosphorus	**2,532.72 lbs.**

7.0 References

Lee, M.T., Peet, R.K., S.D., Wentworth, T.R. 2008. CVS-EEP Protocol for Recording Vegetation Version 4.2. Retrieved from http://cvs.bio.unc.edu/protocol/cvs-eep-protocol-v4.2-lev1-5.pdf.

Schafale, M.P. 2012. A Classification of the Natural Communities of North Carolina, Fourth Approximation.

USDA, Soil Conservation Service, 1976. Soil Survey of Durham County.



WILDLANDS ENGINEERING

Figure 1 Service Area
North Fork Little River
Nutrient and Riparian Buffer Parcel
Bank Parcel Development Plan
Neuse River Basin 03020201
Durham County, NC

Rougement 7.5 minute topographic map

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0 750 1,500 Feet

N

Figure 2 USGS Topographic Map
North Fork Little River
Nutrient and Riparian Buffer Parcel
Bank Parcel Development Plan
Neuse River Basin 03020201

Durham County, NC

Feature	Ave Depth (feet)
B	1.57
C	2.08
F	1.28
G	1.32
H	1.58

Project Parcel
Conservation Easement Area
Topographic Contour 4' (LIDAR)
Jurisdictional Stream
Ditch
Transect
Flow Direction - Overland
Flow Direction - Features
Elevations - Transect (Survey)
Elevations - Centerline of Feature (Survey)

2013 Aerial Photography

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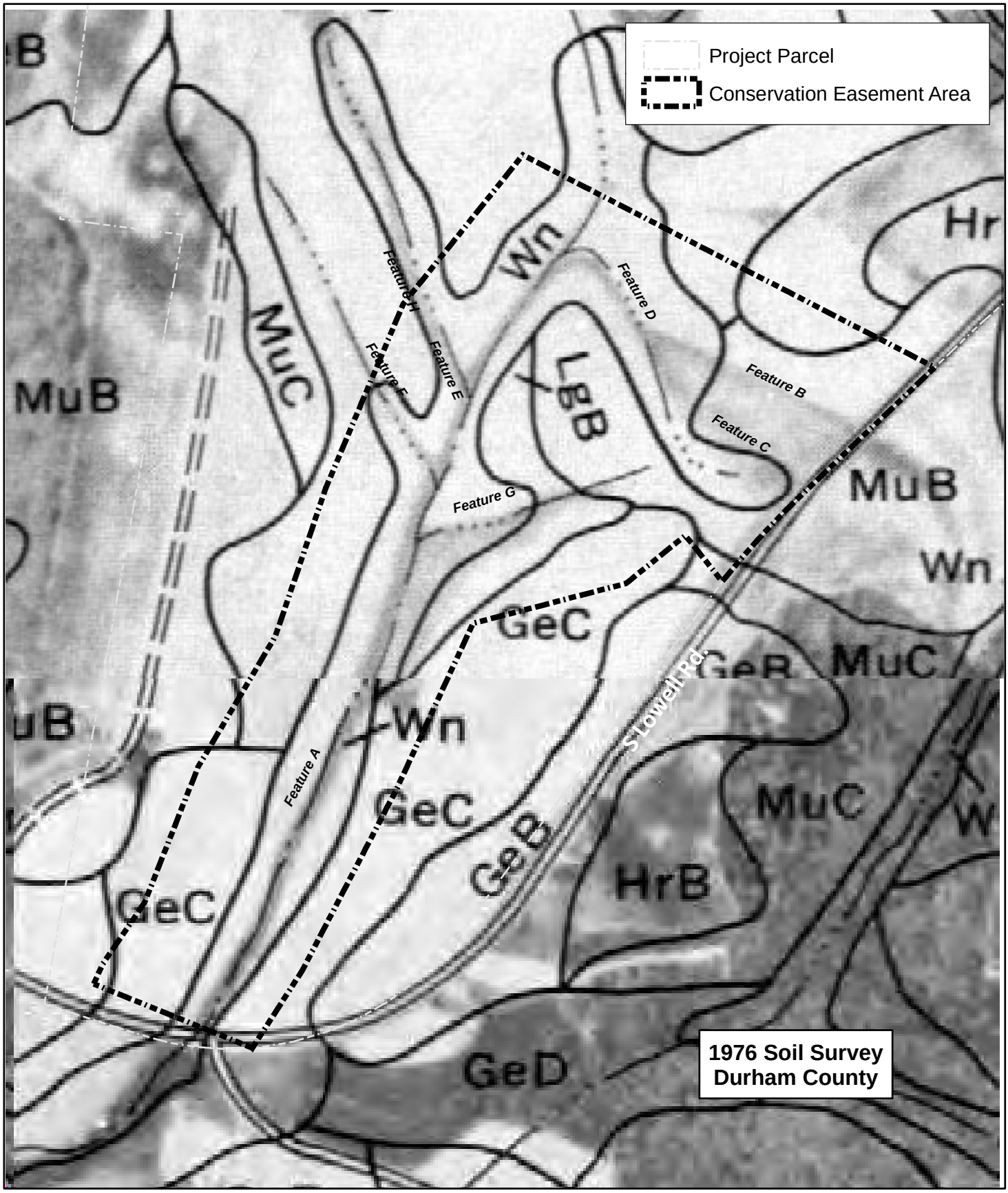
0 87.5 175 350 Feet

Figure 3 Site Map
North Fork Little River
Nutrient and Riparian Buffer Parcel
Bank Parcel Development Plan
Neuse River Basin 03020201
Durham County, NC



