

**ADDENDUM TO THE OCTOBER 2019 BIOLOGICAL ASSESSMENT
AN ASSESSMENT OF POTENTIAL EFFECTS TO ADDITIONAL FEDERALLY
LISTED SPECIES**

For

**I-26 Connector
I-40 to US 19/23/70 North of Asheville
Buncombe County, Asheville, North Carolina**

**Federal Aid Project No. MA-NHF-26-1(53)
WBS No. 34165.1.1
S.T.I.P. No. I-2513**



**Federal Highway Administration
and
North Carolina Department of Transportation**

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Appendix A. Protected Bat Species Structure Survey Report (2019 I-2513 Biological Assessment)

1.0 INTRODUCTION

The following is an addendum to the I-2513 Biological Assessment (BA) dated October 2019. This document serves to describe the environmental baseline, analysis of effects, and effects determinations for two additional federally listed bat species, northern long-eared bat (*Myotis septentrionalis*, MYSE) and Indiana bat (*Myotis sodalis*, MYSO); as well as a species proposed for federal listing, the tricolored bat (*Perimyotis subflavus*, PESU) and an At-Risk Species (ARS) little brown bat (*Myotis lucifugus*, MYLU).

The U.S. Fish and Wildlife Service (USFWS) previously evaluated the effects of I-2513 on gray bat (*Myotis grisescens*, MYGR) in a Biological Opinion (BO) issued in 2020 (Log Number 02-252). The previous consultation also considered Northern long-eared bat (*Myotis septentrionalis*, MYSE) but as take was exempted via the 4(d) rule, NCDOT did not make an effect determination. Since the BO was issued, the following listing actions have taken place:

On March 22, 2022, the USFWS announced a proposal to reclassify MYSE as endangered under the Endangered Species Act. The rule reclassifying the northern long-eared bat from threatened to endangered was published in the *Federal Register* Nov. 30, 2022; the reclassification became effective on March 31, 2023. At the time of the original BA, NCDOT determined that the proposed action was consistent with the final Section 4(d) rule for MYSE, codified at 50 C.F.R. § 17.40(o) and effective February 16, 2016. NCDOT considered Section 7 responsibilities fulfilled for MYSE. The reclassification removed the current 4(d) rule as these special rules only apply to threatened species. Given the reclassification of MYSE as Federally endangered, NCDOT is reinitiating consultation to address impacts to this species.

On September 13, 2022, the USFWS announced a proposal to list the tricolored bat (*Perimyotis subflavus* - PESU) as endangered under the Endangered Species Act. The species, currently an at-risk species (ARS), is now facing extinction due to the impacts of white-nose syndrome. ARS are not legally protected under the Act and are not subject to any of its provisions, including Section 7, unless they are formally proposed or listed as endangered or threatened. Given the proposal to list PESU as Federally endangered, NCDOT is reinitiating consultation to address impacts to this species.

In April 2023, USFWS published the latest update to its National Listing Workplan (Workplan). This document projects the anticipated timeline for the agency's listing-related decisions over the next five years (2023-2027). The Workplan indicates that the USFWS plans to issue proposed listing determinations for MYLU in 2024. Given the plan to list MYLU, NCDOT is reinitiating consultation to address impacts to this species.

MYSO was not known to occur in the action area at the time of the October 2019 BA submission and is currently not listed in USFWS' Information for Planning and Consultation (IPaC) website as a species that will be potentially affected by activities in this location. However, USFWS – Asheville Ecological Services Field Office has cited recent acoustic data (unvetted) collected during monitoring in the action area they believe indicates a potential for this species to be present.

Though acoustic data can be unreliable in distinguishing the calls of MYSE and MYSO from other Myotis species (particularly when the data has not been manually vetted by a qualified specialist), NCDOT considers it prudent to assume presence of these species in action area and reinitiating consultation to address impacts to this species.

NCDOT anticipates that the listing actions described above will occur prior to completion of the project. Therefore, this document requests reinitiation of Section 7 consultation to evaluate the projects impacts on MYSE, MYSO, PESU and MYLU.

2.0 ENVIRONMENTAL BASELINE

MYSE, MYSO, MYLU and PESU are assumed to be present within some portion of the action area and the potential project-related effects to these species are considered as the focus of this supplemental Biological Assessment.

Surveys of structures have been conducted to identify evidence of bat use. A survey history from the BA (July 2017-August 2018) is available in Appendix A. A summary of the structure surveys in the action area that have been conducted and or submitted to NCDOT after the original BA was completed are summarized below in Table 1 (NCDOT 2022a, NCDOT 2022b). No evidence of bat use was found on any of the bridges. The culvert at Hill Street and Riverside Drive near the French Broad River and the culvert that carries Smith Mill Creek under Patton Avenue are the only culverts where bats or evidence of bats was noted.

Table 1. Survey history of bridges in the I-2513 Action Area obtained after original BA submittal

Structure Number	Type (Culvert/Bridge)	Description	Survey date(s)	Results	Survey Reason
100334	Bridge	Hominy Creek and I-40 Bifurcated EBL	6/26/2019	No evidence	ISU*
100339	Bridge	Hominy Creek and I-40 Bifurcated WBL	6/26/2019	No evidence	ISU
100352	Bridge	FBR and I-40 EBL	6/27/2019	No evidence	ISU
None	Culvert	UT FBR and I-26 (near Burnsville Hill Rd.)	5/30/2019	No evidence	A-0010 Action Area overlap
100302	Bridge	Lookout Rd and I-26 WBL	5/27/2019	No evidence	A-0010 Action Area overlap
100303	Bridge	Lookout Rd and I-26 EBL	5/27/2019, 6/18/2019, 5/15/2020	No evidence	A-0010 Action Area overlap & ISU
100314	Bridge	Burnsville Hill Rd and I-26 WBL	5/27/2019, 6/18/2019	No evidence	A-0010 Action Area overlap & ISU
100316	Bridge	Burnsville Hill Rd and I-26 EBL	5/27/2019	No evidence	A-0010 Action Area overlap

