**NON-INSTRUMENT PROJECT**
**MITIGATION PLAN**
**FINAL**

# Mt. Pleasant Creek Restoration Project
**Bowman Property**
**Randolph County, North Carolina**
**DMS Contract D15012i**
**DMS Project Number 44**

**Cape Fear River Basin**
**Cataloging Unit 03030003**

Prepared for:

NC Department of Environmental Quality
Division of Mitigation Services
1652 Mail Service Center
Raleigh, NC 27699

Updated by DMS March 2016

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Prepared by:

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Updated By DMS March 2016

## EXECUTIVE SUMMARY

*This mitigation plan has been written in conformance with the requirements of the following:*

- *Federal rule for compensatory mitigation project sites as described in the Federal Register Title 33 Navigation and Navigable Waters Volume 3 Chapter 2 Section § 332.8 paragraphs (c)(2) through (c)(14).*

*These documents govern DMS operations and procedures for the delivery of compensatory mitigation.*

Mt. Pleasant Creek is a perennial stream located in the Cape Fear River Basin (03030003 8-digit cataloging unit) in Randolph County, North Carolina. The portion of Mt. Pleasant Creek undergoing enhancement in this project is an existing 1,886 linear feet segment located on the property owned by Martha and Mickey Bowman. This project first originated as a DOT project in 2004, but was not implemented at that time. The site was instituted by DMS in 2006. Agricultural BMPs were implemented on the property by DOT/DMS. During the acquisition phase (prior to 2006), DOT agreed to provide the landowner with fencing (four strand high tensile), alternative watering, and a new ford crossing. DMS contracted with the Randolph Soil & Water District to design and oversee the installation of these BMPs. This mitigation plan presents the revised plans and design for the site.

The existing stream is predominantly a C4 stream. The 5.24-square-mile project watershed is located in a rural setting. The Federal Emergency Management Agency (FEMA) has established 100-year water surface elevations and no-encroachment limits on Mt. Pleasant Creek. The adjacent land at the restoration site was used for cattle grazing and has wooded uplands and a cleared floodplain field. A vegetated buffer along the stream, narrow on most of the west bank, is located within the stream corridor. The existing stream ranges from 20 to 35 feet wide with steep to moderate bank angles. The channel has bank height ratios ranging from 1.2 to 1.7. The goals for this project are:

- Restore long-term stability to exposed banks and reduce susceptibility to scour.
- Eliminate stream bacteria and nutrient exposure from animal waste and wallow.
- Restore a contiguous riparian buffer that connects to the surrounding forested mature buffer.

The project goals will be addressed through the following objectives:

- Conduct Enhancement I level stream restoration on 530 linear feet of stream by repairing actively eroding banks and re-establishing the stream pattern where there has been excessive sediment deposition.
- Conduct Enhancement II level stream restoration on 1046 linear feet of stream through a permanent conservation easement and removing cattle access.
- Install Preservation on an additional 290 linear feet of stream by putting the stream in a permanent conservation easement.
- Riparian buffer restoration, enhancement, and preservation throughout the stream corridor.

The project is located approximately five miles southwest of Liberty, North Carolina in Randolph County. Specifically, the site is approximately 2.4 miles west on Whites Chapel Road from the intersection of NC-49. The center of the site is at approximately 35.7938° N and - 79.6363° W near the south-eastern portion of the Grays Chapel USGS Quadrangle.

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## 1.0 RESTORATION PROJECT GOALS AND OBJECTIVES

The North Carolina Division of Mitigation Services (DMS) develops River Basin Restoration Priorities (RBRP) to guide its restoration activities within each of the state's 54 cataloging units. RBRPs delineate specific watersheds that exhibit both the need and opportunity for wetland, stream and riparian buffer restoration. These watersheds are called Targeted Local Watersheds (TLWs) and receive priority for DMS planning and restoration project funds. However, this project was identified by NCDOT, and the RBRP was developed after this project was acquired. This project was not planned through that process.

The 2009 Cape Fear River Basin RBRP identified HUC 03030003020010 (Sandy Creek) as a Targeted Local Watershed, of which the project site is a part (NCEEP 2009). This is a largely rural watershed. The watershed is characterized by 54% forest; however, only 1.5% is protected as conservation lands. There are six registered dairy operations, one registered cattle operation, one registered poultry operation, and seven swine operations in the subbasin (NCDWR 2005).

As of 2014, the watershed had no streams on the NCDENR Division of Water Resources' (DWR) list of impaired waters, but the Sandy Creek reservoir shows indications of high nutrient levels (NCDWR 2014). The Sandy Creek Reservoir's physical water quality parameters (dissolved oxygen, water temperature, pH and conductivity) were within state water quality standards in 2008 and nutrient concentrations were elevated. The reservoir's mean total phosphorus ranged from 0.07 to 0.2 mg/L. and mean total organic nitrogen ranged from 0.7 to 0.9 mg/L. In response to the availability of nutrients, chlorophyll a was greater than the state water quality standard of 40 µg/L. and ranged from 41 µg/L. to 63 µg/L. Analysis of phytoplankton samples collected in 2008 revealed the presence of severe blooms present throughout the summer (NCDWR 2009). The project is located within a Water Supply Watershed and a long portion of Sandy Creek is recognized by the NC Natural Heritage Program (NHP) as a Significant Natural Heritage Area. It is habitat for numerous mussel species such as Carolina creekshell (*Villosa vaughaniana*), notched rainbow (*Villosa constricta*), and eastern creekshell (*Villosa delumbis*) (NCEEP 2009).

Although the project was initiated before the 2009 RBRP, this Mitigation Plan design is aligned with the basin priorities, and includes the following:

- Reduce sources of sediment and nutrients by enhancing riparian buffer vegetation, excluding livestock, and enhancing stream and buffer function.

Project-specific goals for the site will include:

- Restore long-term stability to exposed banks and reduce susceptibility to scour.
- Eliminate stream bacteria and nutrient exposure from animal waste and wallow.
- Restore a contiguous riparian buffer that connects to the surrounding forested mature buffer.

The project goals will be addressed through the following objectives:

- Conduct Enhancement I level stream restoration on 530 linear feet of stream by repairing actively eroding banks and re-establishing the stream pattern where there has been excessive sediment deposition.
- Conduct Enhancement II level stream restoration on 1046 linear feet of stream through a permanent conservation easement and removing cattle access.
- Install Preservation on an additional 290 linear feet of stream by putting the stream in a permanent conservation easement.
- Riparian buffer restoration and enhancement throughout the stream corridor.

# 2.0 SITE SELECTION

## 2.1 Directions

The Mt. Pleasant Creek Site is located approximately 0.5 mile northeast of the intersection of Ramseur Julian Road (SR 2442) and Whites Chapel Road (SR 2456) in Randolph County. From Raleigh, take U.S. Highway 64 west to Siler City and then take U.S. Highway 421 north to N.C. Highway 49. Take a left onto Highway 49, go approximately 3 miles, and take a right onto Whites Chapel Road. Stay on Whites Chapel Road for approximately 5 miles and then the access driveway will be located on the right side of the road.

## 2.2 Site Selection

Within the 03030003020010 USGS Cataloging Unit (Sandy Creek), most of the watershed is forest and pasture land and remains unaffected by urban development. The 03030003020010 USGS Cataloging Unit has been identified by DMS as a TLW. As of 2014, the watershed had no streams on DWR's list of impaired waters; however, the Sandy Creek Reservoir shows indications of high nutrient levels, likely related to the large number of animal operations. Continued implementation of practices to reduce nutrient inputs to Sandy Creek Reservoir is recommended for this watershed (NCEEP 2009). The main stream, Sandy Creek, flows through Randolph County to Sandy Creek Reservoir, a water supply for Ramseur and Franklinville. The watershed for the Mt. Pleasant Creek Project/Bowman Site is comprised of 5.24 square miles at the downstream limit. Section 2.4 Watershed Map shows the site in relation to the project watershed. More information about the project watershed is located in Section 4.1.

The site receives flow from two perennial streams, Mt. Pleasant Creek (DWR Stream Index Number 17-16-3) and one tributary (UT to Mt. Pleasant Creek). DWR classifies Mt. Pleasant Creek as WS-III, which designates waters used as sources of potable water where a more protective WS-I or II classification is not feasible. These waters are also protected for Class C uses. WS-III waters are generally in low to moderately developed watersheds. General discharge permits are only allowed near the water supply intake whereas domestic and non-process industrial discharges are allowed in the rest of the water supply watershed.

The project site is bounded by interspersed pasture and forest to the east, forest to the south, pasture and forest to the north, and agricultural land and forest to the west. The site has a long history of hydrologic modification due to cattle grazing on the property. The site offers an opportunity within this TLW to reduce sediment inputs from failing banks and to reduce potential nutrients and bacteria entering the streams from cattle. Expanded stream buffers will also extend the forested corridor along the stream. The existing site conditions are shown in Section 2.6 and seen in site photographs (Section 2.9).

### *2.2.1 Historic Site Geology/Geomorphic Setting*

A detailed soil delineation was previously performed by others on the site. The majority of the project area (98.5%) is dominated by variations of the Georgeville soil series as mapped by NRCS. These are well drained soils. NRCS has mapped the majority of the site as Georgeville silt loam, 8-15 percent slopes, but there are a few inclusions of Georgeville silt loam, 2-8 percent slopes. The data below presents a typical profile description for the Georgeville series (NRCS 2006).

**Typical Profile for the Georgeville Soil Series**

| Horizon Name | Depth | Soil Color | Texture/Structure |
|---|---|---|---|
| **Soil Unit 1:** | | | |
| Ap | 0-8 | 2.5 YR4/6 | Silt loam/gr |
| Bt | 8-30 | 2.5 YR4/8 | Clay/sbk |
| BC | 30-44 | 2.5 YR4/8 | Sandy clay loam/sbk |

### *2.2.2 Chronology of Impacts*

There are no identified archeological or historical preservation sites located within the project area. The land outside of the easement is used by the property owners for growing crops, grazing cattle, and raising chickens. Prior to easement acquisition, cattle had unrestricted access to the stream. Cattle had unrestricted access prior to easement acquisition. In 2009, cattle were totally fenced out of the stream with 4 strand high tensile fencing. Steep slopes to the south and east of the stream have prevented extensive vegetation clearing. To the west and north of the stream, the land was cleared and has been used for grazing cattle. Most of the current cleared area is outside of the conservation easement and will remain open for grazing cattle.

Historic aerials were examined for any information about how the site hydrology and vegetation have changed over recent history. The reviewed aerials are found in Figure 2.8. Historic aerials were obtained from the USGS EarthExplorer and NC OneMap for 1950, 1964, 1973, 1980, 1993, 2007, 2010, and 2014. An abbreviated chronology of impacts can be described as follows:

1950 – The western field was cleared earlier than 1950. The stream channel is mostly forested but has been impacted by a crossing.

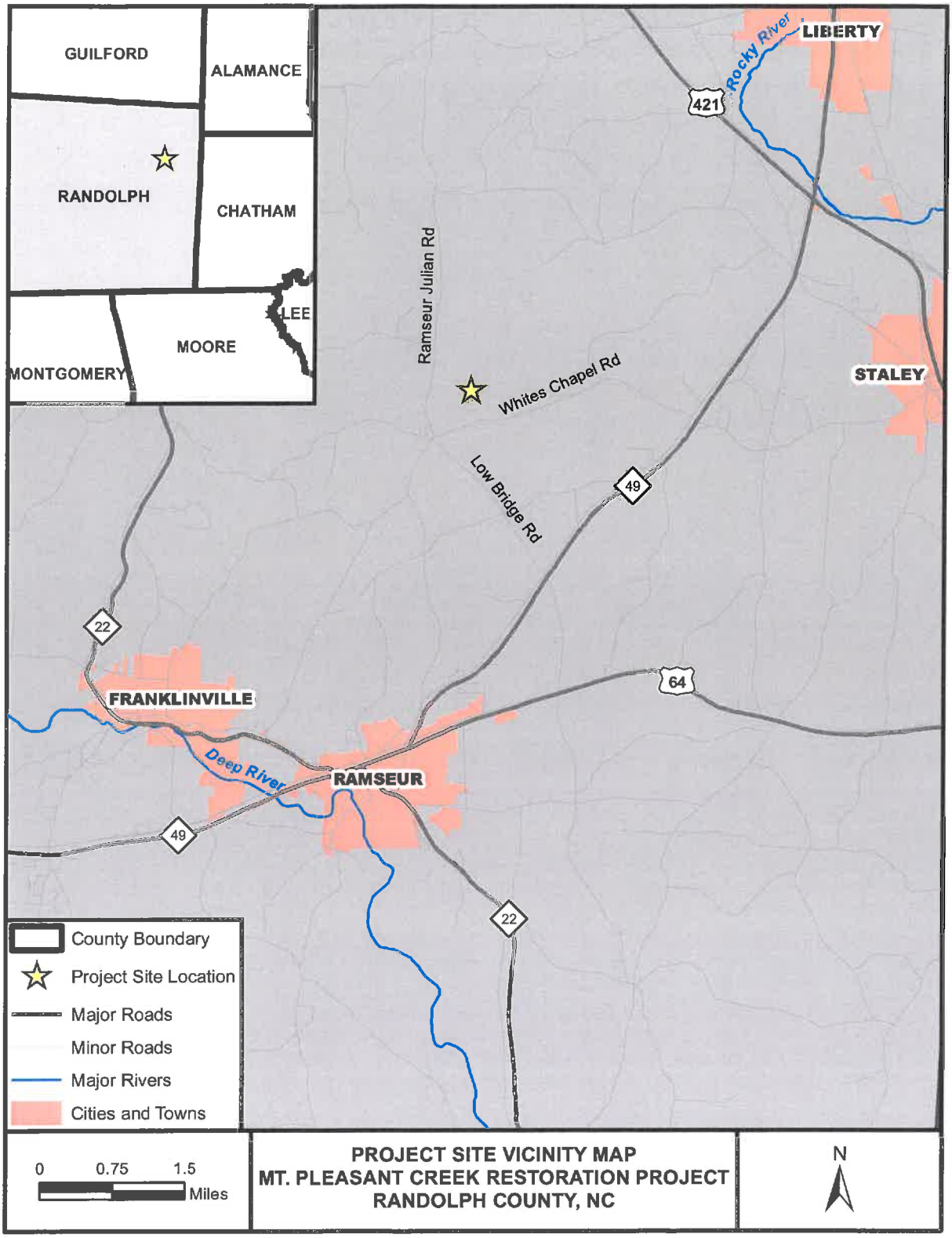
1973 –The forest was cleared from the southern side of the field to the northern bank of Mt. Pleasant Creek. No changes to the streams are apparent.

1993 – The chicken houses southeast of the project were constructed. No other impacts to the streams are visible.

2007 – Fields were cleared along the stream confluence directly upstream of the project area.

2009 – Cattle, with previously unrestricted access, were fenced out of the conservation easement.

## 2.3 Project Site Vicinity Map

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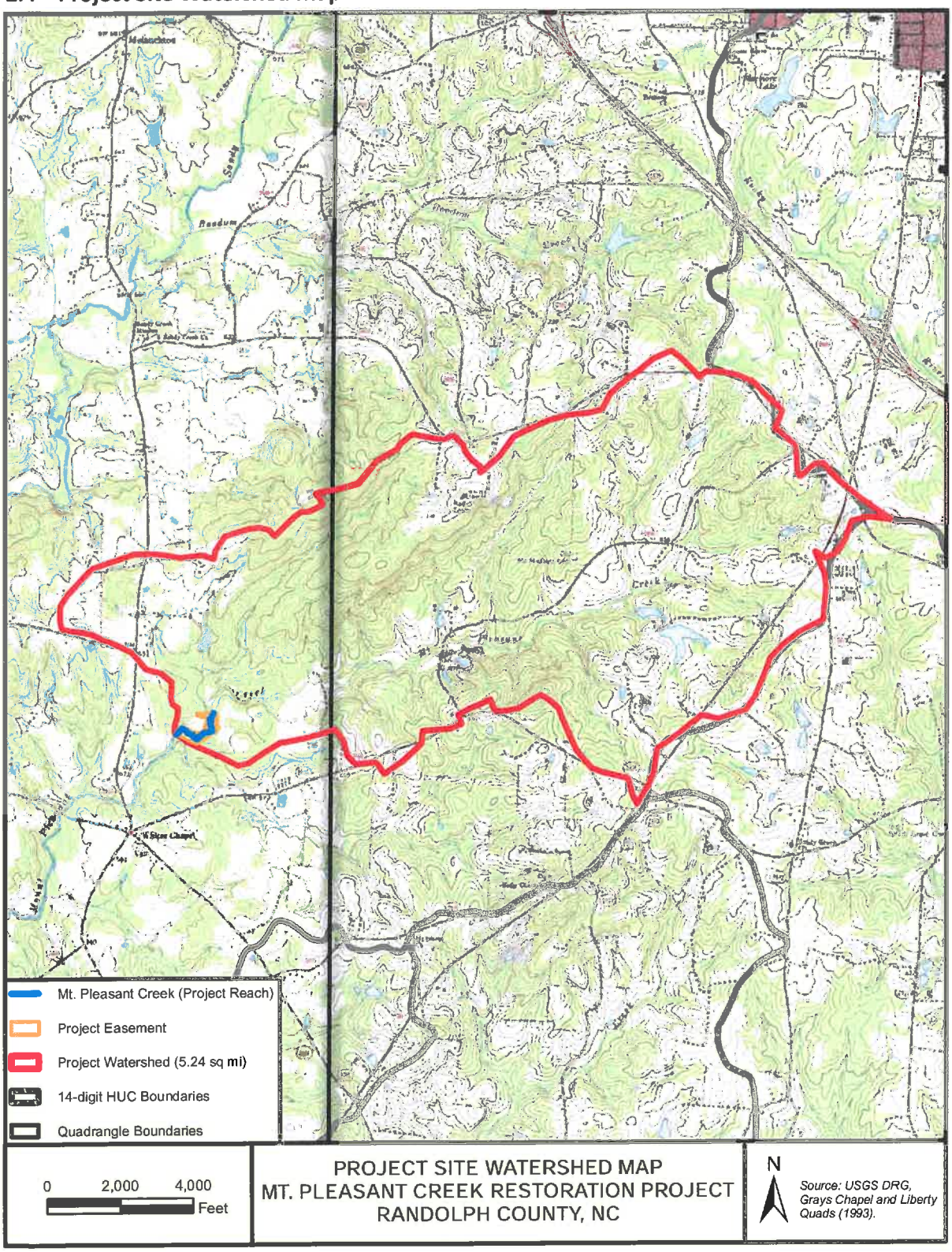
## 2.4 Project Site Watershed Map

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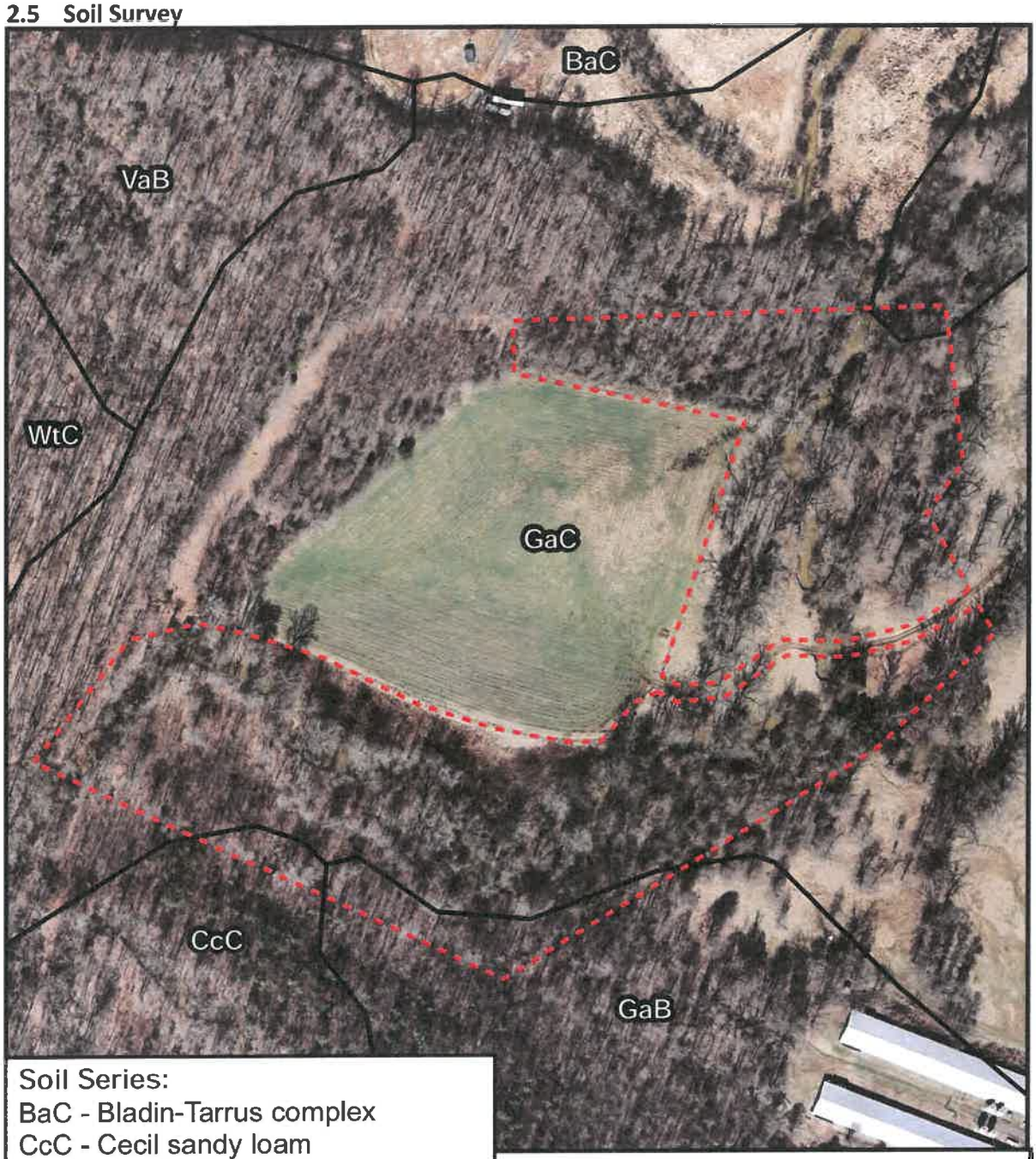
## 2.5 Soil Survey




Soil Series:
BaC - Bladin-Tarrus complex
CcC - Cecil sandy loam
GaB and GaC - Georgeville silt loam
VaB - Vance sandy loam
WtC - Wynott-Enon complex

Project Easement
NRCS Soil Survey (Randolph County)

