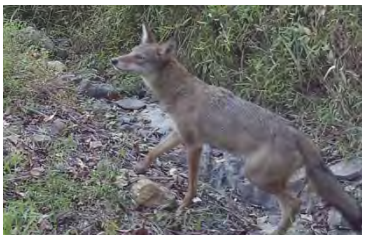


MONITORING YEAR 3
ANNUAL BUFFER REPORT
FINAL

CATFISH POND MITIGATION SITE
Durham County, NC
NCDEQ Contract No. 007424
DMS Project No. 100039
NCDWR Project No. 2018-0196
RFP No. 16-007279

Neuse River Basin
HUC 03020201

Data Collection Period: September 2022
Draft Submission Date: November 2022
Final Submission Date: December 2022

PREPARED FOR:

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

PREPARED BY:

Wildlands Engineering, Inc.
312 West Millbrook Road, Suite 225
Raleigh, NC 27609

Jason Lorch
jlorch@wildlandseng.com
Phone: (919) 851-9986

CATFISH POND MITIGATION SITE

Monitoring Year 3 Buffer Report

TABLE OF CONTENTS

APPENDICES

Section 1: PROJECT OVERVIEW

1.1 Project Summary

Wildlands Engineering, Inc. (Wildlands) implemented a full delivery project at the Catfish Pond Mitigation Site (Site) for the North Carolina Department of Environmental Quality Division of Mitigation Services (DMS). A total of 7,140 linear feet of perennial and intermittent streams were restored and enhanced in Durham County, NC. A conservation easement comprised of 20.73 acres along Catfish Creek and three unnamed tributaries in the Neuse River Basin are included in the project. A total of 18.22 acres (793,207 ft^2) of riparian buffer have been restored or enhanced and are expected to generate 523,358.865 riparian buffer credits, with potential to convert some buffer credits to nutrient offset credits dependent on the need. The Site is located approximately 12 miles north of the City of Durham and approximately 3 miles east of the Orange County/Durham County border (Figure 1). The project resides within Hydrologic Unit Code 03020201020040 and North Carolina Department of Water Resources (NCDWR) Sub-basin 03-04-01. Two unnamed tributaries (UT1 and UT2) drain to Catfish Creek, which drains to Mountain Creek, and one unnamed tributary (Mountain Tributary) drains directly to Mountain Creek. Mountain Creek flows into Little River, the Eno River, and then Falls Lake. Falls Lake is classified as Water Supply Waters (WS-IV) and Nutrient Sensitive Waters (NSW).

Work at the Site was planned, designed, and constructed per the Catfish Pond Mitigation Site – Riparian Buffer Mitigation Plan (Wildlands, 2019) and the Consolidated Buffer Mitigation Rule 15A NCAC 02B .0295 (effective November 1, 2015). The purpose of the riparian buffer restoration is to provide riparian buffer credits to compensate for buffer impacts within the Hydrologic Unit Code 03020201 and the Falls Lake Watershed. The service area for the riparian buffer credits is depicted in Figure 2. The mitigation credits generated from the Site are included in Table 1 and illustrated in Figure 3 located in Appendix 1. With the addition of Catfish Pond II Mitigation Bank Parcel (Catfish Pond II, DWR Project Number 2018-0196v2), it is not necessary to deduct credits for lack of diffuse flow where Ditch D enters the DMS conservation easement. The Catfish Pond II conservation easement completely encompasses Ditch D allowing for diffuse flow through the riparian buffer. Fencing has been installed around Catfish Pond II (Appendix 1, Figure 4).

1.2 Project Goals and Objectives

Prior to construction, the primary degradation of Catfish Creek was the creation of Catfish Pond sometime between 1940 and 1955. Within the same period, extensive logging and farm road construction took place. Aerial photographs from 1972 suggest that UT1 had been straightened for agricultural purposes. Catfish Creek above and below the pond, UT2, and Mountain Tributary showed few signs of channel manipulation.

The major goals of the riparian restoration project are to provide ecological and water quality enhancements to the Neuse River Watershed within the Falls Lake Water Supply Watershed by creating a functional riparian corridor and restoring the riparian area. The project supports specific goals identified in the 2010 Neuse River Basin Restoration Priorities (RBRP) for the Neuse River Targeted Local Watershed, which highlights the importance of riparian buffers for stream restoration projects (Breeding, 2010). Forested riparian areas immobilize and retain nutrients and suspended sediment. The RBRP also supports the Falls Lake Nutrient Management Strategy (NCDWR, 2011). Falls Lake is the receiving water supply water body downstream of the Site and is classified as WS-IV and NSW. Specific enhancements to water quality and ecological processes are outlined below:

- Exclude cattle from project streams – Fencing has been installed around project areas adjacent to cattle pastures.

- Decrease nutrient levels – Filtering runoff from the agricultural fields through restored native riparian zones. The off-site nutrient input is absorbed on-site by filtering flood flows through restored floodplain areas, where flood flows can disperse through native vegetation.
- Decrease water temperature and increase dissolved oxygen concentrations – Riparian areas will create additional long-term shading of the channel flow to reduce thermal pollution.
- Restore and enhance native floodplain vegetation – Planted native tree species in riparian zone where tree growth was insufficient.
- Permanently protect the project Site from harmful uses – Established a conservation easement on the site.

The 20.73-acre Site is protected with a permanent conservation easement. Of the 20.73 acres, Neuse riparian buffer credits were generated by restoring 5.92 acres and enhancing 12.30 acres. No buffer credit will be generated from the remaining 2.51 acres. In general, riparian buffer restoration area widths on streams extend out to 50 feet from top of bank on each side of the stream channel. Figure 3 and Table 1 in Appendix 1 detail the buffer credit generation.

1.3 Monitoring Year 3 Data Assessment

The Mitigation Plan (Wildlands, 2019) was submitted and accepted by DMS in July 2019. Construction activities by Main Stream Earthwork, Inc. and tree planting by Bruton Natural Systems, Inc. were both completed in March 2020. The baseline as-built survey was completed by Kee Mapping and Surveying in April 2020. Refer to Appendix 1 for detailed project activity, history, contact information, and watershed/site background information.

Vegetative performance for buffer restoration areas will be in accordance with 15A NCAC 02B .0295(n)(2)(B), and (n)(4) (effective November 1, 2015). To meet success criteria, areas generating buffer mitigation credits shall include a minimum of four native hardwood tree species, where no one species is greater than 50 percent of stems, and shall have a survival of at least 260 stems per acre at the end of the required five-year monitoring period. For monitoring to be completed and buffer credit to be awarded, NCDWR must provide written approval of successful revegetation of buffer restoration areas. Year 3 monitoring (MY3) was conducted to assess the condition of the vegetation in September 2022.