Structure Number	Type (Culvert/Bridge)	Description	Survey date(s)	Results	Survey Reason
100774	Culvert	Reed Creek and Broadway/ NC 251	6/1/2018, 5/27/2019	No evidence	ISU & A-0010 Action Area overlap
100284	Bridge	Reed Creek Broadway and I-26 WBL	5/27/2019	No evidence	A-0010 Action Area overlap
100289	Bridge	Reed Creek Broadway and I-26 EBL	5/27/2019	No evidence	A-0010 Action Area overlap
100278	Bridge	FBR and SR1348/Pearson Bridge Rd.	7/13/2019	No evidence	ISU
100769	Culvert	Smith Mill Creek and US19/23/Patton Ave	6/1/2019	5 MYGR	ISU, NCDOT BSG survey
None	Culvert	UT FBR and Hill St. at Southern States	6/1/2018, 8/28/2019, 3/9/2021, 2/24/2022, 9/22/2022	1-35 MYGR, except the 2/24/2022 survey-no bats	ISU, WRC winter culvert blitz, NCDOT BSG guano research
100771	Culvert	Ragsdale Creek and US19/23	6/1/2018	No evidence	ISU
100297	Culvert	Ragsdale Creek and I-40	6/1/2018	No evidence	ISU
100066	Bridge	Hominy Creek and I-240E	4/14/2019	No evidence	ISU
100182	Bridge	S. Bear Creek Rd. and I-240	6/25/2018	No evidence	ISU
100194	Bridge	NC191/Brevard Rd and I-40	7/8/2019	No evidence	ISU
100206	Bridge	Hominy Creek and I-240 EBL	7/8/2019	No evidence	ISU
100208	Bridge	Hominy Creek and I-240 WBL	7/8/2019	No evidence	ISU
None	Bridge	Hominy Creek pedestrian walkway and I-240 WBL	7/8/2019	No evidence	ISU
100242	Bridge	NC191/Brevard Rd and I-240	6/27/2019	No evidence	ISU
100248	Bridge	Amboy Rd. ramp and I-240	6/25/2018, 5/15/2020	No evidence	ISU
100253	Bridge	I-240 ramp and I-26	7/14/2018, 6/26/2019	No evidence	ISU
100273	Bridge	I-240/I-40 ramp and I-26 WBL Smokey Park	6/26/2019	No evidence	ISU

Structure Number	Type (Culvert/Bridge)	Description	Survey date(s)	Results	Survey Reason
100051	Bridge	Hominy Creek and Pond Rd. SR 3431	7/8/2019	No Evidence	ISU
100521	Bridge	FBR and Amboy Rd (just outside Action Area)	7/8/2019	No Evidence	ISU

*ISU – Indiana State University, contracted by NCDOT to conduct research on gray bats in the French Broad River Basin as part of conservation measures for area NCDOT roadway projects.

Northern long-eared bat

No caves or mines, which could be used for roosting or foraging are present in the Action Area. Forested habitat, which could be used for roosting or foraging, is present in the Action Area, and the species is assumed to be present. MYSE are also known to roost in NCDOT bridges (NCDOT, 2022a). With the exception of one bridge, all records are associated with a water crossing. There are no records in North Carolina of MYSE roosting in culverts (NCDOT 2022b). According to the North Carolina Natural Heritage Program (NHP) Biotics Database and the NCDOT Bat Structure Survey Databases, most recently updated in April 2023 and February 2023 (respectively), the closest known roosting occurrence of MYSE is in a cave site approximately 16.75 miles southeast of the project site. The closest foraging occurrence of MYSE is a 2022 mist net location 12 miles southeast of the project site.

Reliable numbers of MYSE in the Action Area are not available. There are approximately 171 occurrences of the northern long-eared bat in western NC based on NCNHP element occurrence records, 19 of which are considered historical; most observations are from mist-netting efforts, as well as individuals roosting in caves. The number of bats found at each occurrence range from 1 to over 80 bats (note that some sites have multiple data collection events). According to NHP data (April 2023), evidence of MYSE reproduction in western NC, including capture/tracking of pregnant or lactating bats, or discovery of maternity trees, has been found in 11 western NC counties, however, not in Buncombe County. There have been 22 documented MYSE hibernacula in western NC, all in caves or mines. However, there are not any known MYSE hibernacula in Buncombe County, in fact, MYSE have not been observed using hibernacula in North Carolina since 2014 (NCWRC email comm. November 17, 2022).

Recent acoustic data (unvetted) collected during monitoring in the action area has indicated there is potential for MYSE to be present. Though acoustic data can be unreliable in distinguishing the calls of MYSE from other Myotis species (particularly when the data has not been manually vetted by a qualified specialist), NCDOT considers it prudent to assume presence of these species in action area and receive a USFWS incidental take statement. While no reliable evidence has been found of MYSE in the Action Area, because available habitat exists and up to date presence/absence surveys were not able to be conducted within the acceptable survey window, the species is assumed to be present within the Action Area.

Indiana bat

No caves or mines, which could be used for roosting or foraging are present in the Action Area. Forested habitat, which could be used for roosting or foraging, is present in the Action Area, and the species is assumed to be present. While Indiana bat are not particularly well known for their behavior to roost in structures, NCDOT does have several records of Indiana bats roosting in bridges (NCDOT, 2022a). All bridges are associated with a water crossing. There are no records in North Carolina of Indiana bats roosting in culverts (NCDOT 2022b).

It is difficult to estimate population numbers for MYSO in the Action Area as no known active hibernacula are present in western NC and summer maternity colonies are widely dispersed, with most locations unknown (USFWS 2019). There are 20 element occurrences of the Indiana bat in western NC based on NC Natural Heritage Program (NCNHP) records (April 2023), five of which are considered historical; most are of tree-roosting individuals or from mist-netting. The closest roosting occurrence of MYSO is a 2021 bridge survey location 25 miles west of the project site. Summer maternity colonies are difficult to locate and not widely known, especially in the southernmost portion of the Indiana bat's range. However, Britzke et al. (2003) found a maternity colony in the Nantahala National Forest, though researchers were unable to re-locate it in subsequent years. This colony was the first documented in western NC and at the highest recorded elevation. No other maternity colonies have been reliably documented in western NC since. The closest active hibernaculum to NC is found in the Tennessee portion of the Great Smoky Mountains National Park (GSMP), **outside the state of North Carolina**; its most recent population estimate was 736 bats (USFWS 2019).

Recent acoustic data (unvetted) collected during monitoring in the action area has indicated there is potential for MYSO to be present. Though acoustic data can be unreliable in distinguishing the calls of MYSO from other Myotis species (particularly when the data has not been manually vetted by a qualified specialist), NCDOT considers it prudent to assume presence of these species in action area and receive a USFWS incidental take statement. While no reliable evidence has been found of MYSO in the Action Area, because available habitat exists and up to date presence/absence surveys were not able to be conducted within the acceptable survey window, the species is assumed to be present within the Action Area.

Tricolored bat

No caves or mines, which could be used for roosting or foraging are present in the Action Area. Forested habitat, which could be used for roosting or foraging, is present in the Action Area, and the species is assumed to be present. PESU are also known to roost in NCDOT structures, both bridges (NCDOT, 2022a) and culverts (NCDOT, 2022b). All records are associated with a water crossing. According to the North Carolina Natural Heritage Program (NHP) Biotics Database and the NCDOT Bat Structure Survey Databases, most recently updated in April 2023 and February 2023 (respectively), the closest known roosting occurrence of PESU is in a bridge site approximately 3 miles south of the project site. The closest foraging occurrence of PESU is a 2015 mist net location 6 miles southwest of the project site.

