Permit Drawings

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 3.02; Released April 23, 2024)

WBS Element: N/A **TIP/Proj No.:** DF18313.2100307.PR **County(ies):** Yancey

General Project Information

Waterbody Information

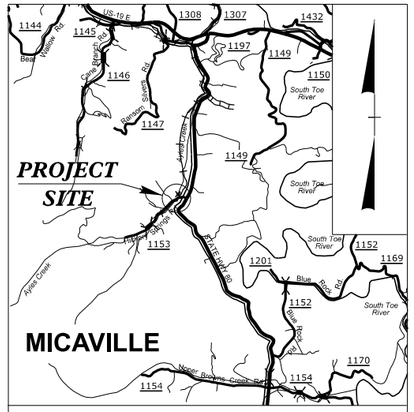
Surface Water Body (1):	Ayles Creek		**NCDWR Stream Index No.:**	7-2-52-33-11		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Trout Waters (Tr)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	Ayles Creek			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**		
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (2):			**NCDWR Stream Index No.:**			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**				
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:				**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?		**Deck Drains Discharge Over Buffer?**		**Dissipator Pads Provided in Buffer?**		
Deck Drains Discharge Over Water Body?		(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (3):			**NCDWR Stream Index No.:**			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**				
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:				**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?		**Deck Drains Discharge Over Buffer?**		**Dissipator Pads Provided in Buffer?**		
Deck Drains Discharge Over Water Body?		(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

01/16/24

CONTRACT: C205023 TIP PROJECT: DF18313.2100307.PR



VICINITY MAP (NTS)

PERMIT DRAWING
SHEET 1 OF 5

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

YANCEY COUNTY

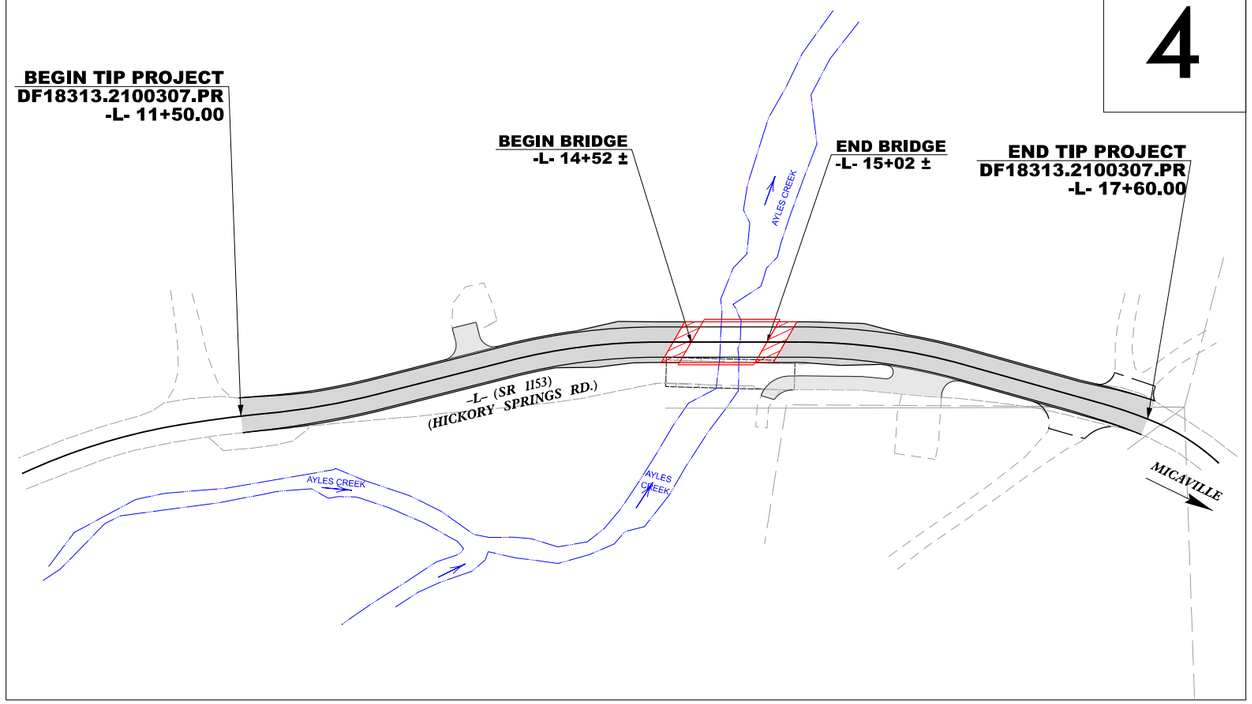
LOCATION: *BRIDGE NO.990062 OVER AYLES CREEK ON SR 1153 (HICKORY SPRINGS RD.)*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING & STRUCTURE*

WETLAND AND SURFACE WATER IMPACTS PERMIT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF18313.2100307.PR	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
DF18313.2100307.PR		PE
DF18313.2100307.PR		ROW
DF18313.2100307.PR		UTILITY
DF18313.2100307.PR		CONST.



B-011 RIGHT OF WAY PLANS
NOVEMBER 5, 2025

RELEASE FOR CONSTRUCTION
DATE: _____

NAD 83/
NA 2011

THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SANFORD CONTRACTORS
628 ROCKY FORK CHURCH RD.
SANFORD, NC 27332
(919)775-7882

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

30 15 0 30 60
PLANS

30 15 0 30 60
PROFILE (HORIZONTAL)

6 3 0 6 12
PROFILE (VERTICAL)

DESIGN DATA

ADT 2025 = 1000
ADT 2045 = 1220
K = N/A
D = N/A
T = N/A
V = 35 MPH

FUNC CLASS = LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT DF18313.2100307.PR = 0.107 MILE

LENGTH OF STRUCTURE TIP PROJECT DF18313.2100307.PR = 0.009 MILE

TOTAL LENGTH OF TIP PROJECT DF18313.2100307.PR = 0.116 MILE

Prepared in the Office of:
WETHERILL ENGINEERING
1223 Jones Franklin Rd. Raleigh, N.C. 27606
License No. F-0377
Bus: 919.851.8077 Fax: 919.851.8107

Prepared for:
DIVISION OF HIGHWAYS DIVISION 13
55 Orange Street
Asheville, NC, 28801

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 5, 2025

LETTING DATE:
JANUARY 12, 2026

CHRIS ANDERSON, PE
PROJECT ENGINEER

JERRY JAVELLANA, PE
PROJECT DESIGN ENGINEER

ANDY HUSSEY, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

. P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

. P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

11/14/23

PERMIT DRAWING SHEET 2 OF 5

50′ 25′ 0′ 50′ 100′

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

BEGIN PROJECT
DF18313.2100307.PR
-L- POC Sta. 11+50.00

-L- PCC 11+04.00
-L- PRC 11+65.70
-L- PT 12+42.82
-L- PC 13+30.82
-L- PT 14+30.46
-L- PC 15+25.93
-L- PT 16+33.86
-L- PC 17+29.71
-L- PCC 17+65.54
-L- POE 18+15.78

REMOVE EXISTING TEMPORARY BRIDGE
RETAIN
CL. II RIPRAP
CL. II RIPRAP
SPECIAL CUT DITCH SEE DETAIL B
GRADE TO DRAIN
BEGIN SBG +14.00
0401
0402
N68°53'50.2"E
N53°57'38.3"E
N83°58'47.3"E
Cl. B RipRap 2 Tons 7 SY Geotextile
SPECIAL CUT DITCH SEE DETAIL B
PROPOSED EXCAVATION
PROPOSED EXCAVATION BANK STABILIZATION SEE DETAIL A
EXISTING BRIDGE (PRE-HELENE)
RETAIN
END PROJECT
DF18313.2100307.PR
-L- POC Sta. 17+60.00

AYLES CREEK

15+00

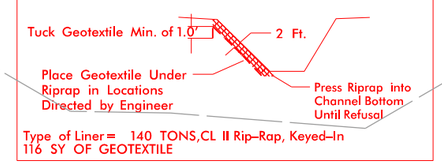
NAD 83 NA 2011

BM1 -L- Sta. 15+57.93 6.39' LT
GPS1 -L- Sta. 17+15.15 15.8' LT
GPS2 -L- Sta. 14+91.70 36.38' RT

APPALACHIAN TRUSS REAL PROPERTY, LLC, DB 895 PG 595
JAMES BRANDON CARROLL DB 525 PG 284
LISA YOUNG THOMPSON ESTATE DB 12E PG 217 DB 444 PG 543
SAMUEL JOE MURPHY DB 703 PG 32
TODD ROBINSON & R. CHAD ROBINSON DB 681 PG 660
JAMES M. NEWTON, JERRY D. NEWTON, & JUANITA NEWSTON SAMS DB 162 PG 683
JAMES BRANDON CARROLL DB 523 PG 611
AMANDA ROBINSON DB 850 PG 254
SAMUEL JOE MURPHY DB 703 PG 32
JAMIE SILVER & JOSEPH LEE SILVER DB 913 PG 262
MARY CARROLL DB 169 PG 507

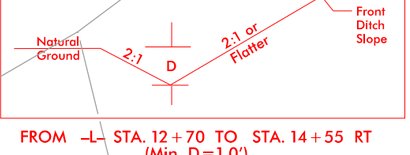
HICKORY SPRINGS RD (SR-1153) 22' BST

DETAIL A
BANK STABILIZATION
(Not to Scale)



Type of Liner = 140 TONS,CL II Rip-Rap, Keyed-In
116 SY OF GEOTEXTILE
FROM –L– STA. 14+42 TO STA. 15+10

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



FROM –L– STA. 12+70 TO STA. 14+55 RT
(Min. D=1.0′)
FROM –L– STA. 13+25 TO STA. 14+70 LT
(Min. D=0.5′)

PAVEMENT REMOVAL

NOTE: UNLESS OTHERWISE NOTED, ALL DRIVEWAY RADII ARE 10'

FOR -L- PROFILE, SEE SHEET 05
ALL GUARDRAIL END UNITS ARE TL-2
ALL STRUCTURE ANCHOR UNITS ARE TYPE III

990062
PRP 04

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
YANCEY COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PREPARED BY
SUTHERLIN ENGINEERING
1223 JONES FRANKLIN ROAD
RALEIGH, NC 27606
(919)851-9077
NC LICENSE P-0377

SANFORD CONTRACTORS
626 ROCKY FORK CHURCH RD.
SANFORD, NC 27332
(919)775-3862

RELEASE FOR CONSTRUCTION
DATE: _____

REVISIONS

$$$-USER_NAME-$$$ - $$$-DATE-$$$

11/14/23

PERMIT DRAWING SHEET 3 OF 5

50′ 25′ 0′ 50′ 100′

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

BEGIN PROJECT
DF18313.2100307.PR
-L- POC Sta. 11+50.00

-L- PCC 11+04.00

-L- PRC 11+65.70

-L- PT 12+42.82

-L- PC 13+30.82

-L- PT 14+30.46

-L- PC 15+25.93

-L- PT 16+33.86

-L- PC 17+29.71

-L- PCC 17+65.54

-L- POE 18+15.78

15+00

REMOVE EXISTING TEMPORARY BRIDGE

RETAIN

CL. II RIPRAP

SPECIAL CUT DITCH SEE DETAIL B

GRADE TO DRAIN

15" HE

0401

BEGIN SBG +14.00

0402

-L- N53°57'38.3"E

-L- N83°58'47.3"E

CL. B RipRap 2 Tons
7 SY Geotextile

SPECIAL CUT DITCH SEE DETAIL B

PROPOSED EXCAVATION

PROPOSED EXCAVATION BANK STABILIZATION SEE DETAIL A

EXISTING BRIDGE (PRE-HELENE)

RETAIN

END PROJECT
DF18313.2100307.PR
-L- POC Sta. 17+60.00

AYLES CREEK

BM1
-L- Sta. 15+57.93
6.39' LT
El. 2629.16'

GPS1
-L- Sta. 17+15.15
15.8' LT

GPS2
-L- Sta. 14+91.70
36.38' RT

BL3
-L- Sta. 12+80.30
27.1' RT

NAD 83
NA 2011

DETAIL A
BANK STABILIZATION
(Not to Scale)

Tuck Geotextile Min. of 1.0' — 2 Ft.

Place Geotextile Under Riprap in Locations Directed by Engineer

Press Riprap into Channel Bottom Until Refusal

Type of Liner = 140 TONS, CL II Rip-Rap, Keyed-In
116 SY OF GEOTEXTILE

FROM –L– STA. 14+42 TO STA. 15+10

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground — 2:1 — D — 2:1 or Flatter — Front Ditch Slope

FROM –L– STA. 12+70 TO STA. 14+55 RT
(Min. D=1.0′)

FROM –L– STA. 13+25 TO STA. 14+70 LT
(Min. D=0.5′)

PAVEMENT REMOVAL

NOTE: UNLESS OTHERWISE NOTED, ALL DRIVEWAY RADII ARE 10'

FOR -L- PROFILE, SEE SHEET 05

ALL GUARDRAIL END UNITS ARE TL-2

ALL STRUCTURE ANCHOR UNITS ARE TYPE III

REVISIONS

990062
PRP 04

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
YANCEY COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

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HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W OR ACQUISITION

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PREPARED BY

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$$$-USER_NAME-$$$ - $$$-DATE-$$$

11/14/23

PERMIT DRAWING SHEET 4 OF 5

-L-

L = 150
K = 38
DS = 35 mph

L = 150
K = 50
DS = 45 mph

EXISTING GROUND AT PROPOSED ALIGNMENT

END DITCH RT.
STA. 14+55.00
EL. 2630.06'

13+91.09 VLP
2634.85

STA. 14+77 -L-
℄ ELEV. 2635.47'
SKEW = 120°
1@50' 21" CORED SLAB
W/ ALASKA RAIL
2' 6" CAP W/ SHEET PILING
VERTICAL ABUTMENTS

PROP 100 YR WS=2634.8'
PROP 25 YR WS=2633.6'
EXCAVATE TO 2630.3'
VERTICAL ABUTMENT WITH SHEET PILING*
NWS ELEV. 2630.1'
WS 4/22/25 ELEV. 2629.1'
NG AT CENTERLINE OF PROPOSED BRIDGE

PROPOSED ROADWAY GRADE

NG. RT.
NG. LT.
NG. RT.
NG. LT.

