

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

JOSH STEIN GOVERNOR

April 14, 2025

J.R. "JOEY" HOPKINS Secretary

U. S. Army Corps of Engineers Asheville Regulatory Field Office		NC Division of Water Resources Transportation Permitting Branch	
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Asneville,	NC 28801-5006	Swannanoa, NC 28778-8211	
ATTN:	Ms. Crystal Amschler,	Ms. Amy Annino,	
	NCDOT Coordinator	NCDOT Coordinator	

Subject: Modification Request to the Section 10 and 404 Nationwide Permits 6, 3 and 33, and Section 401 Water Quality Certification for the Proposed Repair of Interstate 40, Damaged as the Result of Hurricane Helene, in Haywood County, NCDOT Division 14, Project No. 18314.1044057.

Dear Madams:

As the North Carolina Department of Transportation (NCDOT) continues design and investigations for the permanent repair solution to approximately 5 miles of Interstate 40 from the Tennessee/ North Carolina State Line to the dual tunnels (including the tunnel bypass road), two developments have necessitated modification to the existing permit.

Adapting to new baseline conditions

As noted from the March 26, 2025 agency visit to the project area, Duke Energy has resumed normal power production and hydraulic operations since Hurricane Helene. This has lowered the water level significantly in the Pigeon River, and in many locations, has removed surface flow as the river traverses through the fill material deposited from the adjacent I-40 fill slope.

NCDOT was previously approved to move this material in areas where it was in conflict with the temporary construction access road and/or where modification was necessary to maintain proper hydraulic function.

Based on the new baseline conditions, and in consultation with hydraulics and river restoration professionals, NCDOT proposes to remove this fill material from the Pigeon River.

River restoration and hydraulic engineers will create test pits periodically throughout this stretch of river to more accurately define pre-storm event conditions. These elevations will be used in designing the final proposed river grade. Additionally, river geomorphology engineers will collaborate on setting a typical section to be used during construction that more naturally mimics river geometry based on research in western North Carolina and regional curve data.

NCDOT commits to the following measures to ensure compliance with this goal:

-Material removed from the river will be directed and guided by a team of professional river restoration and hydraulic engineers.

-NCDOT will provide monthly reports on the quantities removed from the "scour zone."

Temporary River Crossing for Geotechnical Investigations

Due to the need for a large amount of fill in this constrained corridor, NCDOT, in cooperation with the US Forest Service and Federal Highway Administration, is investigating the potential use of borrow sites on US Forest Service land. Please see enclosed map for a general location of these sites.

NCDOT is currently conducting geotechnical investigations at up to 7 sites to determine the viability of the material for both fill and concrete.

Currently, NCDOT is using US Forest Service Road 288 to access potential borrow sites. USFS Road 288, and its low-water crossing on the Pigeon River, were not intended to carry the level of geotechnical and related machinery needed to conduct this activity. Additionally, there are residents who live on USFS Road 288 for which the road must serve.

NCDOT requests a modification to the Nationwide Permit 6/33 to construct a temporary crossing near the "Cotton Patch" construction yard site. The temporary crossing would be constructed using 8, 48-inch, 60-linear feet in length, steel pipes. The approximate width of the scour zone at this location is 180 linear feet, with a low flow channel width of 60 linear feet.

Purpose and limitations of the Temporary Crossing of the Pigeon River.

The purpose of this crossing is to access borrow site 1 for geotechnical investigations so USFS Road 288 can resume only handling USFS needs and property access.

The crossing would be in place only for the purpose of obtaining geotechnical investigations, which is anticipated to be complete by July of this year.

The crossing would be hydraulically adequate to handle normal flows and would be designed to overtop during high flow events. The structure would function similarly to the USFS Road 288 low water crossing located 1 mile upstream. Please see attached plan sheets for this temporary crossing.

To ensure this crossing will not have long-term or permanent impacts to the river, NCDOT will use river restoration engineers and professionals (working on other sections of the river) to ensure proper and appropriate restoration of the Pigeon River once the temporary crossing is removed.

NCDOT will re-evaluate our future, longer-term temporary crossing needs as part of the borrow site selection. Accordingly, NCDOT would also seek permits for future crossings as part of borrow site permitting.

Impact Summary:

Previously authorized	Temporary Crossing	Revised request
26,641 linear feet	60 linear feet	26,701 linear feet

As noted in the previous application, the above values were created using "scour zone" widths. Actual impact values are anticipated to be significantly lower.

Endangered Species Act

A Biological Opinion was issued by the US Fish and Wildlife Service on February 28, 2025, and is included in this application.

Tribal Coordination

Tribal Coordination letters were sent to the following tribes for the overall project on December 19, 2024 including:

Catawba Indian Nation, Cherokee Nation, Eastern Band of Cherokee Indians, Muscogee (Creek) Nation, and United Keetoowah Band of Cherokee Indians.

Response was received only from the Muscogee (Creek) on the same day via email, indicating,

"After review, the Muscogee Nation is unaware of any Muscogee sacred sites, burial grounds, or significant cultural resources located within the immediate project area. However, as the project is located in an area that is of general historic interest to the Tribe, we request that work be stopped and our office contacted immediately if any Native American cultural materials are encountered."

Section 106

Please find enclosed No Archaeological Survey Required Form, and

Historic Archictecture and Landscapes Effects Required Form.

As the nearby Waterville Hydroelectric Plant is Determined Eligible, an Effects Determination will be required. This will be completed as project design continues so the full impact of the project can be determined. This facility is located at the State Line and is approximately 6 miles from the above-described activities.

No other changes are proposed to the current 404 or 401 permit.

If you have any questions or need additional information, please contact Michael Turchy at maturchy@ncdot.gov or (919) 707-6157.

Sincerely,

Michael Reason: I-40 Permitting

Digitally signed by

Michael A. Turchy Environmental Coordination and Permitting Group Leader

ec: NCDOT Permit Application Standard Distribution List

Project Submittal Interim Form



Updated December 4, 2023

Please note: fields marked with a red asterisk * below are required. You will not be able to submit the form until all mandatory questions are answered.

Project Type:*

- For the Record Only (Courtesy Copy)
- New Project
- Modification/New Project with Existing ID
- More Information Response
- Other Agency Comments
- Pre-Application Submittal
- Re-Issuance\Renewal Request
- Stream or Buffer Appeal

Project Contact Information

Name:	Michael Turchy	
	Who is submitting the information?	
Email Address: *	maturchy@ncdot.gov	

Project Information

Existing ID #: *		Existing Version: *
20250109		1
20170001 (no dashes)		1
Project Name:*	I-40 Emergency Helene Repairs	

Is this a public transportation project?*

- Yes
- 🔘 No

Is this a DOT project?*

- Yes
- No

Is the project located within a NC DCM Area of Environmental Concern (AEC)?*

🔵 Yes 💿 No 🔵 Unknown

Does this project involve maintenance dredging funded by the Shallow Draft Navigation Channel Dredging and Aquatic Weed Fund, electric generation projects located at an existing or former electric generating facility, or involve the distribution or transmission of energy or fuel, including natural gas, diesel, petroleum, or electricity?