Reliable numbers of tricolored bats in the Action Area are not available. There are 163 element occurrences of the tricolored bat in western NC based on NCNHP records, 7 of which are considered historical; most observations are from mist-netting, as well as cave and bridge roosting individuals. The number of bats found at each occurrence range from 1 to 70 bats (note that some sites have multiple data collection events). Maternity and other summer roosts probably are mainly in dead or live tree foliage (Carter and Menzel 2007, Poissant et al. 2010). Maternity colonies also may utilize human-made structures (buildings, bridges, e.g., Ferrara and Leberg 2005) or tree cavities. PESU bats are present in western NC during pupping season and are reproducing, but no maternity colonies have been confirmed. There have been 79 PESU hibernacula documented in western NC, including caves (50), mines (22), root cellars (4), and culverts (3). However, there are not any known PESU hibernacula in Buncombe County (WRC email comm. November 17, 2022).

While no evidence has been found of PESU in the Action Area, because available habitat exists and up to date presence/absence surveys were not able to be conducted within the acceptable survey window, the species is assumed to be present within the Action Area.

Little brown bat

No caves or mines, which could be used for roosting or foraging are present in the Action Area. Forested habitat, which could be used for roosting or foraging, is present in the Action Area, and the species is assumed to be present. MYLU are known to roost in bridge structures (NCDOT 2022a). All records are associated with a water crossing, with the exception of one bridge. There are no records in North Carolina of little brown bats roosting in culverts (NCDOT 2022b). According to the North Carolina Natural Heritage Program (NHP) Biotics Database and the NCDOT Bat Structure Survey Databases, most recently updated in April 2023 and February 2023 (respectively), the closest known roosting occurrence of MYLU is in a barn site approximately 9 miles north of the project site. The closest foraging occurrence of MYLU is a 2011 mist net location 6 miles southwest of the project site.

Reliable numbers of little brown bats in the Action Area are not available. There are 136 element occurrences of the little brown bat in western NC based on NCNHP records, 10 of which are considered historical; most observations are from mist-netting, as well as from bats roosting in small caves and in bridges and other human-made structures. The number of bats found at each occurrence range from 1 to 350 bats. Maternity colonies of little brown bats have been found in 11 western NC counties including Buncombe County. Six maternity colonies were found under NCDOT bridges while others were found in buildings, artificial roosts, and caves. MYLU hibernacula (caves/mines) have been found in 9 NC counties, however, there are not any known MYLU hibernacula in Buncombe County (WRC email comm. November 17, 2022).

While no evidence has been found of MYLU in the Action Area, because available habitat exists and up to date presence/absence surveys were not able to be conducted within the acceptable survey window, the species is assumed to be present within the Action Area.

3.0 CONSERVATION MEASURES

NCDOT and the USFWS developed conservation measures in the 2019 I-2513 BA for MYGR to minimize and avoid impacts from construction activities. Because the effects of the action on these other bat species are similar to those for MYGR, the conservation measures outlined in the previous consultation will be protective of them as well. Conservation Measures and Avoidance and Minimization Measures (Sec 7, pages 98-107) in the October 2019 BA and the subsequent BO (Sec 203 pages 29-41), dated June 2020, that pertained only to MYGR are hereby amended to apply to all listed bat species covered under this supplemental BA (MYSE, MYSO, PESU, and MYLU). For brevity, these measures will not be reproduced in this document. The following Avoidance and Minimization Measures (AMM) and Conservation Measures will be applied in addition to the measures in the October 2019 BA and June 2020 BO:

Lighting:

Smokey Park Highway Interchange:

- AMM: Lighting at Ragsdale Creek will not change from baseline condition, all lighting is existing, the project should result in no changes to the amount of light reaching Ragsdale Creek.
- Conservation Measure: With the exception of the new ramp along Smokey Park Highway, all new low level and high mast lighting installed by NCDOT for I-2513 A, B, C and D will be 3000K color temperature.

I-26/I-40 Interchange Ramp East of Sand Hill Road:

- Conservation Measure: The lighting fixtures installed here will be 3000K. The existing lighting from this interchange to Smokey Park Highway is 4000K. This interchange is the demarcation point between the 3000K fixtures installed as part of the I-2513 projects and the existing lighting to the west that is not being replaced.
- AMM: NCDOT has explored options near Trent Branch to reduce the lighting impact on the waterway, including the possible elimination of a proposed fifth high mast pole. Existing conditions above and below the 6'x9' culvert include four high mast poles at this interchange. All high mast poles to the west of Trent Creek were removed, as well as the last high mast pole before the matchline with plan sheet E5 (four total removed). Because of the number of high mast poles removed from the prior design, NCDOT added new single arm poles (or left existing single arm poles in service) to the west of Trench Branch to adequately light the roadway while still avoiding casting light on Trench Branch.

I-26/I-40 Interchange North of Pond Road

- AMM: Lighting adjacent to Hominy Creek will decrease from existing condition. The existing lighting here is 400-watt high pressure sodium (HPS) with dropped glass lenses. These lamps typically produce 50,000 lumens of light each. The LED fixtures that will be replacing the HPS fixtures will produce less than 35,000 lumens. Additionally, LED fixtures have directional optics rather than a dropped glass lens. The directional optics allow the light to be directed towards the road rather than light being scattered in all directions by the dropped glass lens.

Tree Clearing:

I-26/I-40 Interchange North of Pond Road

- AMM: The wooded buffer along Hominy Creek between the existing right of way and Hominy Creek will remain intact. Two locations will have stone rip rap installed at the outlets of two pipes (-RPD- Sta. 23+25.27). Some trees may be affected to create an entrance point for the rip rap installation, however, the clearing for the two rip rap installations will be temporary and vegetation will return. These two locations are adjacent to a maintained clearing for overhead electric transmission lines. An additional two areas involve clearing within the existing right of way to install ditches. The wooded area between the existing right of way and Hominy Creek will remain unaffected.

Structure Surveys:

- Conservation Measure: NCDOT will survey bridges and culverts that meet the criteria detailed in the Standard Operating Procedures: NCDOT Preliminary Bat Habitat Assessments (Structures, Caves, and Mines) (NCDOT 2015), within 2 years of construction for each phase of the project. This measure applies to structures that are proposed for modification or replacement.

Bat Conservation Funding:

- Conservation Measure: NCDOT will provide \$500,000 for measures consistent with the recovery objectives outlined in each species recovery plan. This is a funding increase from the original BA/BO (from \$350,000 to \$500,000).