(-)3.0500%
(-)3.0500%
(+)0.8909%
(+)0.8909%
(+)0.8909%
(+)3.8659%
(+)3.8659%
-2.6700%
-2.8571%
-5.0%
-4.0%

BEGIN DITCH RT.
STA. 12+70.00
EL. 2835.00'

BEGIN DITCH LT.
STA. 13+25.00
EL. 2633.14'

DITCH PI
STA. 14+00 .00
EL. 2631.00'

DITCH PI
STA. 14+30.00
EL. 2629.50'

LOW CHORD AT CL
LOWEST LOW CHORD
EXCAVATE TO 2630.3'
VERTICAL ABUTMENT WITH SHEET PILING*
BANK STABILIZATION W/ CL II RIPRAP

END DITCH LT.
STA. 14+70.00
EL. 2629.10'

* DEPTH OF SHEET PILING TO BE DETERMINED BY GEOTECHNICAL ENGINEER

TOTAL APPROX. EXCAVATION = 145 cuyds

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	660	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	2633.6	FT
BASE DISCHARGE	=	1000	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2634.8	FT
OVERTOPPING DISCHARGE	=	1100	CFS
OVERTOPPING FREQUENCY	=	100+	YRS
OVERTOPPING ELEVATION	=	2635.3	FT
DATE OF SURVEY	=	04/22/25	
W.S.ELEVATION AT DATE OF SURVEY	=	2629.1	FT

FOR -L- PLAN, SEE SHEET 04

990062
PRP 05

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
YANCEY COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W OR NEGOTIATIONS

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PREPARED BY

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DATE: _____

REVISIONS

$$$-USER_NAME-$$$ - $$$-DATE-$$$

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 14+43 TO 14+85	BANK STABILIZATION						0.02		98		
1	-L- 14+45 TO 14+85	TEMP. IMPACTS FOR DEWATERING							0.01		100	
TOTALS*:								0.02	0.01	98	100	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
12/16/2025
YANCEY COUNTY
DF18313.2100307.PR

ESA Consultation

Buncombe 203, 396, 464, 716
McDowell 111, 716
Yancey 62, 97, 194

Biological and Conference Opinions and Informal Consultations – Batch Format

Replace Multiple Crossing Structures Destroyed by Tropical Storm Helene in Buncombe, McDowell, Yancey Counties, North Carolina

Service Log #25-110 through 25-117

Prepared by:

U.S. Fish and Wildlife Service
Asheville Ecological Services Office
160 Zillicoa Street
Asheville, North Carolina 28801

JANET MIZZI Digitally signed by JANET MIZZI
Date: 2025.02.11 08:27:38 -05'00'

Janet Mizzi
Field Supervisor
Asheville Ecological Services Field Office
Asheville, North Carolina

Table of Contents

Consultation History

December 2, 2024: Discussion between U.S. Fish and Wildlife Service (Service) and North Carolina Department of Transportation (NCDOT) regarding consultation batching processes and applicable avoidance and minimization and conservations measures for projects related to Tropical Storm (TS) Helene damage.
December 3-6, 2024: Email correspondence between the Service and NCDOT discussing aspects of batching process and need for a virtual discussion.
December 11, 2024: Virtual meeting between NCDOT and the Service to discuss batching process and avoidance and minimization and conservations measures.
December 12, 2024: NCDOT submitted batched request for informal and formal consultation to the Service.
December 30-31, 2024: Service asked NCDOT questions about project impact estimates and NCDOT provided responses.
January 2, 2025: Phone discussion between NCDOT and the Service regarding aquatic impact area estimates.
January 7, 2025: NCDOT provided needed information on aquatic impact area estimates. Receipt of complete information and official start of formal consultation process.

Background

On September 27, 2024, TS Helene moved across a large swath of Western North Carolina (WNC). Extreme rainfall and high winds resulted in catastrophic damage across much of the region. Record flooding occurred throughout several watersheds, destroying thousands of transportation sites as well as homes and entire communities. Widespread landslides and timber fall contributed to the damage. In the wake of this disastrous event, the North Carolina Department of Transportation (NCDOT) is tasked with responding to, repairing, and [to the extent possible] replacing the transportation infrastructure destroyed by TS Helene. The following informal and formal consultations are presented in batched format to streamline and expedite review of one group of many similar projects. The format utilized in this consultation is intended for TS Helene-related projects and is tailored to the unique challenges and constraints precipitated by this event. Biological determinations presented below are based on the best available scientific data at the time of this document and incorporate the expertise of WNC's Service and partner resource agency biologists.

Projects

The table below represents the projects reviewed in this batch of TS Helene-related projects. Work will involve the replacement of damaged or wholly destroyed crossing structures, which may include minimal tree clearing, grading, demolition, and in-water construction. The current estimated timeline is for these projects to be carried out over the next two years. Additional description of the project-associated activities is provided in Section 2 of this document.

Table 1. Batched Consultation Projects – Crossing Structures

Structure Number	Waterbody	County	Location	Service Log No.
100203	Beetree Creek	Buncombe	35.61262942, - 82.42700924	25-110
100396	Ashworth Creek	Buncombe	35.50593694, -82.37427045	25-111

100464	Cane Creek	Buncombe	35.5418638, -82.3808703	25-112
100716	Garren Creek	Buncombe	35.5263751, -82.3720587	25-113
580111	North Fork Catawba River	McDowell	35.8345383, -82.0022521	25-114
990062	Ayles Creek	Yancey	35.883833, -82.2178591	25-115
990097	South Toe River	Yancey	35.8711714, -82.1968074	25-116
990194	North Toe River	Yancey	36.0046242, -82.1931341	25-117

Informal Consultation

The NCDOT assessed each project location addressed in this document for the presence of suitable habitat for listed species and for the potential effects of project work on listed species with suitable habitat present. The following table outlines the project locations and associated "No Effect" (NE) and "May Affect, Not Likely to Adversely Affect" NLAA determinations, with supporting biological rationale.

Table 2. Species NLAA and NE Determinations

Structure Number	Waterbody	Service Log No.	NE and NLAA Species
100203	Beetree Creek	25-110	**NE**: Appalachian elktoe (*Alasmidonta raveneliana*), mountain sweet pitcher plant (*Sarracenia rubra sp. jonesii*), rock gnome lichen (*Gymnoderma lineare*). **Rationale**: Absence of suitable habitat
100396	Ashworth Creek	25-111	**NE**: Appalachian elktoe, mountain sweet pitcher plant, rock gnome lichen, white irisette (*Sisyrinchium dichotomum*) **Rationale**: Absence of suitable habitat
100464	Cane Creek	25-112	**NE**: Appalachian elktoe, mountain sweet pitcher plant, rock gnome lichen, white irisette. **Rationale**: Absence of suitable habitat
100716	Garren Creek	25-113	**NE**: Appalachian elktoe, mountain sweet pitcher plant, rock gnome lichen, white irisette. **Rationale**: Absence of suitable habitat
580111	North Fork Catawba River	25-114	**NE**: Appalachian elktoe, small whorled pogonia (*Isotria medeoloides*) **Rationale**: Absence of suitable habitat
990062	Ayles Creek	25-115	**NLAA**: Gray bat (*Myotis grisescens*), northern long-eared bat (*Myotis septentrionalis*), tricolored bat (*Perimyotis subflavus*). **Rationale**: Lack of suitable roosting habitat. **NE**: Appalachian elktoe, small whorled pogonia, rock gnome lichen, Virginia spiraea (*Spiraea virginiana*). **Rationale**: Absence of suitable habitat.

990097	South Toe River	25-116	**NLAA**: Gray bat, northern long-eared bat, tricolored bat. **Rationale**: Lack of suitable roosting habitat. **NE**: Small whorled pogonia, rock gnome lichen, Virginia spiraea. **Rationale**: Absence of suitable habitat.
990194	North Toe River	25-117	**NE**: Gray bat, rock gnome lichen, small whorled pogonia, tricolored bat, Virginia spiraea. **Rationale**: For bats, absence of roosting habitat – bridge structure completely gone. For plants, absence of suitable habitat.

In instances where suitable habitat is absent from the action area, or where project actions would not result in impacts to suitable habitat within the action area, we agree that NE determinations are appropriate.

The NLAA determinations for listed bats are based on the presence of suitable riparian roosting, commuting, or foraging habitat and the lack of suitable roosting habitat, as addressed in the table. For these projects, adverse impacts to riparian habitat are not expected. Additionally, general protective measures will be implemented to the maximum extent possible. These measures are listed in Section 2.3 of this document, below, and further serve to reduce the likelihood that project work could adversely affect any bats occurring within the action areas.

We believe the requirements under section 7 of the ESA are fulfilled for the species addressed above in relation to the designated projects. However, obligations under section 7 of the ESA must be reconsidered if: (1) new information reveals impacts of this proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) this proposed action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the proposed action.

On September 14, 2022, the Service published a proposal in the Federal Register to list the tricolored bat as endangered under the ESA. As a result, NCDOT has requested a conference for the tricolored bat as the projects may be on-going after the effective date of any final listing rule, if one is published. Based on the information provided and the analysis discussed for listed bat species above which also has applicability here, we have determined that the proposed projects will not jeopardize the continued existence of the tricolored bat. Additionally, we would concur with the NCDOT's determination that the projects are NLAA the tricolored bat should the species become listed.

On December 13, 2024, eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*) was proposed for listing as endangered under the ESA. Species proposed for listing are not afforded protection under the ESA; however, as soon as a listing becomes effective, the prohibitions against jeopardizing its continued existence and "take" will apply. Information provided by NCDOT after the originally submitted consultation request for the subject projects indicates that NCDOT has chosen not to conference on eastern hellbender but will consider the species and coordinate with partner resource agencies as project actions move forward.

Biological Opinion and Conference Opinion

1. Introduction

A biological and conference opinion (Opinion) is the document that states the opinion of the Service in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (ESA), as to whether a Federal action is likely to jeopardize the continued existence of species listed as endangered or threatened; or result in the destruction or adverse modification of designated critical habitat.

This document transmits the Service's biological and conference opinions (Opinion) and is based on our review of the proposal to replace several crossing structures (Table 1) and their effects on the federally endangered Appalachian elktoe (*Alasmidonta raveneliana*), federally endangered gray bat (*Myotis grisescens*), federally endangered northern long-eared bat (*Myotis septentrionalis*), and federally proposed endangered tricolored bat (*Perimyotis subflavus*). This Opinion is based on information provided in the assessment submitted to the Service by the NCDOT, field investigations, correspondence between NCDOT and the Service, communications with experts on the affected species, and other sources of information as cited. The Federal Highway Administration is the lead Federal action agency for these projects, with consultation authority delegated to the NCDOT.

2. Proposed Action

As defined in the Service's section 7 regulations (50 CFR 402.02), "*action*" means "*all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas*." The "*action area*" is defined as "*all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action*." The direct and indirect effects of the actions and activities must be considered in conjunction with the effects of other past and present Federal, state, or private activities, as well as the cumulative effects of reasonably certain future state or private activities within the action areas.

2.1 Action Areas

The project action areas are all areas of construction and include any portions of the project waterbodies, as indicated in Table 1, that may be affected by direct or indirect effects. The action areas are comprised of the:

1.) Project construction limits including all project related work such as tree-clearing and grading.
2.) Limits of sedimentation effect, anticipated to extend 100 meters (m) (328 feet (ft)) upstream from each bridge and 400 m (1,314 ft) downstream from each crossing structure in each respective river.

2.2 Project Description

The details of the proposed project designs for each of the crossing structures in Table 1 are not yet known, given the mass response/repair/rebuild efforts for the hundreds of infrastructure failure projects due to TS Helene destruction. The scale of destruction from TS Helene, and associated response efforts, compel a batched consultation response, and the design-build process be expedited. Thus, exact designs and associated action area impact details are not known at the time of this review. However, project activities and estimated impacts, based on the "knowns" associated with NCDOT's crossing structure replacement work, are available. At the time of this consultation, the expectation is that the majority of

the replacement bridges will be concrete box beam or cored slab structures and the culvert structures will be the same or similar materials to those previously in place. The general and expected elements of these crossing structure replacement projects are described below. The current estimated timeline is for these projects to be carried out over the next two years.

In-water impacts
Considering the range in structure and waterbody sizes analyzed in this review, and basing amounts on past similarly-sized structure and waterbody NCDOT crossing structure projects in WNC, the estimate of combined temporary and permanent in-water impacts for these projects range from 0.01 – 0.35 acres (or 4,356 – 15,246 square feet) per structure. Some structure replacements will fall in the lower portion of that range of in-water impacts while some will fall in the higher range. These impacts may be in the form of work pad causeways, bent removal and/or placement, and placement of stream-bank stabilization materials.

Tree Clearing, Access Roads, and Demolition
The maximum estimate for tree clearing at structure replacement locations is 0.10 acre. That amount will likely be less at most locations, given the variability in site conditions and the extreme scour (and resulting loss of riparian vegetation) during TS Helene flooding. The season during which clearing will occur is not known for each location. Clearing and grading will occur to allow for access roads and general construction functionality.

Where damaged structures or portions of damaged structures remain in place, demolition will occur. The details of demolition activities and seasonality of demolition will vary by project.

