

**Madison County
Bridge No. 138 on SR 1151
over Big Pine Creek
Federal Aid Project No.: BRSTP-1151 (6)
W.B.S. No.: 40165.1.1
S.T.I.P. No.: B-4984**

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

6/19/12
DATE

William T. Thorpe
for Gregory J. Thorpe, PhD,
Manager, Project Development & Environmental Analysis Unit

6-25-12
DATE

Michael J. Sullivan
for John F. Sullivan, III, Division Administrator
Federal Highway Administration

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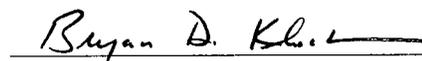
Documentation Prepared in
Project Development and Environmental Analysis Unit By:

6-19-2012
DATE



Tracy Walter
Project Planning Engineer
Bridge Project Development Section

6/19/2012
DATE



Bryan Kluchar, PE
Project Engineer
Bridge Project Development Section



PROJECT COMMITMENTS:

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Hydraulic Unit – FEMA Coordination

The Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP), to determine status of project with regard to applicability of NCDOT'S Memorandum of Agreement, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

Division Construction-FEMA Coordination

This project involves construction activities on or adjacent to FEMA-regulated stream(s). Therefore, the Division shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structure(s) and roadway embankment that are located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

Structure Design – TVA Permit

The proposed project is located in the Tennessee Valley Authority's (TVA) Land Management District. The project will require approval under section 26a of the TVA Act.

Roadside Environmental Unit – Design Standards

Big Pine Creek flows into the French Broad River within one mile of the project site. The French Broad River is listed on the 2010 Final 303(d) list for turbidity impairments – AU [6-(54.5)f], from Sandymush Creek to North Carolina – Tennessee State Line. Therefore, Design Standards in Sensitive Watersheds should be adhered to for this project.

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INTRODUCTION: Bridge No. 138 is included in the latest approved North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and is eligible for the Federal-Aid Highway Bridge Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal “Categorical Exclusion”.

I. PURPOSE AND NEED STATEMENT

NCDOT Bridge Management Unit records indicate Bridge No. 138 has a sufficiency rating of 40.76 out of a possible 100 for a new structure. The bridge is considered structurally deficient due to a superstructure rating of 4 out of 9 according to Federal Highway Administration (FHWA) standards and therefore eligible for FHWA’s Highway Bridge Program.

Components of both the concrete substructure and timber superstructure have experienced an increasing degree of deterioration that can no longer be addressed by maintenance activities. The posted weight limit on the bridge is down to 26 tons for single vehicles and 41 tons for truck-tractor semi-trailers. The bridge is approaching the end of its useful life. Replacement of the bridge will result in safer traffic operations.

II. EXISTING CONDITIONS

The project is located in Madison County (see Figure 1). Development in the area is residential in nature.

SR 1151 is classified as a major collector in the Statewide Functional Classification System and it is not a National Highway System Route.

In the vicinity of the bridge, SR 1151 has an 18-foot pavement width with 2-foot grass shoulders (see Figure 3). The roadway is on an approximate 3% grade through the project area. The existing bridge is on a horizontal curve. The roadway is situated approximately 13.0 feet above the creek bed.

Bridge No. 138 is a two-span structure that consists of timber joists on continuous I-beams with an asphalt-wearing surface. The end bents consist of rubble masonry abutments and the interior bent of timber cap on timber piles. The existing bridge (see Figure 3) was constructed in 1973. The overall length of the structure is 41 feet. The clear roadway width is 22.8 feet.

There are no utilities attached to the existing structure. Utility impacts are anticipated to be low.

The current traffic volume of 630 vehicles per day (VPD) is expected to increase to 800 VPD by the year 2035. The projected volume includes one percent truck-tractor semi-trailer (TTST) and two percent dual-tired vehicles (DT). The speed limit is 55 miles per hour in the project area.

