

MONITORING YEAR 4 ANNUAL REPORT
Final

January 2024

DRY CREEK MITIGATION SITE
Durham County, NC
Neuse River Basin
HUC 03020201010050
DMS Project No. 97082
NCDEQ Contract No. 6827
USACE Action ID No. SAW-2016-00880
DWR Project No. 2016-0369

Data Collection Dates: January - December 2023

PREPARED FOR:

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

January 24, 2024

Danielle Mir
NC Department of Environmental Quality, Division of Mitigation Services
217 W. Jones Street, Suite 3000
Raleigh, NC 27609-1652

Subject: DMS Comments on the MY4 2023 Draft Report
Dry Creek ID # 87082, DMS Contract # 6827

Dear Ms. Mir,

We have reviewed the comments on the MY4 draft report for the above referenced project dated December 19, 2923 and have revised the report based on these comments. The revised documents are submitted with this letter. Below are responses to each of your comments. For your convenience, the comments are reprinted with our response in italics.

Stream MY Report & Field Visit:

1. During site visit a newly created beaver dam was observed on Dry Creek, upstream of confluence of UT-1. Overall, the site looked great.

   Response: *Wildlands will continue to conduct regular site walks to stay on top of any reoccurring beaver issues. Wildlands will be in contact with APHIS to remove beaver dams and eradicate any beaver on site.*

If you have any questions, please contact me by phone (919) 851-9986, or by email (jlorch@wildlandseng.com).

Sincerely,

Jason Lorch, *Monitoring Coordinator*

PREPARED BY:

WILDLANDS
ENGINEERING

312 West Millbrook Road, Suite 225
Raleigh, NC 27609

Jason Lorch
jlorch@wildlandseng.com
Phone: 919.851.9986

DRY CREEK MITIGATION SITE

Monitoring Year 4 Annual Report

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FIGURES

APPENDICES

*Content omitted from Monitoring Year 4 Report

Section 1: PROJECT OVERVIEW

The Dry Creek Mitigation Site (Site) is located in Durham County, approximately 3 miles northwest of Butner, NC and approximately 2 miles west of the Granville County/Durham County line. Table 3 presents information related to the project attributes.

1.1 Project Quantities and Credits

The Site is located on 9 parcels under 6 different landowners and a conservation easement was recorded on 29.764 acres. Mitigation work within the Site included restoration, enhancement I, enhancement II, and preservation of perennial and intermittent stream channels. Table 1 below shows stream credits by reach and the total amount of stream credits expected at closeout.

Table 1: Project Quantities and Credits

PROJECT MITIGATION QUANTITIES							
Project Segment	**Mitigation Plan Footage**	**As-Built Footage**	**Mitigation Category**	**Restoration Level**	**Mitigation Ratio (X:1)**	**Credits**	**Comments**
Stream							
Dry Creek Reach 1	1,278	1,247	Warm	R	1.0	1,278.000	Pond Removal, Full Channel Restoration, Planted Buffer, Fencing Out Livestock
Dry Creek Reach 2	81	84	Warm	R	1.0	81.000	Full Channel Restoration, Planted Buffer, Fencing Out Livestock
	44	43	Warm	N/A	N/A	N/A	Internal Easement Culvert Crossing
	1,681	1,656	Warm	R	1.0	1,681.000	Full Channel Restoration, Planted Buffer, Fencing out Livestock
	60	60	Warm	N/A	N/A	N/A	Bridge Crossing, Easement Break
	85	75	Warm	R	1.0	85.000	Full Channel Restoration, Planted Buffer, Fencing out Livestock
Dry Creek Reach 3	1,603	1,583	Warm	R	1.0	1,603.000	Full Channel Restoration, Invasive Removal
Dry Creek Reach 4	241	243	Warm	R	1.0	241.000	Full Channel Restoration, Invasive Removal
	85	85	Warm	N/A	N/A	N/A	Culvert Crossing, Easement Break
	813	807	Warm	R	1.0	813.000	Full Channel Restoration, Invasive Removal
UT1 Reach 1	216	215	Warm	EII	2.5	86.400	Bank Repairs, Fencing Out Livestock, Planted Buffer
	35	36	Warm	N/A	N/A	N/A	Utility Crossing
	205	202	Warm	EII	2.5	82.000	Bank Repairs, Fencing Out Livestock, Planted Buffer

PROJECT MITIGATION QUANTITIES							
Project Segment	**Mitigation Plan Footage**	**As-Built Footage**	**Mitigation Category**	**Restoration Level**	**Mitigation Ratio (X:1)**	**Credits**	**Comments**
UTI Reach 2	631	627	Warm	R	1.0	631.000	Pond Removal, Full Channel Restoration, Planted Buffer, Fencing Out Livestock
	52	53	Warm	N/A	N/A	N/A	Culvert Crossing, Utility Relocation, Easement Break
	436	426	Warm	R	1.0	436.00	Full Channel Restoration, Planted Buffer, Fencing Out Livestock
UT1A	166	165	Warm	EI	1.5	110.667	Grade Control Structures, Fencing
UT2	151	135	Warm	EII	2.5	60.400	Bank Repairs, Fencing Out Livestock
UT3	156	160	Warm	EII	2.5	62.400	Bank Repairs, Fencing Out Livestock
UT4	115	114	Warm	P	10.0	11.500	Conservation Easement
UT5 Reach 1	298	285	Warm	EI	1.5	198.667	Grade Control Structures, Invasive Removal, Planted Buffer
	80	79	Warm	N/A	N/A	N/A	Culvert Crossing, Easement Break
UT5 Reach 2[1]	119	112	Warm	R	1.0	104.000	Full Channel Restoration
UT6 Reach 1	617	612	Warm	R	1.0	617.000	Full Channel Restoration, Invasive Removal
UT6 Reach 2	209	209	Warm	P	10.0	20.900	Conservation Easement
UT6 Reach 3	89	89	Warm	R	1.0	89.000	Full Channel Restoration, Invasive Removal
UT7	415	408	Warm	EII	2.5	166.000	Bank Repairs

1. No credit proposed for UT5 Reach 2 Station 705+61 to 705+76 due to easement width being less than 15 feet wide.

Blue = **Restoration**	Yellow = **Enhancement I**	Orange = **Enhancement II**	Green = **Preservation**

Restoration Level	**Stream**		
	Warm	**Cool**	**Cold**
Restoration	7,659.000		
Enhancement I	309.334		
Enhancement II	457.200		
Preservation	32.400		
Totals	8,457.934		
Total Stream Credit	**8,457.934**		

1.2 Project Goals and Objectives

The project is intended to provide numerous ecological benefits. Table 2 below describes expected outcomes to water quality and ecological processes and provides project goals and objectives.

Table 2: Goals, Performance Criteria, and Functional Improvements

Goal	Objective/ Treatment	Likely Functional Uplift	Performance Criteria	Measurement	Cumulative Monitoring Results
Improve the stability of stream channels.	Construct stream channels that will maintain stable cross-sections, patterns, and profiles over time.	Reduce erosion and sediment inputs; maintain appropriate bed forms and sediment size distribution.	ER stays over 2.2 and BHR below 1.2 with visual assessments showing progression towards stability.	Cross-section monitoring and visual inspections.	No deviations from design.
Improve in-stream habitat.	Install habitat features such as cover logs, log sills, and bush toes into restored/enhanced streams. Add woody materials to channel beds. Construct pools of varying depth. Fence out livestock.	Support biological communities and processes. Provide aquatic habitats for diverse populations of aquatic organisms.	There is no required performance standard for this metric.	N/A	N/A
Reconnect channels with floodplains and riparian wetlands.	Reconstruct stream channels with appropriate bankfull dimensions and depth relative to existing floodplain.	Reduce shear stress on channel; hydrate adjacent wetland areas; filter pollutants out of overbank flows; provide surface storage of water on floodplain; increase groundwater recharge while reducing outflow of stormwater; support water quality and habitat goals.	Four bankfull events in separate years within monitoring period. 30 consecutive days of flow for intermittent channels.	Crest gauges and/or pressure transducers recording flow elevations.	Bankfull events recorded on Dry Creek R2 and R3, UT1 R2, and UT6 R1. No bankfull events recorded on UT5 R1 during MY4. UT1A, UT2, and UT5 R1 exceeded 30 days of consecutive flow.
Exclude cattle from project streams.	Install fencing around project areas adjacent to cattle pastures or remove cattle from the Site.	Reduce and control sediment inputs. Reduce and manage nutrient inputs. Contribute to protection of or improvement to a Water Supply Waterbody.	There is no required performance standard for this metric.	N/A	N/A