Roost Panel Monitoring:

- Conservation Measure: The Pratt-Whitney roost panel placed on the Biltmore Farms bridge over the French Broad River will be included in NCDOT's monitoring plan of the Modern Bat Modular Roost Panels as described in the Terms and Conditions outlined in the 2020 BO.

NCDOT Culvert Study:

- Conservation Measure: NCDOT initiated a data gathering effort in Fall 2021 to determine if the roosting habitat needs of bats included NCDOT transportation structures such as culverts. If use is determined, the study sought to determine at what frequency, what size culverts bats are using and what material type. Year 1 has been completed as a random sample of all culvert types and sizes. The sample was stratified statewide and across seasons to develop a broadly dispersed sample both geographically and across different culvert characteristics. The study will continue into a second year incorporating feedback from USFWS, North Carolina Wildlife Resources Commission and consulting statisticians.

4.0 EFFECTS ANALYSIS

Effects to MYGR from lighting, noise, vibration, water quality changes and induced land development were evaluated as part of the original 2019 BA. A complete effects analysis for MYGR is available in the referenced BA. NCDOT anticipates that effects to MYSE, MYSO, MYLU and PESU are similar as those presented for MYGR for lighting, noise, vibration, water quality changes and induced land development and thus does not provide any additional effect analyses here for those activities. However, the effects due to removal of woody vegetation could impact MYSE, MYSO, MYLU and PESU differently than MYGR. Therefore, additional details are included here. The original BA for this project discusses MYGR tree roosting as a seasonally driven, brief activity along riparian corridors. MYGR are not known to utilize trees for reproduction. However, because MYSE, MYSO, MYLU and PESU are tree roosting species and no presence/absence surveys have been conducted for these species, they are assumed present in the action area. These are known tree roosting species and as such, could be roosting in trees at unknown locations in the project footprint throughout the active season and potentially reproducing in them. Based on the most circuitous alternative and widest slope stakes, the total limits of tree clearing were estimated at 211 acres for the entire project. Actual tree-clearing will be much less in total as design plans are developed and refined.

Tree-clearing activities will take place at various times throughout the year, both when bats are minimally active (October 16 – March 31) and during the tree-roosting bat active season (April 1 – October 15). Trees removed during the active timeframe may be occupied by bats when they are removed. The resulting forested habitat loss may be permanent. The loss of this habitat may create a gap in forested habitat between larger blocks of forested habitat within the Action Area and potential foraging corridors.

NCDOT has determined that tree removal may result in the following sub-stressors for the tree roosting bats:

- Removal of summer habitat, active timeframe
- Removal of summer habitat, inactive timeframe
- Loss and fragmentation of forested habitats

Removal of Summer Habitat (Active Timeframe)

Risk of injury or death from being crushed when a tree is felled is the most likely impact of this stressor. This risk is greater during cooler weather when bats periodically enter torpor and are unable to arouse quickly enough to respond (i.e., flush and potentially avoid being in the roost when it is felled) and during the pupping season (May 15 – August 15) when pups are non-volant.

In addition to the expenditure of additional energy to find new roost trees, the removal of primary or alternate maternity roosts can lead to the fragmentation or break up of the maternity colony.

Removal of Summer Habitat (Inactive Timeframe)

Forested habitat loss or alteration during the hibernation season (i.e., while the bats are not present) harms tree roosting bats by requiring the increased use of energy to respond to the habitat loss or alteration when returning to summer habitats. This is likely to impair essential behavior patterns

associated with sheltering (roosting), breeding and/or feeding (foraging). This impairment, in turn, results in reduced survival and/or reproduction of the affected individuals. These effects are compounded in the Action Area because most of the returning bats are coming from hibernacula infected with white-nose syndrome (WNS). Individuals surviving WNS have additional energetic demands. For example, WNS-affected bats have fewer fat reserves than non-WNS-affected bats when they emerge from hibernation (Reeder et al. 2012; Warnecke et al. 2012) and have wing damage (Reichard and Kunz 2009, Meteyer et al. 2009) that makes migration and foraging more challenging. Females that survive the migration to their summer habitat must partition energy resources between foraging, keeping warm, maintaining a successful pregnancy, rearing pups, and healing their own bodies.

Loss and Fragmentation of Forested Habitats

While tree roosting bats often like to forage along forest edge habitats, commuting across or foraging in large, open areas (not over water) are likely not preferred in order to avoid predators. Tree removal will create larger gaps in habitat that bats may be using for foraging and commuting habitat. The gap would make access to these areas more difficult, requiring more energy expenditure and/or exposure to predators, or would cut off access to habitat altogether. Individual bats that use the Action Area in the summer after habitat removal are expected to be indirectly harmed.

5.0 EFFECT DETERMINATIONS

As presented in Table 2, NCDOT has made the following determinations of effect for federally listed and proposed species under the ESA for I-2513.

Table 2. Effects Determinations for Federally Species Listed in the I-2513 Action Area

Common Name	Scientific Name	Status	Habitat Present	Biological Conclusion
Gray bat	<i>Myotis grisescens</i>	Endangered	Yes	MALAA*
Northern long-eared bat	<i>Myotis septentrionalis</i>	Endangered	Yes	MALAA
Indiana bat	<i>Myotis sodalis</i>	Endangered	Yes	MALAA
Tricolored bat	<i>Perimyotis subflaus</i>	Proposed Endangered	Yes	MALAA
Little brown bat	<i>Myotis lucifugus</i>	ARS	Yes	MALAA

ARS – At Risk Species

MALAA – May Affect, Likely to Adversely Affect

*Refer to October 2019 BA for the effects determination for MYGR

5.1 May Affect, Likely to Adversely Affect Determinations for Listed Species

Northern long-eared bat

No caves or mines, which could be used for roosting or foraging are present in the Action Area. There are not any known MYSE hibernacula in Buncombe County (NCWRC email comm. November 17, 2022). Therefore, no effects to MYSE winter roosting habitat are anticipated.

Forested habitat, which could be used for roosting or foraging, is present in the Action Area, and the species is assumed to be present. MYSE are also known to roost in NCDOT bridges (NCDOT, 2022a). There are no records in North Carolina of MYSE roosting in culverts (NCDOT 2022b). According to the North Carolina Natural Heritage Program (NHP) Biotics Database and the NCDOT Bat Structure Survey Databases, most recently updated in April 2023 and February 2023 (respectively), the closest known roosting occurrence of MYSE is in a cave site approximately 16.75 miles southeast of the project site. The closest foraging occurrence of MYSE is a 2022 mist net location 12 miles southeast of the project site.