0 100 200 Feet

PROJECT SITE NRCS SOIL SURVEY MAP
MT. PLEASANT CREEK RESTORATION PROJECT
RANDOLPH COUNTY, NC

N

*Soils Source: NRCS SSURGO Data, Randolph County.*

*Image Source: NC OneMap Orthoimagery, 2014.*

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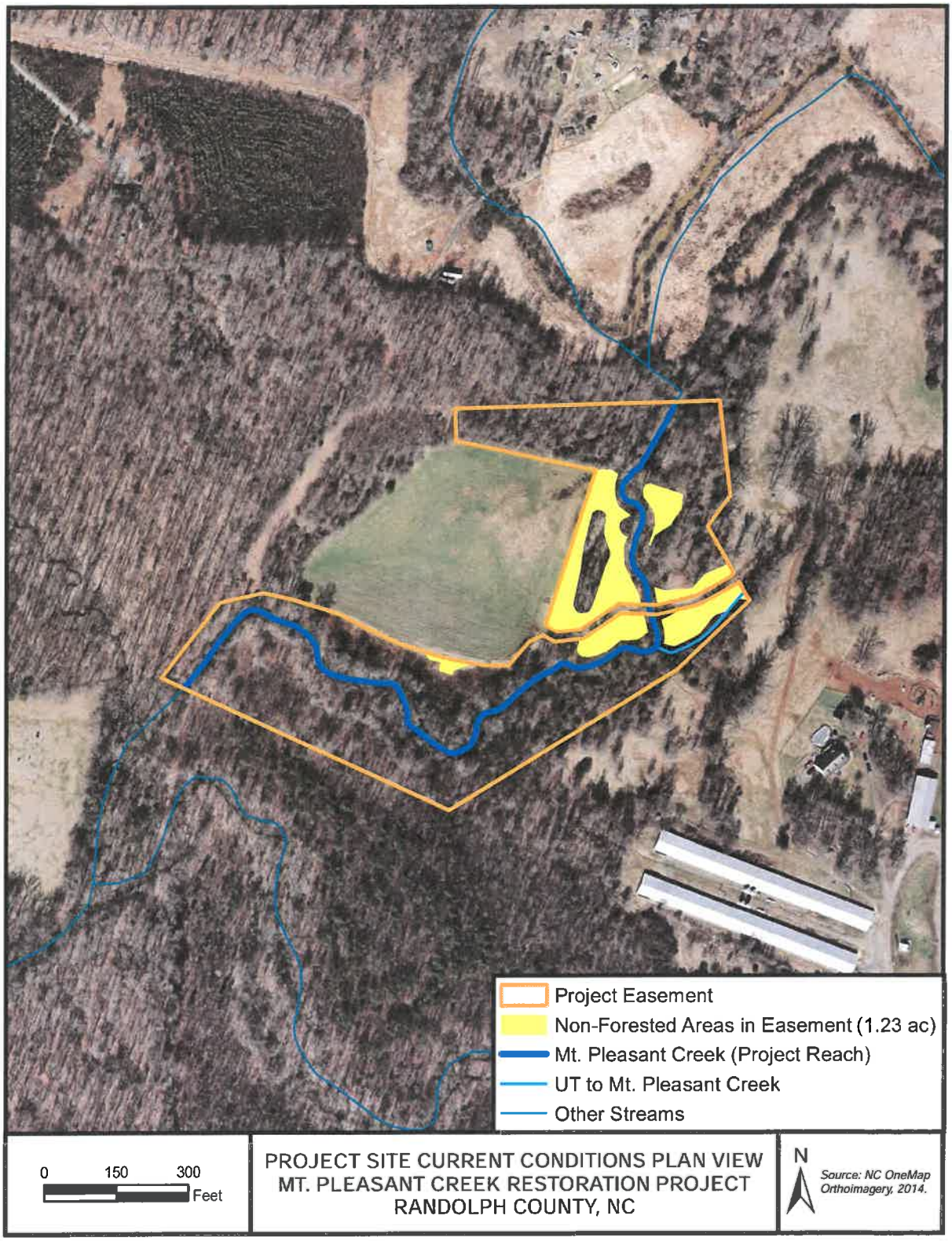
## 2.6 Project Site Current Condition Plan View

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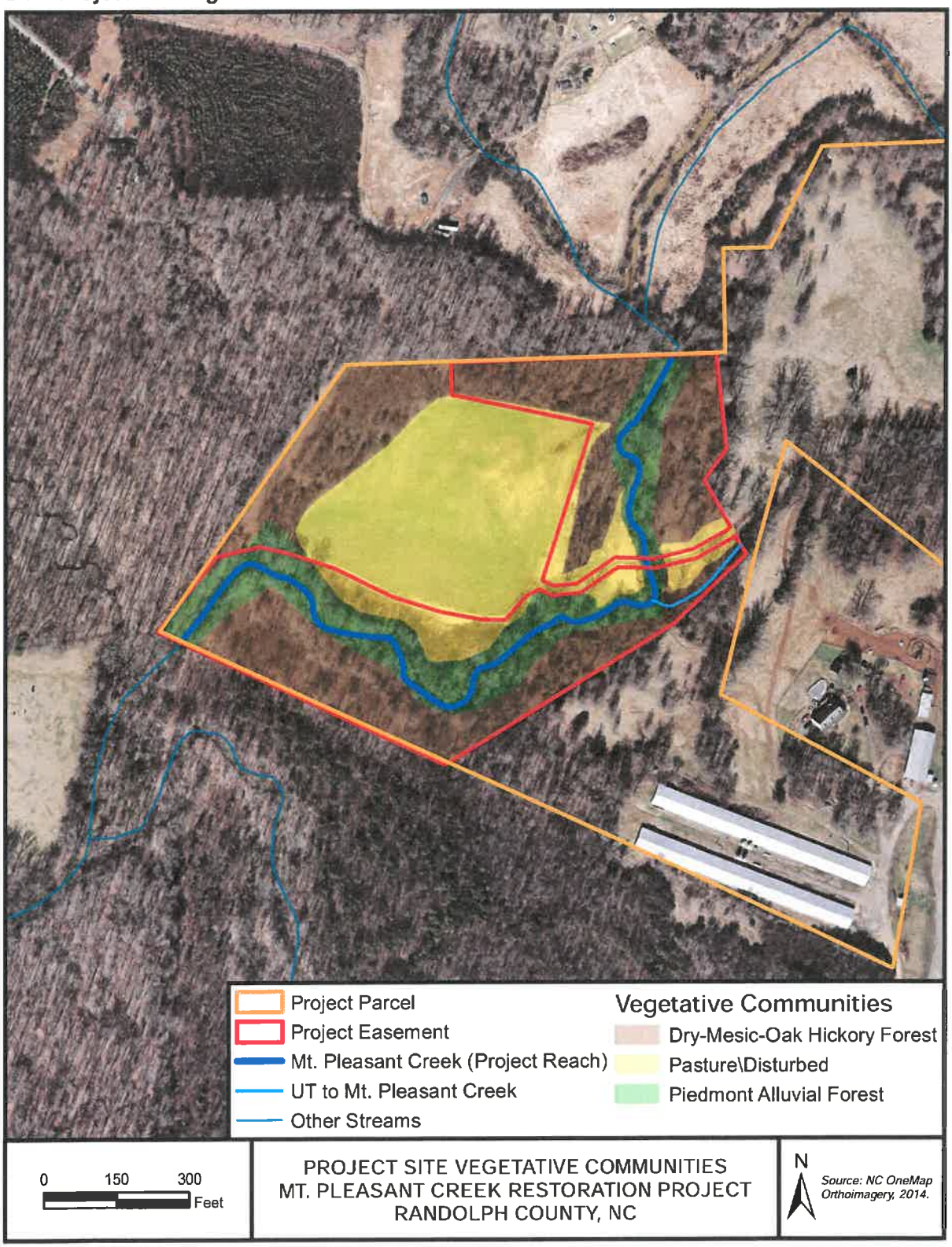
## 2.7 Project Site Vegetative Communities

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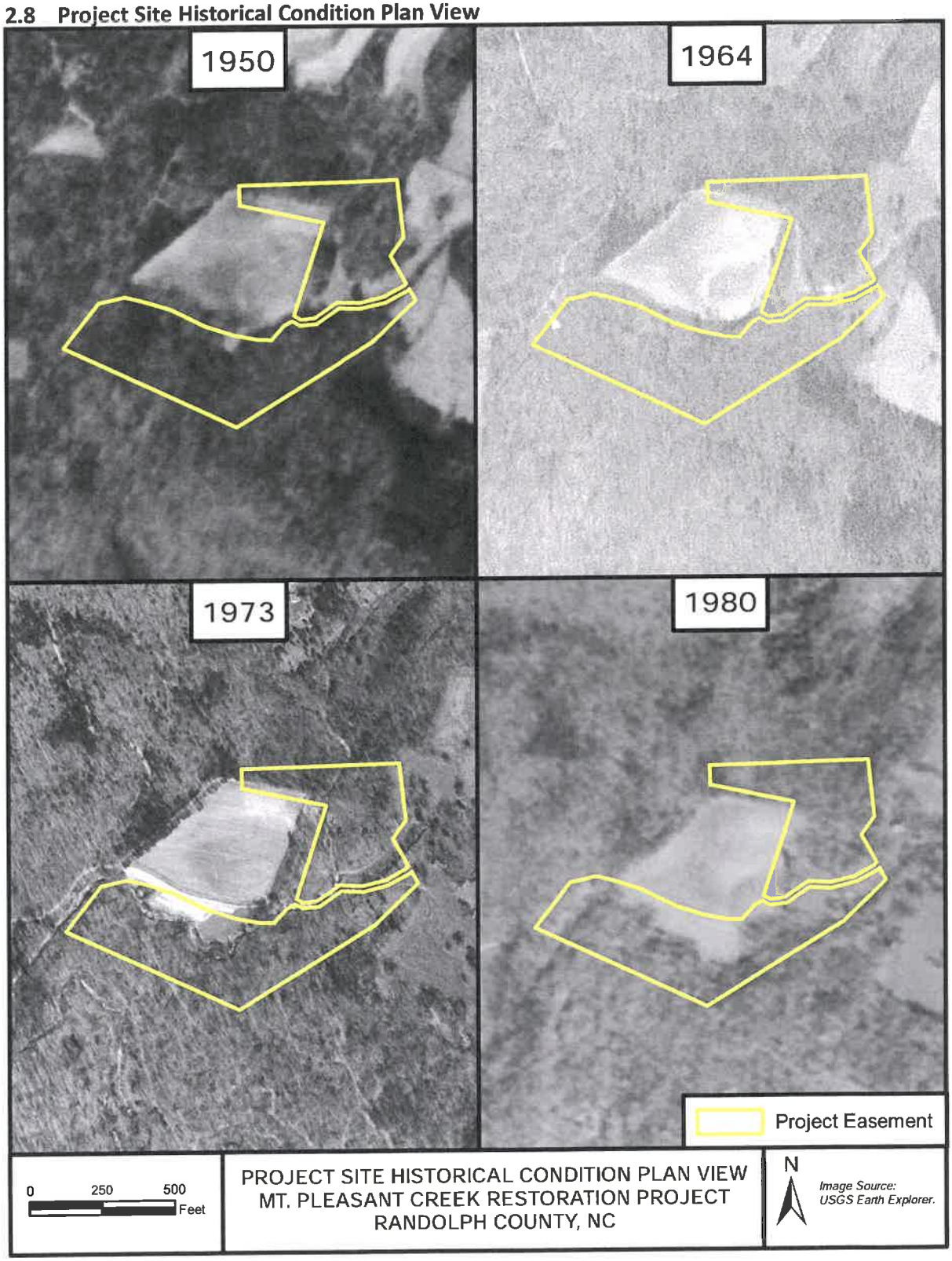
## 2.8 Project Site Historical Condition Plan View

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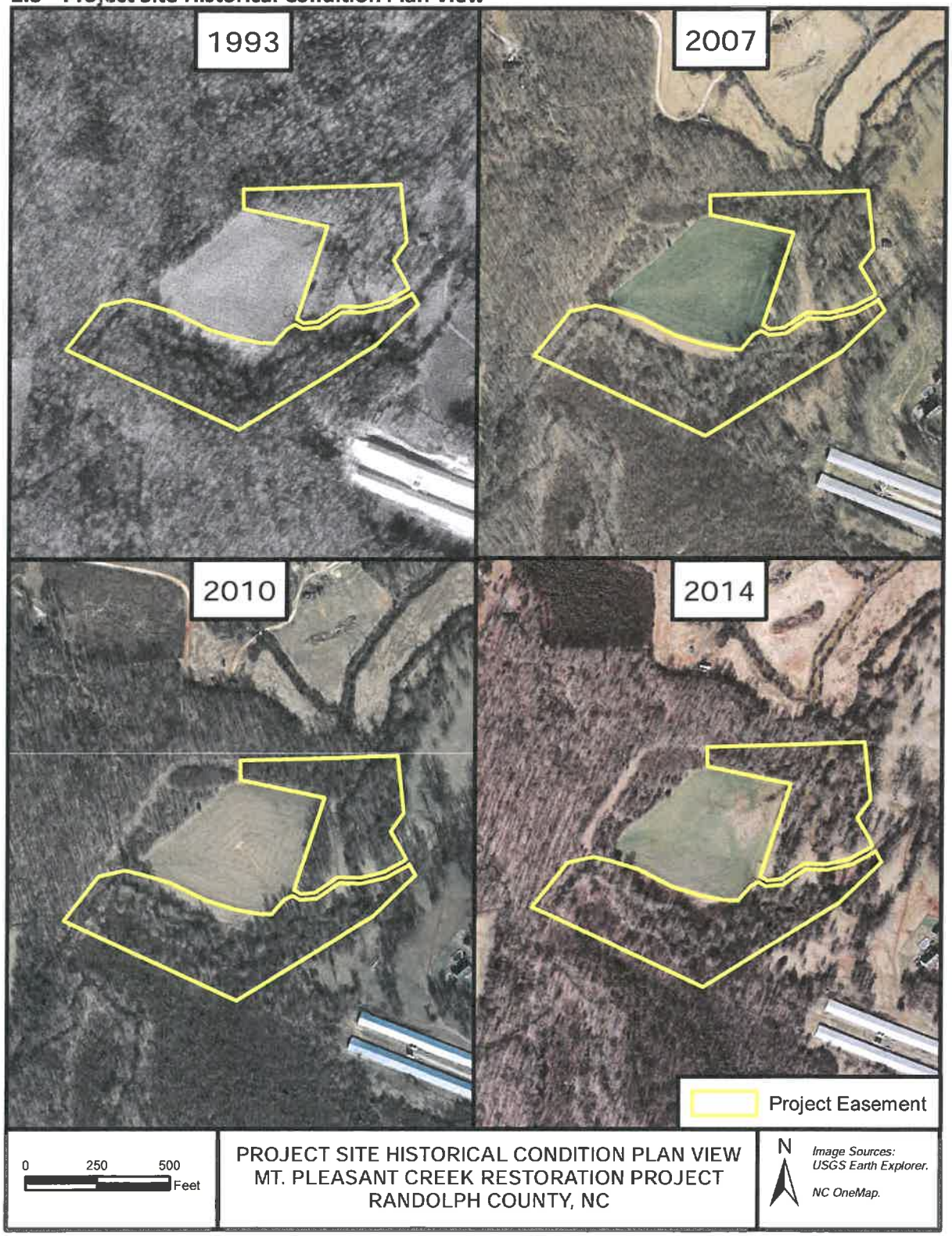
## 2.8 Project Site Historical Condition Plan View

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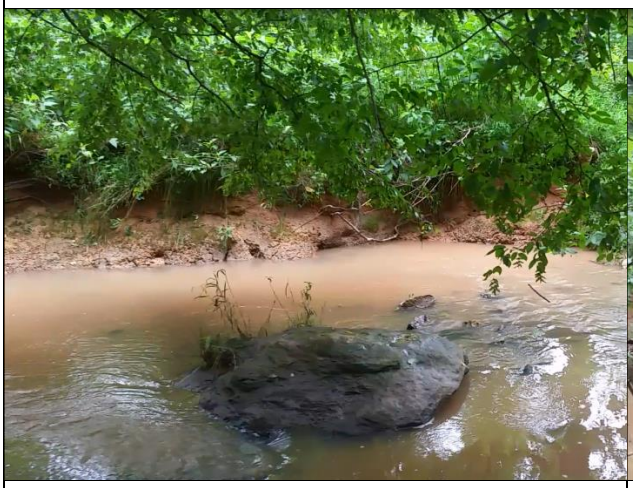
## 2.9 Site Photographs

View looking west from the confluence with UT to Mt. Pleasant Creek. A constructed riffle will be installed upstream (right). A soil lift will be installed downstream (left). Inner portion of the sediment bar will be removed and graded. 7/28/15



View looking west at eroded bank at the top of the project reach where the first (most upstream) soil lift will be installed. 7/14/15

View looking east at eroded bank where the second soil lift will be installed. 7/14/15

View looking north upstream at eroded bank where the second soil lift will be installed. The sycamore will be removed. 7/14/15

View looking west where the third soil lift will be installed. The bar will be graded. 7/14/15

View looking east at the existing rock ford crossing and access easement. This ford crossing will be updated in the proposed design (Appendix C). 7/14/15

View looking south and downstream from the existing rock ford crossing. Stream has been pushed west and caused eroded area. Stream flow will be relocated to the east. 7/14/15

View looking south and downstream from the existing rock ford crossing. Constructed riffle will be installed through vegetation and sediment to relocate the flow to the east. 7/14/15

View looking south at the confluence with UT to Mt. Pleasant Creek. Stream bank is eroded and soil lift will be installed. 7/14/15

View looking south and downstream where final (most downstream) soil lift will be installed. 7/14/15

View looking south at a non-forested area that will be planted as riparian buffer. 7/14/15

View looking south at a non-forested area that will be planted as riparian buffer. 7/14/15

View looking south from the southern end of the adjacent field. The area will be planted as riparian buffer.

## 3.0 SITE PROTECTION INSTRUMENT

### 3.1 Site Protection Instrument Summary Information

The land required for the construction, management, and stewardship of this mitigation project includes portions of the following parcel. The conservation easement document for the project is finalized. A copy of the land protection instrument is included in Appendix A.

**Mt. Pleasant Creek Restoration Project**

| Landowners | Instrument Number | PIN | County | Site Protection Instrument | Deed Book and Page Number | Acreage protected |
|---|---|---|---|---|---|---|
| Bowman, Mickey Charles | N/A | 8714143409, 8714147366 | Randolph | Conservation Easement | DB 2408 PG 1076 | 9.61 |

## 3.2 Site Protection Instrument Figure


March 2016

## 4.0 BASELINE INFORMATION

| **Project Information** | | | |
|---|---|---|---|
| **Project Name** | Mt. Pleasant Creek Restoration Project | | |
| **County** | Randolph County | | |
| **Project Area (acres)** | 9.61 acres | | |
| **Project Coordinates (lat. and long.)** | 35. 35.7938° N, - 79.6363° W | | |
| **Project Watershed Summary Information** | | | |
| **Physiographic Province** | Piedmont | | |
| **River Basin** | Cape Fear | | |
| **USGS Hydrologic Unit 8-digit** | 03030003 | **USGS Hydrologic Unit 14-digit** | 03030003020010 |
| **DWQ Sub-basin** | 03-06-09 | | |
| **Project Drainage Area (acres)** | 3,354 acres | | |
| **Project Drainage Area Percentage of Impervious Area** | 1% | | |
| **CGIA Land Use Classification** | Piedmont Alluvial Forest 21% (3.4 ac), Dry-Mesic-Oak-Hickory Forest 42% (6.6 ac), Pasture/Disturbed Community 37% (5.8 ac) | | |

| **Existing Reach Summary Information** | | |
|---|---|---|
| **Parameters** | **Mt. Pleasant Creek** | **UT to Mt. Pleasant Creek** |
| Length of reach (linear feet) | 1,866 | 236 |
| Drainage area (acres) | 3,354 acres | 33 acres |
| NCDWQ Water Quality Classification | WS-III | WS-III |
| Morphological Description (stream type) | C4/1 | B4/1 |
| Evolutionary trend | Stage VI | N/A |
| Mapped Soil Series | Georgeville silt loam | Georgeville silt loam |
| Drainage class | Well drained | Well drained |
| Soil Hydric status | Non-hydric | Non-hydric |
| Slope | 0.7% | 0-2% |
| FEMA classification | Zone AE | Zone AE |
| Existing vegetation community | Piedmont Alluvial Forest | Piedmont Alluvial Forest |
| Percent composition of exotic invasive vegetation | 5% | 5% |
| | | |

| **Regulatory Considerations** | | | |
|---|---|---|---|
| **Regulation** | **Applicable?** | **Resolved?** | **Supporting Documentation** |
| Waters of the United States – Section 404 | Yes | Applying for NWP 27 | N/A |
| Waters of the United States – Section 401 | Yes | Applying for NWP 27 | N/A |
| Endangered Species Act | No | N/A | N/A |
| Historic Preservation Act | No | N/A | N/A |
| Coastal Zone Management Act (CZMA)/ Coastal Area Management Act (CAMA) | No | N/A | N/A |
| FEMA Floodplain Compliance | No | N/A | N/A |
| Essential Fisheries Habitat | No | N/A | N/A |

## 4.1 Watershed Summary Information

The site is part of the 03030003020010 USGS Cataloging Unit (Sandy Creek) within the Cape Fear River Basin. The watershed for the Mt. Pleasant Creek project is comprised of 5.24 square miles at the downstream limit. The watershed consists mainly of forested land with some land cleared for agriculture and livestock. This area is experiencing increasing residential development, but remains predominantly rural in nature. The majority of the impervious surface within the project watershed comes from roads, residential homes, and livestock houses and amounts to approximately 1% of the total area of the project watershed.

The site receives flow from Mt. Pleasant Creek (DWR Stream Index Number 17-16-3) and UT to Mt. Pleasant Creek. Mt. Pleasant Creek leaves the project area and flows into Sandy Creek approximately 2.5 river miles (RM) past the downstream project limits. Sandy Creek flows into the Deep River approximately 4 RM downstream of its confluence with Mt. Pleasant Creek, under Highways 64/49 just west of the town of Ramseur.

The nearest Significant Natural Heritage Area (SNHA) is the CPF/Sandy Creek Aquatic Habitat area, located approximately 2.5 miles downstream of the project site. There are no conservation or protected areas located adjacent to the project site.

## 4.2 Reach Summary Information

***Existing Conditions***

The land outside of the conservation easement is used by the project landowners for growing crops, grazing cattle, and raising chickens. Cattle were totally fenced out of the stream when the easement was finalized for the site. The 4 strand high tensile fencing was completed in 2009. To the west and north of the project stream, the land was cleared and used for grazing cattle. Most of the historically cleared area is outside of the conservation easement and will remain open for grazing cattle.

The project reach of Mt. Pleasant Creek enters the property on the northern end and flows approximately 1,886 feet before exiting the property at the southwestern corner. The stream condition varies throughout the length of the project reach, with a trend of greater instability towards the top of the project reach and increasing stability in the downstream portion of channel. Overall the channel has a moderate, but varied width-to-depth ratio that averages just over 12. The system is moderately incised, with bank height ratios ranging from 1.2 - 1.7, and entrenchment ratios greater than 3 throughout. A natural bedrock waterfall is located approximately 125 feet upstream of the project site. The existing channel between the rock waterfall and the beginning of the project is wooded and in stable condition. At the beginning of the project, the channel becomes slightly incised. This upper portion of the channel exhibits signs of instability as evidenced by a series of eroding banks. Many of the banks in the upper half are nearly vertical and devoid of vegetation. The upper segment is also impacted by an unstable stream crossing and historic cattle traffic. After the upper 750 linear feet of the project reach, the stream begins to show increased signs of stability. The downstream portion of channel still has some lengths of bank that are unvegetated and undercut, but the rate of change appears to be low and the isolated areas of erosion are not as systemically widespread as in the upper portion of the channel. Overall, the lower reach is stable.

The existing vegetation along Mt. Pleasant Creek consists of tulip poplar (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*), sycamore (*Platanus occidentalis*), hackberry (*Celtis laevigata*), box

elder (*Acer negundo*), American elm (*Ulmus americana*), red maple (*Acer rubrum*), and black walnut (*Juglans nigra*). Sub-canopy and shrub species include ironwood (*Carpinus caroliniana*), pawpaw (*Asimina triloba*), box elder, tag alder (*Alnus serrulata*), elderberry (*Sambucus canadensis*), and painted buckeye (*Aesculus sylvatica*). The herbaceous layer includes yellow crownbeard (*Verbesina occidentalis*), Japanese stilt grass (*Microstegium vimineum*), Christmas fern (*Polystichum acrostichoides*), poison ivy (*Toxicodendron radicans*), greenbriars (*Smilax* spp.), violets (*Viola* spp.), Southern trout lily (*Erythronium umbilicatum* spp. *umbilicatum*), and spring beauty (*Claytonia virginica*). Former cattle disturbed areas are scattered throughout the project area. The Mt. Pleasant Creek Site was intermittently grazed and as a result is undergoing various stages of succession. The disturbed areas are dominated by fescue (*Festuca* spp.), little bluestem (*Schizachyrium* spp.), and other grasses. There is a sparse scattering of immature canopy and sub-canopy species such as black walnut (*Juglans nigra)*, loblolly pine (*Pinus taeda*), sweet gum, box elder, and Eastern red cedar (*Juniperus virginiana*) in these open areas. Shrub and herbaceous species such as multiflora rose (*Rosa multiflora*) and Chinese privet (*Ligustrum sinense*) are present, especially along fence lines and transitional margins.

The segment of Mt. Pleasant Creek being enhanced was mapped and named by the USGS, indicating a perennial stream. For this reason, a NCDWQ Stream Classification evaluation was not necessary for the project reach of Mt. Pleasant Creek.

### 4.3 Regulatory Considerations

Following the completion of the mitigation plan, a pre-construction notification (PCN) will be completed to apply for a Nationwide 27 Permit (NWP) to comply with Sections 401 and 404 of the Clean Water Act with the Wilmington District of the US Army Corps of Engineers and the NCDENR Division of Water Resources.