2.3 Avoidance and Minimization and Conservation Measures

NCDOT will employ the following agency Standards, Guides, and Best Practices to avoid and minimize project mediated activities that could negatively impact listed/proposed species or their habitat.

2.3.1 Avoidance and minimization measures (AMMs)

General (regardless of species): The following General AMMs will be implemented on all projects to minimize impacts to listed/proposed species and habitat:

General AMM1. NCDOT will ensure that all operators, employees, and contractors working in areas of suitable habitat for federally listed/proposed species are aware of all NCDOT environmental commitments, including all applicable AMMs and all associated NCDOT guidance documents.

General AMM2. Best management practices (BMP) and sediment and erosion control (SEC) measures will be utilized to prevent non-point source pollution, control storm water runoff, and minimize sediment damage to avoid and reduce overall water quality degradation.

General AMM3. Areas of disturbance, such as tree clearing, grubbing, and grading, will be limited to the maximum extent possible.

Aquatics- The General AMMs above will minimize impacts to listed/proposed aquatic species. **To the maximum extent possible**, the following AMMs will also be incorporated into project work – though implementation of all aquatic AMMs below cannot be guaranteed at the time of this consultation, given the scale, scope, and timeline constraints addressed previously.

- Aquatic AMM Structure – To the maximum extent possible, structure will be built in the same location as the previous structure, with minimal impact [such as in-water bents] to water resource, built to NCDOT's current improved highway and hydraulic standards.

- Aquatic AMM Equipment – To the maximum extent possible, heavy machinery will not be utilized within the waterbody. Additionally, staging and storage areas for equipment and materials will be managed in such a way to ensure that potential spills and leaks do not have access to the waterbody.

- Aquatic AMM Temporary and Permanent Fill – Any temporary fill (i.e. causeways) or permanent (i.e. bents/piers) fill in excess of what was previously present will be avoided and minimized to the maximum extent possible.

- Aquatic AMM Abutments - Existing abutments will be completely removed unless removal results in destabilizing of banks or increases the adverse effect to listed/proposed aquatic species.

- Aquatic AMM Deck Drains – Deck drains that empty directly to the waterbody below will not be included in new bridge designs. Surface water drainage transport will be designed to incorporate improved treatment prior to drainage entering the waterbody.

- Aquatic AMM Erosion Control Matting – Coir fiber matting will be utilized instead of plastic or other synthetic matting.

Bats - The General AMMs will minimize impacts to listed and proposed bat species. **To the maximum extent possible**, the following AMMs will also be incorporated into project work – though implementation of all bat AMMs below cannot be guaranteed at the time of this consultation, given the scale, scope, and timeline constraints addressed previously.

- Bat AMM Noise - Percussive activities will occur only after tree clearing within the action area has been completed, helping to reduce the exposure of any tree-roosting bats within the action area to high decibel noise.

- Bat AMM Lighting - No new lighting will be added to the action area. Any lighting needed for night work will be directed at the work area and shielded from surrounding waters/landscape, only on when needed, no brighter than necessary, and blue light emissions will be limited.

- Bat AMM Riparian Planting – Disturbed riparian areas will be replanted with native, fast-growing tree and shrub species where feasible, with the understanding that plantings likely cannot be done in utility/drainage/construction easements.

2.3.2 Conservation Measures (CMs)

CMs represent actions, pledged in the project description, that the action agency will implement to further the recovery of the species under review. The beneficial effects of CMs are considered in making determinations of whether the projects will jeopardize the species under consideration in this document.

Aquatic CM: Aquatics Contribution - For individual bridge projects that are Likely to Adversely Affect (LAA) aquatic species, the NCDOT will contribute* $10,000 for each project structure to the N.C. Nongame Aquatic Species Fund (or subsequently renamed fund).

Aquatic CM: Relocation - For projects that are LAA aquatic species, prior to project construction, the Service – Asheville Field Office Aquatics Recovery Lead and NCDOT liaison and the NC Wildlife Resources Commission (NCWRC) NCDOT liaison will be contacted to discuss the potential for mussel relocation, if applicable and practicable.

*Contribution amount reached through discussion between NCDOT aquatics group and Service aquatics recovery biologist, with contribution amounts tailored to support ongoing and upcoming conservation and recovery efforts for Appalachian elktoe.

Bat CM - Tree Clearing Bat Fund Contribution: For individual bridge projects that are LAA bat species during tree removal, the NCDOT will contribute a payment** to the N.C. Nongame Terrestrial Species Fund (or other Service-approved Fund) in support of the recovery of federally protected bat species.

Bat CM Structure Removal Bat Fund Contribution: For individual bridge projects that are LAA bat species during structure removal, the NCDOT will contribute a payment*** to the N.C. Nongame Terrestrial Species Fund (or other Service-approved Fund) in support of the recovery of federally listed bat species.

**Contributions made will be based on a 2:1 ratio multiplier specified for the non-volant pup season (May 15-July 31). This ratio offers the most protective coverage based on the current unknowns surrounding time-of-year clearing. The amount will be determined using the United States Department of Agriculture Farm Real Estate Value for North Carolina for 2024 ($5,190/acre).
https://www.nass.usda.gov/Publications/Todays_Reports/reports/land0824.pdf
If tree clearing amount is unknown, an assumed clearing acreage of 0.1 acre will be used based on estimates from previous clearing work at crossing structures (NCDOT 2015). The formula is calculated as follows:
$5,190 x 0.1 ac = 519 x 2 (critical life stage multiplier) = $1,038 contribution.

***Structures with documented bat use are generally larger than the average bridge, with a median size of 0.10 acre (length x width) (Service 2020b). Therefore 0.10 acre per crossing structure is used to calculate the amount of suitable bat habitat lost for projects involving structure impacts. However, the impacts to bats that may be displaced during structure demolition/construction are considered temporary in nature because the replacement structures are understood to provide adequate roosting habitat, as addressed in the project description. Additionally, the structures being analyzed here are all damaged and understood to provide reduced areas of suitable bat roosting habitat. Therefore, the 1.5:1 ratio multiplier was determined to be appropriate. If the structures are demolished between March 15 – November 15 (the period during which gray bats could be present on the landscape, which also encompasses the northern long-eared bat and tricolored bat active seasons) a structure-related payment will be made; if not, no structure-related payment will be made. The formula is calculated as follows: $5,190 x 0.1 ac = 519 x 1.5 (temporary impact multiplier) = $779 contribution/structure.

3. Status of the Species

This section summarizes best available data about the biology and current condition of the Appalachian elktoe, gray bat (*Myotis grisescens*), northern long-eared bat (*Myotis septentrionalis*), and tricolored bat (*Perimyotis subflavus*) throughout their ranges that are relevant to formulating an opinion about the actions. More in-depth species information such as species status assessments can be found at the species-specific pages at the Service's Environmental Conservation Online System (ECOS): ecos.fws.gov/ecp/

3.1 Appalachian Elktoe

Scientific Name: Alasmidonta raveneliana
Status: Endangered
Date of Listing: November 23, 1994
Critical Habitat: Designated in 2002

3.1.1 Description and Life History

The Appalachian elktoe is a freshwater mussel endemic to the Blue Ridge Physiographic Province of WNC. This species exists in several small populations in the Upper Tennessee River system of North Carolina and Tennessee, inhabiting relatively shallow medium-sized creeks and rivers with cool, well-oxygenated, and moderate- to fast-flowing water.

Lea (1834) described the Appalachian elktoe from the French Broad River (FBR) system in North Carolina. Its shell is thin but not fragile, oblong, and somewhat kidney-shaped, with a sharply rounded anterior margin and a broadly rounded posterior margin. The periostracum (outer shell) of the Appalachian elktoe varies in color from dark brown to yellowish-brown in color. Rays may be prominent in some individuals, usually on the posterior slope, and nearly obscure in other specimens. The reproductive cycle of the Appalachian elktoe is similar to that of other native freshwater mussels. Males release sperm into the water column, which is then taken in by the female through their siphons during feeding and respiration. The females retain the fertilized eggs in their gills until the larvae (glochidia) fully develop, after which they are released into the water and attach to appropriate species of fish hosts. Juveniles then detach from their fish host and sink to the stream bottom where they may continue to develop, provided that suitable substrate and water conditions are present (Service 2002).

3.1.2 Status and Distribution

The Appalachian elktoe is known only from the mountain streams of WNC and eastern Tennessee. It is found in gravelly substrates often mixed with cobble and boulders, in cracks of bedrock, and in relatively silt-free, coarse sandy substrates (Service 1996).

Although the complete historic range of the Appalachian elktoe is unknown, available information suggests that the species once lived in the majority of the rivers and larger creeks of the upper Tennessee River system in North Carolina, with the possible exception of the Hiwassee and Watauga River systems. In Tennessee, the species is known only from its present range in the main stem of the Nolichucky River. At the time of listing, two known populations of the Appalachian elktoe existed: the Nolichucky River, including its tributaries (the Cane River and the North Toe River); and the Little Tennessee River and its tributaries. The record in the Cane River was represented by one specimen found just above its confluence with the North Toe River (Service 1996). Since listing, the Appalachian elktoe has been found in additional areas. These occurrences include extensions of the known ranges in the Nolichucky River (North Toe River, South Toe River, and Cane River) and the Little Tennessee River (Tuckasegee River and Cheoah River) as well as a rediscovery in the FBR basin (Pigeon River, Little River, Mills River, and the main stem of the FBR). Many of these newly discovered populations are relatively small in numbers and range.

The Appalachian elktoe has experienced declines in two populations across its range. A sudden die-off in the Little Tennessee River, (once considered the largest and most secure population of this animal), occurred from 2005 – 2015. Surveys in 2017, 2018 and 2019 produced very low numbers, indicating a

remnant population, but the population is limited and only a tiny fraction of its previous size. The species has also declined in the lower portion of the Nolichucky River. Appalachian elktoe were once common in all three tributaries of the Nolichucky River: North Toe, South Toe and Cane River. In 2008, a fish kill linked to a waste-water plant failure resulted in the death of most of the Appalachian elktoe in the Cane River. Beginning in 2013, the Appalachian elktoe population in the lower South Toe River declined steeply which coincided with a major highway construction project and only occurred downstream of receiving streams in the project footprint. Appalachian elktoe are still present in the North and South Toe Rivers, but at reduced densities. It appears that the North Toe population is limited by urban runoff and mining effects to the river. The other populations of Appalachian elktoe appear to be stable (Tuckasegee, Cheoah, and Pigeon Rivers) or expanding (FBR). A remnant population known in the Cheoah River since the early 2000's is presently being augmented by the NCWRC with hatchery-propagated individuals sourced from the Tuckasegee River. This effort appears to be successful in bringing this population back to a viable state. Prior to 2004, the FBR population appeared to be confined to two tributary streams (Little River and Mills River), but over the last few years the known range of Appalachian elktoe in the main stem of the FBR has expanded and it now appears to be well established, albeit at low density, over a broad area. At the time of this document, impacts to Appalachian elktoe from TS Helene in September of 2024 remain largely unknown. Extreme flooding and scour in many of the rivers occupied by the species is believed to have resulted in reduced abundance in several locations, while other areas likely lost fewer individuals.

3.1.3 Threats

The decline of the Appalachian elktoe throughout its historic range has been attributed to a variety of factors, including sedimentation, point and nonpoint-source pollution, and habitat modification (impoundments, channelization etc.). The low numbers of individuals and the restricted range of most of the surviving populations make them extremely vulnerable to extirpation from a single catastrophic event or activity. Catastrophic events may consist of natural events, such as flooding or drought, as well as human influenced events, such as toxic spills associated with highways or railroads.

Natural flooding events combined with alteration of watersheds can lead to large fluctuations in abundance observed in Appalachian elktoe populations. Record catastrophic flooding in the range of Appalachian elktoe occurred during TS Helene during late September 2024. Many areas inhabited by Appalachian elktoe were severely damaged by erosive flooding, bedload scour, and bank failures. Observations immediately after the flooding in October 2024 revealed that despite severe flooding, certain portions of Appalachian elktoe occurrences in North Carolina, such as the upper Pigeon River, were relatively intact. Those observations indicate that the species is likely to remain in most of the affected areas, though individual numbers were likely greatly reduced in many inhabited locations. Portions of the FBR basin experienced catastrophic flooding in late summer 2021 as a result of the remnants of Tropical Storm Fred. The flooding likely resulted in loss of Appalachian elktoe individuals within populations in the hardest-hit portions of the Pigeon, Mills and French Broad Rivers.

Siltation resulting from improper erosion control of various types of land use, including agriculture, forestry, road construction, and development, has been recognized as a major contributing factor to the degradation of mussel populations (Service 1996). Siltation degrades substrate and water quality, increasing potential exposure to other pollutants, and direct smothering of mussels (Ellis 1936). The abrasive action of sediment on mussel shells has been shown to cause erosion of the outer shell, which allows acids to reach and corrode underlying layers (Harman 1974).

Sewage treatment effluent has been documented to significantly affect the diversity and abundance of mussel fauna (Goudreau *et al*. 1988). Goudreau *et al*. found that recovery of mussel populations might not occur for up to 2 river miles (3.22 kilometers) below points of chlorinated sewage effluent. Most of the water bodies where Appalachian elktoe still exist have relatively few point source discharges within the watershed and are rated as having "good" to "excellent" water quality by the North Carolina Division of Water Resources.

The introduction of exotic species, such as the Asian clam (*Corbicula fluminea*) and zebra mussel (*Dreissena polymorpha*), pose significant threats to native freshwater mussels. Competitive interactions for space, food, and oxygen between these species and native mussels, possibly at the juvenile stages (Neves and Widlak 1987) are the main concerns. At the time the Appalachian elktoe was listed, the Asian clam was not known from the stretch of the Little Tennessee River that it occupies; however, it has been observed in the Little Tennessee River in recent years and, as mentioned earlier, may be a contributing factor to the decline of that population. When the Appalachian elktoe was listed, it was speculated that, due to its restricted distribution, it "may not be able to withstand vigorous competition" (Service 1996).

