

ANNUAL REPORT 2023
Year 5 Report for
Horse Creek Stream Relocation Monitoring Plan – Photo Documentation

TIP Project No. I-4729A – Interchange Improvements at I-26 and US 74
USACE Action ID No. **SAW-2017-01737**
NCDWR Project No. **2017-01737**
Polk County, NC

Prepared By:



Johnson, Mirmiran & Thompson, Inc.
40 Colonial Square
Sylva, NC 28779
(828) 477-4993

Date: January 2024

Prepared for:



North Carolina Department of Transportation
Division of Highways – Division 14
253 Webster Road
Sylva, NC 28779

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SUMMARY

The following report summarizes the Year 5 stream monitoring activities that have occurred during 2023 at the Horse Creek Mitigation Site in Polk County. The stream relocation was completed in April 2018 by the North Carolina Department of Transportation (NCDOT). The site was designed as stream mitigation for the impacts associated with construction of TIP Project No. I-4729A (I-26/US 74 Interchange Improvement Project near Columbus, Polk County, North Carolina). This report provides Year 5 results for the fifth formal year of monitoring (2023). The Year 5 monitoring period is the fifth of seven scheduled years of monitoring (See Success Criteria in the I-4729A Stream Relocation Monitoring Report ver. 1.2). The Year 5 monitoring report only requires visual/photo documentation of the site, which references vegetation survival and channel stability visually along the entire stream reach (see appendix A).

Based on the Year 5 (2023) visual/photo assessment and comparisons to the Year 4 (2022) photo documentation the channel appears well vegetated and stable.

1.0 INTRODUCTION

1.1 Project Description

The following report summarizes the stream monitoring activities that have occurred during **2023** at the Horse Creek Mitigation Site. The site is situated in the center of the I-26 and US 74 interchange (see Figure 1). The site was constructed to provide mitigation for stream impacts associated with the construction of TIP Project No. I-4729A. The site is composed of one reach of Horse Creek.

The mitigation project includes 742 linear feet of onsite stream relocation in the center of the I-26/US 74 interchange resulting from a fill slope that is required to elevate the newly added US 74 eastbound flyover ramp/bridge over the existing lanes within the interchange. Construction began in late November 2017. Following completion of the reinforced concrete box culvert, final channel work, buffer grading and removal of the temporary flow diversion, the stream relocation was completed in April 2018. The stream relocation included instream grade control structures, root wads for aquatic habitat, live staking of the streambanks, and planting of bareroot seedlings in the 30-foot disturbed riparian buffer along the western side of Horse Creek.

1.2 Purpose

For a mitigation site to be considered successful, the site must meet the success criteria. This report details the monitoring in **2023 (Year 5)** at the Horse Creek Mitigation Site. The monitoring schedule was modified from the original schedule due to the repairs of the eroded streambank in October 2020 at the request of NCDOT. The revised monitoring schedule is highlighted in blue in the table below (Table 1). The Year 5 monitoring report only requires photo documentation of the mitigation site, which was conducted on November 8, 2023.

Table 1. Monitoring Schedule - Revised

Resource	Year (2018 – 2025)						
	1	2	3	4	5	6	7
<i>Stream Channel Monitoring</i>				Added			
<i>Vegetation Monitoring</i>				Added			
<i>Visual Assessment - Photos</i>							
<i>Report Submittal</i>							

