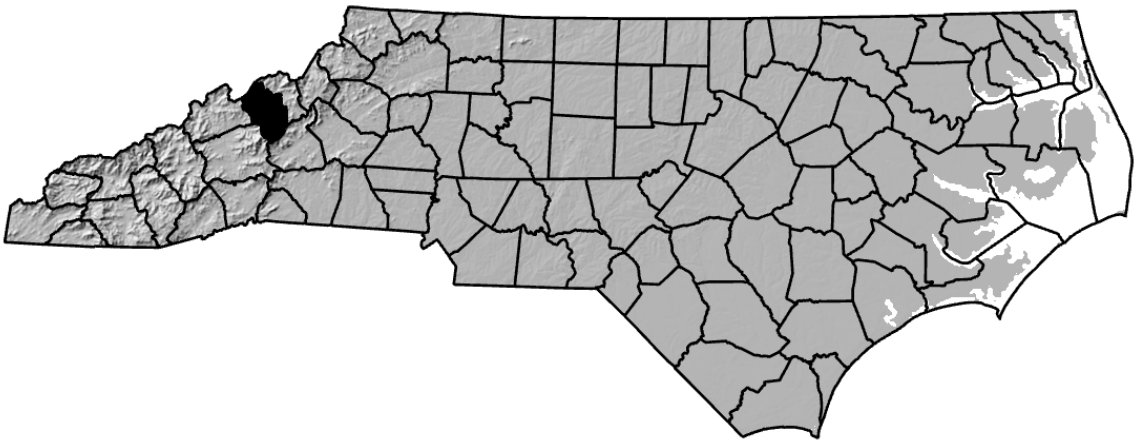
ANNUAL REPORT FOR 2023



UT to Big Crabtree Creek Site #21 Mitigation Site
ONE ID #: 100-018
Yancey County
TIP No. R-2519B
COE Action ID: SAW-2004-9987181 / 2004-30631
NCDWR Project #: 2013-0743v.2

Prepared By:
Roadside Environmental Unit and Environmental Analysis Unit
North Carolina Department of Transportation
October 2023

TABLE OF CONTENTS

FIGURES

APPENDICES

SUMMARY

The following report summarizes the stream monitoring activities that have occurred during the Year 2023 at the UT to Big Crabtree Creek Site #21 Mitigation Site in Yancey County. The North Carolina Department of Transportation (NCDOT) completed the streambank reforestation at this project in March 2020. This report provides the monitoring results for the fourth formal year of monitoring (Year 2023). The Year 2023 monitoring period was the fourth of five scheduled years of monitoring on the UT to Big Crabtree Creek Site #21 Mitigation Site (See Success Criteria Section 2.1).

Based on the overall conclusions of monitoring at the UT to Big Crabtree Creek Site #21, it has met the required monitoring protocols for the fourth formal year of monitoring on the stream. The channel throughout the stream site is stable at this time. The 2023 vegetation monitoring of the site revealed an average tree density within the buffer of 663 trees per acre and visually the streambank vegetation was surviving throughout the site. This average is above the minimum success criteria of 290 trees per acre within the buffer for Year 4.

NCDOT proposes to continue stream and vegetation monitoring at the UT to Big Crabtree Creek Site #21 Mitigation Site in 2024.

1.0 INTRODUCTION

1.1 Project Description

The following report summarizes the stream monitoring activities that have occurred during the Year 2023 at the UT to Big Crabtree Creek Site #21 Mitigation Site. Site #21 is located on US 19 between Hemlock Road (SR 1181) and Big Crabtree Creek in Yancey County from Sta. 244+10 to 247+94 -L- Rt. (Figure 1). The UT to Big Crabtree Creek Site #21 was constructed to provide mitigation for stream impacts associated with Transportation Improvement Program (TIP) number R-2519B in Yancey and Mitchell Counties.