1.3.1 Vegetative Assessment

The quantity of monitoring vegetation plots was determined in accordance with the Carolina Vegetative Sampling Protocol (Lee et al., 2008) such that at least 2 percent of the Site is encompassed in monitoring plots. A total of 7 vegetation plots (each 100 square meters) were established within the conservation easement boundaries. The plot corners have been marked and are recoverable either through field identification or with the use of a GPS unit. Reference photographs are taken at the origin looking diagonally across the plot to the opposite corner on an annual basis. Trees will be marked annually with flagging tape. Species composition, vigor, height, density, and survival rates will be evaluated by plot on an annual basis. The extent of invasive species coverage will also be monitored and controlled as necessary.

The 2022 annual vegetation monitoring resulted in an average survival of 508 stems per acre of Mitigation Plan Approved species, which exceeds the final requirement of 260 stems per acre at the end of Monitoring Year 5. Plot stem densities range from 324 to 607 stems per acre and each plot includes at least four planted species. Volunteer stems have begun to establish themselves and include desirable species such as American persimmon (*Diospyros virginiana*), eastern redbud (*Cercis canadensis*), and sycamore (*Platanus occidentalis*). The Site is on track to surpass the final success criteria. Refer to Appendix 2 for the vegetation condition assessment table, the monitoring plan view map, vegetation

plot and overview photographs. Appendix 3 contains vegetation plot data and the vegetation performance summary table.

1.3.2 Vegetation Areas of Concern

While planted trees are growing well, pasture grasses are still thick. To ensure planted trees remain competitive, herbicide ring sprays were applied around the base of trees where necessary in April 2022.

Invasive species at Catfish Pond have been greatly reduced by past treatments throughout the site. However, Wildlands recognizes that multiple treatments are typically needed for effective invasive plant control. Sporadic patches of multiflora rose (*Rosa multiflora*) and blackberry (*Rubus spp.*) on the upstream portion of UT1 had begun to compete with planted trees and were treated in May 2022 with a foliar spray application of triclopyr herbicide. Intermittent resprouts of multiflora rose, Chinese Privet (*Ligustrum sinense*), and tree-of-heaven (*Alianthus altissima*), were also treated along Catfish Creek with triclopyr and glyphosate using situation and plant appropriate forms of application.

1.4 Monitoring Year 3 Summary

Vegetation across the Parcel is exceeding performance standards. Monitoring Year 3 data shows an average density of 508 stems per acre across vegetation plots. The Parcel is on track to achieve the final success criteria of 260 stems per acre at the end of Monitoring Year 5. In addition, desirable volunteer species such as American persimmon (*Diospyros virginiana*) and eastern redbud (*Cercis canadensis*) are establishing themselves. Sporadic resprouts of invasive vegetation were treated and herbicide ring sprays were applied around trees in Monitoring Year 3. Wildlands will continue to monitor and treat as necessary. Additional herbicide ring sprays will be applied as needed around the base of trees in areas of thick herbaceous competition in spring 2023.

Summary information/data related to the performance of various project and monitoring elements can be found in the tables and figures in the report appendices. Narrative background and supporting information, formerly found in these reports, can be found in the Mitigation Plan (Wildlands, 2019) available on DMS's website. All raw data supporting the tables and figures in the appendices are available from DMS upon request.

Section 2: REFERENCES

Breeding, R. 2010. Neuse River Basin Restoration Priorities. North Carolina Ecosystem Enhancement Program. Accessed at: https://files.nc.gov/ncdeq/Mitigation%20Services/Watershed_Planning/Neuse_River_Basin/FINAL%20RBRP%20Neuse%202010_%2020111207%20CORRECTED.pdf

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

North Carolina Department of Environmental Quality, Division of Mitigation Services (NCDMS). 2017. Riparian Buffer and Nutrient Offset Buffer Baseline and Annual Monitoring Report Template version 2.0 Accessed at: https://files.nc.gov/ncdeq/Mitigation%20Services/Document%20Management%20Library/Guidance%20and%20Template%20Documents/RB_NO_Base_Mon_Template_2.0_2017_5.pdf

North Carolina Department of Environmental Quality, Division of Water Resources (NCDWR). 2000. 15A NCAC 02B .0233 Neuse River Basin: Nutrient Sensitive Waters Management Strategy: Protection and Maintenance of Existing Riparian Buffers. Accessed at: http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environmental%20quality/chapter%2002%20-%20environmental%20management/subchapter%20b/15a%20ncac%2002b%20.0233.pdf

North Carolina Department of Environmental Quality, Division of Water Resources (NCDWR). 2011. Falls Lake Nutrient Management Strategy. Accessed at: https://deq.nc.gov/about/divisions/water-resources/water-planning/nonpoint-source-planning/falls-lake-nutrient-strategy

North Carolina Department of Environmental Quality, Division of Water Resources (NCDWR). 2015. 15A NCAC 02B .0295 Mitigation Program Requirements for Protection and Maintenance of Riparian Buffers. Accessed at: http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environmental%20quality/chapter%2002%20-%20environmental%20management/subchapter%20b/15a%20ncac%2002b%20.0295.pdf

North Carolina Department of Environmental Quality, Division of Water Resources (NCDWR). 2011. Surface Water Classifications. Accessed at: https://deq.nc.gov/about/divisions/water-resources/planning/classification-standards/classifications#DWRPrimaryClassification

Wildlands Engineering, Inc. 2019. Catfish Pond Mitigation Site – Riparian Buffer Mitigation Plan. North Carolina Department of Environmental Quality, Division of Mitigation Services (NCDMS), Raleigh, NC.

