Annual Monitoring Report (MY2)

KINGFIELD BUFFER MITIGATION SITE

Jones County, NC
NCDEQ Contract No. 0103-01
DMS ID No. 100176
DWR Project No. 2021-0020v2
RFP No. 16-20200103

Prepared for:

Mitigation Services
ENVIRONMENTAL QUALITY

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

November 2023

ROY COOPER
Governor
ELIZABETH S. BISER
Secretary
MARC RECKTENWALD
Director

NORTH CAROLINA
Environmental Quality

January 2, 2024

Emily Dunnigan
NCDEQ-DMS
217 West Jones St.
Raleigh, NC 27603

Subject: Task 6 Draft Year 2 Monitoring Report Comment Response – Kingfield Buffer Mitigation Project (DMS #100176)
Neuse River 03020204; Jones County, NC
Contract No. 0103-01

Dear Ms. Dunnigan:

On December 1, 2023, Eco Terra submitted the Draft Year 2 Monitoring Report for the Kingfield Buffer Mitigation Project. On December 14, 2023, DMS completed review of the draft report and supplied the following comments:

DMS Comments:

1. Page 3, Section 4.3: Please include details of the supplemental planting in the narrative. When was it planted? What was it planted with (species and number)? Were the trees from the approved mitigation plan? Include the planting date on the CCPV.
   The requested narrative details have been added to Section 4.3 and the CCPV as requested.

2. Page 3, Section 4.3: As a reminder, monitoring providers are responsible for checking the easement integrity across the project site for encroachments, missing markers, adequate signage, fence breaks, etc. Please confirm that the site was fully checked recently and what the results are.
   Yes, the site was fully checked recently. No additional easement integrity issues were observed.

3. Page 3, Section 4.3: Please discuss the encroachment discovered during the MY2 site visit, actions taken to prevent future encroachment, and add it to the CCPV. Please provide the shapefile for this feature in the digital submittal.
   Discussed in Section 4.3, added to CCPV, and photos supplied in Appendix 2 as requested.

4. Page 3, Section 4.3: Please adjust the acreage of low stem density planted based on the field discussion. Please remove the northern replanted area from the CCPV, since it was not planted, and adjust the planted area acres in the legend.
   CCPV has been adjusted as requested.

5. Photos: Please ensure photo stations and veg plot photographs are taken from the same location each year.
   Noted.

DWR MY1 Comments:

1. There is an area of low stem count highlighted in the figures. Should there be a random veg plot there to assess supplemental planting? If plot 7 is still passing what methods were used to indicate that there is low stem density in the area? Is because it is at 280 in MY1?
   Combined with a lower-than-expected 283 calculated stems/acre in Plot 3 at MY1, areas mapped as low stem density were observed to be under heavy herbaceous competition during MY1. The same areas were of notably less concern during MY2 as the trees grew taller. A random veg plot was not deemed necessary.

Please make the requested revisions and provide one (1) pdf copy of the revised Monitoring Report, the required digital data, and a response to comments letter for DMS review. The comment response letter should be included in the revised report and included after the report cover page.

If you have any questions, please contact me at any time. I can be reached at (919) 817-6534 or email me at emily.dunnigan@ncdenr.gov.

Sincerely,

Emily Dunnigan

Emily Dunnigan
Project Manager
NCDEQ - Division of Mitigation Services
217 West Jones St., Raleigh, NC 27603
Raleigh, NC 27603
919-817-6534

ANNUAL MONITORING REPORT (MY2)

KINGFIELD BUFFER MITIGATION SITE

Jones County, NC
NCDEQ Contract No. 0103-01
DMS ID No. 100176

Neuse River Basin
HUC 03020204

Prepared For:

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

Prepared By:

117 Centrewest Court
Cary, NC 27513
404.596.8004

This Baseline Monitoring Plan has been written in conformance with the requirements of the following:

- 15A NCAC 02B.0295 Mitigation Program Requirements for Protection and Maintenance of Riparian Buffers
- 15A NCAC 02B.0703 Nutrient Offset Credit Trading

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

Contributing Staff

Michael Beinenson
Principal-in-Charge

Michael Eagan
Operations Manager

Norton Webster
Project Manager

J. Burbage / M. Basu
QA/QC/GIS

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APPENDICES

1.0 Mitigation Project Summary

The Kingfield Buffer Mitigation Site (Site) is a buffer restoration project located approximately 3.4 miles northeast of Trenton in Jones County, NC. The Project is located within the Neuse River basin, 14-digit hydrologic unit code (HUC) 03020204010071. The Site comprises approximately 8.59 acres along an unnamed tributary (UT) to Musselshell Creek in the Crooked Creek targeted watershed (HUC 03020204010070) that drains into the Neuse River. Located within North Carolina Division of Mitigation Services (DMS) identified Hydrology and Water Quality Targeted Resource Areas (TRA), the Site has been implemented along a Class C, Sw, NSW, 303(d)-listed water impaired for aquatic life and ecological and biological integrity, according to the North Carolina Department of Environmental Quality (DEQ) 303(d) Final List (2022). According to the as-built survey and Division of Water Resources (DWR) Buffer Mitigation Calculation Tool v3 (updated August 2020), the Site is expected to generate 315,430.000 buffer mitigation units (BMU) (Appendix 1: Table 2).

1.1 Project Goals

The major goals of the Site are to address agricultural runoff, including nutrients and sediment, protect the project site in perpetuity, and restore terrestrial habitat. The Site will reduce future sediment and nutrient loading into Crooked Creek watershed and the Neuse River downstream. It will also improve terrestrial habitats along this stream by establishing a riparian corridor and allowing the land to convert to forested communities.

