

## Freshwater Mussel Survey Report

Replace Bridge #142 on SR 2027 (Martins Creek Road) over Martin Creek

B-6016

Buncombe County, North Carolina



Prepared For:



NC Department of Transportation  
Raleigh, North Carolina

Contact Person:

**Jared Gray**

Biological Surveys Group-Environmental Analysis Unit  
North Carolina Department of Transportation

[jgray@ncdot.gov](mailto:jgray@ncdot.gov)

1598 Mail Service Center  
Raleigh, NC 27699-1598

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Prepared by:



1 Glenwood Avenue, Suite 600  
Raleigh, NC 27603

Contact Person:

**Chris Sheats**  
[csheats@sepiinc.com](mailto:csheats@sepiinc.com)  
919-417-2732

## Table of Contents

1.0	Introduction .....	1
2.0	Waters Impacted.....	1
2.1	303(d) Classification .....	1
2.2	NPDES Discharges.....	1
3.0	Target Federally Protected Species Description .....	2
3.1	<i>Alasmidonta raveneliana</i> (Appalachian Elktoe) .....	2
3.1.1	Species Characteristics.....	2
3.1.2	Distribution and Habitat Requirements.....	2
4.0	Survey Efforts.....	2
4.1	Methodology .....	2
5.0	Results.....	2
6.0	Discussion/Conclusions.....	3
7.0	Literature Cited .....	4

### Appendix A. Figures:

Figure 1: Project Vicinity & Survey Locations

Figure 2: NCNHP Element Occurrences

Figure 3: NPDES Discharges

## 1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge # 142 on SR 2027 (Martins Creek Road) over Martin Creek, a tributary to North Fork Ivy Creek, which flows to the French Broad River (Figure 1). The Appalachian Elktoe (*Alasmodonta raveneliana*) is listed as Endangered by the United States Fish and Wildlife Service (USFWS) under the Endangered Species Act, and critical habitat has been established. According to the USFWS Information for Planning and Consultation (IPaC) GIS planning tool (IPaC Access date: June 10, 2021), the Appalachian Elktoe is the only listed aquatic species that could be affected by the project. The Appalachian Elktoe is known to occur in the French Broad River, in Buncombe County.

According to the NC Natural Heritage Program database (NCNHP, Access date: June 3, 2021), the nearest Appalachian Elktoe element occurrence (EO)(ID # 21150) by water is in the mainstem French Broad River near Asheville, approximately 30 miles away from the project (Figure 2).

SEPI was contracted by the NCDOT Biological Surveys Group to conduct surveys targeting the Appalachian Elktoe as part of the federal permitting process that requires an evaluation of potential project-related impacts to federally protected species.

## 2.0 WATERS IMPACTED

Martin Creek is a tributary to North Fork Ivy Creek of the Upper French Broad River Basin (U.S. Geological Survey [USGS] Hydrological Unit Code (06010105).

### 2.1 303(d) Classification

The N.C. Department of Environmental Quality (NCDEQ) 2020 Final 303(d) list was reviewed to better understand water quality in the study area. There are no waters listed within or upstream of the project. The closest 303d listed waterbody is a portion of Ivy Creek beginning approximately two miles downstream near the confluence of Ivy Creek. This reach is listed for exceeding fecal coliform thresholds (NCDEQ, 2021a).

### 2.2 NPDES Discharges

There is no permitted discharge upstream of the project (NCDEQ, 2021b). The closest permitted discharge is the I-26 Woodyard Inc. (Permit # NCG210426), permitted for timber products stormwater discharge into California Creek, a tributary of Ivy Creek (Figure 3).

### **3.0 TARGET FEDERALLY PROTECTED SPECIES DESCRIPTION**

#### **3.1 *Alasmidonta raveneliana* (Appalachian Elktoe)**

##### *3.1.1 Species Characteristics*

The Appalachian Elktoe is oblong, somewhat kidney-shaped, moderately inflated, and thin-shelled. The anterior margin is sharply rounded, and the posterior margin is broadly rounded, coming to a rounded point close to the posterior ventral margin. The beaks are moderately full, rounded, and situated on the anterior third of the shell slightly above the hinge line. The periostracum varies from yellowish brown in younger individuals to dark brown or black in adults with faint, often interrupted green rays (Bogan, 2002).