## 5.0 DETERMINATION OF CREDITS

R= Restoration RE= Restoration Equivalent of Creation or Enhancement

| Mt. Pleasant Creek Restoration Project, Randolph County<br>DMS Contract D15012i; DMS Project Number 44, SCO ID 060678701 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Mitigation Credits** | | | | | | | | | | | |
| | **Stream (SMU)** | | **Riparian Wetland** | | **Non-riparian Wetland** | | **Riparian Buffer (BMU)** | | | **Nitrogen Nutrient Offset** | **Phosphorous Nutrient Offset** |
| **Type** | R | RE | R | RE | R | RE | R | E | AltE | | |
| **Linear Feet/Acres** | 1,576 | 290 | | | | | 37,474 | 26,593 | 307,011 | | |
| **Credits** | 771.7 | 58.0 | | | | | 33,359 | 11,644 | 138,610 | | |
| **TOTAL CREDITS** | 829.7 | | - | | - | | 183,612 | | | | |

| **Project Components** | | | | | | |
|---|---|---|---|---|---|---|
| **Project Component -or- Reach ID** | **Stationing/ Location** | **Existing Footage/ Acreage** | **Approach (PI, PII etc.)** | **Mitigation Ratio** | **Restoration Footage or Square Footage** | **Restoration -or- Restoration Equivalent** |
| Mt. Pleasant Creek | 10+00-11+75 | 175 lf | Enhancement II | 2.5:1 | 175 lf | 70.0 |
| Mt. Pleasant Creek | 11 + 75 to 14+91<br>15+11 to 17+25 | 530 lf | Enhancement I | 1.5:1 | 530 lf | 353.3 |
| Mt. Pleasant Creek | 17 + 25 to 25 + 96 | 871 lf | Enhancement II | 2.5:1 | 871 lf | 348.4 |
| Mt. Pleasant Creek | 25 + 96 to 28 + 86 | 290 lf | Preservation | 5:1 | 290 lf | 58.0 |

RIPARIAN BUFFER MITIGATION: Randleman Lake Water Supply Watershed

| **Project Component** | **Location** | **Existing Area (sqft)** | **Approach** | **Mitigation Ratio (x: 1)** | **Restoration Area (sqft)** | **Restoration or Equivalent (BMU)** |
|---|---|---|---|---|---|---|
| A | | 16,404 | Restoration | 1 | 16,404 | 16,404 |
| B | | 19,982 | Enhancement | 2 | 19,982 | 9,991 |
| B | 100' + | 6,611 | Enhancement | 4 | 6,611 | 1,653 |
| C1, C2, C3 & D | | 247,427 | Alt. Enhancement | 2 | 247,427 | 123,714 |
| C1, C2, C3 & D | 100' + | 59,584 | Alt. Enhancement | 4 | 59,584 | 14,896 |
| E1 | | 5,222 | Restoration | 1 | 5,222 | 5,222 |
| E1 | 100+ | 3,091 | Restoration | 2 | 3,091 | 1,546 |
| E2 | | 7,617 | Restoration | 1 | 7,617 | 7,617 |
| E2 | 100+ | 5,140 | Restoration | 2 | 5,140 | 2,570 |
| **SUM** | | | | | **371,078** | **183,612** |

Ratios taken from Temporary Rule 15A NCAC 02B .0295 (i) and (m) as precribed in 3/1/2016 DWR Viability Letter

All Stream on Project Site has greater than 30' buffer throughout project

Mitigation credits presented in these tables are projections based upon site design. Upon completion of site construction the project components and credits data will be revised to be consistent with the as-built condition.

## 6.0 MITIGATION WORK PLAN

### 6.1 Target Stream Type and Plant Communities

The project involves enhancement through stabilization of the stream by installation of soil lifts, upgrading an existing rock ford crossing, and installation of a constructed riffle consistent with the C4-type stream in the upper reach (Enhancement I). Invasive species such as multiflora rose (*Rosa multiflora*) and Chinese privet (*Ligustrum sinense*) are present but are not widespread. Invasive species will be treated throughout the project, but presence of invasive species will not be considered for success criteria. Any areas that have a low density of existing vegetation will be supplementally planted with the species listed below. Trees and shrubs will be planted to establish overall stocking levels (8 feet x 8 feet spacing). Woody vegetation planting will be conducted during dormancy. Species to be planted may consist of the following and any substitutions from the planting plan will be taken from this list:

**Bottomland Hardwood Forest – 1.23 acres**

| Common Name | Scientific Name | Wetland Status (Eastern Mts & Piedmont) |
|---|---|---|
| River Birch | *Betula nigra* | FACW |
| Silky Dogwood | *Cornus amomum* | FACW |
| Swamp Chestnut Oak | *Quercus michauxii* | FACW |
| American Sycamore | *Platanus occidentalis* | FACW |
| Tulip Poplar | *Liriodendropn tulipifera* | FACU |
| American Elm | *Ulmus americana* | FAQW |
| Arrowwood viburnum | *Viburnum dentatum* | FAC |

DMS expects some natural regeneration of native successional species such as sweetgum (*Liquidambar styraciflua),* red maple (*Acer rubrum*), and loblolly pine (*Pinus taeda*). A custom herbaceous seed mix will also be developed and used to further stabilize the stream and buffer areas.

### 6.2 Design Parameters

The mitigation approach for the project will aim to improve a stream ecosystem that will provide both water quality and wildlife habitat benefits to the Cape Fear River Basin. The DMS's needs for mitigation in this basin will be achieved by the improvement of a stream complex with 1,866 lf of stream enhancement and 1.85 acres of vegetated buffer. Figures 6.4 and 6.5 show the mitigation type and extent. The proposed project conditions are shown in Section 6.4 and Appendix C.

***STREAM***

*Stream Enhancement I –*

Enhancement I will occur in the upper section of the stream where the stream bed and banks will be stabilized by construction activities. The upper section of stream will be enhanced through the placement of soil lifts and the installation of riffle structures at critical points along the channel. This area has also had cattle excluded from the project area when the easement was finalized (June 26, 2006).

In the project plan sheets (Appendix C, Sheet 3), there is a design for the typical soil lifts that will be installed in the upper segment of Mt. Pleasant Creek. Additional in-stream structures, including structural stone to reinforce the existing rock ford crossing and installation of a constructed riffle with soil lifts, will

be used to stabilize the channel (Appendix C). These structures are designed to reduce bank erosion, influence secondary circulation in the near-bank region of stream bends, and provide grade control. During construction, the number of mature trees removed from the existing riparian areas will be minimized as much as possible. Any valuable trees that may provide immediate shade to the restored channel will be left in place if feasible.

*Stream Enhancement II –*
The Enhancement II mitigation strategy in the lower section of the stream will result from cattle exclusion from the entire project, and buffer restoration activities, including planting and invasive treatments. The lower section of Mt. Pleasant Creek will also be enhanced by the placement of the stream in a perpetual conservation easement, and positive downstream effects due to improvements of the upper segment (see above).

*Stream Preservation –*
The lower section of Mt. Pleasant Creek will be preserved by the placement of the stream in a perpetual conservation easement

***RIPARIAN BUFFER***
Following a site visit and decision by Division of Water Resources (DWR) on January 26, 2016, this site was evaluated for buffer credit pursuant to Rule 15A NCAC 02B .0295 (effective October 24, 2014 to October 31, 2015). The definitions listed below describe the prescribed credit definitions provided by DWR.

*Riparian Buffer Restoration – Area A, E1, and E2*
Riparian buffer restoration areas consist of riparian zone sites (within 200 feet from Mt. Pleasant Creek top of bank) that are characterized by either an absence of trees or only scattered individual trees such that the tree canopy is less than 25 percent of the cover and by a lack of dense growth of smaller woody stems (i.e., shrubs or saplings).

*Riparian Buffer Enhancement – Area B*
Riparian buffer enhancement areas consist of riparian zone sites that are characterized by conditions between that of a restoration site and a preservation site such that the establishment of woody stems (i.e., tree or shrub species) will maximize nutrient removal and other buffer functions.

*Riparian Buffer Alternative Mitigation (m) and (m) (2) (F) – Areas C1, C2, C3, and D*
Enhancement of grazing areas adjacent to streams. Buffer credit at a 2:1 ratio shall be available for an application who proposes permanent exclusion of grazing livestock that otherwise degrade the stream and its adjacent buffer. As described in previous text of this Mitigation Plan, livestock had unrestricted access to all areas of the Conservation Easement prior to this project, and livestock fencing was installed as part of this project.

The riparian buffer sites have been categorized based off of the distance measured from the top of bank of Mt. Pleasant Creek. The table 5.0 above shows the anticipated measurements.

## 6.3 Data Analysis

Given that this project consists of only stream enhancement, the data collection and analysis was limited as appropriate for this level of mitigation. Previous data collected by others at this site included six cross-sectional survey measurements to characterize the nature of the existing channel. The representative cross-sections have been included within this report (Appendix B). The majority of the cross-sections have bank height ratios close to 1.5 or less, with the exception of Cross-Section 5, which has a bank height ratio closer to 2.0. While there is variation throughout the site, the locations of these cross-sections do not show significant signs of instability. This data indicates that the stream and the landscape are resilient enough to maintain stability, even with sub-optimal channel morphology. The areas that are targeted for repair have bank height ratios between 1.5 and 2.0 due to local influences, such as lack of vegetation and planform geometry, which have resulted in this portion of the channel showing signs of instability. For this reason, the mitigation approach is targeted at correcting these local influences through an enhancement approach. Instead of changing the complete character of the channel, the enhancement is making small planform adjustments to soften tight meander bends and stabilizing banks with soil lifts that will be immediately stable and also rapidly vegetate to create rooting strength in the banks for long term stability. The repairs will also replicate the cross-sectional dimensions found in the other stable reaches of the project, adding benches where feasible to create bank height rations of 1.0.

# 6.4 Proposed Stream Mitigation


- Conservation Easement
- Enhancement I (530 lf / 353 SMUs)
- Enhancement II (1,046 lf / 418.4 SMUs)
- Preservation (290 lf / 58 SMUs)
- Proposed Planting Area
- Proposed Monitoring Cross Sections
- Proposed Vegetation Plot
- Stationing
- UT to Mt Pleasant Creek

**PROPOSED STREAM MITIGATION**
**MOUNT PLEASANT CREEK /**
**BOWMAN RESTORATION PROJECT**
**RANDOLPH COUNTY, NC**

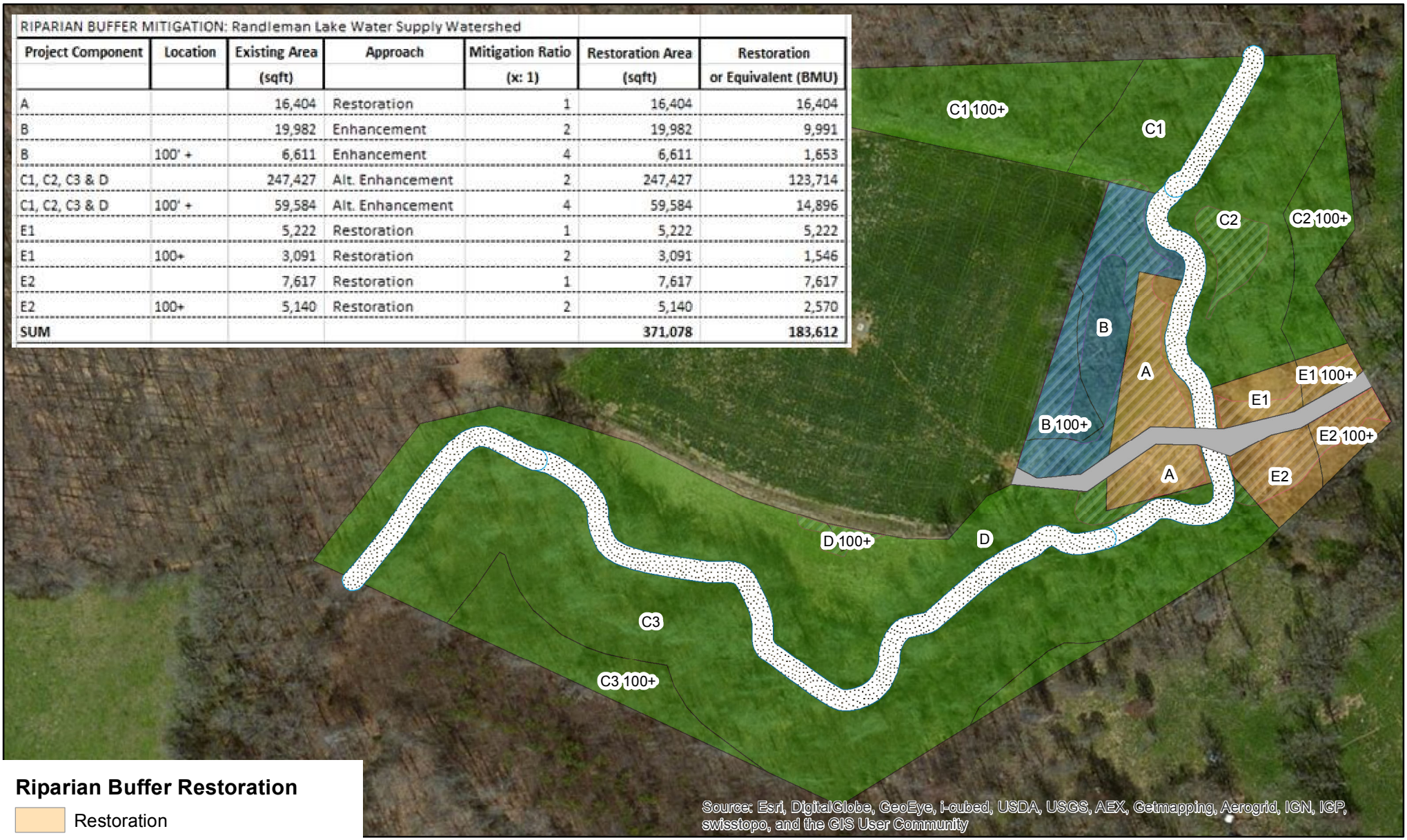
N
W E
S

0 50 100 200
Feet

# 6.5 Proposed Buffer Mitigation

RIPARIAN BUFFER MITIGATION: Randleman Lake Water Supply Watershed

| Project Component | Location | Existing Area (sqft) | Approach | Mitigation Ratio (x: 1) | Restoration Area (sqft) | Restoration or Equivalent (BMU) |
|---|---|---|---|---|---|---|
| A | | 16,404 | Restoration | 1 | 16,404 | 16,404 |
| B | | 19,982 | Enhancement | 2 | 19,982 | 9,991 |
| B | 100' + | 6,611 | Enhancement | 4 | 6,611 | 1,653 |
| C1, C2, C3 & D | | 247,427 | Alt. Enhancement | 2 | 247,427 | 123,714 |
| C1, C2, C3 & D | 100' + | 59,584 | Alt. Enhancement | 4 | 59,584 | 14,896 |
| E1 | | 5,222 | Restoration | 1 | 5,222 | 5,222 |
| E1 | 100+ | 3,091 | Restoration | 2 | 3,091 | 1,546 |
| E2 | | 7,617 | Restoration | 1 | 7,617 | 7,617 |
| E2 | 100+ | 5,140 | Restoration | 2 | 5,140 | 2,570 |
| SUM | | | | | 371,078 | 183,612 |




**Riparian Buffer Restoration**

- Restoration
- Enhancement
- Alternative Enhancement Grazing
- Crossing
- Stream Top of Bank
- Proposed Planting Area

PROPOSED BUFFER MITIGATION
MOUNT PLEASANT CREEK /
BOWMAN RESTORATION PROJECT
RANDOLPH COUNTY, NC

N
W E
S

0 37.5 75 150 225 300 Feet

## 7.0 MAINTENANCE PLAN

The site will be monitored on a regular basis, with a physical inspection of the site conducted a minimum of once per year throughout the post-construction monitoring period until performance standards are met. These site inspections may identify site components and features that require routine maintenance. Routine maintenance should be expected most often in the first two years following site construction and may include the following:

| Component/Feature | Maintenance Through Project Close-Out |
|---|---|
| Stream | Routine channel maintenance and repair activities may include securing of loose coir matting and supplemental installations of live stakes and other target vegetation along the channel. Areas where stormwater and floodplain flows intercept the channel may also require maintenance to prevent bank failures and head-cutting. |
| Vegetation | Vegetation shall be maintained to ensure the health and vigor of the targeted plant community. Routine vegetation maintenance and repair activities may include supplemental planting, pruning, mulching, and fertilizing. Exotic invasive plant species shall be controlled by mechanical and/or chemical methods. Any vegetation control requiring herbicide application will be performed in accordance with NC Department of Agriculture (NCDA) rules and regulations. |
| Site Boundary | Site boundaries shall be identified in the field to ensure clear distinction between the mitigation site and adjacent properties. Boundaries may be identified by fence, marker, bollard, post, tree-blazing, or other means as allowed by site conditions and/or conservation easement. Boundary markers disturbed, damaged, or destroyed will be repaired and/or replaced on an as needed basis. |

## 8.0 PERFORMANCE STANDARDS

Monitoring of the Mt. Pleasant Creek Project shall consist of the collection and analysis of stream stability and riparian/stream bank vegetation survivability data to support the evaluation of the project in meeting established objectives. Specifically, project success will be assessed utilizing measurements of stream stability, site photographs, and vegetation sampling.

**Stream**

Stream performance standards are based on 2003 Stream Mitigation Guidelines for determination of channel stability and vegetative success. Stream stability will be documented through 1) annual visual assessment 2) demonstration of bankfull events, 3) stream photo points and 4) monitoring three cross-sections (for the Enhancement I section only).

**1) Visual Assessment**

An annual site walk will be conducted at the end of each monitoring period to document any stream problem areas. Specific problem areas that could arise include excessive bank erosion, bed deposition or aggradation, or problems with the installed structures. During site walks, any areas of invasive species problems, tree and shrub mortality issues, or other problem areas will be noted. The findings of the visual assessment as well as any recommended corrective actions for problem areas will be summarized in the monitoring reports by way of a Current Conditions Plan View figure.

**2) Verification of Bankfull Events**

During the monitoring period, a minimum of two bankfull events must be recorded within the five-year monitoring period. These two bankfull events must occur in separate monitoring years. Bankfull events will be verified using an automatic stream monitoring gauge to record daily stream depth readings.

**3) Photograph Reference Points**

Permanent photograph reference points will be established to assist in characterizing the site and to allow qualitative evaluation of the site conditions. The location and bearing/orientation of each photo point will be documented to allow for repeated use.

**4) Dimension**

Permanent cross-sections will be established along Mt. Pleasant Creek and will be used to evaluate stream dimension stability, at stations 12+12, 15+25 and 17+00. This will include one cross-section in the constructed riffle (15+25) to evaluate the stability of this structure and then two cross-sections in other locations where the banks were stabilized with soil lifts and were previous cross-sections were established. Permanent monuments will be established at the left and right extents of each cross-section by either conventional survey or GPS. The cross-section surveys shall provide a detailed measurement of the stream and banks and will include points on the adjacent floodplain or valley, at the top of bank, bankfull, at all breaks in slope, the edge of water, and thalweg. Width/depth and entrenchment ratios will be calculated for each cross-section based on the survey data.

Cross-section measurements should show little or no change from the as-built cross-sections. If changes do occur, they will be evaluated to determine whether they are minor adjustments associated with settling and increased stability or whether they indicate movement toward an unstable condition.

**Vegetation**

Performance standards are established to verify that the vegetation component supports community elements necessary for forest development and the maintenance of diffuse flow through the riparian buffer in accordance with North Carolina Division of Water Resources Administrative Code 15A NCAC 02B.0295 (Mitigation Program Requirements for Protection and Maintenance of Riparian Buffers) (NCDWR 2014 Temporary Rule). Performance standards are dependent upon the density and growth of characteristic forest species. After five years of monitoring, an average density of 260 woody stems per acre must be surviving and diffuse flow maintained. If monitoring indicates that the specified survival rate is not being met, appropriate corrective actions will take place, which may include invasive species control, the removal of dead/dying plants and replanting.

## 9.0 MONITORING REQUIREMENTS

Annual monitoring data will be reported using the DMS monitoring template. The monitoring report shall provide a project data chronology that will facilitate an understanding of project status and trends, population of DMS databases for analysis, research purposes, and assist in decision making regarding project close-out.

| Mt. Pleasant Creek Restoration Project | | | | |
|---|---|---|---|---|
| **Required** | **Parameter** | **Quantity** | **Frequency** | **Notes** |
| Yes | Dimension | Cross-sections | Annual | Three cross sections will be installed in the Enhancement I section |
| Yes | Surface Water Hydrology | 1 automatic recording gauge | Annual | One automatic recording gauge will be installed on site; the device will be downloaded every two months to document the occurrence of bankfull events on the project |
| Yes | Vegetation | 1 permanent and 2 random 100 $m^2$ plots | Annual | Species composition and density |
| Yes | Exotic and nuisance vegetation | | Annual | Locations of exotic and nuisance vegetation will be mapped, invasive species will be treated throughout the project monitoring, but will not be counted toward success. |
| Yes | Project boundary | | Semi-annual | Locations of vegetation damage, boundary encroachments, etc. will be mapped |

The first scheduled monitoring will be conducted during the first full growing season following project completion. Monitoring shall subsequently be conducted annually for a total period of five years or until the project meets its success criteria.

Monitoring of site restoration efforts will be performed for five years or until performance standards are met. After planting has been completed in winter or early spring, initial plant stocking will be performed to verify planting methods and to determine initial species composition and density. To monitor the vegetation at this site, the NC Division of Mitigation Services will install 1 permanent vegetation plot, and 2 random rotating plots in the planted area. Visual monitoring will be conducted to assess vegetative cover, diffuse flow and easement integrity. DMS will monitor three 3 (100$m^2$/ 1,089 $ft^2$) vegetation plots in the planted area. These plots will be located in the 1.23 acre planted area, providing >5% coverage in that area. In each sample plot, monitoring parameters will include species composition and density. The plots will be randomly selected using a grid and random number generator (or similar method) for each of the monitoring year. Visual observations of the percent cover of shrub and herbaceous species, diffuse flow and easement integrity will be documented by photograph and site visits.

Photograph reference points (PRPs) will be established to assist in characterizing the site and to allow qualitative evaluation of the site conditions. The location of each photo point will be marked in the monitoring plan and the bearing/orientation of the photograph will be documented.

Annual monitoring reports will be prepared and submitted after all monitoring tasks for each year are completed. The report will document the monitored components and include all collected data, analyses, and photographs. Each report will provide the new monitoring data and compare the most recent results against previous findings. The monitoring report format will be similar to that set out in the most recent DMS monitoring protocol.

## 10.0 LONG-TERM MANAGEMENT PLAN

Upon approval for close-out by the Interagency Review Team (IRT), the sites will be transferred to the NCDOT Stewardship Program. This party shall be responsible for periodic inspection of the sites to ensure that restrictions required in the conservation easement are upheld.

## 11.0 ADAPTIVE MANAGEMENT PLAN

Upon completion of site construction DMS will implement the post-construction monitoring protocols previously defined in this document. Project maintenance will be performed as described previously in this document. If, during the course of annual monitoring it is determined the site's ability to achieve site performance standards are jeopardized, DMS will notify the USACE of the need to develop a Plan of Corrective Action. The Plan of Corrective Action may be prepared using in-house technical staff or may require engineering and consulting services. Once the Corrective Action Plan is prepared and finalized DMS will:

1. Notify the USACE as required by the Nationwide 27 permit general conditions.
2. Revise performance standards, maintenance requirements, and monitoring requirements as necessary and/or required by the USACE.
3. Obtain other permits as necessary.
4. Implement the Corrective Action Plan.
5. Provide the USACE a Record Drawing of Corrective Actions. This document shall depict the extent and nature of the work performed.

# Appendix A. Site Protection Instrument

FILED Krista M Lowe
Register of Deeds, Randolph Co,NC
Recording Fee: $26.00
NC Real Estate Ex Tx:$.00

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Bk:RE2408 Pg:1076
09/25/2014 01:06:57 PM 1/7

✓ NCDOT
1598 Mail Service Center
Raleigh, NC 27699

**STATE OF NORTH CAROLINA** P.I.N. # 8714143409, 8714147366

**COUNTY OF RANDOLPH**

PREPARED BY & ~~RETURN TO:~~ Thomas D. Henry
Assistant Attorney General
North Carolina Department of Justice
Transportation Section
1505 Mail Service Center
Raleigh, North Carolina 27699-1505

# FIRST AMENDMENT TO CONSERVATION EASEMENT AND EASEMENT OF INGRESS AND EGRESS

This First Amendment to Conservation Easement and Easement of Ingress and Egress ("First Amendment") is made on this 18 day of September, 2014 by and between **MICKEY C. BOWMAN** and wife **MICHELE D. BOWMAN** having an address of 5173 Whites Chapel Road, Staley, North Carolina 27355 ("Grantor"), and **THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**, its successors and assigns, having an address of 1598 Mail Service Center, Raleigh, North Carolina 27699-1598 ("NCDOT").