1.3 Project History

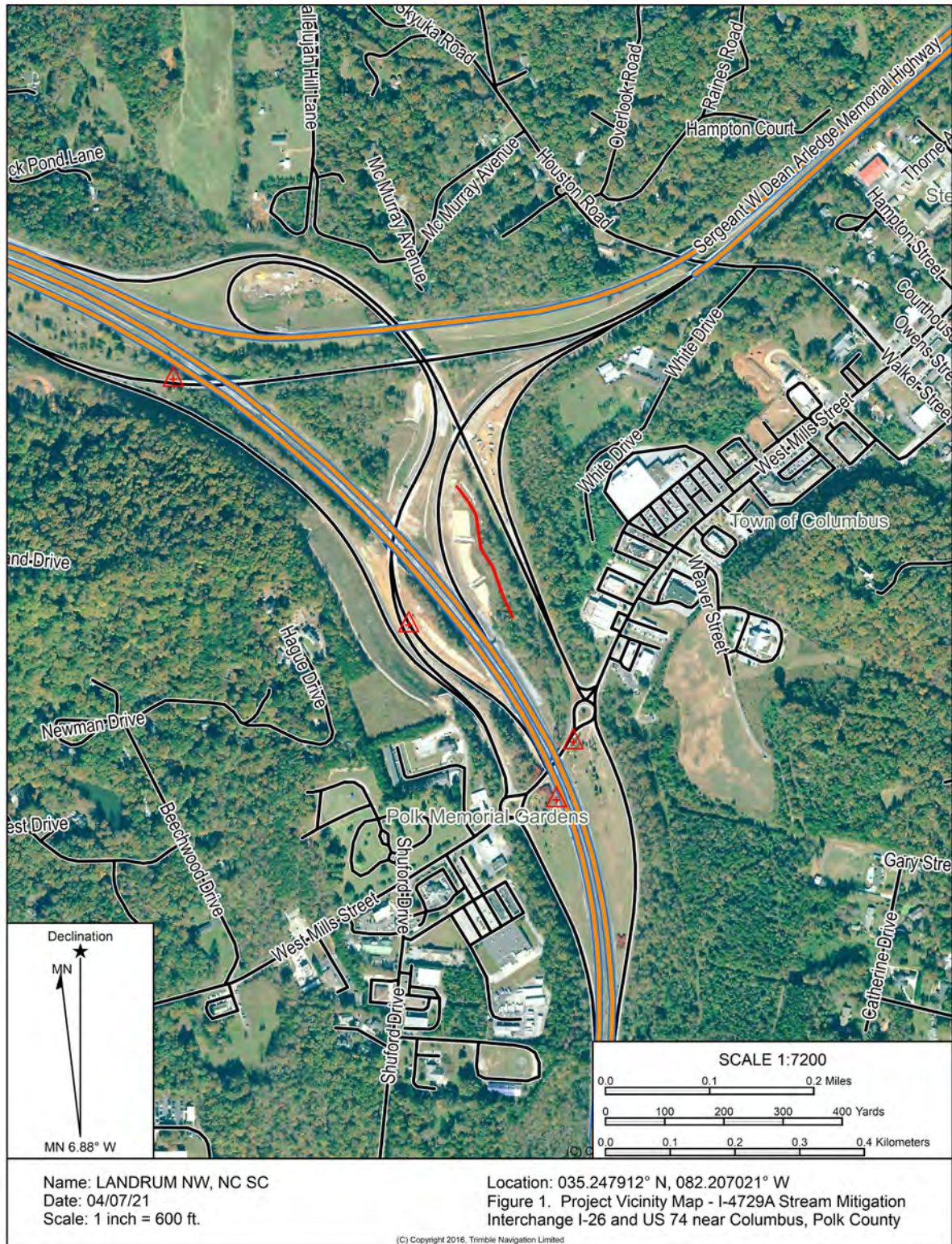
April 2018	As-Built Stream Reforestation Completed
April 2018	As-Built Stream Survey Completed
July 2018	As-Built Vegetation Monitoring
April 2019	Year 1 Stream Survey Completed
April 2019	Year 1 Vegetation Monitoring – Type II Supplemental Planting of Floodplain
April 2020	Year 2 Stream Survey Completed
April 2020	Year 2 Vegetation Monitoring
April 2020	Recommend Stabilization/Repairs of Eroded Streambank and Stream Channel
October 2020	NCDOT Personnel Completed Repairs to Eroded Streambank and Stream Channel
March 2021	Type I & II Supplemental Planting of Streambank Repair and Riparian Area
April 2021	Year 3 Stream Survey Completed (Following Fall 2020 Repairs)
April 2021	Year 3 Vegetation Monitoring