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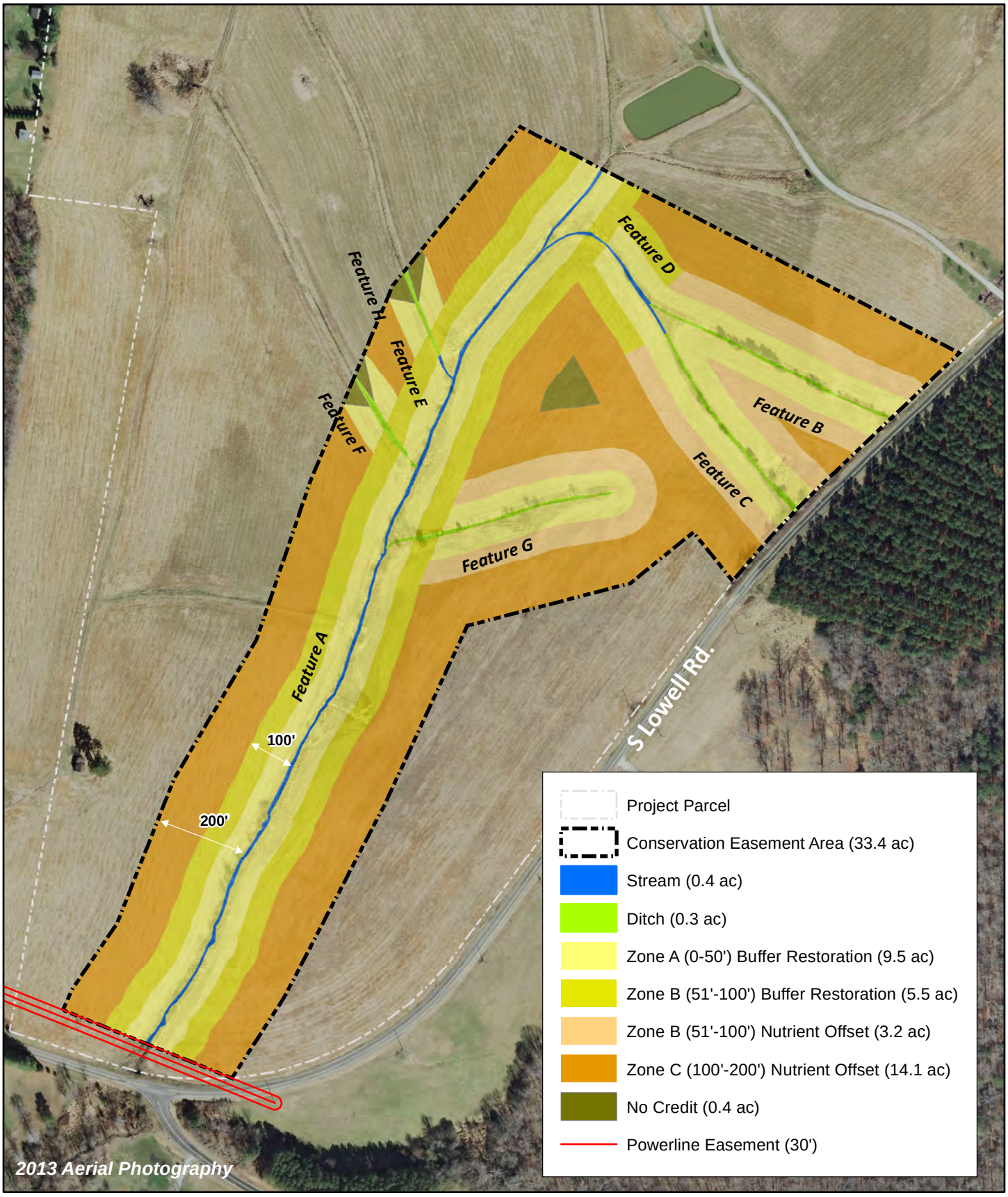
0 150 300 Feet

N

Figure 4 Soils Map
North Fork Little River
Nutrient and Riparian Buffer Parcel
Bank Parcel Development Plan
Neuse River Basin 03020201
Durham County, NC



WILDLANDS ENGINEERING

0 150 300 Feet

N

Figure 5 Concept Map
North Fork Little River
Nutrient and Riparian Buffer Parcel
Bank Parcel Development Plan
Neuse River Basin 03020201
Durham County, NC

Feature A – 3.23.2016

Feature A – 3.23.2016

Feature B – 3.23.2016

Feature B – 3.23.2016

Feature G – 3.23.2016

Feature G – 3.23.2016

Feature	Elevation*	Description	Depth (ft) (TOB to TW)
B-X1	121.41	RTOB	1.6
B-X1	119.81	TW	
B-X1	121.11	LTOB	1.3
B-X2	114.99	RTOB	1.33
B-X2	113.66	TW	
B-X2	115.14	LTOB	1.48
B-X3	109.88	RTOB	1.81
B-X3	108.07	TW	
B-X3	109.98	LTOB	1.91
C-X4	113.81	RTOB	1.41
C-X4	112.4	TW	
C-X4	113.85	LTOB	1.45
C-X5	111.99	RTOB	2.78
C-X5	109.21	TW	
C-X5	111.2	LTOB	1.99
C-X6	110.04	RTOB	2.16
C-X6	107.88	TW	
C-X6	110.57	LTOB	2.69
G-X7	99.13	RTOB	1.15
G-X7	97.98	TW	
G-X7	99.23	LTOB	1.25
G-X8	95.45	RTOB	1.09
G-X8	94.36	TW	
G-X8	95.45	LTOB	1.09
G-X9	90.09	RTOB	1.23
G-X9	88.86	TW	
G-X9	90.99	LTOB	2.13
E-X10	98.73	RTOB	1.1
E-X10	97.63	TW	
E-X10	98.83	LTOB	1.2
E-X11	96.42	RTOB	0.59
E-X11	95.83	TW	
E-X11	96.78	LTOB	0.95
E-X12	94.71	RTOB	2.53
E-X12	92.18	TW	
E-X12	95.28	LTOB	3.1
F-X13	98.53	RTOB	2.17
F-X13	96.36	TW	
F-X13	97.87	LTOB	1.51
F-X14	96.33	RTOB	1.46
F-X14	94.87	TW	
F-X14	96.68	LTOB	1.81
F-X15	93.85	RTOB	0.62
F-X15	93.23	TW	
F-X15	93.31	LTOB	0.08

RTOB	Right Top of Bank
TW	Thalweg
LTOB	Left Top of Bank

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0 150 300 Feet

N

Figure 4 Site Map - Updated 12.18.2015
North Fork Little River
Nutrient and Riparian Buffer Site
Bank Parcel Development Plan

Durham County, NC

North Carolina Department of Natural and Cultural Resources

State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Pat McCrory
Secretary Susan Kluttz

Office of Archives and History
Deputy Secretary Kevin Cherry

February 4, 2016

Andrea Eckardt
Wildlands Engineering, Inc.
1430 South Mint Street, Suite 104
Charlotte, NC 28203

Re: North Fork Little River Buffer Restoration Site, South Lowell Road, Durham, Durham County, ER 16-0089

Dear Ms. Eckardt:

Thank you for your email of January 11, 2016, concerning the above project.