APPENDIX 1. General Figures and Tables

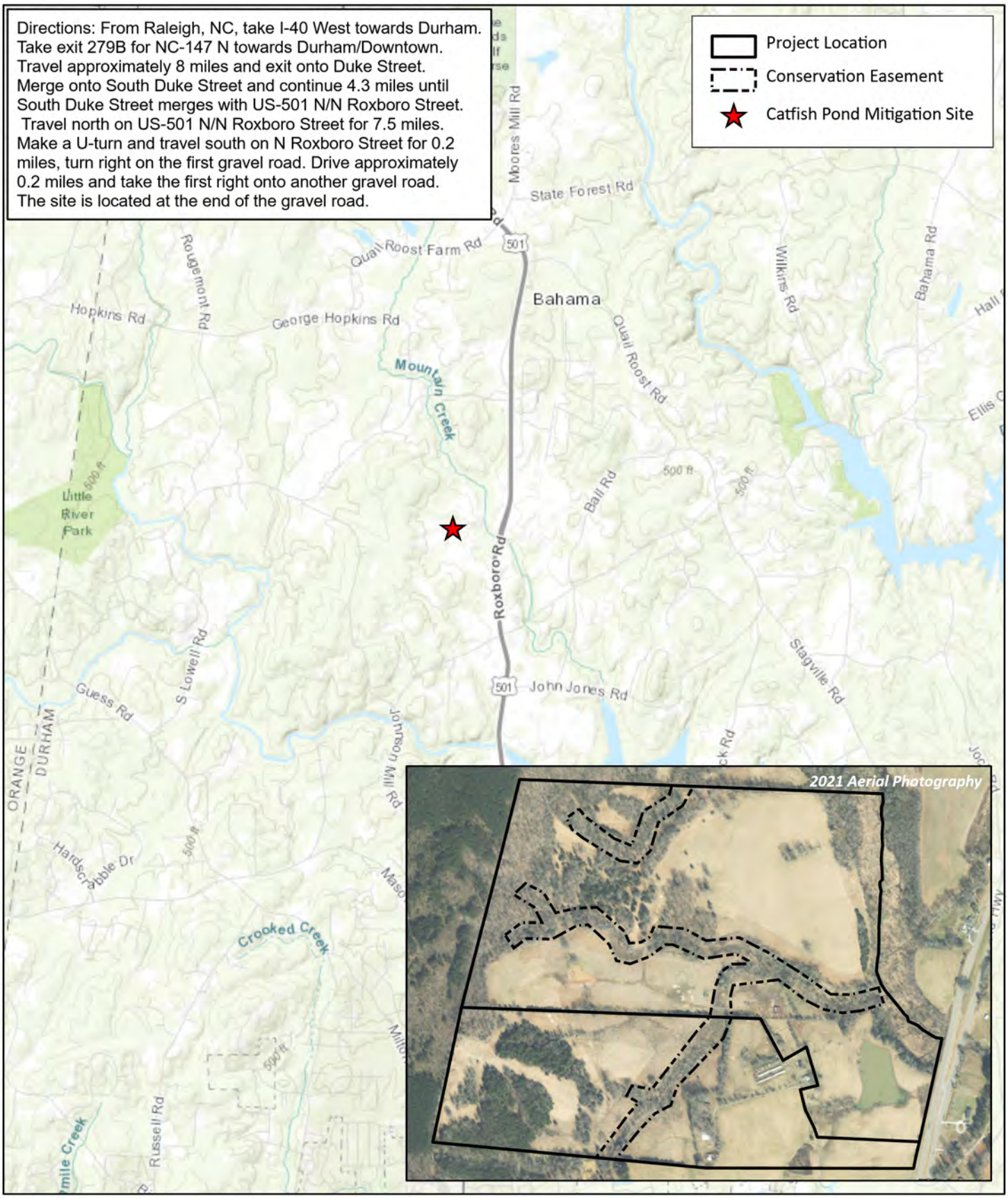
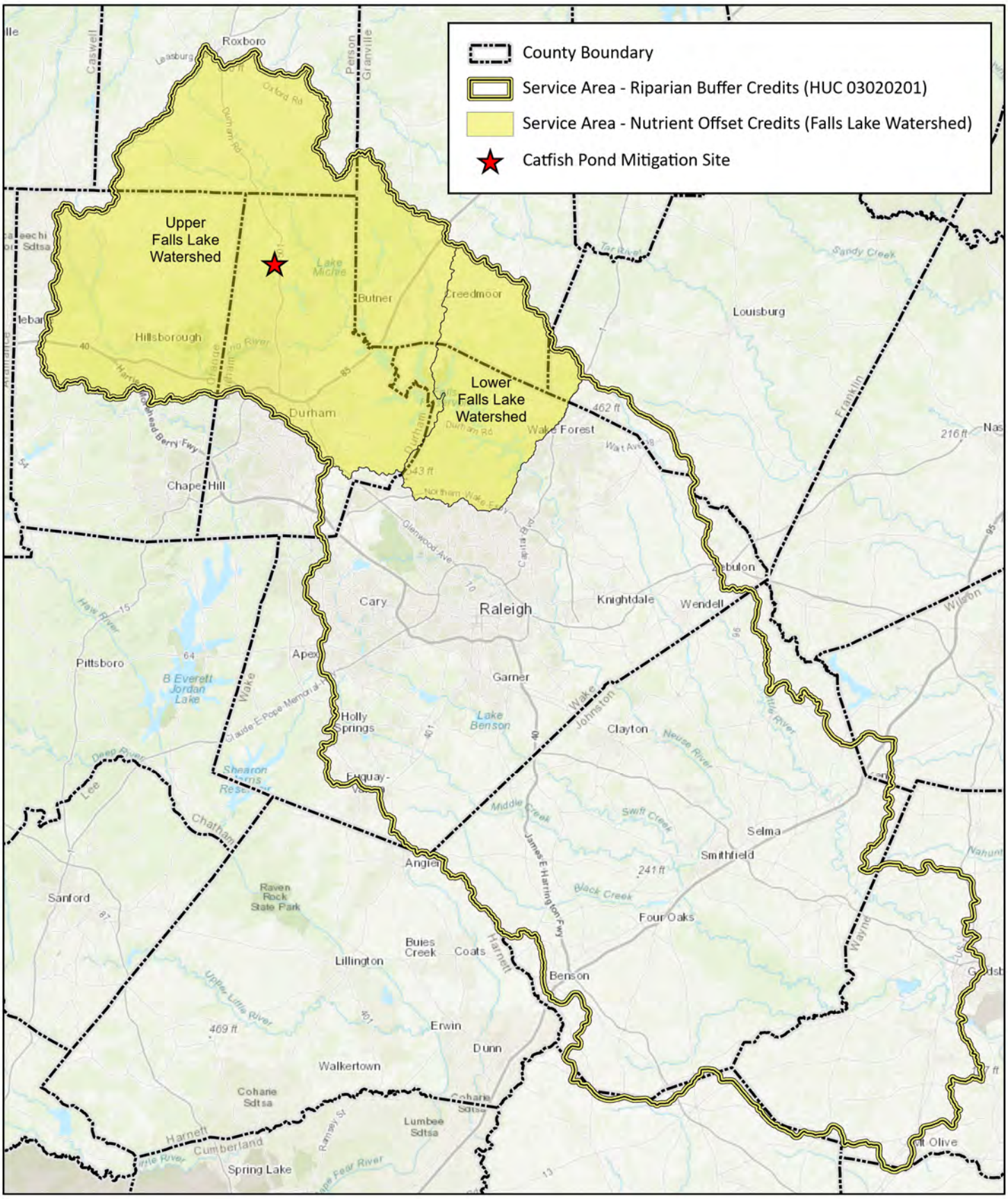


Figure 1. Project Vicinity Map
Catfish Pond Mitigation Site
Monitoring Year 3 – 2022
Neuse River Basin (03020201)