3.2 Gray Bat

Scientific Name: *Myotis grisescens*
Status: Endangered
Date of Listing: April 28, 1976
Critical Habitat: None designated

3.2.1 Description and Life History

The gray bat is a medium-sized insectivorous bat with an overall length of about 3.5 inches and a wingspan of 10 to 11 inches. As the name implies, gray bats have gray fur, but the hair often bleaches to reddish-brown by early summer. The gray bat largely occurs in limestone karst areas, meaning a landscape marked by caves, sinkholes, springs and other features, of the southeastern and midwestern United States.

Gray bats use caves year-round for roosting and hibernating. Seasonal occupancy of caves differs between summer roost and winter hibernacula, and gray bats are known to migrate more than 300 miles between the two. While gray bats are predominantly found roosting in caves, they are known to roost in structures including buildings, bridges and culverts. Bats emerge from summer roosts early in the evening and forage along waterbodies adjacent to forested areas. The species has been documented traveling from a few miles to 20 or more miles between their day roosts and nightly foraging areas.

Adult bats mate upon arrival at the wintering caves in September or early October. Hibernation occurs in deep vertical caves in the winter, where colder temperatures are preferable. Gray bats require consistently cold temperatures to maintain hibernation and conserve energy in the winter months. The adult females will emerge from hibernation in late March or early April. At that time, the females who have mated will begin their pregnancy, while dispersing to maternity caves. Males and juveniles emerge shortly after the females and disperse to bachelor caves. Gray bats are documented using bridges and culverts as roosting habitat during the spring, summer, and fall and show strong philopatry to their summer ranges and typically use the same roost sites year after year (Tuttle 1976; Martin 2007). Gray bats are most commonly observed in bridges of concrete material and their preferred roosting location is in the vertical expansion joints of a bridge deck above piers (NCDOT 2023a), though they can also roost in clogged deck drains and other sheltered areas on crossing structures. According to approximately 2,000 bridge surveys conducted throughout WNC from 2000 - 2023, gray bats have been recorded roosting in bridges

at a usage rate of 3% (NCDOT 2023a), with bridge use observed in the covered area from March – November. Up to 1,000 individuals, including males and females, have been observed day-roosting throughout the summer in expansion joints between box beams at two separate bridges (Weber et al. 2020). Sporadic summer use of other concrete type bridges has also been noted for smaller numbers of day-roosting gray bats (NCDOT, 2023a). Gray bats have also been observed within culverts, most commonly of concrete material.

Gray bats primarily forage over open water bodies, such as rivers, streams, lakes, and reservoirs, and associated riparian areas (Tuttle 1976; LaVal et al. 1977; Weber et al. 2020). While foraging, the gray bat consumes a variety of insects, most of which are aquatic (Brack and LaVal 2006). Bats typically travel individually or in small groups that forage in an area for a short period before moving to another area. Studies suggest that gray bats visit multiple foraging areas during the night and travel frequently between these areas.

3.2.2 Status and Distribution

The primary range of gray bats is concentrated in the cave regions of Alabama, Arkansas, Kentucky, Missouri and Tennessee, though its overall range stretches from Virginia to Oklahoma, and Missouri to Alabama. WNCis on the eastern edge of the bat's range. In North Carolina, the gray bat is currently documented from 14 western counties and is possible in an additional 10 counties. Most gray bat occurrences in WNC are centered on the French Broad and Pigeon River watersheds. Gray bats are generally present in North Carolina from March 15 to November 15, when they leave for winter hibernacula. It is believed that many of the gray bats in North Carolina migrate to hibernacula in Tennessee, using the French Broad River as a commuting pathway.The closest active hibernaculum is near Newport, Tennessee (Weber et al. 2020), approximately 20 miles from the border with Haywood and Madison Counties in North Carolina.

Ellison et al. (2003) of the U.S. Geological Survey (USGS) statistically analyzed 1,879 observations of gray bats obtained from 334 roost locations in 14 south-central and southeastern states. They determined that 94.4% of the populations showed stable or increasing populations while 6% revealed a decreasing population. For populations where there was a downward population trend, decreases in population numbers were mostly attributed to continued problems with human disturbance. This increasing population trend has been reflected in the work of Sasse et al. (2007), Martin (2007), and again by Elliott in 2008 in looking at high-priority caves. It is estimated that more than 95% of the species range-wide population hibernate in only 9 caves.

Emergence counts conducted by Indiana State University researchers at known roosts in WNC from 2018-2019 suggested there were at least 2,820 gray bats in the French Broad River basin (Weber et al. 2020). Due to 2024 flooding associated with TS Helene, these numbers may be significantly lower now, though at the time of this document, the impacts from Helene on imperiled species numbers are still unknown. Throughout WNC, there are 58 current element occurrences of the gray bat based on N.C. Natural Heritage Program, NCWRC, and NCDOT records; most are from built structures (largely bridges). The number of gray bats found at each occurrence range from 1 to about 1,500 bats, with some roosts surveyed in the Weber et al. (2020) study hosting >1,000 gray bats during certain times of the season. The most recent winter population estimate of gray bats in the closest hibernaculum to the action area (Rattling Cave, near Newport TN) was 250,689 bats (TWRA 2019).

3.2.3 Threats

Cave disturbance and alteration, loss of forested habitat, pollution of waterways, and significant natural factors including those caused by climate change (flooding, freezing, and forest destruction) are threats to gray bats. Gray bats have been infected by the invasive fungus *Pseudogymnoascus destructans,* the causative agent of white-nose syndrome (WNS), a fungal disease contributing to the declines of several bat species in the U.S.; however, WNS is not considered a major threat to the species.

3.3 Northern long-eared Bat

Scientific Name: *Myotis septentrionalis*
Status: Endangered
Date of Listing: April 1, 2015 as Threatened; November 30, 2022 as Endangered
Critical Habitat: None designated

3.3.1 Description and Life History

The northern long-eared bat is a wide-ranging species, found in 37 states and eight provinces in North America. The species typically overwinters in caves and mines and spends the remainder of the year in forested habitats. As its name suggests, the northern long-eared bat is distinguished by its long ears, particularly as compared to other bats in the genus *Myotis*.

Northern long-eared bats are a forest bat species that roosts in a variety of forest types and structures. They are known to roost in trees and have also been documented using roost sites such as buildings, artificial roosts, and bridges. During the active season, northern long-eared bats typically roost singly or in maternity colonies underneath bark or more often in cavities or crevices of both live trees and snags (Service 2023). Males' and non-reproductive females' summer roost sites may also include cooler locations, such as caves and mines (Service 2023). With one exception, all bridge roost records in Norther Carolina are associated with a water crossing. There are no records of northern long-eared bats roosting in culverts in North Carolina, though they have been documented using culverts in other states. Northern long-eared bats will overwinter in caves or mines and have been documented using railroad tunnels, storm sewers, and bunkers. Length of hibernation varies depending on location. They may hibernate singly or in small groups and can be found hibernating in open areas but typically prefer caves with deep crevices, cracks, and bore holes that protect from drafts. They typically hibernate from September or October to March or April. More than 780 hibernacula have been documented within the northern long-eared bat range.

Prior to hibernation between mid-August and mid-November, bat activity will increase during the evenings at the entrance of a hibernaculum (fall swarming). Suitable fall swarming habitat is similar to roosting, foraging, and commuting habitat selected during the summer and is most typically within 4-5 miles of a hibernaculum (Service 2023). Likewise, in the spring they emerge from and stage near hibernacula before moving to maternity areas typically in early April to mid-May; however, they may leave as early as March. Northern long-eared bats also roost in trees near hibernacula during spring staging, and Thalken et al. (2018) found that roost trees were situated within 1.2 miles (2km) of hibernacula during spring staging and the early maternity season. The species migrates relatively short distances between maternity areas and hibernacula.

Northern long-eared bats are more likely to forage under the canopy on forested hillsides and ridges (Nagorsen and Brigham 1993) rather than along riparian areas (Brack and Whitaker 2001; LaVal et al. 1977). Because of this, alternative water sources like seasonal woodland pools may be an important source of drinking water for these bats (rather than just streams and ponds; Francl 2008). Mature forests

may be an important habitat type for foraging (Service 2015). Northern long-eared bats have a diverse diet including moths, beetles, flies, leafhoppers, caddisflies, and arachnids (Service 2020a), which they catch while in flight or by gleaning insects off vegetation (Ratcliffe and Dawson 2003).

3.3.2 Status and Distribution

The species' range includes all or portions of 37 eastern and mid-western states and the District of Columbia in the U.S. The northern long-eared bat's range also includes eight Canadian provinces. In WNC, the species range includes all or portions of 26 counties in the western portion of the state.

Prior to the emergence of WNS, northern long-eared bat was abundant and widespread throughout much of its range with 737 occupied hibernacula, a maximum count of 38,181 individuals and its range being spread across >1.2 billion acres in 29 states and 3 Canadian provinces. Numbers vary temporally and spatially, but abundance and occurrence on the landscape were stable (Cheng et al. 2022, p. 204; Wiens et al. 2022, p. 233). Currently, declining trends in abundance and occurrence are evident across much of northern long-eared bat's summer range. Range-wide summer occupancy declined by 80% from 2010–2019. Data collected from mobile acoustic transects found a 79% decline in range-wide relative abundance from 2009–2019 and summer mist-net captures declined by 43–77% compared to pre-WNS capture rates.

There are approximately 169 element occurrences for northern long-eared bat in NC, based on N.C. Natural Heritage Program records, 19 of which are considered historical. The number of bats found at each occurrence ranges from one to more than 80. There have been 22 documented hibernacula, all in caves or mines; however, northern long-eared bats have not been observed using hibernacula in North Carolina since 2014 (NCWRC personal communication September 2022). The Service estimates that there has been an occupancy drop of 85% and a 24% loss of winter colony sites across the Southeast Representation Unit (RPU) overall since 2006 when white-nose syndrome was first documented (Service 2022a).

3.3.3 Threats

The primary factor influencing the viability of the northern long-eared bat range-wide population is WNS. Other primary factors that influence the decline in northern long-eared bat numbers include wind energy mortality, effects from climate change, and habitat loss.

3.4 Tricolored Bat

Scientific Name: *Perimyotis subflavus*
Status: Proposed Endangered
Date of Proposed Listing: September 14, 2022
Critical Habitat: None proposed

3.4.1 Description and Life History

The tricolored bat is one of the smallest bats in North America. The once common species is wide-ranging across the eastern and central US and portions of southern Canada, Mexico and Central America. As its name suggests, the tricolored bat is distinguished by its unique tricolored fur that appears dark at the base, lighter in the middle and dark at the tip.

During the winter, tricolored bats are found in caves and mines, although in the southern US, where caves are sparse, tricolored bats are often found roosting in culverts. During the spring, summer and fall,

tricolored bats are found in forested habitats where they roost in trees, primarily among leave. Additionally, tricolored bats have been observed roosting among pine needles, eastern red cedar (*Juniperus virginiana*), within artificial roost structures, beneath porch roofs, bridges, concrete bunkers, and rarely within caves. Female tricolored bats form maternity colonies and switch roost trees regularly. Maternity colonies typically consist of 1 to several females and pups. They usually have twins in late spring or early summer, which are capable of flight in four weeks.

During the winter, across much of their range tricolored bats hibernate in caves and mines; although, in the southern United States, where caves are sparse, they often hibernate in culverts, as well as sometimes in tree cavities and abandoned water wells. In the southern US, hibernation length is shorter compared to northern portions of the range and in the warmest portions of its range. Hibernating tricolored bats do not typically form large clusters; most commonly roost singly, but sometimes in pairs, or in small clusters of both sexes away from other bats (Service 2021). Tricolored bat hibernacula following population crashes from WNS generally host <100 individuals (Service 2021), though solitary hibernation can often occur with this species (Whitaker and Hamilton 1998).

Before entering hibernacula for the winter, tricolored bats demonstrate 'swarming' behavior. The peak swarming period for tricolored bats in much of WNC/eastern Tennessee generally starts in mid to late August and extends into November and is a sensitive period for bats. Suitable fall swarming habitat is similar to roosting, foraging, and commuting habitat selected during the summer. Spring staging is the time period between winter hibernation and spring migration to summer habitat (Service 2023). During this time, bats begin to gradually emerge from hibernation, exit the hibernacula to feed, but re-enter the same or alternative hibernacula to resume daily bouts of torpor (state of mental or physical inactivity). Tricolored bats also roost in trees near hibernacula during spring staging.

Tricolored bats are opportunistic feeders and consume small insects including caddisflies, moths, beetles, wasps, flying ants and flies. The species most commonly forages over waterways and along forest edges

3.4.2 Status and Distribution

Tricolored bats have a very wide range that encompasses most of the eastern US from Canada to Florida and west to New Mexico (39 states). They can be found throughout North Carolina and are one of the most commonly encountered cave-dwelling species seen in winter, albeit at much lower densities than prior to the arrival of WNS in the state.

There are 147 NC element occurrences of the tricolored bat based on N.C. Natural Heritage Program records, seven of which are considered historical. The number of bats found at each occurrence range from 1 to 3,000 bats. There have been 79 tricolored bat hibernacula documented, including caves (50), mines (22), root cellars (4), and culverts (3).

For tricolored bats, the Service split the bat's range into three Representation Units (RPUs), two of which, the Northern and Southern RPUs, include the western and eastern halves of WNC, respectively. The Service estimates that, since 2006, the Northern RPU has experienced a 17% decline in summer occupancy and a 57% decline in the number of winter colonies, while the Southern RPU has experienced a 37% decline in summer occupancy and a 24% decline in the number of winter colonies (Service 2021).