There were four accidents reported in the vicinity of Bridge No. 138 during a recent three-year period. Neither of the accidents were associated with the alignment or geometry of the bridge, but appear to be related to the roadway alignment.

This section of SR 1151 is not part of a designated bicycle route nor is it listed in the S.T.I.P. as needing incidental bicycle accommodations. However, the area is used by recreational cyclists; therefore, bicycle safe rails a minimum height of 42" and additional lane width are requested for bicyclist safety. Sidewalks do not exist on the existing bridge and there is no indication of pedestrian usage on or near the bridge. Neither temporary nor permanent pedestrian accommodations are required for this project.

III. ALTERNATIVES

NCDOT Guidelines for Evaluation of Offsite Detours for Bridge Replacement Projects considers multiple project variables beginning with the additional time traveled by the average road user resulting from the offsite detour. The location of the project does not offer an acceptable offsite detour; therefore alternatives which would utilize an offsite detour were not considered.

Two alternatives for replacing Bridge No. 138 that were studied in detail are described below.

A. Preferred Alternative

Alternative 1

Bridge No. 138 will be replaced on new alignment slightly to the south of the existing alignment with traffic being maintained on a temporary structure to the south of the existing structure (see Figure 2).

The replacement structure will be a bridge approximately 50 feet long providing a minimum 28 feet clear deck width. The bridge will include two 10-foot lanes and 4-foot offsets. The bridge length is based on preliminary design information and is set by hydraulic requirements. The roadway grade of the new structure will be approximately the same as the existing structure.

The approach roadway will extend approximately 120 feet from the northwest end of the new bridge and 100 feet from the southeast end of the new bridge. The approaches will be

widened to include a 20-foot pavement width providing two 10-foot lanes. Six-foot grass shoulders will be provided on each side (7-foot shoulders where guardrail is included). The roadway will be designed as a Rural Local Route using Sub-Regional Tier Guidelines with a 20 mile per hour design speed.

The total length of the onsite detour alignment is approximately 430 feet. The detour alignment will utilize a temporary 70 foot long 16 foot wide bridge carrying one 12-foot wide lane of traffic. Although the cost and environmental impacts are higher than a replace in-place structure with offsite detour, an acceptable offsite detour was not available for this project.

NCDOT Division 13 concurs that this is the preferred alternative.

B. Studied Alternatives Eliminated From Further Consideration

Alternative 2

An alternative which would replace the existing structure along a new alignment to the south of the existing while maintaining traffic on the existing structure was studied and eliminated due to a rise in the FEMA flood elevation downstream from the new structure causing additional properties to be purchased downstream.

C. Alternatives Eliminated From Initial Consideration

The “do-nothing” alternative will eventually necessitate closure of the bridge. This is not acceptable due to the traffic service provided by SR 1151.

“Rehabilitation” of the old bridge is not practical due to its age and deteriorated condition. Portions of the substructure contain timber elements which would require replacement. Replacement of these substructure elements would in-effect be a total structure replacement.

Staged Construction is not feasible for this bridge because the 24-foot deck width and beam configuration will not support removal of a portion and maintenance of traffic on the remaining portion.

IV. ESTIMATED COSTS

The estimated costs, based on 2012 prices, are as follows:

	Alternative 1 Preferred
Structure	\$ 164,000
Roadway Approaches	\$ 234,000
Detour Structure and Approaches	\$ 78,000
Structure Removal	\$ 17,000
Misc. & Mob.	\$ 106,000
Eng. & Contingencies	\$ 102,000
Total Construction Cost	\$ 700,000
Right-of-way Costs	\$ 54,000
Utility Costs	-0-
Total Project Cost	\$ 754,000

V. NATURAL ENVIRONMENT

Physical Characteristics

The project study area lies in the northern mountain physiographic region of North Carolina. Topography in the project vicinity is comprised of steep and gently rolling hills with narrow, sloped floodplains along streams. Elevations in the project study area range from 1675-foot to 1740-foot above sea level. Land use in the project vicinity consists primarily of forestland along the stream corridor interspersed with residential development and agriculture along roadways.