Goal	Objective/ Treatment	Likely Functional Uplift	Performance Criteria	Measurement	Cumulative Monitoring Results
Restore / improve riparian buffers.	Plant native tree species in riparian zones that are currently insufficient.	Provide a canopy to shade streams and reduce thermal loadings; stabilize stream banks and floodplain; support water quality and habitat goals.	Survival rate of 320 stems per acre at MY3, 260 planted stems per acre at MY5, and 210 stems per acre at MY7. Height requirement is 7 feet at MY5 and 10 feet at MY7.	One hundred square meter vegetation plots are placed on 2% of the planted area of the Site and monitored annually.	Ten of the twelve vegetation plots have a planted stem density of 260 stems per acre or greater. Two additional transects were collected to sufficiently capture data in all supplementally planted areas that occurred on October 19, 2022.
Permanently protect the project Site from harmful uses.	Establish conservation easements on the Site.	Ensure that development and agricultural uses that would damage the Site or reduce the benefits of the project are prevented.	Prevent easement encroachment.	Visually inspect the perimeter of the Site to ensure no easement encroachment is occurring.	No easement encroachments.
Stabilize eroding stream banks.	Reconstruct stream channels slated for restoration with stable dimensions. Create stable tie-ins for tributaries joining restored channels. Add bank revetments and in-stream structures to reaches to protect restored/enhanced streams.	Reduce sediment inputs. Contribute to protection of or improvement to a Water Supply Waterbody.	There is no required performance standard for this metric.	N/A	N/A

1.3 Project Attributes

The Site includes Dry Creek and eight unnamed tributaries. Prior to construction, cattle grazed in rotations along UT1, UT1a, and Dry Creek to the UT3 confluence, leading to significant ecological impacts along these streams. In addition, there were two in-line ponds located along UT1 Reach 2 and Dry Creek Reach 2 that were removed during construction. The northern half of the watershed has been forested since the 1950s, and the southern half of the watershed has remained primarily in agricultural use since 1940. In general, the area surrounding the Site has maintained its rural, agricultural character over the past 78 years with minor changes in land cover. Table 3 below and Table 8 in Appendix C present additional information on pre-restoration conditions.

Table 3: Project Attributes

PROJECT INFORMATION			
Project Name	Dry Creek Mitigation Site	County	Durham County
Project Area (acres)	29.764	Project Coordinates	36.110792, -78.793900
PROJECT WATERSHED SUMMARY INFORMATION			
Physiographic Province	Piedmont	River Basin	Neuse River
USGS HUC 8-digit	03020201	USGS HUC 14-digit	03020201010050
DWR Sub-basin	03-04-01	Land Use Classification	50% Forested, 40% Cultivated, 9% Residential
Project Drainage Area (acres)	807	Percentage of Impervious Area	<1%

RESTORATION TRIBUTARY SUMMARY INFORMATION					
Parameters	**Dry Creek**	**UT1**	**UT1A**	**UT5**	**UT6**
Pre-project length (feet)	6,643	1,401	90	506	849
Post-project (feet)	5,883	1,559	165	477	910
Valley confinement (Confined, moderately confined, unconfined)	Moderately Confined to Unconfined	Confined			
Drainage area (acres)	807	85	22	25.5	36
Perennial, Intermittent, Ephemeral	Perennial		Intermittent		Perennial
DWR Water Quality Classification	WS-III (NSW)				
Dominant Stream Classification (existing)	C4/G4/E4/F4	G4	E4	G4	E4
Dominant Stream Classification (proposed)	C4	C4		C4b	
Dominant Evolutionary class (Simon) if applicable	Stage IV				

REGULATORY CONSIDERATIONS			
Parameters	**Applicable?**	**Resolved?**	**Supporting Documentation**
Water of the United States - Section 404	Yes	Yes	USACE Nationwide Permit No. 27 and DWQ 401 Water Quality Certification No. 4134.
Water of the United States - Section 401	Yes	Yes	
Endangered Species Act	Yes	Yes	Categorical Exclusion in Mitigation Plan (Wildlands, 2019)
Historic Preservation Act	Yes	Yes	
Coastal Zone Management Act (CZMA or CAMA)	N/A	N/A	N/A
Essential Fisheries Habitat	N/A	N/A	N/A

Section 2: MONITORING YEAR 4 DATA ASSESSMENT

Annual monitoring and site visits were conducted during MY4 to assess the condition of the project. The vegetation and stream success criteria for the Site follow the approved success criteria presented in the Mitigation Plan (Wildlands, 2018). Performance criteria for vegetation, stream, and hydrologic assessment are located in Section 1.2 Table 2: Goals, Performance Criteria, and Functional Improvements. Methodology for annual monitoring is presented in the MY0 Annual Report (Wildlands, 2020).

2.1 Vegetative Assessment

Detailed vegetation inventory and analysis is not required during MY4. However, the IRT requested that data be collected and reported on during MY4 within the 2.3 acres supplementally planted on October 19, 2022. The supplemental planting occurred in response to the notable diversity and density issues discussed by Wildlands and the IRT during MY3. Due to the presence of fixed vegetation plots 6 and 7 within supplemental planted polygons, as well as an overlap of the Dry Creek buffer and stream fixed vegetation plots, all vegetation plot data was collected during MY4, and is included in this report.

A total of eleven standard 10 meter by 10 meter vegetation plots, and one 5 meter by 20 meter vegetation plot, were established during baseline monitoring. Four of the twelve vegetation plots are relocated randomly on an annual basis to monitor vegetation health across the Site. Nine out of the twelve vegetation plots meet stem density requirements in MY4. Fixed vegetation plots 5, and 8 exhibited less than 260 stems per acre. Vegetation plot 5 is on track to meet the final success criteria.

Random plots 9, 10, and 12 were collected within supplementally planted areas, and two additional transects, labeled veg plot 13 and veg plot 14, were collected within supplemental planted areas to ensure adequate data collection. All six mobile veg plots meet stem density requirements of 260 stems per acre by the end of MY5. Fixed vegetation plots 6 and 7 are within supplementally planted areas, and when including supplemental stems, surpass success criteria with stem densities of 405, or greater. Dominant species composition is at, or below, 50% within all six random plots. Species counts are above four on all but one random vegetation plot. After the supplemental planting, species counts went from four in fixed plot 6 and three in fixed plot 7, to five in fixed plot 6 and four in fixed plot 7. Refer to Appendix A for Vegetation Plot Photographs and the Vegetation Condition Assessment Table and Appendix B for all Vegetation Plot Data.

Visual assessment across the rest of the Site during MY4 indicated that vegetation is healthy and performing adequately to attain interim success criteria at the end of MY5 and terminal success criteria. Herbaceous vegetation is abundant across the Site and includes native pollinator species, indicating a healthy riparian habitat. The riparian habitat is helping to reduce nutrient runoff from the cattle fields outside the easement and is stabilizing the stream banks.

2.2 Vegetation Areas of Concern and Management

In addition to the supplemental planting in MY3, other measures were taken during MY4 to promote a healthy vegetative community throughout the Site. Ring sprays consisting of glyphosate were conducted across the Site on May 5th, 2023 to reduce herbaceous competition. Soil amendments were applied in a localized manner around the base of trees May 10th and August 15th to support a higher nutrient content that aids in tree growth and survival. The contents used for the soil amendments were a blend of macronutrients, micronutrients, and ingredients that promote microbial and mycorrhizal community development. A Site wide invasive removal was conducted in July 2023 to target scattered populations of Chinese privet (*Ligustrum sinense*), multiflora rose (*Rosa multiflora*), Japanese honeysuckle (*Lonicera japonica)*, sweetgum (*Liquidambar styraciflua*), and princess tree (*Paulownia tomentosa*). Soil

amendments and removal of invasive species will continue to be implemented as necessary across the Site in MY5.

Areas of persisting low species diversity or stem density, as well as newly discovered areas of low species diversity, will be supplementally planted during MY5 (see Figures 1a-b). Wildlands is in the process of developing a supplemental planting plan. A memorandum will be sent to DMS and the IRT documenting areas supplementally planted and species utilized.

2.3 Stream Assessment

Detailed dimensional survey and analysis is not required for MY4. Visual monitoring indicated that the stream channels are performing as desired. No deposition or erosion exceeding approximate natural levels was observed. See Appendix A for stream photographs and visual assessment data.

During construction, most of the rock structures were substituted with logs due to the availability of on-site materials. An abundance of mature trees on the site provided numerous large logs for structures, but the contractor was not able to locate boulder size rock on Site. While wooden structures on intermittent reaches have the potential to rot, there are benefits to using wood in the stream instead of rock. Wood creates additional in-stream habitat for aquatic species and is better at maintaining the stream bed grade due to the absence of voids in between large rocks. Wildlands has observed no signs of unstable or rotting wooden structures across the Site but will continue to monitor log structures.