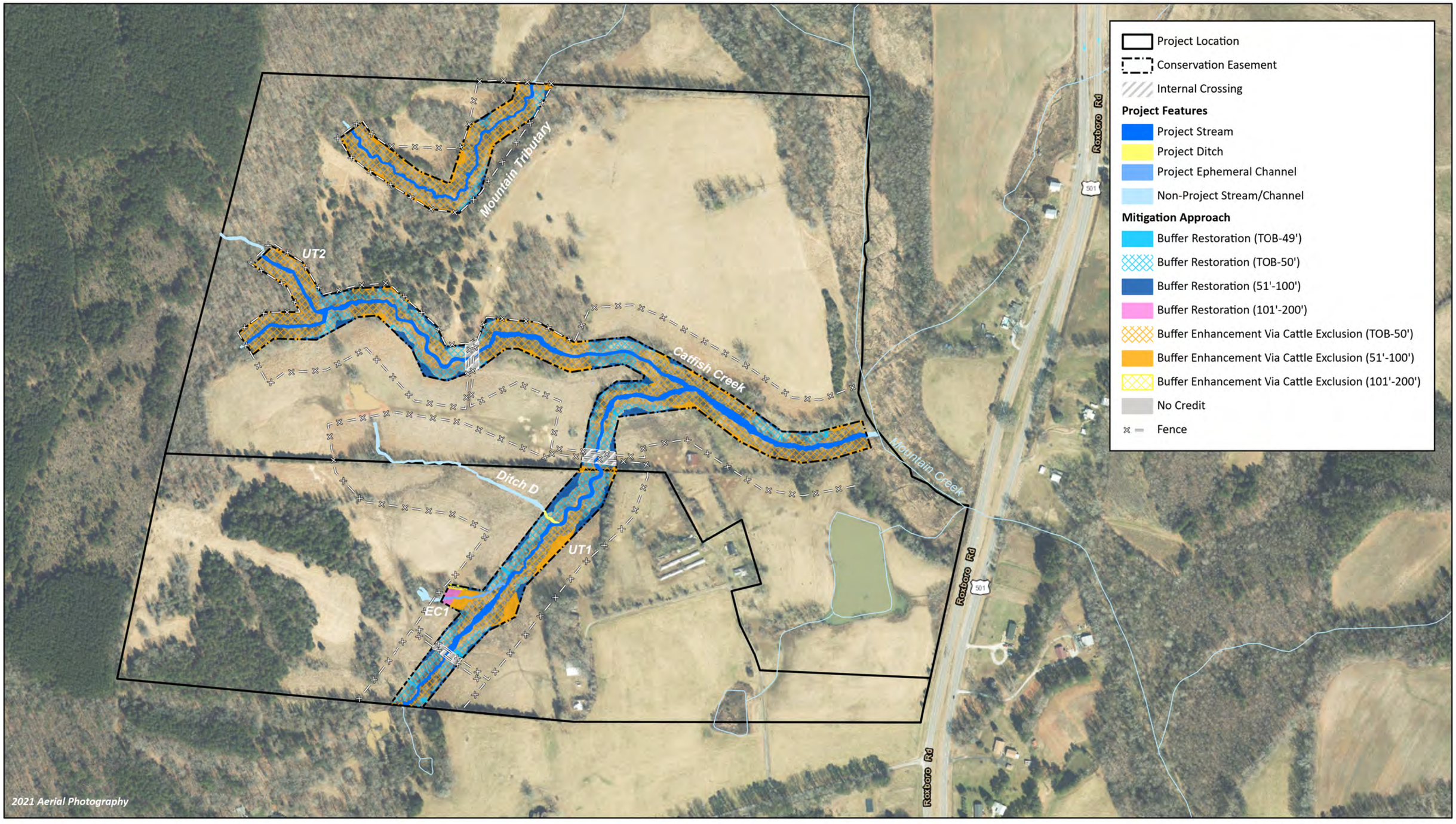
Durham County, NC



WILDLANDS ENGINEERING

Figure 2. Service Area Map
Catfish Pond Mitigation Site
Monitoring Year 3 – 2022
Neuse River Basin (03020201)

Durham County, NC

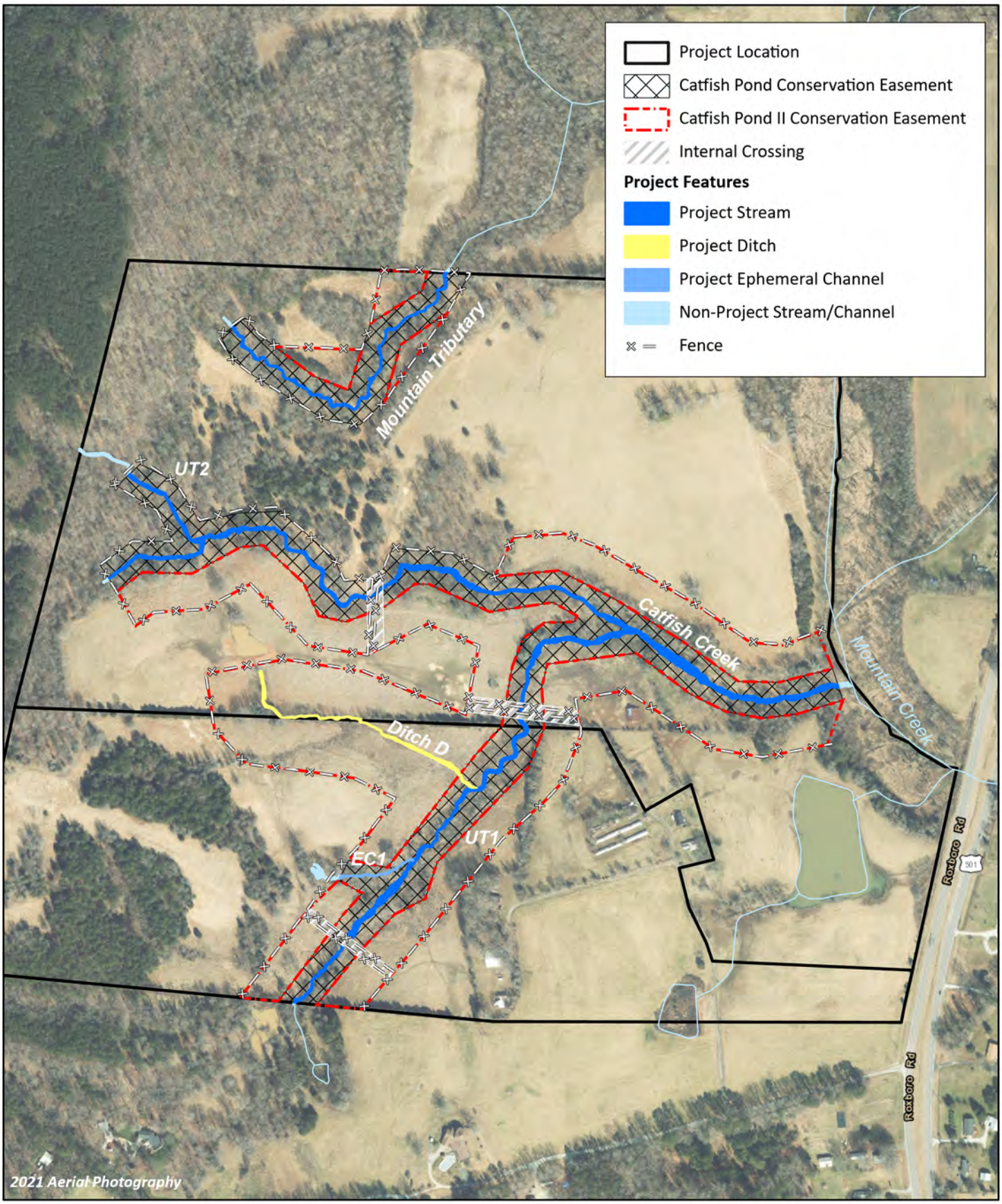


WILDLANDS ENGINEERING

0 400 800 Feet

N

Figure 3. Project Component/Asset Map
Catfish Pond Mitigation Site
Monitoring Year 3 – 2022
Neuse River Basin (03020201)
Durham County, NC



