



# MONITORING YEAR 5 ANNUAL / CLOSEOUT REPORT

Final

## Burnetts Chapel Mitigation Site-Phase II

Guilford County, NC  
DMS Project No. 100045  
DMS Contract No. 7430  
DWR Project Number 2011-0841

Randleman Lake Watershed  
Cape Fear River Basin  
HUC 03020201

DMS RFP No. 16-007242

Data Collection Period: September 2023  
Draft Submission Date: November 2023  
Final Submission Date: January 2024

---

PREPARED FOR:



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

**PREPARED BY:**

---



**Wildlands Engineering, Inc.**  
1430 S. Mint St., Suite 104  
Charlotte, NC 28203  
Phone: (704) 332-7754

**BURNETTS CHAPEL MITIGATION SITE-PHASE II**  
Monitoring Year 5 Annual/Closeout Report

**TABLE OF CONTENTS**

**Section 1: PROJECT OVERVIEW ..... 1-1**

1.1 Project Description..... 1-1

1.2 Project Goals and Objectives ..... 1-1

1.3 Project History ..... 1-2

1.4 Project Location ..... 1-2

1.5 Project Design ..... 1-2

**Section 2: DETERMINATION OF CREDITS ..... 2-1**

**Section 3: PERFORMANCE CRITERIA AND MONITORING PROTOCOLS..... 3-1**

3.1 Annual Monitoring and Reporting ..... 3-1

3.2 Vegetation Success Criteria and Monitoring Protocol..... 3-1

3.3 Photo Reference Stations ..... 3-1

3.4 Visual Assessments ..... 3-2

**Section 4: RESULTS OF YEAR 5 MONITORING ..... 4-1**

4.1 Vegetative Success..... 4-1

4.2 Vegetative Problem Areas ..... 4-1

4.3 Boundary Inspection ..... 4-2

4.4 Parcel Maintenance ..... 4-2

4.5 Conclusions ..... 4-2

**Section 5: REFERENCES ..... 5-1**

**APPENDICES**

**Appendix 1      General Tables and Figures**

Figure 1      Project Vicinity Map

Figure 2      Project Component/Asset Map

Table 1      Buffer Project Areas and Assets

Table 2      Project Activity and Reporting History

Table 3      Project Contact Table

Table 4      Project Information and Attributes

Table 5      Planted Tree Species  
NCDWR Site Viability Letter  
NCDWR On-site Determination Approval Letter

**Appendix 2      Visual Assessment Data**

Figure 3      Current Conditions Plan View

Table 6      Vegetation Condition Assessment Table  
Buffer & Site Conditions Photographs  
Vegetation Plot Photographs  
Areas of Concern Photographs  
Improved Areas of Concern Photographs

**Appendix 3      Vegetation Plot Data**

Table 7      Vegetation Plot Criteria Attainment

Table 8      Planted and Total Stem Count

Table 9      Vegetation Performance Standard Summary Table

Table 10      Vegetation Height Data



## Section 1: PROJECT OVERVIEW

### 1.1 Project Description

The Burnetts Chapel Mitigation Site-Phase II (Site) is a buffer restoration project located approximately three miles west of the Town of Pleasant Garden and four miles south of the City of Greensboro in Guilford County, NC (Figure 1). The Site is comprised of 7.50 acres along several unnamed tributaries to the Randleman Reservoir (Figure 2). The Site is surrounded by fields that are used for agriculture and is immediately adjacent to Phase I of the Burnetts Chapel Mitigation Project, which was successfully completed by Wildlands in 2017 for the North Carolina Division of Environmental Quality (NCDEQ) Division of Mitigation Services (DMS). The project expands the Phase I riparian buffer area from 50 feet to 100 to 200 feet on five of the original project streams and channels. The Site is expected to generate 280,577.321 riparian buffer credits.

The Site is located within the Cape Fear River Basin Hydrologic Unit Code (HUC) 03030003-010050 and the North Carolina Department of Water Resources (NCDWR) Sub-basin 03-06-08. Five unnamed tributaries on the Site flow into the Randleman Reservoir (Reaches B1-B5). These water bodies are classified as WS-IV, as the Randleman Reservoir is a major source of drinking water for the region.

This buffer restoration project will reduce sediment and nutrient loading and improve terrestrial habitat. The area surrounding the streams proposed for restoration is primarily open agricultural fields. Restoring the vegetative buffer on the areas up to 200 feet from the streams will remove the hay fields and fertilizer inputs within the project area. The restored floodplain areas will filter sediment-laden farm runoff during rainfall events. The establishment of riparian buffers will create shading to minimize thermal pollution. Finally, invasive vegetation will be treated within the project area as needed and the proposed native vegetation will provide cover and food for wildlife.

Tables 1 and 2 in Appendix A provide more detailed watershed and Site background information for this project.

### 1.2 Project Goals and Objectives

The major goals of the proposed buffer restoration project are to provide ecological and water quality enhancements to the Randleman Reservoir Watershed of the Cape Fear River Basin by creating a functional riparian corridor and restoring the riparian buffer. Specific enhancements to water quality and ecological processes are outlined below.

Goals	Objectives
Decrease nutrient levels	Nutrient input will be decreased by filtering runoff from the agricultural fields through restored native buffer zones. The off-site nutrient input will also be absorbed on-site by dispersing flood flows through native vegetation.
Decrease sediment input	Sediment from off-site sources will be deposited on restored floodplain areas where native vegetation will slow overland flow velocities.
Create appropriate terrestrial habitat	Buffer areas will be restored by removing invasive vegetation and planting native vegetation.
Permanently protect the Site from harmful uses.	A conservation easement will be established on the Site.

### 1.3 Project History

On March 26, 2018, NCDWR conducted on-site determinations to review features and land use within the project boundary. The resulting NCDWR site viability letter and map confirming the Site as suitable for riparian buffer mitigation is located in Appendix A. NCDWR also approved the five project reaches as appropriate for buffer mitigation as related to the rules set forth in the Randleman Lake Water Supply Watershed: Mitigation Program for Protection and Maintenance of Existing Riparian Buffers (15A NCAC 02B .0252). The on-site determination approval letter from NCDWR is also included in Appendix A.

The final mitigation plan was submitted and accepted by the NC DMS in September 2018. Planting activities were completed by Bruton Natural Systems, Inc. in March 2019. The baseline monitoring and as-built survey were completed in May 2019. There were no significant deviations reported in the project elements in comparison to the design plans. Tables 1 and 2 in Appendix A provides more detailed project activity, history, and contact information for this project.

### 1.4 Project Location

The Site is located (Center of project 35.944022 N and -79.845255 W) in Guilford County, NC approximately three miles west of the Town of Pleasant Garden and four miles south of the City of Greensboro) within the Cape Fear River Basin (HUC 03030003-010050) and the NCDWR Sub-basin 03-06-08. Directions to the project are as follows: Traveling south on I-73 from Greensboro, take Exit 94 for Old Randleman Road. Turn right onto Old Randleman Road. Travel 0.5 miles and take a slight right onto Kivett Drive. Continue on Kivett Drive for 0.7 miles and take a left onto Drake Road. Continue on Drake Road for 1.7 miles and turn left onto Burnetts Chapel Road. The project parcel will be on the right approximately 0.1 miles down Burnetts Chapel Road. Enter the Site via the gravel driveway. The property location is depicted on the Vicinity Map (Figure 1), which is located in Appendix A.

### 1.5 Project Design

The Wildlands Team restored high quality riparian buffers along several unnamed tributaries on the Site. The project design ensured that no adverse impacts to wetlands or existing riparian buffers occurred. Figure 2 illustrates the conceptual design for the Site. Detailed descriptions of the proposed restoration activity follow in Sections 1.5.1 through 1.5.2. General Site and buffer photographs are included in Appendix B.

#### 1.5.1 Riparian Area Restoration Activities

Prior to planting, the buffer restoration area was used as agricultural fields. These areas were tilled with a chisel plow to reduce soil compaction prior to planting. The fields within the project area contained only a few invasive species; therefore, only some selective spot herbicide treatments were required. The Site's ephemeral channels were located fully within the conservation easement area and were completely buffered as part of the project; therefore, no land disturbance to maintain diffuse flow was required.

The revegetation plan for the buffer restoration area included permanent seeding, planting bare root trees, live stakes, and herbaceous plugs. These revegetation efforts were coupled with the select treatment of invasive species to control their population. The specific species composition planted was selected based on the desired community type, observation of occurrence of species in riparian buffers adjacent to the Site, and best professional judgement on species establishment and anticipated site conditions in the early years following project implementation. The total number of tree species planted across the buffer areas are as follows: tulip poplar (*Liriodendron tulipifera*) 450 stems, willow oak (*Quercus phellos*) 900 stems, American sycamore (*Platanus occidentalis*) 900 stems, river birch (*Betula nigra*) 900 stems, green ash (*Fraxinus pennsylvanica*) 900 stems, and swamp chestnut oak (*Quercus*



*michauxii*) 450 stems. In total, 4,500 stems were planted across the buffer areas of the Site resulting in a planting density of 608 stems per acre. Trees were planted at a density sufficient to meet the performance standards outlined in the Rule 15A NCAC 02B .0295 of 260 trees per acre at the end of five years. No one tree species planted was greater than 50% of the established stems. An appropriate seed mix was applied as necessary to provide temporary ground cover for soil stabilization and reduction of sediment loss during rain events in disturbed areas. This was followed by an appropriate permanent seed mixture. Planting was completed on March 16, 2019.

Vegetation management and herbicide applications were implemented as needed during tree establishment in the restoration areas to prevent establishment of invasive species that could compete with the planted native species.

### **1.5.2 Riparian Area Preservation Activities**

No work was done in the buffer preservation areas, as allowed under 15A NCAC 02B .0295(o). The preservation area will be protected in perpetuity under a conservation easement.



