Rockingham County
Bridge No. 169 on NC 770
over Cascade Creek
Federal Aid Project No. BRSTP-0770(4)
W.B.S. No. 46057.1.1
T.I.P. No. B-5343

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

5/27/15
DATE

FOR Richard W. Hancock, PE
Manager, Project Development & Environmental Analysis Unit

5/28/15
DATE

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

Rockingham County
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CATEGORICAL EXCLUSION

May 2015

NORTH CAROLINA PROFESSIONAL SEAL 039174 ENGINEER AARON M. HEUSTESS

5/22/15

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PROJECT COMMITMENTS

Rockingham County
Bridge No. 169 on NC 770 over Cascade Creek
Federal Aid Project No. BRSTP-0770(4)
WBS No. 46057.1.1
TIP Project No. B-5343

All standard procedures and measures, including NCDOT's Best Management Practices for Protection of Surface Waters, Guidelines for Best Management Practices for Bridge Demolition and Removal, will be implemented, as applicable, to avoid or minimize environmental impacts. The following special commitments have been agreed to by NCDOT:

Commitments Developed through Project Development and Design

Current status, changes, or additions to the project commitments as shown in the environmental document for the project are printed in italic font.

Project Development and Environmental Analysis Unit/Project Development and Environmental Analysis Unit – Natural Environment Section/Division 7/FHWA

- The proposed project involves the replacement of a bridge over Cascade Creek which is a part of the Roanoke River basin. On April 24, 2012 a Roanoke logperch (*Percina rex*) was collected from Cascade Creek in the project vicinity by NCDOT and NCWRC personnel. Given the documented presence of this species, NCDOT will pursue consultation with USFWS on a **May Affect, Likely to Adversely Affect** biological conclusion. However, due to projected limited impacts from the construction of this project, a non-jeopardy biological opinion is anticipated. Construction authorization will not be requested until consultation with USFWS is completed.

This commitment will be resolved prior to permitting and construction of the project.

Project Development and Environmental Analysis Unit – Natural Environment Section

- The US Fish and Wildlife Service has developed a programmatic biological opinion (PBO) in conjunction with the Federal Highway Administration (FHWA), the US Army Corps of Engineers (USACE), and NCDOT for the northern long-eared bat (NLEB) (*Myotis septentrionalis*) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. The programmatic determination for NLEB for the NCDOT program is **May Affect, Likely to Adversely Affect**. The PBO provides incidental take coverage for NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Rockingham County, where B-5343 is located.

This commitment will be implemented prior to and during construction of the project.

PROJECT COMMITMENTS

Roadway Design Unit/Structures Management Unit

- A one or two bar metal rail will be required on permanent bridge as a condition of the February 4, 2014, Assessment of Effects with regards to Section 106 compliance. The results of the April 21, 2015, Effects Meeting for the project between the North Carolina State Historic Preservation Office (HPO), Federal Highway Administration (FHWA) and NCDOT it was concurred on that the 54 inch Standard 2 Bar Metal Rail would be used on this structure.

This commitment will be addressed during final design.

Project Development & Environmental Analysis Unit- Human Environment Section/ Roadway Design Unit/ Division 7 Construction

- The NRCS review of the AD 1006 form for the project preferred alternative yielded a point total exceeding 160 points; requiring NCDOT to implement minimization and mitigation options. Minimization and mitigation options for this project will include the removal of all fill materials utilized in the construction of the temporary detour and restoration of the lands utilized for the temporary detour to a farmable condition.

This commitment will be addressed during final design and implemented during construction.

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INTRODUCTION: Bridge No. 169 is included in the latest approved North Carolina Department of Transportation (NCDOT) Transportation Improvement 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. 169 has a sufficiency rating of 20.45 out of a possible 100 for a new structure. The bridge is considered structurally deficient and functionally obsolete according to Federal Highway Administration (FHWA) standards.

Components of both the superstructure and substructure 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 19 tons for single vehicles and 25 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 on NC 770 approximately 2.5 miles northeast of downtown Eden and one mile south of the North Carolina/Virginia border (see Figure 1). Land uses surrounding the project are rural and include forests, active farms, and open water (farm ponds and Cascade Creek) (see Figure 2).

NC 770 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, NC 770 has a 22-foot pavement width with 2-foot grass shoulders. The roadway grade is in a sag vertical curve through the project area. The existing bridge is on a tangent. The roadway is situated approximately 12 feet above the creek bed.

Bridge No. 169 is a two-span structure that consists of an asphalt overlay on a concrete deck on steel I-beams supported by reinforced concrete abutments and a solid reinforced concrete interior pier. The existing bridge was constructed in 1953. The overall length of the structure is 50 feet. The clear roadway width is 28.0 feet. The posted weight limit on this bridge is 19 tons for single vehicles and 25 tons for TTSTs.