2.4 Stream Areas of Concern and Management

Localized bank erosion on the outside bend of a pool directly downstream of the culvert crossing along Dry Creek Reach 4, was identified during MY1. This area was repaired in March of MY1. The repair has continued to be stable, and vegetation is establishing. See a timeline of before and after photos of the area in Appendix 2. This area will continue to be monitored to assess the continued stability of the repaired area.

Several small beaver dams were located along the upstream portion of Dry Creek before the confluence of UT1 during MY4. APHIS has removed the beaver and dams, but beavers are expected to return over the course of the seven-year monitoring period. Wildlands will continue to monitor the Site for beaver activity and remove them. No major stream bank damage has occurred from the beaver dams. Most of the vegetation removed by beavers was live stakes that have resprouted.

2.5 Hydrology Assessment

Bankfull events were recorded on Dry Creek Reach 2 and 3, UT1 Reach 2, and UT6 Reach 1. A bankfull event was not recorded on UT5 Reach 1 during MY4; however, bankfull events have been recorded on UT5 in MY1, MY2, and MY3. All channels are on track to meet the hydrologic success criteria of four bankfull events in separate years.

In addition, the presence of baseflow must be documented on intermittent reaches (UT1A, UT2, and UT5 Reach 1) for a minimum of 30 consecutive days during a normal precipitation year. Intermittent reaches maintained baseflow from 143 to 292 consecutive days. Refer to Appendix D for hydrologic data.

2.6 Wetland Assessment

One groundwater gauge was installed and monitored within an existing wetland zone at a location requested by North Carolina Division of Water Resources. The purpose of the gauge is to assess potential effects to wetland hydrology from the construction of the restored stream channel through this area. The results of this monitoring are not tied to any success criterion. The measured hydroperiod was 2.6% (7 days) of the growing season consecutively for MY4. Prior to construction, hydrology

associated with this existing wetland was largely the result of the backwater effect of an impoundment on Dry Creek. By removing the impoundment during stream restoration activities, Wildlands anticipates an effect on hydrology and the associated gauge results. While the gauge results may indicate hydrological impairment, the overall ecological uplift associated with removal of the man-made impoundment outweighs the potential reduction in groundwater hydrology.

2.7 Monitoring Year 4 Summary

An approved supplemental planting took place on October 19, 2022, within areas of poor stem density and diversity. As per the request of the IRT, random vegetation plots were collected during MY4 within areas supplementally planted. Due to the presence of fixed plots 6 and 7 within supplementally planted zones, along with the overlap of Dry Creek Buffer vegetation plots, fixed vegetation plot data was collected during MY4, as well. Of the twelve vegetation plots, ten meet the MY5 interim requirement of 260 planted stems per acre. Two additional random vegetation plots were collected during MY4 to collect sufficient data on all supplementally planted areas and show a stem density of 607 stems per acre, or higher. Soil amendments and ring sprays were applied across the Site in the spring and summer of 2023 to promote tree growth. Areas of persisting low species diversity were identified during MY4 and will be supplementally planted in MY5. A dense herbaceous layer, including wetland and pollinator species, has established across the Site. All streams within the Site are stable and functioning as designed. The localized erosion identified in MY1 on Dry Creek Reach 4 was repaired and remains stable. Bankfull events were documented on Dry Creek R2 and R3, UT1 R2, and UT6 R1, partially fulfilling the final bankfull hydrologic success requirement. No bankfull events recorded on UT5 R1 during MY4; however, UT5 R1 has exhibited bankfull events during MY1, MY2, and MY3, and is still on track to meet success criteria of four recorded bankful events in separate monitoring years. Greater than 30 days of consecutive flow were recorded on monitored intermittent stream reaches UT1A, UT2, and UT5 Reach 1, fulfilling MY4 success requirement. Overall, the Site is meeting its goals and is on track to meet final success criteria.

Summary information and data related to the performance of various project and monitoring elements can be found in the tables and figures in the report appendices. All raw data supporting the tables and figures in the appendices are available from DMS upon request.

Section 3: REFERENCES

Doll, B.A., Grabow, G.L., Hall, K.A., Halley, J., Harman, W.A., Jennings, G.D., and Wise, D.E. 2003. Stream Restoration A Natural Channel Design Handbook.

Harrelson, C.C., Rawlins, C.L., Potyondy, J.P. 1994. *Stream Channel Reference Sites: An Illustrated Guide to Field Technique.* Gen. Tech. Rep. RM-245. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 61 p.

Rosgen, D. L. 1994. A classification of natural rivers. *Catena* 22:169-199.

North Carolina Interagency Review Team (NCIRT). 2016. Wilmington District Stream and Wetland Compensatory Mitigation Update.

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

Wildlands Engineering, Inc. 2020. Dry Creek Mitigation Project Mitigation Plan. DMS, Raleigh, NC.

Wildlands Engineering, Inc. 2021. Dry Creek Mitigation Project Monitoring Year 0 (MY0) Annual Report. DMS, Raleigh, NC

APPENDIX A. Visual Assessment Data

Figure 1a

Figure 1b

2021 Aerial Photography

Hall Rd
Reach 1
UT1A
UT1
Reach 2
Dry Creek
Reach 2
UT2
UT3
UT4
Reach 1
Reach 2
UT5
Reach 3
Dry Creek
Reach 1
Reach 2
UT6
Reach 3
UT7
Reach 4
Dry Creek
Ellis Chapel Rd
Adcock Rd
Range Rd

- Conservation Easement
- Internal Crossing
- Existing Wetlands
- Supplemental Planting - 2024
- Supplemental Planting - October 2022

Fixed Vegetation Plot Condition - MY4

- Criteria Met
- Criteria Not Met

Random Vegetation Plot Condition - MY4

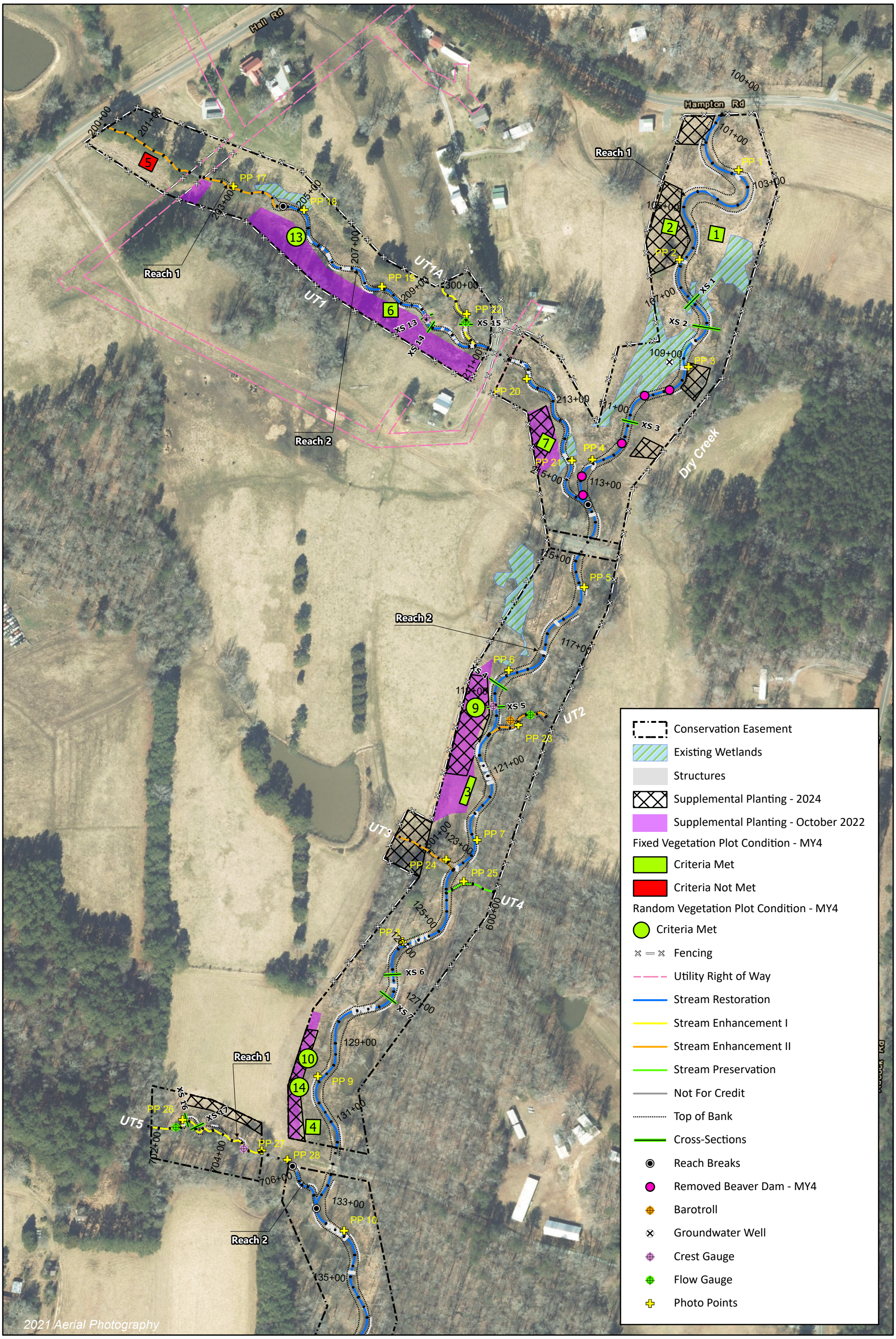
- Criteria Met
- Fencing
- Utility Right of Way
- Stream Restoration
- Stream Enhancement I
- Stream Enhancement II
- Stream Preservation
- Not For Credit
- Cross-Sections
- Reach Breaks
- Crest Gauge
- Flow Gauge
- Groundwater Well
- Photo Points