## Section 2: DETERMINATION OF CREDITS

In addition to buffer restoration on subject streams, per the Consolidated Buffer Mitigation Rules (15A NCAC 02B 0.0295 (o)), alternative mitigation is proposed on the Site in the form of buffer restoration on ephemeral channels and preservation of forested buffer on subject streams. The proposed project is in compliance with these rules in the following ways:

Buffer Restoration on Ephemeral Channels (15A NCAC 02B 0.0295(o)(7)):

- NCDWR performed an evaluation of the Site (Phase I in 2011 and Phase II in 2018) and identified the perennial, intermittent, and ephemeral channels on the property.
- The mitigation area on the Site's ephemeral channels is located completely within their drainage areas.
- The ephemeral channels are directly connected to intermittent or perennial stream channels and will be protected under the same contiguous easement boundary.
- The mitigation area on the ephemeral channels is less than 25% of the total buffer mitigation area on the Site (Table 1, Appendix A).

Preservation on Subject Streams (15A NCAC 02B .0295 (o)(5)):

- The buffer width is at least 30 feet from the stream.
- The area meets the requirements of 15A NCAC 02R 0.0403(c)(7), (8), and (11) with no known structures, infrastructure, hazardous substances, solid waste, or encumbrances within the mitigation boundary.
- Preservation mitigation is being requested on no more than 25% of the total buffer mitigation area (Table 1, Appendix A).

Mitigation credits are presented in Table 1 and Figure 2 in Appendix A and are based upon the as-built survey included in the Burnetts Chapel Mitigation Site-Phase II Baseline Monitoring Report (2019).





## Section 3: PERFORMANCE CRITERIA AND MONITORING PROTOCOLS

The performance criteria for the Site follows approved performance criteria presented in Burnetts Chapel Mitigation Site-Phase II Mitigation Plan (Wildlands Engineering, Inc., 2018), the NC DMS Riparian Buffer and Nutrient Offset Buffer Baseline & Annual Monitoring Report Template, Version 2.0 (May 2017) and the Consolidated Buffer Rule (15A NCAC 02B .0295).

The buffer restoration project has been assigned specific performance criteria components for vegetation. Performance criteria will be evaluated throughout the five-year post-construction monitoring. The monitoring period will extend for five years beyond the completion of construction or until performance criteria have been met. An outline of the performance criteria and monitoring components are described below.

### 3.1 Annual Monitoring and Reporting

Annual monitoring and semi-annual site visits will be conducted to assess the condition of the finished project. The extent of invasive species coverage will also be monitored and treated as necessary throughout the required monitoring period (five years). Complete monitoring reports will be prepared in the fall of each monitoring year and submitted to DMS. Annual monitoring reports will be based on the above referenced DMS Template (May 2017).

### 3.2 Vegetation Success Criteria and Monitoring Protocol

The final vegetative success criteria will be the survival of 260 planted stems per acre in the riparian corridor at the end of the required monitoring period (Monitoring Year (MY) 5). The final performance standard shall include a minimum of four native hardwood tree species or four native hardwood tree and native shrub species, where no one species is greater than 50 percent of stems. Native hardwood and native shrub volunteer species may be included to meet the final performance standard of 260 stems per acre. Performance criteria will be evaluated throughout the five-year post-construction monitoring or until performance criteria have been met. Annual vegetation monitoring will follow the CVS-EEP Level 1 & 2 Protocol for Recording Vegetation (2008).

A total of six (6) vegetation monitoring quadrants were established within the project easement area using standard 10 meter by 10 meter vegetation monitoring plots. Plots were randomly established within planted portions of the riparian buffer areas to capture the heterogeneity of the designed vegetative communities. The plot corners have been marked and are recoverable either through field identification or with the use of a GPS unit. Reference photographs of the vegetation plots are taken annually from the origin looking diagonally across the plot to the opposite corner.

Vegetation plot locations are depicted on the Current Conditions Plan View (CCPV) Map (Figure 3) in Appendix B. Photos depicting the current conditions of the vegetation plots for MY5 are also presented in Appendix B.

### 3.3 Photo Reference Stations

Photographs will be taken within the project area once a year to visually document stability for five years following construction. A total of eight (8) permanent markers were established and located with GPS equipment so that the same locations and view directions on the Site are photographed each year. Photo reference locations are depicted on the CCPV map (Figure 3) in Appendix B. Photos depicting the current conditions of the conservation easement for MY5 are also presented in Appendix B.



### 3.4 Visual Assessments

Visual assessments should support the specific performance standards for each metric as described above. Visual assessments will be performed within the Site on a semi-annual basis during the five-year monitoring period. Problem areas with vegetative health will be noted (e.g. low stem density, vegetation mortality, invasive species, and/or encroachment). Areas of concern will be mapped, photographed, and accompanied by a written description in the annual monitoring report. Problem areas will be re-evaluated during each subsequent visual assessment.



## Section 4: RESULTS OF YEAR 5 MONITORING

### 4.1 Vegetative Success

The six vegetation plots were sampled in September 2023 towards the end of the growing season. A reference photo was taken from the southwest corner of each plot, which can be found in Appendix B. Total numbers of tree species identified within the monitoring plots as well as density and composition are summarized in Table 8. The field data sheets are in Appendix C.

The MY5 vegetation monitoring resulted in an average stem density of 978 total stems per acre (479 planted stems per acre) which exceeds the final stem density requirement of at least 260 stems per acre by the end of MY5. Seventy-nine percent of the planted stems survived from MY0. Stem densities within individual monitoring plots ranged from 445 to 2,630 total stems per acre (324 to 607 planted stems per acre). As shown in the plot below, the trees took a year to get established and have shown continuous growth. Average stem height increased 40 cm (1.3 ft) since last year and now averages 182 cm (6.0 ft). The number of different species in each plot ranged from four to eight with a Site total of ten species, which exceeds the species diversity criteria of a minimum of four native hardwood species.

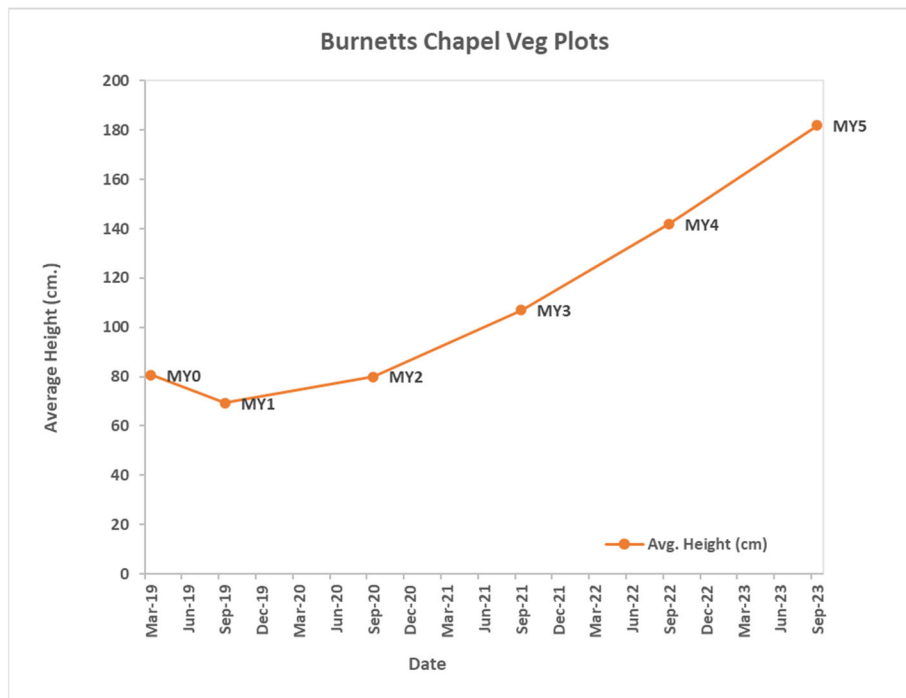


Figure A: Growth of the planted stems across the Site.

Please refer to Appendix C for vegetation plot data and Appendix B for vegetation plot photographs. The Site has met and exceeded the final success criteria.

### 4.2 Vegetative Problem Areas

An assessment of the vegetation condition was conducted throughout the site. The history of invasive species management and low growth areas are outlined below and are presented in Table 6 in Appendix B.

#### 4.2.1 Invasive Species

During MY5, follow up herbicide treatments of callery pear (*Pyrus calleryana*) and tree of heaven (*Ailanthus altissima*) were completed. With the help of ring spays in 2021, the trees have not had a problem growing above the Johnsongrass (*Sorghum halepense*). Pine tree saplings growing in the eastern portion of the easement were previously cut down by hand to facilitate the growth of the targeted hardwood community and are no longer an issue.

#### 4.2.2 Bare, Low Stem Density, & Poor Growth Rate Areas

A 0.1-acre area of low stem density was reported along Reach B4 in MY2. This area was reduced in MY3 once the planted stems had time to get established and some volunteers were noted. The area is performing well in MY5, and no concerns were noted during the site walk with the DMS representative in August 2023. Photos of this improvement are shown in the Improved Areas of Concern Photographs in Appendix B.

### 4.3 Boundary Inspection

Starting in 2022, it was noticed that narrow areas of mowing (“scalping”) had occurred across the site. These swaths extended only 6-12-inches into the easement and were not substantial enough to cut any of the trees close to the boundary. Horse tape and additional easement signs were added during MY4 to better demarcate portions of the boundary. During MY5, a few areas continued to be scalped. The landowner was contacted about this issue in November and after discussion, agreed that additional signage would not be necessary. Refer to Figure 3 for the locations of the mowing encroachments and Appendix 2 for the Areas of Concern Photographs. These areas total 0.02 acres and are now considered resolved. This issue will continue to be monitored until the project is closed out.

The entirety of the boundary was walked and there were no issues with the boundary markings.

### 4.4 Parcel Maintenance

Adaptive measures will be developed, or appropriate remedial actions will be implemented in the event that the Site or a specific component of the Site fails to achieve the success criteria outlined in the Site’s Mitigation Plan. Site maintenance will be performed to correct any identified problems on the Site that have a high likelihood of affecting project success. Such items include but are not limited to excess tree mortality caused by fire, flooding, drought, or insects. Any actions implemented will be designed to achieve the success criteria and will include a work schedule and updated monitoring criteria.