We have conducted a review of the project and are aware of no historic resources which 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, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

for Ramona M. Bartos

North Fork Little River
10119 S Lowell Rd
Bahama, NC 27503

Inquiry Number: 3773119.2s
October 31, 2013

EDR Summary Radius Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

10119 S LOWELL RD
BAHAMA, NC 27503

COORDINATES

Latitude (North):	36.1693000 - 36° 10' 9.48''
Longitude (West):	78.9304000 - 78° 55' 49.44''
Universal Tranverse Mercator:	Zone 17
UTM X (Meters):	686145.4
UTM Y (Meters):	4004510.2
Elevation:	473 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	TP
Source:	USGS 7.5 min quad index

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2012
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

SURROUNDING SITES: SEARCH RESULTS

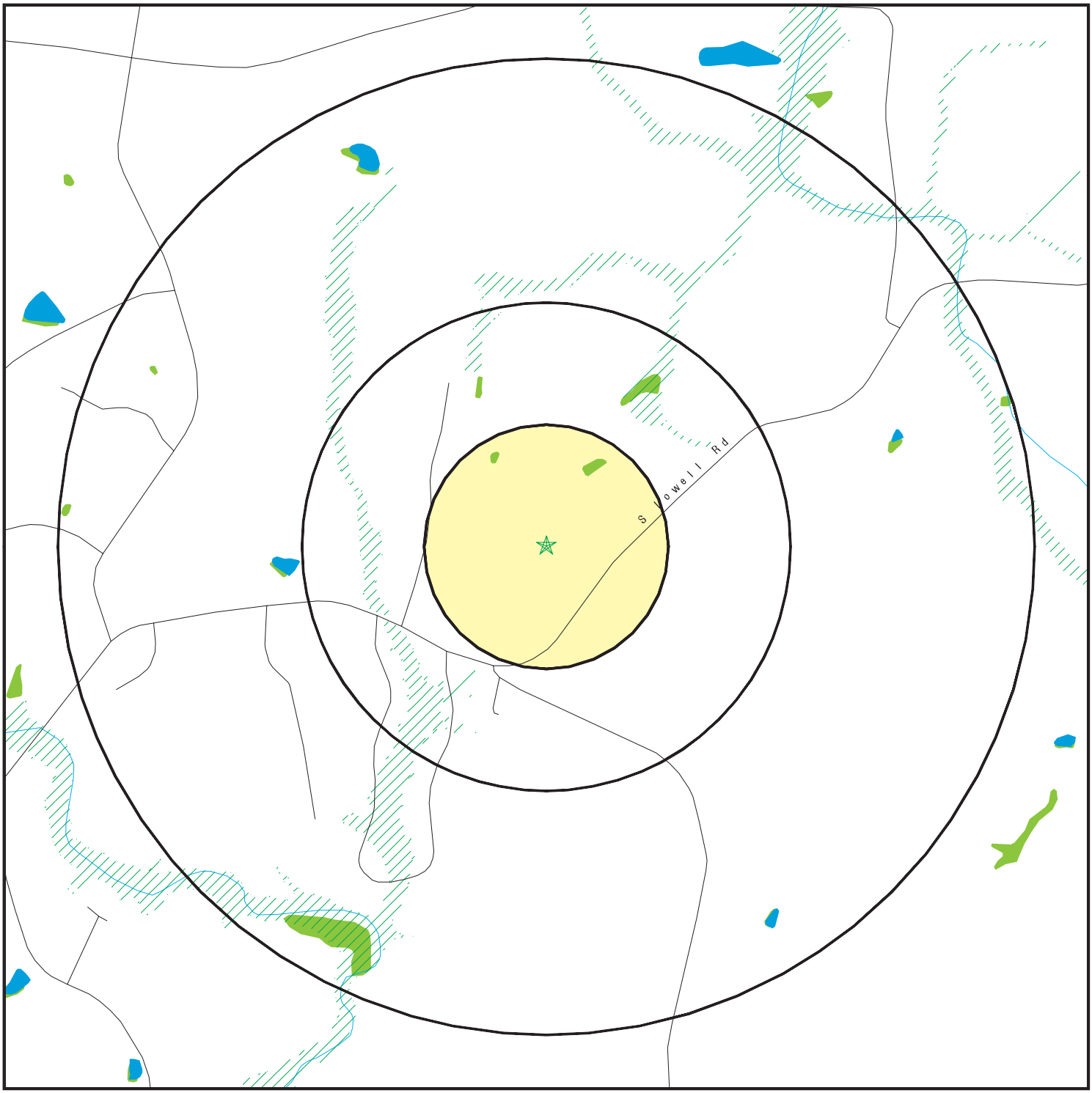
Surrounding sites were not identified.

Unmappable (orphan) sites are not considered in the foregoing analysis.

Count: 4 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
BAHAMA	U001202073	RESEARCH UNIT 10	ROUTE 1, BOX 198-B	27503	UST
BAHAMA	1004747394	MANGUM TRUCKING	HWY 501 N		RCRA NonGen / NLR, FINDS
MEBANE	U001205688	MEBANE HOME TELEPHONE	HWY 119	27503	UST
WESTFIELD	S110728953	DAVIS HARDWARE - II	10620 HWY 89	27503	LUST

OVERVIEW MAP - 3773119.2s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Hazardous Substance Disposal Sites