WILDLANDS ENGINEERING

0 250 500 Feet

Figure 4. Catfish Pond II Mitigation Bank Parcel Site Map
Catfish Pond Mitigation Site
Monitoring Year 3 – 2022
Neuse River Basin (03020201)
Durham County, NC

Table 1. Buffer Project Areas and Assets
Catfish Pond Mitigation Site
DMS Project No. 100039
Monitoring Year 3 - 2022

Neuse 03020201 - Upper Falls Lake	**Project Area**
19.16394	**N Credit Conversion Ratio (ft^2/pound)**
297.54099	**P Credit Conversion Ratio (ft^2/pound)**

Credit Type	Location	Subject? (enter NO if ephemeral or ditch [1])	Feature Type	Mitigation Activity	Min-Max Buffer Width (ft)	Feature Name	Total Area (ft^2)	Total (Creditable) Area of Buffer Mitigation (ft^2)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Convertible to Riparian Buffer?	Riparian Buffer Credits	Convertible to Nutrient Offset?	Delivered Nutrient Offset: N (lbs)	Delivered Nutrient Offset: P (lbs)
Buffer	Rural	Yes	I / P	Restoration	0-50	Catfish Creek, UT1	4,369	4,369	1	100%	1.00000	Yes	4,369.000	No	—	—
Buffer	Rural	Yes	I / P	Restoration	0-100	Catfish Creek, UT1, UT2, Mountain Trib	252,086	252,086	1	100%	1.00000	Yes	252,086.000	Yes	13,154.184	847.231
Buffer	Rural	Yes	I / P	Restoration	101-200	UT1	1,063	1,063	1	33%	3.03030	Yes	350.790	Yes	55.469	3.573
Buffer	Rural	Yes	I / P	Enhancement via Cattle Exclusion	0-100	Catfish Creek, UT1, UT2, Mountain Trib	531,834	531,834	2	100%	2.00000	Yes	265,917.000	No	—	—
Buffer	Rural	Yes	I / P	Enhancement via Cattle Exclusion	101-200	UT1	3,855	3,855	2	33%	6.06061	Yes	636.075	No	—	—
						Totals:	793,207	793,207								

Enter Preservation Credits Below

Eligible for Preservation (ft^2): 264,402

Credit Type	Location	Subject?	Feature Type	Mitigation Activity	Min-Max Buffer Width (ft)	Feature Name	Total Area (sf)	Total (Creditable) Area for Buffer Mitigation (ft^2)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Riparian Buffer Credits
Buffer				Preservation								—

Preservation Area Subtotal (ft^2):	0
Preservation as % Total Area of Buffer Mitigation:	0.0%
Ephemeral Reaches as % Total Area of Buffer Mitigation:	0.0%

TOTAL AREA OF BUFFER MITIGATION (TABM)		
Mitigation Totals	**Square Feet**	**Credits**
Restoration:	257,518	256,805.790
Enhancement:	535,689	266,553.075
Preservation:	0	0.000
Total Riparian Buffer:	793,207	523,358.865
TOTAL NUTRIENT OFFSET MITIGATION		
Mitigation Totals	**Square Feet**	**Credits**
Nutrient Offset: Nitrogen:	0	0.000
Nutrient Offset: Phosphorus:		0.000

last updated 01/17/2020

Table 2. Project Activity and Reporting History

Catfish Pond Mitigation Site
DMS Project No. 100039
Monitoring Year 3 - 2022

Activity or Report	Data Collection Complete	Completion or Scheduled Delivery
Mitigation Plan	July 2019	July 2019
Final Design - Construction Plans	August 2019	August 2019
Construction	February-March 2020	March 2020
Temporary S&E mix applied to entire project area[1]	March 2020	March 2020
Permanent seed mix applied to reach/segments[1]	April 2020	April 2020
Bare root and live stake plantings for reach/segments	March 2020	March 2020
Baseline Monitoring Document (Year 0)	March 2020	June 2020
Competitive Vegetation Treatment[2]		April-May 2020
Invasive Vegetation Treatment		May & September 2020
Year 1 Monitoring	October 2020	December 2020
Invasive Vegetation Treatment		September 2021
Year 2 Monitoring	September 2021	December 2021
Competitive Vegetation Treatment[2]		April 2022
Invasive Vegetation Treatment		May 2022
Year 3 Monitoring	September 2022	December 2022
Year 4 Monitoring	2023	December 2023
Year 5 Monitoring	2024	December 2024

[1]Seed and mulch is added as each section of construction is completed.
[2]Herbicide ring sprays around the base of planted stems.

Table 3. Project Contact Table

Catfish Pond Mitigation Site
DMS Project No. 100039
Monitoring Year 3 - 2022

Designer Daniel Johnson, PE	**Wildlands Engineering, Inc.** 497 Bramson Ct, Suite 104 Mt. Pleasant, SC 29464 843.277.6221
Construction Crew	**Main Stream Earthwork, Inc.** 631 Camp Dan Valley Rd Reidsville, NC 27320
Planting Contractor	**Bruton Natural Systems, Inc** P.O. Box 1197 Fremont, NC 27830
Seeding Contractor	**Canady's Landscaping & Erosion** 256 Fairview Acres Rd Lexington, NC 27295
Seed Mix Sources	**Garrett Wildflower Seed Farm** 1591 Cleveland Rd Smithfield, NC 27577
	Ernst Conservation Seeds, Inc. 8884 Mercer Pike Meadville, PA 16335
Nursery Stock Suppliers **Bare Roots**	**Dykes and Sons Nursery and Greenhouse** 825 Maude Etter Rd McMinnville, TN 37110
Live Stakes	**Bruton Natural Systems, Inc**
	Foggy Mountain Nursery 797 Helton Creek Rd Lansing, NC 28643
Monitoring Performers Monitoring, POC	**Wildlands Engineering, Inc.** Jason Lorch 919.851.9986

Table 4. Project Information and Attributes

Catfish Pond Mitigation Site
DMS Project No. 100039
Monitoring Year 3 - 2022

PROJECT INFORMATION	
Project Name	Catfish Pond Mitigation Site
County	Durham County
Project Coordinates (latitude and longitude)	36° 9' 48.03" N, 78° 54' 37.66" W
Project Area (acres)	20.73
Planted Acreage (acres of woody stems planted)	8.00
PROJECT WATERSHED SUMMARY INFORMATION	
Physiographic Province	Carolina Slate Belt of the Piedmont Physiographic Province
River Basin	Neuse River
USGS Hydrologic Unit 8-digit	03020201
USGS Hydrologic Unit 14-digit	03020201020040
DWR Sub-basin	03-04-01
Project Drainiage Area (acres)	227 (Catfish Creek - 197, Mountain Tributary - 30)
Project Drainage Area Percentage of Impervious Area	0.0%
CGIA Land Use Classification	45.6% forested, 54.2% cultivated, 0.2% wetland