### 4.5 Conclusions

This is the fifth and final monitoring year (MY5) as established in the Mitigation Plan (Wildlands, 2018). The Site will be presented to the NCDWR for regulatory closeout in 2023. Vegetation is thriving across the Site and is exceeding the performance standards. Monitoring Year 5 data shows an average density of 978 total stems per acre (479 planted stems per acre) across all vegetation plots, which exceeds the final criteria. Herbaceous cover is well established throughout the site and no bare or low stem-density areas are reported. The trees are doing well with an average stem height of 6.0 feet. As with the previous years, monitoring data shows positive trends in vegetation establishment and this trajectory is expected to continue after the project is closed out. Invasive species treatments have been effective and are no longer an issue on the project. The areas will continue to be monitored through closeout.



## Section 5: REFERENCES

15A NCAC 02B .0252

15A NCAC 02B .0295

Lee, Michael T., Peet, Robert K., Steven D., Wentworth, Thomas R. 2008. CVS-EEP Protocol for Recording Vegetation Version 4.2. Retrieved from <http://cvs.bio.unc.edu/protocol/cvs-EEP-protocol-v4.2-lev1-5.pdf>

North Carolina Ecosystem Enhancement Program. 2009. Cape Fear River Basin Restoration Priorities 2009. [http://www.nceep.net/services/lwps/cape\\_fear/RBRP%20Cape%20Fear%202008.pdf](http://www.nceep.net/services/lwps/cape_fear/RBRP%20Cape%20Fear%202008.pdf)

North Carolina Division of Mitigation Services (DMS). 2017. Riparian Buffer and Nutrient Offset Buffer Baseline & Annual monitoring Report Template (Version 2.0, 05-2017). Raleigh, North Carolina. [https://ncdenr.s3.amazonaws.com/s3fs-public/Mitigation%20Services/Document%20Management%20Library/Guidance%20and%20Template%20Documents/RB\\_NO\\_Base\\_Mon\\_Template\\_2.0\\_2017\\_5.pdf](https://ncdenr.s3.amazonaws.com/s3fs-public/Mitigation%20Services/Document%20Management%20Library/Guidance%20and%20Template%20Documents/RB_NO_Base_Mon_Template_2.0_2017_5.pdf)

North Carolina Interagency Review Team. 2016. Wilmington District Stream and Wetland Compensatory Mitigation Update. October 24, 2016.

Schafale, M.P. and A.S. Weakley. 1990. Classification of the Natural Communities of North Carolina, 3rd approx. North Carolina Natural Heritage Program, Raleigh, North Carolina.

United States Army Corps of Engineers (USACE), 2003. Stream Mitigation Guidelines. USACE, NCDENR-DWQ, USEPA, NCWRC.

Wildlands Engineering, Inc. 2018. Burnetts Chapel Mitigation Site-Phase II Mitigation Plan. DMS, Raleigh, NC. September 28, 2018.

Wildlands Engineering, Inc. 2019. Burnetts Chapel Mitigation Site-Phase II Baseline Monitoring Report. DMS, Raleigh, NC. May 16, 2019.

Wildlands Engineering, Inc. 2021. Burnetts Chapel Mitigation Site-Phase II Monitoring Year 3 Annual Report. DMS, Raleigh, NC. November 2021.



## **APPENDIX 1. General Tables and Figures**

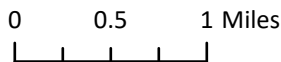
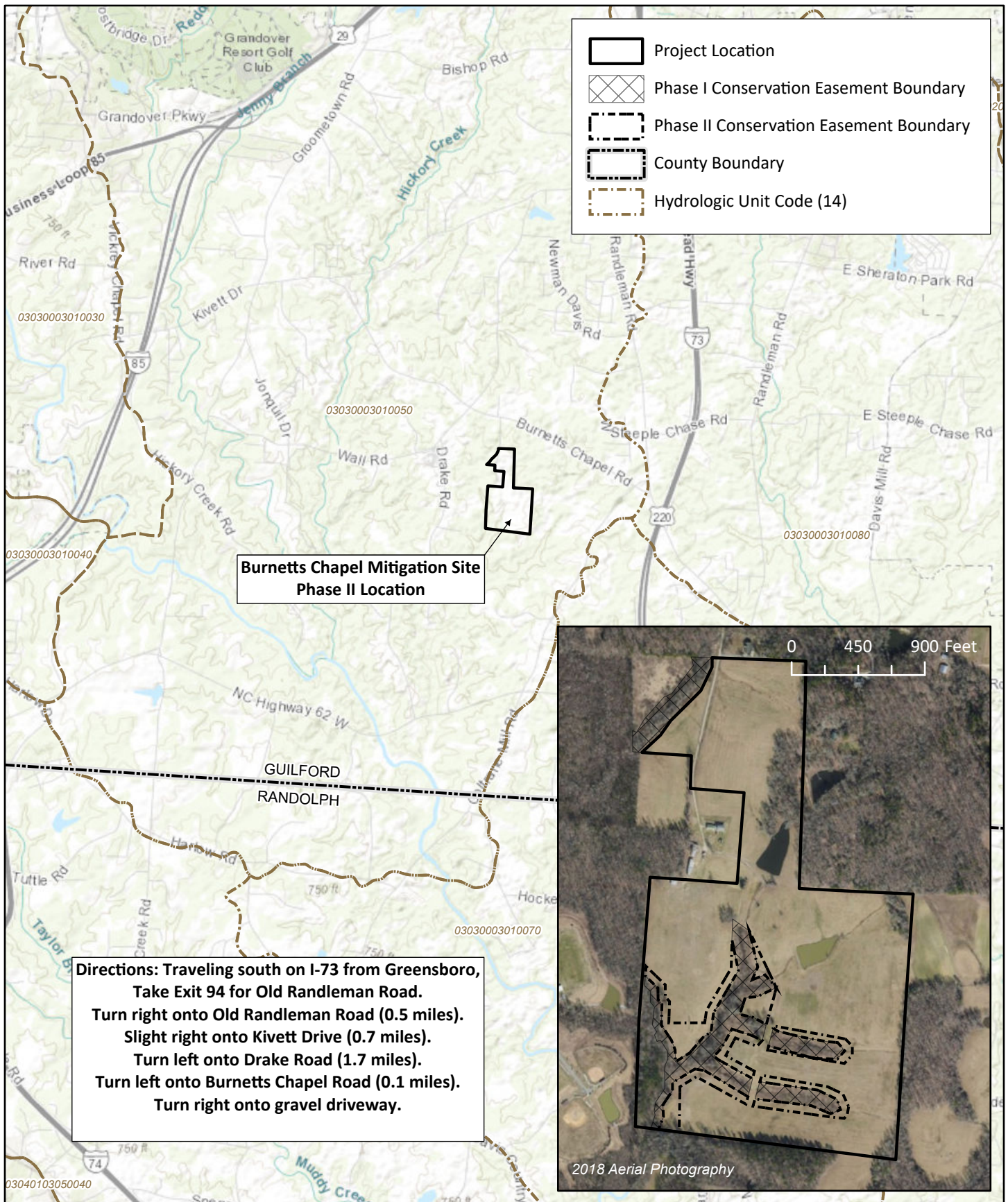


Figure 1 Project Vicinity Map  
 Burnetts Chapel Mitigation Site - Phase II  
 2023 Monitoring Report (MY5)  
 Cape Fear River Basin (03030003)  
 Guilford County, NC

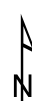
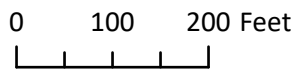
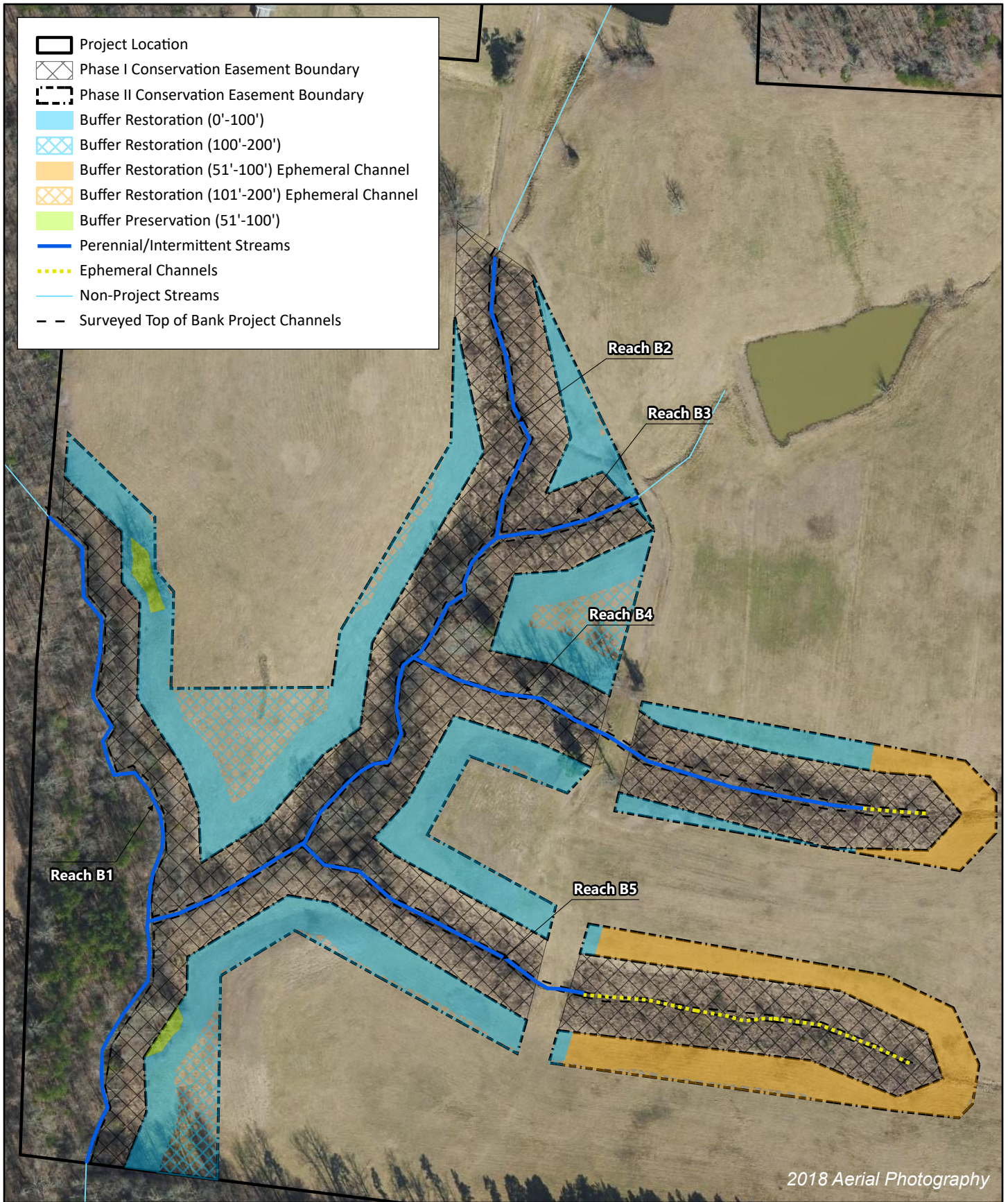