The project goals and objectives are consistent with those of the DMS, and the specific goals outlined in the 2018 Neuse River Basin Restoration Priorities (RBRP). As proposed, the Kingfield Buffer Mitigation Site will further help DMS to meet these goals.

1.2 Existing Site Conditions

The Site is located within three parcels (~135 acres) currently used for agricultural row crop production and animal pasture. Adjacent land use includes pasture and row crop agriculture. Additionally, minimal vegetated buffer exists within the Site along the length of the UT to Musselshell Creek (UT1) as well as Musselshell Creek proper.

The project was successfully planted in 2022 with appropriate trees and herbaceous vegetation and is now at the end of the second (2nd) full growing season and early stages of successful buffer restoration. The project restored forested riparian buffers and adjacent riparian areas to a maximum of approximately 100 feet from the top-of-bank of both streams and removed rotating crops and fertilizer inputs.

The restored Neuse riparian buffer and adjacent riparian areas will filter runoff from the surrounding farm fields and provide shading to improve stream temperatures and aquatic

habitat. Invasive vegetation will be treated as needed within the project area to promote native vegetation

Vegetative success criteria was confirmed at all plots, with stem densities ranging from 526 to 688 stems per acre. Supplemental planting of approved trees and herbaceous competition management was accomplished during February 2023 to ensure future project success.

2.0 Regulatory Considerations

Riparian buffer and adjacent riparian area restoration was accomplished in accordance with the Consolidated Buffer Mitigation Rule (15A NCAC 02B .0295) and the Nutrient Offset Credit Trading Rule (15A NCAC 02B .0703). All areas within 100+ linear feet of the top-of-bank of subject streams as measure from the top-of-bank landward were planted and devoted to generating riparian buffer mitigation credits. Areas designated for future nutrient offset conversion were planted similarly at a minimum 50 linear feet of the top of bank. Mitigation credits generated are listed in Table 2 and are based upon the DWR Buffer Mitigation Calculation Tool v3 (October 2020) (Appendix 1).

3.0 Project Construction Summary

Site construction was completed in February 2022, following mitigation plan approval. Eco Terra and supporting team members successfully planted and restored the proposed areas dedicated for riparian buffer and adjacent riparian area restoration with high quality native trees, shrubs, and herbaceous vegetation.

3.1 Riparian Area Restoration Activities

In accordance with the Mitigation Plan, restoration of the riparian areas involved planting bare root one- and two-year old trees in planting zones specific to soil and site conditions. A combination of machine and manual planting techniques were used depending on site conditions. Approximately 6,900 stems (803 stems/acre) were planted within the riparian areas designated for restoration.

4.0 Annual Monitoring and Performance Criteria

The Mitigation Program Requirements for Protection and Maintenance of Riparian Buffers (15A NCAC 02B .0295) and RFP 16-20200208 set forth specific performance criteria for the successful development and close-out of the Site. Performance criteria monitoring includes standardized vegetation plot establishment and annual monitoring for planted stems including individual plot photo documentation, overall site photo documentation, biannual visual assessments for project status and easement integrity including herbaceous and/or invasive species competition, stem mortality, stand health, incidental damage from agricultural equipment, and stem loss or damage from natural causes such as fire, disease, or animal predation. Figure 1 illustrates the location of project easement, permanent vegetation plots/photo points, as well as overall site photo points.

4.1 Vegetation

Seven permanent vegetation plots were established according to the most recent Carolina Vegetation Survey (CVS) protocol within the restored buffer area. Representative vegetation plots were established at a minimum density of 2% of the planted area. Specifically, vegetation monitoring was obtained for all plots according to the CVS-EEP Level I Protocol for Recording Vegetation, v4.2 (2008). Second year monitoring (MY2) vegetation stem data is included in Appendix 3: Table 3. All vegetation plots met success criteria for stem densities, averaging 607 stems/ac; overall tree vigor, averaging 3.2; and overall tree height, averaging 113 cm.

4.2 Photo Reference Stations

Site reference photo points were taken at designated points along the conservation easement boundary, providing an overall view of project success (Appendix 2). Individual plot photos were taken at the approximate southwest corner (origin) of each plot and are included in Appendix 3. All photo points were located by survey and georeferenced for map production to provide a consistent means for photo replication annually, or in the event a plot or photo location must be reestablished during the monitoring period. Photo orientation (direction and bearing) were recorded as well as approximate vertical position for consistency in photo logging.

4.3 Visual Assessments

Additional observations were made of site conditions and vegetation conditions outside of monitoring plots. Initial implementation and planting of the Site resulted in a density of 803 stems/acre. However, additional native trees were needed to supplement an approximately 0.79 acre low density area adversely impacted by aggressive herbaceous competition (Figure 1). Approximately 1,000 cumulative stems of one- to two-year old bareroot seedlings consisting of swamp chestnut oak, willow oak, and water oak were supplementally planted in the impacted area during February 2023. A January 2023 site

walk revealed scalloping along the easement boundary. The landowner was warned and horsetape and T-posts were installed to prevent future encroachment. Photos were provided to DMS early February 2023 to complete MY1. A scalloped border was observed at a December 2023 site walk and promptly marked off with horsetape and a T-post. The area of impact is noted on the CCPV and photo documentation provided in Appendix 2.

Biannual visual assessments will continue in order to appropriately monitor changing site conditions and address any issues to ensure Site success and performance criteria are met in subsequent monitoring years. Any additional Site problems will be noted and discussed in the annual reports, addressed in a remedial action plan if necessary, and monitored biannually to ensure performance criteria are met following any remedial action.