3.4.3 Threats

WNS is the primary driver of the species' decline and is predicted to continue to be the primary influence into the future. Wind energy-related mortality is also considered a consequential driver to the bat's

viability. Although habitat loss is considered pervasive across the species' range, severity has likely been low given historical abundance and spatial extent; however, as tricolored bat's spatial extent is projected to decline in the future (i.e., consolidation into fewer winter and summer colonies) negative impacts (e.g., loss of a hibernaculum or maternity colony) may be significant.

4. Environmental Baseline

The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process [50 CFR §402.02].

The project action areas contain the existing crossing structures and the roadway approaches, along with the existing utilities and surrounding riparian areas in which project work will occur, and are located in the Environmental Protection Agency Blue Ridge Ecoregion in WNC. Past impacts include the original construction and placement of the crossing structures within waterbodies to facilitate transportation in the surrounding locations. Because this document addresses several projects, more detailed information regarding other human activities at each location is not included for the purposes of this consultation review.

4.1 Appalachian Elktoe Within the Action Areas

Flooding and scour from TS Helene impacted all waterbodies included in this consultation. Yancey Bridges 097 in South Toe River and 194 in North Toe River were completely destroyed and the structures are gone. These locations are within designated critical habitat for Appalachian elktoe. Post-storm in-water surveys have not been conducted at this time, given all of the constraints already addressed, though discussions regarding site conditions as observed by the Service Asheville Field Office Aquatics Recovery Lead and/or aquatic biologists with NCWRC and NCDOT's Biological Surveys Group have occurred. While the major flood and scour event destroyed the crossing structures and degraded the habitat, the potential for individual Appalachian elktoe to still occur within the action area remains. At the time of this consultation, those individual numbers are believed to be reduced from pre-Helene conditions but are not believed to be zero. Five Appalachian elktoe per structure location are estimated based on pre-TS Helene estimates and anticipated storm losses.

4.2 Listed and Proposed Bats Within the Action Areas

Structures

Portions of damaged Buncombe County crossing structures 203, 396, 464, and 716; and McDowell County crossing structure 111 remain in place; however, suitable structural roosting habitat on all structures is extensively reduced and degraded from pre-storm conditions. For gray bats, primary roost structures can support several hundred to over 1,000 individuals, while the majority of structures with observed roosting gray bats in WNC contain 1 to 10 individuals. The structures supporting those higher numbers of gray bats, whether culvert or bridge, are larger than average. The northern long-eared bats observed roosting on bridges in WNC is between 1 and 2 individuals at any given time. In more detail, Natural Heritage data shows 1 bridge roost location in Graham County, 1 in Madison, and 2 in Swain (all pre-WNS except 1 Swain County location). There are currently no culvert roosting records for northern long-eared bat in NC. Records of tricolored bat roosting in bridges and culverts in WNC consist mainly of 1-2 individual per structure. Within the action areas of these damaged crossing structures, given the degraded and reduced roosting habitat available, and based on existing WNC data, it is estimated that 1 individual per species could be present within each structure at each crossing location.

Trees
Gray bats are not considered "tree-roosting" species. While individuals have been observed utilizing trees in rare occasions, they are generally considered a cave/structure-specific roosting species; therefore, no gray bats are expected to be roosting in trees within the action areas. Northern long-eared bats and tricolored bats roost in trees during the warmer months. Given the minimal amount of riparian vegetation and trees remaining within the action areas, it is unlikely that high number of bats would be utilizing the small amount of available habitat. Based on that rationale, 1 individual per species (of northern long-eared bat or tricolored bat) could be present in trees within the action area per crossing structure location.

5. Effects of the Action

Under section 7(a)(2) of the ESA, "effects of the action" refers to the consequences, both direct and indirect, of an action on the species or critical habitat. The effects of the proposed action are added to the environmental baseline to determine the future baseline, which serves as the basis for the determination in this Opinion. Should the effects of the Federal action result in a situation that would jeopardize the continued existence of the species, we may propose reasonable and prudent alternatives that the Federal agency can take to avoid a violation of section 7(a)(2).

5.1 Appalachian Elktoe

5.1.1 Proximity of the Action, Nature of the Effect, and Disturbance Duration

Based on the description of the action and the species' biology, stressors to the Appalachian elktoe have been identified and are outlined below. The proximity of these actions will be within the waters occupied by Appalachian elktoe [within the action area] and duration of disturbance is expected during the construction phase of project work.

5.1.2 Effects Analysis

Direct Impacts – Direct effects are caused by the action and occur at the same time and place (50 CFR 402.02).

In-water Work
In-water work, such as the placement of causeways, demolition of remnant structures (if any), and placement of hard materials for new bents/structures or for bank stabilization, are likely to occur at some or all of the project locations. Installation of temporary causeways may result in adverse effects to Appalachian elktoe and their fish host species due to the potential to bury individuals and harm fish host individuals or disrupt passage or other behavior while they are in place. Causeways also constrict river flows, which could potentially modify the hydrology and physical habitat conditions upstream and downstream of the respective fill areas. Causeways may impact hydrology and the physical habitat of the river. Rock causeway material may be washed away during extremely high flow events, which may kill, crush, or bury individuals, or otherwise degrade mussel habitat downstream of the footprint. Causeways increase the risk of stream bed and bank scour. The habitat downstream of causeways may experience higher velocities until removal. Temporary causeways may also act as physical and high-velocity barriers to fish movement. Demolition and construction may result in the loss of materials in the waterbody. While this isn't expected, given the implementation of BMPs, it is still possible. Materials that aren't effectively contained during demolition or construction could serve to crush or bury aquatic species. Similarly, the placement of hard materials within the waterbody may result in crushing or burying Appalachian elktoe.

Alteration of Flows and Channel Stability
The initial construction of a crossing structure is known to cause changes in the flow of the stream and corresponding erosive processes that can alter the adjacent habitat. Channel instability occurs when scour results in degradation or when sediment deposition leads to aggradation (Rosgen 1996). Since most structures are being replaced in the same locations, any alteration of flows and channel stability associated with the new structures are anticipated to be minor and localized. That said, altering the existing in-water structures has the potential to create flow instability which could impact downstream habitat.

Turbidity and Sedimentation
Increases in turbidity and sedimentation within the action area during demolition and construction are expected. This can occur from in-water work and from the erosion of bare soil in and surrounding the construction zone, especially during heavy rain events. Sediment accumulations of less than one inch have been shown to cause high mortality in most mussel species (Ellis 1936). Adverse effects to mussels resulting from the accumulation of sediments include smothering, disruption of feeding and breeding activity, alteration of habitat, or some combination. Sediment and erosion control (SEC) devices, when properly designed and maintained, are expected to greatly reduce influxes of turbidity; however, heavy rain events can exceed SEC capacity, resulting in sediment releases which degrade mussel habitat in the vicinity.

In summary, the in-water work within the action areas are likely to adversely affect (LAA) Appalachian elktoe and take is expected. Take may occur in the form of killing, wounding, or harming individuals of the species.

Accidental Spills
The inadvertent spill or discharge of toxic pollutants, such as diesel fuel, hydraulic oil, and uncured concrete into action area waterbodies could occur during demolition and construction activities and result in mortality of Appalachian elktoe. The type, timing, amount, and proximity to the river of any accidental spills would determine the magnitude of effect to Appalachian elktoe, but may result in death, disrupt feeding or reproductive behaviors, influence animals to expend energy relocating to more favorable habitats, or otherwise reduce fitness. Significant spills resulting from negligent operation are possible, but unlikely to occur. Adhering to measures outlined in the AMMs and CMs will minimize the potential for accidental spills to occur.

Indirect Impacts – Indirect effects are defined as those that are caused by the proposed action and are later in time but are still reasonably certain to occur (50 CFR 402.02).

Operational Effects
Because these projects are limited to the replacement of damaged or destroyed crossing structures and their approaches, which will not result in changes to traffic volumes, any operational effects above the existing baseline conditions are not expected to occur; or, if they do occur, are expected to be minimal.

5.2 Gray Bat, Northern Long-eared Bat, and Tricolored Bat

5.2.1 Proximity of the Action, Nature of the Effect, and Disturbance Duration for Bats

Based on the description of the action and the species' biology, stressors to gray bat, northern long-eared bat, and tricolored bat have been identified and are shared below. The proximity of these actions will be within the entire action area of each project, including the structures, waterways, riparian zone, and any existing forested areas. Duration of disturbance is expected primarily during the construction phase of project work.

5.2.2 Effects Analysis for Bats

Replacement structures: Due to the constraints associated with the TS Helene response, such as the high volume of projects and timeline unknowns, the exact designs of replacement crossing structures are not known at the time of this document. However, according to information provided by NCDOT, the majority of replacement bridge structures are expected to be either cored slab or box beam bridges. Such precast concrete bridges may provide suitable bat roosting habitat depending on factors such as spacing between beams/girders, arrangement above any bents, and other design elements that could result in potential roosting crevices. Generally, concrete is a favorable material for roosting due to its thermal stability.

Direct Impacts – Direct effects are caused by the action and occur at the same time and place (50 CFR 402.02).

Structure Work

The demolition of remaining portions of structures, if conducted while bats are present, could result in causing bats to flush, which would expose them to risk of predation and would cause increased energy expenditure and create the need for bats to find alternative roost locations. It could also result in physical wounding or death. High-decibel percussive noises associated with demolition or construction may cause bats roosting in close proximity to flush, exposing them to harm and increased energy expenditure. Additionally, if non-volant pups are present, while adults may be able to flush, pups would be left behind with mortality as the likely outcome. In summary, these activities, should they occur while bats are present, are expected to result in harm to gray bat, northern long-eared bat, and tricolored bat.

Tree Removal

The removal of suitable roost trees, if conducted while northern long-eared bats or tricolored bats are present, could result in causing bats to flush, which would expose them to risk of predation and would cause increased energy expenditure and create the need for bats to find alternative roost locations. It could also result in physical wounding or death. Given the presence of alternative forested habitat in close proximity to the action areas, bats could likely find trees for roosting. Harm would be expected in the increased exposure to predation from flushing and from the potential for wounding or killing when trees are felled. Additionally, if non-volant pups are present, while adults may be able to flush, pups would be left behind with mortality as the likely outcome. In summary, these activities, should they occur while bats are present, are expected to result in harm to northern long-eared bat and tricolored bat.

Indirect Impacts – Indirect effects are defined as those that are caused by the proposed action and are later in time but are still reasonably certain to occur (50 CFR 402.02).

If bats were utilizing structures or trees (when considering northern long-eared bat and tricolored bat) within the action areas as roost sites prior to demolition/clearing/construction, and return to those roost sites to find the habitat gone or altered, the bats may then have to expend extra energy in finding alternative roosting areas. While this could occur, it is considered unlikely to result in adverse effects given that replacement structures are expected to offer suitable roosting features and alternative forested habitat is available in close proximity to the action areas.

Operational Effects

Because these projects are limited to the replacement of damaged or destroyed crossing structures and their approaches, which will not result in changes to traffic volumes, any operational effects above the

existing baseline conditions are not expected to occur; or, if they do occur, are expected to be minimal.

5.3 Cumulative Effects

Cumulative effects are defined as "those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation" (50 CFR 402.02). Future federal actions unrelated to the proposed action are not considered because they require separate consultation pursuant to Section 7 of the ESA.

These structure replacements are not expected to induce land development or substantially change the function of the roadways. Any potential effects are anticipated to be localized and consistent with baseline land use patterns. Many private landowners and local governments are recovering from TS Helene and rebuilding homes/businesses and infrastructure. Therefore, there will likely be increased construction in WNC Counties for an undefined period of time. Some of this work will be conducted during seasons when bats are active on the landscape, potentially increasing exposure to construction-related stressors. However, other effects from these private actions cannot be determined at this time.

6. Conclusion and Jeopardy Determination

After reviewing the current status of Appalachian elktoe, gray bat, northern long-eared bat, and tricolored bat, the environmental baselines for the action areas, the effects analyses and cumulative effects, the Service's biological and conference opinions are shared below.

6.1 Appalachian elktoe

It is the Service's biological opinion that the proposed actions are not likely to jeopardize the continued existence of the Appalachian elktoe. This opinion is based on the following factors: Effects of the actions occur as a result the planned replacement of Yancey County Bridges 097 and 194. The species occurs in approximately 162 river miles in WNC and Eastern Tennessee (as understood pre-Helene); thus, impacts are likely to be limited to about 0.5% of the range-wide occupied habitat. Crossing structure construction activities are likely to negatively affect Appalachian elktoe within the action areas, but the incorporated conservation measures are expected to reduce impacts; notably, relocation efforts that could remove and relocate individual mussels prior to work taking place. Designated critical habitat for this species is present at Yancey Bridge 097 and 194 locations. Based on knowledge of the action area and surrounding portions of the project waters, the projects will not result in adverse modification (that is, "…no direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of listed species" (50 CFR §402.02)) to Appalachian elktoe designated critical habitat.

6.2 Gray Bat, Northern Long-eared Bat, and Tricolored Bat

It is the Service's biological and conference opinion that the proposed actions are not likely to jeopardize the continued existence of gray bat, northern long-eared bat, or tricolored bat. This opinion is based on the following factors: Effects of the actions occur as a result the planned replacement of Buncombe County crossing structures 203, 396, 464, and 716; and McDowell County crossing structure 111. These action areas comprise only a small amount of active season habitat within the overall ranges of these species. No changes in the long-term viability of gray bat, northern long-eared bat, or tricolored bat are expected because, given the low numbers of each species which could be expected to occur at each crossing structure location (that is, an estimate of 1 individual per species per structure and an estimate of 1 northern long-eared bat and 1 tricolored bat per forested area within each action area), and the occurrence range-wide of each species – gray bat in 14 states, northern long-eared bat in 37 states, and tricolored bat in 39 states as well as in portions of other North and Central American countries – only a miniscule

percentage of those overall populations may be affected. Crossing structure construction activities are likely to negatively affect gray bat, northern long-eared bat, and tricolored bat within the action areas, but the incorporated conservation measures are expected to reduce impacts.