Figure 2 Project Component/Asset Map  
 Burnetts Chapel Mitigation Site - Phase II  
 2023 Monitoring Report (MY5)  
 Cape Fear River Basin (03030003)

Guilford County, NC



**Table 1. Buffer Project Areas and Assets**

Burnetts Chapel Mitigation Site - Phase II

DMS Project No. 100045

Monitoring Year 5 - 2023

**RIPARIAN BUFFER (15A NCAC 02B.0295)**

Location	Jurisdictional Streams	Method	Feature Name	Min-Max Buffer Width (ft)	Total Area (sf)	Creditable Area (sf)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Riparian Buffer Credits	Convertible to Nutrient Offset (Yes or No)
Rural or Urban	Subject or Nonsubject	Restoration	~	20-29	--	--	1	75%	1.33333	--	--
Rural or Urban	Subject or Nonsubject	Restoration	Ephemeral	0-100	70,473	70,473	1	100%	1.00000	70,473.000	No
Rural or Urban	Subject or Nonsubject	Restoration	Streams	0-100	188,792	188,792	1	100%	1.00000	188,792.000	No
Rural or Urban	Subject or Nonsubject	Restoration	Ephemeral	101-200	2,837	2,837	1	33%	3.03030	936.211	No
Rural or Urban	Subject or Nonsubject	Restoration	Streams	101-200	60,573	60,573	1	33%	3.03030	19,989.110	No
Rural or Urban	Subject or Nonsubject	Enhancement	~	20-29	--	--	2	75%	2.66667	--	--
Rural or Urban	Subject or Nonsubject	Enhancement	~	0-100	--	--	2	100%	2.00000	--	--
Rural or Urban	Subject or Nonsubject	Enhancement	~	101-200	--	--	2	33%	6.06061	--	--
<b>SUBTOTALS</b>						<b>322,675</b>				<b>280,190.321</b>	

<b>ELIGIBLE PRESERVATION AREA</b>						<b>107,558</b>					
Location	Jurisdictional Streams	Method	Feature Name	Min-Max Buffer Width (ft)	Total Area (sf)	Creditable Area (sf)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Riparian Buffer Credits	
Rural	Subject	Preservation	~	20-29	--	--	10	75%	13.33333	--	
Rural	Subject	Preservation	Streams	0-100	3,870	3,870	10	100%	10.00000	387.000	
Rural	Subject	Preservation	~	101-200	--	--	10	33%	30.30303	--	
Rural	Nonsubject	Preservation	~	20-29	--	--	5	75%	6.66667	--	
Rural	Nonsubject	Preservation	~	0-100	--	--	5	100%	5.00000	--	
Rural	Nonsubject	Preservation	~	101-200	--	--	5	33%	15.15152	--	
Urban	Subject or Nonsubject	Preservation	~	20-29	--	--	3	75%	4.00000	--	
Urban	Subject or Nonsubject	Preservation	~	0-100	--	--	3	100%	3.00000	--	
Urban	Subject or Nonsubject	Preservation	~	101-200	--	--	3	33%	9.09091	--	
<b>SUBTOTALS</b>						<b>3,870</b>				<b>387.000</b>	
<b>TOTALS</b>						<b>326,545</b>				<b>280,577.321</b>	

**Table 2. Project Activity and Reporting History**

Burnetts Chapel Mitigation Site - Phase II

DMS Project No. 100045

**Monitoring Year 5 - 2023**

Activity or Report	Data Collection Complete	Completion or Scheduled Delivery
Mitigation Plan	-	September 2019
Bare roots plantings	-	March 2019
Baseline Monitoring (Year 0)	April 2019	May 2019
Year 1 Monitoring	October 2019	November 2019
Invasive Species Treatment	July 2020	
Year 2 Monitoring	September 2020	November 2020
Invasive Species Treatment	April 2021	
Year 3 Monitoring	September 2021	November 2021
Boundary Monitoring	March 2022	
Invasive Species Treatment	September 2022	
Year 4 Monitoring	September 2022	November 2022
Boundary Monitoring	September 2023	
Invasive Species Treatment	May-September 2023	
Year 5 Monitoring	September 2023	November 2023

**Table 3. Project Contact Table**

Burnetts Chapel Mitigation Site - Phase II

DMS Project No. 100045

**Monitoring Year 5 - 2023**

<b>Designers</b>	<b>Wildlands Engineering, Inc.</b> 1430 South Mint Street, Suite 104 Charlotte, NC 28203 704.332.7754
<b>Project Manager (POC)</b>	Andrea Eckardt, 704.332.7754, Ext. 101
<b>Planting Contractor</b>	<b>Bruton Natural Systems, Inc.</b> 150 Old Black Creek Rd Freemont, NC 27830
<b>Nursery Stock Suppliers</b>	<b>Dykes &amp; Son Nursery</b> 825 Maude Etter Rd. McMinnville, TN 37110
<b>Monitoring Performers</b>	<b>Wildlands Engineering, Inc.</b>
<b>Monitoring (POC)</b>	Kristi Suggs, 704.332.7754, Ext. 110

**Table 4. Project Information and Attributes**

Burnetts Chapel Mitigation Site - Phase II

DMS Project No. 100045

**Monitoring Year 5 - 2023**

Project Information	
<b>Project Name</b>	Burnetts Chapel Mitigation Site – Phase II
<b>Hydrologic Unit Code</b>	03030003010050
<b>River Basin</b>	Cape Fear
<b>Geographic Location (Lat, Long)</b>	35° 56' 46.0"N, 79° 50' 44.2"W
<b>Site Protection Instrument (DB, PG)</b>	8127 / 2755
<b>Total Credits (BMU)</b>	280,577.321
<b>Types of Credits</b>	Riparian Buffer

**Table 5. Planted Tree Species**

Burnetts Chapel Mitigation Site - Phase II

DMS Project No. 100045

**Monitoring Year 5 - 2023**

Common Name	Scientific Name
River Birch	<i>Betula nigra</i>
Green Ash	<i>Fraxinus pennsylvanica</i>
Tulip Poplar	<i>Liriodendron tulipifera</i>
American Sycamore	<i>Platanus occidentalis</i>
White Oak	<i>Quercus alba</i>
Swamp Chestnut Oak	<i>Quercus michauxii</i>
Willow Oak	<i>Quercus phellos</i>



ROY COOPER  
*Governor*  
 MICHAEL S. REGAN  
*Secretary*  
 LINDA CULPEPPER  
*Interim Director*

March 27, 2018

DWR ID# 2011-0841v2  
 Guilford County

Wildlands Engineering, Inc.  
 Attn: Andrea Eckardt  
 1430 South Mint Street Suite 104  
 Charlotte, NC  
 (via electronic mail: [aekardt@wildlandseng.com](mailto:aekardt@wildlandseng.com) )

Re: Site Viability for Buffer Mitigation & Nutrient Offset – Burnetts Chapel Phase II Site  
 1323 Burnetts Chapel Road, Greensboro, NC  
 Randleman Lake Watershed

Dear Ms. Eckardt

On March 26, 2018, Katie Merritt, with the Division of Water Resources (DWR), assisted you and staff with Division of Mitigation Services (DMS) at the proposed Burnetts Chapel Mitigation Site (Site) in Greensboro, NC. The Site is located in the Randleman Lake WS of the Cape Fear River Basin within the 8-digit Hydrologic Unit Code 03030003. The Site is being proposed as part of a full-delivery buffer mitigation project for the DMS (RFP # 16-007242). At your request, on March 26, 2018, Ms. Merritt performed an onsite assessment of riparian land uses adjacent to streams onsite, which are shown on the attached map labeled “Site Map”. This site is adjacent to an existing DMS full-delivery buffer mitigation site known as “Burnetts Chapel Mitigation Site” (DWR# 2011-0841) where fifty-foot riparian buffers were restored.

Ms. Merritt’s evaluation of the features onsite and their associated mitigation determination for the riparian areas are provided in the table below. This evaluation was made from 51’ out to 200’ from the top of bank from each feature for buffer mitigation pursuant to 15A NCAC 02B .0295 (effective November 1, 2015).