Water Resources

The project is located in part of the French Broad River basin (United States Geological Survey [USGS] Hydraulic Unit 06010105). One stream was identified in the project study area.

Big Pine Creek (DWQ index number 6-108) has a Best usage Classification of C. There are no Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supplies (WS-I or WS-II) within one mile of the project study area. The Big Pine Creek flows into the French Broad River, which is listed on the 303(d) list for turbidity impairment, less than one mile from the project site.

Big Pine Creek is a North Carolina Wildlife resource Commission (NCWRC) trout water but not a Division of Water Quality (DWQ) trout water.

Biotic Resources

Two terrestrial communities were identified in the project study area: maintained/disturbed and mesic mixed hardwood forest.

Aquatic communities in the project study area consist of Big Pine Creek, a perennial cold-water mountain stream.

Two species from the NCDOT Invasive Exotic Plant List for North Carolina was found in the project study area: Japanese knotweed (threat status 1) and Japanese honeysuckle (threat status 2). NCDOT will follow Best Management Practices (BMP's) for the management of invasive plant species.

Moratorium

Big Pine Creek is a NCWRC trout water stream, but not a DWQ trout water stream. Therefore, no moratorium will apply to this project.

Surface Waters and Wetlands

One jurisdictional stream, Big Pine Creek, is located within the project area. No jurisdictional wetlands are present in the project area.

Permits

In accordance with provisions of Section 404 of the Clean Water Act (33 USC 1344), a section 404 Nationwide Permit (NWP) 23 from the USACE is likely to be applicable for all impacts to Waters of the United States resulting from this project. A NWP 33 may be required for this project. A North Carolina Division of Water Quality (DWQ) Section 401 Water Quality General Certification is required prior to the issuance of the Section 404 NWP 23 and/or NWP 33.

Existing Bridge Removal

The existing structure will be removed using the guidelines established within the Best Management Practices for Construction and Maintenance Activities.

Federally Protected Species

Plants and animals with a federal classification of Endangered or Threatened are protected under the provisions of Section 7 and Section 9 of the Endangered Species Act of 1973. The United States Fish and Wildlife Service (USFWS) lists three species under federal protection for Madison county as of June 1, 2012.

Bog turtle

Biological Conclusion: Not required

Species listed as threatened due to similarity of appearance do not require Section 7 consultation with the USFWS.

Gray bat

Biological Conclusion: No Effect

A habitat assessment for this species was conducted on February 14, 2008 by NCDOT biologists. There were no areas suitable for roosting habitat, nor were there any caves or mines in the project area. The inspection of the bridge concluded no evidence of bats. A check of the NCNHP database on March 11, 2008 showed no known occurrences of gray bats within 1.0 miles of the project study area.

Spotfin chub

Biological Conclusion: No Effect

Habitat requirements for the spotfin chub do not occur in the project area. Occurrences of spotfin chub have not been recorded in the French Broad River basin since 1888. A review of NCNHP records on March 11, 2008 indicates no known occurrences within 1.0 mile of the project study area.

Bald and Golden Eagle Protection Act

Habitat for the bald eagle primarily consists of mature forest in proximity to large bodies of open water for foraging. Large dominate trees are utilized for nesting sites, typically within 1.0 mile of open water. Suitable habitat for the bald eagle is present in the study area. A survey for nest trees was conducted on March 22, 2007 within the study area and to a distance of 660 feet on all sides outside of the study area; no nests were observed.

VI. HUMAN ENVIRONMENT

Section 106 Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at Title 36 CFR Part 800. Section 106 requires Federal agencies to take into account the effect of their undertakings (federally funded, licensed, or permitted) on properties included in or eligible for inclusion in the National Register of Historic Places and afford the Advisory Council a reasonable opportunity to comment on such undertakings.

Historic Architecture

In a form dated January 27, 2009 the N.C. Historic Preservation Office (HPO) indicated no surveys for historic properties are required. The form is attached in the Appendix.