4.4 Annual Reporting Performance Criteria

All monitoring reports, including this annual report, will be compiled and submitted to DMS annually in accordance with the Riparian Buffer and Nutrient Offset Buffer Baseline and Annual Monitoring Report Template Ver. 2.0 (May 2017). Annual monitoring will occur for a minum of five years or until performance criteria are met.

4.5 Maintenance and Contingency Plans

Any Site observations identified through vegetation plots or visual assessments, whereby the performance criteria is not met, will be noted and discussed in the annual reports and addressed with a contingency plan as necessary. DMS/DWR will be notified and, if necessary, collaborate with Eco Terra to develop a contingency plan with remedial action steps to correct the performance criteria deficiency. Any contingency plan and remedial actions will occur within an agreed timeframe and monitoring adjusted accordingly, if necessary. Site problem areas will be monitored biannually to ensure performance criteria are met following any remedial action.

5.0 References

15 NCAC 02B .0295 Mitigation Program Requirements for Protection and Maintenance of Riparian Buffers. 2015.

15A NCAC 02B .0703 Nutrient Offset Trading. 2020.

NC Department of Water Resources. Methodology for Determining Nutrient Reductions Associated with Riparian Buffer Establishment. 1998.

NC Department of Water Resources. Buffer Interpretation/Clarification #2008-019 Memorandum. August 19, 2008.

NC Department of Environmental Quality. Division of Water Resources. Clarified Procedures for Calculating Buffer Mitigation Credits & Nutrient Offset Credits for Riparian Projects Regulated under 15A NCAC 02B .0295 and 15A NCAC 02B .0240. November 21, 2019.

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

NC Department of Environmental Quality. Division of Mitigation Services. 2017. Riparian Buffer and Nutrient Offset Buffer Baseline and Annual Monitoring Report Template Version 2.0.

NC Department of Environmental Quality. Division of Mitigation Services. 2018. Tar-Pamlico River Basin Restoration Priorities.

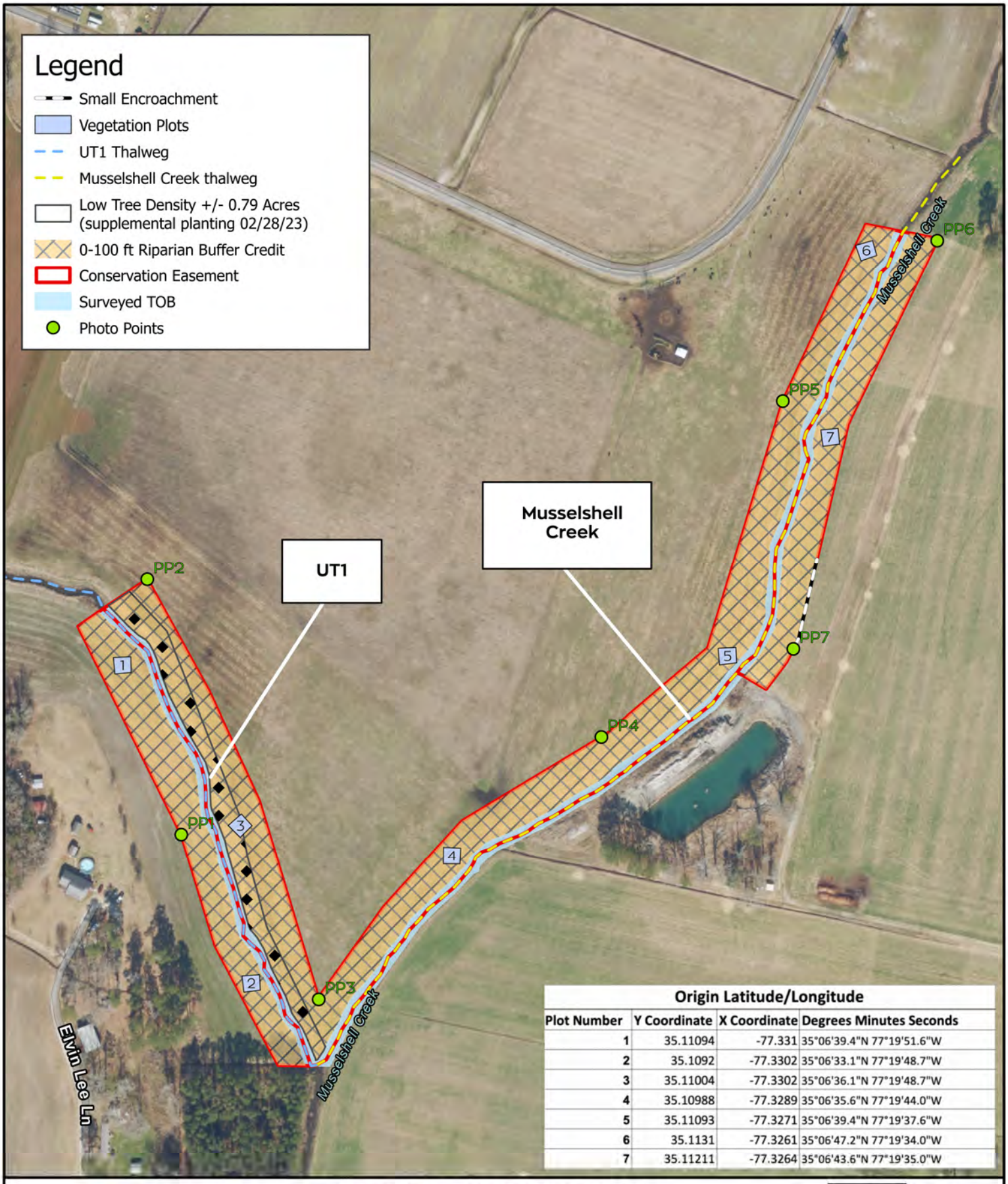
US Department of Agriculture. Natural Resources Conservation Service. 2021. Web Soil Survey. https://websoilsurvey.nrcs.usda.gov/app/. Accessed April 2021.