<u>Feature</u>	<u>Classification</u>	<u><sup>1</sup>Subject to Buffer Rule</u>	<u>Riparian Land uses adjacent to Feature (51-200')</u>	<u>Buffer Credit Viable</u>	<u><sup>2</sup>Nutrient Offset Viable at 2,273 lbs/acre</u>	<u>Mitigation Type Determination w/in riparian areas</u>
B1	Stream	Yes	Hay crop fields	Yes	N/A	<b>Fields</b> - Restoration Site per 15A NCAC 02B .0295 (n)
B2	Stream	Yes	Hay crop fields	Yes	N/A	<b>Fields</b> - Restoration Site per 15A NCAC 02B .0295 (n)
B3	Stream	Yes	Hay crop fields	Yes	N/A	<b>Fields</b> - Restoration Site per 15A NCAC 02B .0295 (n)
B4 Above DWR 2011 flag (green)	Wetland / Swale	No	N/A	No	N/A	N/A

Burnetts Chapel Phase II Site  
Wildlands  
March 27, 2018

<u>Feature</u>	<u>Classification</u>	<u><sup>1</sup>Subject to Buffer Rule</u>	<u>Riparian Land uses adjacent to Feature (51-200')</u>	<u>Buffer Credit Viable</u>	<u><sup>2</sup>Nutrient Offset Viable at 2,273 lbs/acre</u>	<u>Mitigation Type Determination w/in riparian areas</u>
B4 At DWR 2011 flag	Ephemeral	No	Hay crop fields	Yes <sup>4</sup>	N/A	<b>Fields</b> - Restoration Site per 15A NCAC 02B .0295 (o)(7)  <i>Must meet additional requirements under .0295 (o)(7) to be viable for buffer mitigation</i>
B4 At DWR 2010 flag	Stream	Yes	Hay crop fields	Yes	N/A	<b>Fields</b> - Restoration Site per 15A NCAC 02B .0295 (n)
B5 Above DWR 2011 flag (green)	Wetland / Swale	No	N/A	No	N/A	N/A
B5 At DWR 2011 flag	Ephemeral	No	Hay crop fields	Yes <sup>4</sup>	N/A	<b>Fields</b> - Restoration Site per 15A NCAC 02B .0295 (o)(7)  <i>Must meet additional requirements under .0295 (o)(7) to be viable for buffer mitigation</i>
B5 At DWR 2010 flag	Stream	Yes	Hay crop fields	Yes	N/A	<b>Fields</b> - Restoration Site per 15A NCAC 02B .0295 (n)

<sup>1</sup>Subjectivity calls for the features were determined by DWR in correspondence dated March 27, 2018 using the 1:24,000 scale quadrangle topographic map prepared by USGS and the most recent printed version of the soil survey map prepared by the NRCS

<sup>2</sup> NC Division of Water Resources - Methodology and Calculations for determining Nutrient Reductions associated with Riparian Buffer Establishment

<sup>3</sup>The area of preservation credit within a buffer mitigation site shall comprise of no more than 25 percent (25%) of the total area of buffer mitigation per 15A NCAC 0295 (o)(5) and 15A NCAC 0295 (o)(4). Site cannot be a Preservation only site to comply with this rule.

<sup>4</sup>The area of the mitigation site on ephemeral channel shall comprise no more than 25 percent (25%) of the total area of buffer mitigation per 15A NCAC 02B .0295 (o)(7).

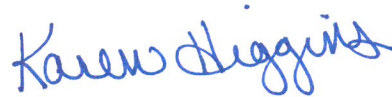
The attached map (Site Map) showing the project site and features was provided by Wildlands Engineering and was initialed by Ms. Merritt on March 27, 2018. This letter should be provided in any future stream, wetland, buffer and/or nutrient offset mitigation plans for this Site.

This letter does not constitute an approval of this site to generate mitigation credits. Pursuant to 15A NCAC 02B .0295, a mitigation proposal and a mitigation plan shall be submitted to DWR for written approval **prior** to conducting any mitigation activities in riparian areas and/or surface waters for buffer mitigation credit. Pursuant to 15A NCAC 02B .0240, a proposal regarding a proposed nutrient load-reducing measure for nutrient offset credit shall be submitted to DWR for approval prior to any mitigation activities in riparian areas and/or surface waters.

All vegetative plantings, performance criteria and other mitigation requirements for riparian restoration, enhancement and preservation must follow the requirements in 15A NCAC 02B .0295 to be eligible for buffer and/or nutrient offset mitigation credits. For any areas depicted as not being viable for nutrient offset credit above, one could propose a different measure, along with supporting calculations and sufficient detail to support estimates of load reduction, for review by the DWR to determine viability for nutrient offset in accordance with 15A NCAC 02B .0240. For any areas generating wetland mitigation credit, no buffer or nutrient offset credit can be generated.

This viability assessment will expire on March 27, 2020 or upon the submittal of an As-Built Report to the DWR, whichever comes first. Please contact Katie Merritt at (919)-807-6371 if you have any questions regarding this correspondence.

Sincerely,

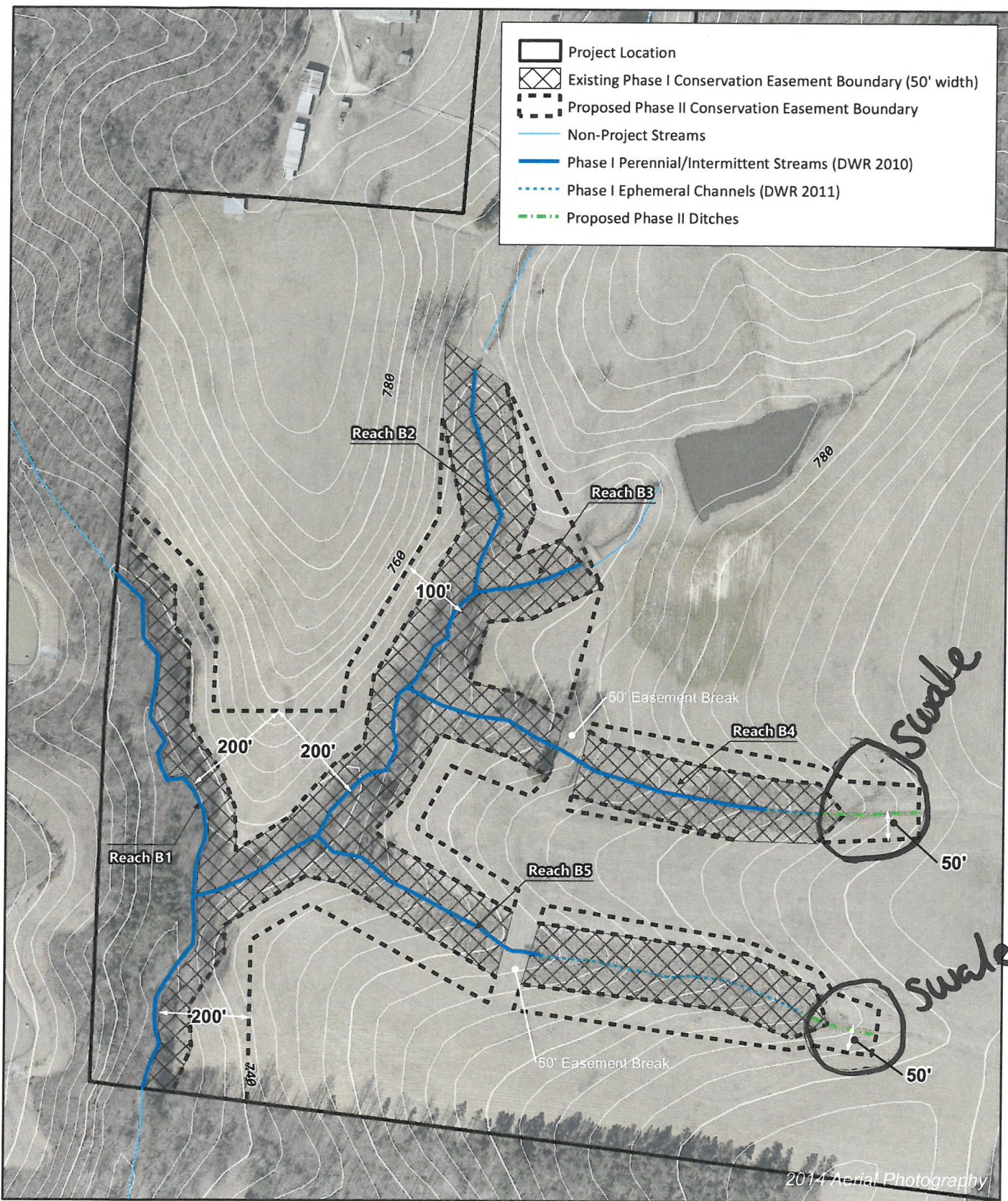


Karen Higgins, Supervisor  
401 and Buffer Permitting Branch

KAH/km

Attachments: Site Map

cc: File Copy (Katie Merritt)  
DMS - Jeff Schaffer (via electronic mail)