##### *3.1.2 Distribution and Habitat Requirements*

The Appalachian Elktoe occurs in tributaries of the Tennessee River in east Tennessee and western North Carolina. In North Carolina, this species is found in the Nolichucky River, Little Tennessee River and the French Broad River Basin (Clarke, 1981). Individuals can be found in habitats composed of sand and gravel substrate among cobbles and boulders, usually in moderate current at depths of less than three feet.

### **4.0 SURVEY EFFORTS**

Field efforts were conducted by SEPI personnel Chris Sheats (Permit # 20-ES00558) and Tori Fowler. Surveys were conducted on May 20, 2021.

#### **4.1 Methodology**

Visual and tactile methods using bathiscopes were employed to complete the freshwater mussel survey. Habitat conditions were recorded throughout the survey area.

### **5.0 RESULTS**

Freshwater mussels, including the Appalachian Elktoe, were not observed during the survey efforts. Fish observed throughout include Blacknose Dace and Rosyside Dace. Crayfish were also observed throughout the survey. Martin Creek was 1-3 meters wide with minimum and maximum depths of 0.25 meters and 0.5 meters. Substrate was dominated by cobble and sand particles while gravel was the subdominant type. Riffle, run habitats were dominant with some pool habitats present. Water levels were normal, and visibility was clear during surveys. This site had 75% forest cover with wooded buffers and a surrounding natural, rural, and sub-urban land-use with a road corridor. Some portions of the riparian buffer were maintained grasses with no tree canopy over the stream.

## 6.0 DISCUSSION/CONCLUSIONS

The survey results indicate there are some physical habitat conditions and biological indicators that are associated with freshwater mussels, such as a sufficient flow regime, substrate size class diversity (i.e. silt, sand, gravel, and cobble), and the presence of fish and crayfish. Impacts from adjacent land use (i.e. disturbed narrow stream buffers), and a relatively steep stream gradient dominated by a riffle-run sequence may be limiting factors for freshwater mussel occupation within the survey reach. The survey efforts detailed in the report serve to update species information within Martin Creek.

**Recommended Biological Conclusion for Appalachian Elktoe:** May Affect Not Likely To Adversely Affect

Habitat for the species was observed but based on the distance to the nearest EO, and the results of the survey, the project may affect, but is not likely to adversely affect the Appalachian Elktoe.

**Recommended Biological Conclusion for Proposed Critical Habitat:** No Effect

Proposed critical habitat for Appalachian Elktoe is not identified in the study area, suggesting that the proposed project will have no effect on proposed critical habitat for this species.

## 7.0 LITERATURE CITED

Bogan, A.E. 2002. Workbook and key to the freshwater bivalves of North Carolina. North Carolina Freshwater Mussel Conservation Partnership, Raleigh, NC 101 pp, 10 color plates.

Clarke, A.H. 1981. The tribe Alasmidontini (Unionidae: Anodontinae), Part I. *Pegias*, *Alasmidonta*, and *Arcidens*. *Smithsonian Contributions to Zoology* No. 326. iii + 101 pp.

North Carolina Department of Environmental Quality (NCDEQ) - Division of Water Resources. 2021a. 2020 North Carolina 303(d) List Final. <https://deq.nc.gov/about/divisions/water-resources/planning/modeling-assessment/water-quality-data-assessment/integrated-report-files>