Archaeology

In a form dated January 27, 2009 the N.C. Historic Preservation Office (HPO) indicated no surveys for archaeology is required. The form is attached in the Appendix.

Community Impacts

No adverse impact on families or communities is anticipated. right-of-way acquisition will be limited. No relocatees are expected with implementation of the proposed alternative.

No adverse effect on public facilities or services is expected. The project is not expected to adversely affect social, economic, or religious opportunities in the area.

The project is not in conflict with any plan, existing land use, or zoning regulation. No change in land use is expected to result from the construction of the project.

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impact to prime farmland of all land acquisition and construction projects. There are no soils classified as prime, unique, or having state or local importance in the vicinity of the project. Therefore, the project will not involve the direct conversion of farmland acreage within these classifications.

The project will not have a disproportionately high and adverse human health and environmental effect on any minority or low-income population.

Noise & Air Quality

The project is located in Madison County, which has been determined to comply with the National Air Quality Standards. The proposed project is located in an attainment area; therefore, 40 CFR Parts 51 and 93 are not applicable. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

This project will not result in any meaningful changes in traffic volume, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. As such FHWA has determined that this project will generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special MSAT concerns. Consequently this effort is exempt from analysis for MSAT's.

Noise levels may increase during project construction; however, these impacts are not expected to be substantial considering the relatively short-term nature of construction noise and the limitation of construction to daytime hours. The transmission loss characteristics of nearby natural elements and man-made structures are believed to be sufficient to moderate the effects of intrusive construction noise.

VII. GENERAL ENVIRONMENTAL EFFECTS

The project is expected to have an overall positive impact. Replacement of an inadequate bridge will result in safer traffic operations.

The bridge replacement will not have an adverse effect on the quality of the human or natural environment with the use of the current North Carolina Department of Transportation standards and specifications.

The proposed project will not require right-of-way acquisition or easement from any land protected under Section 4(f) of the Department of Transportation Act of 1966.

An examination of records at the North Carolina Department of Environment and Natural Resources, Division of Environmental Management, Groundwater Section and the North Carolina Department of Human Resources, Solid Waste Management Section revealed no underground storage tanks or hazardous waste sites in the project area.

Madison County is a participant in the National Flood Insurance Program. There are no practical alternatives to crossing the floodplain area. Any shift in alignment will result in an impact area of about the same magnitude. The proposed project is not anticipated to increase the level or extent of upstream flood potential.

VIII. COORDINATION & AGENCY COMMENTS

NCDOT has sought input from the following agencies as a part of the project development: U.S. Army Corps of Engineers, NC Department of Natural Resources, U.S. Fish & Wildlife Service, N.C Wildlife Resource Commission, Tennessee Valley Authority, N.C. Division of Parks & Recreation, North Carolina State Historic Preservation Office, and Madison County Planning Department.

The N.C. Wildlife Resource Commission and U.S. Fish & Wildlife Service in standardized letters provided a request that they prefer any replacement structure to be a spanning structure.

Response: NCDOT will be replacing the existing structure with a new bridge.