Table 5. Adjacent Forested Areas Existing Tree and Shrub Species

Catfish Pond Mitigation Site
DMS Project No. 100039
Monitoring Year 3 - 2022

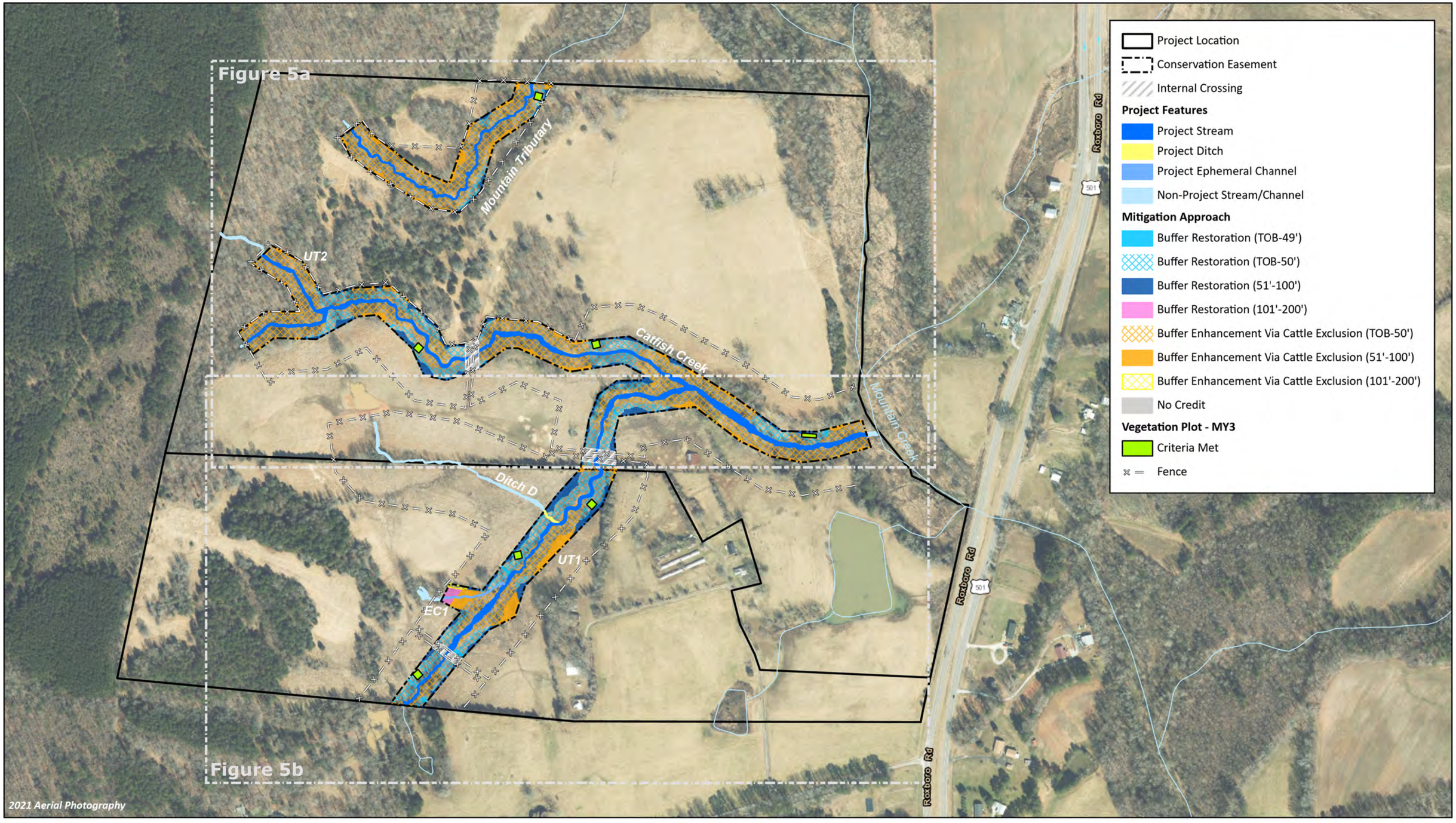
Common Name	Scientific Name	Wetland Indicator Status
Black Willow	*Salix nigra*	OBL
Eastern Red Cedar	*Juniperus virginiana*	FACU
Green Ash	*Fraxinus pennsylvanica*	FACW
Hazel Alder	*Alnus serrulata*	OBL
Paw Paw	*Asimina triloba*	FAC
Red Maple	*Acer rubrum*	FAC
Sweet Gum	*Liquidambar styraciflua*	FAC
Sycamore	*Platanus occidentalis*	FACW
White Oak	*Quercus alba*	FACU
Yellow Poplar	*Liriodendron tulipifera*	FACU

Table 6. Planted Tree Species

Catfish Pond Mitigation Site
DMS Project No. 100039
Monitoring Year 3 - 2022

Common Name	Scientific Name	Number Planted	% of Total
Arrowwood Viburnum	*Viburnum dentatum*	55	1.0%
Green Ash	*Fraxinus pennsylvanica*	646	11.5%
Overcup Oak	*Quercus lyrata*	365	6.5%
River Birch	*Betula nigra*	927	16.5%
Shumard Oak	*Quercus shumardii*	646	11.5%
Smooth Serviceberry	*Amelanchier laevis*	55	1.0%
Swamp Chestnut Oak	*Quercus michauxii*	646	11.5%
Sycamore	*Platanus occidentalis*	1,207	21.5%
White Oak	*Quercus alba*	365	6.5%
Willow Oak	*Quercus phellos*	646	11.5%
Yellow Buckeye	*Aesculus flava*	55	1.0%