The mitigation site provided approximately 396 linear feet of stream restoration. Streambank reforestation was completed in March 2020 by NCDOT. The restoration of the UT to Big Crabtree Creek Site #21 Mitigation Site involved relocating 396 feet of UT to Big Crabtree Creek due to road widening. A new floodplain and channel were excavated. The riparian buffer zone will be planted ranging in width from 18 to 45 feet along the southern bank and 12 feet wide buffer along the northern bank between the stream restoration and US 19. No proposed utility easements will affect this mitigation site.

1.2 Purpose

In order for a mitigation site to be considered successful, the site must meet the success criteria. This report details the monitoring in 2023 at the UT to Big Crabtree Creek Site #21 Mitigation Site. Hydrologic monitoring was not required for this site.

1.3 Project History

March 2020	Streambank Reforestation Completed
September 2020	Stream Channel and Vegetation Monitoring (Year 1)
February 2021	Supplemental Buffer Planting Completed
July 2021	Stream Channel and Vegetation Monitoring (Year 2)
March 2022	Supplemental Buffer Planting Completed
August 2022	Stream Channel and Vegetation Monitoring (Year 3)
September 2022	Herbicide Application on Invasive Species
July 2023	Stream Channel and Vegetation Monitoring (Year 4)

1.4 Debit Ledger

The entire UT to Big Crabtree Creek Site #21 stream mitigation site was used for the R-2519B project to compensate for unavoidable stream impacts.