🔵 Yes 💿 No

Is this project connected with ARPA funding?*

🔵 Yes 🔍 No

WBS#:

18314.144057 (Applies to DOT projects only)

County (ies)*

Haywood

Please upload all files that need to be submited.

Click the upload button or drag and drop files here to attach document

I-40 Helene Repair Modification Reqst April 2025.pdf 10.14MB

Only pdf or kmz files are accepted.

Describe the attachments or add comments:

* Sy checking the box and signing box below, I certify that:

- I, the project proponent, hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief.
- I, the project proponent, hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.
- I agree that submission of this online form is a "transaction" subject to Chapter 66, Article 40 of the NC General Statutes (the "Uniform Electronic Transactions Act");
- I agree to conduct this transaction by electronic means pursuant to Chapter 66, Article 40 of the NC General Statutes (the "Uniform Electronic Transactions Act");
- I understand that an electronic signature has the same legal effect and can be enforced in the same way as a written signature; AND
- I intend to electronically sign and submit the online form.

Signature: *

Michael Tunchy

Submittal Date:

Temporary River Crossing Graphics

PLAN VIEW OF PROPOSED TEMP CREEK CROSSING



CROSS SECTION VIEW OF TEMP CREEK CROSSING



TYPICAL SECTION FOR TEMP CREEK CROSSING





Potential

Borrow Sites



Biological Opinion

Biological and Conference Opinion

Repair Portions of Interstate 40 Destroyed by Tropical Storm Helene in Haywood County, North Carolina

Service Log #25-108



Prepared by:

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

JANET MIZZ Digitally signed by JANET MIZZI Date: 2025.02.28 15:00:06 -05'00'

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

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Consultation History

November 19, 2024: Virtual meeting held by North Carolina Department of Transportation (NCDOT) with U.S. Fish and Wildlife Service (Service) and U.S. Forest Service (USFS) regarding I-40 landslide damage caused by Tropical Storm (TS) Helene and need for expedited response, permitting, and repair. **November – December 2024**: Email and phone correspondence between the Service and NCDOT discussing approach for consultation.

January 15, 2025: Federal Highway Administration (FHWA) submitted a Biological Assessment (BA), requesting formal consultation and conference. Service acknowledged receipt of final BA and start of official formal consultation.

January 17, 2025: Representatives from the Service, NCDOT, USFS, U.S. Army Corps of Engineers (USACE), and project contractors attended a site visit through the project area section of I-40.

January – February 2025: Email correspondence between the Service and NCDOT on potential borrow areas and consultation document details.

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 formal consultation and conference is presented to expedite review of the subject project, as I-40 is an integral transportation artery for both the traveling public and commerce between North Carolina, Tennessee, and beyond. 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 and project information at the time of this document and incorporate the expertise of WNC's Service and partner resource agency biologists.

The NCDOT assessed the known portion of the action area 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 outlines "No Effect" (NE) determinations, with supporting biological rationale.

<u>NE Determinations</u> Rock Gnome Lichen Small Whorled Pogonia

(Gymnoderma lineare) (Isotria medeoloides)

Endangered Threatened

The NE determinations for rock gnome lichen and small whorled pogonia are based on the absence of suitable habitat within the known portions of the action area. 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. Should chosen borrow sites, which are unknown at the time of this consultation but are considered part of the action area, contain suitable habitat for either species, it is the responsibility of the project proponent and federal action agency to make supported biological determinations and reinitiate consultation, as necessary.

On December 12, 2024, monarch butterfly (*Danaus plexippus*) was proposed for listing as endangered under the Endangered Species Act (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. Per discussion with the Service, NCDOT chose not to conference on monarch butterfly at this time. Conferencing procedures can be initiated later in the timeline of this project should the need arise.

On December 13, 2024, eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*) was proposed for listing as endangered under the ESA. Occurrence data for eastern hellbender from 1988 is present within the northernmost (approximately 1-mile-long) portion of the action area. Based on the historical status of the occurrence record, conferencing procedures were not pursued.

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 ESA of 1973, as amended (16 U.S.C. 1531-1543), 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 and is based on our review of the proposal to repair the extensive damage caused during TS Helene to the eastbound lanes of I-40, which include massive roadbed slides and loss of lanes into the Pigeon River Gorge during the high flood and rain event; and the effects on the federally endangered gray bat (*Myotis grisescens*), Indiana bat (*Myotis sodalis*), 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 FHWA, field investigations, correspondence between NCDOT and the Service, and other sources of information as cited. The FHWA is the lead Federal action agency for this project, 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 action 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 area.

2.1 Action Area

The project action area is comprised of:

- The 7-mile-long portion of the I-40 corridor, starting at mile post (MP) 0 at the North Carolina/Tennessee border and extending to the southeast at MP 7; including project construction limits and all project related work such as tree-clearing and grading throughout the approximate 390-acre corridor.
- 2.) Off-site borrow and/or waste areas comprising approximately 150 acres and related work such as tree-clearing, grading, and excavation.

2.2 Project Description

The NCDOT and FHWA propose to repair the damage caused during TS Helene to the eastbound lanes of I-40 by rebuilding and replacing portions of the two lanes (each 12 feet), shoulders (inside shoulder 2 feet, outside shoulder 10 feet), and median concrete barrier. The project is within the USFS's Pisgah National Forest and meetings between NCDOT and USFS have addressed the scope of the work and the anticipated action area. NCDOT commits to working as much as possible within its existing USFS easement; however, because work in the Pigeon River will be required to rebuild the slope scoured during TS Helene, USFS has ceded authority for any work in the Pigeon River to the USACE.

The project is expected to occur over the next three years. Certain elements of project design are not yet known, given the expedited nature of the response and repair necessitated by the massive volume and scale of TS Helene destruction. However, project activities and estimated impacts, based on the "knowns" associated with this type of project work, are available. At the time of this consultation, due to the exceptional circumstances and accelerated pace of this project, the expectation is that certain elements of the project, such as borrow site locations and sizes, may change as project actions move forward. That constraint is acknowledged and the reinitiation process for consultation modification will be followed as necessary. The general and expected elements of this large-scale repair project are described below. Construction and associated work is expected to include the following: installation of retaining walls of varying types along the eastbound lanes within the Pigeon River Gorge, tree clearing, excavation of fill material from borrow sites, new and/or upgraded storm drainage systems, culvert and pipe alterations, river realignments and reconstruction, signing, night work, blasting and high-decibel percussive activities, and asphalt overlay of the westbound lanes. A construction causeway will be required throughout the 7mile length of the project along the river scour zone, portions of which will extend into the river channel. This will include access roads and a haul road parallel to the eastbound lanes east of the tunnels. Borrow sites near the project corridor will be utilized, though are not known at the time of this consultation, which is addressed further below. This work will occur from MP 0.0 (35.775713, -83.098014) to approximately MP 7.0 (35.733483, -83.024440), designated as the action area in Figure 1.