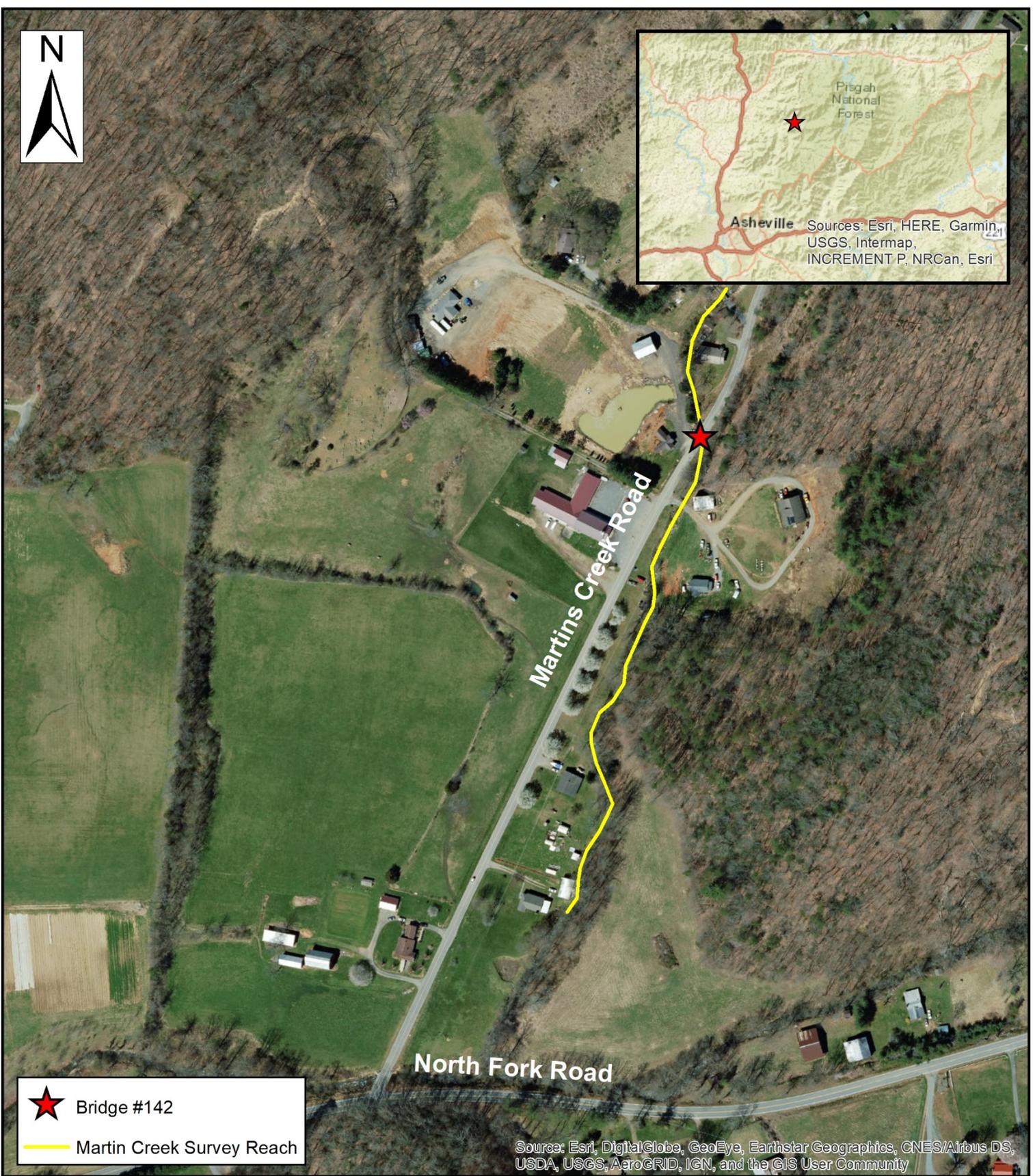
North Carolina Department of Environmental Quality. Online GIS NPDES Stormwater Permits. 2021b. (Accessed June 3, 2021). [https://data-ncdenr.opendata.arcgis.com/datasets/aec2efd41f844be499db8adef43f9fd3\\_0](https://data.ncdenr.opendata.arcgis.com/datasets/aec2efd41f844be499db8adef43f9fd3_0)

North Carolina Natural Heritage Program (NCNHP), 2021. Natural Heritage Element Occurrence. (Accessed June 3, 2021).

United States Fish and Wildlife Service, Information for Planning and Consultation (IPaC) <https://ecos.fws.gov/ipac/location/index> (Accessed June 10, 2021).