While no evidence has been found of MYSE roosting within the bridges in the Action Area, because up to date surveys were not able to be conducted during the accepted survey window, the species is assumed to be present within the Action Area due to available habitat. Therefore, the I-2513 project work may affect the ability of individual MYSE to roost in a preferred location. Direct mortality could occur if they are roosting in a bridge during the replacement or modification work which may trap or harm listed bat species if they are present and non-volant. However, this potential is low, given no evidence of bats has been observed during previous survey work.

MYSE may be affected by project tree clearing work from April 1 – October 15 when they are assumed present in the Action Area. Trees removed during the active timeframe may be occupied by bats when they are removed. Risk of injury or death from being crushed when a tree is felled is the most likely impact. This risk is greater during cooler weather when bats periodically enter torpor and are unable to arouse quickly enough to respond (i.e., flush and potentially avoid being in the roost when it is felled) and during the pupping season (May 15 – August 15) when pups are non-volant. Although MYSE roost tree surveys were not conducted for this project, it is highly unlikely that a forest interior species such as MYSE would choose to roost in trees within this wooded area, or in any wooded areas immediately adjacent to the interstate due to elevated levels of disturbance caused by light and noise from passing vehicles.

The potential exists that the addition of temporary lighting could directly affect commuting and foraging bats that may be present in the area by avoiding lit areas, causing them to use other areas, possibly impacting individual bat fitness due to longer flight distances or threats from predation or vehicle traffic in new routes. However, these potential effects from listed bats choosing alternate commuting areas due to additional temporary lighting are expected to be insignificant due to the abundance of alternative forested area that is available in the surrounding landscape.

Listed bat species may experience indirect effects to their roosting behavior in the form of habitat loss during tree clearing or within the cracks and joints of the existing bridges. If bats were potentially using adjacent trees or the bridges as roosting habitat, there would be an indirect loss due to tree clearing, bridge modification or replacement work. However, this potential is low, given no evidence of bats has been observed during previous survey work. In addition, these potential effects from listed bats choosing alternate roosting areas are expected to be insignificant due to the abundance of alternative roosts available in the surrounding landscape.

Construction effects are anticipated to last several years. The same population of bats will experience stressors associated with other nearby highway and bridge construction projects. The combination of stressors is expected to cause long term effects to the MYSE population in western NC. The proposed action “**May Affect, Likely to Adversely Affect**” MYSE. Incorporation of conservation measures into the project will offset some of those effects (Section 3.0).

Indiana bat

MYSO was not known to occur in the action area at the time of the October 2019 BA submission and is currently not listed in USFWS’ Information for Planning and Consultation (IPaC) website as a species that will be potentially affected by activities in this location. However, USFWS – Asheville Ecological Services Field Office has cited recent acoustic data (unvetted) collected during monitoring in the action area they believe indicates a potential for this species to be present. Though acoustic data can be unreliable in distinguishing the calls of MYSE and MYSO from other Myotis species (particularly when the data has not been manually vetted by a qualified specialist), NCDOT considers it prudent to assume presence of these species in action area and to address impacts to this species.

No caves or mines, which could be used for roosting or foraging are present in the Action Area. There are not any known MYSO hibernacula in Buncombe County. The closest active hibernaculum to NC is found in the Tennessee portion of the Great Smoky Mountains National Park (GSMP), **outside the state of North Carolina** (NCWRC email comm. November 17, 2022). Therefore, no effects to MYSE winter roosting habitat are anticipated.

Forested habitat, which could be used for roosting or foraging, is present in the Action Area, and the species is assumed to be present. MYSO are also known to roost in NCDOT bridges (NCDOT, 2022a). There are no records in North Carolina of MYSO roosting in culverts (NCDOT 2022b). According to the North Carolina Natural Heritage Program (NHP) Biotics Database and the NCDOT Bat Structure Survey Databases, most recently updated in April 2023 and February 2023 (respectively), the closest roosting occurrence of MYSO is from a 2021 bridge survey location 25 miles west of the project site. While no evidence has been found of MYSO roosting within the bridges in the Action Area, because up to date surveys were not able to be conducted during the accepted survey window, the species is assumed to be present within the Action Area due to available habitat. Therefore, the I-2513 project work may affect the ability of individual MYSO to roost in a preferred location. Direct mortality could occur if they are roosting in a bridge during the replacement or modification work which may trap or harm listed bat species if they are present and non-volant. However, this potential is low, given no evidence of bats has been observed during previous survey work.

MYSO may be affected by project tree clearing work from April 1 – October 15 when they are assumed present in the Action Area. Trees removed during the active timeframe may be occupied by bats when they are removed. Risk of injury or death from being crushed when a tree is felled is the most likely impact. This risk is greater during cooler weather when bats periodically enter torpor and are unable to arouse quickly enough to respond (i.e., flush and potentially avoid being in the roost when it is felled) and during the pupping season (May 15 – August 15) when pups are

non-volant. Although MYSO roost tree surveys were not conducted for this project, summer MYSO maternity colonies are difficult to locate and not widely known, especially in the southernmost portion of the Indiana bat's range. However, Britzke et al. (2003) found a maternity colony in the Nantahala National Forest, though researchers were unable to re-locate it in subsequent years. This colony was the first documented in western NC and at the highest recorded elevation. No other maternity colonies have been reliably documented in western NC since. Therefore, effects to potential MYSO roost trees due to tree clearing are expected to be insignificant.

The potential exists that the addition of temporary lighting could directly affect commuting and foraging bats that may be present in the area by avoiding lit areas, causing them to use other areas, possibly impacting individual bat fitness due to longer flight distances or threats from predation or vehicle traffic in new routes. However, these potential effects from listed bats choosing alternate commuting areas due to additional temporary lighting are expected to be insignificant due to the abundance of alternative forested area that is available in the surrounding landscape.

Listed bat species may experience indirect effects to their roosting behavior in the form of habitat loss during tree clearing or within the cracks and joints of the existing bridges. If bats were potentially using adjacent trees or the bridges as roosting habitat, there would be an indirect loss due to tree clearing, bridge modification or replacement work. However, this potential is low, given no evidence of bats has been observed during previous survey work. In addition, these potential effects from listed bats choosing alternate roosting areas are expected to be insignificant due to the abundance of alternative roosts available in the surrounding landscape.

Construction effects are anticipated to last several years. The same population of bats will experience stressors associated with other nearby highway and bridge construction projects. The combination of stressors is expected to cause long term effects to the MYSO population in western NC. The proposed action “**May Affect, Likely to Adversely Affect**” MYSO. Incorporation of conservation measures into the project will offset some of those effects (Section 3.0).

5.2 Effect Determinations for Proposed and At-Risk Species

On September 13, 2022, the USFWS announced a proposal to list the PESU as “Endangered” under the Endangered Species Act. Given the proposal to list PESU as Federally endangered, NCDOT is seeking a conference consultation to address impacts to this species.