October 2022	Year 4 Stream Survey Completed (Year 4 Survey added due to Fall 2020 Repairs)
October 2022	Year 4 Vegetation Monitoring (Year 4 Survey added due to Fall 2020 Repairs)
November 2023	Year 5 Photo Documentation, Visual Assessment Only

1.4 Debit Ledger

The US Army Corps of Engineers General Permit 31 for the Horse Creek stream relocation indicates the loss of 795 linear feet of stream channel. Fifty-three (53) linear feet of stream channel will be a total loss and is mitigated at a 2:1 ratio. The remaining 742 linear feet of channel relocation will be mitigated at a 1:1 ratio for the I-4729A project to compensate for unavoidable stream impacts.

Figure 1. Project Vicinity Map – Revised 2021



2.0 CONCLUSION

Based on the Year 5 (2023) visual/photo assessment and comparisons to the Year 4 (2022) photo documentation the channel appears well vegetated and stable. There is new beaver activity occurring along the northern end of the stream reach. There is a small beaver dam located just above Cross Section 1 (XS 1, riffle area) near the end of the streambank repairs which were completed in 2020. This dam has caused some pooling and minor accumulation of sediment in the stream channel upstream of the dam. There is also a larger beaver dam located just above Cross Section 2 (XS 2, pool area), which has impacted the stream channel by additional pooling and accumulation of sediment upstream of the dam. The streamside vegetation upstream of the two beaver dams has been thinned to a degree by this beaver activity; however, the remaining root structure should regenerate new stems in the spring along these impacted stream reaches.

NCDOT plans to trap the beavers and remove the beaver dams from the stream channel as soon as possible. Once these dams are removed, the stream channel should flush itself of excess sediments and return to a more natural condition as designed. The overall stream channel parameters appear to be in good shape. There is one area of concern relating to streambank erosion near where the channel change ties back into the natural channel on the south end of the stream reach (see photos). NCDOT will keep this area under close observation and note any continued erosion.

NCDOT has a contract with USDA Wildlife Services for beaver removal. The Division 14 Environmental Staff contacted USDA on November 13, 2023, regarding the removal of the beavers. Josh Johnson with USDA Wildlife Services began beaver removal/trapping in early December 2023. One male beaver was trapped/removed from the area and the two dams were removed by USDA personnel. Mr. Johnson stated that this was the second time this year that he had trapped beavers in this area, which could continue to be a problem in the future.

The two original stream buffer planting plots are doing well with additional volunteer species sprouting up throughout the sites. No photos were taken of the vegetation plots this year; however, photos from last years review are included in this report.

Storm systems and high-water events continue to affect this area of Polk County.

NCDOT proposes to continue stream and vegetation monitoring at the Horse Creek Mitigation Site in 2024.

3.0 REFERENCES

I-4729A Stream Relocation Monitoring Plan, Horse Creek, Polk County. Version 1.2, NCDOT Division 14, August 17, 2017.

On-Site Stream Mitigation Plan, Interchange at I-26 and US 74 near Columbus; Polk County, NC, T.I.P. Number I-4729A, WBS No: 34243.1.3, August 17, 2017.

Rosgen, D. L., 1996. Applied River Morphology. Wildland Hydrology, Pagosa Springs, Colorado.

US Army Corps of Engineers (USACE), 2003. Stream Mitigation Guidelines. Prepared with cooperation from the US Environmental Protection Agency, NC Wildlife Resources Commission, and the NC Division of Water Quality.

USDA Wildlife Services, Josh Johnson, personal communication, January 3, 2024.

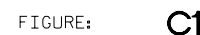
4.0 QUALIFICATIONS

The field photos and preparation of the Stream Monitoring Report 2023 was conducted by Mark S. Davis, Senior Environmental Scientist, of JMT (Johnson, Mirmiran, & Thompson, Inc.) for NCDOT Division 14 Environmental Office.