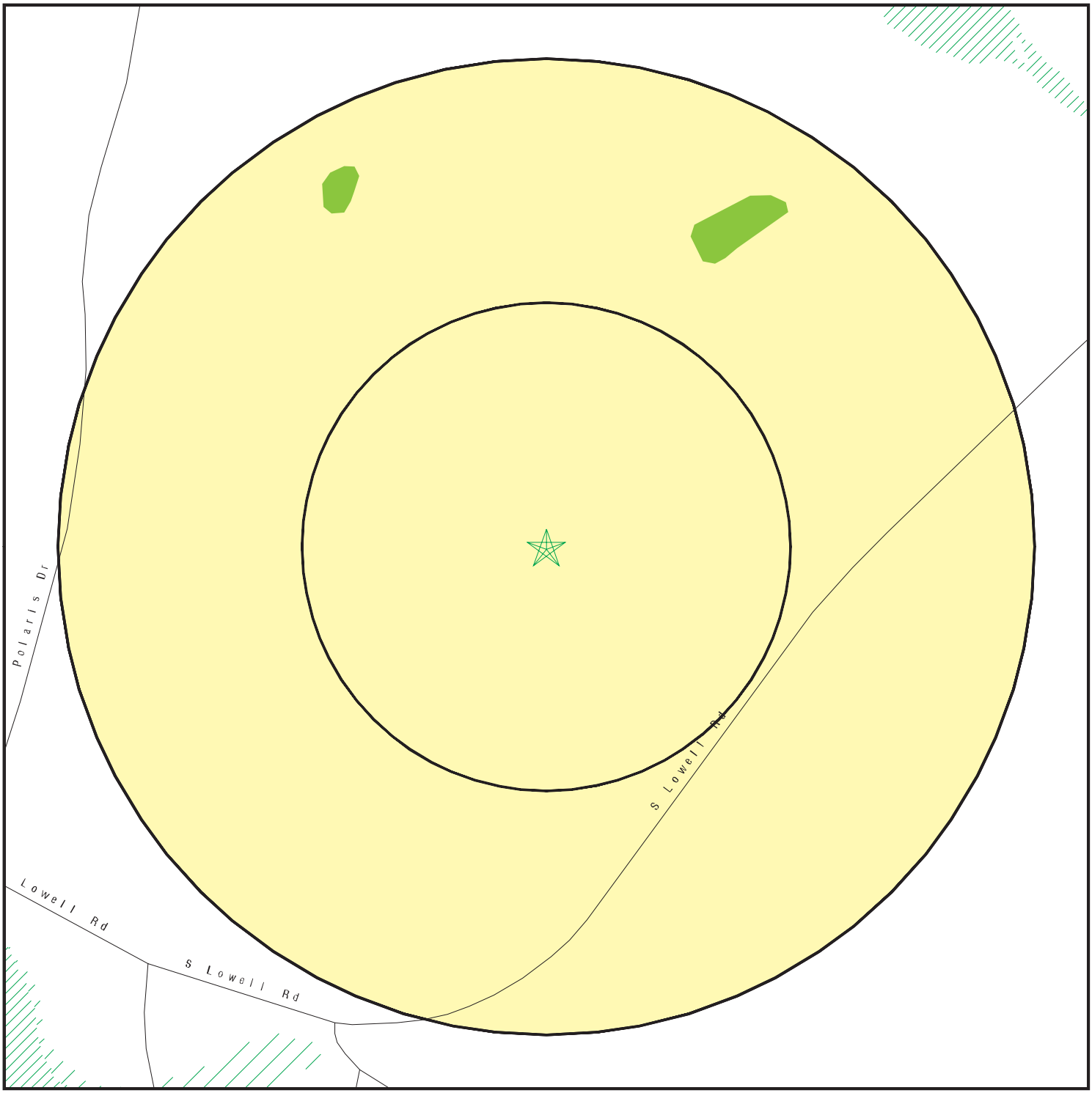
0 1/4 1/2 1 Miles

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: North Fork Little River	CLIENT: Wildlands Eng, Inc.
ADDRESS: 10119 S Lowell Rd Bahama NC 27503	CONTACT: Andrea Eckardt
LAT/LONG: 36.1693 / 78.9304	INQUIRY #: 3773119.2s DATE: October 31, 2013 11:28 am

DETAIL MAP - 3773119.2s



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Hazardous Substance Disposal Sites

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: North Fork Little River	CLIENT: Wildlands Eng, Inc.
ADDRESS: 10119 S Lowell Rd Bahama NC 27503	CONTACT: Andrea Eckardt
LAT/LONG: 36.1693 / 78.9304	INQUIRY #: 3773119.2s DATE: October 31, 2013 11:29 am

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS	0.500		0	0	0	NR	NR	0
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
LUCIS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
NC HSDS	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
SHWS	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
OLI	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LUST TRUST	0.500		0	0	0	NR	NR	0
LAST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
INST CONTROL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
HIST LF	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
IMD	0.500		0	0	0	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
SPILLS 80	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	0	0	NR	0
FUDS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	1.000		0	0	0	0	NR	0
EDR US Hist Auto Stat	0.250		0	0	NR	NR	NR	0
EDR US Hist Cleaners	0.250		0	0	NR	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

North Carolina Department of Environment and Natural Resources
Division of Water Resources
Water Quality Programs

Pat McCrory
Governor

Thomas A. Reeder
Director

John E. Skvarla, III
Secretary

August 5, 2013

John Hutton
Wildlands Engineering, Inc.
5605 Chapel Hill Road, Suite 122
Raleigh, NC 27607

Subject: Surface Water Buffer Determination Letter
NBRRO#13-128
Durham County

Determination Type:	
Buffer Call	Isolated or EIP Call
☒ Neuse (15A NCAC 2B .0233) ☐ Tar-Pamlico (15A NCAC 2B .0259) ☐ Jordan (15A NCAC 2B .0267)	☒ Ephemeral/Intermittent/Perennial Determination ☐ Isolated Wetland Determination

Project Name: Water's Property – 10119 South Lowell Road

Location/Directions: (1) Travel North on US Hwy 501 North from Downtown Durham. (2) Turn left onto South Lowell Road and continue West. Site is at 10119 South Lowell Road, Bahama, NC near the intersection of Johnston Mill Road.

Subject Stream: UTs to the North Fork of the Little River

Date of Determination: July 8, 2013

Feature	E/I/P *	Not Subject	Subject	Start@	Stop@	Soil Survey	USGS Topo
Feature A	I		X	GPS point	S. Lowell Road	X	X

Wetlands, Buffers, Streams - Compliance and Permitting (Webscape) Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6494
Internet: www.ncwaterquality.org

Feature B	E	X		Road	Confluence with Feature C		
Feature C	E	X		Road	GPS point		
Feature D	I		X	GPS point	Confluence of Feature A	X	
Feature E	I		X	GPS point	Confluence of Feature A	X	
Feature F	E	X		Throughout		X	
Feature G	E	X		Throughout		X	

**E/I/P = Ephemeral/Intermittent/Perennial*

Explanation: This determination was made by Katie Merritt with the Division of Water Quality, hereby referred to as the Division of Water Resources (DWR). Features A, D, E, F, and G listed above have been located on the Soil Survey Map of Durham County, North Carolina which is provided as an attachment to this letter. Each feature that is checked "Not Subject" has been determined not to be a stream or is not present on the property. Features that are checked "Subject" have been located on the property and possess characteristics that qualify it to be a stream. All features are provided in the attached aerial photo, prepared by Wildlands Engineering, Inc. There may be other streams located on the subject property that do not show up on the maps referenced above, but still may be considered jurisdictional according to the US Army Corps of Engineers and/or to DWR.

This on-site determination shall expire five (5) years from the date of this letter. Landowners or affected parties that dispute a determination made by the DWR or Delegated Local Authority may request a determination by the Director. An appeal request must be made within sixty (60) days of date of this letter or from the date the affected party (including downstream and/or adjacent owners) is notified of this letter. A request for a determination by the Director shall be referred to the Director in writing c/o Karen Higgins, DWR WeBSCaPe Unit, 1650 Mail Service Center, Raleigh, NC 27699.

This determination is final and binding unless, as detailed above, you ask for a hearing or appeal within sixty (60) days.

The owner/future owners should notify the Division of Water Resources (including any other Local, State, and Federal Agencies) of this decision concerning any future correspondences regarding the subject property (stated above). This project may require

a Section 404/401 Permit for the proposed activity. Any inquiries should be directed to the Division of Water Resources (Central Office) at (919)-807-6360, and the US Army Corp of Engineers (Raleigh Regulatory Field Office) at (919)-554-4884.