7. Incidental Take Statement

Section 9 of the Endangered Species ESA and Federal regulations pursuant to section 4(d) of the Endangered Species Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take "*means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct*" (16 U.S.C §1532). Harm is further defined by the Service as "*an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering*" (50 CFR 17.3). Incidental taking "*means any taking otherwise prohibited, if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity*" (50 CFR 17.3). Harass is defined by the Service as "*an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering*" (50 CFR 17.3). Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered to be prohibited under the Endangered Species Act, provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

7.1 Amount of Take for Appalachian Elktoe

The Service anticipates incidental take of the Appalachian elktoe may occur as a result of the demolition (if applicable) and construction of Yancey County Bridges 097 and 194. Specifically, take of the species may occur as a result of 1) riverbed disturbance in the form of bent removal and causeway construction, operation, and removal, 2) the resulting river instability, scour, sediment movement, and turbidity produced from those activities, and 3) demolition and construction activities around the crossings. During these activities, individual mussels may be crushed; harmed by increases in turbidity and scour, sediment movement, or other water quality degradation; or dislocated because of physical changes in their habitat. These impacts are expected to occur primarily within the structure construction footprints, with the potential for more minor impacts to occur 100 meters upstream and 400 meters downstream of the current structure locations.

Incidental take of Appalachian elktoe is difficult to measure or detect given that 1) mussels are small, aquatic, cryptic, and generally difficult to observe, 2) finding dead or injured mussels during or following project implementation is unlikely, 3) some incidental take is in the form of non-lethal harm and not directly observable; and 4) losses may be masked by seasonal fluctuations in numbers or other causes. Given this, the estimated amount of riverbed disturbance in acres or square feet is used as a surrogate measure of take for this Opinion. Additionally, as discussed in the Environmental Baseline, no more than 5 Appalachian elktoe are estimated to be present within the construction footprint immediately surrounding the structures and, to the best of situational abilities, efforts will be made to relocate individuals if found prior to construction in an effort to reduce mortality.

Therefore, the incidental take permitted by the Opinion would be exceeded if:

1. The construction footprint (placement of permanent fill, causeways, and associated actions) exceeds 0.35 acres (15,226 square feet) at any crossing structure construction location.
2. Take of greater than 5 Appalachian elktoe per project location is observed.

Exceedance of take as defined above will represent new information that was not considered in this Opinion and shall result in reinitiation of this consultation. The incidental take of Appalachian elktoe is expected to be in the form of harm, wounding, or death.

7.2 Amount of Take for Gray Bat, Northern Long-eared Bat, and Tricolored Bat

The Service anticipates incidental take of the gray bat, northern long-eared bay, and tricolored bat may occur as a result of the demolition (if applicable) and construction of Buncombe County Bridges 203, 396, 464, and 716; and McDowell County Bridge 111. Specifically, take of these species may occur as a result of flushing, wounding, or direct mortality during demolition activities (if applicable); or, for northern long-eared bat and tricolored bat, take may occur as a result of clearing suitable roost trees during times of year that these bats could be tree-roosting within the action area, which may similarly result in flushing, wounding, or direct mortality during clearing activities.

Incidental take of bats is difficult to measure or detect given that 1) the animals are small, cryptic, and generally difficult to observe, 2) finding dead or injured bats during or following project implementation is unlikely, and 3) some incidental take is in the form of non-lethal harm and not directly observable. Given this, the 1) maximum estimated tree clearing (for northern long-eared bat and tricolored bat only) and 2) number of structures replaced, are used as surrogate measures of take for this Opinion. Additionally, as discussed in the Environmental Baseline, no more than 1 individual of gray bat or 2 individuals of northern long-eared bat or tricolored bat (given structure and tree roosting) are estimated to be present within the action areas of each crossing structure.

Therefore, the incidental take permitted by the Opinion would be exceeded if:

1. *Tree clearing amount exceeds 0.10 acre at a single structure location for the crossing structures listed at the beginning of section 7.2.
2. Any more than one structure is demolished/replaced per crossing structure, as listed at the beginning of section 7.2.

**For northern long-eared bat and tricolored bat only*

Exceedance of take as defined above will represent new information that was not considered in this Opinion and shall result in reinitiation of this consultation. The incidental take of gray bat, northern long-eared bat, and tricolored bat is expected to be in the form of harm, wounding, or death.

7.3 Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measure(s) are necessary and appropriate to minimize take of Appalachian elktoe, gray bat, northern long-eared bat, and tricolored bat. These non-discretionary measures reduce the level of take associated with project activities and include only actions that occur within the action area.

1. NCDOT shall ensure that the contractor(s) understands and follows the measures listed in the "Conservation Measures", "Reasonable and Prudent Measures," and "Terms and Conditions" sections of this Opinion.
2. NCDOT shall minimize the area of disturbance within the action areas to only the area necessary for the safe and successful implementation of the proposed actions.
3. NCDOT shall monitor and document any take numbers and the surrogate measures of take and report those to the Service in a batched format.

7.4 Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Applicant must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting and/or monitoring requirements. When incidental take is anticipated, the terms and conditions must include provisions for monitoring project activities to determine the actual project effects on listed fish or wildlife species (50 CFR §402.14(i)(3)). These terms and conditions are nondiscretionary. If this conference opinion is adopted as a biological opinion following a listing or designation, these terms and conditions will be non-discretionary.

1. NCDOT shall adhere to all measures as listed in the Avoidance and Minimization and Conservation Measures section as summarized in this Opinion.
2. The NCDOT will immediately inform the Service if the amount or extent of incidental take in the incidental take statement is exceeded.
3. When incidental take is anticipated, the Terms and Conditions must include provisions for monitoring project activities to determine the actual project effects on listed fish or wildlife species (50 CFR §402.14(i)(3)). In order to monitor the impact of incidental take, the NDOT must report the action impacts on the species to the Service according to the following:
    a. The NCDOT will submit a report each year not later than September 30 identifying, per individual project (via Service Log # and NCDOT identifiers), the following for the preceding calendar year ending December 31:
        i. Acreage of in-water impacts, if LAA for Appalachian elktoe.
        ii. Acreage and dates of tree removal (if any), if LAA for bats (excepting gray bat).
        iii. Dates of structure removal (if any), if LAA for bats.

8. Conservation Recommendations

Section 7(a)(l) of the Endangered Species ESA directs Federal agencies to use their authorities to further the purposes of the Endangered Species ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

- **Eastern Hellbender**: Occurrence records for eastern hellbender exist at Yancey Country structure 097 in the South Toe River. Ahead of work at this location, coordinate with the NCWRC and the Service to survey for/relocate any hellbender that may be within the action area and vulnerable to impacts from project work.
- **State Species of Concern**: Several aquatic species with North Carolina designations occur at Yancey County structure 194 in the North Toe River. While these species are not currently afforded legal protection under the ESA, we recommend the most protective sediment and erosion control measures possible be used in waters occupied by these species, and we encourage you to coordinate any relocation efforts of such species with the NCWRC.
- **Provide Terrestrial Wildlife Passage**: Where riparian corridors suitable for wildlife movement occur adjacent to a project, a spanning structure that also spans a portion of the floodplain and provides or maintains a riprap-free level path underneath for wildlife passage would provide a safer roadway and facilitate wildlife passage. A 10-foot strip may be ideal, though smaller widths can also be beneficial. Alternatively, a “wildlife path” can be constructed with a top-dressing of finer stone (such as smaller aggregate or on-site alluvial material) to fill riprap voids if full bank plating is required. If a multi-barrel culvert is used, the low flow barrel(s) should accommodate the entire stream width and the other barrel should have sills to the floodplain level and be back-filled to

provide dry, riprap-free wildlife passage and well as periodic floodwater passage.

For the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

9. Reinitiation Notice

This concludes formal consultation on the action(s) outlined in the consultation request dated December 12, 2024. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

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Section 106 Checklist

Cultural Resources Programmatic Agreement Screening Checklist for Section 106

Project TIP: **FA:** **WBS:** DF18313.2100307

Project Name: repair/replace Bridge 062 **County:** Yancey

Project Description: Repair/replace Bridge 062 over Ayles Creek on Hickory Springs Road due to damages incurred by Hurricane Helene

Funding Source: anticipated federal reimbursement **Lead Federal Agency:** FHWA/FEMA

Permits Anticipated: none anticipated

Instructions:
NCDOT Project Managers, Project Engineers, or the Division Environmental Staff shall complete the following checklist based upon knowledge of the project site and adjacent parcels. Webservices (https://www.ncdcr.gov/about/history/division-historical-resources/gis-maps-and-data) should be reviewed for NRHP Eligible or Listed Buildings, Districts, Objects, Sites, or Structures. Before checking "Unable to Determine", efforts should be made to acquire any available information. If the answer to any question is "Yes" or "Unable to Determine", the undertaking is subject to further historic preservation review by NCDOT Cultural Resources staff. If answers to all the questions are "No", the undertaking will be considered to have *Little Potential to Cause Effects – Exempt Activities* and excluded from further historic preservation review, until differing information is discovered. Please reference "Appendix A *Exempt Activities Under Section 106*" of the Programmatic Agreement for Transportation Program in North Carolina prior to completion.

	Yes	No	Unable to Determine
A. Would this activity have the potential to cause effects on historic properties, assuming historic properties are present? See list in Appendix A.		X	
B. Is this project directly related to other actions with individually insignificant, but cumulatively significant environmental effects?		X	
C. Are you aware of any concerns raised by the owner of a historic property or public controversy for this undertaking?		X	
D. Locations of cemeteries have been found on the webservices? (https://www.ncdcr.gov/about/history/division-historical-resources/gis-maps-and-data)		X	

By my signature, I certify that I have completed a site visit or am familiar with the specifics of the project and to the best of my knowledge answers to the questions above are correct. I also understand that no further environmental analysis is required at this time, as all of the answers are "No".

Christine Farrell	*Christine Farrell*	11/6/2024
Name (print)	Signature	Date

NEPA Document

Type I or II Categorical Exclusion Action Classification Form

STIP/Project No. Bridge 062, Div 13, Yancey County

WBS/DF Element DF18313.2100307

Federal Project No. _____

A. Project Description:

The North Carolina Department of Transportation (NCDOT) intends to re-establish Bridge 062 over Ayles Creek on Hickory Springs Road in Yancey County, North Carolina (Division 13). See vicinity map.

B. Description of Need and Purpose:

The Purpose of the project is to replace a structure damaged by floodwaters associated with Hurricane Helene which made landfall in Florida on September 26, 2024. The repair/replacement work is needed to restore essential traffic in Western North Carolina.

C. Categorical Exclusion Action Classification:

Type I(A) - Ground Disturbing Action

D. Proposed Improvements:

9. The following actions for transportation facilities damaged by an incident resulting in an emergency declared by the Governor of the State and concurred in by the Secretary, or a disaster or emergency declared by the President pursuant to the Robert T. Stafford Act (42 U.S.C. 5121):

a) Emergency repairs under 23 U.S.C. 125; and

b) The repair, reconstruction, restoration, retrofitting, or replacement of any road, highway, bridge, tunnel, or transit facility (such as a ferry dock or bus transfer station), including ancillary transportation facilities (such as pedestrian/bicycle paths and bike lanes), that is in operation or under construction when damaged and the action:

i) Occurs within the existing right-of-way and in a manner that substantially conforms to the preexisting design, function, and location as the original (which may include upgrades to meet existing codes and standards as well as upgrades warranted to address conditions that have changed since the original construction); and

ii) Is commenced within a 2-year period beginning on the date of the declaration.

and/or

28. Bridge rehabilitation, reconstruction, or replacement or the construction of grade separation to replace existing at-grade railroad crossings, if the actions meet the constraints in 23 CFR 771.117(e)(1-6).

E. Special Project Information:

NCDOT conducted a desktop GIS analysis for potential natural and human environment features in early November 2024. The study area was defined as a 200-foot buffer around the bridge location. NCDOT is utilizing an Emergency Express Design-Build contracting process to expedite this process. The repair/replacement bridge work is anticipated to occur within the current NCDOT right-of-way (ROW). If additional ROW is required, or if the final design results in potential impacts outside of the

study area, NCDOT will re-evaluate and document any additional effects. NCDOT is conducting ongoing federal and state agency coordination to determine the most expedient processes for accomplishing NEPA compliance while adhering to emergency relief protocols.

NCDOT is providing comprehensive public outreach to our western NC communities in lieu of site-specific outreach. As site-specific information becomes available, NCDOT will use its various outreach platforms to inform the public.

A Direct and Indirect Screening Tool (DIST) was used to assess potential impacts to the local community, farm lands, and pedestrian accomodations (see project site). The bridge location is surrounded by protected farmland. Should any additional ROW or permanent easements be needed after design is available, the preliminary screening process should be initiated with Community Studies.

The NCDOT 106 PA checklist was completed for this project (see project site). The checklist determined the project is exempt from further Section 106 review in accordance with NCDOT's Section 106 PA. The PA also exempts the project from any further tribal coordination.