Tricolored bat

No caves or mines, which could be used for roosting or foraging are present in the Action Area. There are not any known PESU hibernacula in Buncombe County (NCWRC email comm. November 17, 2022). Therefore, no effects to PESU winter roosting habitat are anticipated.

Forested habitat, which could be used for roosting or foraging, is present in the Action Area, and the species is assumed to be present. PESU are also known to roost in NCDOT bridges (NCDOT, 2022a) and culverts (NCDOT 2022b). According to the North Carolina Natural Heritage Program (NHP) Biotics Database and the NCDOT Bat Structure Survey Databases, most recently updated

in April 2023 and February 2023 (respectively), the closest known roosting occurrence of PESU is in a bridge site approximately 3 miles south of the project site. The closest foraging occurrence of PESU is a 2015 mist net location 6 miles southwest of the project site.

While no evidence has been found of PESU roosting within the bridges in the Action Area, because up to date surveys were not able to be conducted during the accepted survey window, the species is assumed to be present within the Action Area due to available habitat. Therefore, the I-2513 project work may affect the ability of individual PESU to roost in a preferred location. Direct mortality could occur if they are roosting in a bridge during the replacement or modification work which may trap or harm listed bat species if they are present and non-volant. However, this potential is low, given no evidence of bats has been observed during previous survey work.

PESU may be affected by project tree clearing work from April 1 – October 15 when they are assumed present in the Action Area. Trees removed during the active timeframe may be occupied by bats when they are removed. Risk of injury or death from being crushed when a tree is felled is the most likely impact. This risk is greater during cooler weather when bats periodically enter torpor and are unable to arouse quickly enough to respond (i.e., flush and potentially avoid being in the roost when it is felled) and during the pupping season (May 15 – August 15) when pups are non-volant.

The potential exists that the addition of temporary lighting could directly affect commuting and foraging bats that may be present in the area by avoiding lit areas, causing them to use other areas, possibly impacting individual bat fitness due to longer flight distances or threats from predation or vehicle traffic in new routes. However, these potential effects from listed bats choosing alternate commuting areas due to additional temporary lighting are expected to be insignificant due to the abundance of alternative forested area that is available in the surrounding landscape.

Listed bat species may experience indirect effects to their roosting behavior in the form of habitat loss during tree clearing or within the cracks and joints of the existing bridges. If bats were potentially using adjacent trees or the bridges as roosting habitat, there would be an indirect loss due to tree clearing, bridge modification or replacement work. However, this potential is low, given no evidence of bats has been observed during previous survey work. In addition, these potential effects from listed bats choosing alternate roosting areas are expected to be insignificant due to the abundance of alternative roosts available in the surrounding landscape.

Construction effects are anticipated to last several years. The same population of bats will experience stressors associated with other nearby highway and bridge construction projects. The combination of stressors is expected to cause long term effects to the PESU population in western NC. The proposed action **“May Affect, Likely to Adversely Affect”** PESU. Incorporation of conservation measures into the project will offset some of those effects (Section 3.0).

Little Brown Bat

No caves or mines, which could be used for roosting or foraging are present in the Action Area. There are not any known MYLU hibernacula in Buncombe County (NCWRC email comm. November 17, 2022). Therefore, no effects to MYLU winter roosting habitat are anticipated.

Forested habitat, which could be used for roosting or foraging, is present in the Action Area, and the species is assumed to be present. MYLU are also known to roost in NCDOT bridges (NCDOT, 2022a). There are no records in North Carolina of MYLU roosting in culverts (NCDOT 2022b). According to the North Carolina Natural Heritage Program (NHP) Biotics Database and the NCDOT Bat Structure Survey Databases, most recently updated in April 2023 and February 2023 (respectively), the closest known roosting occurrence of MYLU is in a barn site approximately 9 miles north of the project site. The closest foraging occurrence of MYLU is from a 2011 mist net location 6 miles southwest of the project site.

While no evidence has been found of MYLU roosting within the bridges in the Action Area, because up to date surveys were not able to be conducted during the accepted survey window, the species is assumed to be present within the Action Area due to available habitat. Therefore, the I-2513 project work may affect the ability of individual MYLU to roost in a preferred location. Direct mortality could occur if they are roosting in a bridge during the replacement or modification work which may trap or harm listed bat species if they are present and non-volant. However, this potential is low, given no evidence of bats has been observed during previous survey work.

MYLU may be affected by project tree clearing work from April 1 – October 15 when they are assumed present in the Action Area. Trees removed during the active timeframe may be occupied by bats when they are removed. Risk of injury or death from being crushed when a tree is felled is the most likely impact. This risk is greater during cooler weather when bats periodically enter torpor and are unable to arouse quickly enough to respond (i.e., flush and potentially avoid being in the roost when it is felled) and during the pupping season (May 15 – August 15) when pups are non-volant.

The potential exists that the addition of temporary lighting could directly affect commuting and foraging bats that may be present in the area by avoiding lit areas, causing them to use other areas, possibly impacting individual bat fitness due to longer flight distances or threats from predation or vehicle traffic in new routes. However, these potential effects from listed bats choosing alternate commuting areas due to additional temporary lighting are expected to be insignificant due to the abundance of alternative forested area that is available in the surrounding landscape.

Listed bat species may experience indirect effects to their roosting behavior in the form of habitat loss during tree clearing or within the cracks and joints of the existing bridges. If bats were potentially using adjacent trees or the bridges as roosting habitat, there would be an indirect loss due to tree clearing, bridge modification or replacement work. However, this potential is low, given no evidence of bats has been observed during previous survey work. In addition, these potential effects from listed bats choosing alternate roosting areas are expected to be insignificant due to the abundance of alternative roosts available in the surrounding landscape.

Construction effects are anticipated to last several years. The same population of bats will experience stressors associated with other nearby highway and bridge construction projects. The combination of stressors is expected to cause long term effects to the MYLU population in western NC. The proposed action “**May Affect, Likely to Adversely Affect**” MYLU. Incorporation of conservation measures into the project will offset some of those effects (Section 3.0).

5.3 *Effect Determination for Critical Habitat*

No designated Critical Habitat or proposed Critical Habitat for any federally listed species currently exists within the project action area.