Respectfully,

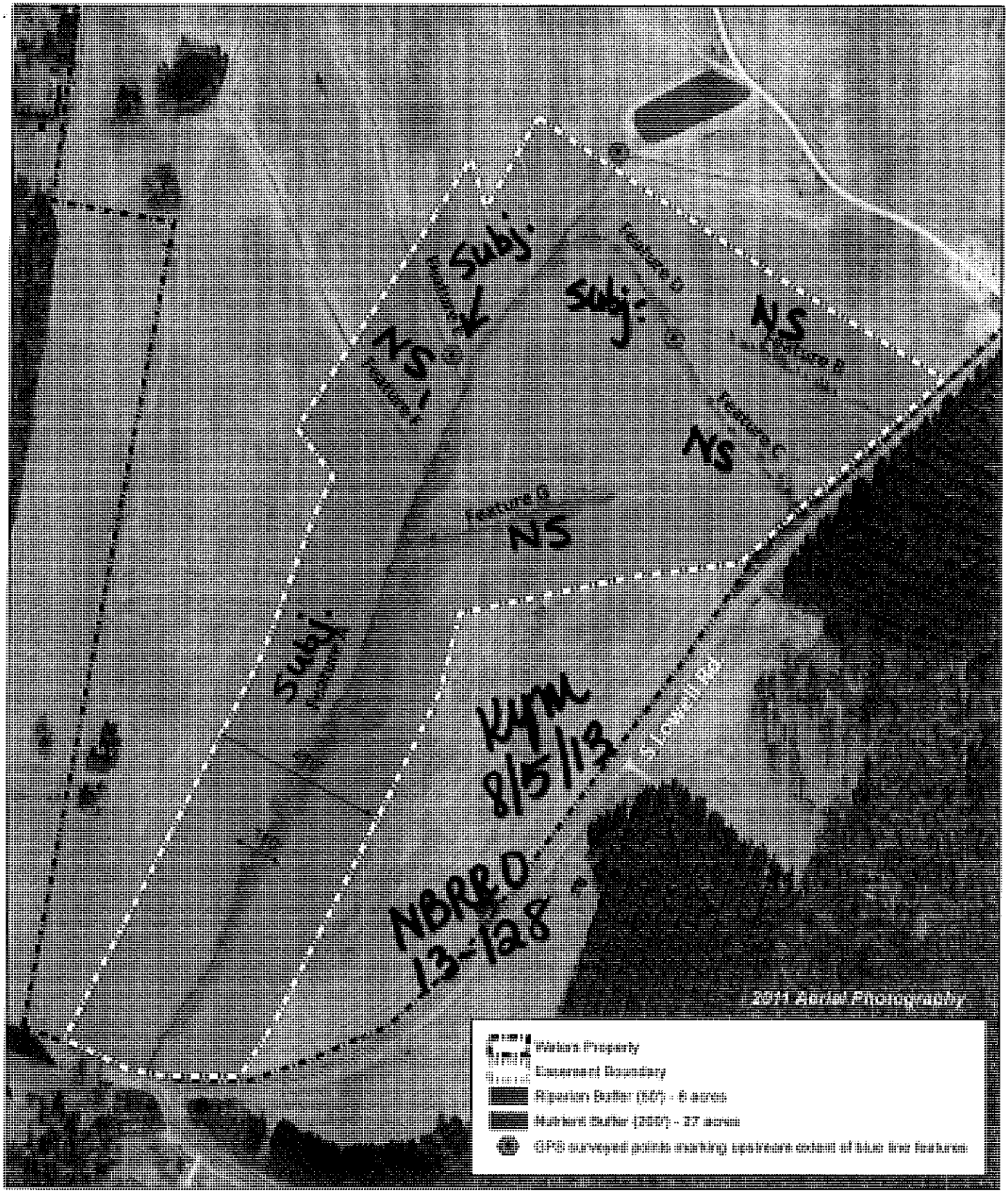
Karen Higgins

Karen Higgins, Supervisor
Wetlands, Buffers, Streams,
Compliance and Permitting Unit

KAH/*km*

Attachments: Durham County Soil Survey Map, Aerial Photo of Features

File Copy – Katie Merritt
cc: Michael Waters (Landowner); 10119 South Lowell Road, Bahama, NC



WILDLANDS ENGINEERING

0 150 300 Feet

N

Figure 4 Site Map
North Fork Little River
Nutrient and Riparian Buffer Site Prospectus
Durham County