The United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) tool was reviewed on November 1, 2024. USFWS lists the following species below as federally protected with potential to be found within the project study area as of this date:

Species Name	**Scientific Name**	**ESA Status**	**Biological Conclusion**	**Habitat Present**
Gray bat	*Myotis grisescens*	Endangered	MANLAA	Yes
Northern Long-eared bat	*Myotis septentrionalis*	Endangered	MANLAA	Yes
Tricolored bat	*Perimyotis subflavus*	Proposed Endangered	MANLAA	Yes
Appalachian Elktoe	*Alasmidonta raveneliana*	Endangered	No Effect	No
Small whorled pogonia	*Isotria medeoloides*	Threatened	No Effect	No
Rock gnome lichen	*Gymnoderma lineare*	Endangered	No Effect	No
Virginia spiraea	*Spiraea virginiana*	Threatened	No Effect	No

F. Project Impact Criteria Checklists:

F2. Ground Disturbing Actions – Type I (Appendix A) & Type II (Appendix B)

Proposed improvement(s) that fit Type I Actions (NCDOT-FHWA CE Programmatic Agreement, Appendix A) including 2, 3, 6, 7, 9, 12, 18, 21, 22 (ground disturbing), 23, 24, 25, 26, 27, 28, &/or 30; &/or Type II Actions (NCDOT-FHWA CE Programmatic Agreement, Appendix B) answer the project impact threshold questions (below) and questions 8 – 31.

- *If any question 1-7 is checked "Yes" then NCDOT certification for FHWA approval is required.*
- *If any question 1-31 is checked "Yes" then additional information will be required for those questions in Section G.*

PROJECT IMPACT THRESHOLDS (FHWA signature required if any of the questions 1-7 are marked "Yes".)		Yes	No
1	Does the project require formal consultation with U.S. Fish and Wildlife Service (USFWS).	☐	☑
2	Does the project result in impacts subject to the conditions of the Bald and Golden Eagle Protection Act (BGEPA)?	☐	☑
3	Does the project generate substantial controversy or public opposition, for any reason, following appropriate public involvement?	☐	☑
4	Does the project cause disproportionately high and adverse impacts relative to low-income and/or minority populations?	☐	☑
5	Does the project involve a residential or commercial displacement, or a substantial amount of right of way acquisition?	☐	☑
6	Does the project require an Individual Section 4(f) approval?	☐	☑
7	Does the project include adverse effects that cannot be resolved with a Memorandum of Agreement (MOA) under Section 106 of the National Historic Preservation Act (NHPA) or have an adverse effect on a National Historic Landmark (NHL)?	☐	☑

If any question 8-31 is checked "Yes" then additional information will be required for those questions in Section G.

Other Considerations		Yes	No
8	Is an Endangered Species Act (ESA) determination unresolved or is the project covered by a Programmatic Agreement under Section 7?	☐	☑
9	Is the project located in anadromous fish spawning waters?	☐	☑
10	Does the project impact waters classified as Outstanding Resource Water (ORW), High Quality Water (HQW), Water Supply Watershed Critical Areas, 303(d) listed impaired water bodies, buffer rules, or Submerged Aquatic Vegetation (SAV)? https://data-ncdenr.opendata.arcgis.com/datasets/surface-water-classifications/explore	☐	☑
11	Does the project impact Waters of the United States in any of the designated mountain trout streams? https://data-ncdenr.opendata.arcgis.com/datasets/surface-water-classifications/explore	☑	☐

12	Does the project require a U.S. Army Corps of Engineers (USACE) Individual Section 404 Permit?	☐	☑
13	Will the project require an easement from a Federal Energy Regulatory Commission (FERC) licensed facility?	☐	☑
14	Does the project include a Section 106 of the National Historic Preservation Act (NHPA) effects determination other than a No Effect, including archaeological remains?	☐	☑
15	Does the project involve GeoEnvironmental Sites of Concerns such as gas stations, dry cleaners, landfills, etc.?	☐	☑
16	Does the project require work encroaching and adversely affecting a regulatory floodway or work affecting the base floodplain (100-year flood) elevations of a water course or lake, pursuant to Executive Order 11988 and 23 CFR 650 subpart A?	☑	☐
17	Is the project in a Coastal Area Management Act (CAMA) county and substantially affects the coastal zone and/or any Area of Environmental Concern (AEC)?	☐	☑
18	Does the project require a U.S. Coast Guard (USCG) permit?	☐	☑
19	Does the project involve construction activities in, across, or adjacent to a designated Wild and Scenic River present within the project area? https://www.rivers.gov/carp/map	☐	☑
20	Does the project involve Coastal Barrier Resources Act (CBRA) resources?	☐	☑
21	Does the project impact federal lands (e.g. U.S. Forest Service (USFS), USFWS, etc.) or Tribal Lands?	☐	☑
22	Does the project involve any changes in access control or the modification or construction of an interchange on an interstate?	☐	☑
23	Does the project have a permanent adverse effect on local traffic patterns or community cohesiveness?	☐	☑
24	Will maintenance of traffic cause substantial disruption?	☐	☑
25	Is the project inconsistent with the STIP, and where applicable, the Metropolitan Planning Organization's (MPO's) Transportation Improvement Program (TIP)?	☑	☐
26	Does the project require the acquisition of lands under the protection of Section 6(f) of the Land and Water Conservation Act, the Federal Aid in Fish Restoration Act, the Federal Aid in Wildlife Restoration Act, Tennessee Valley Authority (TVA), Tribal Lands, or other unique areas or special lands that were acquired in fee or easement with public-use money and have deed restrictions or covenants on the property?	☐	☑
27	Does the project involve Federal Emergency Management Agency (FEMA) buyout properties under the Hazard Mitigation Grant Program (HMGP)?	☐	☑
28	Does the project include a *de minimis* or programmatic Section 4(f)?	☐	☑
29	Is the project considered a Type I under the NCDOT Noise Policy?	☐	☑
30	Is there prime or important farmland soil impacted by this project as defined by the Farmland Protection Policy Act (FPPA)?	☐	☑
31	Are there other issues that arose during the project development process that affected the project decision?	☐	☑

G. Additional Documentation as Required from Section F (ONLY for questions marked 'Yes'):

8. NCDOT and our federal partners, USACE and FHWA, completed consultation with USFWS in August 2024 to develop a Programmatic Section 7 Agreement for federally listed bat species in western NC (Divisions 9-14) after initiating the formal consultation process on 5/16/24. Per 50 CFR 402.12 issuance of a Programmatic Biological Opinion (PBO) was required on or before 09/30/24. Following recent and ongoing discussions with all parties, USFWS is expected to issue the PBO in February 2025. Once the PBO is issued, if Section 7 for this project has not been completed, it may need to be evaluated under the terms and conditions of the agreement.

11. Ayles Creek is a designated trout water per NCDWR Surfacewater Classification system. If a USACE 404 permit is required for this project, it may include requirements related to trout moratoriums.

16. The County is a participant in the Federal Flood Insurance Program, administered by the Federal Emergency Management Agency (FEMA). The project is within a Flood Hazard Zone for which the 100-year base flood elevations and corresponding regulatory floodway/non-encroachment area have been established. The project intersects a FEMA mapped stream studied by the North Carolina Floodplain Mapping Program.
The Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP), to determine status of project with regard to applicability of NCDOT'S Memorandum of Agreement, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR). This project involves construction activities on or adjacent to FEMA-regulated stream(s). Therefore, the Division shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structure(s) and roadway embankment that are located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

25. This project is an emergency relief project due to Hurricane Helene impacts. Per 40 CFR § 93.126, it is exempt from the requirement to determine conformity because it does not involve substantial functional, locational or capacity changes (23 CFR 450.218(g)).

H. Project Commitments (attach as Green Sheet to CE Form):

NCDOT PROJECT COMMITMENTS

WBS/DF DF18313.2100307
Re-establishment of Bridge 062 over Ayles Creek on Hickory Springs Road
Yancey County
Federal Aid Project No. Federal Aid Number

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

NCDOT and our federal partners, USACE and FHWA, completed consultation with USFWS in August 2024 to develop a Programmatic Section 7 Agreement for federally listed bat species in western NC (Divisions 9-14) after initiating the formal consultation process on 5/16/24. Per 50 CFR 402.12 issuance of a Programmatic Biological Opinion (PBO) was required on or before 09/30/24. Following recent and ongoing discussions with all parties, USFWS is expected to issue the PBO in February 2025. Once the PBO is issued, if Section 7 for this project has not been completed, it may need to be evaluated under the terms and conditions of the agreement.

Eastern Hellbender
The Eastern Hellbender was proposed for federal listing in December 2024. However, no restrictions will take effect until the proposal is finalized, which is expected in late 2025 or early 2026. Until then, proposed species do not receive protection under the Endangered Species Act (ESA), except that federal action agencies must ensure their actions do not jeopardize the species' existence. These agencies may also consult with the U.S. Fish and Wildlife Service (USFWS) to obtain a conference opinion, which will automatically convert to a biological opinion upon the final listing decision.
In the meantime, NCDOT construction or division environmental offices may voluntarily coordinate with the North Carolina Wildlife Resources Commission (NCWRC) to assess and potentially relocate hellbenders from project sites in western North Carolina. It is recommended that they contact the NCWRC liaison at least two months before construction begins.

David McHenry
Email: david.mchenry@ncwildlife.org
Phone: (828) 476-1966

Monarch Butterfly
The Monarch Butterfly was proposed for federal listing in December 2024. However, no restrictions will take effect until the proposal is finalized, which is expected in late 2025 or early 2026. Until then, proposed species do not receive protection under the Endangered Species Act (ESA), except that federal action agencies must ensure their actions do not jeopardize the species' existence. These agencies may also consult with the U.S. Fish and Wildlife Service (USFWS) to obtain a conference opinion, which will automatically convert to a biological opinion upon the final listing decision.

Construction in FEMA Coordination
This project involves construction activities on or adjacent to FEMA-regulated stream(s). Therefore, the Division shall: (1) construct all vertical and horizontal elements within the floodplain as designed; and (2) consult with the Hydraulics Unit of any planned deviation of these elements within the floodplain prior to commencing any such changes; and (3) submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction. The Hydraulics Unit will then verify either: (1) the drainage structure(s) and roadway embankment located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically; or (2) any changes made to the plans were reviewed

and approved to meet FEMA SFHA compliance; or (3) appropriate mitigation measures will be achieved prior to project close-out.

Ayles Creek is a designated trout water per NCDWR Surfacewater Classification system. If a USACE 404 permit is required for this project, it may include requirements related to trout moratoriums.

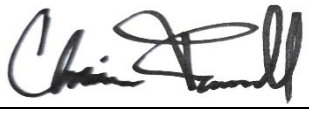
I. Categorical Exclusion Approval:

STIP/Project No. Bridge 062, Div 13, Yancey County

WBS/DF Element DF18313.2100307

Federal Project No. _____

Prepared By:



01/8/2025
Date

Christine Farrell, NEPA Program Consultant
Environmental Policy Unit, NCDOT

Prepared For: NCDOT Division 13

Reviewed By:

2/10/2025
Date

Marissa Cox, Western Regional Team Lead
Environmental Policy Unit, NCDOT

☑ **Approved**

- If NO grey boxes are checked in Section F (pages 2 and 3), NCDOT approves the Type I or Type II Categorical Exclusion.

☐ **Certified**

- If ANY grey boxes are checked in Section F (pages 2 and 3), NCDOT certifies the Type I or Type II Categorical Exclusion for FHWA approval.
- If classified as Type III Categorical Exclusion.

2/10/2025
Date

John Jamison, Environmental Policy Unit Manager
North Carolina Department of Transportation

FHWA Approved: For Projects Certified by NCDOT (above), FHWA signature required.

_____
Date

for Yolonda K. Jordan, Division Administrator
Federal Highway Administration

Note: Prior to ROW or Construction authorization, a consultation may be required (please see Section VII of the NCDOT-FHWA CE Programmatic Agreement for more details).

Bridge Number	Division	County	Location Description	Latitude	Longitude
990062	13	Yancey	SR 1153 (Hickory Springs Rd) from 500ft E of Bridge #990062 to 500ft W of the bridge	35.88384	-82.2178627

HNTB North Carolina, P.C.
4000 Center at North Hills Street, Suite 500
Raleigh, North Carolina 27609

Permitted Drawings

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 3.02; Released April 23, 2024)

WBS Element: N/A **TIP/Proj No.:** DF18313.2100307.PR **County(ies):** Yancey

General Project Information

Waterbody Information

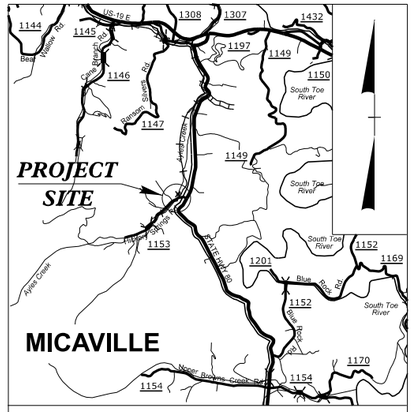
Surface Water Body (1):	Ayles Creek		**NCDWR Stream Index No.:**	7-2-52-33-11		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Trout Waters (Tr)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	Ayles Creek			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**		
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (2):			**NCDWR Stream Index No.:**			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**				
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:				**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?		**Deck Drains Discharge Over Buffer?**		**Dissipator Pads Provided in Buffer?**		
Deck Drains Discharge Over Water Body?		(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (3):			**NCDWR Stream Index No.:**			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**				
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:				**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?		**Deck Drains Discharge Over Buffer?**		**Dissipator Pads Provided in Buffer?**		
Deck Drains Discharge Over Water Body?		(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

01/16/24

CONTRACT: C205023 TIP PROJECT: DF18313.2100307.PR



VICINITY MAP (NTS)