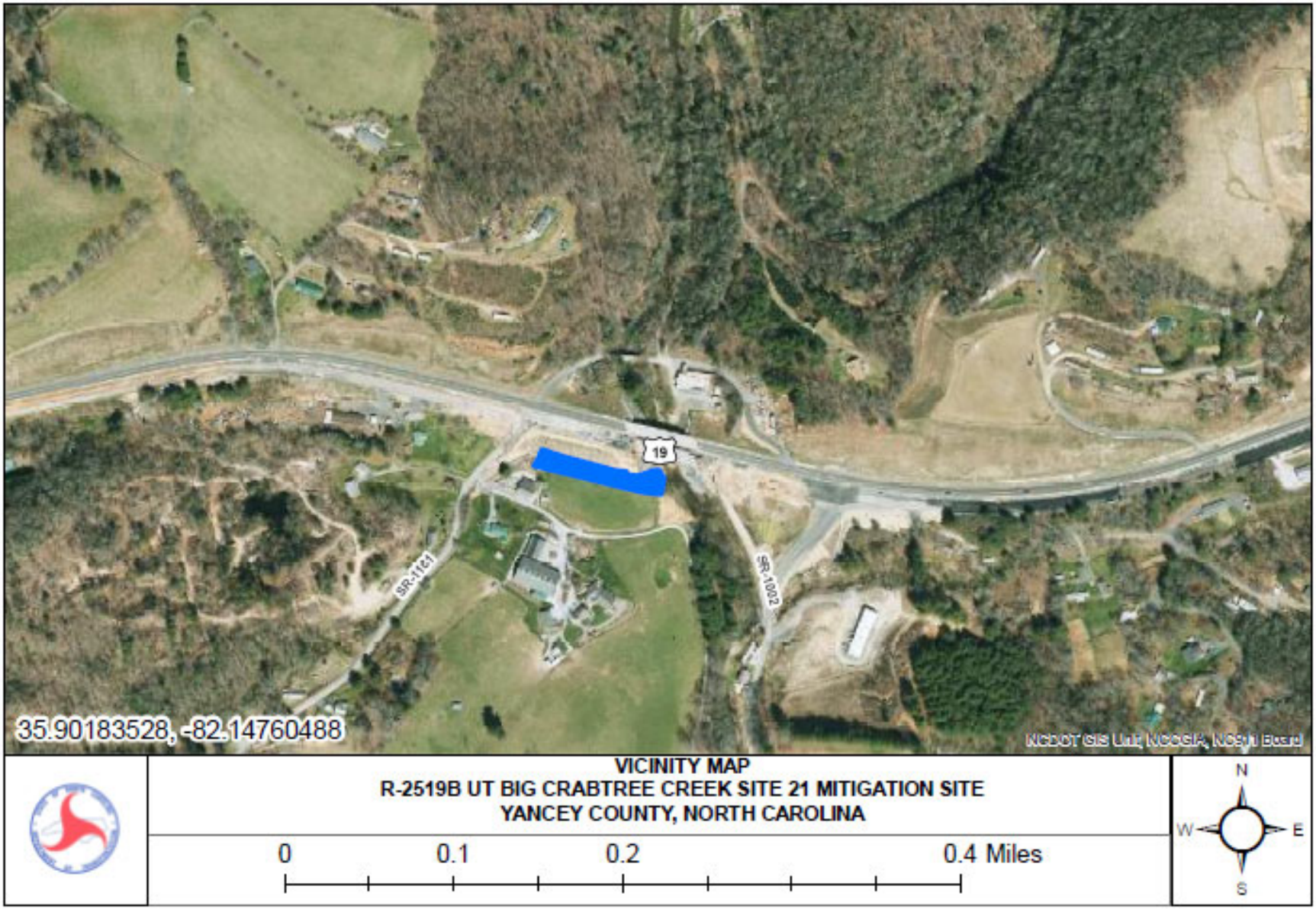


Figure 1. Vicinity Map

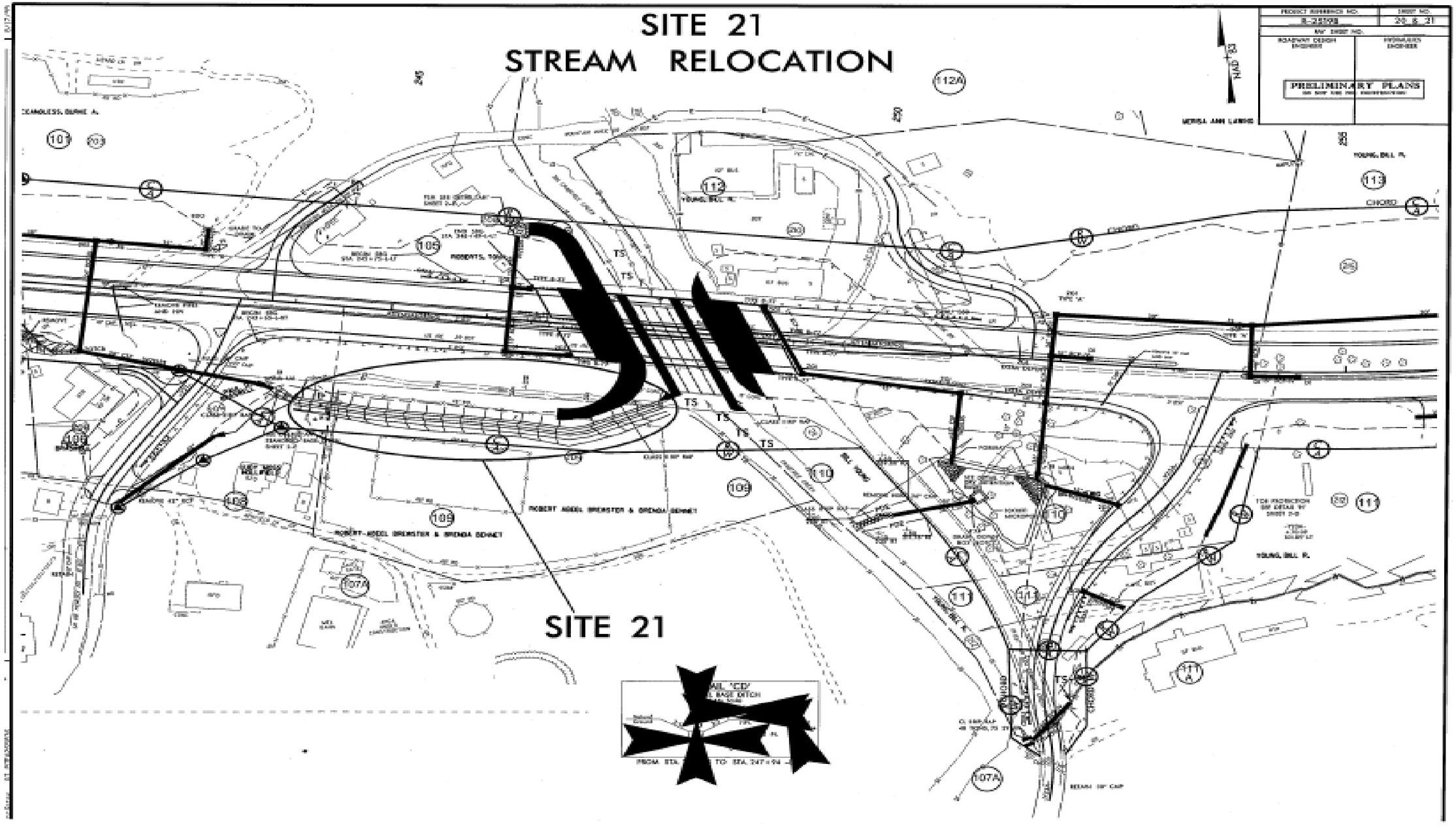


Figure 2. Site #21 Permit Drawing

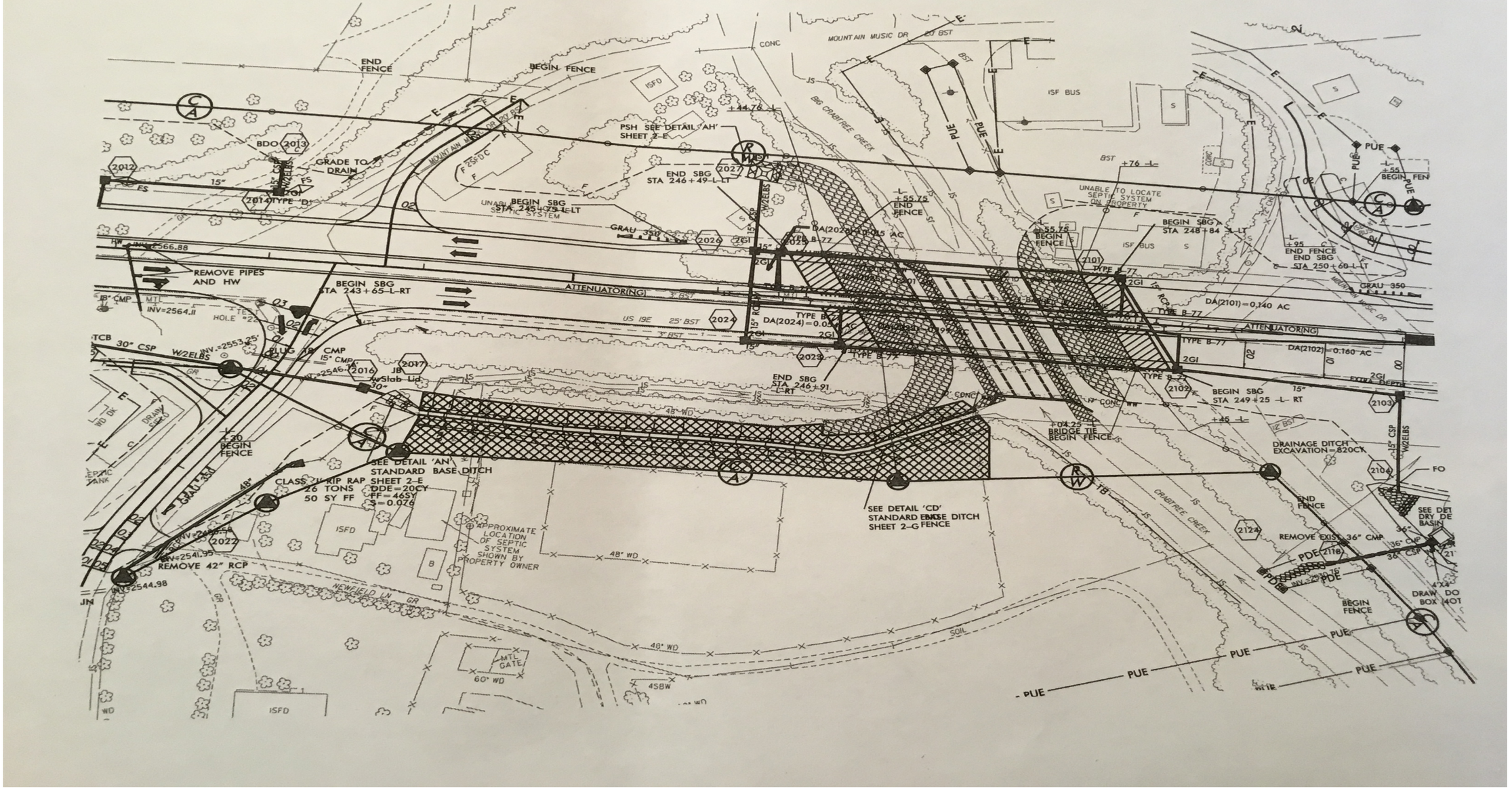


Figure 3. Site #21 Reforestation Plan

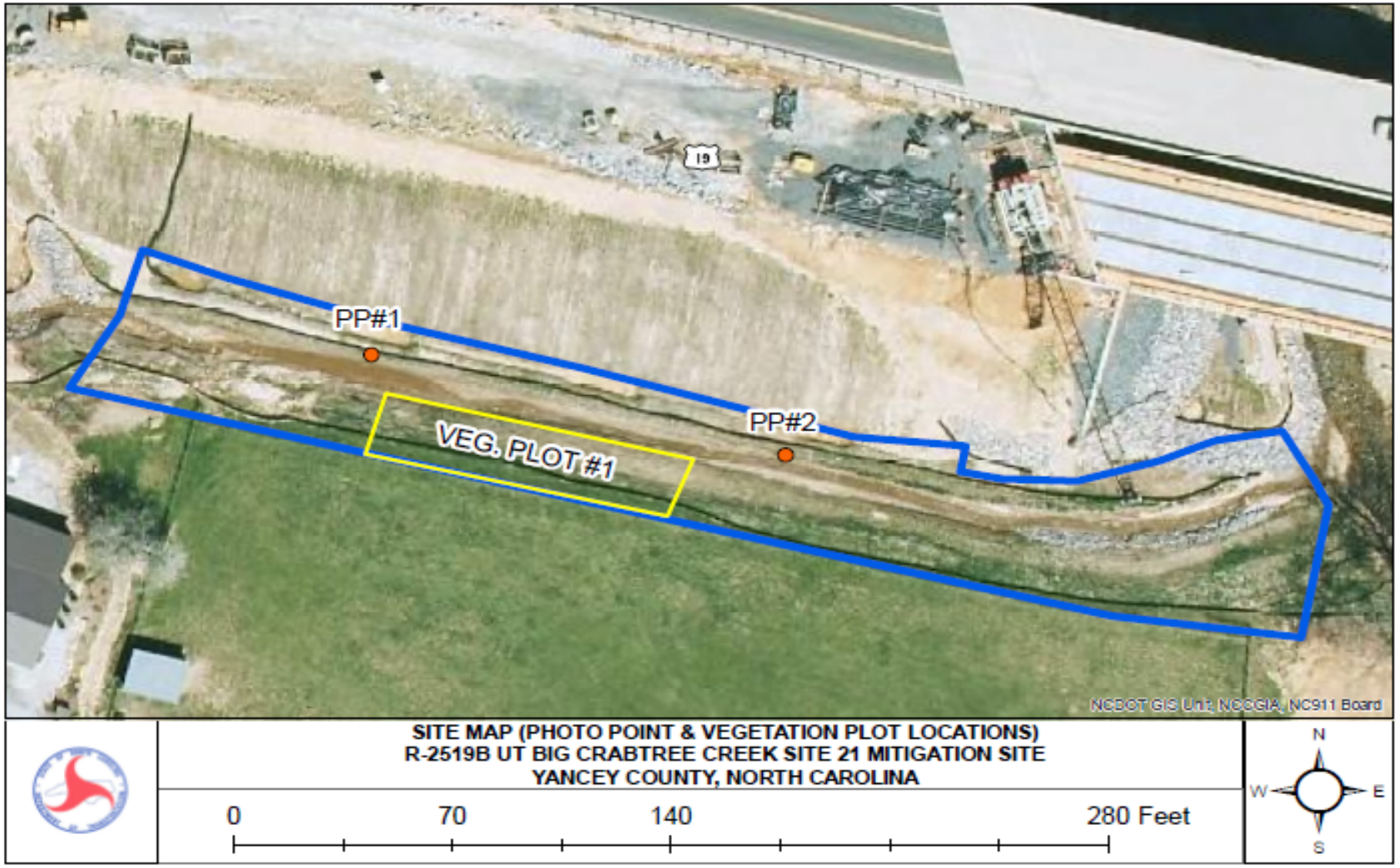


Figure 4. Site #21 Map

2.0 STREAM ASSESSMENT

2.1 Success Criteria

Based on email correspondence with the Regulatory Agencies it was agreed to maintain consistency and follow the mitigation plan language as it relates to the vegetation monitoring.

Mitigation Plan

Performance Standards
Performance standards are based on the April 2003 Stream Mitigation Guidelines. Success for vegetation monitoring within the riparian buffer areas will be based on the survival of at least 260 stems of five-year-old trees at year five. Assessment of channel stability will be based on the survival of riparian vegetation and lack of significant bank erosion, channel widening or down-cutting.