WILDLANDS ENGINEERING

0 350 700 Feet

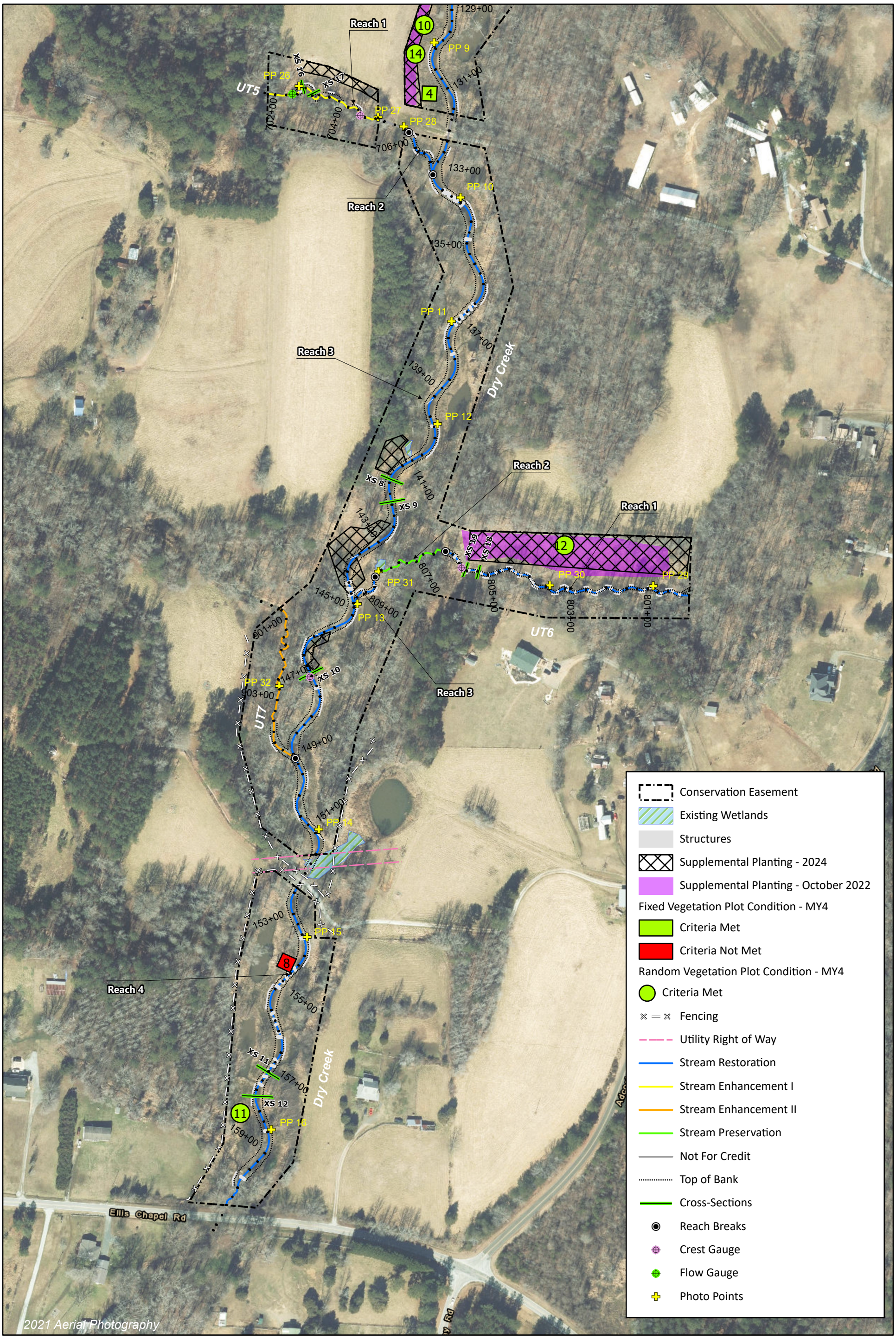
N

Figure 1. Current Condition Plan View (Key)
Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023
Durham County, NC



WILDLANDS ENGINEERING

Figure 1a. Current Condition Plan View
Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023
Durham County, NC



WILDLANDS ENGINEERING

0 200 400 Feet

N

Figure 1b. Current Condition Plan View
Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023
Durham County, NC

Table 4. Visual Stream Morphology Stability Assessment Table

Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023

Dry Creek Reach 1-4

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-Built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	5,883
					Assessed Bank Length	11,766
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	12	12		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	36	36		100%

Visual assessment was completed December 6, 2023.

UT1 Reach 2

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-Built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	1,053
					Assessed Bank Length	2,106
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	3	3		100%
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	10	10		100%

Visual assessment was completed December 6, 2023.

Table 4. Visual Stream Morphology Stability Assessment Table

Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023

UT1A

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-Built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	165
					Assessed Bank Length	330
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	0	0		N/A
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	1	1		100%

Visual assessment was completed December 6, 2023.

UT5 Reach 1-2

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-Built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	397
					Assessed Bank Length	794
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	0	0		N/A
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	6	6		100%

Visual assessment was completed December 6, 2023.

Table 4. Visual Stream Morphology Stability Assessment Table

Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023

UT6 Reach 1 & 3

Major Channel Category		Metric	Number Stable, Performing as Intended	Total Number in As-Built	Amount of Unstable Footage	% Stable, Performing as Intended
					Assessed Stream Length	701
					Assessed Bank Length	1,402
Bank	**Surface Scour/ Bare Bank**	Bank lacking vegetative cover resulting simply from poor growth and/or surface scour.			0	100%
	Toe Erosion	Bank toe eroding to the extent that bank failure appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	100%
	Bank Failure	Fluvial and geotechnical - rotational, slumping, calving, or collapse.			0	100%
				Totals:	**0**	**100%**
Structure	**Grade Control**	Grade control structures exhibiting maintenance of grade across the sill.	0	0		N/A
	Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	17	17		100%

Visual assessment was completed December 6, 2023.

Table 5. Vegetation Condition Assessment Table

Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023

Planted Acreage **14.03**

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 current MY stem count criteria.	0.10	2.66	19%
		Total	**3**	**19%**
Areas of Poor Growth Rates	Planted areas where average height is not meeting current MY Performance Standard.	0.10	0	0%
		Cumulative Total	**3**	**19%**

Visual assement was completed December 6, 2023.

*Supplemental planting is planned to take place in MY5.

Easement Acreage **29.76**

Vegetation Category	Definitions	Mapping Threshold (ac)	Combined Acreage	% of Easement Acreage
Invasive Areas of Concern	Invasives may occur outside of planted areas and within the easement and will therefore be calculated against the total easement acreage. Include species with the potential to directly outcompete native, young, woody stems in the short-term or community structure for existing communities. Invasive species included in summation above should be identified in report summary.	0.10	0	0%
Easement Encroachment Areas	Encroachment may be point, line, or polygon. Encroachment to be mapped consists of any violation of restrictions specified in the conservation easement. Common encroachments are mowing, cattle access, vehicular access. Encroachment has no threshold value as will need to be addressed regardless of impact area.	none	0 Encroachments Noted / 0 ac	

Visual assement was completed December 6, 2023.