US Environmental Protection Agency. North Carolina Final 303(d) List. 2022. https://edocs.deq.nc.gov/WaterResources/DocView.aspx?dbid=0&id=2361776&cr=1. Published June 8, 2022.

US Geological Survey. 2013. Trenton. 1:24,000. North Carolina Topographic Quadrangle (7.5-minute series). Reston, VA: U.S. Department of the Interior, USGS, 2013.

APPENDIX 1

PROJECT DATA



Origin Latitude/Longitude			
Plot Number	Y Coordinate	X Coordinate	Degrees Minutes Seconds
1	35.11094	-77.331	35°06'39.4"N 77°19'51.6"W
2	35.1092	-77.3302	35°06'33.1"N 77°19'48.7"W
3	35.11004	-77.3302	35°06'36.1"N 77°19'48.7"W
4	35.10988	-77.3289	35°06'35.6"N 77°19'44.0"W
5	35.11093	-77.3271	35°06'39.4"N 77°19'37.6"W
6	35.1131	-77.3261	35°06'47.2"N 77°19'34.0"W
7	35.11211	-77.3264	35°06'43.6"N 77°19'35.0"W

Figure 1: Current Condition Plan View
Kingfield Buffer Mitigation Site
Neuse 03020204
Jones County, North Carolina
December 2023

NC Onemap 2021 Aerial Imagery

N W E S

0 260 520 Feet

Table 1: Buffer Project Attributes
Kingfield Buffer Mitigation Site
DMS ID No. 100176
DWR Project No. 2021-0020v2
Monitoring Year 2 – 2023

Project Name	Kingfield Buffer Mitigation Site
Hydrologic Unit Code	03020204
River Basin	Neuse
Geographic Location (decimal degrees)	35.110000, -77.330000
Site Protection Instrument (BK, PG)	422/637-688
Types of Credits	Riparian Buffer (315,430.000)
Mitigation Plan Date	December 2021
Initial Planting Date	February 2022
Baseline Report Date	June 2022
MY1 Report Date	November 2022
MY2 Report Date	November 2023
MY3 Report Date	November 2024
MY4 Report Date	November 2025
MY5 Report Date	November 2026
Close out Report Date/Visit	May 2027

Table 2: Buffer Project Components and Assets
Kingfield Buffer Mitigation Site
DMS ID No. 100176
DWR Project No. 2021-0020v2
Monitoring Year 2 – 2023

Table 3. Kingfield Buffer Mitigation Site, DMS No: 100176, Project Credits: 315,430.000 BMU

Neuse 03020204	Project Area
19.16394	N Credit Conversion Ratio (ft^2/pound)
N/A	P Credit Conversion Ratio (ft^2/pound)

Credit Type	Location	Subject? (enter NO if ephemeral or ditch[3])	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	0-100	UT1	133,008	133,008	1	100%	1.00000	Yes	133,008.000	Yes	6,940.535	–
Buffer	Rural	Yes	I / P	Restoration	0-100	Musselshell Creek	182,422	182,422	1	100%	1.00000	Yes	182,422.000	Yes	9,519.024	–
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						Totals (ft2):	315,430	315,430					315,430.000		16,459.559	0.000
						Total Buffer (ft2):	315,430	315,430								
						Total Nutrient Offset (ft2):	0	N/A								
						Total Ephemeral Area (ft^2) for Credit:	0	0								
						Total Eligible Ephemeral Area (ft^2):	78,858	0.0%	Ephemeral Reaches as % TABM							
Enter Preservation Credits Below						Total Eligible for Preservation (ft^2):	105,143	0.0%	Preservation as % TABM							

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
	Rural	Yes	I / P		0-100				10	100%		–
	Rural	Yes	Ephemeral		0-100				10	100%		–
												–
												–
												–
						Preservation Area Subtotals (ft^2):	0	0				

TOTAL AREA OF BUFFER MITIGATION (TABM)			
Mitigation Totals		Square Feet	Credits
Restoration:		315,430	315,430.000
Enhancement:		0	0.000
Preservation:		0	0.000
Total Riparian Buffer:		315,430	315,430.000
TOTAL NUTRIENT OFFSET MITIGATION			
Mitigation Totals		Square Feet	Credits
Nutrient Offset:	Nitrogen:	0	0.000
	Phosphorus:		0.000

Credit conversions must be calculated using the guidance provided in the Clarified Procedures for Calculating Buffer Mitigation Credits and Nutrient Offset Credits letter issued by the DWR in November 2019 and located at: https://files.nc.gov/ncdeq/Water%20Quality/Surface%20Water%20Protection/401/Mitigation/Issues---Resolutions-Ver-1.0-buffer-mitigation-nutrient-offset.pdf