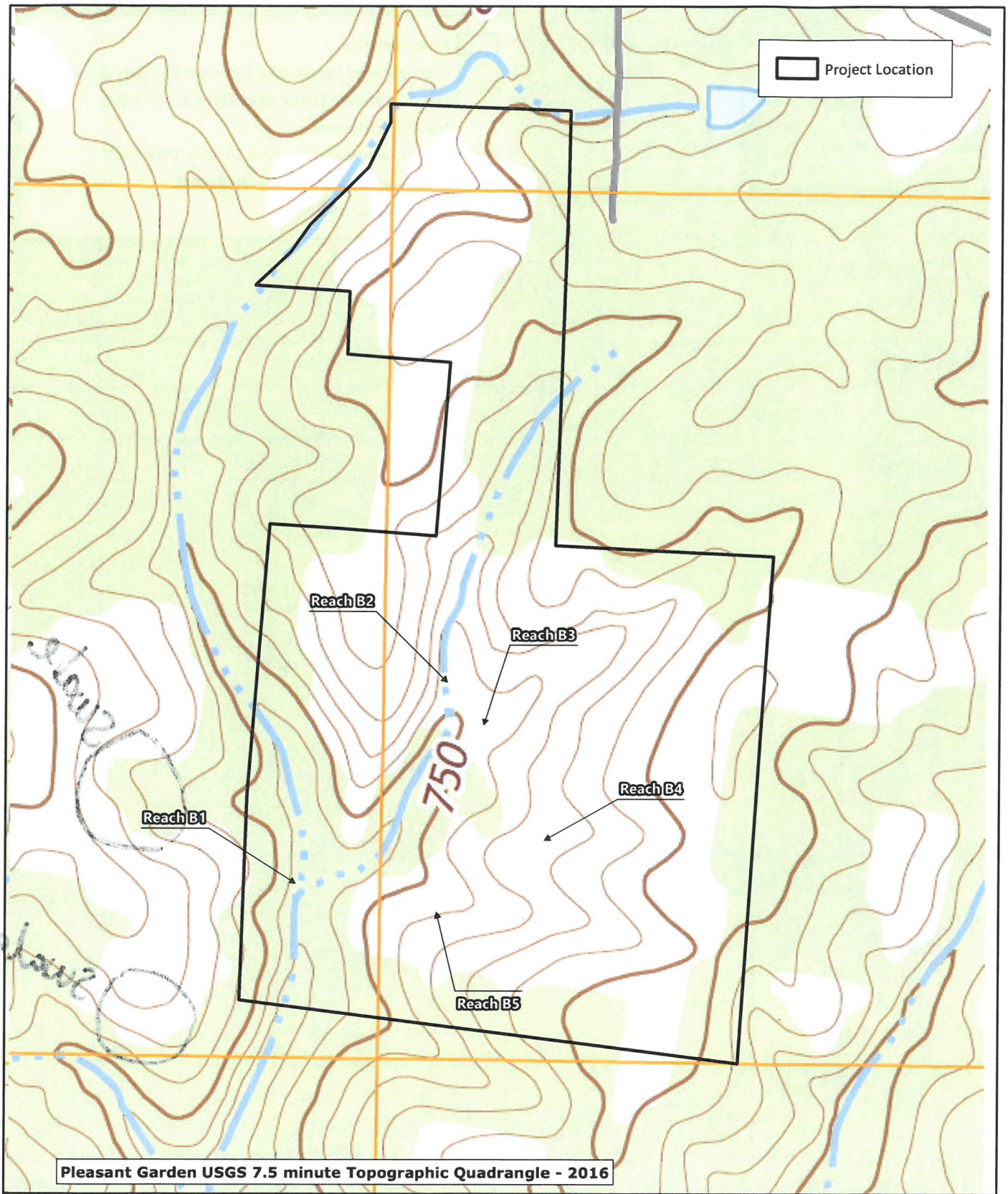
**WILDLANDS**  
ENGINEERING



Site Map  
Burnetts Chapel Mitigation Site - Phase II  
Cape Fear River Basin (03030003)

Guilford County, NC

*Handwritten:* KRM 3/27/18







ROY COOPER  
*Governor*  
MICHAEL S. REGAN  
*Secretary*  
LINDA CULPEPPER  
*Interim Director*

March 27, 2018

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

**Subject:** On-Site Determination for Applicability to the Randleman Lake Buffer Rules (15A NCAC 2B .0250)

**Subject Property:** Burnett's Chapel Mitigation Site, 1323 Burnetts Chapel Rd, Greensboro NC  
Guilford County  
DWR# 2011-0841

Dear Ms. Eckardt:

On March 26, 2018, at your request, Sue Homewood conducted an on-site determination to review features located on the subject project for stream determinations with regards to the above noted state regulations. Katie Merritt with the Division of Water Resources (Division) was also present during the site visit.

During the site visit the upper portions of Reach B4 and Reach B5, as shown in green on the attached map, were reviewed. Both areas were representative of vegetated swales and had characteristics of wetlands and were therefore were determined not to be subject to the Randleman Buffer Rules as stated above.

The owner (or future owners) should notify the Division (and other relevant agencies) of this decision in any future correspondences concerning this property. This on-site determination shall expire five (5) years from the date of this letter.

Landowners or affected parties that dispute a determination made by the Division or Delegated Local Authority that a surface water exists and that it is subject to the buffer rule may request a determination by the Director. A request for a determination by the Director shall be referred to the Director in writing c/o 401 & Buffer Permitting Branch, 1650 Mail Service Center, Raleigh, NC 27699-1650. Individuals that dispute a determination by the Division or Delegated Local Authority that "exempts" surface water from the buffer rule may ask for an adjudicatory hearing. You must act within 60 days of the date that you receive this letter. Applicants are hereby notified that the 60-day statutory appeal time does not start until the affected party (including downstream and adjacent landowners) is notified of this decision. The Division recommends that the applicant conduct this notification in order to be certain that third party appeals are made in a timely manner. To ask for a hearing, send a written petition, which conforms to Chapter 150B of the North Carolina General Statutes to the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, N.C. 27699-6714. This determination is final and binding unless you ask for a hearing within 60 days.

This letter only addresses the applicability to the buffer rules and does not approve any activity within Waters of the United States or Waters of the State or their associated buffers. If you have any additional questions or require additional information, please contact me at 336-776-9693 or [sue.homewood@ncdenr.gov](mailto:sue.homewood@ncdenr.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Sue Homewood". The signature is fluid and cursive, with a large loop at the end.

Sue Homewood  
Winston-Salem Regional Office

Enclosures: USGS Topo Map  
Wildlands Features Map

Cc: Rick & Val Ingram, 1323 Burnetts Chapel Rd, Greensboro NC 27406  
Katie Merritt, DWR (via email)  
DWR, Winston-Salem Regional Office

## **APPENDIX 2. Visual Assessment Data**

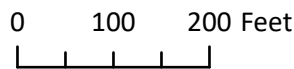
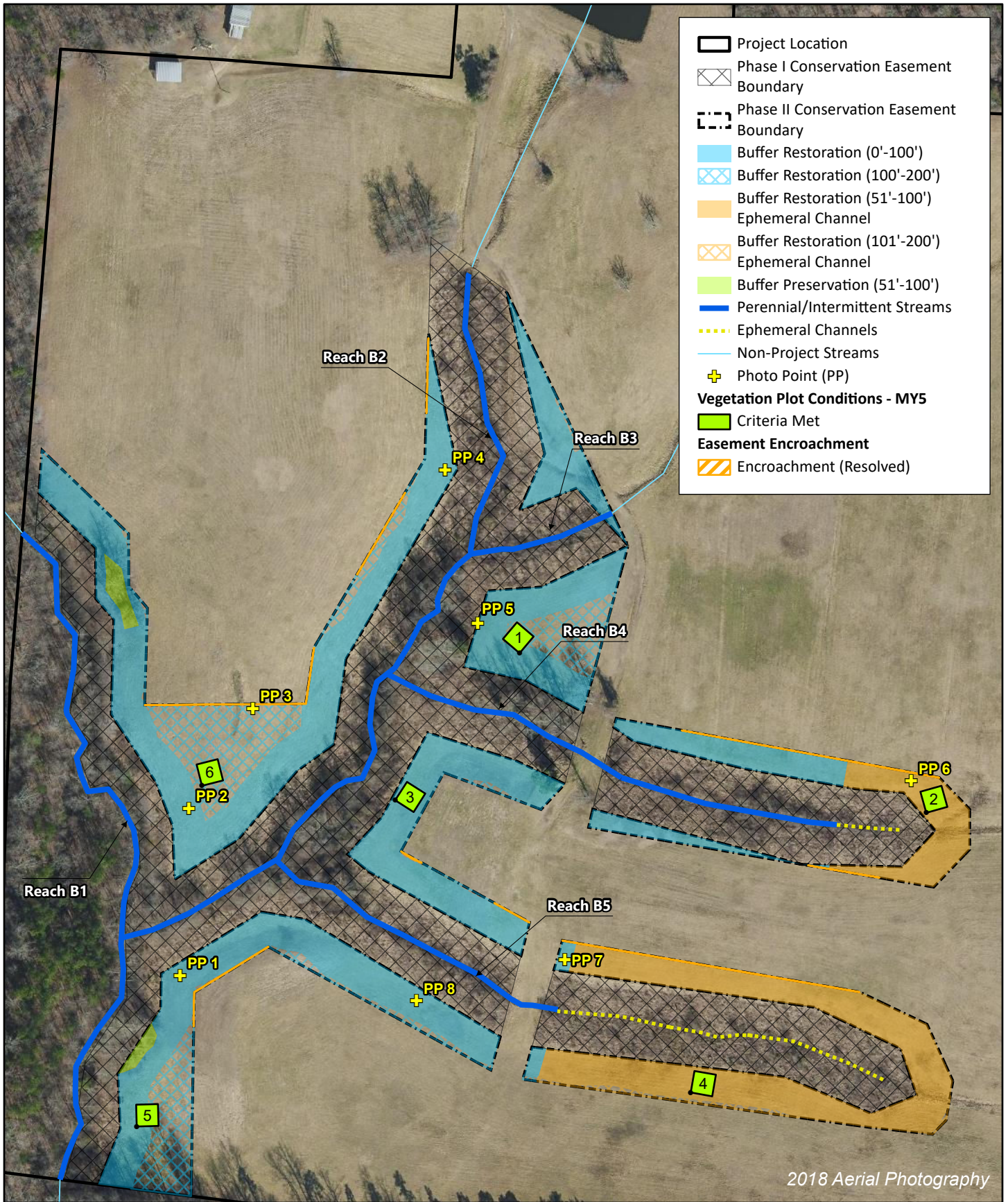


Figure 3 Current Conditions Plan View  
 Burnetts Chapel Mitigation Site - Phase II  
 2023 Monitoring Report (MY5)  
 Cape Fear River Basin (03030003)

Guilford County, NC

**Table 6. Vegetation Condition Assessment Table**

Burnetts Chapel Mitigation Site - Phase II

DMS Project No. 100045

Monitoring Year 5 - 2023

**Planted Acreage 7.4**

Vegetation Category	Definitions	Mapping Threshold (acres)	Number of Polygons	Combined Acreage	% of Planted Acreage
Bare Areas	Very limited cover of both woody and herbaceous material	0.1	0	0.0	0%
Low Stem Density Areas	Woody stem densities clearly below target levels based on MY5 stem count criteria.	0.1	0	0.0	0%
<b>Total</b>			<b>0</b>	<b>0.0</b>	<b>0%</b>
Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size class that are obviously small given the monitoring year.	0.0	0	0.0	0%
<b>Cumulative Total</b>			<b>0</b>	<b>0.0</b>	<b>0%</b>

**Easement Acreage 7.5**

Vegetation Category	Definitions	Mapping Threshold (SF)	Number of Polygons	Combined Acreage	% of Planted Acreage
Invasive Areas of Concern	Areas or points (if too small to render as polygons at map scale).	1,000	0	0.0	0%
Easement Encroachment Areas	Areas or points (if too small to render as polygons at map scale).	none	0	0.0	0%