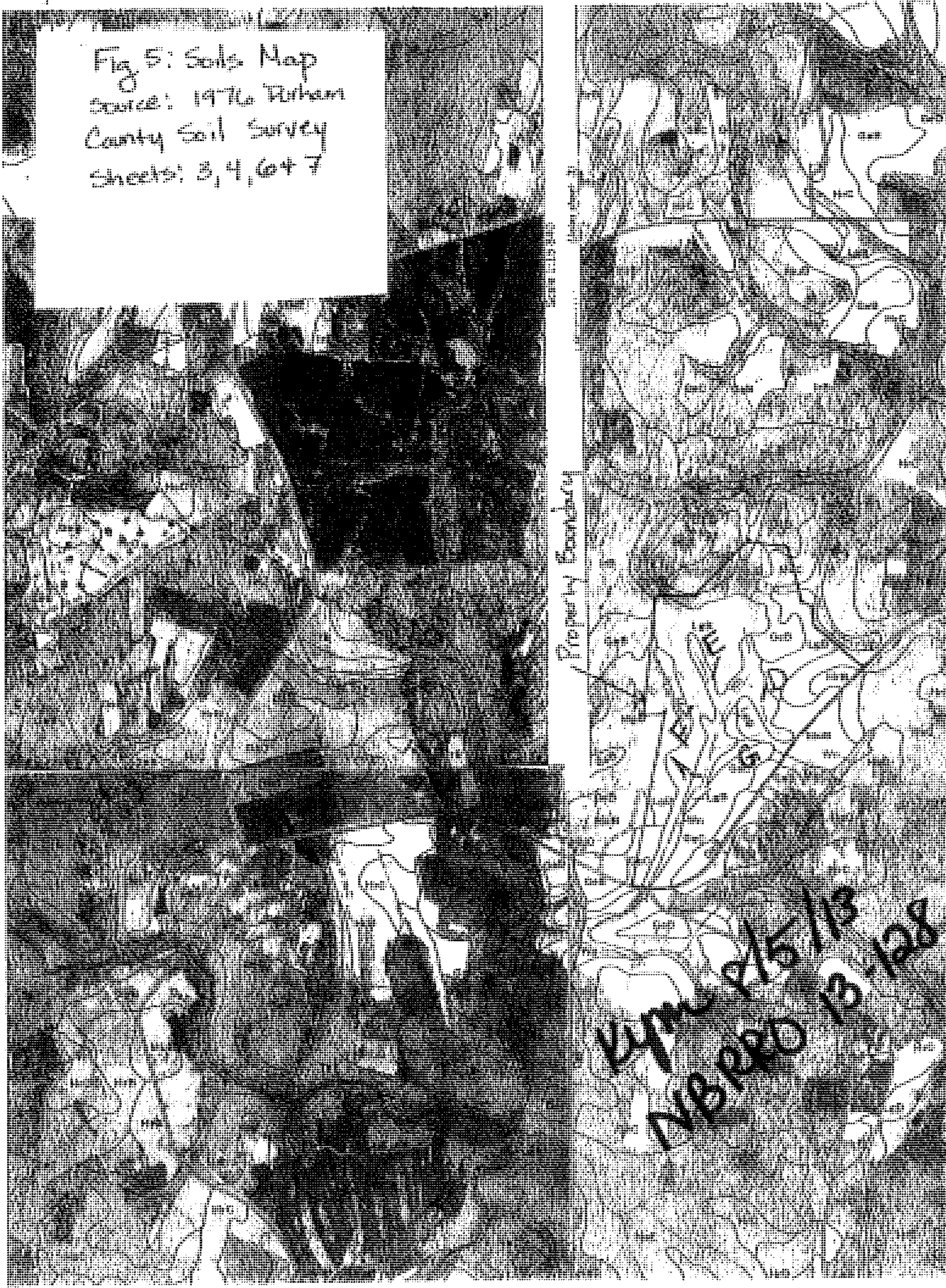


Fig. 5: Soils Map
Source: 1976 Durham County Soil Survey
Sheets: 3, 4, 6 & 7

Water Resources
ENVIRONMENTAL QUALITY

PAT MCCRORY
Governor
DONALD R. VAN DER VAART
Secretary
S. JAY ZIMMERMAN
Director

December 16, 2015

John Hutton
Wildlands Holdings II, LLC
312 West Millbrook Rd, Suite 225
Raleigh, NC 27609
(via electronic mail)

DWR Project #: 2013-0630

Re: Site Viability for Buffer Mitigation & Nutrient Offset – North Fork Little River
10119 S. Lowell Rd, Bahama, NC
Durham County

Dear John,

On June 13, 2013, Katie Merritt, with the Division of Water Resources (DWR), received a request from you on behalf of Wildlands Engineering Inc., for a site visit near the above-referenced site in the Upper Falls Watershed to determine the potential for nutrient offset and Neuse riparian buffer mitigation. On July 9, 2015, Ms. Merritt performed a stream buffer determination and site assessment of the features onsite, which is more accurately shown in the attached aerial signed by Ms. Merritt on August 5, 2013. If approved, mitigating this site could provide riparian buffer credits and/or nutrient offset credits within the 8-digit Hydrologic Unit Code 03020201 of the Upper and Lower Falls Lake Watersheds.

Ms. Merritt's evaluation of the features for buffer and nutrient offset mitigation pursuant to Rule 15A NCAC 02B .0295 (effective November 1, 2015) and Rule 15A NCAC 02B .0240 is provided below:

Features A, D and E

- Streams are subject to the Neuse Buffer Rule as determined by the stream buffer determination letter issued for the subject site by the DWR on August 5, 2013.
- Land uses within the riparian areas (0 to +/- 200') adjacent to these streams were active row crops. The riparian areas along these streams are viable for riparian restoration and suitable for either buffer mitigation or nutrient offset credits.
- Features D and E connect with field ditches. Therefore, additional information will be required to ensure that diffuse flow is restored and maintained.

Features B, C, F and G

- Features are ditches and are not subject to the Neuse Buffer rules 15A NCAC 02B .0233.
- The depth of each ditch was not evaluated onsite.

- Land uses within the riparian areas (0 to +/- 200') adjacent to these ditches were active row crops. The riparian areas along these streams are viable for riparian restoration and suitable for either buffer mitigation or nutrient offset credits.
- The direction of surface/storwater water flow within each ditch was not evaluated onsite. Therefore, DWR will need to know details on flow direction within each ditch to the stream/s. Features that are directly hydrologically connected to, and drain to the UTs onsite are viable for riparian restoration to generate Nutrient Offset mitigation only.

A map showing the project site and the features is provided and signed by Ms. Merritt on August 5, 2015. For any areas depicted as not being viable for nutrient offset credit, one could propose a different measure other than riparian restoration, along with supporting calculations and sufficient detail to support estimates of load reduction, for review by the DWR to determine viability for nutrient offset according to 15A NCAC 02B .0240. If proposing any ditch for Neuse riparian buffer mitigation, the ditch must comply with all items listed in 15A NCAC 02B .0295 (o) (8), which became effective on November 1, 2015.

Please contact Katie Merritt at (919)-807-6371 if you have any questions regarding this correspondence.