APPENDIX 2. Visual Assessment Data

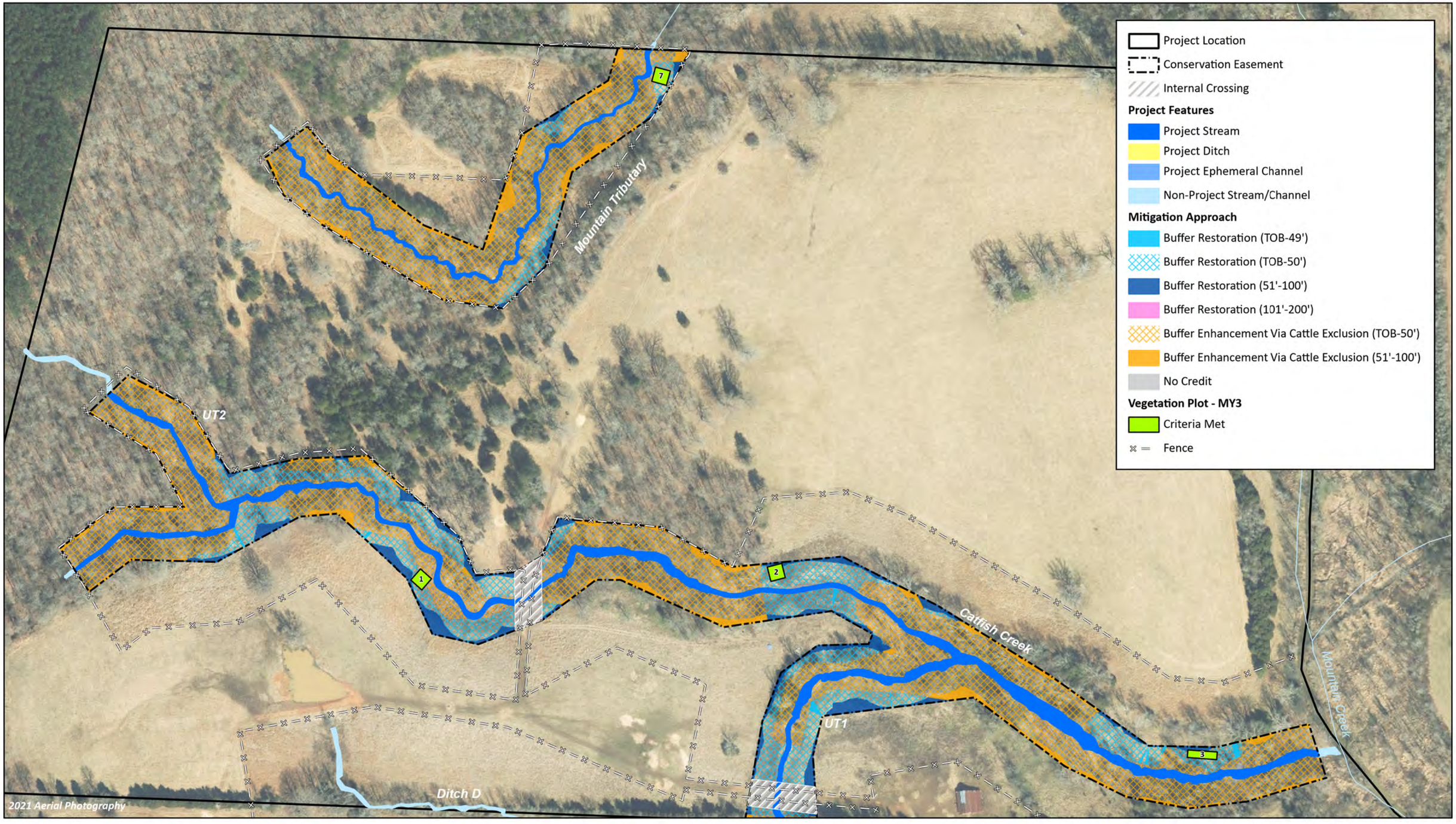


WILDLANDS ENGINEERING

0 400 800 Feet

N

Figure 5. Monitoring Plan View Map
Catfish Pond Mitigation Site
Monitoring Year 3 – 2022
Neuse River Basin (03020201)
Durham County, NC



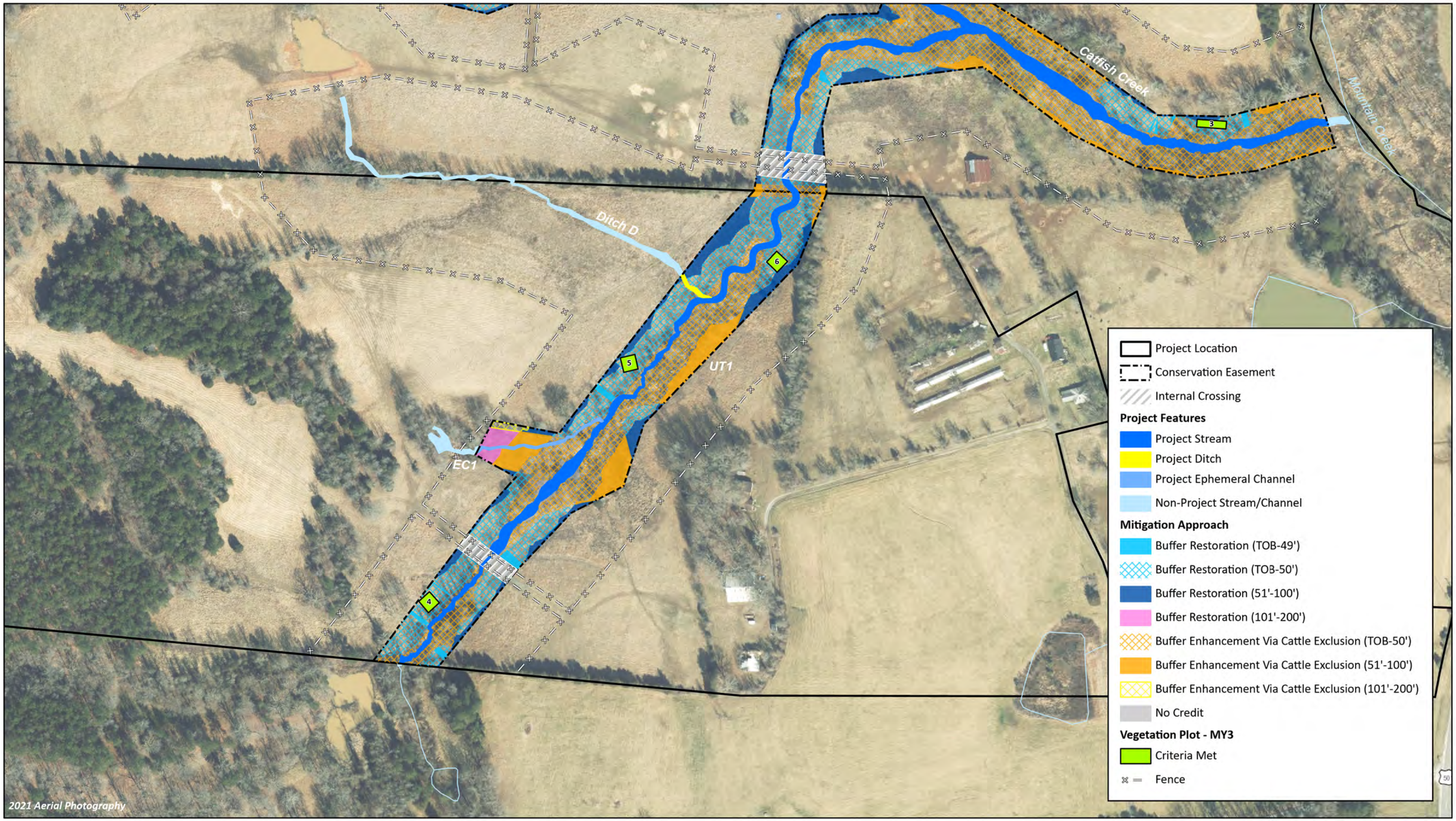
WILDLANDS ENGINEERING

0 200 400 Feet

N

Figure 5a. Monitoring Plan View Map
Catfish Pond Mitigation Site
Monitoring Year 3 – 2022
Neuse River Basin (03020201)

