Eight Point Buffer Restoration Site

Year 3 Monitoring Report
Guilford County, North Carolina
Cape Fear River Basin - 03030003

DMS Contract 7865
DMS Project Number 100113
DWR Project Number 20190647

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

Data Collected: August 2023
Date Submitted: December 2023

Monitoring and Design Firm

Prepared by:

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MEMORANDUM

Date: February 23, 2024
To: Danielle Mir, DMS Project Manager
From: Adam Spiller, Project Manager
KCI Associates of North Carolina, PA
Subject: Eight Point Buffer Restoration Site
MY-03 Monitoring Report Comments
Cape Fear River Basin CU 03030003
NCDMS Project # 100108
Contract # 7865

Please find below our responses in italics to the MY-03 Monitoring Report comments from NCDMS received on February 8, 2024, for the Eight Point Buffer Restoration Site.

- A double walled plastic culvert extends approximately 2' into the easement southwest of the primary residence at corner marker # 12. There is active erosion of the ground surface and migrating headcut at the culvert outfall which has exposed approximately 15" for the rebar of corner marking #12. It is recommended that his culvert be pulled out of the easement with care to not increase or continue the erosion.
KCI Response: This culvert was installed as part of the new house construction that recently occurred on the property outside of the easement. KCI will be in contact with the landowner to resolve this encroachment.

- Please mention in the MY3 report that an undisclosed septic field failed within the conservation easement, and it is being abandoned.
KCI Response: This change has been made.

- Please continue treatment to control the blackberries.
KCI Response: KCI will continue to treat any nuisance vegetation that is deemed a threat to project success.

- Tubes will need to be removed by MY5 before closeout, unless DWR says differently. *KCI Response: The installed tree tubes are photo-degradable. Our experience has indicated that these tubes will degrade over time and will not hinder tree growth or project success. The IRT, including the DWR representative, has not required removal of tree tubes on past projects. KCI can provide evidence of these tubes degrading over time if requested by DMS or DWR.*

Please contact me if you have any questions or would like clarification concerning these responses.

Sincerely,

Adam Spiller
Project Manager

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PROJECT SUMMARY

The Eight Point Buffer Restoration Site (EPBRS) was completed in early 2021 and restored a total of 217,858 square feet of riparian buffer along an intermittent stream in the Randleman Lake Watershed of the Cape Fear River Basin (HUC 03030003010050 – Randleman Reservoir/Hickory Creek). The buffers at this site have been historically cleared for pasture and impacted by cattle and other anthropogenic impacts. With the exception of a few large remnant oaks along the stream, the only vegetation in the riparian area was pasture grasses. The completed project restored a functional riparian buffer and lowered the supply of sediment entering Hickory Creek. All project assets are based on the surveyed conservation easement and top of bank.

The EPBRS is protected by a 5.62 acre permanent conservation easement, held by the State of North Carolina. It is located in central Guilford County, approximately eight miles southwest of Greensboro, North Carolina. Specifically, the site is on Newman Davis Road just west of US-73. The center of the site is at approximately 35.9621 N and -79.8351 W in the Pleasant Garden USGS Quadrangle.

The mitigation work at the EPBRS was completed on February 24, 2021. This work included of chemical control of pasture grasses and other non-native or invasive species. Disking was used in areas of fescue or other allelopathic plants. 3,400 bare root seedlings were planted across the site with a 4' Tubex Treeshelter and a VisPore Weedmat fitted on every other tree. See Table 3 for a complete list of the species planted on site. A custom herbaceous seed mix composed of native species was spread across the site. Finally, the site boundary was marked with visible signs conforming to DMS and DEQ Stewardship standards.

MONITORING PLAN

Monitoring will be conducted for a period of five years following project implementation or until performance standards have been achieved. Monitoring will consist of vegetation sampling and visual inspection to ensure the health and vigor of the planted restoration area and that the requirements of the conservation easement are being upheld. Vegetation sampling will consist of five 10m x 10m plots. Three of these plots were permanently installed during the baseline monitoring, while the other two will be randomly placed during each monitoring visit. The species, height, and origin (planted vs. volunteer) of all trees within these plots will be recorded each year, and a photograph will be taken of each plot. Invasive stems will be recorded in each plot but will not count towards reaching performance standards.