The action area contains 16 culverts with dimensions suitable for bat roosting (per the NCDOT Standard Operating Procedures for Preliminary Bat Habitat Assessments (SOP)), two of which are concrete and the rest are metal. Pipe lining and potential expansion is planned for 10 metal culverts while 6 of the culverts (metal and concrete) are not slated for alteration at the time of this consultation. Work impacting culverts may occur during any time of year.

Approximately 3 million cubic yards (cy) of fill material will be needed for the project. This material will be necessary primarily for causeway placement within the Pigeon River Gorge, for retaining wall backfill, and for roadbed material in areas that were washed out. Sourcing the materials from an off-site quarry is impracticable because of difficulty in retaining consistent production rates which would be dependent upon on-road trucking coming from both Tennessee and North Carolina; introduction of live traffic to the roadway with approximately 500 truckloads a day in this section of I-40; and, assuming an amount of ~3 million cy to import, a period of approximately 1,200 days would be allocated for material transport alone. Given these limiting factors, the utilization of on- and near-site borrow areas on USFS property will be pursued for supplying the needed material.

The majority of tree clearing associated with the project is for borrow areas, estimated at 150 acres, though approximately 37 acres of clearing will occur within the roadway corridor. For areas of tree clearing within the road corridor that were previously vegetated and where slope allows, replanting will occur. The estimated total amount of clearing at the time of this consultation is 187 acres. Minor amounts of clearing are expected to occur early in the life of the project to accommodate geotechnical exploration and access at potential borrow sites. Larger areas of clearing will occur throughout the roadway corridor and at off-site borrow locations once borrow sites are established and must be cleared to allow for material excavation. Borrow sites are expected to be located in the landscape surrounding this section of the I-40 corridor (Figure 3). Clearing for geotechnical exploration is expected to occur prior to April 1, 2025, while the majority of project-associated tree clearing may occur during any time of year. At the time of this consultation, the 187-acre tree clearing amount is an overestimate, as borrow areas are still being investigated and considered by the USFS, NCDOT, and contractor. An accurate acreage amount of tree clearing will be reported at the end of project construction and a payment will be calculated based on the tree clearing mitigation equation as addressed in 2.3 below. Borrow areas will be stabilized and

rehabilitated (i.e. replanted with native vegetation where feasible) upon project completion.

2.3 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. Conservation Measures (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.

The following measures will be implemented to minimize impacts to listed/proposed species and habitat:

<u>General 1</u>. 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 CMs and all associated NCDOT guidance documents.

<u>General 2</u>. 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.

<u>General 3</u>. Areas of disturbance, such as tree clearing, grubbing, and grading, will be limited to the maximum extent possible.

<u>General 4</u>. Borrow pits and waste sites should only be created when needed and be no larger than necessary to minimize noise and tree clearing impacts. Sites closer to the project are recommended to reduce the effects of hauling in the region.

<u>Bat - Noise</u> - To maximum extent possible, NCDOT will avoid blasting, night work, and tree clearing during the bat active season (March 15 and November 15, with priority on avoidance of the May 15 – July 31 pup season); however, given constraints with the project timeline, portions of those activities may occur when listed/proposed bats are within the action area. Section 220 of the NCDOT Standard Specifications for all blasting activities, which includes use of blast mats or soil cover, will be adhered to.

<u>Bat - Lighting</u> - No new lighting will be added to the action area. For temporary construction lighting between March 15 and November 15: Limit all construction-related lighting to whatever is necessary to maintain safety in *active* work areas. Where possible, direct lighting at the active work area and away from the surrounding landscape and river corridor. Use shielding when possible. Turn lights off when not needed.

<u>Bat - Tree Clearing Bat Fund Contribution</u>: For any clearing that occurs from April 1 - November 15, 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.

<u>Bat - Culvert Alteration Bat Fund Contribution</u>: For individual culverts that are LAA bat species during culvert work, that is, through direct culvert alterations or close proximity to high decibel/percussive activities, 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.

*Contributions made will be based on a 2:1 ratio multiplier. 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). <u>https://www.nass.usda.gov/Publications/Todays_Reports/reports/land0824.pdf</u> Example calculation: \$5,190 x 20 ac = \$103,800 x 2 (critical life stage multiplier) = \$207,600 contribution.

**Culverts with documented bat use are generally larger than the average bridge, with a median size of 0.10 acre (length x width) (Service 2019). Therefore 0.10 acre per culvert is used to calculate the amount of suitable bat habitat lost for projects involving culvert impacts. However, the impacts to bats that may be displaced during culvert work are considered temporary in nature because the post-work culvert will provide adequate roosting habitat. Therefore, the 1.5:1 ratio multiplier was determined to be appropriate. The formula is calculated as follows: $$5,190 \times 0.1 \text{ ac} = 519 \times 1.5$ (temporary impact multiplier) = \$779 contribution/culvert.

3. Status of the Species

This section summarizes best available data about the biology and current condition of the gray bat, Indiana bat, northern long-eared bat, and tricolored bat throughout their ranges that are relevant to formulating an opinion about the action. 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 Gray Bat	
Scientific Name:	Myotis grisescens
Status:	Endangered
Date of Listing:	April 28, 1976
Critical Habitat:	None designated

3.1.1 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.

3.1.2 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 and comprises approximately 174,581 square miles. WNC is 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). The impacts from TS 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 (NCNHP), NC Wildlife Resources Commission (WRC), 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).

3.1.3 Threats

Cave disturbance and alteration, loss of forested habitat, pollution of waterways, and significant natural factors including those caused by extreme weather events (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.

3.2 Indiana Bat

Scientific Name:	Myotis sodalis
Status:	Endangered
Date of Listing:	March 11, 1967
Critical Habitat :	Established in 1976

3.2.1 Description and Life History

The Indiana bat is a temperate, insectivorous, migratory bat that hibernates colonially in caves and mines in the winter. The species is widely distributed in a variety of wooded habitats, ranging from highly fragmented woodlands in agricultural landscapes to extensively forested areas. Roosting areas are preferred in forest stands with uneven-aged trees that can supply the canopy with large, dead trees in more direct sunlight and are near foraging areas and water sources. Some roosts do occur in living trees (primarily shagbark hickory) or damaged trees from several species. During winter, Indiana bats are restricted to suitable underground hibernacula. Most of these sites are caves located in karst areas of the east-central United States; however, Indiana bats also hibernate in other cave-like locations, including abandoned mines.