Monitoring Requirements
Each site will be monitored for five years with no less than two bankfull events, which must occur in separate monitoring years and be documented. If less than two bankfull events occur during the first five years, monitoring will continue until the second bankfull event is documented. The following components of Level 1 monitoring will be performed annually for the monitoring period: reference photos, plant survival monitoring (identification of specific problem areas and remedial action), and visual inspection of channel stability. Vegetation stem counts will be conducted on Sites 8, 21, and 30 only. Physical measurements of channel stability/morphology will only be performed on Site 30. An as-built will be submitted for each site and will include stream channel profile and cross-section surveys which will provide a baseline for comparison if it is determined at any time during the monitoring period that a problem has occurred. Annual monitoring reports will be made available on the NCDOT website.

NCDWR Condition #1
The permittee shall visually monitor the vegetative plantings to assess and ensure complete stabilization of the mitigation stream segments. Riparian area success shall be determined by conducting stem counts to ensure a tree survival rate of 320 stems/acre. The monitoring shall be conducted annually for a minimum of 3 years after final planting. Photo documentation shall be utilized to document the success of the riparian vegetation and submitted to NCDWR in a final report within sixty days after completing monitoring. After 3 years the NCDOT shall contact NCDWR to schedule a site visit to “close out” the mitigation site.

2.2 Stream Description

2.2.1 Post-Construction Conditions

The restoration of the UT to Big Crabtree Creek Site #21 Mitigation Site involved relocating 396 feet of UT to Big Crabtree Creek due to road widening. A new floodplain and channel were excavated. The riparian buffer zone will be planted ranging in width from 18 to 45 feet along the southern bank and 12 feet wide buffer along the northern bank between the stream restoration and US 19. No proposed utility easements will affect this mitigation site.

2.2.2 Monitoring Conditions

The objective of the UT to Big Crabtree Creek Site #21 stream restoration was to restore a stream as identified in Rosgen's Applied River Morphology. A visual stream assessment will be conducted annually each year of the monitoring period.