STREAM PHOTOGRAPHS

PHOTO POINT 1 Dry Creek R1 – upstream *(3/28/2023)*

PHOTO POINT 1 Dry Creek R1 – downstream *(3/28/2023)*

PHOTO POINT 2 Dry Creek R1 – upstream *(3/28/2023)*

PHOTO POINT 2 Dry Creek R1 – downstream *(3/28/2023)*

PHOTO POINT 3 Dry Creek R1 – upstream *(3/28/2023)*

PHOTO POINT 3 Dry Creek R1 – downstream *(3/28/2023)*

PHOTO POINT 4 Dry Creek R1 – upstream *(3/28/2023)*

PHOTO POINT 4 Dry Creek R1 – downstream *(3/28/2023)*

PHOTO POINT 5 Dry Creek R2 – upstream *(3/28/2023)*

PHOTO POINT 5 Dry Creek R2 – downstream *(3/28/2023)*

PHOTO POINT 6 Dry Creek R2 – upstream *(3/28/2023)*

PHOTO POINT 6 Dry Creek R2 – downstream *(3/28/2023)*

	
PHOTO POINT 7 Dry Creek R2 – upstream *(3/28/2023)*	**PHOTO POINT 7 Dry Creek R2 – downstream *(3/28/2023)***
	
PHOTO POINT 8 Dry Creek R2 – upstream *(3/28/2023)*	**PHOTO POINT 8 Dry Creek R2 – downstream *(3/28/2023)***
	
PHOTO POINT 9 Dry Creek R2 – upstream *(3/28/2023)*	**PHOTO POINT 9 Dry Creek R2 – downstream *(3/28/2023)***

PHOTO POINT 10 Dry Creek R3 – upstream *(3/28/2023)*

PHOTO POINT 10 Dry Creek R3 – downstream *(3/28/2023)*

PHOTO POINT 11 Dry Creek R3 – upstream *(3/28/2023)*

PHOTO POINT 11 Dry Creek R3 – downstream *(3/28/2023)*

PHOTO POINT 12 Dry Creek R3 – upstream *(3/28/2023)*

PHOTO POINT 12 Dry Creek R3 – downstream *(3/28/2023)*

PHOTO POINT 13 Dry Creek R3 – upstream *(3/28/2023)*

PHOTO POINT 13 Dry Creek R3 – downstream *(3/28/2023)*

PHOTO POINT 14 Dry Creek R3 – upstream *(3/28/2023)*

PHOTO POINT 14 Dry Creek R3 – downstream *(3/28/2023)*

PHOTO POINT 15 Dry Creek R4 – upstream *(3/28/2023)*

PHOTO POINT 15 Dry Creek R4 – downstream *(3/28/2023)*

	
PHOTO POINT 16 Dry Creek R4 – upstream *(3/28/2023)*	**PHOTO POINT 16 Dry Creek R4 – downstream *(3/28/2023)***
	
PHOTO POINT 17 UT1 R1 – upstream *(3/28/2023)*	**PHOTO POINT 17 UT1 R1 – downstream *(3/28/2023)***
	
PHOTO POINT 18 UT1 R2 – upstream *(3/28/2023)*	**PHOTO POINT 18 UT1 R2 – downstream *(3/28/2023)***

PHOTO POINT 19 UT1 R2 – upstream *(3/28/2023)*

PHOTO POINT 19 UT1 R2 – downstream *(3/28/2023)*

PHOTO POINT 20 UT1 R2 – upstream *(3/28/2023)*

PHOTO POINT 20 UT1 R2 – downstream *(3/28/2023)*

PHOTO POINT 21 UT1 R2 – upstream *(3/28/2023)*

PHOTO POINT 21 UT1 R2 – downstream *(3/28/2023)*

	
PHOTO POINT 22 UT1a – upstream *(3/28/2023)*	**PHOTO POINT 22 UT1a – downstream *(3/28/2023)***
	
PHOTO POINT 23 UT2 – upstream *(3/28/2023)*	**PHOTO POINT 23 UT2 – downstream *(3/28/2023)***
	
PHOTO POINT 24 UT3 – upstream *(3/28/2023)*	**PHOTO POINT 24 UT3 – downstream *(3/28/2023)***

	
PHOTO POINT 25 UT4 – upstream *(3/28/2023)*	**PHOTO POINT 25 UT4 – downstream *(3/28/2023)***
	
PHOTO POINT 26 UT5 R1 – upstream *(3/28/2023)*	**PHOTO POINT 26 UT5 R1 – downstream *(3/28/2023)***
	
PHOTO POINT 27 UT5 R1 – upstream *(3/28/2023)*	**PHOTO POINT 28 UT5 R2 – downstream *(3/28/2023)***

	
PHOTO POINT 29 UT6 R1 – upstream *(3/28/2023)*	**PHOTO POINT 29 UT6 R1 – downstream *(3/28/2023)***
	
PHOTO POINT 30 UT6 R1 – upstream *(3/28/2023)*	**PHOTO POINT 30 UT6 R1 – downstream *(3/28/2023)***
	
PHOTO POINT 31 UT6 R2 – upstream *(3/28/2023)*	**PHOTO POINT 31 UT6 R2 – downstream *(3/28/2023)***

	
PHOTO POINT 32 UT7 – upstream *(3/28/2023)*	**PHOTO POINT 32 UT7 – downstream *(3/28/2023)***

Stream Area of Concern Photographs
Dry Creek Reach 4

	
Before – Localized Erosion (11/4/2020)	**Before – Localized Erosion** (11/4/2020)
	
After – Repaired Localized Erosion (04/2/2021)	**After – Repaired Localized Erosion** (04/2/2021)
	
After – Repaired Localized Erosion (09/16/2021)	**After – Repaired Localized Erosion** (09/16/2021)

	
After – Repaired Localized Erosion (10/18/2022)	**After – Repaired Localized Erosion** (10/18/2022)
	
After – Repaired Localized Erosion (11/8/2023)	**After – Repaired Localized Erosion** (11/8/2023)

STREAM CROSSING PHOTOGRAPHS

Dry Creek Reach 2 – Looking Upstream *(12/7/2023)*

Dry Creek Reach 2 – Looking Downstream *(12/7/2023)*

Dry Creek Reach 2 – Looking Upstream *(12/7/2023)*

Dry Creek Reach 2 – Looking Downstream *(12/7/2023)*

Dry Creek Reach 4 – Looking Upstream *(12/7/2023)*

Dry Creek Reach 4 – Looking Downstream *(12/7/2023)*

UT1 Reach 1 – Looking Upstream *(12/7/2023)*

UT1 Reach 1 – Looking Downstream *(12/7/2023)*

UT1 Reach 2 – Looking Upstream *(12/7/2023)*

UT1 Reach 2 – Looking Downstream *(12/7/2023)*

UT5 – Looking Upstream *(12/7/2023)*

UT5 – Looking Downstream *(12/7/2023)*

VEGETATION PLOT PHOTOGRAPHS

FIXED VEG PLOT 1 *(10/12/2023)*

FIXED VEG PLOT 2 *(10/12/2023)*

FIXED VEG PLOT 3 *(10/12/2023)*

FIXED VEG PLOT 4 *(10/12/2023)*

FIXED VEG PLOT 5 *(10/12/2023)*

FIXED VEG PLOT 6 *(10/12/2023)*

FIXED VEG PLOT 7 *(10/12/2023)*

FIXED VEG PLOT 8 *(10/12/2023)*

RANDOM VEG PLOT 9 *(10/12/2023)*

RANDOM VEG PLOT 10 *(10/12/2023)*

RANDOM VEG PLOT 11 *(10/12/2023)*

RANDOM VEG PLOT 12 *(10/12/2023)*

	
RANDOM VEG PLOT 13 – Additional Vegetation Monitoring *(10/12/2023)*	**RANDOM VEG PLOT 14 – Additional Vegetation Monitoring** *(10/12/2023)*

APPENDIX B. Vegetation Plot Data

Table 6. Vegetation Plot Data
Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023

Planted Acreage	14.04
Date of Initial Plant	2020-04-24
Date of Supplemental Plant	2022-10-19
Date of Current Survey	2023-10-12
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	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	Tree	FACW	6	6	2	2				
	Fraxinus pennsylvanica	green ash	Tree	FACW					2	2	1	1
	Platanus occidentalis	American sycamore	Tree	FACW	1	4	5	5	5	8	2	3
	Populus deltoides	eastern cottonwood	Tree	FAC	2	2						
	Quercus lyrata	overcup oak	Tree	OBL								
	Quercus michauxii	swamp chestnut oak	Tree	FACW					2	2	4	4
	Quercus pagoda	cherrybark oak	Tree	FACW								
	Quercus phellos	willow oak	Tree	FAC								
	Salix nigra	black willow	Tree	OBL		3						2
Sum				Performance Standard	9	15	7	7	9	12	7	10
Post Mitigation Plan Species	*Acer rubrum*	*red maple*	*Tree*	*FAC*								
	Diospyros virginiana	common persimmon	Tree	FAC								
	Liquidambar styraciflua	*sweetgum*	*Tree*	*FAC*								*1*
	Pinus taeda	*loblolly pine*	*Tree*	*FAC*				*1*				
	Quercus nigra	water oak	Tree	FAC								
	Quercus shumardii	Shumard's oak	Tree	FAC								
	Ulmus alata	winged elm	Tree	FACU								
Sum				Proposed Standard	9	15	7	7	9	12	7	10
Mitigation Plan Performance Standard				Current Year Stem Count		15		7		12		10
				Stems/Acre		607		283		405		405
				Species Count		4		2		3		4
				Dominant Species Composition (%)		40		62		67		36
				Average Plot Height (ft.)		8		4		3		6
				% Invasives		0		0		0		0
Post Mitigation Plan Performance Standard				Current Year Stem Count		15		7		12		10
				Stems/Acre		607		283		405		405
				Species Count		4		2		3		4
				Dominant Species Composition (%)		40		62		67		36
				Average Plot Height (ft.)		8		4		3		6
				% Invasives		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.
**Per IRT request, vegetation data was collected during Monitoring Year 4 within areas supplementally planted on 10/19/2022. Veg plots 13 R and 14 R are additional transects included in Monitoring Year 4 vegetation assessment to capture sufficient, representative data on all areas supplementally planted.