## **APPENDIX A**

Figures



 Bridge #142

 Martin Creek Survey Reach

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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**B-6016**  
**Replace Bridge # 142 over Martin Creek**  
**Vicinity Map and Survey Location**

Martins Creek Road (SR 2027) over Martin Creek  
Buncombe County, North Carolina

Created By:

VCF

Checked By:

CMS

Scale:

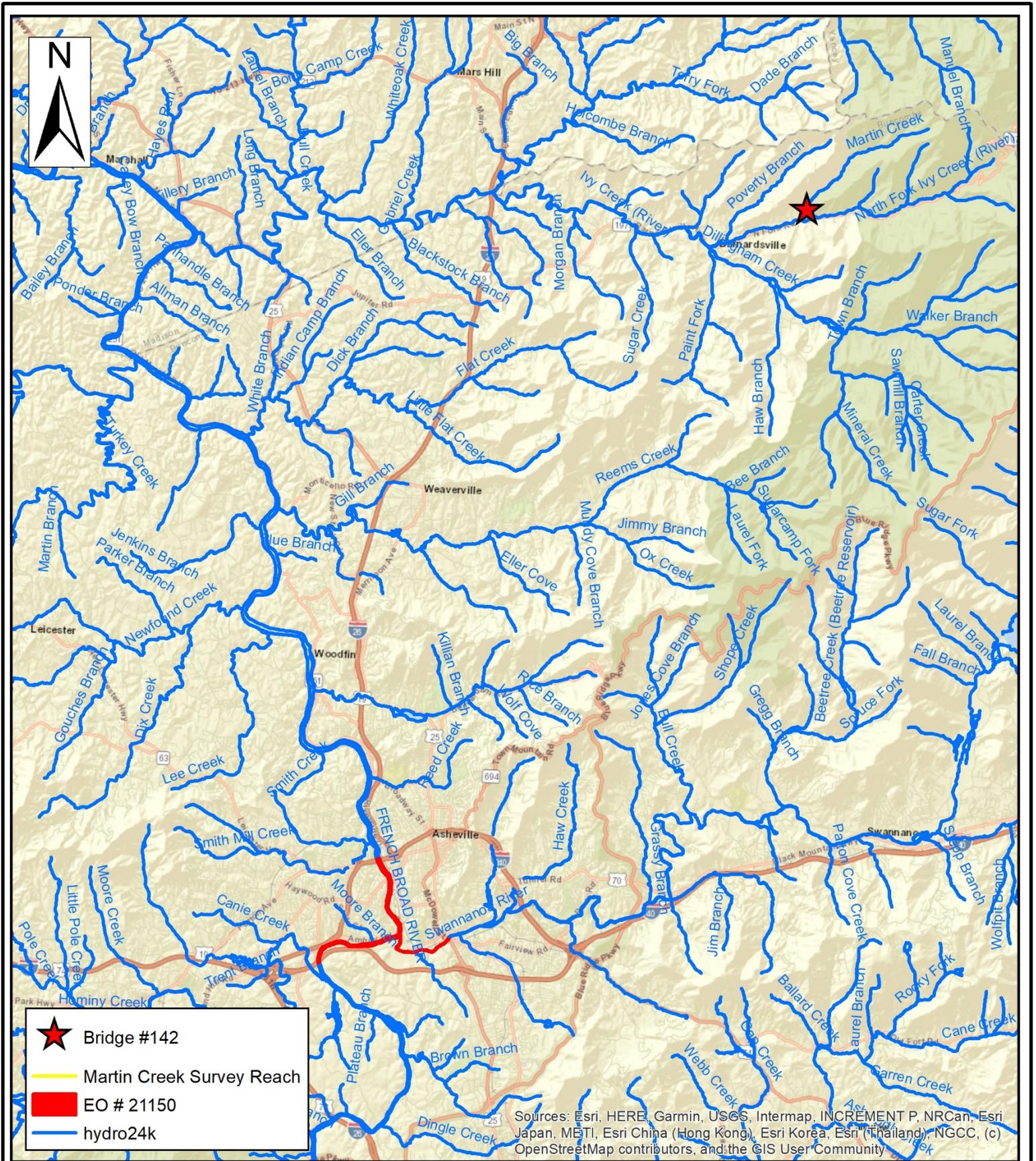
0 20 40  
Meters

Date:

August 2021

Figure

1



Prepared By:



Prepared For:



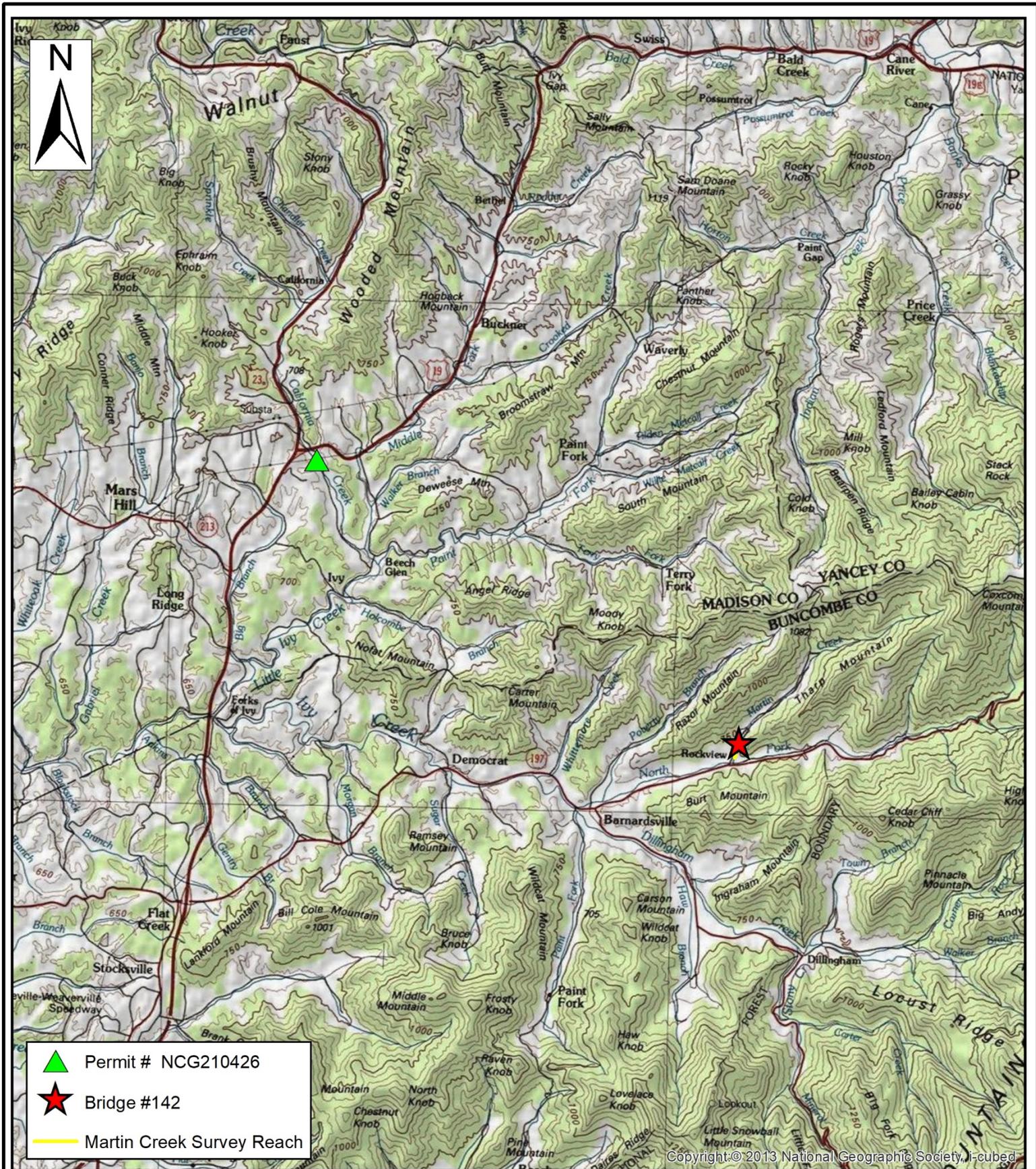
**B-6016**  
**Replace Bridge # 142 over Martin Creek**  
**NCNHP Element Occurrences**

Martins Creek Road (SR 2027) over Martin Creek  
 Buncombe County, North Carolina

Created By:	Checked By:
VCF	CMS
Scale:	
0 0.75 1.5 Miles	
Date:	
August 2021	

**Figure**

# 2



Prepared By:



Prepared For:



**B-6016**  
**Replace Bridge # 142 over Martin Creek**  
**NPDES Discharges**

Martins Creek Road (SR 2027) over Martin Creek

Buncombe County, North Carolina

Created By:

VCF

Checked By:

CMS

Scale:

0 0.5 1 Miles

Date:

August 2021

Figure

**3**