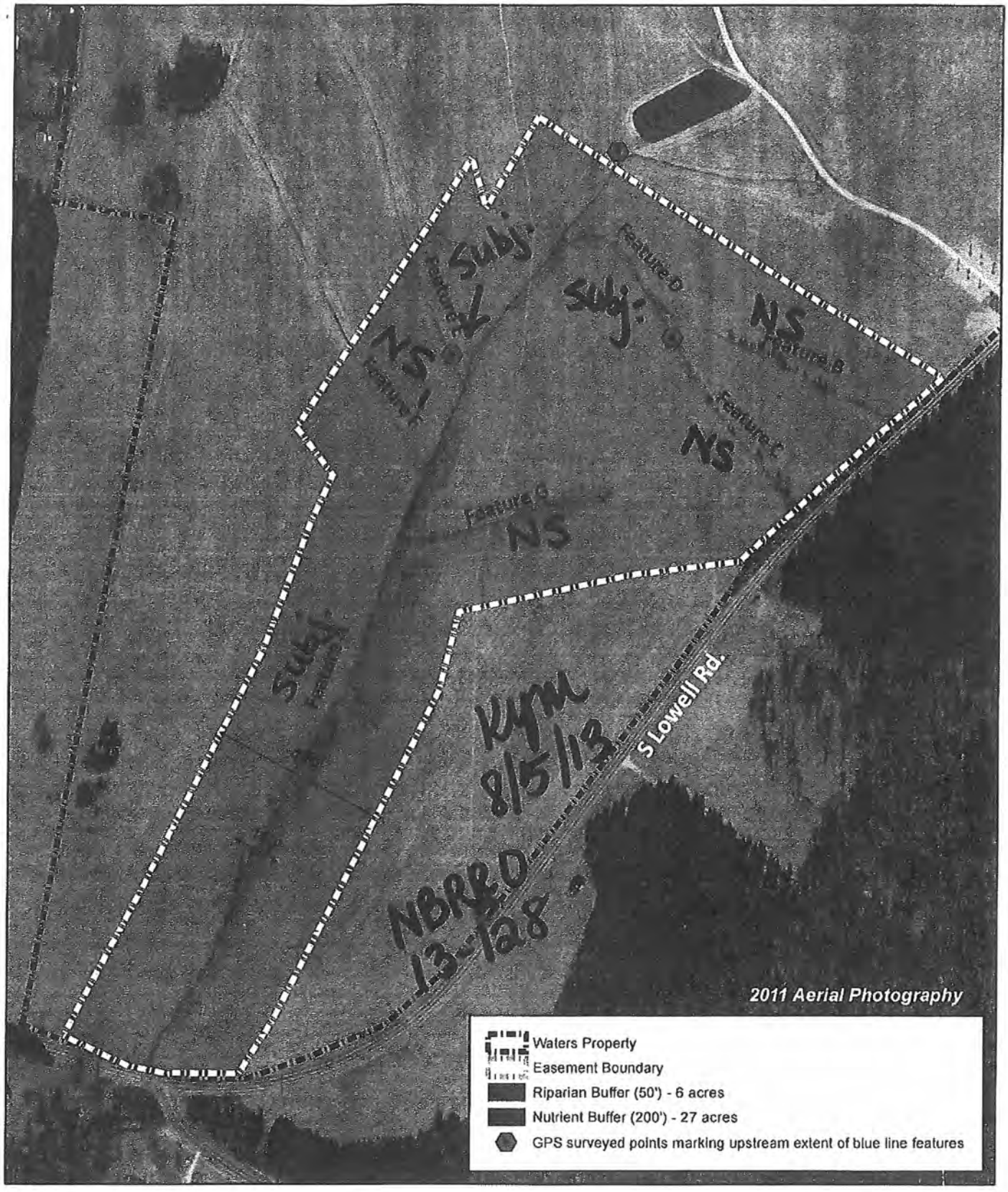
Sincerely,

Karen Higgins

Karen Higgins, Supervisor
401 and Buffer Permitting Unit

KAH/*km*
Attachments: Site Aerial Map

cc:File Copy (Katie Merritt)



WILDLANDS ENGINEERING

0 150 300 Feet

N

Figure 4 Site Map
North Fork Little River
Nutrient and Riparian Buffer Site
Prospectus
Durham County

Michael F. Easley
Governor

William G. Ross, Jr., Secretary
Department of Environment and Natural Resources

Coleen, H. Sullins, Director
Division of Water Quality

August 19, 2008
Buffer Interpretation/Clarification #2008-019

MEMORANDUM

RE: The Division of Water Quality's (DWQ's) stance on whether diffuse flow of stormwater through the newly restored buffers on mitigation sites should be a requirement. Diffuse flow is a requirement for buffer restoration or enhancement in the Neuse River Basin Buffer Rule 15A NCAC 02B.0242(9)(d)(iii), the Tar-Pamlico River Basin Buffer Rule 15A NCAC 02B.0260(9)(d)(iii), and the Catawba River Basin Buffer Rule 15A NCAC 02B.0244 (9)(d)(iii).

Diffuse flow is a requirement for all sites in a buffered basin for buffer mitigation and for for sites providing nutrient offset credit as well.

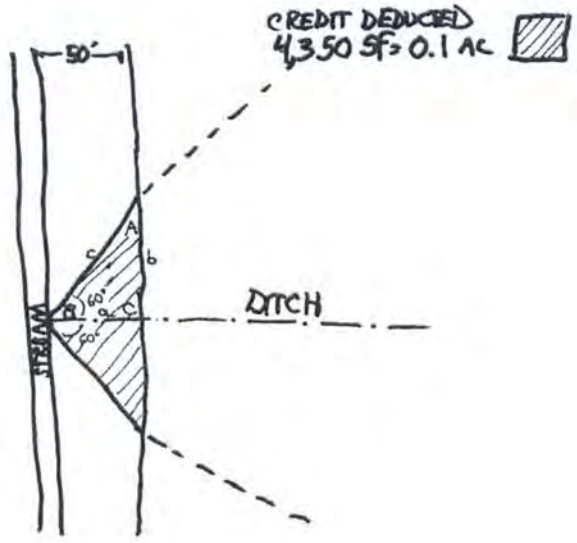
Current Policy: According to the Mitigation rules in the Neuse, Tar-Pamlico and Catawba buffer rules, a grading plan must be provided for buffer mitigation sites. In addition, those rules state that "The site shall be graded in a manner to ensure diffuse flow through the riparian buffer".

Problem: The question has been raised as to whether stormwater carried by lateral ditches that enter buffered streams should provide diffuse flow prior to that stormwater entering the restored buffers.

Solution: The Neuse, Tar-Pamlico and Catawba buffer rules with respect to buffer mitigation sites contain a very clear requirement that states that diffuse flow of stormwater must be maintained through the buffer. Unless otherwise approved by DWQ, all buffer mitigation sites must provide diffuse flow of stormwater from ditches and similar conveyances through the restored buffer.

Where such diffuse flow cannot be attained and where DWQ agrees that such treatment is not possible, deduction of buffer credit will be calculated as follows:

SCENARIO 1



401 Wetlands Certification Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
2321 Crabtree Boulevard, Suite 250, Raleigh, North Carolina 27604
Phone: 919-733-1786 / FAX 919-733-6893 / Internet: http://h2o.enr.state.nc.us/ncwetlands

A, B and C are angles. a, b, and c are distances (lengths)

DWQ believes that using an immediate drainage area extending at a 60-degree angle from the point of discharge to the stream is a reasonable approach to the issue of determining the area which is not draining through the restored buffer. To calculate the area of buffer being "short-circuited" by the ditch, the area of the right triangles shown in the figure above must be determined.

a = 50'
A = 30°
B = 60°

b = a cot A
b = 50 (1.732)
b = 86.6' (87')

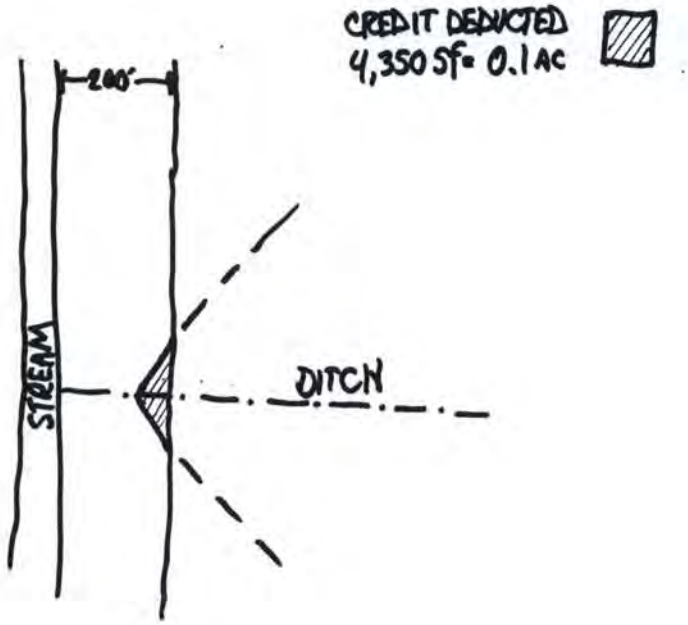
The area to be excluded from credit would be the area of the two right triangles:

Area = (a x b)/2
Area = (50 feet x 87feet)/2
Area = 2,175 SF

Total deducted area = 2,175 x 2 = 4,350 SF or 0.1 acres.