Table 6. Vegetation Plot Data
Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023

Planted Acreage	14.04
Date of Initial Plant	2020-04-24
Date of Supplemental Plant	2022-10-19
Date of Current Survey	2023-10-12
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 5 F		Veg Plot 6 F		Veg Plot 7 F		Veg Plot 8 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	Tree	FACW	3	3	2	2				
	Fraxinus pennsylvanica	green ash	Tree	FACW	1	1	1	1			1	1
	Platanus occidentalis	American sycamore	Tree	FACW			2	5	3	3	4	4
	Populus deltoides	eastern cottonwood	Tree	FAC			1	1				
	Quercus lyrata	overcup oak	Tree	OBL	2	2						
	Quercus michauxii	swamp chestnut oak	Tree	FACW					3	3		
	Quercus pagoda	cherrybark oak	Tree	FACW								
	Quercus phellos	willow oak	Tree	FAC								
	Salix nigra	black willow	Tree	OBL								
Sum				Performance Standard	6	6	6	9	6	6	5	5
Post Mitigation Plan Species	*Acer rubrum*	*red maple*	*Tree*	*FAC*								
	Diospyros virginiana	common persimmon	Tree	FAC			2	2				
	Liquidambar styraciflua	*sweetgum*	*Tree*	*FAC*								
	Pinus taeda	*loblolly pine*	*Tree*	*FAC*								
	Quercus nigra	water oak	Tree	FAC								
	Quercus shumardii	Shumard's oak	Tree	FAC					1	1		
	Ulmus alata	winged elm	Tree	FACU					1	3		
Sum				Proposed Standard	6	6	8	11	8	10	5	5
Mitigation Plan Performance Standard				Current Year Stem Count		6		9		6		5
				Stems/Acre		243		364		243		202
				Species Count		3		4		2		2
				Dominant Species Composition (%)		50		45		30		80
				Average Plot Height (ft.)		3		8		5		9
				% Invasives		0		0		0		0
Post Mitigation Plan Performance Standard				Current Year Stem Count		6		11		10		5
				Stems/Acre		243		445		405		202
				Species Count		3		5		4		2
				Dominant Species Composition (%)		50		45		30		80
				Average Plot Height (ft.)		3		7		4		9
				% Invasives		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.
**Per IRT request, vegetation data was collected during Monitoring Year 4 within areas supplementally planted on 10/19/2022. Veg plots 13 R and 14 R are additional transects included in Monitoring Year 4 vegetation assessment to capture sufficient, representative data on all areas supplementally planted.

Table 6. Vegetation Plot Data
Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023

Planted Acreage	14.04
Date of Initial Plant	2020-04-24
Date of Supplemental Plant	2022-10-19
Date of Current Survey	2023-10-12
Plot size (ACRES)	0.0247

	Scientific Name	Common Name	Tree/Shrub	Indicator Status	Veg Plot 9 R Total	Veg Plot 10 R Total	Veg Plot 11 R Total	Veg Plot 12 R Total	Veg Plot 13 R** Total	Veg Plot 14 R** Total
Species Included in Approved Mitigation Plan	Betula nigra	river birch	Tree	FACW	2		1	1	1	
	Fraxinus pennsylvanica	green ash	Tree	FACW		2		2	2	2
	Platanus occidentalis	American sycamore	Tree	FACW	2	9	6	8	8	7
	Populus deltoides	eastern cottonwood	Tree	FAC						
	Quercus lyrata	overcup oak	Tree	OBL		2				1
	Quercus michauxii	swamp chestnut oak	Tree	FACW	2			1	4	
	Quercus pagoda	cherrybark oak	Tree	FACW	1					
	Quercus phellos	willow oak	Tree	FAC	2			1		2
	Salix nigra	black willow	Tree	OBL		2	2			2
Sum				Performance Standard	9	15	9	13	15	14
Post Mitigation Plan Species	*Acer rubrum*	*red maple*	*Tree*	*FAC*		*1*	*1*			
	Diospyros virginiana	common persimmon	Tree	FAC				2		1
	Liquidambar styraciflua	*sweetgum*	*Tree*	*FAC*		*2*	*2*	*5*	*8*	
	Pinus taeda	*loblolly pine*	*Tree*	*FAC*	*9*	*15*		*1*	*2*	*5*
	Quercus nigra	water oak	Tree	FAC				1		
	Quercus shumardii	Shumard's oak	Tree	FAC						
	Ulmus alata	winged elm	Tree	FACU					1	
Sum				Proposed Standard	9	15	9	16	16	15
Mitigation Plan Performance Standard				Current Year Stem Count	9	15	9	13	15	14
				Stems/Acre	364	607	364	526	607	567
				Species Count	5	4	3	5	4	5
				Dominant Species Composition (%)	50	45	50	36	31	35
				Average Plot Height (ft.)	3	2	7	3	5	4
				% Invasives	0	0	0	0	0	0
Post Mitigation Plan Performance Standard				Current Year Stem Count	9	15	9	16	16	15
				Stems/Acre	364	607	364	648	648	607
				Species Count	5	4	3	7	5	6
				Dominant Species Composition (%)	50	45	50	36	31	35
				Average Plot Height (ft.)	3	2	7	3	5	4
				% Invasives	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.
**Per IRT request, vegetation data was collected during Monitoring Year 4 within areas supplementally planted on 10/19/2022. Veg plots 13 R and 14 R are additional transects included in Monitoring Year 4 vegetation assessment to capture sufficient, representative data on all areas supplementally planted.

Table 7. Vegetation Performance Standards Summary Table
Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023

	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 4	607	8	4	0	283	4	2	0	405	3	3	0
Monitoring Year 3	607	6	4	0	283	4	3	0	486	3	3	0
Monitoring Year 2	283	3	3	0	364	3	4	0	405	2	3	0
Monitoring Year 1	486	2	5	0	486	2	4	0	607	2	5	0
Monitoring Year 0	526	2	5	0	486	3	4	0	648	2	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 4	405	6	4	0	243	3	3	0	445	8	5	0
Monitoring Year 3	445	4	4	0	243	3	3	0	324	6	4	0
Monitoring Year 2	405	3	5	0	243	2	3	0	202	4	3	0
Monitoring Year 1	445	3	6	0	364	2	5	0	283	2	4	0
Monitoring Year 0	567	3	7	0	486	2	6	0	486	2	5	0
	Veg Plot 7 F				**Veg Plot 8 F**				**Veg Plot Group 9 R**			
	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 4	405	5	4	0	202	9	2	0	364	3	5	0
Monitoring Year 3	202	5	2	0	121	6	2	0	486	4	4	0
Monitoring Year 2	243	4	3	0	243	3	4	0	445	2	6	0
Monitoring Year 1	364	3	5	0	526	2	6	0	445	2	5	0
Monitoring Year 0	486	2	6	0	567	2	6	0	607	2	5	0
	Veg Plot Group 10 R				**Veg Plot Group 11 R**				**Veg Plot Group 12 R**			
	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 4	607	2	4	0	364	7	3	0	648	3	5	0
Monitoring Year 3	445	3	2	0	486	2	7	0	324	4	2	0
Monitoring Year 2	364	2	4	0	405	2	3	0	364	2	2	0
Monitoring Year 1	324	2	4	0	526	2	4	0	405	2	5	0
Monitoring Year 0	405	2	6	0	486	2	6	0	567	2	6	0
Monitoring Year 0	**Veg Plot Group 13 R****				**Veg Plot Group 14 R****							
	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives	Stems/Ac.	Av. Ht. (ft)	# Species	% Invasives				
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 4	648	5	5	0	607	4	6	0				
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0												

*Each monitoring year represents a different plot for the random vegetation plot "groups". Random plots are denoted with an R, and fixed plots with an F.
**Per IRT request, vegetation data was collected during Monitoring Year 4 within areas supplementally planted on 10/19/2022. Veg plots 13 R and 14 R are additional transects included in Monitoring Year 4 vegetation assessment to capture sufficient, representative data on all areas supplementally planted.