SUCCESS CRITERIA

Plots must achieve an average stem density of 260 stems/acre after five years with 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/acre upon DWR approval.

MONITORING RESULTS

Monitoring Year 3 vegetation data was collected on August 23, 2023. All five vegetation monitoring plots had greater than 260 stems/acre and only one plot (Plot 1F, 3 species) had less than 4 native hardwood species. Overall the site is well vegetated with extensive herbaceous coverage and many diverse volunteer woody species. During the MY02 site walk with DMS, concern was expressed about the number of sweetgum saplings growing on-site and a large, dense patch of blackberry growing near the northeast corner of the site. This treatment was completed in December 2022. The treatment consisted of cutting down the sweetgum saplings and spraying the stumps with herbicide and mowing down the blackberry, while avoiding the trees growing within this area. In December 2023, a previously undisclosed septic field within the conservation easement failed. The landowner has agreed to abandon the failed septic field and relocate a new one outside of the conservation easement.

APPENDIX A

Background Tables and Site Maps

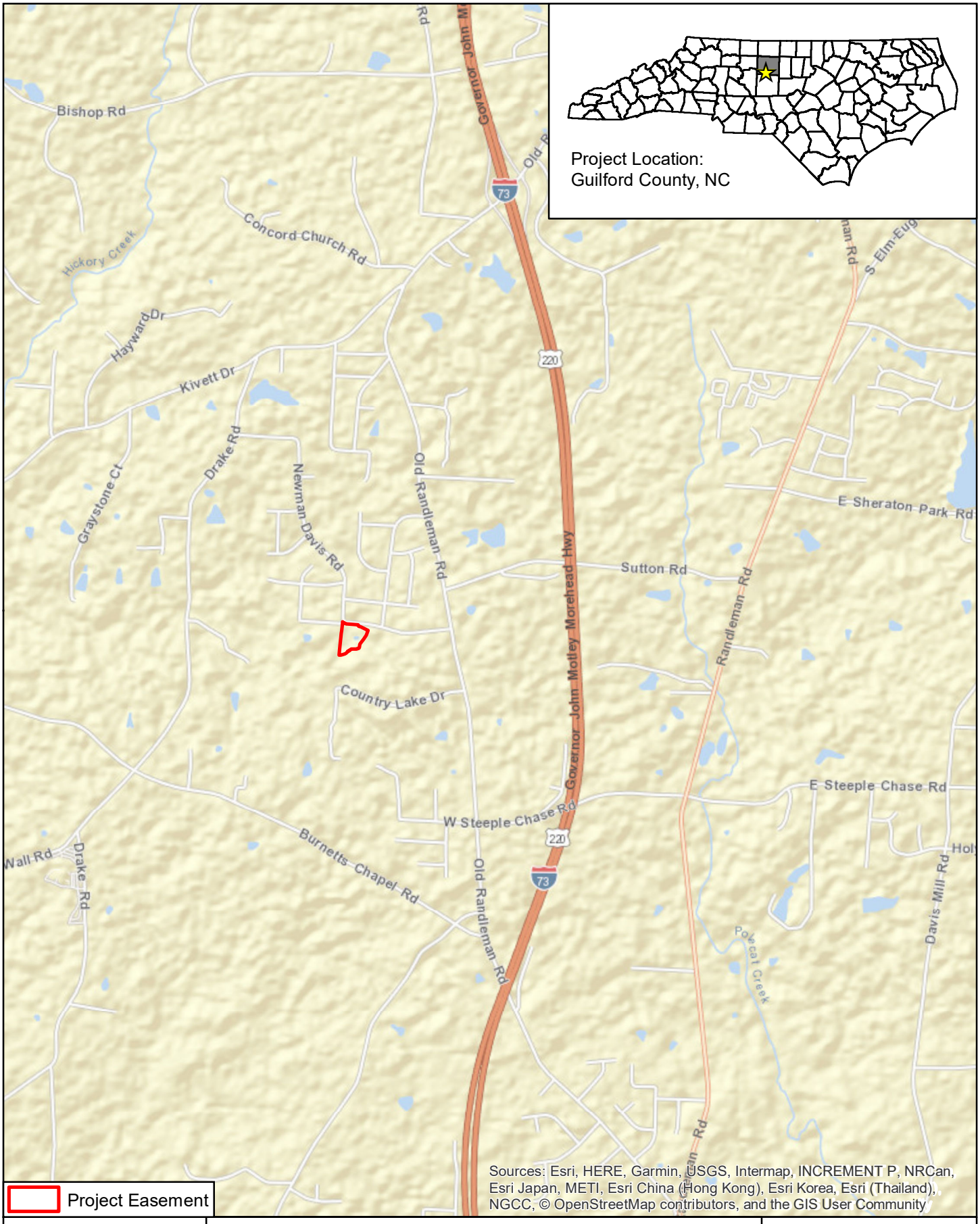

FIGURE 1. PROJECT SITE VICINITY MAP
EIGHT-POINT BUFFER RESTORATION SITE
GUILFORD COUNTY, NC

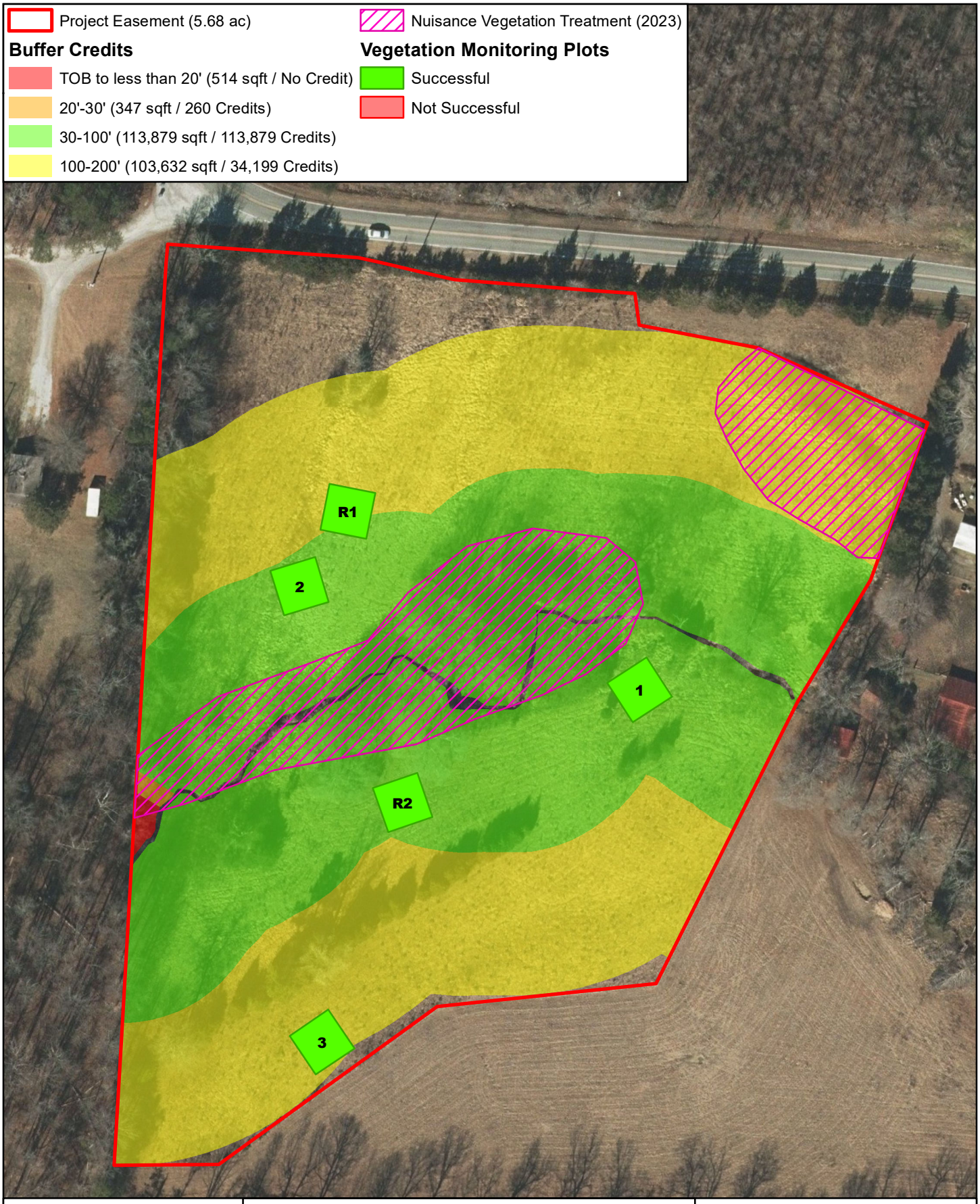

FIGURE 2. PROJECT ASSETS and CURRENT CONDITIONS