The designation Grantor and NCDOT (collectively, the "Parties") as used herein shall include said Parties, their heirs, successors, assigns, respective agents, executors, administrators, grantees, devisees, licensees, and/or all other successors as their interests may appear, and shall include singular, plural, masculine, feminine or neuter as required by context.

## WHEREAS:

Under a Conservation Easement and Easement of Ingress and Egress ("Original Instrument") recorded on June 26, 2006 at Book 1979, Page 313 of the Randolph County Registry, NCDOT possesses a conservation easement and access easement over, upon, and across certain real property owned in fee simple by Grantor (the "Property"). Grantor's Property is more particularly described in the Original Instrument and in Book 2012, Page 1727, Book 1373, Page 1069, and Book 1068, Page 157 of the Randolph County Registry.

By this First Amendment, the Parties mutually desire to amend the Original Instrument with respect to the description of the Permanent Access Easement set forth in Paragraph 4 and Exhibit A of the Original Easement. The original Permanent Access Easement was depicted on a plat recorded at Book 101, Pages 36-37 of the Randolph County Registry, and labeled as "Proposed Future Farm Road."

Given changed circumstances on the property and given changes to the planned Stream Mitigation Project referenced in Paragraph 4 of the Original Instrument, the Parties mutually desire to establish access to the Conservation Easement Area by means of an existing soil road and mutually desire to abandon the "Proposed Future Farm Road" depicted at Book 101, Pages 36-37 of the Randolph County Registry.

The Parties acknowledge that substituting new access for the original access will reduce the acreage of the Conservation Easement Area by 0.087 acres and will alter the boundaries of the Conservation Easement Area, as depicted on the plat recorded at Book 141, Page 84 of the Randolph County Registry.

The Parties agree that the establishment of a new Permanent Access Easement is mutually beneficial, is consistent with the Original Instrument, and will effectuate the purposes of the Original Instrument, including the purpose of conducting and monitoring the Stream Mitigation Project.

The Parties agree that the mutual obligations, promises and duties herein imposed constitute adequate mutual consideration.

The Parties mutually desire to resolve any and all claims concerning, or in any way associated with, the substitution of the new access, described on the plat recorded at Book 141, Page 84 of the Randolph County Registry, for the original access described in the Original Instrument.

The Parties agree that, except as amended hereby, and in all other respects, the Original Instrument shall remain in full force and effect and shall be interpreted to give meaning to its provisions and to those contained herein.

**NOW, THEREFORE**, in consideration of good and valuable consideration acknowledged by both Grantor and NCDOT, the benefits of which flow to NCDOT and Grantor from each other, the receipt of which is hereby acknowledged, and in further consideration of the mutual covenants, terms, conditions and restrictions contained herein, Grantor and NCDOT hereby amend the Original Instrument and establish this First Amendment thereto.

The terms and conditions of this First Amendment are as hereinafter set forth:

1. Grantor hereby grants and conveys unto NCDOT and its successors or assigns, in perpetuity, a Permanent Access Easement as more particularly described in **Exhibit A,** which is attached hereto and incorporated herein by reference. Any improvements to or maintenance decisions regarding the Permanent Access Easement shall be at the

discretion of NCDOT or the North Carolina Department of Environment and Natural Resources, Ecosystem Enhancement Program ("EEP").

2. NCDOT and its authorized representatives, including the U.S. Army Corps of Engineers and EEP, at all reasonable times and continuing in perpetuity, shall have the right to access the Conservation Easement Area through the Property over this Permanent Access Easement (1) in order to conduct and monitor the Stream Mitigation Project; and (2) for the purpose of inspecting the Conservation Easement Area to determine if Grantor is complying with the terms, conditions, restrictions, and purposes of the Original Instrument and this First Amendment.

3. The Conservation Easement Area encompasses perennial streams, wetlands and surrounding land located on the Property, as more particularly described in **Exhibit A,** comprising approximately **9.61** total acres.

4. Grantor covenants and represents that Grantor is the sole owner and is seized of the Property in fee simple and has good right to grant and convey the aforesaid First Amendment and Permanent Access Easement; that the Property, Conservation Easement Area, and Permanent Access Easement are free and clear of any and all encumbrances, except easements and leases of record or as of the date hereto, which Grantor has made known to NCDOT; Grantor will warrant and defend the title against the lawful claims of all persons whomsoever; that both Grantor and NCDOT have legal access to the Property and the Conservation Easement Area; and Grantor covenants that NCDOT shall have the use of and enjoy all of the benefits derived from and arising out of the aforesaid easements conveyed. All easements conveyed herein shall run with the land and shall be made part of any transfer of title by Grantor.

5. This instrument sets forth the entire agreement of the Parties with respect to the First Amendment and Permanent Access Easement and supersedes all prior or contemporaneous discussions, negotiations, understandings or agreements relating to said Easements.

6. The burdens of this First Amendment shall run with the Property and shall be enforceable against Grantor and all future parties who have an interest in the Property in perpetuity.

7. The Original Instrument is amended only to the extent set forth herein. This First Amendment does not affect, alter, or supersede the Original Instrument in any other way. The Original Instrument (Book 1979, Page 313 of the Randolph County Registry) is specifically incorporated herein by reference. Except as amended, the Original Instrument shall remain in full force and effect and shall be interpreted to give meaning to its provisions and to those contained herein.

8. Grantor acknowledges that:

a) NCDOT and authorized representatives shall have access to the Conservation Easement Area by means of an existing soil road, as depicted on the plat recorded at Book 141, Page 84 of the Randolph County Registry;

b) The plan to construct the "Proposed Future Farm Road" depicted at Book 101, Pages 36-37 of the Randolph County Registry is, has been and forever will be abandoned; and

c) These changes will reduce the Conservation Easement Area by 0.087 acres and will alter the boundaries of the Conservation Easement Area, as depicted on the plat recorded at Book 141, Page 84 of the Randolph County Registry.

9. Grantor, their successors and assigns, hereby release and forever discharge the State of North Carolina and any agencies thereof, including its officials, officers, directors, employees, subsidiaries, affiliates, successors, assigns, agents, and representatives, from all claims, demands and causes of action, whether known or unknown, that Grantor has or may have or which may arise as a result of the mutual agreement between the parties not to construct a new access road, depicted as "Proposed Future Farm Road" on the plat recorded at Book 141, Page 84 of the Randolph County Registry, but instead to continue using the existing access road as depicted on the same plat. This release includes but is not limited to any and all claims by Grantor, their successors and assigns, against NCDOT and the State, either directly or indirectly, as well as any claims that have been or could be asserted in any independent civil action relating to the change in terms of the original agreement between the parties. Grantors, their successors and assigns, and all those claiming by, under or through them, shall be forever barred from asserting any claim against NCDOT and the State arising out of the change of circumstances described in this agreement.

10. All Parties have read and understand this First Amendment and have had an opportunity to consult with counsel regarding the same.

**TO HAVE AND TO HOLD** this First Amendment to Conservation Easement and Easement of Ingress and Egress unto the NCDOT, its successors and assigns, forever, this First Amendment to Conservation Easement and Easement of Ingress and Egress together with all and singular the appurtenances and privileges belonging or in any way pertaining thereto.

**IN WITNESS WHEREOF**, Grantor and NCDOT, intending to legally bind each other, have set their hands on the date first written above.

**GRANTOR:**

_____ (Seal)
MICKEY C. BOWMAN

_____ (Seal)
MICHELE D. BOWMAN

NORTH CAROLINA
RANDOLPH COUNTY

I, ADAM ROTHROCK, a Notary Public of GUILFORD County, North Carolina, do hereby certify that MICKEY C. BOWMAN and wife MICHELE D. BOWMAN personally appeared before me this day and executed the foregoing instrument.

Witness my hand and official stamp or seal this 17TH day of SEPT., 2014.

SEAL

ADAM ROTHROCK NOTARY PUBLIC GUILFORD COUNTY, N.C.

_____
Notary Public Signature

ADAM ROTHROCK
Printed Name of Notary Public

My commission expires: 5-15-19

**INTENTIONALLY LEFT BLANK.**

**SIGNATURES CONTINUED ON PAGE FOLLOWING.**

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RE2408 1081 677

**GRANTEE:**

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**

_____ (SEAL)
By: Tom Childrey
Manager, Right of Way Branch
North Carolina Department of Transportation

NORTH CAROLINA
Wake COUNTY

I, Lisa J. Perry, a Notary Public of Wake County, North Carolina, do hereby certify that Tom Childrey personally came before me this day and acknowledged that he is the Manager of the Right of Way Branch for the North Carolina Department of Transportation, an agency of the State of North Carolina, and that by authority duly given, he executed the foregoing instrument.

Witness my hand and official stamp or seal this 18th day of September, 2014.

LISA J. PERRY NOTARY SEAL PUBLIC WAKE COUNTY, N.C.

Lisa J Perry
Notary Public Signature

Lisa J. Perry
Printed Name of Notary Public

My commission expires: 12-18-2018

## EXHIBIT A

**CONSERVATION EASEMENT AREA AND PERMANENT ACCESS EASEMENT**

**Being all of that property designated as "BOUNDARY SURVEY AND CONSERVATION EASEMENT DEDICATION MAP OF THE MARTHA LEE BOWMAN PROPERTY FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, COLUMBIA TOWNSHIP, RANDOLPH COUNTY, NORTH CAROLINA,"** as shown on a survey for North Carolina Department of Transportation revised January 16, 2014 and recorded in Plat Book 141 at Page 84 in the office of the Register of Deeds for Randolph County.

# Appendix B. Baseline Information Data

**FHWA Categorical Exclusion Form**

**Appendix A**

# Categorical Exclusion Form for Ecosystem Enhancement Program Projects
## Version 1.4

**Note: Only Appendix A should to be submitted (along with any supporting documentation) as the environmental document.**

| Part 1: General Project Information | |
|---|---|
| **Project Name:** | Bowman |
| **County Name:** | Randolph |
| **EEP Number:** | 44 |
| **Project Sponsor:** | NC DEQ Division of Mitigation Services (DMS) |
| **Project Contact Name:** | Lindsay Crocker, DMS |
| **Project Contact Address:** | 217 W Jones Street, Raleigh, NC 27603 |
| **Project Contact E-mail:** | Lindsay.crocker@ncdenr.gov |
| **EEP Project Manager:** | Lindsay Crocker |

**Project Description**

DMS will complete 1866' of stream preservation and enhancement work along Mount Pleasant Creek. Site work will consists of 530' of enhancement I level work, which will include installing 6 bank soil lifts, 1 constructed riffle structure, and an updating a farm ford crossing. The additional 1046' of enhancement II level work includes spot treatment of invasives, and installation of fencing. The last 290' of the project is preservation.

**For Official Use Only**

**Reviewed By:** LINDSAY CROCKER.

3-1-2016
**Date**

LH Crocker
**EEP Project Manager**

**Conditional Approved By:**

**Date**

**For Division Administrator**
**FHWA**

☐ **Check this box if there are outstanding issues**

**Final Approval By:**

3-3-16
**Date**

**For Division Administrator**
**FHWA**

| Part 2: All Projects<br>Regulation/Question | Response |
|---|---|
| **Coastal Zone Management Act (CZMA)** | |
| 1. Is the project located in a CAMA county? | ☐ Yes<br>☒ No |
| 2. Does the project involve ground-disturbing activities within a CAMA Area of Environmental Concern (AEC)? | ☐ Yes<br>☐ No<br>☒ N/A |
| 3. Has a CAMA permit been secured? | ☐ Yes<br>☐ No<br>☒ N/A |
| 4. Has NCDCM agreed that the project is consistent with the NC Coastal Management Program? | ☐ Yes<br>☐ No<br>☒ N/A |
| **Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)** | |
| 1. Is this a "full-delivery" project? | ☐ Yes<br>☒ No |
| 2. Has the zoning/land use of the subject property and adjacent properties ever been designated as commercial or industrial? | ☐ Yes<br>☐ No<br>☒ N/A |
| 3. As a result of a limited Phase I Site Assessment, are there known or potential hazardous waste sites within or adjacent to the project area? | ☐ Yes<br>☐ No<br>☒ N/A |
| 4. As a result of a Phase I Site Assessment, are there known or potential hazardous waste sites within or adjacent to the project area? | ☐ Yes<br>☐ No<br>☒ N/A |
| 5. As a result of a Phase II Site Assessment, are there known or potential hazardous waste sites within the project area? | ☐ Yes<br>☐ No<br>☒ N/A |
| 6. Is there an approved hazardous mitigation plan? | ☐ Yes<br>☐ No<br>☒ N/A |
| **National Historic Preservation Act (Section 106)** | |
| 1. Are there properties listed on, or eligible for listing on, the National Register of Historic Places in the project area? | ☐ Yes<br>☒ No |
| 2. Does the project affect such properties and does the SHPO/THPO concur? | ☐ Yes<br>☐ No<br>☒ N/A |
| 3. If the effects are adverse, have they been resolved? | ☐ Yes<br>☐ No<br>☒ N/A |
| **Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act)** | |
| 1. Is this a "full-delivery" project? | ☐ Yes<br>☒ No |
| 2. Does the project require the acquisition of real estate? | ☐ Yes<br>☒ No<br>☐ N/A |
| 3. Was the property acquisition completed prior to the intent to use federal funds? | ☐ Yes<br>☐ No<br>☒ N/A |
| 4. Has the owner of the property been informed:<br>* prior to making an offer that the agency does not have condemnation authority; and<br>* what the fair market value is believed to be? | ☐ Yes<br>☐ No<br>☒ N/A |

| Part 3: Ground-Disturbing Activities<br>Regulation/Question | Response |
|---|---|
| **American Indian Religious Freedom Act (AIRFA)** | |
| 1. Is the project located in a county claimed as "territory" by the Eastern Band of Cherokee Indians? | ☐ Yes<br>☒ No |
| 2. Is the site of religious importance to American Indians? | ☐ Yes<br>☒ No<br>☐ N/A |
| 3. Is the project listed on, or eligible for listing on, the National Register of Historic Places? | ☐ Yes<br>☒ No<br>☐ N/A |
| 4. Have the effects of the project on this site been considered? | ☒ Yes<br>☐ No<br>☐ N/A |
| **Antiquities Act (AA)** | |
| 1. Is the project located on Federal lands? | ☐ Yes<br>☒ No |
| 2. Will there be loss or destruction of historic or prehistoric ruins, monuments or objects of antiquity? | ☐ Yes<br>☒ No<br>☐ N/A |
| 3. Will a permit from the appropriate Federal agency be required? | ☐ Yes<br>☒ No<br>☐ N/A |
| 4. Has a permit been obtained? | ☐ Yes<br>☐ No<br>☒ N/A |
| **Archaeological Resources Protection Act (ARPA)** | |
| 1. Is the project located on federal or Indian lands (reservation)? | ☐ Yes<br>☒ No |
| 2. Will there be a loss or destruction of archaeological resources? | ☐ Yes<br>☒ No<br>☐ N/A |
| 3. Will a permit from the appropriate Federal agency be required? | ☐ Yes<br>☒ No<br>☐ N/A |
| 4. Has a permit been obtained? | ☐ Yes<br>☐ No<br>☒ N/A |
| **Endangered Species Act (ESA)** | |
| 1. Are federal Threatened and Endangered species and/or Designated Critical Habitat listed for the county? | ☒ Yes<br>☐ No |
| 2. Is Designated Critical Habitat or suitable habitat present for listed species? | ☒ Yes<br>☐ No<br>☐ N/A |
| 3. Are T&E species present or is the project being conducted in Designated Critical Habitat? | ☐ Yes<br>☒ No<br>☐ N/A |
| 4. Is the project "likely to adversely affect" the specie and/or "likely to adversely modify" Designated Critical Habitat? | ☐ Yes<br>☒ No<br>☐ N/A |
| 5. Does the USFWS/NOAA-Fisheries concur in the effects determination? | ☐ Yes<br>☐ No<br>☒ N/A |
| 6. Has the USFWS/NOAA-Fisheries rendered a "jeopardy" determination? | ☐ Yes<br>☐ No<br>☒ N/A |

| Executive Order 13007 (Indian Sacred Sites) | |
|---|---|
| 1. Is the project located on Federal lands that are within a county claimed as "territory" by the EBCI? | ☐ Yes<br>☒ No |
| 2. Has the EBCI indicated that Indian sacred sites may be impacted by the proposed project? | ☐ Yes<br>☐ No<br>☒ N/A |
| 3. Have accommodations been made for access to and ceremonial use of Indian sacred sites? | ☐ Yes<br>☐ No<br>☒ N/A |
| **Farmland Protection Policy Act (FPPA)** | |
| 1. Will real estate be acquired? | ☐ Yes<br>☒ No |
| 2. Has NRCS determined that the project contains prime, unique, statewide or locally important farmland? | ☐ Yes<br>☒ No<br>☐ N/A |
| 3. Has the completed Form AD-1006 been submitted to NRCS? | ☐ Yes<br>☐ No<br>☒ N/A |
| **Fish and Wildlife Coordination Act (FWCA)** | |
| 1. Will the project impound, divert, channel deepen, or otherwise control/modify any water body? | ☒ Yes<br>☐ No |
| 2. Have the USFWS and the NCWRC been consulted? | ☒ Yes<br>☐ No<br>☐ N/A |
| **Land and Water Conservation Fund Act (Section 6(f))** | |
| 1. Will the project require the conversion of such property to a use other than public, outdoor recreation? | ☐ Yes<br>☒ No |
| 2. Has the NPS approved of the conversion? | ☐ Yes<br>☐ No<br>☒ N/A |
| **Magnuson-Stevens Fishery Conservation and Management Act (Essential Fish Habitat)** | |
| 1. Is the project located in an estuarine system? | ☐ Yes<br>☒ No |
| 2. Is suitable habitat present for EFH-protected species? | ☐ Yes<br>☐ No<br>☒ N/A |
| 3. Is sufficient design information available to make a determination of the effect of the project on EFH? | ☐ Yes<br>☐ No<br>☒ N/A |
| 4. Will the project adversely affect EFH? | ☐ Yes<br>☐ No<br>☒ N/A |
| 5. Has consultation with NOAA-Fisheries occurred? | ☐ Yes<br>☐ No<br>☒ N/A |
| **Migratory Bird Treaty Act (MBTA)** | |
| 1. Does the USFWS have any recommendations with the project relative to the MBTA? | ☐ Yes<br>☒ No |
| 2. Have the USFWS recommendations been incorporated? | ☐ Yes<br>☐ No<br>☒ N/A |
| **Wilderness Act** | |
| 1. Is the project in a Wilderness area? | ☐ Yes<br>☒ No |
| 2. Has a special use permit and/or easement been obtained from the maintaining federal agency? | ☐ Yes<br>☐ No<br>☒ N/A |

**Existing Conditions**

**Cross-Sections**

# Mount Pleasant Creek - Bowman Property
## Randolph County

| | |
|---|---|
| Field Crew: | Becky Ward, Zach Pitts |
| River Basin: | Cape Fear |
| Watershed: | Mount Pleasant Creek |
| Reach: | Mount Pleasant Creek |
| DA: | 5.24 square miles |
| Date: | 1/3/2007 |
| Station: | CS #1, 11+50 |
| Feature: | Riffle |

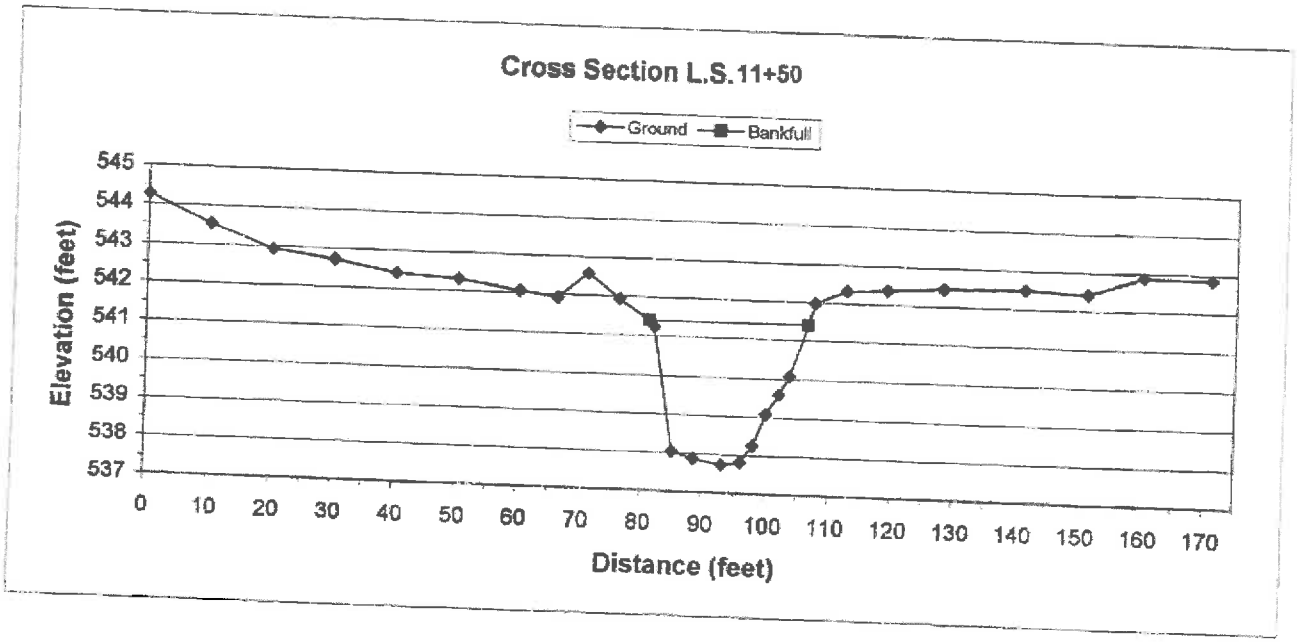
| STATION (FEET) | HI (FEET) | FS (FEET) | ELEVATION (FEET) | NOTES |
|---|---|---|---|---|
| 0+00 | 547.21 | 2.96 | 544.25 | |
| 0+10 | 547.21 | 3.68 | 543.53 | |
| 0+20 | 547.21 | 4.29 | 542.92 | |
| 0+30 | 547.21 | 4.50 | 542.71 | |
| 0+40 | 547.21 | 4.80 | 542.41 | |
| 0+50 | 547.21 | 4.90 | 542.31 | |
| 0+60 | 547.21 | 5.15 | 542.06 | |
| 0+66 | 547.21 | 5.29 | 541.92 | |
| 0+71 | 547.21 | 4.65 | 542.56 | |
| 0+76 | 547.21 | 5.28 | 541.93 | |
| 0+81 | 547.21 | 5.82 | 541.39 | LBKF |
| 0+82 | 547.21 | 5.98 | 541.23 | TOB L |
| 0+85 | 547.21 | 9.16 | 538.05 | Bottom of Bank |
| 0+89 | 547.21 | 9.33 | 537.88 | |
| 0+93 | 547.21 | 9.46 | 537.75 | TW |
| 0+96 | 547.21 | 9.40 | 537.81 | |
| 0+98 | 547.21 | 8.96 | 538.25 | |
| 1+00 | 547.21 | 8.14 | 539.07 | |
| 1+02 | 547.21 | 7.63 | 539.58 | |
| 1+04 | 547.21 | 7.13 | 540.08 | |
| 1+07 | 547.21 | 5.82 | 541.39 | RBKF |
| 1+08 | 547.21 | 5.24 | 541.97 | TOB R |
| 1+13 | 547.21 | 4.90 | 542.31 | |
| 1+19 | 547.21 | 4.84 | 542.37 | |
| 1+28 | 547.21 | 4.77 | 542.44 | |
| 1+41 | 547.21 | 4.73 | 542.48 | |
| 1+51 | 547.21 | 4.79 | 542.42 | |
| 1+60 | 547.21 | 4.34 | 542.87 | |
| 1+71 | 547.21 | 4.36 | 542.85 | Fence |

**BANKFULL**
**Hydraulic Geometry**

| | Width (Feet) | Depth (Feet) | Area (Sq. Ft.) |
|---|---|---|---|
| | 0.7 | 0.1 | 0.1 |
| | 3.3 | 1.8 | 5.8 |
| | 3.5 | 3.4 | 12.0 |
| | 4.5 | 3.6 | 16.1 |
| | 3.0 | 3.6 | 10.9 |
| | 2.0 | 3.4 | 6.7 |
| | 2.0 | 2.7 | 5.5 |
| | 2.0 | 2.1 | 4.1 |
| | 1.7 | 1.6 | 2.7 |
| | 2.8 | 0.4 | 1.1 |
| TOTALS | 25.5 | | 65.0 |