APPENDIX 2

SITE PHOTO-POINTS

Kingfield Buffer Mitigation Site
DMS ID# 100176
DWR Project # 2021-0020v2

MY2 2023 PHOTO STATION PHOTOS

MY2	MY1

Photo #1
Date: 09/20/2023
Feature: Photo Station 1
Direction: East

Photo #2
Date: 09/20/2023
Feature: Photo Station 2
Direction: East

Photo #3
Date: 09/20/2023
Feature: Photo Station 3
Direction: West

Kingfield Buffer Mitigation Site
DMS ID# 100176
DWR Project # 2021-0020v2

MY2 2023 PHOTO STATION PHOTOS

MY2	MY1

Photo #4
Date: 09/20/2023
Feature: Photo Station 4
Direction: East

Photo #5
Date: 09/20/2023
Feature: Photo Station 5
Direction: East

Photo #6
Date: 09/20/2023
Feature: Photo Station 6
Direction: East

MY2 2023 PHOTO STATION PHOTOS

MY2	MY1

Photo #7		
Date: 09/20/2023		
Feature: Photo Station 7		
Direction: East		

KINGFIELD BUFFER MITIGATION
DMS ID# 100176
DWR Project # 2021-0020

MY2 ENCROACHMENT AREA PHOTOS

	MY2 Updated Marking	MY2 Updated Marking
Photo #1 Date: 12/14/23 Feature: Near PP7 Direction: West, South		
Photo #2 Date: 12/14/23 Feature: Near PP7 Direction: West, South		

APPENDIX 3

MONITORING PLOT DATA
MONITORING PLOT PHOTOGRAPHS

Table 3: Planted and Total Stems
Kingfield Buffer Mitigation Site
DMS ID No. 100176
DWR Project No. 2021-0020v2
Monitoring Year 2 - 2023

			Current Plot Data (MY2-2023)														Annual Summary		
			MP1		MP2		MP3		MP4		MP5		MP6		MP7		MY2	MY1	MY0
Scientific Name	Common Name	Species Type	P	T	P	T	P	T	P	T	P	T	P	T	P	T	2023	2022	2022
Betula nigra	River Birch	Tree	2	2	2	2			1	1	2	2	1	1			8	6	10
Diospyros virginiana	Persimmon	Tree	1	1			1	1							1	1	3		6
Fraxinus pennsylvanica	Green Ash	Tree	3	3	3	3	1	1					1	1	1	1	9	7	8
Liriodendron tulipifera	Tulip Poplar	Tree	1	1			2	2	1	1	1	1					5	6	8
Quercus laurifolia	Laurel Oak	Tree			3	3	1	1			2	2	5	5	4	4	15	17	19
Quercus michauxii	Swamp Chestnut Oak	Tree	2	2	2	2	3	3	6	6	2	2	3	3	3	3	21	17	19
Quercus nigra	Water Oak	Tree	2	2	1	1			1	1	2	2	4	4	4	4	14	14	12
Quercus phellos	Willow Oak	Tree	1	1	3	3	1	1	2	2	2	2			2	2	11	14	13
Quercus shumardii	Shumard Oak	Shrub Tree			1	1	4	4			3	3	2	2			10	7	8
Taxodium distichum	Bald-cypress	Tree	1	1	2	2	4	4	2	2							9	7	12
		Stem count	13	13	17	17	17	17	13	13	14	14	16	16	15	15	105	95	115
		size (ares)		1		1		1		1		1		1		1	7	7	20
		Size (acres)		0.025		0.025		0.025		0.025		0.025		0.025		0.025	0.17	0.17	0.17
		Species count		8		8		8		6		7		6		6	10	9	10
		Vigor		3.2		3.2		3.5		3.3		3.8		4		3.2	3.4	3.8	4
		Height (cm)		93.0		81.0		90.0		103.0		120.0		144.0		113.0	106.3	60.6	44.1
		Stems/acre		526		688		688		526		567		647		607	607	549	665

Color for Density

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%

Plot Size (ares/ac): 1 / 0.0247

P: planted stems
T: total stems

KINGFIELD BUFFER MITIGATION SITE - MONITORING YEAR 2

	Latitude	Longitude	Species	MY2 - Tree Height (cm)	Vigor MY2	Plot Num
PLOT 1	35.11103094	-77.33099515	Green Ash (Fraxinus pennsylvanica)	80	3	1
	35.11100981	-77.33097397	River Birch (Betula nigra)	111	4	1
	35.11098847	-77.33096353	Green Ash (Fraxinus pennsylvanica)	102	4	1
	35.1109679	-77.33094894	Green Ash (Fraxinus pennsylvanica)	105	3	1
	35.11102475	-77.3309481	Water Oak (Quercus nigra	58	3	1
	35.11102066	-77.33102871	Bald Cypress (Taxodium distichum)	58	2	1
	35.11100408	-77.33101337	Persimmon (Diospyros virginiana)	63	3	1
	35.11096283	-77.33101996	Swamp Chesnut Oak (Quercus michauxii)	132	4	1
	35.11098058	-77.33103312	Water Oak (Quercus nigra	125	4	1
	35.11099756	-77.33104731	Swamp Chesnut Oak (Quercus michauxii)	131	4	1
	35.11101356	-77.33106127	Willow Oak (Quercus phellos)	150	4	1
	35.11097657	-77.33099158	River Birch (Betula nigra)	46	2	1
	35.11095915	-77.33097983	Yellow Poplar (Liriodendron tulipifera)	47	2	1
			Number of Trees	**13**		
			Number of Species	**8**		
			Avg Ht	93		
			Min Ht	46		
			Max Ht	150		
			Avg Vigor	**3.2**		
			Trees per ac	**526**		