EIGHT-POINT BUFFER RESTORATION SITE
GUILFORD COUNTY, NC

Table 1. Buffer Project Attributes	
Project Name	Eight Point Buffer Restoration Site
Hydrologic Unit Code	03030003010050
River Basin	Cape Fear – Randleman Lake
Geographic Location (Lat, Long)	35.9621 N and -79.8351 W
Site Protection Instrument (DB, PG)	DB 8295 PG 298
Total Credits (BMU)	148,337.845
Type of Credits	Restoration
Mitigation Plan Date	February 20, 2020
Initial Planting Date	February 24, 2021
Baseline Report Date	April 2021
MY1 Report Date	December 2021
MY2 Report Date	August 2022
Nuisance Vegetation Treatment	December 13, 2022
MY3 Report Date	September 2023
MY4 Report Date	December 2024
MY5 Report Date	December 2025

Table 2. Buffer Project Areas and Assets
Riparian Buffer (15A NCAC 02.B0295)

Location	Jurisdictional Streams	Restoration Type	Reach ID/Component	Buffer Width (ft)	Creditable Area (sf)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Riparian Buffer Credits (BMU)	Convertible to Nutrient Offset (Yes or No)
Rural or Urban	Subject or Nonsubject	Restoration	T1	20-29	347	1	75%	1.33333	260.251	No
			T1	30-100	113,879		100%	1.00000	113879.000	No
			T1	101-200	103,632		33%	3.03030	34198.594	No
		Enhancement		20-29		2	75%	2.66667	0	
				30-100			100%	2	0	
				101-200			33%	6	0	
				SUBTOTALS	**217,858**				**148,337.845**	
				TOTALS	**217,858**				**148,337.845**	

APPENDIX B

Visual Assessment Data