The example shown above assumes a buffer width of 50 feet from the top of bank (riparian buffer mitigation site). For nutrient offset sites, credit can be generated out to 200 feet from the top of bank. The policy applies to sites with larger buffers as follows:

SCENARIO 2



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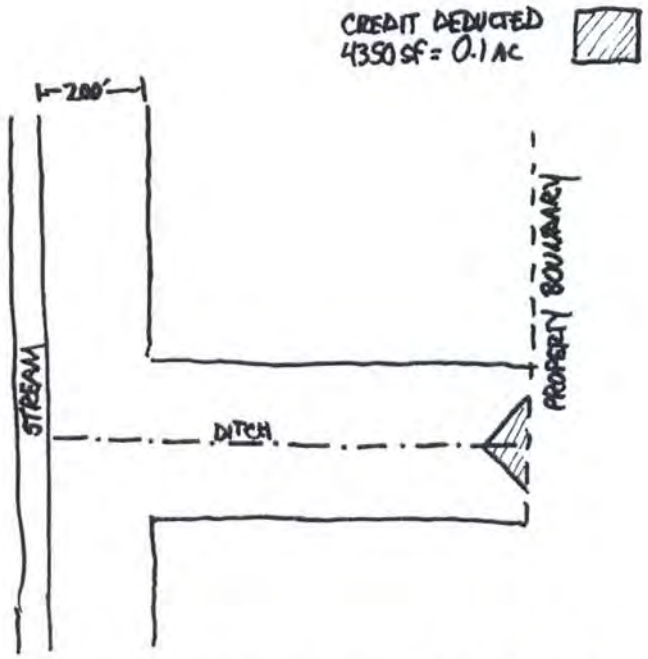
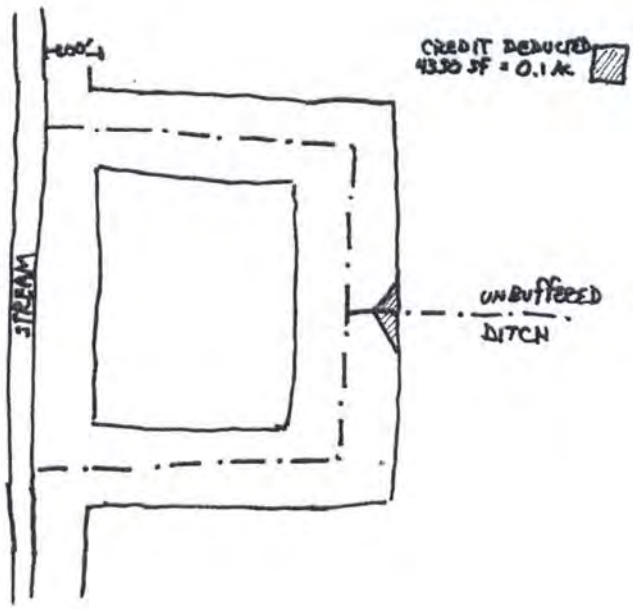
If a ditch leading to a buffered stream is buffered, then no credit is deducted from the stream buffer. If the upstream origin of the ditch is within the buffer, no credit is deducted. If the upstream origin of the ditch is not buffered (e.g. if the ditch begins upstream offsite), the credit deduction is applied to the most upstream portion of the ditch on the property.

SCENARIO 3



Where a network of interconnecting ditches occurs on a site, and all of the ditches are buffered, the only credit deduction would be at the point where an unbuffered ditch enters the project:

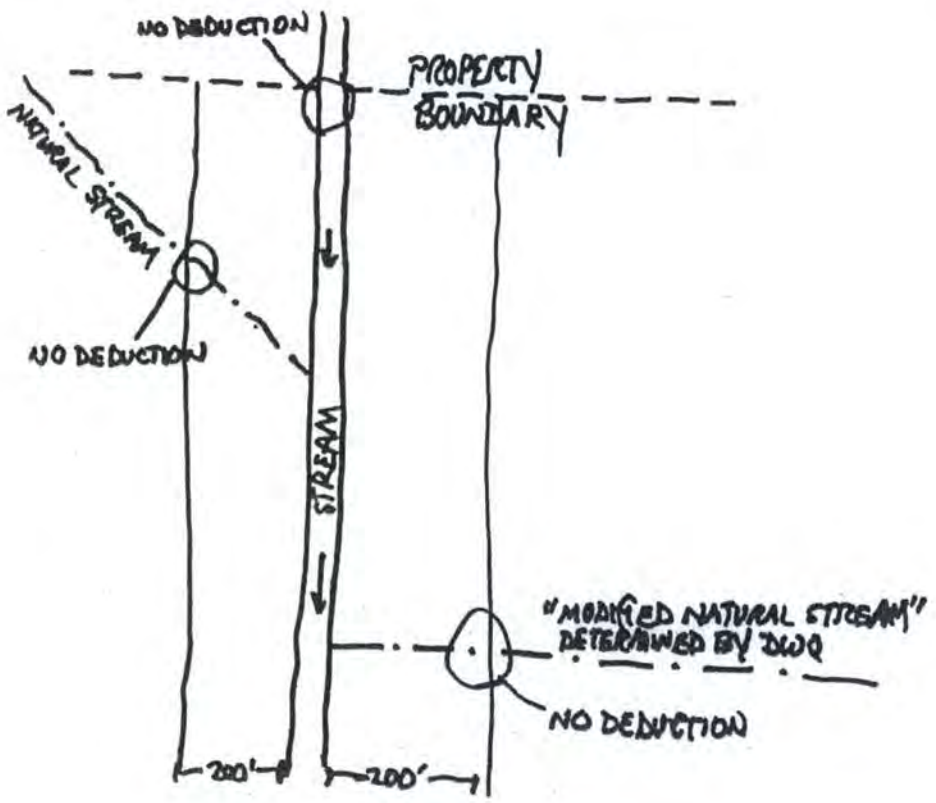
SCENARIO 4



401 Wetlands Certification Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
2321 Crabtree Boulevard, Suite 250, Raleigh, North Carolina 27604
Phone: 919-733-1786 / FAX 919-733-6893 / Internet: http://h2o.enr.state.nc.us/ncwetlands

Where a natural stream enters the project site, no deduction of credit will occur. Also, when a natural stream or a modified natural stream flow into a buffered stream, no deduction of credit will occur. The modified natural stream must be subject to the buffer rules, and must be verified to be a modified natural stream (as opposed to a ditch) through an on-site determination by DWQ personnel.

SCENARIO 5



For any additional questions or clarifications on this issue, please contact Eric Kulz or Amy Chapman at (919) 733-1786.

Signature: _____ Date: 8/19/2008

Signature: _____ Date: 8/19/2008

401 Wetlands Certification Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
2321 Crabtree Boulevard, Suite 250, Raleigh, North Carolina 27604
Phone: 919-733-1786 / FAX 919-733-6893 / Internet: http://h2o.enr.state.nc.us/ncwetlands