Maternity colonies form in early May and remain together until August. Females will rear a single pup from May into July. Temperatures and weather will alter the length of the time a pup will stay in the primary roost and females will relocate the pup to another snag to manage temperatures and environmental conditions. In summer, most reproductive females occupy roost sites under the exfoliating bark of dead trees that retain large, thick slabs of peeling bark. Habitats in which maternity roosts occur include riparian zones, bottomland and floodplain habitats, wooded wetlands, and upland communities. Indiana bats typically forage in semi-open to closed (open understory) forested habitats, forest edges, and riparian areas.

Fall swarming and mating takes place between August and November and are at different sites from the actual hibernaculum. Typically, hibernation begins in November and lasts through March. Several variables influence hibernacula selection, but generally Indiana bats prefer caves with stable temperatures that remain below 50°F with humidity greater than 74 percent. Indiana bats emerge from hibernation in March or April and remain near the hibernacula to refuel before migrating to summer ranges. Migration distances vary but have been observed greater than 300 miles. Bats may be concentrated near hibernacula and often roost in trees during fall swarming and spring staging.

Indiana bats primarily feed on flying insects, including some from orders with both an aquatic and terrestrial stage. Numerous foraging habitat studies have found that Indiana bats often forage in closed to semi-open forested habitats and forest edges located in floodplains, riparian areas, lowlands, and uplands; however, old fields and agricultural fields are also used (Service 2007). Drinking water is essential,

especially when bats actively forage. Indiana bats obtain water from streams, ponds, and water-filled road ruts in forest uplands. Consistent use of moths, flies, beetles, and caddisflies throughout the year at various colonies suggests that Indiana bats are selective predators to a certain degree, but incorporation of other insects into the diet also indicates that these bats can be opportunistic (Murray and Kurta 2002).

3.2.2 Status and Distribution

Indiana bats can be found primarily in the midwestern and eastern part of the United States, with a range stretching east to west from Vermont to Oklahoma, and north to south from Michigan to Alabama, and comprising approximately 403,883 square miles. WNC falls on the southeast edge of their range. No known active hibernacula are present in WNC and summer maternity colonies are widely dispersed, with most locations unknown (Service 2019a).

According to the 2024 population status updated (Service 2024), range-wide there are approximately 631,786 Indiana bats, using 194 hibernacula across 15 states. The nine most populous hibernacula are home to 91% of Indiana bats, though none are in North Carolina or adjacent states. The Service divides the Indiana bat range into four recovery units, delineating evidence of population discreteness and genetic differentiation, differences in population trends, and broad-level differences in macrohabitats and land use. North Carolina is part of the Appalachia Recovery Unit, which includes all of West Virginia, as well as portions of Pennsylvania, Virginia, and Tennessee. The Appalachian recovery unit represents 0.2% of the overall Indiana bat population.

There are 20 element occurrences of the Indiana bat in WNC based on NCNHP records, five of these are considered historical. There are several records of Indiana bats roosting in concerte-material bridges associated with a water crossing (NCDOT 2023a). According to approximately 2,000 bridge surveys conducted throughout WNC from 2000 - 2023, Indiana bats have been recorded roosting in WNC bridges at a usage rate of 0.2%, with use documented to occur from March - July (NCDOT 2023a). There are currently no records in North Carolina of Indiana bats roosting in culverts, though they have been found in culverts in other states. White Oak Blowhole cave in Tennessee (Great Smoky Mountains National Park) is located within five miles of the North Carolina border. Therefore, part of the designated spring staging and fall swarming habitat associated with this hibernaculum extends into Swain County, NC.

3.2.3 Threats

Threats to the Indiana bat include modifications to caves, mines, and surrounding areas that change airflow and alter microclimate in the hibernacula. Human disturbance and vandalism pose significant threats during hibernation through direct mortality and by inducing arousal and consequent depletion of fat reserves. Natural catastrophes can also have a significant effect during winter because of the concentration of individuals in a relatively few sites. During summer months, possible threats relate to the loss and degradation of forested habitat. Migration pathways and swarming sites may also be affected by habitat loss and degradation. Although populations have increased in recent years, WNS poses an additional threat that has caused and may continue to cause population declines.

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 North Carolina are associated with a water crossing (NCDOT 2023a). Northern long eared bats have been recorded roosting in western NC bridges at a usage rate of 0.2%, with use documented to occur from May - October (NCDOT 2023a). There are no records of northern long-eared bats roosting in culverts in North Carolina (NCDOT 2023b), 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 and includes eight Canadian provinces, totaling approximately 582,058 square miles. 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 NCNHP 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 WNS 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 extreme weather events, 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 wideranging 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, culverts, 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. 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), comprising approximately 686,152 square miles. 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 in WNC based on N.C. Natural Heritage Program records to date, seven of which are considered historical. The number of bats found at each occurrence range from 1 to 3,000 bats. There have been 80 tricolored bat hibernacula documented, including caves (51), mines (22), root cellars (4), and culverts (3). According to approximately 2,000 bridge surveys conducted throughout WNC from 2000 - 2023, tricolored bats have been recorded roosting in bridges at a usage rate of 1.5% (NCDOT 2023a). Tricolored bat bridge use has been documented to occur from April – October (with one record from 2013 citing February use). Tricolored bats have been found using culverts in WNC at a rate of 0.8% observed use. Approximately 900 surveys have been conducted in western North Carolina from 2010 – 2023 (NCDOT 2023b) with year-round data coverage. Culvert use has been observed in WNC from January – April. Tricolored bat use of culverts as hibernacula is well documented (e.g., Katzenmeyer 2016, Newman et al. 2021) and use may be more widespread than previously known.

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 is located in the Environmental Protection Agency Blue Ridge Ecoregion in WNC, specifically in the Pigeon River Gorge. I-40 is a major east-west facility, a four lane, median barrier divided interstate, providing connections for commuters, tourists, and commercial vehicles. In 1958, the first section of I-40 was constructed through the Pigeon River Gorge running from the Tennessee border southeast to near Waynesville, North Carolina. This section of I-40 bisects the Pisgah National Forest and carries between 26,000 and 27,000 vehicles per day. Because I-40 serves as a primary east-west shipping interstate, the volume of tractor trailer trucks ranges from 6,410 to 6,690 per day. The action area contains the existing 7-mile-long corridor of I-40, starting at MP 0 at the North Carolina/Tennessee border and extending to the southeast at MP 7; as well as off-site borrow and/or waste areas and related work such as tree-clearing, grading, and excavation. Past impacts include the original construction of I-40, the construction of the hydroelectric Walters Dam and associated downstream Waterville Power Station, and several USFS-owned roads on the east and west sides of the gorge. The surrounding landscape is comprised primarily of contiguous deciduous, evergreen, and mixed forest types owned and managed by the USFS.