Vegetation Monitoring Plot Photos

Plot 1 MY00 – 3/29/2021

Plot 1 MY03 – 8/23/2023

Plot 2 MY00 – 3/29/2021

Plot 2 MY03 – 8/23/2023

Plot 3 MY00 – 3/29/2021

Plot 3 MY03 – 8/23/2023

Plot R1 MY03 – 8/23/2023

Plot R2 MY03 – 8/23/2023

APPENDIX C

Vegetation Plot Data

Table 3. Species and Quantity of Planted Stems		
Common Name	Scientific Name	Quantity
Black Gum	*Nyssa sylvatica*	170
River Birch	*Betula nigra*	340
Persimmon	*Diospyros virginiana*	340
Silky Dogwood	*Cornus amomum*	170
Buttonbush	*Cephalanthus occidentalis*	34
Pin Oak	*Quercus palustris*	170
Tulip Poplar	*Liriodendron tulipifera*	340
Sycamore	*Platanus occidentalis*	340
White Oak	*Quercus alba*	340
Swamp Chestnut Oak	*Quercus michauxii*	340
Willow Oak	*Quercus phellos*	476
American Elm	*Ulmus americana*	340
Herbaceous Seed Mix		
Common Name	Scientific Name	% of mix
Autumn Bentgrass	*Agrostis perennans*	10
Big Bluestem	*Andropogon gerardii*	8
Lanceleaf Coreopsis	*Coreopsis lanceolata*	10
Virginia Wild Rye	*Elymus virginicus*	15
Soft Rush	*Juncus effusus*	3
Switchgrass	*Panicum virgatum*	10
Black-Eyed Susan	*Rudbeckia hirta*	10
Little Bluestem	*Schizachyrium scoparium*	3
Indian Grass	*Sorghastrum nutans*	3
Eastern Gamma	*Tripsacum dactyloides*	3
Rye Grain	*Secale cereal*	25

Planted Acreage	5.62
Date of Initial Plant	2021-02-24
Date(s) of Supplemental Plant(s)	NA
Date(s) Mowing	2022-06-23
Date of Current Survey	8/23/2023
Plot size (ACRES)	0.0247