Durham County, NC



WILDLANDS ENGINEERING

0 200 400 Feet

N

Figure 5b. Monitoring Plan View Map
Catfish Pond Mitigation Site
Monitoring Year 3 – 2022
Neuse River Basin (03020201)

Durham County, NC

Table 7. Vegetation Condition Assessment Table

Catfish Pond Mitigation Site
DMS Project No. 100039
Monitoring Year 3 - 2022

Planted Acreage **8.00**

Vegetation Category	Definitions	Mapping Threshold (ac)	Combined Acreage	% of Planted Acreage
Bare Areas	Very limited cover of both woody and herbaceous material.	0.10	0	0%
Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	0.10	0	0%
		Total	**0.00**	**0%**
Areas of Poor Growth Rates	Areas with woody stems of a size class that are obviously small given the monitoring year.	0.25	0	0%
		Cumulative Total	**0.00**	**0%**

Visual assessment was completed October 18, 2022.

Easement Acreage **20.73**

Vegetation Category	Definitions	Mapping Threshold (ac)	Combined Acreage	% of Easement Acreage
Invasive Areas of Concern	Areas of points (if too small to render as polygons at map scale).	0.10	0	0%
Easement Encroachment Areas	Areas of points (if too small to render as polygons at map scale).	none	0 Encroachments Noted / 0 ac	

Visual assessment was completed October 18, 2022.

VEGETATION PLOT PHOTOGRAPHS

	
VEG PLOT 1 *(09/01/2022)*	**VEG PLOT 2** *(09/22/2022)*
	
VEG PLOT 3 *(09/22/2022)*	**VEG PLOT 4** *(09/22/2022)*
	
VEG PLOT 5 *(09/22/2022)*	**VEG PLOT 6** *(09/22/2022)*

VEG PLOT 7 *(09/01/2022)*

OVERVIEW PHOTOGRAPHS

APPENDIX 3. Vegetation Plot Data

Table 8. Vegetation Plot Criteria Attainment Table

Catfish Pond Mitigation Site
DMS Project No. 100039
Monitoring Year 3 - 2022

Plot	Success Criteria Met*	Tract Mean
1	Yes	100%
2	Yes	
3	Yes	
4	Yes	
5	Yes	
6	Yes	
7	Yes	

*Based on the target stem density for MY5 of 260 stems per acre.

Table 9. Vegetation Plot Data
Catfish Pond Mitigation Site
DMS Project No. 100039
Monitoring Year 3 - 2022

Planted Acreage	8.00
Date of Initial Plant	2020-03-25
Date of Current Survey	2022-09-22
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/ Shrub	Indicator Status	Veg Plot 1 F		Veg Plot 2 F		Veg Plot 3 F		Veg Plot 4 F		Veg Plot 5 F		Veg Plot 6 F		Veg Plot 7 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Aesculus flava	yellow buckeye	Tree	FACU	1	1												
	Betula nigra	river birch	Tree	FACW					1	1							4	4
	Fraxinus pennsylvanica	green ash	Tree	FACW			2	2				2	3	3	1	1	1	1
	Platanus occidentalis	American sycamore	Tree	FACW	4	7	6	6	3	3	8	8	2	2	6	6	6	6
	Quercus alba	white oak	Tree	FACU			2	2										
	Quercus michauxii	swamp chestnut oak	Tree	FACW			1	1	2	2	1	1	3	3	2	2		
	Quercus pagoda	cherrybark oak	Tree	FACW														
	Quercus phellos	willow oak	Tree	FAC	4	5			2	2	1	1	3	3	2	2		
	Quercus shumardii	Shumard's oak	Tree	FAC	1	1	1	1			2	2	2	3	1	1		
	Salix nigra	black willow	Tree	OBL														
	Sambucus canadensis	American black elderberry	Tree			1										3		
Sum				Performance Standard	10	15	12	12	8	8	12	14	13	14	12	15	11	11
Post Mitigation Plan Species	**Alnus serrulata**	**hazel alder**	**Tree**	**OBL**												**2**		
	Cercis canadensis	**eastern redbud**	**Tree**	**FACU**														**2**
	Diospyros virginiana	**common persimmon**	**Tree**	**FAC**						**5**		**1**						
	Juglans nigra	**black walnut**	**Tree**	**FACU**														**1**
	Liquidambar styraciflua	*sweetgum*	*Tree*	*FAC*								*1*		*1*				*2*
	Nyssa biflora	**swamp tupelo**	**Tree**	**FACW**		**1**												
Sum				Proposed Standard	10	16	12	12	8	13	12	15	13	14	12	17	11	14
Mitigation Plan Performance Standard				Current Year Stem Count		15		12		8		14		14		15		11
				Stems/Acre		607		486		324		526		567		607		445
				Species Count		5		5		4		5		5		6		3
				Dominant Species Composition (%)		47		50		38		53		20		40		46
				Average Plot Height (ft.)		4		10		6		9		5		8		5
				% Invasives		0		0		0		0		0		0		0
Post Mitigation Plan Performance Standard				Current Year Stem Count		16		12		13		15		14		17		14
				Stems/Acre		648		486		526		567		567		688		567
				Species Count		6		5		5		6		5		7		5
				Dominant Species Composition (%)		47		50		38		53		20		40		46
				Average Plot Height (ft.)		4		10		5		9		5		8		4
				% Invasives		0		0		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.

Table 10. Vegetation Performance Standards Summary Table
Catfish Pond Mitigation Site
DMS Project No. 100039
Monitoring Year 3 - 2022

	Veg Plot 1 F				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 7												
Monitoring Year 5												
Monitoring Year 3	607	4	5	0	486	10	5	0	324	6	4	0
Monitoring Year 2	405	3	4	0	526	6	5	0	405	4	5	0
Monitoring Year 1	567	3	5	0	607	4	6	0	486	3	6	0
Monitoring Year 0	567	3	5	0	607	3	6	0	486	3	6	0
	Veg Plot 4 F				Veg Plot 5 F				Veg Plot 6 F			
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3	526	9	5	0	567	5	5	0	607	8	6	0
Monitoring Year 2	405	7	4	0	526	4	5	0	567	4	5	0
Monitoring Year 1	405	4	4	0	526	3	5	0	567	3	5	0
Monitoring Year 0	405	4	4	0	526	2	5	0	607	2	6	0
	Veg Plot 7 F											
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives								
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3	445	5	3	0								
Monitoring Year 2	526	4	5	0								
Monitoring Year 1	648	3	5	0								
Monitoring Year 0	648	3	5	0								