**Burnetts Chapel Mitigation Site – Phase II**

Monitoring Year 5

Buffer and Site Condition Photographs



**Photo Point 1** – Looking upstream B2 and B5 (09/30/2019)



**Photo Point 1** – Looking upstream B2 and B5 (09/27/2023)



**Photo Point 1** – Looking downstream B1 (03/25/2019)



**Photo Point 1** – Looking downstream B1 (09/27/2023)



**Photo Point 2** – Looking upstream B1 (03/25/2019)



**Photo Point 2** – Looking upstream B1 (09/27/2023)



**Photo Point 2** – Looking downstream to B1-B2 confluence (09/30/2019)



**Photo Point 2** – Looking downstream to B1-B2 confluence (09/27/2023)



**Photo Point 3** – Looking upstream B2 (09/30/2019)



**Photo Point 3** – Looking upstream B2 (09/27/2023)



**Photo Point 3** – Looking downstream B2 (03/25/2019)



**Photo Point 3** – Looking downstream B2 (09/27/2023)





**Photo Point 4** – Looking upstream B2 (09/30/2019)



**Photo Point 4** – Looking upstream B2 (09/27/2023)



**Photo Point 4** – Looking downstream B2 (03/25/2019)



**Photo Point 4** – Looking downstream B2 (09/27/2023)



**Photo Point 5** – Looking upstream B3 (03/25/2019)



**Photo Point 5** – Looking upstream B3 (09/27/2023)



**Photo Point 5** – Looking downstream to B2-B4 confluence (09/30/2019)



**Photo Point 5** – Looking downstream to B2-B4 confluence (09/27/2023)



**Photo Point 6** – Looking upstream across top of B4 (09/30/2019)



**Photo Point 6** – Looking upstream across top of B4 (09/27/2023)



**Photo Point 6** – Looking downstream B4 (03/25/2019)



**Photo Point 6** – Looking downstream B4 (09/27/2023)



**Photo Point 7** – Looking upstream B5 (03/25/2019)



**Photo Point 7** – Looking upstream B5 (09/27/2023)



**Photo Point 7** – Looking downstream B5 (09/30/2019)



**Photo Point 7** – Looking downstream B5 (09/27/2023)



**Photo Point 8** – Looking upstream B5 (09/30/2019)



**Photo Point 8** – Looking upstream B5 (09/27/2023)



**Photo Point 8** – Looking downstream B5 (03/25/2019)



**Photo Point 8** – Looking downstream B5 (09/27/2023)

*Note: MY0 photos only captured one view from each photo point location; an upstream and downstream photo at each location began in MY1. MY1 photos are used in the above comparison photos to fill in any gaps from the MY0 photos.*

**Burnetts Chapel Mitigation Site – Phase II**

Monitoring Year 5

Vegetation Plot Photographs



**Vegetation Plot 1 - MY0 (03/18/2019)**



**Vegetation Plot 1 - MY5 (09/27/2023)**



**Vegetation Plot 2 - MY0 (03/18/2019)**



**Vegetation Plot 2 - MY5 (09/27/2023)**



**Vegetation Plot 3 - MY0 (03/18/2019)**



**Vegetation Plot 3 - MY5 (09/27/2023)**



**Vegetation Plot 4 - MY0 (03/18/2019)**



**Vegetation Plot 4 - MY5 (09/27/2023)**



**Vegetation Plot 5 - MY0 (03/18/2019)**



**Vegetation Plot 5 - MY5 (09/27/2023)**



**Vegetation Plot 6 - MY0 (03/18/2019)**



**Vegetation Plot 6 - MY5 (09/27/2023)**

## **Burnetts Chapel Mitigation Site – Phase II**

Monitoring Year 5

Areas of Concern Photographs





**Photo 1** – Shallow mowing encroachment (“scalloping”) near PP3 (09/05/2023)



**Point 2** – Shallow mowing encroachment (“scalloping”) along the right boundary of B4 (09/05/2023)



**Photo 3** – Shallow mowing encroachment (“scalloping”) along upper reach of B4 (09/05/2023)



**Point 4** – Shallow mowing encroachment (“scalloping”) along B5 near VP3 (09/05/2023)



**Photo 5** – Shallow mowing encroachment (“scalloping”) along the upper reach of B5 (09/05/2023)



**Point 6** – Shallow mowing encroachment (“scalloping”) near PP1 (09/05/2023)

**Burnetts Chapel Mitigation Site – Phase II**

Monitoring Year 5

Improved Areas of Concern Photographs



**Photo 1** – Looking at low density area on the right floodplain of B4  
(09/03/2020)



**Point 1** – Looking at low density area on the right floodplain of B4  
(09/27/2023)

## **APPENDIX 3. Vegetation Plot Data**

**Table 7. Vegetation Plot Criteria Attainment**

Burnetts Chapel Mitigation Site - Phase II

DMS Project No. 100045

**Monitoring Year 5 - 2023**

Plot	Success Criteria Met (Y/N)	Tract Mean
1	Y	100%
2	Y	
3	Y	
4	Y	
5	Y	
6	Y	

**Table 8. Planted and Total Stem Count**

Burnetts Chapel Mitigation Site - Phase II  
 DMS Project No. 100045  
 Monitoring Year 5 - 2023

			Current Plot Data (MY5 2023)																		
Scientific Name	Common Name	Species Type	Vegetation Plot 1 <sup>1</sup>			Vegetation Plot 2			Vegetation Plot 3			Vegetation Plot 4			Vegetation Plot 5			Vegetation Plot 6			
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	
<i>Acer rubrum</i>	Red Maple	Tree																			
<i>Betula nigra</i>	River Birch, Red Birch	Tree	5	5	5	6	6	6	3	3	3	4	4	4	1	1	1				
<i>Diospyros virginiana</i>	American Persimmon, Possumwood	Tree									2										
<i>Fraxinus pennsylvanica</i>	Green Ash, Red Ash	Tree	1	1	1	1	1	1	3	3	3	4	4	4	1	1	1				
<i>Juglans nigra</i>	Black Walnut	Tree																			
<i>Juniperus virginiana</i>	Red Cedar	Tree												1							
<i>Liquidambar styraciflua</i>	Sweet Gum, Red Gum	Tree			35						5			10			3			2	
<i>Liriodendron tulipifera</i>	Tulip Poplar	Tree	1	1	16									1					3	3	3
<i>Platanus occidentalis</i>	Sycamore, Plane-tree	Tree	2	2	2	3	3	3	1	1	1	2	2	2	1	1	1	3	3	3	
<i>Quercus alba</i>	White Oak	Tree							1	1	1										
<i>Quercus michauxii</i>	Basket Oak, Swamp Chestnut Oak	Tree	4	4	4	4	4	4	1	1	1	2	2	2	5	5	5				
<i>Quercus phellos</i>	Willow Oak	Tree	2	2	2				2	2	2	2	2	2				3	3	3	
<i>Quercus rubra</i>	Northern Red Oak	Tree																			
<i>Ulmus americana</i>	American Elm	Tree																			
<b>Stem count</b>			15	15	65	14	14	14	11	11	18	14	14	26	8	8	11	9	9	11	
<b>size (ares)</b>			1			1			1			1			1			1			
<b>size (ACRES)</b>			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247			
<b>Species count</b>			6	6	7	4	4	4	6	6	8	5	5	8	4	4	5	3	3	4	
<b>Stems per ACRE</b>			607	607	2,630	567	567	567	445	445	728	567	567	1,052	324	324	445	364	364	445	

			Annual Means																	
Scientific Name	Common Name	Species Type	MY5 (2023)			MY4 (2022)			MY3 (2021)			MY2 (2020) <sup>2</sup>			MY1 (2019)			MY0 (2019)		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
<i>Acer rubrum</i>	Red Maple	Tree						2												
<i>Betula nigra</i>	River Birch, Red Birch	Tree	19	19	19	20	20	20	20	20	20	19	19	19	20	20	20	20	20	20
<i>Diospyros virginiana</i>	American Persimmon, Possumwood	Tree			2			1			1			1			1			
<i>Fraxinus pennsylvanica</i>	Green Ash, Red Ash	Tree	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	11	11	11
<i>Juglans nigra</i>	Black Walnut	Tree						1			1			1						
<i>Juniperus virginiana</i>	Red Cedar	Tree			1			2												
<i>Liquidambar styraciflua</i>	Sweet Gum, Red Gum	Tree			55			43			20			22						
<i>Liriodendron tulipifera</i>	Tulip Poplar	Tree	4	4	20	4	4	21	4	4	15	4	4	16	8	8	8	9	9	9
<i>Platanus occidentalis</i>	Sycamore, Plane-tree	Tree	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	13	13	13
<i>Quercus alba</i>	White Oak	Tree	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
<i>Quercus michauxii</i>	Basket Oak, Swamp Chestnut Oak	Tree	16	16	16	16	16	16	16	16	16	16	16	16	18	18	18	20	20	20
<i>Quercus phellos</i>	Willow Oak	Tree	9	9	9	9	9	9	10	10	10	10	10	10	13	13	13	17	17	17
<i>Quercus rubra</i>	Northern Red Oak	Tree						1												
<i>Ulmus americana</i>	American Elm	Tree						1												
<b>Stem count</b>			71	71	145	72	72	140	73	73	106	72	72	108	83	83	84	90	90	90
<b>size (ares)</b>			6			6			6			6			6			6		
<b>size (ACRES)</b>			0.1483			0.1483			0.1483			0.1483			0.1483			0.1483		
<b>Species count</b>			7	7	10	7	7	14	7	7	10	7	7	10	7	7	8	6	6	6
<b>Stems per ACRE</b>			479	479	978	486	486	944	492	492	715	486	486	728	560	560	567	607	607	607

1 - *L. styraciflua* composed 54% of the plot's total stems.

2 - MY2 stem counts corrected based on data sheets; 19 river birch and 12 sycamore counted during MY2; overall total unchanged.