**SUMMARY DATA (BANKFULL)**

| | |
|---|---|
| A (BKF) | 65.0 |
| W (BKF) | 25.5 |
| Max d | 3.6 |
| Mean d | 2.5 |



## Mount Pleasant Creek - Bowman Property
## Randolph County

| | |
|---|---|
| Field Crew: | Becky Ward, Zach Pitts |
| River Basin: | Cape Fear |
| Watershed: | Mount Pleasant Creek |
| Reach: | Mount Pleasant Creek |
| DA: | 5.24 square miles |
| Date: | 1/3/2007 |
| Station: | CS #2, 12+12 |
| Feature: | Riffle |

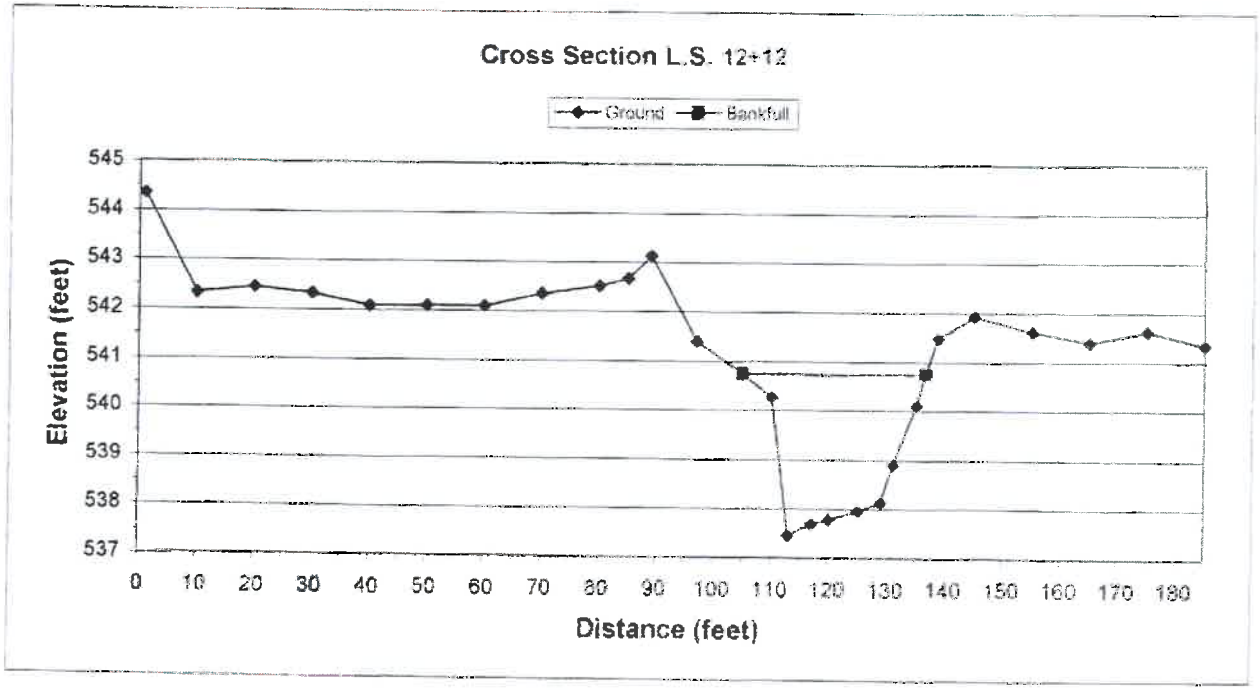
| STATION (FEET) | HI (FEET) | FS (FEET) | ELEVATION (FEET) | NOTES |
|---|---|---|---|---|
| 0+01 | 547.21 | 2.86 | 544.35 | |
| 0+10 | 547.21 | 4.88 | 542.33 | |
| 0+20 | 547.21 | 4.77 | 542.44 | |
| 0+30 | 547.21 | 4.88 | 542.33 | |
| 0+40 | 547.21 | 5.13 | 542.08 | |
| 0+50 | 547.21 | 5.12 | 542.09 | |
| 0+60 | 547.21 | 5.12 | 542.09 | |
| 0+70 | 547.21 | 4.86 | 542.35 | |
| 0+80 | 547.21 | 4.70 | 542.51 | |
| 0+85 | 547.21 | 4.55 | 542.66 | |
| 0+89 | 547.21 | 4.08 | 543.13 | Tree |
| 0+97 | 547.21 | 5.81 | 541.40 | |
| 1+05 | 547.21 | 6.48 | 540.73 | LBKF |
| 1+10 | 547.21 | 6.95 | 540.26 | TOB L |
| 1+13 | 547.21 | 9.73 | 537.48 | |
| 1+17 | 547.21 | 9.50 | 537.71 | |
| 1+20 | 547.21 | 9.42 | 537.79 | Long Sta 6.6 |
| 1+25 | 547.21 | 9.25 | 537.96 | |
| 1+29 | 547.21 | 9.07 | 538.14 | |
| 1+31 | 547.21 | 8.31 | 538.90 | |
| 1+35 | 547.21 | 7.12 | 540.09 | |
| 1+37 | 547.21 | 6.48 | 540.73 | RBKF |
| 1+39 | 547.21 | 5.75 | 541.46 | TOB R |
| 1+45 | 547.21 | 5.29 | 541.92 | |
| 1+55 | 547.21 | 5.59 | 541.62 | |
| 1+65 | 547.21 | 5.81 | 541.40 | |
| 1+75 | 547.21 | 5.59 | 541.62 | |
| 1+85 | 547.21 | 5.87 | 541.34 | Fence |

**BANKFULL**
**Hydraulic Geometry**

| | Width (Feet) | Depth (Feet) | Area (Sq. Ft.) |
|---|---|---|---|
| | 5.0 | 0.2 | 1.2 |
| | 3.0 | 1.9 | 5.6 |
| | 4.0 | 3.1 | 12.5 |
| | 3.0 | 3.0 | 8.9 |
| | 5.0 | 2.9 | 14.3 |
| | 4.0 | 2.7 | 10.7 |
| | 2.0 | 2.2 | 4.4 |
| | 4.0 | 1.2 | 4.9 |
| | 1.5 | 0.3 | 0.5 |
| TOTALS | 31.5 | | 63.1 |

**SUMMARY DATA (BANKFULL)**

| | |
|---|---|
| A (BKF) | 63.1 |
| W (BKF) | 31.5 |
| Max d | 3.1 |
| Mean d | 2.0 |



## Mount Pleasant Creek - Bowman Property
## Randolph County

| | |
|---|---|
| Field Crew: | Becky Ward, Zach Pitts |
| River Basin: | Cape Fear |
| Watershed: | Mount Pleasant Creek |
| Reach: | Mount Pleasant Creek |
| DA: | 5.24 square miles |
| Date: | 1/3/2007 |
| Station: | CS #4, 17+00 |
| Feature: | Riffle |

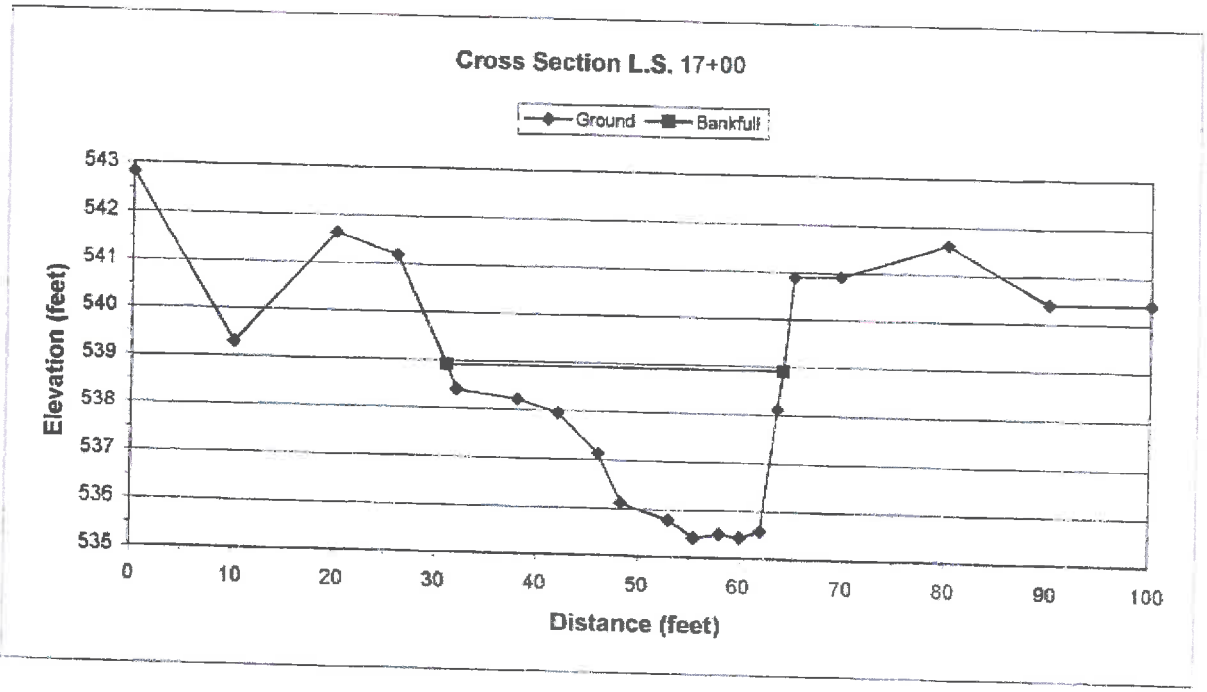
| STATION (FEET) | HI (FEET) | FS (FEET) | ELEVATION (FEET) | NOTES |
|---|---|---|---|---|
| 0+00 | 545.80 | 2.98 | 542.82 | |
| 0+10 | 545.80 | 6.50 | 539.30 | |
| 0+20 | 545.80 | 4.17 | 541.63 | |
| 0+26 | 545.80 | 4.62 | 541.18 | TOB L / Tree |
| 0+31 | 545.80 | 7.90 | 538.90 | LBKF |
| 0+32 | 545.80 | 7.40 | 538.40 | |
| 0+38 | 545.80 | 7.59 | 538.21 | |
| 0+42 | 545.80 | 7.85 | 537.95 | |
| 0+46 | 545.80 | 8.67 | 537.13 | |
| 0+48 | 545.80 | 9.68 | 536.12 | |
| 0+53 | 545.80 | 10.03 | 535.77 | |
| 0+56 | 545.80 | 10.39 | 535.41 | Long Sta 526.5 |
| 0+58 | 545.80 | 10.30 | 535.50 | |
| 0+60 | 545.80 | 10.37 | 535.43 | |
| 0+62 | 545.80 | 10.24 | 535.57 | |
| 0+64 | 545.80 | 7.69 | 538.11 | |
| 0+64 | 545.80 | 7.90 | 538.90 | RBKF |
| 0+65 | 545.80 | 4.91 | 540.89 | TOB R |
| 0+70 | 545.80 | 4.89 | 540.91 | |
| 0+80 | 545.80 | 4.19 | 541.61 | |
| 0+90 | 545.80 | 5.40 | 540.40 | |
| 1+00 | 545.80 | 5.38 | 540.42 | |

**BANKFULL**
**Hydraulic Geometry**

| | Width (Feet) | Depth (Feet) | Area (Sq. Ft.) |
|---|---|---|---|
| | 7.0 | 0.3 | 2.4 |
| | 4.0 | 0.8 | 3.3 |
| | 4.0 | 1.4 | 5.4 |
| | 2.3 | 2.3 | 5.2 |
| | 4.7 | 3.0 | 13.9 |
| | 2.5 | 3.3 | 8.3 |
| | 2.5 | 3.4 | 8.6 |
| | 2.0 | 3.4 | 6.9 |
| | 2.0 | 3.4 | 6.8 |
| | 2.0 | 1.7 | 3.3 |
| TOTALS | 33.0 | | 64.2 |

**SUMMARY DATA (BANKFULL)**

| | |
|---|---|
| A (BKF) | 64.2 |
| W (BKF) | 33.0 |
| Max d | 3.4 |
| Mean d | 1.9 |



## Mount Pleasant Creek - Bowman Property
## Randolph County

| | |
|---|---|
| Field Crew: | Becky Ward, Zach Pitts |
| River Basin: | Cape Fear |
| Watershed: | Mount Pleasant Creek |
| Reach: | Mount Pleasant Creek |
| DA: | 5.24 square miles |
| Date: | 1/3/2007 |
| Station: | CS #5, 18+70 |
| Feature: | Riffle |

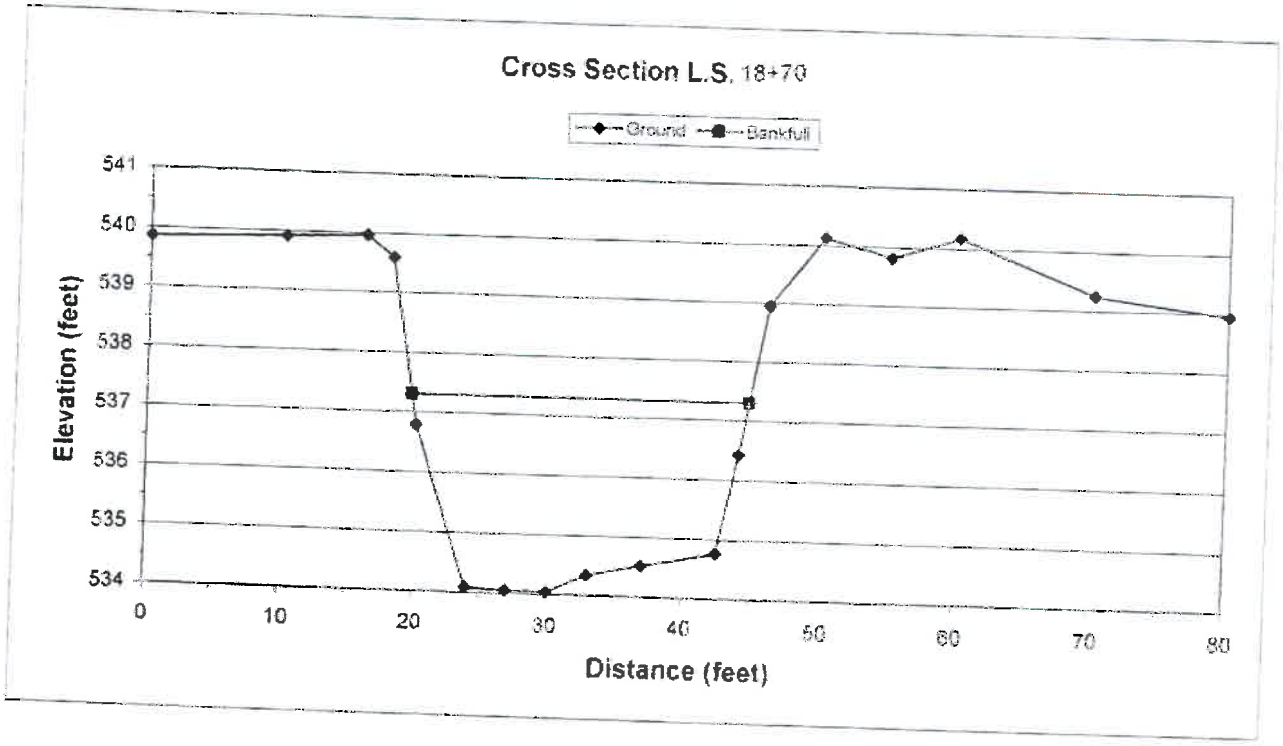
| STATION (FEET) | HI (FEET) | FS (FEET) | ELEVATION (FEET) | NOTES |
|---|---|---|---|---|
| 0+00 | 544.58 | 4.72 | 539.86 | |
| 0+10 | 544.58 | 4.67 | 539.91 | |
| 0+16 | 544.58 | 4.62 | 539.96 | |
| 0+16 | 544.58 | 4.98 | 539.60 | TOB L |
| 0+20 | 544.58 | 7.28 | 537.30 | LBKF |
| 0+20 | 544.58 | 7.80 | 536.78 | |
| 0+24 | 544.58 | 10.48 | 534.10 | |
| 0+27 | 544.58 | 10.52 | 534.06 | |
| 0+30 | 544.58 | 10.53 | 534.05 | Long Sta 719 |
| 0+33 | 544.58 | 10.22 | 534.36 | |
| 0+37 | 544.58 | 10.04 | 534.54 | |
| 0+43 | 544.58 | 9.80 | 534.78 | |
| 0+44 | 544.58 | 8.15 | 536.43 | |
| 0+45 | 544.58 | 7.28 | 537.30 | RBKF |
| 0+46 | 544.58 | 5.63 | 538.95 | TOB R |
| 0+50 | 544.58 | 4.45 | 540.13 | |
| 0+55 | 544.58 | 4.76 | 539.82 | |
| 0+60 | 544.58 | 4.41 | 540.17 | |
| 0+70 | 544.58 | 5.33 | 539.25 | |
| 0+80 | 544.58 | 5.63 | 538.95 | |

**BANKFULL**
**Hydraulic Geometry**

| | Width (Feet) | Depth (Feet) | Area (Sq. Ft.) |
|---|---|---|---|
| | 0.3 | 0.3 | 0.1 |
| | 4.0 | 1.9 | 7.4 |
| | 3.0 | 3.2 | 9.7 |
| | 3.0 | 3.2 | 9.7 |
| | 3.0 | 3.1 | 9.3 |
| | 4.0 | 2.8 | 11.4 |
| | 5.5 | 2.6 | 14.5 |
| | 2.2 | 1.3 | 2.8 |
| TOTALS | 25.0 | | 64.9 |

**SUMMARY DATA (BANKFULL)**

| | |
|---|---|
| A (BKF) | 64.9 |
| W (BKF) | 25.0 |
| Max d | 3.2 |
| Mean d | 2.6 |



## Mount Pleasant Creek - Bowman Property
## Randolph County

| | |
|---|---|
| Field Crew: | Becky Ward, Zach Pitts |
| River Basin: | Cape Fear |
| Watershed: | Mount Pleasant Creek |
| Reach: | Mount Pleasant Creek |
| DA: | 5.24 square miles |
| Date: | 1/3/2007 |
| Station: | CS #6, 20+38 |
| Feature: | Pool |

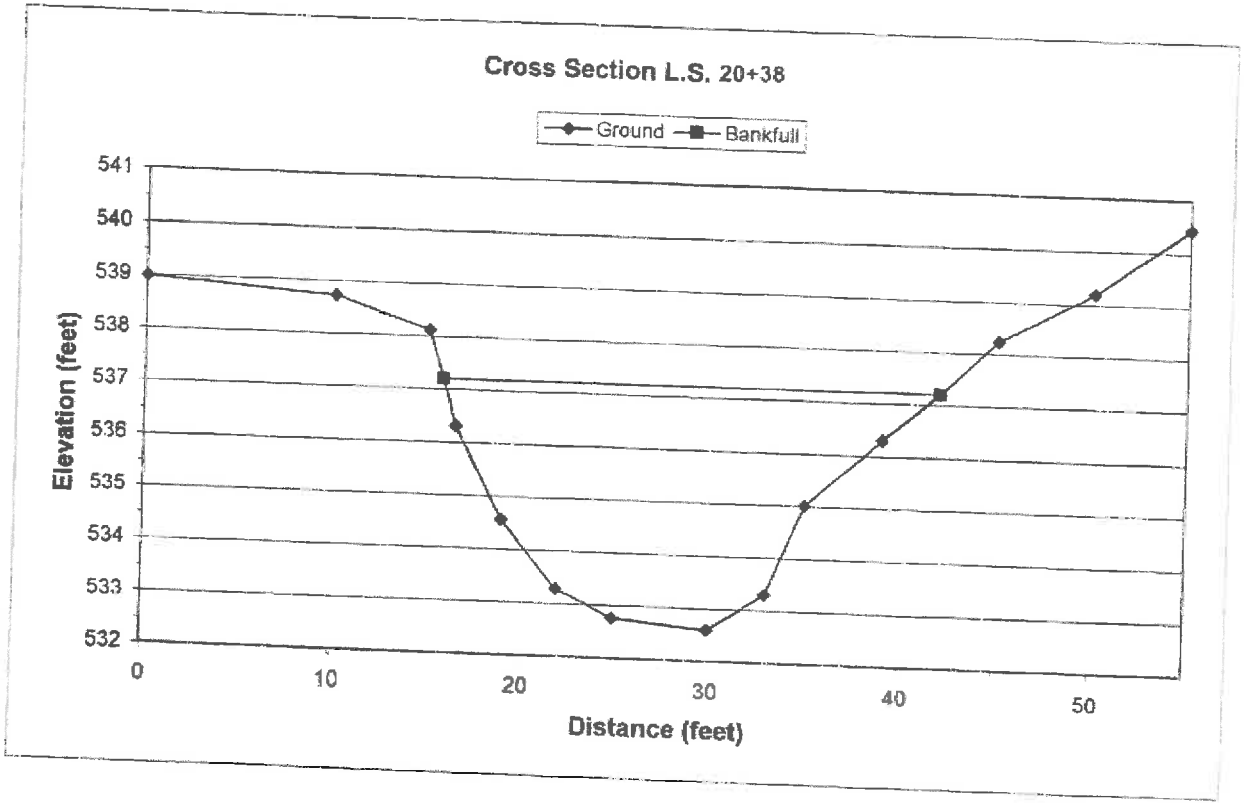
| STATION (FEET) | HI (FEET) | FS (FEET) | ELEVATION (FEET) | NOTES |
|---|---|---|---|---|
| 0+00 | 543.66 | 4.67 | 538.99 | |
| 0+10 | 543.66 | 4.93 | 538.73 | |
| 0+15 | 543.66 | 5.54 | 538.12 | TOB L |
| 0+16 | 543.66 | 6.46 | 537.20 | LBKF |
| 0+17 | 543.66 | 7.35 | 536.31 | |
| 0+19 | 543.66 | 9.10 | 534.56 | |
| 0+22 | 543.66 | 10.38 | 533.28 | |
| 0+25 | 543.66 | 10.90 | 532.76 | Long Sta 883 |
| 0+30 | 543.66 | 11.07 | 532.59 | |
| 0+33 | 543.66 | 10.37 | 533.29 | TOB L |
| 0+35 | 543.66 | 8.65 | 535.01 | Tree roots |
| 0+39 | 543.66 | 7.37 | 536.29 | |
| 0+42 | 543.66 | 6.46 | 537.20 | RBKF |
| 0+45 | 543.66 | 5.41 | 538.25 | TOB R |
| 0+50 | 543.66 | 4.46 | 539.20 | Piled Debris |
| 0+55 | 543.66 | 3.22 | 540.44 | Piled Debris |

**BANKFULL**
**Hydraulic Geometry**

| | Width (Feet) | Depth (Feet) | Area (Sq. Ft.) |
|---|---|---|---|
| | 3.0 | 1.3 | 4.0 |
| | 3.0 | 3.3 | 9.8 |
| | 3.0 | 4.2 | 12.5 |
| | 5.0 | 4.5 | 22.6 |
| | 3.0 | 4.3 | 12.8 |
| | 2.0 | 3.1 | 6.1 |
| | 6.0 | 1.1 | 6.6 |
| TOTALS | 25.0 | | 74.4 |

**SUMMARY DATA (BANKFULL)**

| | |
|---|---|
| A (BKF) | 74.4 |
| W (BKF) | 25.0 |
| Max d | 4.5 |
| Mean d | 3.0 |