	Latitude	Longitude	Species	MY2 - Tree Height (cm)	Vigor MY2	Plot Num
PLOT 2	35.10923276	-77.33017486	Green Ash (Fraxinus pennsylvanica)	47	2	2
	35.10924762	-77.33018337	River Birch (Betula nigra)	48	2	2
	35.10924816	-77.33014119	Bald Cypress (Taxodium distichum)	37	3	2
	35.1092648	-77.33019012	Green Ash (Fraxinus pennsylvanica)	70	3	2
	35.10924987	-77.33014078	Shumard Oak (Quercus shumardii)	53	4	2
	35.10927944	-77.33019547	River Birch (Betula nigra)	203	4	2
	35.10922917	-77.33013093	Willow Oak (Quercus phellos)	77	4	2
	35.10930054	-77.33020741	Green Ash (Fraxinus pennsylvanica)	79	3	2
	35.10926585	-77.33015128	Water Oak (Quercus nigra	64	4	2
	35.1092789	-77.33015793	Laurel Oak (Quercus laurifolia)	41	4	2
	35.10929314	-77.33024677	Willow Oak (Quercus phellos)	187	4	2
	35.10928089	-77.33023756	Willow Oak (Quercus phellos)	81	3	2
	35.1092992	-77.33016914	Swamp Chesnut Oak (Quercus michauxii)	115	4	2
	35.1092678	-77.33023056	Laurel Oak (Quercus laurifolia)	50	2	2
	35.10924825	-77.33022175	Swamp Chesnut Oak (Quercus michauxii)	130	3	2
	35.10921718	-77.330202	Bald Cypress (Taxodium distichum)	40	2	2
	35.1092304	-77.33020816	Laurel Oak (Quercus laurifolia)	55	3	2
			Number of Trees	**17**		
			Number of Species	8		
			Avg Ht	81		
			Min Ht	37		
			Max Ht	203		
			Avg Vigor	3.2		
			Trees per ac	688		

	Latitude	Longitude	Species	MY2 - Tree Height (cm)	Vigor MY2	Plot Num
PLOT 3	35.11005726	-77.33024822	Laurel Oak (Quercus laurifolia)	97	4	3
	35.11011505	-77.33016925	Shumard Oak (Quercus shumardii)	50	4	3
	35.11007535	-77.33026112	Bald Cypress (Taxodium distichum)	110	3	3
	35.11009093	-77.33026356	Bald Cypress (Taxodium distichum)	66	3	3
	35.1101075	-77.33020593	Yellow Poplar (Liriodendron tulipifera)	143	4	3
	35.11010754	-77.3302714	Swamp Chesnut Oak (Quercus michauxii)	68	3	3
	35.11013113	-77.33021495	Green Ash (Fraxinus pennsylvanica)	115	4	3
	35.11014566	-77.3302217	Shumard Oak (Quercus shumardii)	85	4	3
	35.11011241	-77.33030825	Swamp Chesnut Oak (Quercus michauxii)	139	4	3
	35.11016117	-77.33023081	Bald Cypress (Taxodium distichum)	68	4	3
	35.11012205	-77.33027849	Swamp Chesnut Oak (Quercus michauxii)	140	4	3
	35.11013607	-77.33028347	Persimmon (Diospyros virginiana)	43	2	3
	35.1101426	-77.33025061	Shumard Oak (Quercus shumardii)	88	4	3
	35.110127	-77.33028007	Shumard Oak (Quercus shumardii)	86	3	3
	35.11010257	-77.33023758	Yellow Poplar (Liriodendron tulipifera)	66	2	3
	35.11008224	-77.33022766	Willow Oak (Quercus phellos)	94	3	3
	35.11012234	-77.3302451	Bald Cypress (Taxodium distichum)	69	4	3
			Number of Trees	17		
			Number of Species	11		
			Avg Ht	90		
			Min Ht	43		
			Max Ht	143		
			Avg Vigor	3.5		
			Trees per ac	688		

	Latitude	Longitude	Species	MY2 - Tree Height (cm)	Vigor MY2	Plot Num
PLOT 4	35.10990089	-77.32890449	Bald Cypress (Taxodium distichum)	90	3	4
	35.10990762	-77.32880272	Water Oak (Quercus nigra	100	4	4
	35.10991367	-77.32888813	Swamp Chesnut Oak (Quercus michauxii)	103	3	4
	35.1098923	-77.32881949	Swamp Chesnut Oak (Quercus michauxii)	50	4	4
	35.10991823	-77.32888217	River Birch (Betula nigra)	190	4	4
	35.10988581	-77.32887702	Swamp Chesnut Oak (Quercus michauxii)	100	4	4
	35.10996167	-77.32888059	Willow Oak (Quercus phellos)	85	2	4
	35.10991045	-77.32884939	Bald Cypress (Taxodium distichum)	116	4	4
	35.10997244	-77.32887269	Willow Oak (Quercus phellos)	120	3	4
	35.10992708	-77.32883033	Yellow Poplar (Liriodendron tulipifera)	86	4	4
	35.10995832	-77.32883308	Swamp Chesnut Oak (Quercus michauxii)	129	3	4
	35.10994392	-77.32880792	Swamp Chesnut Oak (Quercus michauxii)	85	3	4
	35.10994396	-77.32885738	Swamp Chesnut Oak (Quercus michauxii)	80	2	4
			Number of Trees	13		
			Number of Species	7		
			Avg Ht	103		
			Min Ht	50		
			Max Ht	190		
			Avg Vigor	3.3		
			Trees per ac	526		