4.1 Listed and Proposed Bats Within the Action Area

Indiana bats, northern long-eared bats, and tricolored bats roost in trees during the warmer months. All three species are assumed to be present within the action area and have NCNHP element occurrence data in the surrounding landscape. Capture locations exist for Indiana bat approximately 9 miles west of the action area and roosting observation exists 10.5 miles south in the Jonathan Creek bridge. Mist net records of northern long-eared bat from 2011 occur within the southern portion of the action area and from 2015 along Hurricane Creek Road approximately 2 miles southeast of the project's southern end. The closest tricolored bat record is from a 2018 mist net capture 0.3 miles from the southern end of the project. Additionally, tricolored bat hibernacula exist within approximately 1.5 miles south of the project location which is noteworthy given that tree-roosting during spring staging (April 1 – mid May) and fall swarming (mid August – mid November) is common within 3 miles of a hibernaculum.

Gray bats are not considered "tree-roosting" species. While individuals have been observed utilizing trees on 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 area. That said, this portion of the Pigeon River Gorge is a known important foraging and commuting corridor for the species. For example, 2018 NHP data includes one night of 27 gray bat captures approximately 0.3 miles south of the project location. Therefore, gray bat is assumed to be present within the action area.

Sixteen culverts with dimensions suitable for bat roosting (in accordance with NCDOT SOP) occur within the action area, 10 of which have lining and extension work planned. Additionally, high-decibel work from project construction activities may occur near any of the culverts during any time of year during project construction. For gray bats, primary roost culverts can support several hundred to over 1,000 individuals, while most culverts with observed roosting gray bats in WNC contain 1 to 10

individuals. The culverts supporting those higher numbers of gray bats, whether culvert or bridge, are larger than average. There are currently no culvert roosting records for northern long-eared bat or Indiana bat in WNC, though culvert records for both species occur in other states within their ranges. Records of tricolored bat roosting in bridges and culverts in WNC consist mainly of 1-2 individual per culvert. The pipe culvert within the action area have not been surveyed for roosting bats, but their dimensions suggest that any of the covered species could be present; therefore, presence is assumed.

5. Effects of the Action on Gray Bat, Indiana Bat, Northern Long-eared Bat, and Tricolored Bat

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 and the cumulative effects 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 Proximity of the Action, Nature of the Effect, and Disturbance Duration

Based on the description of the action and the species' biology, stressors to gray bat, Indiana bat, northern long-eared bat, and tricolored bat have been identified and are described below. The proximity of these actions will be within the entire action area, including the forested areas, culverts, waterways, and riparian zone. Duration of disturbance is expected primarily during the construction phase of project work, expected to be three years, as impacts from the existing I-40 corridor such as noise and collision are not expected to deviate from previous baseline conditions.

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

Tree Removal

The removal of suitable roost trees, if conducted while Indiana bats, northern long-eared bats, or tricolored bats are present, could cause bats to flush, which would expose them to risk of predation, 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 surrounding 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 Indiana bat, northern long-eared bat and tricolored bat.

Culvert Work

The demolition of remaining portions of culverts, if conducted while bats are present, could cause bats to flush, which would expose them to risk of predation, 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 nearby roosting bats 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 or harassment to gray bat, Indiana bat, northern long-eared bat, and tricolored bat.

Blasting

The decibels (dBA) associated with rock blasting at 50 feet from source is 112, which is considered "extreme" (CalTrans 2016). The CalTrans 2016 noise attenuation formula predicts that rock blasting noise will attenuate to approximately 89 dBA, a level considered 'high,' at a distance of 400 feet. For the purposes of this effects analysis, close-proximity rock blasting (that is, blasting \leq 400 feet from a suitable roosting area) is considered likely to result in adverse effects on any bats that could be roosting. The "very high" and "extreme" range of dBA that would be expected to reach roosting bats that are within the 400-foot radius of rock blasting could cause bats to flush. Bats flushed from roosting are likely to experience harm in the form of increased exposure to predators and reduced fitness due to energy expenditure. Additionally, should flushing occur during the pup season, adults may flush and leave behind non-volant pups, which could result in harm or mortality for the abandoned pup. The measures to incorporate Section 220 of the NCDOT Standard Specifications for all blasting activities, which includes use of blast mats or soil cover, and to avoid blasting as much as possible within the sensitive bat activity periods, are expected to minimize but not wholly avoid adverse impacts from this activity. In summary, blasting, should it occur while bats are present, is expected to result in harms or harm to gray bat, Indiana bat, northern long-eared bat, and tricolored bat.

Lighting and Night Work

Permanent lighting exists at the I-40 tunnel within the action area and no additional permanent lighting will be added. Night work and associated temporary lighting will take place. Lighting from vehicle headlights that were previously blocked by a vegetated buffer between the roadway and the river may result in increased illumination within portions of the river gorge in excess of baseline conditions. Bat behavior may be affected by lights when traveling between roosting and foraging areas. Foraging in lighted areas may increase risk of predation or it may deter bats from flying in those areas. Bats that significantly alter their foraging patterns may increase their energy expenditures resulting in reduced reproductive rates. This depends on the context (e.g., duration, location, extent, type) of the lighting. Given the measure to avoid lighting the river corridor as much as possible with temporary night-lighting; the post-construction tree planting in feasible areas of the road corridor between the roadway and the river; the roadway height above the river that allows for headlight attenuation within the gorge; and given that lighting, even when on, will not illuminate the entirety of the riparian corridor throughout the action area, impacts from temporary night lighting and vehicle headlights will be minimized but not completely avoided and therefore may result in take of the covered species in the form of harassment.

Aquatic Resource Loss and Degradation

Water quality may be affected by increased sedimentation due to ground disturbance, placement of fill material for causeway construction, runoff, and through the introduction of environmental contaminants. The introduction of environmental contaminants to waterways may negatively affect bats by exposing them or their prey to toxic substances. Hazardous materials used during construction or maintenance may include diesel fuel, gasoline, hydraulic fluids, oils, lubricants, etc. Chemical pollutants can reduce diversity of prey items, as less tolerant species are lost, and overall macroinvertebrate abundance may be negatively affected depending on pollutant levels and frequency of application. The negative impacts of sedimentation on aquatic insect larvae are well-documented. In a literature review, Henley et. al (2000) summarized how stream sedimentation impacts these communities. Sediment suspended in the water column affects aquatic insect food sources by physically removing periphyton from substrate and reducing light available for primary production of phytoplankton. Sediment that settles out of the water column onto the substrate fills interstitial spaces occupied by certain aquatic insect larvae, displacing that biota. Increases in sedimentation can also change the composition of the insect community in a stream, reducing diversity and possibly reducing the prey base for foraging bats. While project activities, notably

the placement of causeway fill material in the Pigeon River, any excavation of river materials (for ensuring proper hydraulic capacity – not for "dredging", which will not occur), and use of heavy equipment adjacent to and in the river, are expected to temporarily reduce water quality within the action area, the impacts are not expected to result in take of the covered species. This determination is based on the implementation of sediment and erosion control measures, the temporary nature of the impacts, the alternative availability of foraging habitat within the free-flowing portion of the Pigeon River within the action area, and the availability of alternative foraging habitat provided by tributaries to the Pigeon River directly outside of the action area.