## Mount Pleasant Creek - Bowman Property
## Randolph County

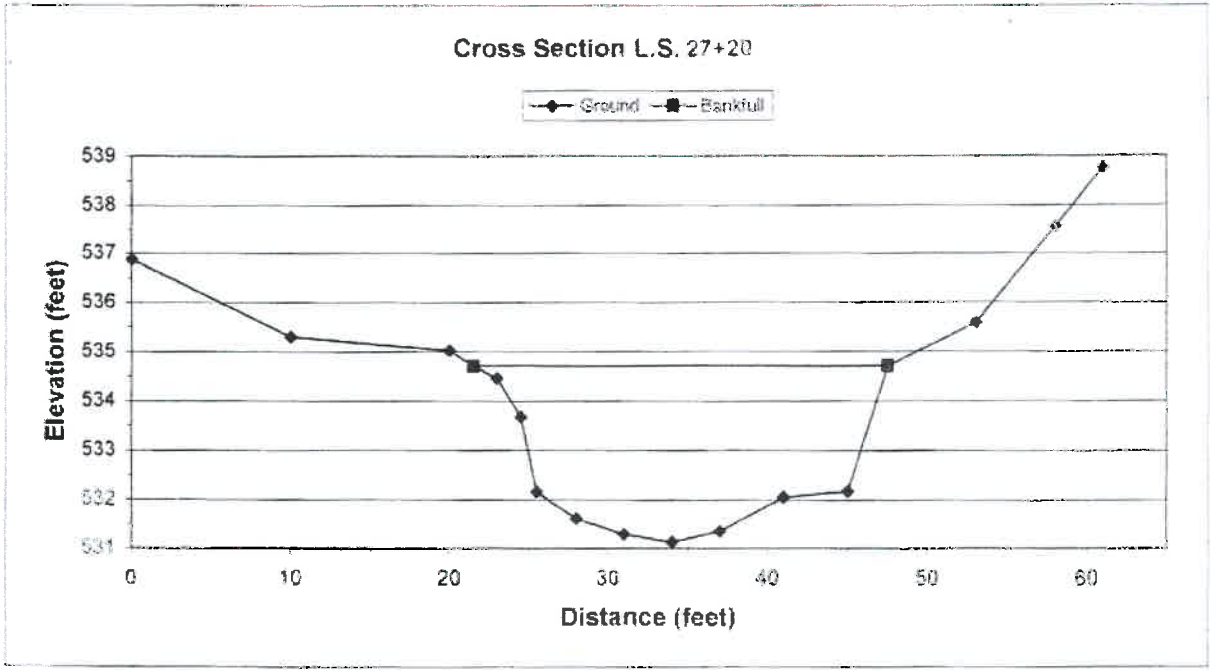
| | |
|---|---|
| Field Crew: | Becky Ward, Zach Pitts |
| River Basin: | Cape Fear |
| Watershed: | Mount Pleasant Creek |
| Reach: | Mount Pleasant Creek |
| DA: | 5.24 square miles |
| Date: | 1/3/2007 |
| Station: | CS #7, 27+20 |
| Feature: | Riffle |

| STATION (FEET) | HI (FEET) | FS (FEET) | ELEVATION (FEET) | NOTES |
|---|---|---|---|---|
| 0+00 | 540.10 | 3.22 | 536.88 | |
| 0+10 | 540.10 | 4.81 | 535.29 | |
| 0+20 | 540.10 | 5.08 | 535.02 | |
| 0+22 | 540.10 | 5.40 | 534.70 | LBKF |
| 0+23 | 540.10 | 5.64 | 534.46 | |
| 0+25 | 540.10 | 6.43 | 533.67 | TOB L |
| 0+26 | 540.10 | 7.94 | 532.16 | |
| 0+28 | 540.10 | 8.49 | 531.61 | |
| 0+31 | 540.10 | 8.81 | 531.29 | |
| 0+34 | 540.10 | 8.97 | 531.13 | |
| 0+37 | 540.10 | 8.75 | 531.35 | |
| 0+41 | 540.10 | 8.04 | 532.06 | |
| 0+45 | 540.10 | 7.93 | 532.17 | |
| 0+48 | 540.10 | 5.40 | 534.70 | TOB R, RBKF |
| 0+53 | 540.10 | 4.52 | 535.58 | |
| 0+58 | 540.10 | 2.55 | 537.55 | Start of Debris |
| 0+61 | 540.10 | 1.33 | 538.77 | |

**BANKFULL**
**Hydraulic Geometry**

| | Width (Feet) | Depth (Feet) | Area (Sq. Ft.) |
|---|---|---|---|
| | 1.5 | 0.1 | 0.2 |
| | 1.5 | 0.6 | 1.0 |
| | 1.0 | 1.8 | 1.8 |
| | 2.5 | 2.8 | 7.0 |
| | 3.0 | 3.3 | 9.8 |
| | 3.0 | 3.5 | 10.5 |
| | 3.0 | 3.5 | 10.4 |
| | 4.0 | 3.0 | 12.0 |
| | 4.0 | 2.6 | 10.3 |
| | 2.5 | 1.3 | 3.2 |
| TOTALS | 26.0 | | 66.0 |

| SUMMARY DATA (BANKFULL) | |
|---|---|
| A (BKF) | 66.0 |
| W (BKF) | 26.0 |
| Max d | 3.5 |
| Mean d | 2.5 |



# Appendix C. Project Plan Sheets

KCI JOB# : 16157593A

| STATE | DMS PROJECT NUMBER | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| N.C. | 44 | 1 | 8 |

| REVISIONS | |
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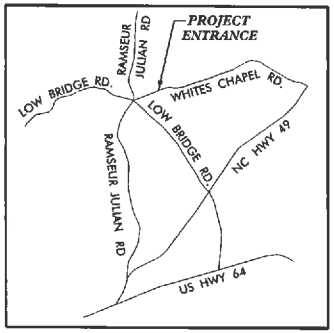
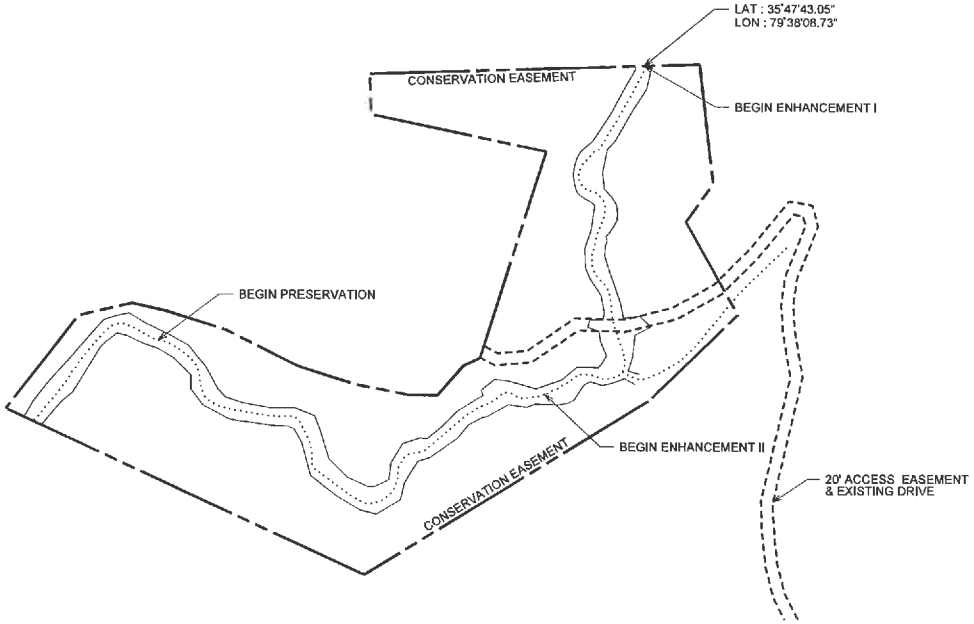
NCDEQ DIVISION OF MITIGATION SERVICES

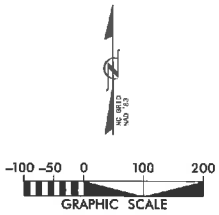
# MT. PLEASANT CREEK PROJECT (BOWMAN PROPERTY)

## RANDOLPH COUNTY, NORTH CAROLINA




VICINITY MAP
NOT TO SCALE




INDEX OF SHEETS



### DIRECTIONS TO SITE

From Raleigh, follow US-1 South to US-64 West. Follow US-64 for about one hour then take a right onto Eastern Randolph Road (SR2481). Eastern Randolph Road quickly becomes Low Bridge Road. Follow for about 2 miles then take a right onto Whites Chapel Road. The project access will be on the left at 5173 Whites Chapel Road. Merge left as you drive along the site access towards the two chicken facilities. Take a left just after the two chicken buildings and follow the access drive to the existing rock ford crossing.

### PROJECT DATA

| | STREAM ENHANCEMENT I (1.5:1) | STREAM ENHANCEMENT II (2.5:1) | STREAM PRESERVATION (5:1) |
|---|---|---|---|
| PROJECT CREDITS | 705 FT./ 470 CR. | 871 FT./ 348.4 CR. | 290 FT./ 58 CR. |

LIMITS OF DISTURBANCE = 1.24 ACRES


Prepared in the Office of:

KCI ASSOCIATES OF NC
ENGINEERS • PLANNERS • ECOLOGISTS
SUITE 220 LANDMARK CENTER II
4601 SIX FORKS RD., RALEIGH, NC

Prepared for:
LINDSAY CROCKER
DMS PROJECT MANAGER
LIN XU
DMS REVIEW COORDINATOR

Prepared by:
GARY M. MRYNCZA, PE
PROJECT ENGINEER
ALEX FRENCH
PROJECT DESIGNER


PROJECT ENGINEER

**NOT FOR CONSTRUCTION**

SIGNATURE: P.E.

## CONSTRUCTION SEQUENCE:

THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING THE SEQUENCE OF CONSTRUCTION IN ACCORDANCE WITH THE PLANS AND THE FOLLOWING PROVISIONS, AS DIRECTED BY THE DESIGNER. CONSTRUCTION SHALL PROCEED IN THE SPECIFIED MANNER UNLESS OTHERWISE DIRECTED OR APPROVED BY THE DESIGNER. THE FOLLOWING PROVISIONS, ALONG WITH THE INSTRUCTIONS CONTAINED IN THE PLANS, CONSTITUTE THE SEQUENCE OF CONSTRUCTION.

GENERAL SITE NOTES:
- UNDER NO CIRCUMSTANCES SHALL ANY WASTE MATERIAL OR TEMPORARY STOCKPILING MATERIAL BE PLACED IN ANY AREAS OUTSIDE OF THE LIMITS OF DISTURBANCE.
- ALL PUMP AROUND OPERATIONS SHALL BE INSTALLED IN A MANNER THAT IT WILL BE ALLOWED TO RUN 24 HOURS A DAY UNLESS CHANNEL WITHIN THE PUMP AROUND LOCATION CAN BE STABILIZED WITHIN THE WORK DAY.

PHASE 1: INITIAL SITE PREPARATION.
1. IDENTIFY PROJECT BOUNDARY, LIMITS OF DISTURBANCE, SENSITIVE AREAS, STAGING AREA, AND ACCESS POINTS WITH THE DESIGNER.
2. CONSTRUCT THE STAGING AREA IN A MANNER TO SUPPORT THE EXECUTION OF THE PROJECT IN PHASES AS INDICATED IN THE PLANS AND AS DIRECTED BY THE DESIGNER.
3. INSTALL EROSION CONTROL DEVICES IN ACCORDANCE WITH THE SITE STABILIZATION PLAN AND AS DIRECTED BY THE DESIGNER.

PHASE 2: COMPLETE REPAIR AREAS
4. BEFORE CONSTRUCTION ACTIVITIES START, INSTALL PUMP AROUND OPERATIONS AS SHOWN IN PLANS.
5. INSTALL ROCK FORD AS DIRECTED IN THE PLANS.
6. INSTALL CONSTRUCTED RIFFLE AS DIRECTED IN THE PLANS.
7. INSTALL SOIL LIFTS AS DIRECTED IN THE PLANS.
8. GRADE INNER BARS AS DIRECTED IN PLANS.
9. ONCE DISTURBED AREAS AND EXPOSED SLOPES ARE STABILIZED, REMOVE PUMP AROUND SYSTEM.

* UPON APPROVAL FROM THE DESIGNER, ITEMS 5 THROUGH 8 MAY BE CONSTRUCTED IN A DIFFERENT SEQUENCE THAN INDICATED ABOVE OR CONCURRENTLY. THE CONTRACTOR SHALL ONLY START ON A SECTION THAT HE CAN FINISH AND STABILIZE IN ONE WORKING DAY.

PHASE 3: PLANTING
10. LIVE STAKES AND BARE ROOT TREES SHALL BE INSTALLED DURING THE DORMANT SEASON (NOVEMBER 6 - MARCH 24). PREPARE AND INSTALL LIVE STAKES AND BARE ROOT TREES IN ACCORDANCE WITH THE BID PACKAGE AND AS DIRECTED BY THE DESIGNER.

PHASE 4: COMPLETION OF PROJECT SITE
11. REMOVE ALL REMAINING WASTE MATERIALS AND RESTORE THE REMAINING STAGING AND STOCKPILING AREAS, ACCESS ROADS, AND ENTRANCES TO THEIR PRIOR CONDITION. SEED AND MULCH ALL DISTURBED AREAS UTILIZING THE SEED AND MULCH MIXES SPECIFIED IN THE PLANS.

## GENERAL NOTES:

BEARINGS AND DISTANCES:
ALL BEARINGS ARE NAD 1983 GRID BEARINGS.
ALL DISTANCES AND COORDINATES SHOWN ARE HORIZONTAL (GROUND) VALUES.

UTILITY/SUBSURFACE PLANS:
* NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. EXISTING UNDERGROUND UTILITIES HAVE NOT BEEN VERIFIED. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING A UTILITY LOCATOR AND ESTABLISHING THE EXACT LOCATION OF ANY AND ALL EXISTING UTILITIES IN THE PROJECT REACH.

## CONTROL POINTS

| POINT | NORTHING | EASTING | ELEV |
|---|---|---|---|
| KCI#1 | 744508.68 | 1811397.59 | 541.53 |
| KCI#2 | 744520.75 | 1811197.66 | 541.10 |

## PROJECT LEGEND

SOIL LIFT

CONSTRUCTED RIFFLE

LIMITS OF DISTURBANCE — LOD —

SILT FENCE — SF —

SILT FENCE ROCK OUTLET

EXISTING CONTROL POINT KCI#1

REVISIONS

NCDEQ DIVISION OF MITIGATION SERVICES

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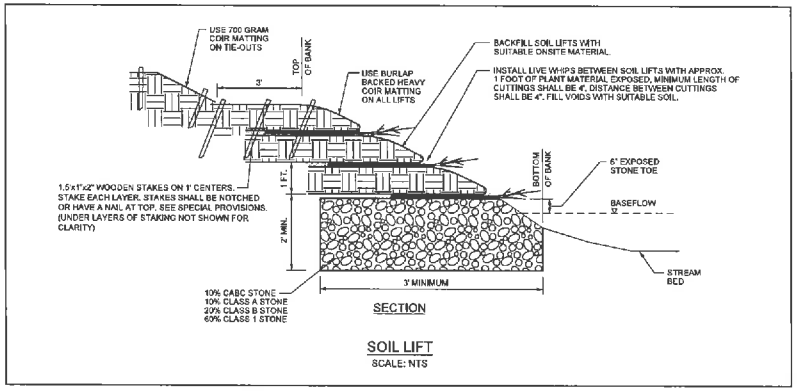
RALEIGH, NORTH CAROLINA 27609

MT. PLEASANT CREEK PROJECT
(BOWMAN PROPERTY)
DMS #44
RANDOLPH COUNTY, NORTH CAROLINA

DATE: OCTOBER 2015
SCALE: N.T.S.

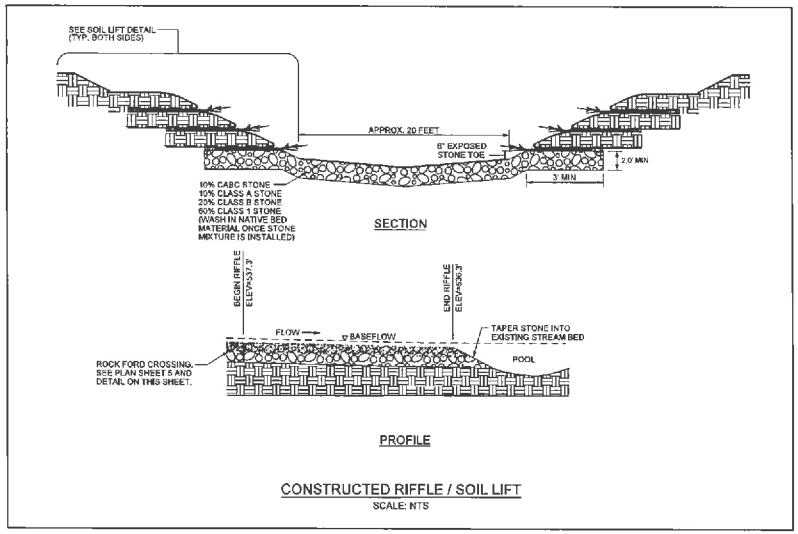
PROJECT LEGEND & NOTES




SECTION

SOIL LIFT

SCALE: NTS

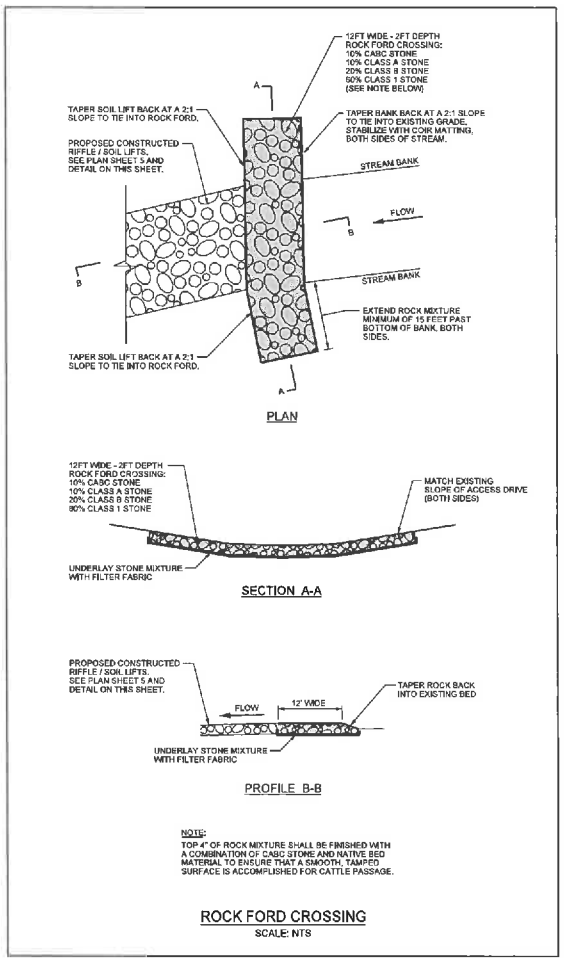



SECTION

PROFILE

CONSTRUCTED RIFFLE / SOIL LIFT

SCALE: NTS




PLAN

SECTION A-A

PROFILE B-B

NOTE:
TOP 4" OF ROCK MIXTURE SHALL BE FINISHED WITH A COMBINATION OF CABC STONE AND NATIVE BED MATERIAL TO ENSURE THAT A SMOOTH, TAMPED SURFACE IS ACCOMPLISHED FOR CATTLE PASSAGE.

ROCK FORD CROSSING

SCALE: NTS

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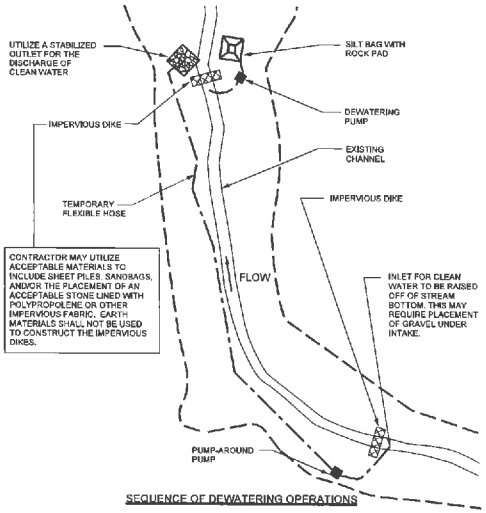
MT. PLEASANT CREEK PROJECT
(BOWMAN PROPERTY)
DMS #44
RANDOLPH COUNTY, NORTH CAROLINA

DATE: OCTOBER 2015
SCALE: N.T.S.

DETAILS

SHEET 3 OF 8




SEQUENCE OF DEWATERING OPERATIONS

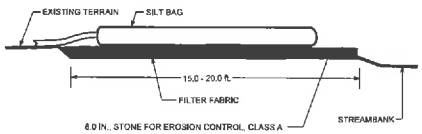
* ANY DEVIATION FROM ABOVE DEWATERING PLAN WILL REQUIRE DESIGNER APPROVAL.

1. INSTALL SILT BAGS(S) AND ROCK PAD(S).
2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA.
5. PERFORM REPAIR WORK IN ACCORDANCE WITH THE PLANS.
6. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE (DOWNSTREAM IMPERVIOUS DIKES FIRST).
7. REMOVE SILT BAG(S) AND STABILIZE DISTURBED AREA WITH SEED AND MULCH.

## EXAMPLE OF PUMP-AROUND OPERATION

SCALE: NTS

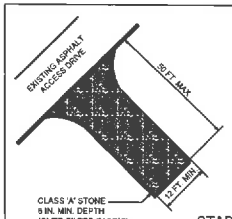
STILLING BASIN MAINTENANCE:
1. SEDIMENT BAGS SHALL BE REPLACED AND DISPOSED OF WHEN IT IS THREE-QUARTERS FULL OF SEDIMENT OR WHEN IT IS IMPRACTICAL FOR THE BAG TO FILTER THE SEDIMENT OUT AT A REASONABLE FLOW RATE.
2. ACCUMULATED SEDIMENT SHOULD BE DISPOSED OF IN A DESIGNATED DISPOSAL AREA.
3. SPENT BAGS SHOULD BE DISPOSED OF PROPERLY AND NOT BURIED.
4. GRAVEL PADS SHOULD BE CHECKED DAILY DURING USE TO ENSURE THAT GRAVEL HAS NOT BEEN WASHED AWAY OR BEEN CHOKED BY EXCESSIVE SEDIMENTATION.
5. REPLACE PAD WITH CLEAN GRAVEL, AS NEEDED.




NOTE: PROVIDE STABILIZED OUTLET DOWN BANK TO STREAM

## SPECIAL STILLING BASIN (SILT BAG) WITH ROCK PAD

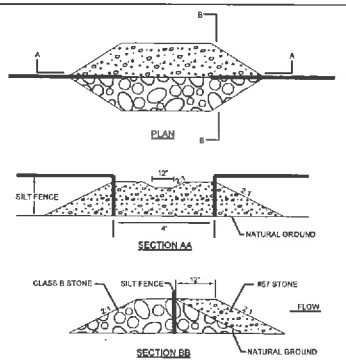
SCALE: NTS




NOTES:
1. TURNING RADIUS SUFFICIENT TO ACCOMODATE LARGE TRUCKS SHALL BE PROVIDED.
2. ENTRANCE(S) SHOULD BE LOCATED TO PROVIDE FOR UTILIZATION BY ALL CONSTRUCTION VEHICLES.
3. MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO STREETS. PERIODIC TOPDRESSING WITH STONE WILL BE NECESSARY.
4. ANY MATERIAL TRACKED ONTO THE ROADWAY MUST BE CLEANED UP IMMEDIATELY.
5. GRAVEL CONSTRUCTION ENTRANCE SHALL BE LOCATED AT ALL POINTS OF INGRESS AND EGRESS UNTIL SITE IS STABILIZED. FREQUENT CHECKS OF THE DEVICE AND TIMELY MAINTENANCE MUST BE PROVIDED.

## STABILIZED CONSTRUCTION ENTRANCE

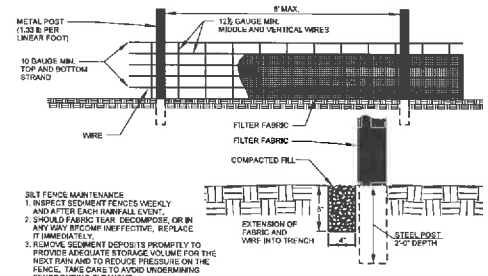
SCALE: NTS




SILT FENCE ROCK OUTLET MAINTENANCE:
1. REMOVE SEDIMENT WHEN IT ACCUMULATES TO ONE-HALF THE DESIGN VOLUME.
2. CHECK STRUCTURE AND ABUTMENTS FOR EROSION, PIPING, OR ROCK DISPLACEMENT. REPAIR IMMEDIATELY.
3. REMOVE ROCK OUTLET WHEN CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED. INSPECTED AND APPROVED. REMOVE ALL WATER AND SEDIMENT PRIOR TO REMOVING SCREEN. DISPOSE OF WASTE MATERIAL IN DESIGNATED DISPOSAL AREA.