PERMIT DRAWING
SHEET 1 OF 5

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

YANCEY COUNTY

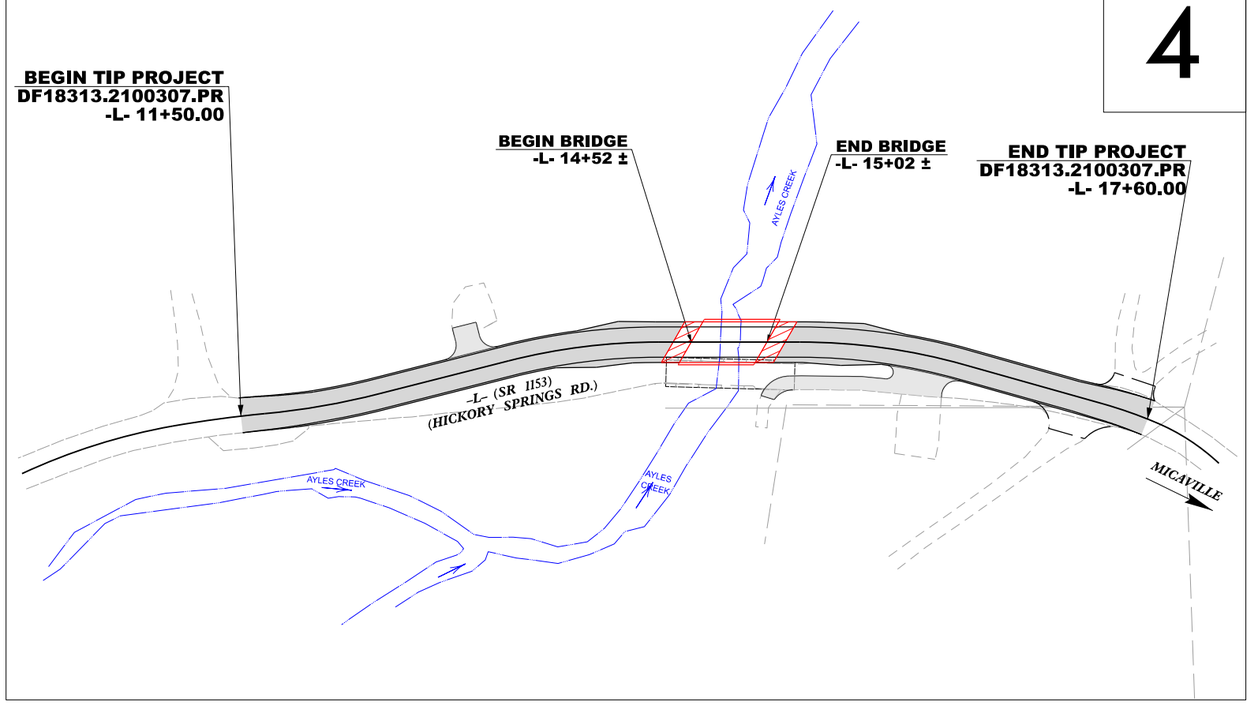
LOCATION: *BRIDGE NO.990062 OVER AYLES CREEK ON SR 1153 (HICKORY SPRINGS RD.)*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING & STRUCTURE*

WETLAND AND SURFACE WATER IMPACTS PERMIT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF18313.2100307.PR	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
DF18313.2100307.PR		PE
DF18313.2100307.PR		ROW
DF18313.2100307.PR		UTILITY
DF18313.2100307.PR		CONST.



B-011 RIGHT OF WAY PLANS
NOVEMBER 5, 2025

RELEASE FOR CONSTRUCTION
DATE: _____

NAD 83/
NA 2011

THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SANFORD CONTRACTORS
628 ROCKY FORK CHURCH RD.
SANFORD, NC 27332
(919)775-7882

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

30 15 0 30 60
PLANS

30 15 0 30 60
PROFILE (HORIZONTAL)

6 3 0 6 12
PROFILE (VERTICAL)

DESIGN DATA

ADT 2025 = 1000
ADT 2045 = 1220
K = N/A
D = N/A
T = N/A
V = 35 MPH

FUNC CLASS = LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT DF18313.2100307.PR = 0.107 MILE

LENGTH OF STRUCTURE TIP PROJECT DF18313.2100307.PR = 0.009 MILE

TOTAL LENGTH OF TIP PROJECT DF18313.2100307.PR = 0.116 MILE

Prepared in the Office of:
WETHERILL ENGINEERING
1223 Jones Franklin Rd. Raleigh, N.C. 27606
License No. F-0377
Bus: 919.851.8077 Fax: 919.851.8107

Prepared for:
DIVISION OF HIGHWAYS DIVISION 13
55 Orange Street
Asheville, NC, 28801

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 5, 2025

LETTING DATE:
JANUARY 12, 2026

CHRIS ANDERSON, PE
PROJECT ENGINEER

JERRY JAVELLANA, PE
PROJECT DESIGN ENGINEER

ANDY HUSSEY, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

. P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

. P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

11/14/23

PERMIT DRAWING SHEET 2 OF 5

50′ 25′ 0′ 50′ 100′

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

BEGIN PROJECT
DF18313.2100307.PR
-L- POC Sta. 11+50.00

-L- PCC 11+04.00
-L- PRC 11+65.70
-L- PT 12+42.82
-L- PC 13+30.82
-L- PT 14+30.46
-L- PC 15+25.93
-L- PT 16+33.86
-L- PC 17+29.71
-L- PCC 17+65.54
-L- POE 18+15.78

REMOVE EXISTING TEMPORARY BRIDGE
RETAIN
CL. II RIPRAP
CL. II RIPRAP
SPECIAL CUT DITCH SEE DETAIL B
GRADE TO DRAIN
BEGIN SBG +14.00
0401
0402
N68°53'50.2"E
N53°57'38.3"E
N83°58'47.3"E
Cl. B RipRap 2 Tons 7 SY Geotextile
SPECIAL CUT DITCH SEE DETAIL B
PROPOSED EXCAVATION
PROPOSED EXCAVATION BANK STABILIZATION SEE DETAIL A
EXISTING BRIDGE (PRE-HELENE)
RETAIN
END PROJECT
DF18313.2100307.PR
-L- POC Sta. 17+60.00

AYLES CREEK

15+00

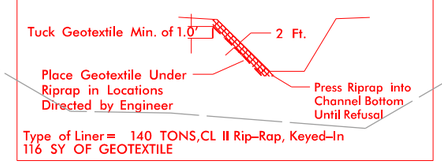
NAD 83 NA 2011

BM1 -L- Sta. 15+57.93 6.39' LT
GPS1 -L- Sta. 17+15.15 15.8' LT
GPS2 -L- Sta. 14+91.70 36.38' RT

APPALACHIAN TRUSS REAL PROPERTY, LLC, DB 895 PG 595
JAMES BRANDON CARROLL DB 525 PG 284
LISA YOUNG THOMPSON ESTATE DB 12E PG 217 DB 444 PG 543
SAMUEL JOE MURPHY DB 703 PG 32
TODD ROBINSON & R. CHAD ROBINSON DB 681 PG 660
JAMES M. NEWTON, JERRY D. NEWTON, & JUANITA NEWSTON SAMS DB 162 PG 683
JAMES BRANDON CARROLL DB 523 PG 611
AMANDA ROBINSON DB 850 PG 254
SAMUEL JOE MURPHY DB 703 PG 32
JAMIE SILVER & JOSEPH LEE SILVER DB 913 PG 262
MARY CARROLL DB 169 PG 507

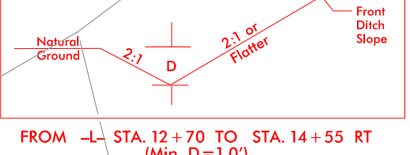
HICKORY SPRINGS RD (SR-1153) 22' BST

DETAIL A
BANK STABILIZATION
(Not to Scale)



Type of Liner = 140 TONS,CL II Rip-Rap, Keyed-In
116 SY OF GEOTEXTILE
FROM –L– STA. 14+42 TO STA. 15+10

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



FROM –L– STA. 12+70 TO STA. 14+55 RT
(Min. D=1.0′)
FROM –L– STA. 13+25 TO STA. 14+70 LT
(Min. D=0.5′)

PAVEMENT REMOVAL

NOTE: UNLESS OTHERWISE NOTED, ALL DRIVEWAY RADII ARE 10'

FOR -L- PROFILE, SEE SHEET 05
ALL GUARDRAIL END UNITS ARE TL-2
ALL STRUCTURE ANCHOR UNITS ARE TYPE III

990062
PRP 04

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
YANCEY COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PREPARED BY
SUTHERLIN ENGINEERING
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SANFORD CONTRACTORS
626 ROCKY FORK CHURCH RD.
SANFORD, NC 27332
(919)775-3862

RELEASE FOR CONSTRUCTION
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11/14/23

PERMIT DRAWING SHEET 3 OF 5

50′ 25′ 0′ 50′ 100′

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

BEGIN PROJECT
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-L- POC Sta. 11+50.00

-L- PCC 11+04.00

-L- PRC 11+65.70

-L- PT 12+42.82

-L- PC 13+30.82

-L- PT 14+30.46

-L- PC 15+25.93

-L- PT 16+33.86

-L- PC 17+29.71

-L- PCC 17+65.54

-L- POE 18+15.78

15+00

REMOVE EXISTING TEMPORARY BRIDGE

RETAIN

CL. II RIPRAP

SPECIAL CUT DITCH SEE DETAIL B

GRADE TO DRAIN

15" HE

0401

BEGIN SBG +14.00

0402

-L- N53°57'38.3"E

-L- N83°58'47.3"E

CL. B RipRap 2 Tons
7 SY Geotextile

SPECIAL CUT DITCH SEE DETAIL B

PROPOSED EXCAVATION

PROPOSED EXCAVATION BANK STABILIZATION SEE DETAIL A

EXISTING BRIDGE (PRE-HELENE)

RETAIN

END PROJECT
DF18313.2100307.PR
-L- POC Sta. 17+60.00

AYLES CREEK

BM1
-L- Sta. 15+57.93
6.39' LT
El. 2629.16'

GPS1
-L- Sta. 17+15.15
15.8' LT

GPS2
-L- Sta. 14+91.70
36.38' RT

BL3
-L- Sta. 12+80.30
27.1' RT

NAD 83
NA 2011

DETAIL A
BANK STABILIZATION
(Not to Scale)

Tuck Geotextile Min. of 1.0' — 2 Ft.

Place Geotextile Under Riprap in Locations Directed by Engineer

Press Riprap into Channel Bottom Until Refusal

Type of Liner = 140 TONS, CL II Rip-Rap, Keyed-In
116 SY OF GEOTEXTILE

FROM –L– STA. 14+42 TO STA. 15+10

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground — 2:1 — D — 2:1 or Flatter — Front Ditch Slope

FROM –L– STA. 12+70 TO STA. 14+55 RT
(Min. D=1.0′)

FROM –L– STA. 13+25 TO STA. 14+70 LT
(Min. D=0.5′)

PAVEMENT REMOVAL

NOTE: UNLESS OTHERWISE NOTED, ALL DRIVEWAY RADII ARE 10'

FOR -L- PROFILE, SEE SHEET 05

ALL GUARDRAIL END UNITS ARE TL-2

ALL STRUCTURE ANCHOR UNITS ARE TYPE III

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11/14/23

PERMIT DRAWING SHEET 4 OF 5

-L-

L = 150
K = 38
DS = 35 mph

L = 150
K = 50
DS = 45 mph

EXISTING GROUND AT PROPOSED ALIGNMENT

END DITCH RT.
STA. 14+55.00
EL. 2630.06'

13+91.09 VLP
2634.85

STA. 14+77 -L-
℄ ELEV. 2635.47'
SKEW = 120°
1@50' 21" CORED SLAB
W/ ALASKA RAIL
2' 6" CAP W/ SHEET PILING
VERTICAL ABUTMENTS

PROP 100 YR WS=2634.8'
PROP 25 YR WS=2633.6'
EXCAVATE TO 2630.3'
VERTICAL ABUTMENT WITH SHEET PILING*
NWS ELEV. 2630.1'
WS 4/22/25 ELEV. 2629.1'
NG AT CENTERLINE OF PROPOSED BRIDGE

PROPOSED ROADWAY GRADE

NG. RT.
NG. LT.
NG. RT.
NG. LT.

(-)3.0500%
(-)3.0500%
(+)0.8909%
(+)0.8909%
(+)0.8909%
(+)3.8659%
(+)3.8659%
-2.6700%
-2.8571%
-5.0%
-4.0%

BEGIN DITCH RT.
STA. 12+70.00
EL. 2835.00'

BEGIN DITCH LT.
STA. 13+25.00
EL. 2633.14'

DITCH PI
STA. 14+00 .00
EL. 2631.00'

DITCH PI
STA. 14+30.00
EL. 2629.50'

LOW CHORD AT CL
LOWEST LOW CHORD
EXCAVATE TO 2630.3'
VERTICAL ABUTMENT WITH SHEET PILING*
BANK STABILIZATION W/ CL II RIPRAP

END DITCH LT.
STA. 14+70.00
EL. 2629.10'

* DEPTH OF SHEET PILING TO BE DETERMINED BY GEOTECHNICAL ENGINEER

TOTAL APPROX. EXCAVATION = 145 cuyds

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	660	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	2633.6	FT
BASE DISCHARGE	=	1000	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2634.8	FT
OVERTOPPING DISCHARGE	=	1100	CFS
OVERTOPPING FREQUENCY	=	100+	YRS
OVERTOPPING ELEVATION	=	2635.3	FT
DATE OF SURVEY	=	04/22/25	
W.S.ELEVATION AT DATE OF SURVEY	=	2629.1	FT

FOR -L- PLAN, SEE SHEET 04

990062
PRP 05

NORTH CAROLINA
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WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 14+43 TO 14+85	BANK STABILIZATION						0.02		98		
1	-L- 14+45 TO 14+85	TEMP. IMPACTS FOR DEWATERING							0.01		100	
TOTALS*:								0.02	0.01	98	100	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
12/16/2025
YANCEY COUNTY
DF18313.2100307.PR