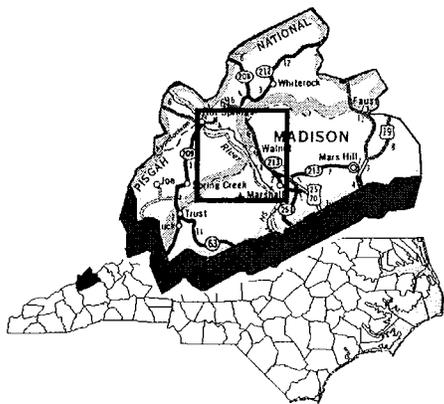
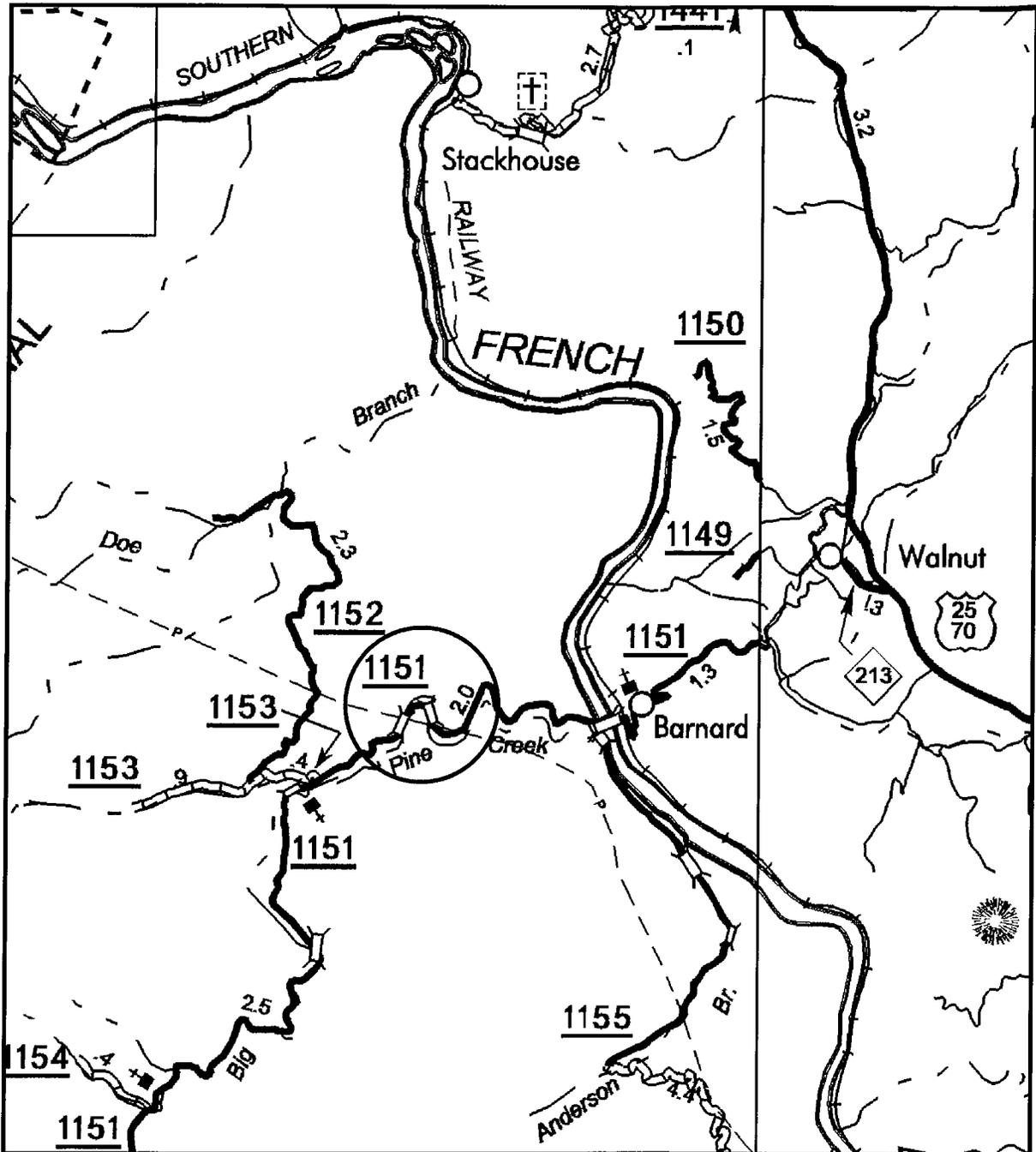
IX. PUBLIC INVOLVEMENT

A letter was sent by the Location & Surveys Unit to all property owners affected directly by this project. Property owners were invited to comment. No comments have been received to date.