<u>Indirect Impacts</u> – 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 culverts or trees (when considering Indiana bat, northern long-eared bat, and tricolored bat) within the action areas as roost sites prior to 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 given that altered culverts will provide suitable roosting features and alternative forested habitat is available throughout the adjacent landscape.

Operational Effects

Because this project is limited to the replacement of damaged or destroyed sections of roadway, 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 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.

This interstate roadway repair is not expected to induce land development or substantially change the function of the roadway from its pre-TS Helene status. Any potential effects are anticipated to be localized and consistent with baseline land use patterns. The WNC landscape surrounding and outside of the action area is experiencing increased levels of private or non-federal work-associated impacts from TS Helene response, such as waterway recovery, downed timber removal, and rebuilding. Such actions are above normal background levels and may disrupt listed and proposed bats throughout the region.

6. Conclusion and Jeopardy Determination for Gray Bat, Indiana Bat, Northern Long-eared Bat, and Tricolored Bat

After reviewing the status of gray bat, Indiana bat, northern long-eared bat, and tricolored bat, the environmental baseline for the action area, the effects analyses and cumulative effects, the Service's biological and conference opinions are shared below.

It is the Service's biological and conference opinion that the proposed actions are not likely to jeopardize the continued existence of gray bat, Indiana bat, northern long-eared bat, or tricolored bat. This opinion is based on the following factors: This action area, including the borrow sites, comprises only a small amount of active season habitat within the recovery units and overall ranges of these species. No changes

in the long-term viability of gray bat, Indiana bat, northern long-eared bat, or tricolored bat are expected given the low percentage of each species' range that will be impacted by project actions. That is, of the 187 acres (0.3 square mile) of clearing and road corridor impacts, that equates to less than 0.0001% impact on each species' range, meaning only a miniscule percentage of those overall populations may be affected. Tree clearing, culvert modification, percussive and blasting activities, and increased illumination of the river gorge are likely to negatively affect gray bat, Indiana bat, northern long-eared bat, and tricolored bat within the action area, but the incorporated conservation measures are expected to reduce and offset some 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(0)(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 Gray Bat, Northern Long-eared Bat, and Tricolored Bat

The Service anticipates incidental take of the Indiana bat, northern long-eared bat, and tricolored bat may occur as a result of the tree clearing; and take of gray bat, Indiana bat, northern long-eared bat, and tricolored bat may occur as a result of culvert work, construction/operational lighting, and noise/blasting associated with the subject project. Specifically, take of Indiana, northern long-eared, and tricolored bats may occur as a result of flushing, wounding, or direct mortality during tree clearing activities during sensitive seasonal periods; or, take may occur for those species and gray bat as a result of illuminated habitat resulting in reduced fitness; or as a result of the modification/replacement of or blasting within close proximity to suitable culvert roosts during sensitive seasonal periods, which may similarly result in flushing, wounding, or direct mortality during culvert and borrow work 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 or harassment and not directly observable. Given this, the 1) maximum estimated tree clearing (except for gray bat) and 2) number of culverts replaced/modified/impacted by close-proximity blasting, are used as surrogate measures of take for this Opinion.

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

- 1. Tree clearing amount exceeds 187 acres.
- 2. Any more than 16 culverts [with dimensions suitable for bat roosting per NCDOT SOP] are

modified, replaced, or impacted by nearby blasting.

3. Project construction extends beyond the 3-year projected timeline, that is, beyond March 15 2028.

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, Indiana bat, northern long-eared bat, and tricolored bat is expected to be in the form of harm, harassment, wounding, or death.

7.2 Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measure(s) are necessary and appropriate to minimize take of gray bat, Indiana bat, northern long-eared bat, and tricolored bat. These non-discretionary measures reduce the level of take associated with project activities.

- 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 area to only the area necessary for the safe and successful implementation of the proposed actions.
- 3. NCDOT shall monitor and document the surrogate measures of take and report those to the Service. Any observed covered bat species, regardless of condition, shall be included in monitoring and documentation.

7.3 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 for the listed bats. If this conference opinion for tricolored bat is adopted as a biological opinion following a listing or critical habitat designation, these terms and conditions would be non-discretionary for tricolored bat.

- 1. NCDOT shall adhere to all measures as listed in the 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. The NCDOT will submit location information, acreage, anticipated clearing acreage, and visual figures/maps of the chosen borrow locations once known.
- 4. 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 NCDOT 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 the following for the preceding calendar year ending December 31:
 - i. Acreage and dates of tree removal.
 - ii. Dates of culvert modification/replacement/or impacts from close-proximity blasting (if any).
 - iii. Dates of night work during which associated lighting illuminated the Pigeon River Gorge.

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.

- **Replanting**: Once construction activities are complete within portions of the action area, including the road corridor and borrow sites, incorporate native herbaceous, shrub, and tree species for replanting. For the road corridor, using containerized fast-growing tree species will help to shield the river gorge from headlight illumination as the trees mature. Utilizing native vegetation can help to stabilize the soil and provide ecological value to wildlife in the area.
- **Implement NCWRC Recommendations**: Letters submitted from the NCWRC on January 6, 2025 and February 3, 2025 provided several recommendations that should be incorporated into project work. Notably, we encourage NCDOT to adhere to NCWRC's recommendations to:
 - Include a river channel restoration plan in the I-40 repair design.
 - Incorporate the list addressing stream channel work following storms.
 - Incorporate the list addressing wildlife connectivity.

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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Appendix A – Figures





























Archaeology & **Historic** Architecture

2020 PROGRAMMATIC AGREEMENT ARCHAEOLOGY TEAM "NO ARCHAEOLOGICAL SURVEY REQUIRED" FORM 1 of 14



24-12-0019



NO ARCHAEOLOGICAL SURVEY REQUIRED FORM

This form only pertains to ARCHAEOLOGICAL RESOURCES for this project. It is not valid for Historic Architecture and Landscapes. You must consult separately with the Historic Architecture and Landscapes Team.