	Latitude	Longitude	Species	MY2 - Tree Height (cm)	Vigor MY2	Plot Num
PLOT 5	35.11094684	-77.32706764	Shumard Oak (Quercus shumardii)	142	4	5
	35.1109721	-77.32707386	River Birch (Betula nigra)	75	3	5
	35.11099686	-77.32697221	Swamp Chesnut Oak (Quercus michauxii)	123	4	5
	35.11099075	-77.32705358	Laurel Oak (Quercus laurifolia)	113	3	5
	35.11098136	-77.32698599	Willow Oak (Quercus phellos)	74	4	5
	35.11101266	-77.32706892	Laurel Oak (Quercus laurifolia)	175	4	5
	35.11101494	-77.3270327	Water Oak (Quercus nigra	121	4	5
	35.11096515	-77.32700266	Shumard Oak (Quercus shumardii)	140	4	5
	35.11100294	-77.32704116	Swamp Chesnut Oak (Quercus michauxii)	122	4	5
	35.1109509	-77.32701801	River Birch (Betula nigra)	200	4	5
	35.11101542	-77.3269964	Willow Oak (Quercus phellos)	82	3	5
	35.11095758	-77.32704911	Shumard Oak (Quercus shumardii)	115	4	5
	35.11099957	-77.32701136	Water Oak (Quercus nigra	142	4	5
	35.11097267	-77.32703216	Yellow Poplar (Liriodendron tulipifera)	50	4	5
			Number of Trees	14		
			Number of Species	8		
			Avg Ht	120		
			Min Ht	50		
			Max Ht	200		
			Avg Vigor	3.8		
			Trees per ac	567		

	Latitude	Longitude	Species	MY2 - Tree Height (cm)	Vigor MY2	Plot Num
PLOT 6	35.11311624	-77.32610196	Laurel Oak (Quercus laurifolia)	206	4	6
	35.11314796	-77.32611278	Shumard Oak (Quercus shumardii)	56	3	6
	35.11313521	-77.32604957	Laurel Oak (Quercus laurifolia)	156	4	6
	35.11316425	-77.32610002	Shumard Oak (Quercus shumardii)	180	4	6
	35.11314923	-77.32604016	River Birch (Betula nigra)	156	4	6
	35.113181	-77.32609461	Water Oak (Quercus nigra	54	2	6
	35.1131993	-77.32611871	Water Oak (Quercus nigra	105	4	6
	35.11317938	-77.32602309	Swamp Chesnut Oak (Quercus michauxii)	170	4	6
	35.11320097	-77.32608375	Water Oak (Quercus nigra	152	4	6
	35.1131937	-77.32601377	Laurel Oak (Quercus laurifolia)	152	4	6
	35.11319804	-77.32604916	Laurel Oak (Quercus laurifolia)	130	3	6
	35.11321242	-77.32603923	Water Oak (Quercus nigra	208	4	6
	35.11318815	-77.32603169	Green Ash (Fraxinus pennsylvanica)	132	4	6
	35.11316333	-77.32603028	Swamp Chesnut Oak (Quercus michauxii)	160	4	6
	35.11311724	-77.3260619	Swamp Chesnut Oak (Quercus michauxii)	166	4	6
	35.1131621	-77.32609057	Laurel Oak (Quercus laurifolia)	127	4	6
			Number of Trees	16		
			Number of Species	6		
			Avg Ht	144		
			Min Ht	54		
			Max Ht	208		
			Avg Vigor	3.8		
			Trees per ac	648		

	Latitude	Longitude	Species	MY2 - Tree Height (cm)	Vigor MY2	Plot Num
PLOT 7	35.11213015	-77.32629806	Laurel Oak (Quercus laurifolia)	125	3	7
	35.11214467	-77.32629504	Laurel Oak (Quercus laurifolia)	95	3	7
	35.11219962	-77.32638002	Willow Oak (Quercus phellos)	210	4	7
	35.11218888	-77.32628212	Persimmon (Diospyros virginiana)	110	3	7
	35.11220757	-77.32627382	Swamp Chesnut Oak (Quercus michauxii)	138	2	7
	35.11219311	-77.32634817	Willow Oak (Quercus phellos)	174	4	7
	35.11217794	-77.32635048	Persimmon (Diospyros virginiana)	36	4	7
	35.11219984	-77.32630708	Water Oak (Quercus nigra	106	3	7
	35.11217647	-77.32635353	Willow Oak (Quercus phellos)	170	4	7
	35.11215751	-77.32635938	Willow Oak (Quercus phellos)	110	4	7
	35.11216062	-77.32632537	Water Oak (Quercus nigra	92	2	7
	35.11213671	-77.32636514	Laurel Oak (Quercus laurifolia)	95	4	7
	35.11214439	-77.32633109	Swamp Chesnut Oak (Quercus michauxii)	56	3	7
	35.11213327	-77.32633255	Laurel Oak (Quercus laurifolia)	80	2	7
	35.11211993	-77.32637145	Swamp Chesnut Oak (Quercus michauxii)	97	3	7
			Number of Trees	15		
			Number of Species	7		
			Avg Ht	113		
			Min Ht	36		
			Max Ht	210		
			Avg Vigor	3.2		
			Trees per ac	607		