6.0 REFERENCES

- Britzke, E.R., M.J. Harvey, and S.C. Loeb. 2003. Indiana bat, *Myotis sodalis*, maternity roosts in the southern United States. *Southeastern Naturalist* 2(2): 235-242.
- California Department of Transportation (CalTrans). 2016. Technical Guidance for the Assessment and Mitigation of the Effects of Traffic Noise and Road Construction Noise on Bats. July. (Contract43A0306.) Sacramento, CA. Available: <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/noise-effects-on-bats-jul2016-a11y.pdf>
- Carter, T. C., and J. M. Menzel. 2007. Behavior and day-roosting ecology of North American foliage-roosting bats. Pages 61-81 in M. J. Lacki et al., editors. *Bats in forests*. Johns Hopkins University Press, Baltimore.
- Ferrara, F. J., and P. L. Leberg. 2005. Characteristics of positions selected by day-roosting bats under bridges in Louisiana. *Journal of Mammalogy* 86:729-735.
- Meteyer, C.U., E.L. Buckles, D.S. Blehert, A.C. Hicks, D.E. Green, V. Shearn-Bochsler, N.J. Thomas, A. Gargas, and M.J. Behr. 2009. Histopathologic criteria to confirm white-nose syndrome in bats. *Journal of Veterinary Diagnostic Investigation* 21:411-414.
- North Carolina Department of Transportation (NCDOT). 2015. Standard Operating Procedures: NCDOT Preliminary Bat Habitat Assessments (Structures, Caves, and Mines). Version March 2023 Available: <https://connect.ncdot.gov/resources/Environmental/EAU/BSG/Documents/Bats/NCDOT%20SOP%202023%20Prelim%20Bat%20Habitat%20Assessment%20Struc%20Cave%20Mine.pdf>
- North Carolina Department of Transportation (NCDOT). 2019. STIP Project I-2513 Biological Assessment, I-26 Connector I-40 to US 19/23/70 North of Asheville Buncombe County, Asheville, North Carolina. 140 pp.

- North Carolina Department of Transportation (NCDOT). 2022a. Combined Bridge Inspection Database. Accessed July 19, 2023. Last updated February 2023.
- North Carolina Department of Transportation (NCDOT). 2022b. Combined Culvert Inspection Database. Accessed July 19, 2023. Last updated February 2023.
- Poissant, J. A., H. G. Broders, and G. M. Quinn. 2010. Use of lichen as a roosting substrate by *Perimyotis subflavus*, the tricolored bat, in Nova Scotia. *Ecoscience* 17:372-378.
- Reeder, D.M., C.L. Frank, G.R. Turner, C.U. Meteyer, A. Kurta, E.R. Britzke, M.E. Vodzak, S.R. Darling, C.W. Stihler, A.C. Hicks, R. Jacob, L.E. Grieneisen, S.A. Borwnlee, L.K. Muller, and D.S. Blehert. 2012. Frequent arousal from hibernation linked to severity of infection and mortality in bats with white-nose syndrome. *PLoS ONE* 7:e38920.
- Reichard, J.D. and T.H. Kunz. 2009. White-nose syndrome inflicts lasting injuries to the wings of little brown myotis (*Myotis lucifugus*). *Acta Chiropterologica*, 11(2):457-464.
- USFWS. 2019. Indiana Bat (*Myotis sodalis*) 5 Year Review: Summary and Evaluation. Indiana Ecological Services Field Office, Bloomington, IN.
- USFWS. 2021. Species Status Assessment Report for the Tricolored Bat (*Perimyotis subflavus*), Version 1.1. Hadley, MA.
- USFWS. 2022. Species Status Assessment Report for the Northern long-eared bat (*Myotis septentrionalis*), Version 1.1. Midwest Regional Office, Bloomington, MN.
- Warnecke, L., J.M. Turner, T.K. Bollinger, J.M. Lorch, V. Misra, P.M. Cryan, G. Wibbelt, D.S. Blehert, and C.K.R. Willis. 2012. Inoculation of bats with European *Geomyces destructans* supports the novel pathogen hypothesis for the origin of white-nose syndrome. *PNAS* 109(18):6999-7003.
- Weber, J., Joy O’Keefe, Brianne Walters, Francis Tillman, and Christopher Nicolay. 2020. Distribution, Roosting and Foraging Ecology, and Migration Pathways for Gray Bats in Western North Carolina. NCDOT Project 2018-36. FHWA/NC/2018-36, October 2020.

Appendix A.

Protected Bat Species Structure Survey Report History
(completed as part of the 2019 I-2513 BA)

Table 1. Bridge Survey Results

CALYX ID	NCDOT Structure Number	Facility on Structure	Feature Under Structure	Date Surveyed	Emergence Survey	Comment
B1	100171	Brevard Rd/NC 191	I-26	5/31/2018	Y	<i>Quercus</i> sp. snag. No bats emerged 7/25/2018
B2	N/A	Private Road	Hominy Creek	9/7/2017	N	
B3	100235 (WBL) 100238 (EBL)	I-26	Hominy Creek	5/31/2018	N	
B4	100051	Pond Rd/SR 3431	Hominy Creek	5/31/2018	N	
B5	100295	Monte Vista Rd/SR 1224	I-40	8/22/2017	Y	<i>Juglans nigra</i> or <i>Carya</i> sp. snag. No bats emerged 7/25/2018
B6	100301	I-40	Smokey Park Hwy/US23/US74A	8/22/2017	N	
B7	100313	I-40	Railroad	8/22/2017	N	
B8	100326	I-40	Sand Hill Rd/SR 3412	8/22/2017	N	
B9	100253	I-26	I-40	8/24/2017	N	
B10	100254	US 74	I-26 /I-40	8/24/2017	N	
B11	100273	I-26	I-40	9/7/2017	N	
B12	100334	I-40	Hominy Creek	9/7/2017	N	
B13	100285	I-26	I-40	9/7/2017	N	
B14	100283	I-26	I-40	9/7/2017	N	
B15	100339	I-40	Hominy Creek	9/7/2017	N	
B16^	100052	E Oakview Rd	Hominy Creek	9/7/2017, 5/31/2018	N	
B17	100194	Brevard Rd/NC 191	I-40	9/7/2017	N	
B18	100037 (WBL) 100344 (EBL)	I-40	Hominy Creek	9/7/2017	N	
B19*	100356 (WBL) 100352 (EBL)	I-40	French Broad River	9/16/2017	N	Checked on foot and with lift truck. Approximately 30 cliff swallow nests; lots of pigeon droppings.
B20	100070 (WBL) 100066 (EBL)	I-26/I-240	Hominy Creek	9/7/2017	Y	<i>Platanus occidentalis</i> snag. Emergence survey on 7/26/2018, saw one bat possibly emerge from tree. Survey repeated on 8/8/2018. Again, one bat possibly emerged from snag. Anabat SD2 recorded bat calls during time of emergence. No calls consistent with any <i>Myotis</i> species.
B21	100182	S Bear Creek Rd/SR 3413	I-26/I-240	9/7/2017	N	
B22	100845	Brevard Rd/NC 191	Hominy Creek	8/11/2017	Y	<i>Platanus occidentalis</i> snag. No bats emerged 7/18/18.
B23	100208 (WBL) 100206 (EBL)	I-26/I-240	Hominy Creek/Private Road	8/11/2017	Y	<i>Platanus occidentalis</i> snag. No bats emerged 7/18/18.
B24^	100216	Pedestrian Walkway	Hominy Creek	8/11/2017, 5/31/2018	Y	<i>Platanus occidentalis</i> snag. No bats emerged 7/18/18.
B25	100242	Brevard Rd/NC 191	I-26/I-240	8/23/2017	N	
B26	100521	Amboy Rd/SR 3556	I-26	8/23/2017	Y	Unidentified snags. No bats emerged 7/18/18.
B27^	N/A	Stewart St	I-26/I-240	8/23/2017, 7/4/2018	N	
B28	100274	State St	I-26/I-240	8/23/2017	N	
B29*	100336	Haywood Rd/US 19B/US 23B	I-26/I-240	8/23/2017	N	Checked on foot and with lift truck.
B30	100191	US 19/US 23	I-240	8/23/2017	N	
B31	100168	US 19/US 23/US 74A/Patton Ave	I-26/I-240	8/23/2017	N	
B32^	N/A	Sam's Club Entrance	Smith Mill Creek	8/11/2017, 7/4/2018	Y	Unidentified snag. No bats emerged 7/19/18.
B33	N/A	Private Road	Smith Mill Creek	8/11/2017	Y	<i>Robinia pseudoacacia</i> with dead branches and <i>Liriodendron tulipifera</i> snag. No bats emerged 7/17/18.
B34	N/A	Private Road	Smith Mill Creek	8/11/2017	Y	<i>Robinia pseudoacacia</i> with dead branches and <i>Liriodendron tulipifera</i> snag. No bats emerged 7/17/18.