2.3 Results of the Stream Assessment

2.3.1 Site Data

The visual assessment of the stream noted that the channel appears stable with little or no active bank erosion. A noted wrack line indicated a bankfull event had recently occurred. A stormwater pipe encroachment coming into the site buffer from an adjacent property owner was noted during the monitoring visit. The Yancey County Maintenance Engineer contacted the adjacent property owner to remove the pipe from NCDOT ROW, stabilize and seed and mulch the buffer after the pipe is removed. The pipe was removed in September 2023 and the area was stabilized (see pre and post removal photos in Appendix A). NCDOT will continue to monitor the channel stability at Site #21 in 2024.

3.0 VEGETATION: UT TO BIG CRABTREE CREEK SITE #21

3.1 Description of Species

The following tree species were planted on the streambank:

Salix nigra, Black Willow

Cornus amomum, Silky Dogwood

The following tree species were planted in the buffer area:

Liriodendron tulipifera, Yellow Poplar

Platanus occidentalis, Sycamore

Fraxinus pennsylvanica, Green Ash

Quercus alba, White Oak

Quercus rubra, Northern Red Oak

Betula nigra, River Birch

Quercus phellos, Willow Oak

3.2 Results of Vegetation Monitoring

Plot #	Yellow Poplar	Sycamore	Green Ash	White Oak	Northern Red Oak	River Birch	Willow Oak	Total (Year 4)	Total (at planting)	Density (Trees/Acre)
1		9	2	8	10	7	2	38	39	663
Year 4 Average Density (Trees/Acre)										**663**
Year 3 Average Density (Trees/Acre)										680
Year 2 Average Density (Trees/Acre)										680
Year 1 Average Density (Trees/Acre)										189

Site Notes: The visual assessment of the streambank vegetation noted that the live stakes were surviving along the streambank. Some multi-flora rose was noted.

3.3 Conclusions

NCDOT proposes to continue monitoring the planted and plans to spray the multi-flora rose in 2024.

4.0 OVERALL CONCLUSIONS/RECOMMENDATIONS

The UT to Big Crabtree Creek Site #21 Mitigation Site has met the required monitoring protocols for the third formal year of monitoring. The channel throughout the stream site is stable at this time. The 2023 vegetation monitoring of the site revealed an average tree density within the buffer of 663 trees per acre and visually the streambank vegetation was surviving throughout the site. This average is above the minimum success criteria of 290 trees per acre within the buffer for Year 4.

NCDOT proposes to continue stream and vegetation monitoring at the UT to Big Crabtree Creek Site #21 Mitigation Site in 2024.

5.0 REFERENCES

Mitigation Plan, US 19E Widening, Yancey and Mitchell Counties, North Carolina TIP Number R-2519B, WBS No. 35609.1.1, May 6, 2013 (Revised November 4, 2013)

Department of the Army Permit, Permittee: North Carolina Department of Transportation, Permit No. 2004-9987181 / 2004-30631, TIP No. R-2519B, Issuing Office: CESAW-RG-A

North Carolina Department of Environment and Natural Resources, Division of Water Resources, December 2, 2013, Proposed improvements to US 19E from SR 1186 in Yancey County to multilane section west of Spruce Pine in Mitchell County, State Project No. 6.909001T, WBS Element No. 35609.1.1, TIP R-2519B, NCDWR Project No. 2013-0743v.2

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 Resources.

APPENDIX A

SITE PHOTOGRAPHS

UT to Big Crabtree Creek Site #21

Photo Point #1 (Upstream)

Photo Point #1 (Downstream)

Photo Point #2 (Upstream)

Photo Point #2 (Downstream)

Vegetation Plot #1

Pipe encroachment looking south

July 2023

UT to Big Crabtree Creek Site #21

Pipe encroachment looking east

Pipe encroachment aerial view

July 2023

UT to Big Crabtree Creek Site #21

Pipe encroachment area after relocation outside of NCDOT right of way