Table 4. Vegetation Performance Standards Summary Table
Eight Points Buffer Restoration Site, DMS #100113

	Scientific Name	Common Name	Tree/ Shrub	Indicator Status	Veg Plot 1 F		Veg Plot 2 F		Veg Plot 3 F		Veg Plot 1 R	Veg Plot 2 R
					Planted	Total	Planted	Total	Planted	Total	Total	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	Tree	FACW	9	9	4	5			4	
	Cornus amomum	silky dogwood	Shrub	FACW	1	1	1	1			5	1
	Diospyros virginiana	common persimmon	Tree	FAC				2		1	6	2
	Liriodendron tulipifera	tuliptree	Tree	FACU			2	2		2		1
	Nyssa sylvatica	blackgum	Tree	FAC			1	1	2	2		
	Platanus occidentalis	American sycamore	Tree	FACW					4	4	1	
	Quercus alba	white oak	Tree	FACU					4	4		
	Quercus michauxii	swamp chestnut oak	Tree	FACW	8	8	4	4	1	1	5	
	Quercus palustris	pin oak	Tree	FACW			2	2				2
	Quercus phellos	willow oak	Tree	FAC				2	1	1		8
	Ulmus americana	American elm	Tree	FACW					5	5		
Sum	Performance Standard				18	18	14	19	17	20	21	14
Post Mitigation Plan Species	*Acer rubrum*	*red maple*	*Tree*	*FAC*								*1*
	Baccharis halimifolia	*eastern baccharis*	*Tree*	*FAC*		*7*					*1*	
	Fraxinus pennsylvanica	*green ash*	*Tree*	*FACW*				*3*				
	Liquidambar styraciflua	*sweetgum*	*Tree*	*FAC*		*42*		*16*		*52*	*24*	*41*
	Pinus taeda	*loblolly pine*	*Tree*	*FAC*							*1*	
	Pinus virginiana	*Virginia pine*	*Tree*							*7*		
	Ulmus alata	*winged elm*	*Tree*	*FACU*				*1*		*2*		*2*
Sum	Proposed Standard				18	18	14	19	17	20	21	14
Mitigation Plan Performance Standard	Current Year Stem Count					18		19		20	21	14
	Stems/Acre					729		769		810	850	567
	Species Count					3		8		8	5	5
	Dominant Species Composition (%)					63		41		64	51	71
	Average Plot Height (ft.)					2		4		2	4	3
	% Invasives					0		0		0	0	0
Post Mitigation Plan Performance Standard	Current Year Stem Count					18		19		20	21	14
	Stems/Acre					729		769		810	850	567
	Species Count					3		8		8	5	5
	Dominant Species Composition (%)					63		41		64	51	71
	Average Plot Height (ft.)					2		4		2	4	3
	% Invasives					0		0		0	0	0

1). Bolded species are proposed for the current monitoring year, italicized species are not approved, and a regular font indicates that the species has been approved.
2). The "Species Included in Approved Mitigation Plan" section contains only those species that were included in the original approved mitigation plan. The "Post Mitigation Plan Species" section includes species that are being proposed through a mitigation plan addendum for the current monitoring year (bolded) , species that have been approved in prior monitoring years through a mitigation plan addendum (regular font), and species that are not approved (italicized).
3). The "Mitigation Plan Performance Standard" section is derived only from stems included in the original mitigation plan, whereas the "Post Mitigation Plan Performance Standard" includes data from mitigation plan approved, post mitigation plan approved, and proposed stems.

	Veg Plot 1				Veg Plot 2 F				Veg Plot 3 F			
	Stems/ Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/ Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/ Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 5												
Monitoring Year 4												
Monitoring Year 3	729	2	3	0	769	4	8	0	810	2	8	0
Monitoring Year 2	810	2	3	0	931	2	9	0	1012	2	7	0
Monitoring Year 1	850	2	3	0	607	2	6	0	729	2	6	0
Monitoring Year 0	891	2	3	0	688	2	7	0	931	2	8	0
	Veg Plot Group 1 R				Veg Plot Group 2 R							
	Stems/ Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/ Ac.	Av. Ht. (ft)	# Species	% Invasives				
Monitoring Year 5												
Monitoring Year 4												
Monitoring Year 3	850	4	5	0	567	3	5	0				
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0												