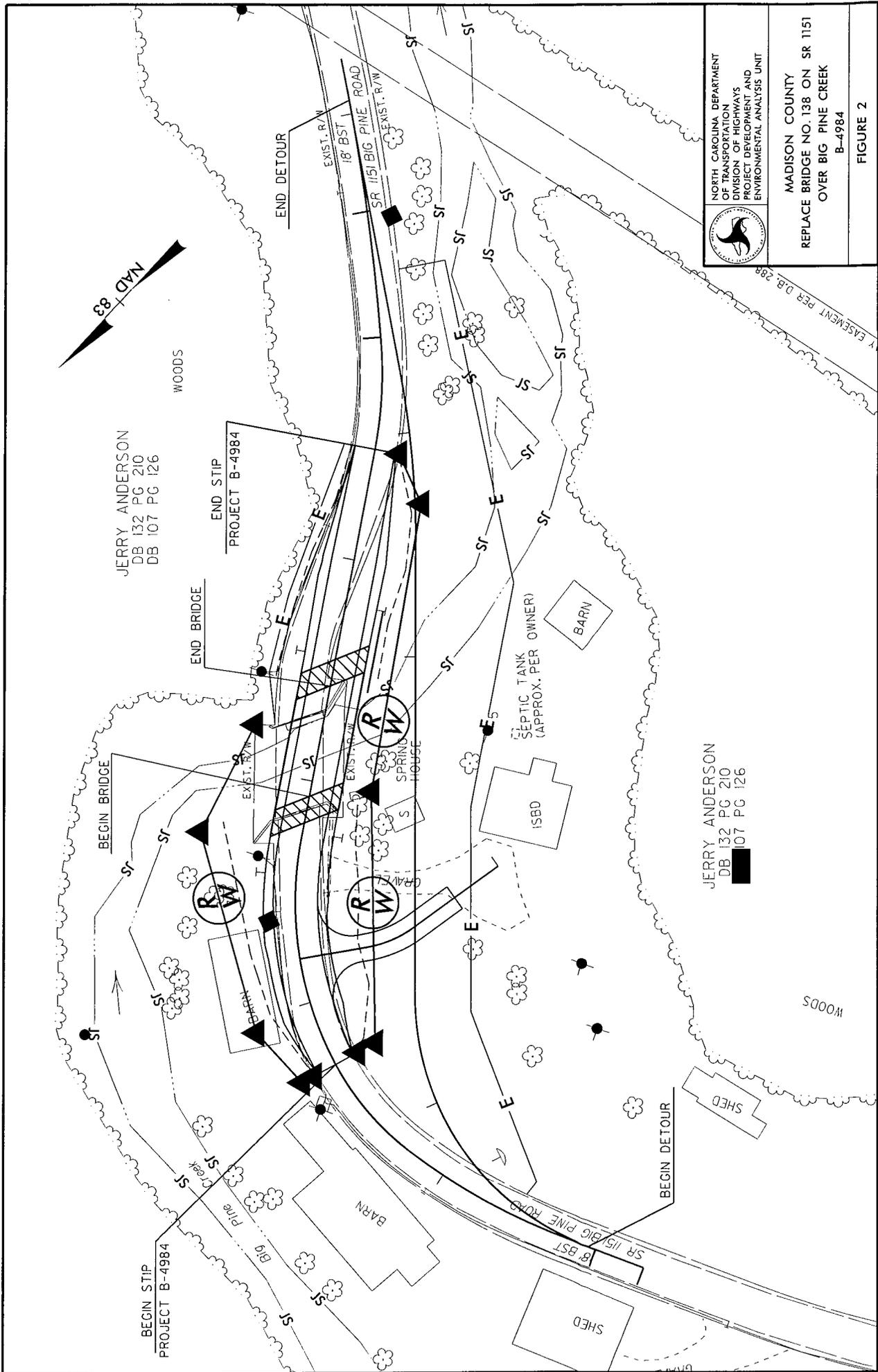
There is not substantial controversy on social, economic, or environmental grounds concerning the project.