Investigator: Mark S. Davis, Senior Environmental Scientist, JMT
Education: BS Fishery Science, North Carolina State University, 1978
Experience: Senior Environmental Scientist, JMT, 2022 to Present
Environmental Specialist, Vaughn & Melton Consulting Engineers, 2016-2022
Environmental Supervisor, NCDOT Division 14, 2000-2016
Mountain Region Hab/Con Coordinator, NC Wildlife Resources Commission, 1996-2000
Fishery Biologist/Technician, NC Wildlife Resources Commission, 1987-1996
Research Technician, US Forest Service, Coweeta Hydrologic Laboratory, 1980-1985
Biological Technician, US Fish & Wildlife Service, 1978-1979
Responsibilities: Wetland and stream delineations, habitat assessments, T&E species assessments and surveys, SHPO requests, 404/401 and TVA 26a Permit Applications, NEPA/SEPA document preparation.

APPENDIX A

CROSS SECTION, VEGETATION PLOT & PHOTO POINT LOCATIONS



APPENDIX B

STREAM PHOTOS – VISUAL ASSESSMENT

I-4729A Horse Creek Mitigation Site – Photo/Visual Assessment
Photo Point 1A – November 8, 2023



Looking Upstream from Photo Point 1A



Looking Downstream from Photo Point 1A

**I-4729A Horse Creek Mitigation Site – Photo/Visual Assessment
November 8, 2023**



Looking at Beaverdam 1 at End of Streambank Repairs just above X-Section 1



Looking Across X-Section 1 from East to West

**I-4729A Horse Creek Mitigation Site – Photo/Visual Assessment
November 8, 2023**



Looking Downstream from X-Section 1 – Water back-up from Beaverdam 2



Looking at Beaverdam just upstream of X-Section 2

I-4729A Horse Creek Mitigation Site – Photo/Visual Assessment
Photo Point 2 – November 8, 2023



Looking Upstream from Photo Point 2



Looking Downstream from Photo Point 2

I-4729A Horse Creek Mitigation Site – Photo/Visual Assessment
Photo Point 2 – November 8, 2023



Looking Across Stream from Photo Point 2 from East to West



Looking Upstream from just below Photo Point 2

I-4729A Horse Creek Mitigation Site – Photo/Visual Assessment
Photo Point 2 – November 8, 2023



Looking Downstream from just below Photo Point 2



Looking at Log Vane Downstream from just below Photo Point 2

**I-4729A Horse Creek Mitigation Site – Photo/Visual Assessment
November 8, 2023**



Looking Across Stream at X-Section 3 – East to West



Looking at Rock Cross Vane just below X-Section 3 – East to West

**I-4729A Horse Creek Mitigation Site – Miscellaneous Photos
November 8, 2023**



Looking Upstream toward RCBC – Beginning of Channel Change – North End



Looking Downstream from Below RCBC

**I-4729A Horse Creek Mitigation Site – Miscellaneous Photos
November 8, 2023**



Looking Downstream below RCBC at Streambank Repairs from 2020



Looking Upstream from End of Channel Change – South End

**I-4729A Horse Creek Mitigation Site – Miscellaneous Photos
November 8, 2023**



Looking Downstream from End of Channel Change – Some Streambank Erosion



Looking Across Stream – End of Channel Change – Some Streambank Erosion

**I -4729A – Horse Creek Mitigation Site – Polk County
Vegetation Plot Photos 2022**



Plot 1 – Looking Southeast from Northwest Corner – 10/6/22



Plot 1 – Looking South from Northwest Corner – 10/6/22

**I -4729A – Horse Creek Mitigation Site – Polk County
Vegetation Plot Photos 2022**



Plot 2 – Looking Southeast from Northwest Corner – 10/6/22



Plot 2 – Looking Northwest from Southeast Corner – 10/6/22