CALYX ID	NCDOT Structure Number	Facility on Structure	Feature Under Structure	Date Surveyed	Emergence Survey	Comment
B35	N/A	Private Road	Smith Mill Creek	8/11/2017	Y	<i>Robinia pseudoacacia</i> with dead branches and <i>Liriodendron tulipifera</i> snag. No bats emerged 7/17/18.
B36	N/A	Private Road	Smith Mill Creek	7/28/2017	N	
B37	N/A	Southern Railroad	Smith Mill Creek	7/28/2017	N	
B38^	100726	Emma Rd/SR 1338	Smith Mill Creek	7/28/2017, 7/5/2018	N	
B39	100277	Southern Railroad	Smith Mill Creek, Emma Rd/SR 1338	7/28/2017	N	
B40^	100743	Craven St	French Broad River	8/11/2017, 6/1/2018	N	Metal (on south side of bridge) and concrete (on north side) guard rails (each side is different).
B41a	100322 (WBL)	I-240/I-26/Patton Ave	French Broad River	7/26/2017	N	Snags (<i>Platanus occidentalis</i> , <i>Juglans nigra</i> , <i>Acer negundo</i> , <i>Pinus</i> sp.) present but unsuitable habitat due to proximity to I-240, I-26, and urban development.
B41b	100323 (EBL)	I-240/I-26/Patton Ave	French Broad River	7/26/2017	N	Snags (<i>Platanus occidentalis</i> , <i>Juglans nigra</i> , <i>Acer negundo</i> , <i>Pinus</i> sp.) present but unsuitable habitat due to proximity to I-240, I-26, and urban development.
B42^	N/A	Southern Railroad	French Broad River	8/11/2017, 7/4/2018	N	
B43*	100278	Pearson Bridge Rd/SR 1348	French Broad River	9/17/2017	Y	Checked on foot and with lift truck. Unidentified snag. No bats emerged on 7/16/2018. Surface mine within 0.5 mi.
B44	100289 (EBL) 100284 (WBL)	I-26	Reed Creek/Broadway	7/28/2017	N	Surface mine within 0.5 mi.
B45	100281	I-26	Hill St	8/11/2017	N	
B46	100279	Atkinson St	I-26	8/11/2017	N	
B47	100001	US 70 Ramp to I-240	I-240/I-26	9/6/2017	N	
B48	100348	I-240	I-26	9/6/2017	N	
B49	100034	US 19 Ramp	I-240	9/6/2017	N	
B50	100077	Patton Ave	I-240	9/6/2017	N	
B51	N/A	Pedestrian Bridge	I-240	8/10/2017	N	
B52*	100705	Haywood Rd/SR 3548	French Broad River	9/17/2017	N	Checked on foot and with lift truck. 75+ cliff swallow nests.
B53*	100521	Amboy Rd/SR 3556	French Broad River	9/16/2017	N	Checked on foot and with lift truck. Lots of pigeon droppings. Approximately 30 cliff swallow nests.

^ bat-friendly bridge; checked in 2017 and 2018.

* Indicates bridge checked with hydra lift

Table 2. Culvert Survey Results

CALYX ID	NCDOT Structure Number	Facility on Structure	Feature Under Structure	Date Surveyed	Emergence Survey	Comments
C1	N/A	I-26	UT to Hominy Creek	7/17/2018	Y	Unidentified snags. No bats emerged on 7/24/2018 or 7/25/2018.
C2	100297	I-40	Ragsdale Creek	8/22/2017	N	
C3	100771	US-19/Smokey Park Hwy/US 23/US 74A	Ragsdale Creek	8/22/2017	N	
C4	100320	I-40	Ragsdale Creek	8/24/2017	N	
C5	N/A	Sand Hill Rd/SR 3412	Ragsdale Creek	8/24/2017	N	
C6	N/A	US 74/I-40	Trent Branch	8/24/2017	N	
C7	N/A	I-26/I-240	UT to French Broad River	8/24/2017	N	
C8	N/A	I-26/I-240	UT to French Broad River	8/23/2017	N	
C9	N/A	I-26/I-240	Moore Branch	8/23/2017	N	
C11	100769	US 19/US 23/US 74A/Patton Ave	Smith Mill Creek	8/23/2017	N	
C12	100774	NC 251/Broadway	Reed Creek	7/28/2017	N	Surface mine within 0.5 mi.
C13	N/A	US 19/23/Riverside Dr	UT to French Broad River	8/24/2017	Y	MYGR roosting in culvert; emergence surveys performed by USFWS and NCWRC documented over 200 bats on September 7, 2017.
C14	N/A	US 19/23/Riverside Dr	UT to French Broad River	8/24/2017	N	
C15	N/A	I-26/Riverside Dr	UT Reed Creek	8/22/2018	N	
C16	N/A	I-26	UT Hominy Creek	8/22/2018	N	