PROJECT INFORMATION

Project No:	I-40/Pigeon River Recovery	County:	Haywood
WBS No:	18314.1044057	Document:	Federal CE
Federal Aid No:	Not Known	Funding:	State State
Federal Permit Red	quired? 🛛 Yes 🗌 No	Permit Type:	FHWA and USACE

Project Description:

The project calls for repairs along I-40 in Haywood County, which was damaged during Hurricane Helene. The archaeological Area of Potential Effects (APE) for the project is defined as a 6.66 mile (10.72 km) long corridor on I-40 running east from the Tennessee state line to Exit 7 (Bridge 57 over Cold Spring Road and Creek in Haywood County). The APE width varies from approximately 300 feet (91.44 m) to 1,100 feet (335.28 m) wide extending from the edge of right-of-way on the northside of the road to the southern bank of the Pigeon River. Only a proposed waste site, located one mile southeast of the state line, extends past the southern bank. This area measures approximately 250 feet (76.20 m) east-west from the river and 660 feet (201.17 m) north-south. Overall, there are at least four potential waste sites within the APE on the North Caolina section. Those sections of the project area in Tennessee including another proposed waste sites are not covered by this PA and will need to be reviewed by agencies in Tennessee. The APE within North Carolina encompasses approximately 313 acres.

This project is federally funded. As a result, this archaeological review was conducted in accordance with Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance (36 CFR Part 800).

SUMMARY OF CULTURAL RESOURCES REVIEW

Brief description of review activities, results of review, and conclusions:

The I-40/Pigeon River Recovery project is located in Haywood County, North Carolina, at the Tennessee state line and plotted in the southern half of the Waterville and northern half of the Cove Creek Gap USGS 7.5' topographic quadrangles (Figure 1). The project includes US Forest Service properties.

A site file search was conducted using data from the Office of State Archaeology (OSA) on December 30, 2024. No sites are reported within the project's APE, but 45 known sites (31HW230, 31HW253–31HW265, 31HW268, 31HW411–31HW415, 31HW420, 31HW429, 31HW465, 31HW467, 31HW470, 31HW471, 31HW493–31HW495, 31HW592, 31HW594–31HW602, 31HW605, 31HW613, 31HW615, 31HW623, 31HW654, and 31HW655) in North Carolina are within a mile. Known sites in Tennessee were not included in this review. According to the North Carolina State Historic Preservation Office (SHPO) online database (HPOWEB 2024), the APE falls along the edge of the determined eligible Waterville Historic District (HW0524) and the Walters Dam and Hydroelectric Plant (HW0628) at the northern end. Contributing and intact archaeological deposits to these two resources will not be encountered by the project as they are outside of the archaeological limits. Topographic maps, USDA soil survey maps, aerial photographs (NC One Map), historic maps (North Carolina maps website), Google Street View application, and damage inspection photos were further examined for information on environmental and cultural variables that may have contributed to precontact or historic settlement within the project limits and to assess the level of ground disturbance.



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The I-40/Pigeon River Recovery project run roughly northwest to southeast along the base of hillside slopes on the northside of the Pigeon River (Figures 2a–f). The river flows northwest and is a tributary to the French Broad River. The APE is almost entirely disturbed consisting of fill material from the construction of I-40. This material comes from the adjacent cut and/or blasted hillside. The few areas not made of fill are steeply sloped hillsides such as at a tunnel and a potential waste site south of the river about a mile from the state line (see Figures 2b, d, and e). A review of historic aerial photographs prior to the construction of I-40 show an improved road following an alignment similar to I-40. The properties have often been subjected to clear cut activities and the slopes appear to extend to the Pigeon River. In photographs from the 1970s after the construction of I-40, exposed rock from blasting and hillside cutting is visible. Intact and significant archaeological resources are not expected due to severe ground disturbance.

The USDA soil survey map for Haywood County identifies most of the project area as belonging to the Udorthents-Urban land complex (5) and Urban land (Ur) (USDA NRCS 2024). These are disturbed soils in which the natural characteristics have been altered by earth moving activities. Archaeological surveys are not usually required for these soils due to disturbance. Also found to a lesser extent on the hillsides are the Brassown-Junaluska complex (BaD), the Rock outcrop-Cataska complex (RgF), the Soco-Cataska-Rock outcrop complex (SmF), and the Soco-Stecosh complex (SoF). While well drained, these soil types have a slope of 15 percent or more. Subsurface testing is not usually required on these soil types since intact archaeological deposits are unlikely to be found.

A review of the archaeological site files shows that site density is high with 45 known sites being reported in the vicinity. However, these sites are in areas of minimal disturbance well away from I-40 and the impact its construction has had. The sites are situated mostly on ridge tops and finger ridges, while a smaller number are located along terraces. Based upon the disturbed landforms within the current project area, no sites are expected to be present. Furthermore, a portion of the project area was also previously reviewed for the replacement of Bridge No. 57 over Cold Spring Creek and Road (PA 19-04-0018; Jones 2019) at the southerm end of the APE in 2019. The project included one of the four potential waste sites known as the Cotton Patch (see Figure 2f). A field inspection was carried out on May 21, 2019, as part of the review and confirmed that the project area is covered in fill material and/or steeply sloped with no usual features such as rock shelters observed.

A map review also failed to provide any significant historical information. Most early maps prior to the 20th century show few details concerning the project area. The 1893 USGS Mt Guyot topographic map is one of the first to display a reliable location for the project (Figure 3). This map depicts no roads running parallel with the Pigeon River and no structures in the area. The later 1925 *Soil Map for Haywood County* provides the same picture (Jurney et al. 1925) (Figure 4). However, the 1935 Newport and the1936 USGS Cove Creek Gap map illustrates a road or trial along the alignment of I-40. It also depicts the Big Bend School at a potential waste site location in an area known as the Cotton Patch near the southern end (Figure 5). The school was in operation for three years and closed in 1937 due to funding (Waynesville Mountaineer 1937). It was built under the Emergency Relief Administration (ERA) for North Carolina from material removed from a lumber company office building (Kirk et al. 1936:177) (Figure 6). The ERA report states:

The Big Bend community is made up of twelve families marooned in an inaccessible part of the county. To reach this community, it is necessary to walk twelve miles after going as far as possible in a car. Not even a mule can go up the trail. Since the trestle of the old lumber railroad washed out the pedestrian has to let himself down from rock to rock by hanging on to roots and shrubs until he reaches the stream, then cross by rocks, if the stream is low, and pull himself up the other side by roots and shrubs. This is the only way ERA case workers could reach these families.

There is no other school within a radius of nine miles and this building is the first school in this section in eighteen or twenty years. There is now a full time school teacher and approximately twenty-five children in attendance at the school.