## TEMPORARY SILT FENCE ROCK OUTLET DETAIL

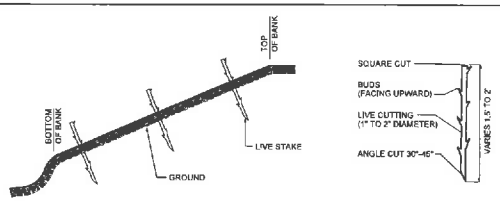
SCALE: NTS




SILT FENCE MAINTENANCE
1. INSPECT SEDIMENT FENCES WEEKLY AND AFTER EACH RAINFALL EVENT.
2. SHOULD FABRIC TEAR, DECOMPOSE, OR IN ANY WAY BECOME INEFFECTIVE, REPLACE IT IMMEDIATELY.
3. REMOVE SEDIMENT DEPOSITS PROMPTLY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING FENCE DURING CLEANOUT.
4. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED, INSPECTED AND APPROVED. BRING THE DISTURBED AREA TO GRADE AND STABILIZE AS SHOWN IN THE VEGETATION PLAN.

## SILT FENCE DETAIL

SCALE: NTS




| COMMON NAME | SCIENTIFIC NAME |
|---|---|
| BLACK WILLOW | SALIX NIGRA |
| SILKY WILLOW | SALIX SERICEA |
| SILKY DOGWOOD | CORNUS AMOMUM |
| ELDERBERRY | SAMBUCUS CANADENSIS |

NOTES:

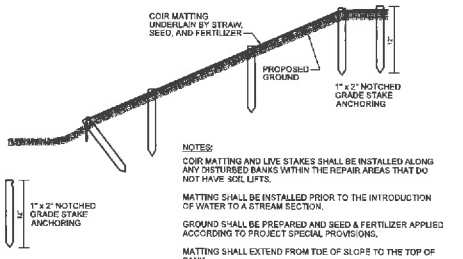
COIR MATTING AND LIVE STAKES SHALL BE INSTALLED ALONG ANY DISTURBED BANKS WITHIN THE REPAIR AREAS THAT DO NOT HAVE SOIL LIFTS.

AT LEAST THREE OF THE LISTED SPECIES MUST BE INSTALLED AND NO SINGLE LIVE STAKING SPECIES SHALL COMPOSE MORE THAN 40% OF THE TOTAL NUMBER OF LIVE STAKES TO BE INSTALLED.

LIVE STAKES SHALL BE INSTALLED IN 3 ROWS AT 2' CENTER SPACING ON ALL DISTURBED STREAM BANKS, AT RANDOM SPECIES PLACEMENT.

## LIVE STAKES DETAIL

SCALE: NTS




NOTES:

COIR MATTING AND LIVE STAKES SHALL BE INSTALLED ALONG ANY DISTURBED BANKS WITHIN THE REPAIR AREAS THAT DO NOT HAVE SOIL LIFTS.

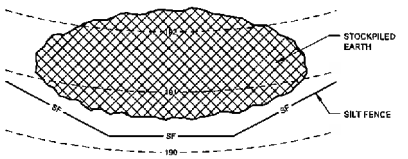
MATTING SHALL BE INSTALLED PRIOR TO THE INTRODUCTION OF WATER TO A STREAM SECTION.

GROUND SHALL BE PREPARED AND SEED & FERTILIZER APPLIED ACCORDING TO PROJECT SPECIAL PROVISIONS.

MATTING SHALL EXTEND FROM TOE OF SLOPE TO THE TOP OF BANK.

## COIR MATTING DETAIL

SCALE: NTS




NOTES:

TEMPORARY SEEDING MUST BE APPLIED TO STOCKPILES IF NOT RELOCATED WITHIN 7 DAYS.

ALL STOCKPILES SHALL BE WITHIN LIMITS OF DISTURBANCE.

SILT FENCE SHALL BE INSTALLED DOWN GRADIENT OF ALL STOCKPILES.

## TEMPORARY STOCKPILE DETAIL

SCALE: NTS

REVISIONS

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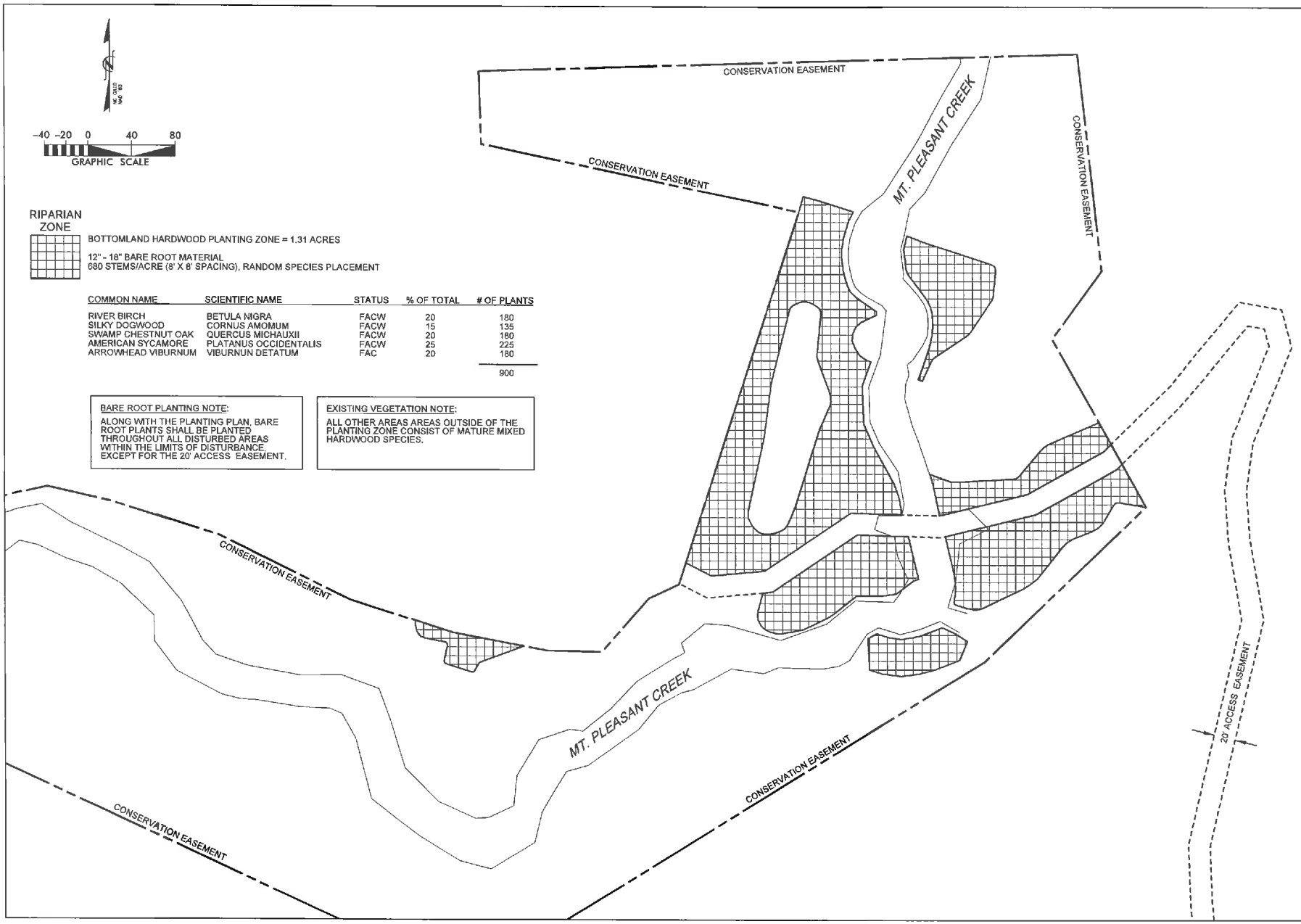
RALEIGH, NORTH CAROLINA 27609

MT. PLEASANT CREEK PROJECT
(BOWMAN PROPERTY)
DMS #44
RANDOLPH COUNTY, NORTH CAROLINA

DATE: OCTOBER 2015
SCALE: N.T.S.

EROSION CONTROL PLAN

SHEET 4 OF 8




RIPARIAN ZONE

BOTTOMLAND HARDWOOD PLANTING ZONE = 1.31 ACRES

12" - 18" BARE ROOT MATERIAL
680 STEMS/ACRE (8' X 8' SPACING), RANDOM SPECIES PLACEMENT

| COMMON NAME | SCIENTIFIC NAME | STATUS | % OF TOTAL | # OF PLANTS |
|---|---|---|---|---|
| RIVER BIRCH | BETULA NIGRA | FACW | 20 | 180 |
| SILKY DOGWOOD | CORNUS AMOMUM | FACW | 15 | 135 |
| SWAMP CHESTNUT OAK | QUERCUS MICHAUXII | FACW | 20 | 180 |
| AMERICAN SYCAMORE | PLATANUS OCCIDENTALIS | FACW | 25 | 225 |
| ARROWHEAD VIBURNUM | VIBURNUN DETATUM | FAC | 20 | 180 |
| | | | | 900 |

BARE ROOT PLANTING NOTE:
ALONG WITH THE PLANTING PLAN, BARE ROOT PLANTS SHALL BE PLANTED THROUGHOUT ALL DISTURBED AREAS WITHIN THE LIMITS OF DISTURBANCE, EXCEPT FOR THE 20' ACCESS EASEMENT.

EXISTING VEGETATION NOTE:
ALL OTHER AREAS AREAS OUTSIDE OF THE PLANTING ZONE CONSIST OF MATURE MIXED HARDWOOD SPECIES.

REVISIONS

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MT. PLEASANT CREEK PROJECT
(BOWMAN PROPERTY)
DMS #44
RANDOLPH COUNTY, NORTH CAROLINA

DATE: OCTOBER 2015
SCALE: GRAPHIC

PLANTING PLAN

SHEET 6 OF 8

## EROSION CONTROL NOTES:

1. IT IS THE INTENT OF THESE PLANS THAT AS SOON AS AN AREA OF GRADING IS COMPLETE IT SHALL BE STABILIZED IN ACCORDANCE WITH THE EROSION CONTROL PRACTICES DESCRIBED IN THESE PLANS. DUE TO THE ANTICIPATED DURATION AND SEQUENCE OF THE CONSTRUCTION ACTIVITIES, THE CONTRACTOR IS REQUIRED TO MINIMIZE, AS MUCH AS POSSIBLE, THE AMOUNT OF THE AREA THAT IS DISTURBED AT ONE TIME.

2. THE CONTRACTOR SHALL EXERCISE EVERY REASONABLE PRECAUTION THROUGHOUT THE CONSTRUCTION OF THE PROJECT TO PREVENT EROSION AND SEDIMENTATION. EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE PROJECT PLANS, NORTH CAROLINA SEDIMENT AND EROSION CONTROL GUIDELINES AND AS DIRECTED BY THE DESIGNER.

3. ALL DISTURBED SOILS WILL BE SEEDED FOR VEGETATIVE STABILIZATION FOLLOWING THE GUIDELINES DESCRIBED ON THIS SHEET AND ACCORDING TO THE FOLLOWING SCHEDULE: TEMPORARY OR PERMANENT SEEDING MUST BE APPLIED ON ALL GRADED SLOPES AND FILL WITHIN 7 CALENDAR DAYS. PERMANENT SEEDING MUST BE APPLIED TO ALL DISTURBED AREAS WITHIN 15 WORKING DAYS.

4. SILT FENCE SHALL BE INSTALLED AS DEPICTED ON THE PLANS PRIOR TO THE COMMENCEMENT OF DISTURBANCE ACTIVITIES. SILT FENCE SHALL BE TEMPORARILY REMOVED IN EACH ISOLATED WORK AREA TO PERMIT GRADING OF THE RESTORED STREAM. IMMEDIATELY FOLLOWING THE COMPLETION OF STABILIZATION MEASURES FOR EACH ISOLATED AREA AND PRIOR TO THE INITIATION OF WORK ON ANOTHER SECTION, THE SILT FENCE SHALL BE REINSTALLED AT ITS ORIGINAL LOCATION. SILT FENCE SHALL BE MAINTAINED HEREAFTER AND SHALL NOT BE REMOVED UNTIL GROUND COVER HAS BEEN FULL ESTABLISHED WITHIN THE LIMITS OF DISTURBANCE. SILT FENCE SHALL ALSO BE INSTALLED ON THE LOW SIDE OF ANY TEMPORARY STOCKPILES OF EXCAVATED MATERIAL.

5. IN THE EVENT OF A STORM, THE CONTRACTOR WILL BE RESPONSIBLE FOR REMOVAL OR PROTECTION OF ANY EQUIPMENT, TOOLS, MATERIALS OR OTHER ITEMS NEEDED TO COMPLETE THE WORK THAT COULD BE AFFECTED BY STORMWATER.

6. ALL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CHECKED FOR STABILITY AND FUNCTIONAL OPERATION FOLLOWING EVERY RUNOFF PRODUCING RAIN EVENT AND/OR AT LEAST ONCE PER WEEK. ANY NEEDED MAINTENANCE OR REPAIRS SHALL BE MADE IMMEDIATELY TO MAINTAIN ALL MEASURES AS DESIGNED. ACCUMULATED SEDIMENT SHALL BE REMOVED FROM CONTROL MEASURES WHEN THEY REACH APPROXIMATELY 50% OF THEIR FUNCTIONAL CAPACITY. THESE MEASURES SHALL BE REPAIRED IF DISTURBED DURING MAINTENANCE. ALL SEEDED AREAS SHALL BE FERTILIZED, RESEEDED AND MULCHED, AS NECESSARY, TO PROMOTE THE ESTABLISHMENT OF VEGETATION COVER.

7. EACH SEDIMENT CONTROL DEVICE WILL BE REMOVED AFTER ALL WORK IN THE CORRESPONDING CONSTRUCTION PHASE HAS BEEN COMPLETED AND THE AREAS HAVE BEEN STABILIZED.

8. THE CONSTRUCTION ENTRANCES AND STAGING AREAS IDENTIFIED ON THE PLANS PROVIDE THE ONLY ACCESS POINTS INTO THE LIMITS OF DISTURBANCE. NO ADDITIONAL ACCESS POINTS SHALL BE USED WITHOUT APPROVAL OF THE DESIGNER.

9. ALL REPAIR WORK SHALL BE PERFORMED IN DRY OR ISOLATED AREAS, WITH NO STANDING WATER OR WATER FLOWING THROUGH THE WORK AREA.

10. A TEMPORARY PUMP-AROUND SHALL BE UTILIZED BY THE CONTRACTOR DURING WORK ON THE STREAM TO DIVERT FLOW FROM AND DEWATER THE DESIGNATED AREA IN ORDER TO WORK. THE TEMPORARY PUMP-AROUND USED BY THE CONTRACTOR SHALL MEET ALL REQUIREMENTS SPECIFIED IN THESE PLANS. THE TEMPORARY PUMP-AROUND SHALL BE INSTALLED AND REMOVED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES. TWENTY-FOUR (24) HOURS PRIOR TO THE INITIATION OF PUMP-AROUND ACTIVITIES, THE CONTRACTOR SHALL MEASURE THE APPROXIMATE FLOW RATE AT THE PUMP-AROUND LOCATION. THE FLOW RATE SHALL BE SUBMITTED TO THE DESIGNER FOR APPROVAL. THE CONTRACTOR SHALL, THEREAFTER, UTILIZE A PUMP(S) SUFFICIENT TO ACCOMODATE 120% (1.2 TIMES) THE APPROVED FLOW RATE.

| GROUND STABILIZATION | |
|---|---|
| SITE AREA DESCRIPTION | STABILIZATION TIME FRAME |
| PERIMETER DIKES, SWALES, DITCHES AND SLOPES | 7 DAYS |
| HIGH QUALITY WATER (HQW) ZONES | 7 DAYS |
| SLOPES STEEPER THAN 3:1 | 7 DAYS |
| SLOPES 3:1 OR FLATTER | 7 DAYS |
| ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1 | 7 DAYS |

| INSPECTIONS |
|---|
| WEEKLY INSPECTIONS REQUIRED. |
| RAIN GAUGE MUST BE PRESENT AT SITE. INSPECTIONS REQUIRED AFTER 0.5" RAIN EVENTS. |
| INSPECTIONS ARE ONLY REQUIRED DURING "NORMAL BUSINESS HOURS". |
| INSPECTION REPORTS MUST BE AVAILABLE ON-SITE DURING BUSINESS HOURS UNLESS A SITE SPECIFIC EXEMPTION IS APPROVED. |
| RECORD MUST BE KEPT FOR 3 YEARS AND AVAILABLE UPON REQUEST. |
| ELECTRONICALLY-AVAILABLE RECORDS MAY BE SUBSTITUTED UNDER CERTAIN CONDITIONS. |

### TEMPORARY SEED MIX

THE CONTRACTOR SHALL UTILIZE THE FOLLOWING SEED/FERTILIZER MIX IN SEEDING ALL DISTURBED AREAS WITHIN THE PROJECT LIMITS:

SUMMER MIX (APRIL 15 - AUGUST 15)
GERMAN MILLET..... SETARIA ITALICA ..... 20 LBS / ACRE
BROWNTOP MILLET.... UROCHLOA RAMOSA.... 20 LBS / ACRE

WINTER MIX (AUGUST 15 - APRIL 15)
RYE GRAIN..... SECALE CEREALE..... 100 LBS / ACRE
WHEAT..... TRITICUM AESTIVUM..... 20 LBS / ACRE

### PERMANENT SEED MIX

THE CONTRACTOR SHALL UTILIZE THE FOLLOWING SEED MIX AND FERTILIZER SPECIFICATION IN ALL STREAMSIDE AND FLOODPLAIN NATURAL AREAS .

| | APPLICATION RATE (IN MIX) | |
|---|---|---|
| PERMANENT NATIVE SPECIES | % OF MIX | LBS / ACRE |
| VIRGINIA WILD RYE – ELYMUS VIRGINICUS | 35 | 8.75 |
| BEAKED PANIC GRASS – PANICUM ANCEPS | 20 | 5.00 |
| RIVER OATS – CHASMANTHIUM LATIFOLIUM | 30 | 7.50 |
| DEER TONGUE – DICHANTHELIUM CLANDESTINUM | 5 | 1.25 |
| FOX SEDGE – CAREX VULPINOIDEA | 5 | 1.25 |
| REDTOP – AGROSTIS ALBA | 5 | 1.25 |
| TOTAL | 100 | 25 |

FERTILIZER AND LIMESTONE SHALL BE APPLIED AT THE RATE OF 500 LBS / ACRE AND 2000 LBS / ACRE. RESPECTIVELY. FERTILIZER SHALL BE 5-10-10 ANALYSIS. UPON SOIL ANALYSIS A DIFFERENT RATIO OF FERTILIZER MAY BE USED.

### SEEDBED PREPARATION

THE SEEDBED SHALL BE COMPRISED OF LOOSE SOIL AND NOT COMPACTED, THIS MAY REQUIRE LIGHT MECHANICAL LOOSENING OF THE SOIL. SOIL AMENDMENTS SHOULD FOLLOW THE FERTILIZER AND LIMING DESCRIPTION IN THE ABOVE SECTIONS. FOLLOWING SEEDING, MULCHING SHALL FOLLOW THE BELOW APPLICATION METHODS AND AMOUNTS.

### MULCHING

SEEDED AREAS ARE TO BE PROTECTED BY SPREADING STRAW MULCH UNIFORMLY TO FORM A CONTINUOUS BLANKET (75% COVERAGE = 2 TONS/ACRE) OVER SEEDED AREAS. CONTRACTOR MAY PROPOSE ALTERNATE METHODS OF SEED, FERTILIZER AND LIMING (HYDRO-SEEDING) UPON SUBMISSION TO THE DESIGNER OF CALCULATIONS SHOWING THE EQUIVALENCY OF THE PROPOSED METHOD.

REVISIONS

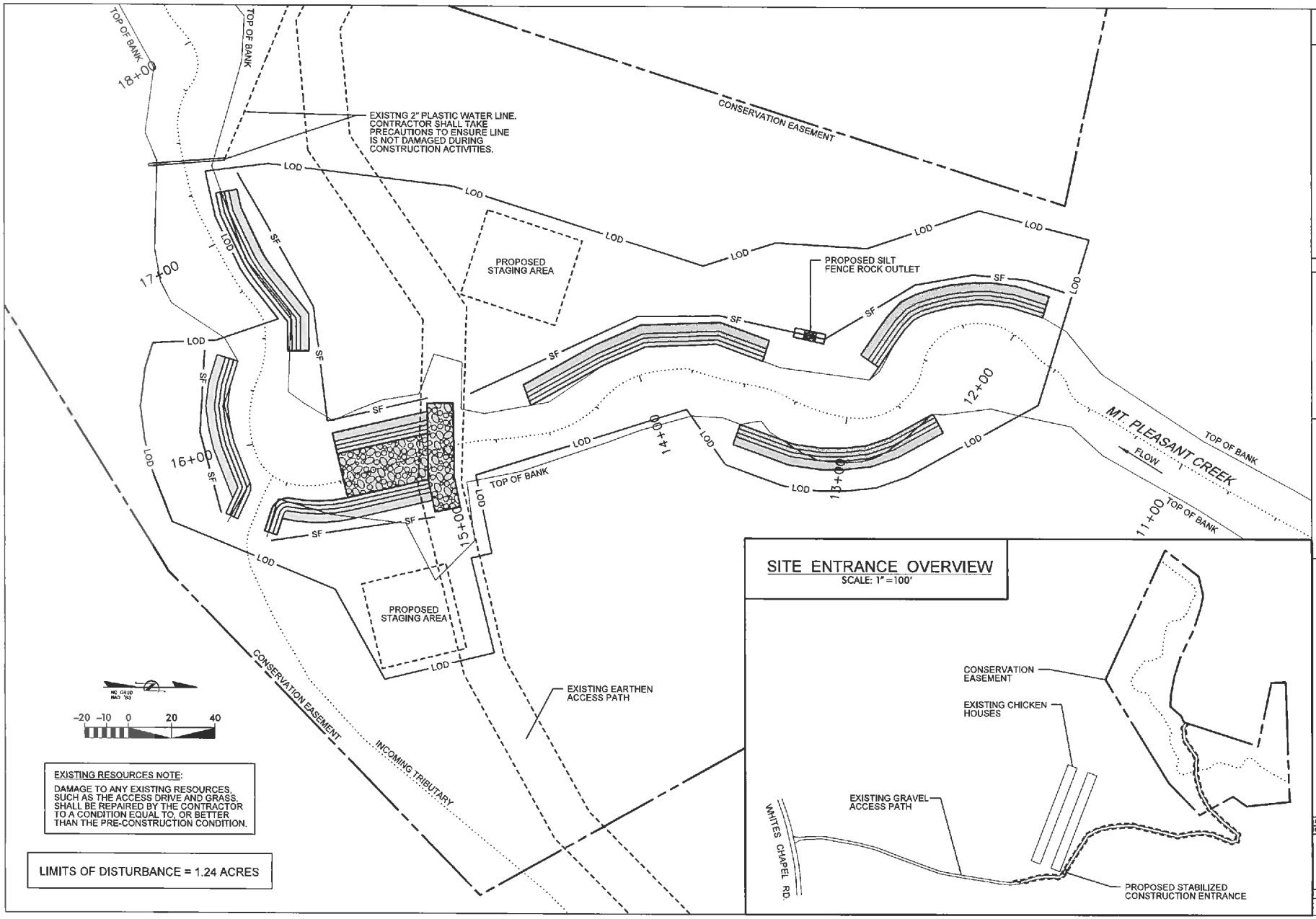
NCDEQ DIVISION OF MITIGATION SERVICES

KCI ASSOCIATES OF NC
ENGINEERS • PLANNERS • SCIENTISTS
4961 SIX FORKS ROAD, SUITE 220
RALEIGH, NORTH CAROLINA 27609

MT. PLEASANT CREEK PROJECT
(BOWMAN PROPERTY)
DMS #44
RANDOLPH COUNTY, NORTH CAROLINA

DATE: OCTOBER 2015
SCALE: N.T.S.