X. CONCLUSION

On the basis of the above discussion, it is concluded that no substantial adverse environmental impacts will result from implementation of the project. The project is therefore considered to be a federal "Categorical Exclusion" due to its limited scope and lack of substantial environmental consequences.



	<p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS UNIT</p>
<p>MADISON COUNTY REPLACE BRIDGE NO. 138 ON SR 1151 OVER BIG PINE CREEK B-4984</p>	
<p>Figure 1</p>	



JERRY ANDERSON
 DB 132 PG 210
 DB 107 PG 126

END STIP
 PROJECT B-4984

BEGIN STIP
 PROJECT B-4984

JERRY ANDERSON
 DB 132 PG 210
 DB 107 PG 126



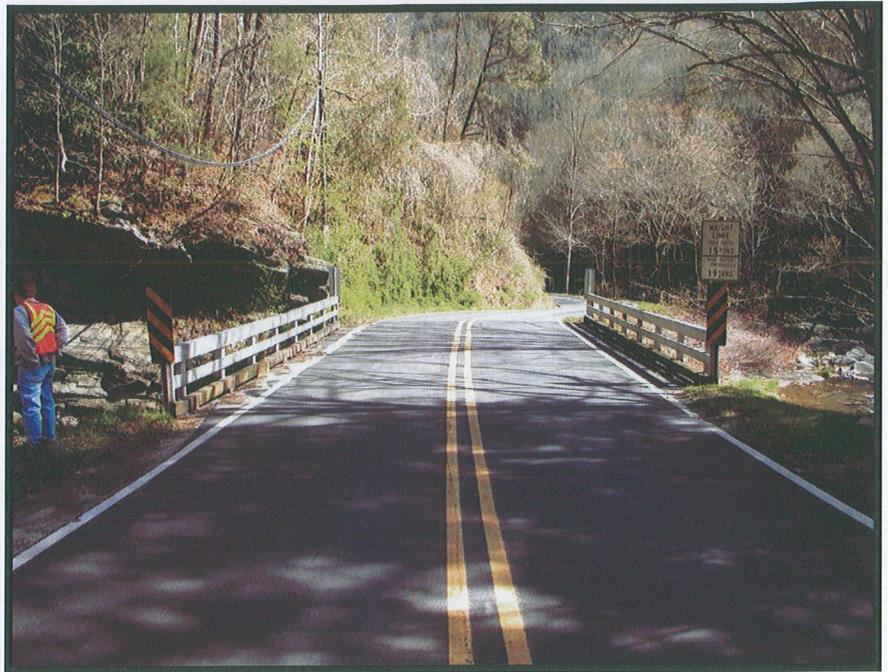
NORTH CAROLINA DEPARTMENT
 OF TRANSPORTATION
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 PROJECT DEVELOPMENT AND
 ENVIRONMENTAL ANALYSIS UNIT

MADISON COUNTY
 REPLACE BRIDGE NO. 138 ON SR 1151
 OVER BIG PINE CREEK
 B-4984

FIGURE 2

EASEMENT PER D.B. 288

**Bridge No. 138
looking east**



**Bridge No. 138
looking west**



	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS UNIT
<p>MADISON COUNTY REPLACE BRIDGE NO. 138 ON SR 1151 OVER BIG PINE CREEK B-4984</p>	
<p>Figure 3</p>	

Bridge Construction CFY 2012 Projects

SHPO Number	TIP	Project	County	Division	Project Engineer	Archaeological Survey	Architectural Survey
ER 08-2570	B-4984	Bridge 138 on SR 1151 over Big Pine Creek	Madison	13	T. Waiter	NO	NO

A-NC 1/6/08

12-3-08

S- NC 11/6/08
CS

Due 12/31/08

Peter B Sandbach
1/27/09

NOV 14 2008

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Division of Highways

FEB -4 2009

Presonster
Project Development and
Environmental Analysis Group