APPENDIX C. Stream Geomorphology Data

Morphological survey and analysis not required during MY4.

APPENDIX D. Hydrology Data

Table 10. Bankfull Events

Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023

Reach	MY1 (2020)	MY2 (2021)	MY3 (2022)	MY4 (2023)	MY5 (2024)	MY6 (2025)	MY7 (2026)
Dry Creek Reach 2	4/13/2020 10/11/2020	1/3/2021 2/16/2021	5/23/2022	4/7/2023			
Dry Creek Reach 3	5/21/2020 10/11/2020	1/3/2021 2/16/2021	1/3/2022 5/23/2022 8/1/2022	4/7/2023 7/14/2023			
UT1 Reach 2	4/13/2020 10/11/2020	1/3/2021 2/16/2021	3/13/2022 5/23/2022	4/8/2023			
UT5 Reach 1	10/11/2020	2/16/2021 4/9/2021	1/3/2022	N/A			
UT6 Reach 1	*	2/16/2021 4/9/2021	1/3/2022 5/23/2022 12/26/2022	3/2/2023 4/8/2023 7/13/2023			

*Gauge malfunction

Table 11. Rainfall Summary

Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023

	MY1 (2020)	MY2 (2021)	MY3 (2022)	MY4 (2023)	MY5 (2024)	MY6 (2025)	MY7 (2026)
Annual Precip Total	61.38	43.24	44.49	36.83*			
WETS 30th Percentile	43.73	43.75	43.01	43.57			
WETS 70th Percentile	50.88	51.13	50.84	51.23			
Normal	H	L	Y	*			

*Annual precipitation total was collected up until 10/30/2023. Data will be updated in MY5.

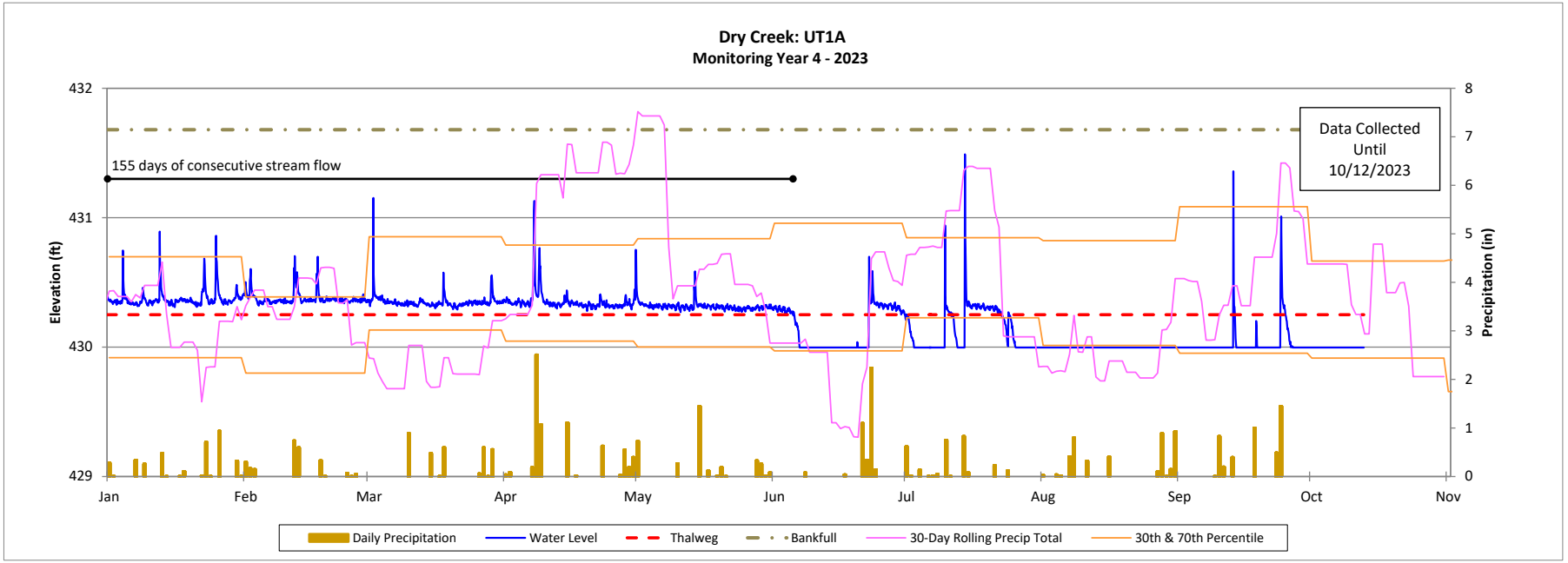
Table 12. Recorded In-Stream Flow Events Summary
Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023

Reach	Max Consecutive Days/Total Days Meeting Success Criteria*						
	MY1 (2020)	MY2 (2021)	MY3 (2022)	MY4 (2023)**	MY5 (2024)	MY6 (2025)	MY7 (2026)
UT1A	129 Days/ 251 Days	140 Days/ 162 Days	114 Days/ 181 Days	155 Days/ 175 Days			
UT2	295 Days/ 295 Days	284 Days/ 284 Days	365 Days/ 365 Days	292 Days/ 292 Days			
UT5 Reach 1	87 Days/ 155 Days	142 Days/ 157 Days	127 Days/ 191 Days	143 Days/ 169 Days			

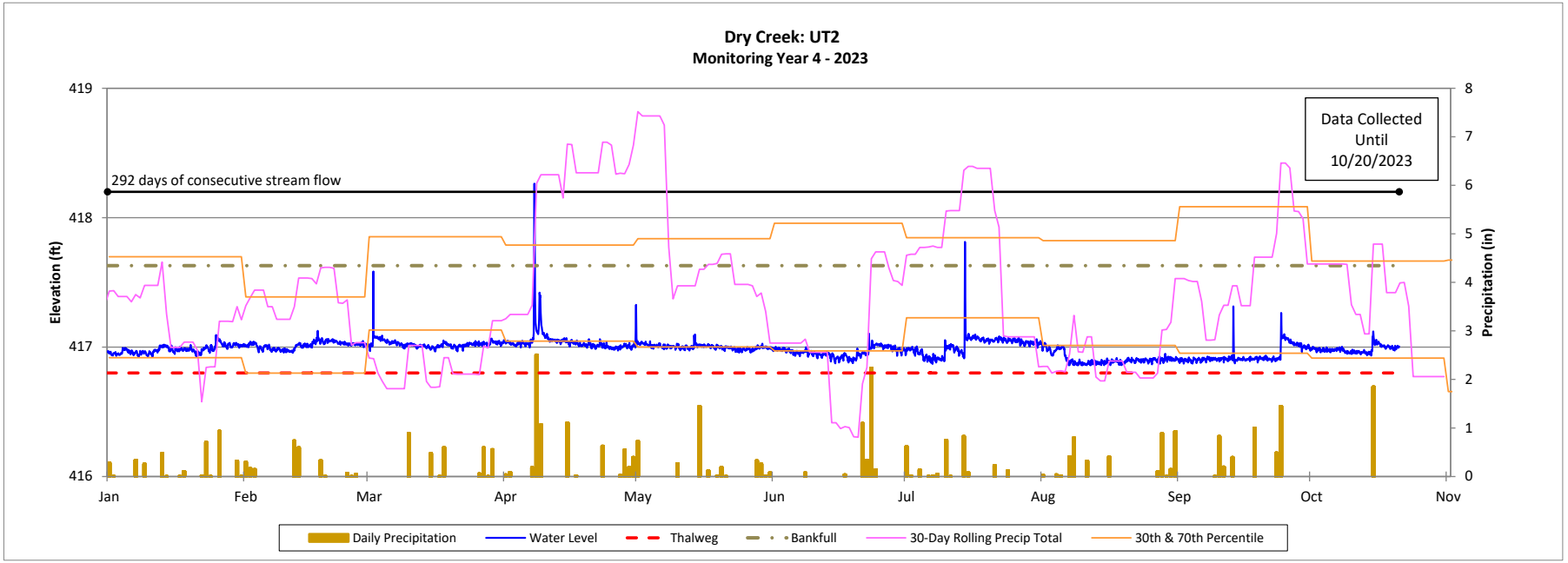
*Success criteria is 30 consecutive days of flow.