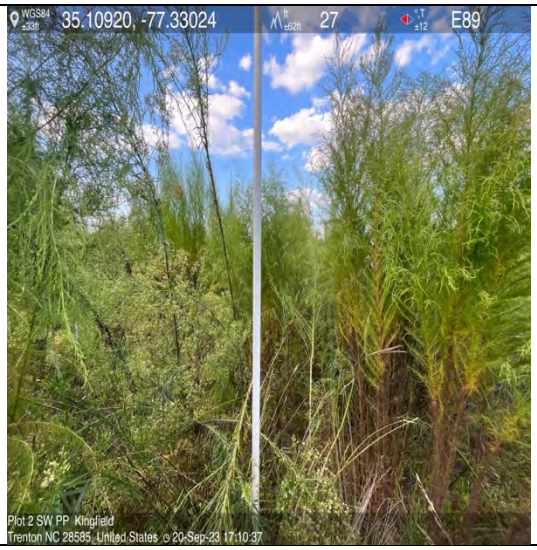
Kingfield Buffer Mitigation Site
DMS ID# 100176
DWR Project # 2021-0020v2

MY2 2023 MONITORING PLOT PHOTOS

MY2	MY1

Photo #1
Date: 09/20/2023
Feature: Plot 1
Direction: East

Photo #2
Date: 09/20/2023
Feature: Plot 2
Direction: East



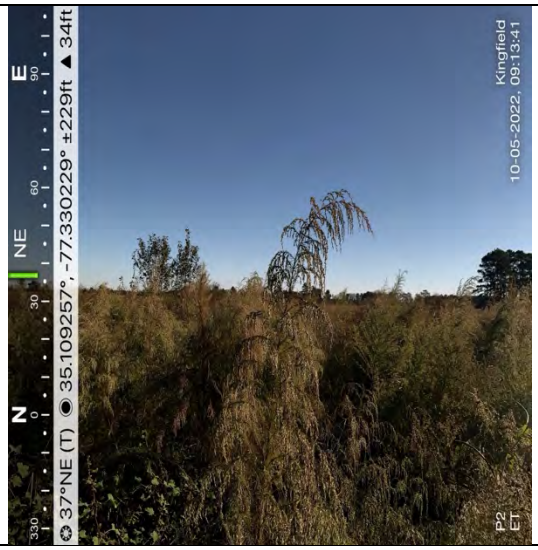
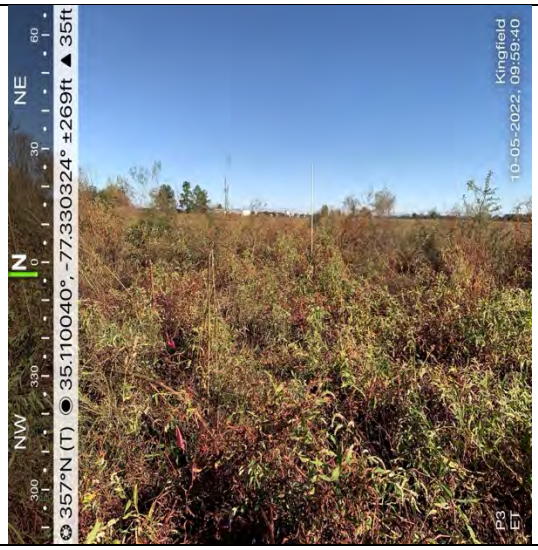


Photo #3
Date: 09/20/2023
Feature: Plot 3
Direction: East



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MY2 2023 MONITORING PLOT PHOTOS

MY2	MY1

Photo #4
Date: 09/20/2023
Feature: Plot 4
Direction: East

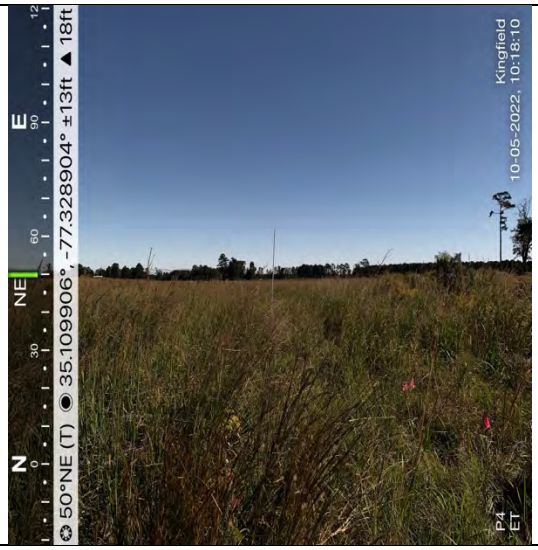

Photo #5
Date: 09/20/2023
Feature: Plot 5
Direction: East

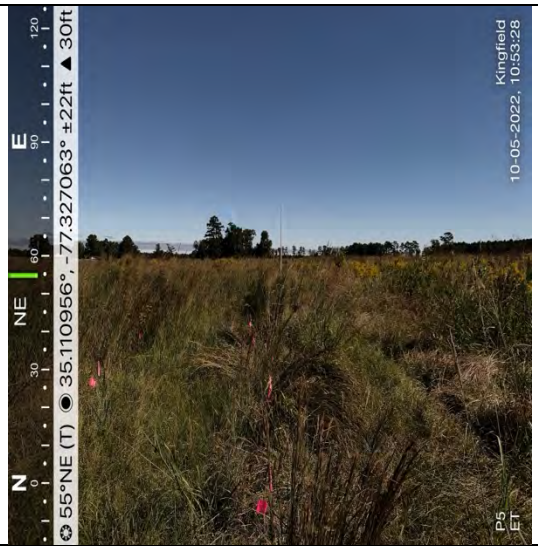

Photo #6
Date: 09/20/2023
Feature: Plot 6
Direction: East

Kingfield Buffer Mitigation Site
DMS ID# 100176
DWR Project # 2021-0020v2

MY2 2023 MONITORING PLOT PHOTOS

MY2	MY1

Photo #7
Date: 09/20/2023
Feature: Plot 7
Direction: Northeast