Exceeds requirements by 10%  
 Exceeds requirements, but by less than 10%  
 Fails to meet requirements, by less than 10%  
 Fails to meet requirements by more than 10%  
 Volunteers included

PnoLS: Number of planted stems excluding live stakes  
 P-All: Number of planted stems including live stakes  
 T: Total stems

**Table 9. Vegetation Performance Standard Summary Table**

Burnetts Chapel Mitigation Site - Phase II

DMS Project No. 100045

**Monitoring Year 5 - 2023**

	Vegetation Plot 1					Vegetation Plot 2			
	Total Stems	Stems/Ac.	Av. Ht. (ft)	# Species		Total Stems	Stems/Ac.	Av. Ht. (ft)	# Species
Monitoring Year 5	65	2,630	7.0	7	Monitoring Year 5	14	567	4.3	4
Monitoring Year 4	65	2,630	5.4	7	Monitoring Year 4	15	607	3.3	4
Monitoring Year 3	37	1,497	3.3	7	Monitoring Year 3	14	567	2.9	4
Monitoring Year 2	44	1,781	2.8	7	Monitoring Year 2	14	567	2.2	4
Monitoring Year 1	15	607	2.5	6	Monitoring Year 1	14	567	2.6	4
Monitoring Year 0	15	607	2.8	6	Monitoring Year 0	15	607	3.0	4
	Vegetation Plot 3					Vegetation Plot 4			
	Total Stems	Stems/Ac.	Av. Ht. (ft)	# Species		Total Stems	Stems/Ac.	Av. Ht. (ft)	# Species
Monitoring Year 5	18	728	6.0	8	Monitoring Year 5	26	1,052	4.9	8
Monitoring Year 4	19	769	4.3	11	Monitoring Year 4	23	931	4.2	9
Monitoring Year 3	17	688	3.2	9	Monitoring Year 3	19	769	3.3	7
Monitoring Year 2	16	647	2.6	9	Monitoring Year 2	17	688	2.3	6
Monitoring Year 1	15	607	2.2	7	Monitoring Year 1	14	567	2.2	5
Monitoring Year 0	15	607	2.4	5	Monitoring Year 0	15	607	2.7	5
	Vegetation Plot 5					Vegetation Plot 6			
	Total Stems	Stems/Ac.	Av. Ht. (ft)	# Species		Total Stems	Stems/Ac.	Av. Ht. (ft)	# Species
Monitoring Year 5	11	445	7.6	5	Monitoring Year 5	11	445	6.0	4
Monitoring Year 4	8	324	6.1	4	Monitoring Year 4	10	405	4.7	4
Monitoring Year 3	8	324	4.1	4	Monitoring Year 3	11	445	4.2	4
Monitoring Year 2	7	283	3.2	3	Monitoring Year 2	9	364	2.7	3
Monitoring Year 1	14	567	2.4	6	Monitoring Year 1	12	486	1.9	3
Monitoring Year 0	15	607	2.5	6	Monitoring Year 0	15	607	2.5	4

- Exceeds requirements by 10%
- Exceeds requirements, but by less than 10%
- Fails to meet requirements, by less than 10%
- Fails to meet requirements by more than 10%

**Table 10. Vegetation Height Data**

Burnetts Chapel Mitigation Site - Phase II

DMS Project No. 100045

**Monitoring Year 5 - 2023**

Plot	Scientific Name	Common Name	X (m)	Y (m)	Height (ft)	Vigor
VP1	<i>Quercus michauxii</i>	Swamp Chestnut Oak	0.4	0.4	300	4
VP1	<i>Platanus occidentalis</i>	Sycamore	5	0.4	500	4
VP1	<i>Betula nigra</i>	River Birch	9.6	0.4	70	4
VP1	<i>Quercus michauxii</i>	Swamp Chestnut Oak	9.6	2.4	225	4
VP1	<i>Quercus phellos</i>	Willow Oak	5.2	2.5	110	4
VP1	<i>Betula nigra</i>	River Birch	0.3	2.4	85	3
VP1	<i>Platanus occidentalis</i>	Sycamore	0.4	4.6	500	4
VP1	<i>Fraxinus pennsylvanica</i>	Green Ash	5	4.9	300	4
VP1	<i>Quercus phellos</i>	Willow Oak	9.8	5	135	4
VP1	<i>Quercus michauxii</i>	Swamp Chestnut Oak	9.9	7.5	250	4
VP1	<i>Betula nigra</i>	River Birch	5	7.3	64	4
VP1	<i>Quercus michauxii</i>	Swamp Chestnut Oak	0.3	6.7	137	4
VP1	<i>Liriodendron tulipifera</i>	Tulip Poplar	0.5	9.6	400	4
VP1	<i>Betula nigra</i>	River Birch	5	9.8	34	3
VP1	<i>Betula nigra</i>	River Birch	9.6	9.7	90	4
VP2	<i>Betula nigra</i>	River Birch	0.5	0.5	67	4
VP2	<i>Betula nigra</i>	River Birch	4.8	0.6	65	4
VP2	<i>Fraxinus pennsylvanica</i>	Green Ash	9.5	0.5	220	4
VP2	<i>Quercus michauxii</i>	Swamp Chestnut Oak	9.5	2.4	100	4
VP2	<i>Betula nigra</i>	River Birch	4.8	2.2	59	4
VP2	<i>Betula nigra</i>	River Birch	0.5	1.9	62	4
VP2	<i>Platanus occidentalis</i>	Sycamore	0.5	4.5	200	4
VP2	<i>Betula nigra</i>	River Birch	9.7	5.3	65	4
VP2	<i>Platanus occidentalis</i>	Sycamore	9.7	7.5	275	4
VP2	<i>Betula nigra</i>	River Birch	4.8	6.7	67	4
VP2	<i>Quercus michauxii</i>	Swamp Chestnut Oak	0.5	6.3	100	4
VP2	<i>Quercus michauxii</i>	Swamp Chestnut Oak	0.4	9.5	150	4
VP2	<i>Platanus occidentalis</i>	Sycamore	4.8	9.4	300	4
VP2	<i>Quercus michauxii</i>	Swamp Chestnut Oak	9.6	9.5	95	4



**Table 10. Vegetation Height Data**

Burnetts Chapel Mitigation Site - Phase II

DMS Project No. 100045

**Monitoring Year 5 - 2023**

Plot	Scientific Name	Common Name	X (m)	Y (m)	Height (ft)	Vigor
VP3	<i>Quercus phellos</i>	Willow Oak	0.5	0.5	220	4
VP3	<i>Platanus occidentalis</i>	Sycamore	2.4	0.5	450	4
VP3	<i>Quercus alba</i>	White Oak	4.9	0.5	110	4
VP3	<i>Betula nigra</i>	River Birch	7.1	0.4	Dead	0
VP3	<i>Betula nigra</i>	River Birch	9.4	0.5	37	4
VP3	<i>Quercus michauxii</i>	Swamp Chestnut Oak	9.6	4.9	240	4
VP3	<i>Quercus phellos</i>	Willow Oak	7.1	4.7	163	4
VP3	<i>Quercus phellos</i>	Willow Oak	5.1	4.6	Dead	0
VP3	<i>Betula nigra</i>	River Birch	2.6	4.6	95	4
VP3	<i>Fraxinus pennsylvanica</i>	Green Ash	0.5	4.5	75	4
VP3	<i>Fraxinus pennsylvanica</i>	Green Ash	0.4	9.6	250	4
VP3	<i>Fraxinus pennsylvanica</i>	Green Ash	2.3	9.5	300	4
VP3	<i>Betula nigra</i>	River Birch	7.2	9.7	87	4
VP4	<i>Platanus occidentalis</i>	Sycamore	5.3	0.4	500	4
VP4	<i>Betula nigra</i>	River Birch	9.6	0.5	65	4
VP4	<i>Fraxinus pennsylvanica</i>	Green Ash	9.5	2.5	250	4
VP4	<i>Fraxinus pennsylvanica</i>	Green Ash	5.2	2.6	100	4
VP4	<i>Quercus michauxii</i>	Swamp Chestnut Oak	0.6	2.5	220	4
VP4	<i>Quercus phellos</i>	Willow Oak	0.5	5.1	95	4
VP4	<i>Betula nigra</i>	River Birch	5.2	5.1	55	4
VP4	<i>Fraxinus pennsylvanica</i>	Green Ash	9.4	5.1	85	4
VP4	<i>Fraxinus pennsylvanica</i>	Green Ash	9.3	7.5	40	4
VP4	<i>Quercus michauxii</i>	Swamp Chestnut Oak	5.1	7.5	130	4
VP4	<i>Betula nigra</i>	River Birch	0.4	7.5	60	4
VP4	<i>Platanus occidentalis</i>	Sycamore	0.5	9.5	300	4
VP4	<i>Betula nigra</i>	River Birch	5.1	9.5	65	4
VP4	<i>Quercus phellos</i>	Willow Oak	9.5	9.6	105	4
VP5	<i>Quercus michauxii</i>	Swamp Chestnut Oak	2.5	0.4	240	4
VP5	<i>Quercus michauxii</i>	Swamp Chestnut Oak	9.5	5.1	300	4
VP5	<i>Fraxinus pennsylvanica</i>	Green Ash	7.3	5.1	125	4
VP5	<i>Quercus michauxii</i>	Swamp Chestnut Oak	4.6	5.2	140	4
VP5	<i>Quercus michauxii</i>	Swamp Chestnut Oak	0.5	5.3	180	4
VP5	<i>Quercus michauxii</i>	Swamp Chestnut Oak	0.6	9.5	110	4
VP5	<i>Betula nigra</i>	River Birch	7.7	9.5	70	4
VP5	<i>Platanus occidentalis</i>	Sycamore	9.6	9.5	700	4

**Table 10. Vegetation Height Data**

Burnetts Chapel Mitigation Site - Phase II

DMS Project No. 100045

**Monitoring Year 5 - 2023**

<b>Plot</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>X (m)</b>	<b>Y (m)</b>	<b>Height (ft)</b>	<b>Vigor</b>
VP6	<i>Quercus phellos</i>	Willow Oak	0.4	0.4	85	4
VP6	<i>Liriodendron tulipifera</i>	Tulip Poplar	5	0.3	275	4
VP6	<i>Platanus occidentalis</i>	Sycamore	7.6	0.4	350	4
VP6	<i>Quercus phellos</i>	Willow Oak	0.4	4.8	63	4
VP6	<i>Quercus phellos</i>	Willow Oak	2.2	4.8	31	4
VP6	<i>Liriodendron tulipifera</i>	Tulip Poplar	5	4.7	64	4
VP6	<i>Liriodendron tulipifera</i>	Tulip Poplar	0.4	9.5	69	4
VP6	<i>Platanus occidentalis</i>	Sycamore	7.6	9.5	300	4
VP6	<i>Platanus occidentalis</i>	Sycamore	9.4	9.5	400	4