**Data was colleted through 10/20/2023. Data will be updated in MY5.

Recorded In-Stream Flow Events Plot
Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023



Recorded In-Stream Flow Events Plot
Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023



Recorded In-Stream Flow Events Plot
Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023

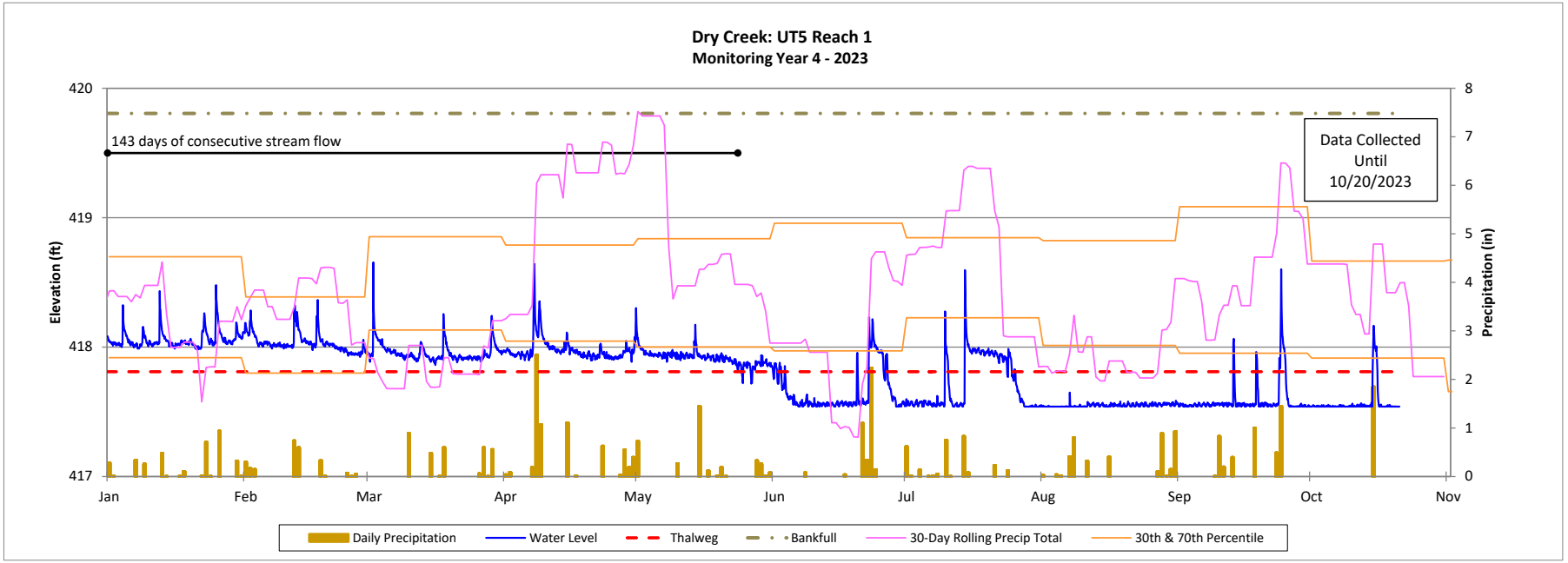


Table 13. Wetland Gauge Summary

Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023

Gauge	Max. Consecutive Hydroperiod (Percentage)						
	MY1 (2020)	MY2 (2021)	MY3 (2022)	MY4 (2023)*	MY5 (2024)	MY6 (2025)	MY7 (2026)
1	**7 Days (2.7%)**	**9 Days (3.5%)**	**15 Days (5.7%)**	**7 Days (2.6%)**			

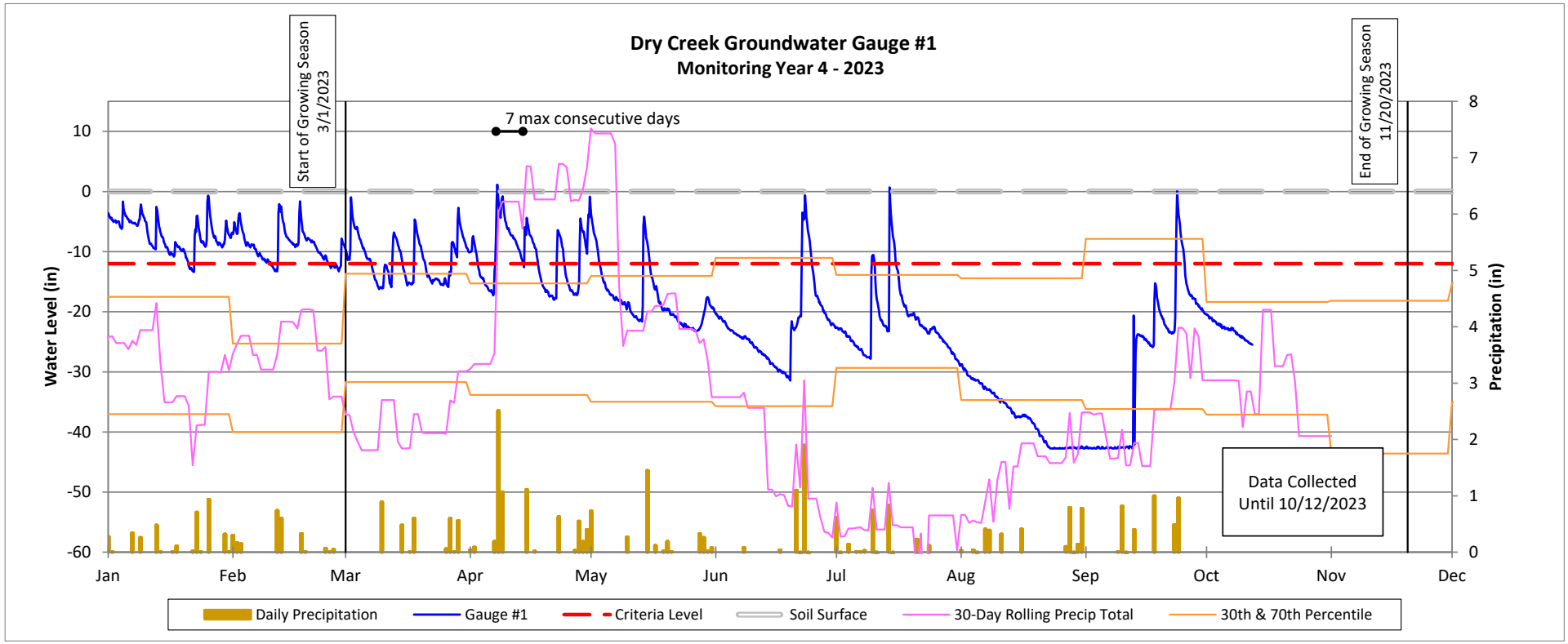
Performance Standard: **None**
WETS Station (Daily Rainfall): **Durham 7.5 NNE, NC** (Approximately 8.5 miles from Site)
WETS Station (30th & 70th Percentile): **Roxboro 7 ESE, NC** (Approximately 11 miles from Site)
Growing Season: **3/1/2023 to 11/11/2023 (255 Days)**
*Data was collected from 3/1/2023 to 10/12/2023 (225 Days).

Groundwater Gauge Plot

Dry Creek Mitigation Site

DMS Project No. 97082

Monitoring Year 4 - 2023



APPENDIX E. Project Timeline and Contact Info

Table 14. Project Activity and Reporting History

Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023

Activity or Deliverable		Data Collection Complete	Task Completion or Deliverable Submission
Project Instituted		NA	March 15, 2016
Mitigation Plan Approved		NA	November 2018
Construction (Grading) Completed		NA	April 20, 2020
Planting Completed		NA	April 24, 2020
As-Built Survey Completed		NA	April 30, 2020
Baseline Monitoring Document (Year 0)	Stream Survey	April 30, 2020	August 2020
	Vegetation Survey	April 27, 2020	
Year 1 Monitoring	Stream Survey	November 4, 2020	December 2020
	Vegetation Survey	November 4, 2020	
	Manual Bank Repair	March 2021	
Year 2 Monitoring	Stream Survey	June 10, 2021	December 2021
	Vegetation Survey	September 16, 2021	
Year 3 Monitoring	Stream Survey	May 5, 2022	December 2022
	Vegetation Survey	September 14, 2022	
	Supplemental Planting	October 19, 2022	
Year 4 Monitoring	Ring Sprays	May 5, 2023	December 2023
	Soil Amendments	May 10 & August 15, 2023	
	Invasive Removal	July 2023	
	Vegetation Survey	October 12, 2023	
Year 5 Monitoring	Stream Survey	2024	December 2024
	Vegetation Survey	2024	
Year 6 Monitoring			December 2025
Year 7 Monitoring	Stream Survey	2026	December 2026
	Vegetation Survey	2026	

Table 15. Project Contact Table

Dry Creek Mitigation Site
DMS Project No. 97082
Monitoring Year 4 - 2023

Designer Nicole Macaluso Millns, PE	**Wildlands Engineering, Inc.** 312 West Millbrook Road, Suite 225 Raleigh, NC 27609 919.851.9986
Construction Contractor	**Land Mechanic Designs, Inc.** 126 Circle G Lane Willow Spring, NC 27592
Monitoring Performers Monitoring, POC	**Wildlands Engineering, Inc.** Jason Lorch 919.851.9986