EROSION CONTROL PLAN




REVISIONS

NCDEQ DIVISION OF MITIGATION SERVICES

KCI ASSOCIATES OF NC
ENGINEERS • PLANNERS • SCIENTISTS
4601 SIX FORKS ROAD, SUITE 220
RALEIGH, NORTH CAROLINA 27609

MT. PLEASANT CREEK PROJECT
(BOWMAN PROPERTY)
DMS #44
RANDOLPH COUNTY, NORTH CAROLINA

DATE: OCTOBER 2015
SCALE: GRAPHIC

EROSION CONTROL PLAN

SHEET 8 OF 8

# Appendix D: Agency Correspondence

**DEPARTMENT OF THE ARMY**
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

REPLY TO
ATTENTION OF:

March 10, 2016

Regulatory Division

Re: NCIRT Review and USACE Approval of the Mt. Pleasant Creek (Bowman Site) Draft Mitigation Plan; SAW-2008-01382; DMS Project #44

Mr. Tim Baumgartner
North Carolina Division of Mitigation Services
1652 Mail Service Center
Raleigh, NC 27699-1652

Dear Mr. Baumgartner:

The purpose of this letter is to provide the North Carolina Division of Mitigation Services (NCDMS) with all comments generated by the North Carolina Interagency Review Team (NCIRT) during the 30-day comment period for the Mt. Pleasant Creek Draft Mitigation Plan, which closed on February 8, 2016. These comments are attached for your review.

Based on our review of these comments, we have determined that no major concerns have been identified with the Draft Mitigation Plan, which is considered approved with this correspondence. However, several minor issues were identified, as described in the attached comment memo, which must be addressed in the Final Mitigation Plan.

The Final Mitigation Plan is to be submitted with the Preconstruction Notification (PCN) application for Nationwide permit approval of the project along with a copy of this letter. Issues identified above must be addressed in the Final Mitigation Plan. All changes made to the Final Mitigation Plan should be summarized in an errata sheet included at the beginning of the document. If it is determined that the project does not require a Department of the Army permit, you must still provide a copy of the Final Mitigation Plan, along with a copy of this letter, to the appropriate USACE field office at least 30 days in advance of beginning construction of the project. Please note that this approval does not preclude the inclusion of permit conditions in the permit authorization for the project, particularly if issues mentioned above are not satisfactorily addressed. Additionally, this letter provides initial approval for the Mitigation Plan, but this does not guarantee that the project will generate the requested amount of mitigation credit. As you are aware, unforeseen issues may arise during construction or monitoring of the project that may require maintenance or reconstruction that may lead to reduced credit.

Thank you for your prompt attention to this matter. If you have questions regarding this letter, the mitigation plan review process, or the requirements of the Mitigation Rule, please call me at 919-846-2564.

Sincerely,

HUGHES.ANDREA.WADE.1258339165

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Date: 2016.03.10 09:38:48 -05'00'

Andrea Hughes
Mitigation Project Manager

Enclosures

Electronic Copies Furnished:

NCIRT Distribution List
Lindsay Crocker, NCDMS

**DEPARTMENT OF THE ARMY**
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

REPLY TO
ATTENTION OF:

CESAW-RG/Hughes February 24, 2016

MEMORANDUM FOR RECORD

SUBJECT: Mt. Pleasant Creek Restoration Project - NCIRT Comments During 30-day Mitigation Plan Review

PURPOSE: The comments listed below were posted to the NCDMS Mitigation Plan Review Portal during the 30-day comment period in accordance with Section 332.8(g) of the 2008 Mitigation Rule.

NCDMS Project Name: Mt. Pleasant Creek Restoration Project, Randolph County, NC

USACE AID#: SAW-2008-01382
NCDMS #: 44

30-Day Comment Deadline: 8 February 2016

*Ginny Baker and Sue Homewood, NCDWR, February 3, 2016:*

1. Please provide a figure that shows the approximate location of the three proposed cross-sections.
2. The lower 500' of the proposed E1 reach appears to have notably unstable banks. DWR would highly recommend re-measuring at least two of the original cross-sections located in this section in order to obtain current baseline data. Cross-sections should be located in appropriate areas of the stream that are currently unstable and proposed for bank work. An updated long-pro resurvey should also be considered but since the stream bed seems fairly stable DWR is less concerned with the profile baseline measurements.
3. DWR believes that an EII designation is more appropriate for the upper 200' of the proposed E1 reach since only cattle removal and invasive species treatments will be done along this section.
4. DWR understands that rotating vegetative monitoring plots will survey a larger area and provide a more extensive set of monitoring data on the condition of the planted buffer. However, DWR is concerned that the use of rotating plots may not capture and clearly evaluate vegetation trends in problem areas. DWR would recommend: 1.) Using a combination of fixed and rotating plots OR 2.) Keep a plot fixed if the current monitoring year's vegetation data shows vigor is poor and stem counts are border-lined or below that monitoring year's required stem count and/or there is a predominance of woody invasive species or undesirable species in the vegetation survey plot.
5. Please provide a brief description of the improved ford that will be installed for cattle crossing in the Enhancement 1 stream section. Section 6.2, Stream Enhancement 1 mentioned cattle have been excluded from that section since 2006. Do cattle currently have access to other sections of the stream? Please clarify if any areas have current or recent cattle access OR if cattle have been excluded since 2006 throughout the project

easement. Additional fencing will be necessary for the ford crossing through the easement.

6. Only one of the trees proposed in the planting plan, sycamore, (*Plantanus occidentalis*) was listed as currently existing in the forested sections of the buffer as described in the reach summary information, Section 4.2, page 17. Were some of the other canopy and sub-canopy species considered such as tulip poplar (Liriodendron tulipifera), hackberry (Celtis laevigata), box elder (Acer negundo), American elm (Ulmus americana), black walnut (Juglans nigra), ironwood (Carpinus carolinana), paw paw (Asiminia triloba), tag alder (Alnus serrulata) elderberry (Sambucus candadensis), and painted buckeye (Aesculus sylvatica)?

*Andrea Hughes, USACE, 24 February 2016:*

1. The restoration plan states (page 19) that invasive species such as *Rosa multiflora and Ligustrum sinense* are present but are not widespread and the condition of the invasive species will be re-evaluated at Year 3. During the site visit we noted a high percentage of invasive species on the lower end of the project. We recommend that the provider address invasive species issues on the site now rather than waiting until Year 3.
2. Please provide information regarding how water will be provided for the field adjacent to the buffer. (Plans to relocate the existing line as discussed on-site)
3. Please provide details regarding plans to ensure that cattle do not have access to the stream channel at the ford crossing area.
4. Please provide updated baseline data as discussed during the site visit on January 19, 2016. The baseline data should include updated cross-sections and profile data for the E1 restoration areas only.
5. Please provide a map of proposed monitoring locations. The vegetation monitoring should include fixed plot locations. Also, please note that vegetation success is based on survival of 260 *planted* stems at year 5.
6. Please provide an updated Categorical Exclusion Form.
7. According to the mitigation plan, Enhancement I credit will be generated for 705 LF of restoration at station 10+00 to 14+91 and station 15+11 to 17+25. According to Sheet 6 of the design plans, no work will be conducted at the upper end of the site beginning at station 10+00 and ending at ~ station 11+75. Please revise the chart on page 18 of the mitigation plan to reflect Enhancement II credits for this area.

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Date: 2016.02.24 12:17:20 -05'00'

Andrea Hughes
Mitigation Project Manager
Regulatory Division

Environmental Quality

PAT MCCRORY
Governor

DONALD R. VAN DER VAART
Secretary

**MEMORANDUM**

Date: February 25, 2016

To: Andrea Hughes, Mitigation Program Manager and IRT Liaison
US Army Corps of Engineers

February 25, 2016

Subject: DMS response to Bowman Mitigation Plan Comments
Project Name: Bowman Mitigation Site
USACE Action ID #: SAW-2008-01382
NCDMS Project #: 44
County: Randolph
River Basin: Cape Fear
HUC: 03030003
Assets: 876.4 SMUs (705 lf EI, 871 lf EII, 290 lf Preservation)
Provider: DBB, Designer is KCI
NCDMS Project Manager: Lindsay Crocker lindsay.crocker@ncdenr.gov

30-Day Comment Start Date: January 7, 2016 30-Day Comment Deadline: February 8, 2016 60-Day Intent to Approve Deadline: March 10, 2016

The following comments were received by members of the IRT. DMS responses are shown in green text.

*Ginny Baker and Sue Homewood 2/3/2016*

1. Please provide a figure that shows the approximate location of the three proposed cross-sections.
   Three proposed cross sections will be updated on the figure 6.4 'Proposed Mitigation.' After field conversations, DMS will re-establish 2 of the 3 cross sections at locations of CS2 (12+12) and CS4 (17+00) following construction to show constructed baseline, and another cross section will be established at the riffle downstream of the crossing (~15+25).

2. The lower 500' of the proposed E1 reach appears to have notably unstable banks. DWR would highly recommend re-measuring at least two of the original cross-sections located in this section in order to obtain current baseline data. Cross-sections should be located in appropriate areas of the stream that are currently unstable and proposed for bank work. An updated long-pro resurvey should also be considered but since the stream bed seems fairly stable DWR is less concerned with the profile baseline measurements.
   Cross sections: Please explain the rationale behind re-evaluating existing cross-section conditions for the EI channel. DMS justified conducting Enhancement Level 1 work due to the degraded conditions, evidenced through previous cross sections and a site visit with the IRT on 1/19/2016. Establishing additional existing conditions, or providing documentation for continued cross-sectional degradation does not provide any meaningful information for the design of the project. Furthermore, the proposed soil lifts provide a high level of intervention in those degraded areas. DMS will re-establish 2 of the 3 monitoring cross sections at post-construction stage to provide true post-restoration baseline cross sections.

Profile measurements: A site visit was conducted by the DMS Geomorphologist on this site and it was determined that the spatial distribution of bedrock outcrops and sills in the channel provide grade control for this stream. Since no profile work is prescribed for the channel and given the stable condition of the bed, DMS does not believe long profiles are needed. Bed stability will be measured throughout the project through visual assessment.

3. DWR believes that an EII designation is more appropriate for the upper 200' of the proposed E1 reach since only cattle removal and invasive species treatments will be done along this section.
   The earthwork associated with this project begins at station 11+50-11+75. As such, DMS has updated first 175' of stream to an EII approach (based on additional Corps comments to begin at the 11+75 mark).

4. DWR understands that rotating vegetative monitoring plots will survey a larger area and provide a more extensive set of monitoring data on the condition of the planted buffer. However, DWR is concerned that the use of rotating plots may not capture and clearly evaluate vegetation trends in problem areas. DWR would recommend: 1.) Using a combination of fixed and rotating plots OR 2.) Keep a plot fixed if the current monitoring year's vegetation data shows vigor is poor and stem counts are border-lined or below that monitoring year's required stem count and/or there is a predominance of woody invasive species or undesirable species in the vegetation survey plot.
   The Bowman project plan only includes planting a total of 1.23 acres. CVS protocol would require 1 fixed vegetation plot to cover 2% of the project area. DMS proposed an alternative monitoring method that would provide more than 5% coverage of the project area, and as such, believes that the information provided from 3 rotating plots would provide more relevant information. Based on DWR concerns and additional Corps comments requiring fixed plots, DMS will install 1 fixed plot. DMS will also provide 2 rotating plots to ensure information is captured.

5. Please provide a brief description of the improved ford that will be installed for cattle crossing in the Enhancement 1 stream section. Section 6.2, Stream Enhancement 1 mentioned cattle have been excluded from that section since 2006. Do cattle currently have access to other sections of the stream? Please clarify if any areas have current or recent cattle access OR if cattle have been excluded since 2006 throughout the project easement. Additional fencing will be necessary for the ford crossing through the easement.
   The ford description can be found on Appendix C of the Plan Views. A detailed description is listed on Page 3 of 8 on the Plan View. At the inception of this project, cattle had unrestricted access to the entire easement. As part of the original plan, cattle were legally excluded from the easement imposed by the 'Grantor Restricted Uses' Section of the Conservation Easement document signed 9/25/2014. Cattle were physically excluded through fencing as part of the Bowman project, completed in 2009 (page 3, Section 2.2.2 Chronology of Impacts). DMS considers the legal restriction, and installation of fencing as work conducted to fulfill mitigation requirements for this project. The addition of fencing for the ford crossing is noted and will be installed by the landowner.

6. Only one of the trees proposed in the planting plan, sycamore, (Plantanus occidentalis) was listed as currently existing in the forested sections of the buffer as described in the reach summary information, Section 4.2, page 17. Were some of the other canopy and sub-canopy species considered such as tulip poplar (Liriodendron tulipifera), hackberry (Celtis laevigata), box elder (Acer negundo), American elm (Ulmus americana), black walnut (Juglans nigra), ironwood (Carpinus carolinana), paw paw (Asiminia

triloba), tag alder (Alnus serrulata) elderberry (Sambucus candadensis), and painted buckeye (Aesculus sylvatica)?

The species selected for the planting plan are suitable for the site soils and vegetative community. DMS will add Tulip poplar and American elm to the planting list.

*Andrea Hughes, USACE, 24 February 2016:*

1. The restoration plan states (page 19) that invasive species such as Rosa multiflora and Ligustrum sinense are present but are not widespread and the condition of the invasive species will be re-evaluated at Year 3. During the site visit we noted a high percentage of invasive species on the lower end of the project. We recommend that the provider address invasive species issues on the site now rather than waiting until Year 3.
   An invasive treatment plan will be incorporated into the mitigation plan.
2. Please provide information regarding how water will be provided for the field adjacent to the buffer. (Plans to relocate the existing line as discussed on-site)
   The water line traversing the stream at 17+40 is an existing water line, and will remain in the project area. The line was installed as part of the project to provide alternative fresh water to cattle on-site.
3. Please provide details regarding plans to ensure that cattle do not have access to the stream channel at the ford crossing area.
   See response to DWR comment 5 above.
4. Please provide updated baseline data as discussed during the site visit on January 19, 2016. The baseline data should include updated cross-sections and profile data for the E1 restoration areas only.
   See response to DWR comment 2 above.
5. Please provide a map of proposed monitoring locations. The vegetation monitoring should include fixed plot locations. Also, please note that vegetation success is based on survival of 260 planted stems at year 5.
   See response to DWR comment 4 above. The fixed plot location will be updated on the figure 6.4 'Proposed Mitigation.' Because the areas proposed for planting (1.23 acres) all occur in the NC DWR Buffer Credit area, DMS applied performance standards in accordance with the new NC Mitigation Rules (15ANCAC 02B .0295), which state 260 planted and volunteer stems. DMS understands per 2003 Corps guidance that the riparian buffer within 50' from the stream must show survival of 260 trees/acre planted through year five. However, there is very little area within the 50' stream buffer that will be planted because this is an enhancement project and most of the forested buffer within 50' of the project stream contain mature forest stands.
6. Please provide an updated Categorical Exclusion Form.
   The Categorical Exclusion Form will be updated to reflect a 2016 date signature.
7. According to the mitigation plan, Enhancement I credit will be generated for 705 LF of restoration at station 10+00 to 14+91 and station 15+11 to 17+25. According to Sheet 6 of the design plans, no work will be conducted at the upper end of the site beginning at station 10+00 and ending at ~ station 11+75. Please revise the chart on page 18 of the mitigation plan to reflect Enhancement II credits for this area.
   Updated, see DWR comment 1 above.

Water Resources
ENVIRONMENTAL QUALITY

PAT MCCRORY
*Governor*

DONALD R. VAN DER VAART
*Secretary*

S. JAY ZIMMERMAN
*Director*

March 1, 2016

Melonie Allen
DEQ-Division of Mitigation Services
1652 Mail Service Center
Raleigh, NC 27699-1652 (via electronic mail)

DWR Project #: 2007-2252v2

Re: Site Viability for Buffer Mitigation – Mt. Pleasant Creek/Bowman (DMS #44)
Mt. Pleasant Creek off of Whites Chapel Rd, Liberty, NC
*Viability assessed under Temporary Rule 15A NCAC 02B .0295 (i) and (m)*
Randolph County

Dear Ms. Allen,

On November 5, 2015, Katie Merritt, with the Division of Water Resources (DWR), received a Mitigation Plan for the Mt. Pleasant Creek Restoration Project (Bowman Property) and a request from you on behalf of Division of Mitigation Services (DMS), to review the report for Neuse riparian buffer mitigation potential along Mt. Pleasant Creek. This site is located in rural Liberty, NC in the 03030003 Hydrologic Unit Code outside of the Randleman Lake Watershed in the Cape Fear River Basin. As provided in the attached "*EEP Nutrient Offset Meeting Summary*" document, it was agreed upon by the DWR to allow the subject site to be used to generate Randleman Buffer Mitigation. Based on correspondence from Katie Merritt with DWR, it was requested that DMS request an onsite mitigation viability assessment prior to constructing the project for mitigation.

According to the Mitigation Plan this project was instituted in 2006, but was not constructed. DMS and the Department of Transportation installed a four-strand high tensile fence around the perimeter of the project boundary to remove cattle out of the stream and riparian areas.

Ms. Merritt and Sue Homewood with DWR, accompanied by Lindsay Crocker with DMS, performed a buffer mitigation viability assessment on January 26, 2016. If approved, mitigating this site could provide riparian buffer credits within the Randleman Lake Water Supply Watershed in the Cape Fear River Basin.

Ms. Merritt's evaluation of site conditions for buffer mitigation pursuant to Rule 15A NCAC 02B .0295 (effective October 24, 2014 to October 31, 2015) is provided below and described using the Top Of Bank (TOB) as a category to describe the distance from Mt. Pleasant Creek.

**Area A**

- Located along the western side of Mt. Pleasant Creek. Land use within the riparian areas (TOB to +/- 50') is mostly fescue with only a few mature hardwoods. This area is viable for riparian restoration and suitable for buffer mitigation only.

**Area B**

- Located adjacent to Area A and along the West side of Mt. Pleasant Creek. Land use within the riparian area (50' to +/- 200') adjacent to Area A is comprised of a mix of mature woody stems and fescue. This area is viable for riparian enhancement and suitable for buffer mitigation only.

**Areas C1, C2 & C3**

- Comprised of three areas located along the entire eastern side of the project along Mt. Pleasant Creek with a small portion to the north western side of the creek. Land use within the riparian areas (TOB +/- 200') is comprised of a natural forest consisting of the forest strata and diversity of species appropriate for the location. This area is viable for riparian preservation and suitable for buffer mitigation only.
- Based on conversations with DMS, these areas may have included cattle that were excluded after DMS installed the cattle fencing in 2006. This area may qualify for "enhancement of grazing areas" under 15A NCAC 02B .0295 (m) (2) (F) if it can meet all requirements of (m) (1) and (m) (2) (F). This area would still be suitable for buffer mitigation only.

**Area D**

- Located along the south western side of Mt. Pleasant Creek. Land use within the riparian area (TOB +/- 200') is comprised of a natural forest consisting of the forest strata and diversity of species appropriate for the location. This area is viable for riparian preservation and suitable for buffer mitigation only
- Based on conversations with DMS, this area may have included cattle that were excluded after DMS installed the cattle fencing in 2006. This area may qualify for "enhancement of grazing areas" under 15A NCAC 02B .0295 (m) (2) (F) if it can meet all requirements of (m) (1) and (m) (2) (F). This area would still be suitable for buffer mitigation only.

**Areas E1 & E2**

- Comprised of two narrow corridors and located along the eastern side of Mt. Pleasant Creek to the North and South of the maintained crossing. Land use within the riparian areas (TOB to +/- 200') is mostly fescue with only a few early successional and mature hardwoods. This area is viable for riparian restoration and suitable for buffer mitigation only.

A map showing the project site and the different Areas (A-E) is provided and initialed by Ms. Merritt on February 22, 2016. If DMS proceeds with the use of these features for generating

buffer mitigation credits, they shall do so in full compliance with the Temporary Consolidated Buffer Mitigation Rule 15A NCAC 02B .0295, which was effective from October 24, 2014 until October 31, 2015 and must apply all applicable ratios and percentages according to that rule.

All supporting documentation for alternative mitigation options under .0295 (m) must be provided in a final mitigation plan and submitted to DWR for review. Written approval of the mitigation plan must be received by the DWR prior to any further construction of the project.

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

Sincerely,

Karen Higgins

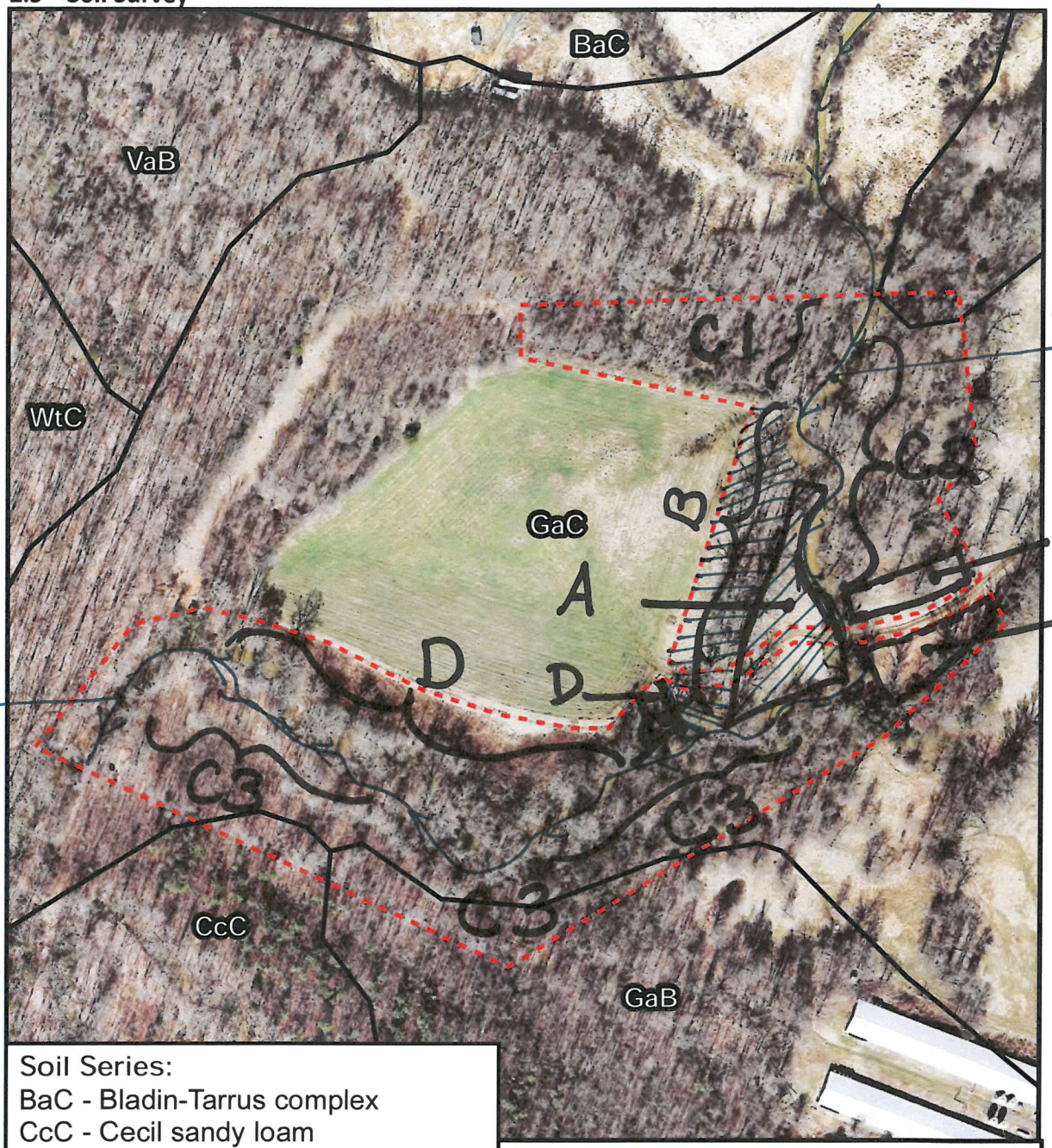
Karen Higgins, Supervisor
401 and Buffer Permitting Branch

KAH/*km*
Attachments: Site Map, Clarification Memo #2008-019, EEP Nutrient Offset Meeting Summary (dated August 2, 2007 )

cc: File Copy (Katie Merritt)
Sue Homewood – DWR Winston Salem Regional Office (via electronic mail)
Andrea Hughes – USACE (via electronic mail)

AREAS A, B, C, D, E1 + E2

## 2.5 Soil Survey




Soil Series:
BaC - Bladin-Tarrus complex
CcC - Cecil sandy loam
GaB and GaC - Georgeville silt loam
VaB - Vance sandy loam
WtC - Wynott-Enon complex

Project Easement
NRCS Soil Survey (Randolph County)

0 100 200 Feet

PROJECT SITE NRCS SOIL SURVEY MAP
MT. PLEASANT CREEK RESTORATION PROJECT
RANDOLPH COUNTY, NC

N

*Soils Source: NRCS SSURGO Data, Randolph County.*

*Image Source: NC OneMap Orthoimagery, 2014.*



KM 2/22/16

Bowman Property
DMS # 44
DWR # 2007-2252 r2