The school building was likely salvaged as by 1941 it is no longer depicted on any map. No evidence of former structures was observed during the field inspection of the Cotton Patch in 2019. Finally, I-40 appears on various maps during the 1960s. Although the school was established as a high priority for the community, it did not function for long due to a lack of resources. It along with any other possible early 20th century structures are typically for the time period and will not provide any new information towards the region's history. It is not likely from this review that any significant historic resources are present

Brief Explanation of why the available information provides a reliable basis for reasonably predicting that there are no unidentified historic properties in the APE:

The defined archaeological APE for the I-40/Pigeon River Recovery project in Haywood County will not impact intact and significant archaeological resources. This is due to previous disturbance caused during the construction of I-40 with cut/blasted slopes and the deposition of fill. Those few areas with minimal disturbance are steeply slope will not yield significant deposits. As long as repair work occurs within the defined APE, no further archaeological investigations are recommended. If repairs affect undisturbed subsurface areas beyond the defined APE, further archaeological consultation will be necessary.

This project falls within North Carolina Counties in which the Catawba Nation, the Eastern Band of Cherokee Indians, the Cherokee Nation, the United Keetoowah Band of Cherokee Indians, and Muscogee (Creek) Nation have expressed an interest. We recommend that you ensure that this documentation is forwarded to these tribes using the process described in the current NCDOT Tribal Protocol and PA Procedures Manual.

In addition, the project contains property belonging to the US Forest Service. Their review of the PA document is required.

SUPPORT DOCUMENTATION

See attached:	Ma
	Other:

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Previous Survey Info Photos

Correspondence

FINDING BY NCDOT ARCHAEOLOGIST: <u>NO ARCHAEOLOGY SURVEY REQUIRED</u>

C. Damon Jones NCDOT ARCHAEOLOGIST II January 3, 2025

Date

REFERENCES CITED

Jones, C. Damon

2019 No Archaeological Survey Required, PA# 19-04-0018, Haywood County. In *Annual Report for Programmatic Agreement for Minor Transportation Projects for the Review Year* 2018-2019, Archaeology, Multi County. North Carolina Department of Transportation, Raleigh. Submitted to North Carolina Department of Natural and Cultural Resources, State Historic Preservation Office, Raleigh.

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1925 Soil Map for Haywood County, North Carolina. U.S. Department of Agriculture, Government Printing Office, Washington D.C. On file at North Carolina Collections, University of North Carolina, Chapel Hill.

HPOWEB

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United States Geological Survey (USGS)

- 1893 Mt Guyot, Tennessee-North Carolina 30 minute quadrangle map. Reprinted in 1906.
- 1935 Newport, Tennessee-North Carolina 7.5 minute planimetric map.
- 1936 Cove Creek Gap, North Carolina 7.5 minute planimetric map.
- 2016a Cove Creek Gap, North Carolina 7.5 minute quadrangle map.
- 2016b Waterville, Tennessee-North Carolina 7.5 minute quadrangle map.

Waynesville Mountaineer

1937 County Makes Net Gain of 3 Teachers for Coming Term. Fifty-Third Year, No. 26, Waynesville, NC. Thursday, July 8, 1937.



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Figure 1. Topographic Setting of the Project Area, Waterville (2016b), TN-NC and Cove Creek Gap (2016a) NC USGS 7'5 Topographic Quadrangles.



Figure 2a. Aerial photograph of the APE starting at the Tennessee state line showing contours.



Figure 2b. Aerial photograph of the APE showing contours and one of the potential waste sites.



Figure 2c. Aerial photograph of the APE showing contours.



Figure 2d. Aerial photograph of the APE showing contours and one of the potential waste sites and the tunnel location.



Figure 2e. Aerial photograph of the APE showing contours and two of the potential waste sites and the tunnel location.



Figure 2f. Aerial photograph of the APE at the southern end showing contours and one of the potential waste sites (Cotton Patch).

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Figure 3. The 1893 USGS Mt Guyot topographic map showing the location of the project area.



Figure 4. The 1925 Soil Map for Haywood County showing the location of the project area.



Figure 5. The 1935 Newport and 1936 Cove Creek Gap USGS planimetric maps showing the location of the project area.

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Figure 6. Big Bend Schoolhouse from the 1936 from *Emergency Relief in North Carolina* report.

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HISTORIC ARCHICTECTURE AND LANDSCAPES **EFFECTS REQUIRED FORM**

This form only pertains to Historic Architecture and Landscapes for this project. It is not valid for Archaeological Resources. You must consult separately with the Archaeology Group.

PROJECT INFORMATION

Project No:	No TIP	County:	Haywood
WBS No.:	49082.2.14	Document Type:	CE
Fed. Aid No:	To Be Assigned	Funding:	State Federal
Federal Permit(s):	Yes No	Permit Type(s):	USACE

Project Description:

In response to the aftermath of Hurricane Helene, NCDOT's Division 14 proposes to repair/restore I-40 along the Pigeon River Gorge near the NC/TN state line. The project is approximately 4.5 miles of interstate with travel lanes that have been destroyed, damaged, or compromised by flooding. Repair, temporary roadway shoring, and permanent road reconstruction are required throughout the project's length. Geotechnical investigations are underway to determine the height and extent of retaining walls needed between the river and I-40 from east of the double tunnels downstream to Snowbird Creek, and possibly to the state line.

No formal design was available at the time of this review; therefore the Area of Potential Effects (APE) width was created to allow flexibility to study a range of potential, successful roadway solutions. The width is 1000 feet which allows 500 feet to either side of the recent centerline and includes Pigeon River in areas.

SUMMARY OF HISTORIC ARCHICTECTURE AND LANDSCAPES REVIEW Description of review activities, results, and conclusions:

An NCDOT architectural historian reviewed the known historic properties in proximity to the APE using HPOWeb, Haywood County GIS, and survey site files from the HPO Western Office. The intent was to "flag" specific properties that should be avoided or will require plan review with NCDOT and HPO to determine if they will have an effect on the property. The three (3) known historic properties are listed below and marked on the HPOWeb maps included in this form.

- 1. HW0268 Walters Dam and Hydroelectric Plant and associated tunnels (Determined Eligible 1990)
- 2. HW0524 Waterville Historic District (Determined Eligible, 2000)
- 3. NC0007 Appalachian Trail (Determined Eligible, 2009)

It is recommended to coordinate with the National Park Service's superintendent of the Appalachian National Scenic Trail and the Appalachian Trail Conservancy with regard to potential viewshed impacts to the trail.

SUPPORT DOCUMENTATION

Map(s) Previous Survey Info. Photos Correspondence Design Plans FINDING BY NCDOT ARCHITECTURAL HISTORIAN

Historic Architecture and Landscapes -- **EFFECTS REQUIRED**

Mary Pope Furr

NCDOT Architectural Historian

Date

- .

1/6/2025



Known Historic Resources- source HPOWeb