There is a natural gas line attached to the existing structure. This attachment will be relocated and coordinated with Piedmont Natural Gas. The distribution power line (Duke Energy) is running parallel on the south side of NC 770 and is approximately 40 to 50 feet from the edge of the bridge. CenturyLink is buried and parallels the north side of the bridge, going aerial only at the creek crossing. The 16” sewer line (City of Eden) is currently being installed and should be outside of the project limits.

The current traffic volume of 2,500 vehicles per day (VPD) is expected to increase to 4,800 VPD by the year 2040. The projected volume includes eight percent truck-tractor semi-trailer (TTST) and three percent dual-tired vehicles (DT). The posted speed limit is 55 miles per hour in the project area. This route is used by Rockingham County school buses.

There was one crash reported in the vicinity of Bridge No. 169 during a recent five-year period (December 1, 2006 to November 30, 2011). The crash was with an animal and was not associated with the alignment or geometry of the bridge or its approach roadway.

This section of NC 770 is not part of a designated bicycle route nor is it listed in the T.I.P. as needing incidental bicycle accommodations. Sidewalks do not exist on the existing bridge and there is no indication of pedestrian usage on or near the bridge. Neither permanent nor temporary bicycle or pedestrian accommodations are required for this project.

III. ALTERNATIVES

A. Preferred Alternative

Bridge No. 169 will be replaced on the existing alignment while traffic is maintained on a temporary two lane onsite detour alignment to the south side (see Figures 3 and 4).

The permanent replacement structure will be a bridge approximately 85 feet long providing a minimum 30’-10” clear deck width. The bridge will include two 12-foot lanes and 3’-5” 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 230 feet from the west end of the new bridge and 280 feet from the east end of the new bridge. The approaches will be widened to include a 24-foot pavement width providing two 12-foot lanes. Six-foot shoulders (two-foot paved and four-foot grass) will be provided on each side (9-foot shoulders where guardrail is included). The roadway will be designed as a Rural Collector using Sub-Regional Tier Guidelines with a 60 mile per hour design speed.

The total length of the onsite detour alignment is 800 feet. The detour alignment will utilize a temporary 60 foot long 24 foot wide bridge carrying two 10-foot wide lanes of traffic. Although the environmental impacts are higher for the replace in-place with an onsite detour alternative, the overall project costs are less due to the required offsite detour improvements. The best detour route is approximately 11 miles long and extends into Virginia. Given the use

of NC 770 by school buses and emergency vehicles, the delay created by the detour is undesirable.

NCDOT Division 7 concurs that this is the preferred alternative.

B. Alternatives Eliminated from Further Consideration

The "do-nothing" alternative will eventually necessitate closure of the bridge. This is not acceptable due to the traffic service provided by NC 770.

"Rehabilitation" of the existing bridge is not practical due to its age and deteriorated condition. Bridge No. 169 has a sufficiency rating of 20.45 out of a possible 100 for a new structure, and the bridge is considered structurally deficient and functionally obsolete. Components of both the superstructure and substructure 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 19 tons for single vehicles and 25 tons for truck-tractor semi-trailers.

Staged Construction is not recommended for this bridge because of the longer construction period and anticipated higher impacts to the natural environment due to the nature of staged construction. Additionally, the presence of heavy truck traffic and the remote location make single-lane, two-way travel undesirable in this location.

IV. ESTIMATED COSTS

The estimated functional design costs, based on 2015 prices, are listed in Table 1:

Table 1. Project Cost Estimates

	Alternative 1 Offsite Detour	Alternative 2 Onsite Detour (Preferred)	Alternative 3 Staged Construction
Structure	$ 370,625	$ 370,625	$ 486,000
Roadway Approaches	903,060	321,260	292,400
Detour Structure and Approaches	- 0 -	108,000	-0-
Structure Removal	36,400	36,400	36,400
Misc. & Mob.	474,915	229,715	191,200
Eng. & Contingencies	264,000	183,000	143,000
Total Construction Cost	$ 2,049,000	$ 1,249,000	$ 1,149,000
Right-of-way Costs	- 0-	$81,500	-0-
Right-of-way Utility Costs	$51,000	$51,000	$51,000
Total Project Cost	$2,100,000	$1,381,500	$1,200,000

V. NATURAL ENVIRONMENT

Natural resources in the project study area were reviewed in the field in February and May 2012 and documented in a Natural Resources Technical Report (NRTR) (NCDOT, June 2012), incorporated by reference. This section includes a summary of the existing conditions, as well as the potential environmental impacts of the alternatives.

Physical Characteristics

Water Resources

Water resources in the study area are part of the Roanoke River Basin [US Geological Survey (USGS) Hydrologic Unit 03010103]. Three streams were identified in the study area – Cascade Creek [NC Division of Water Quality (NCDWQ) Index Number 22-45], Mountain Run (NCDWQ Index Number 22-45-2) and an unnamed tributary (UT) to Cascade Creek.

Table 2. Water Resources

Stream Name	Map ID	Best Usage Class.	Bank Height (ft)	Bankfull Width (ft)	Water Depth (in)	Channel Substrate	Flow	Clarity
Cascade Creek	SA	C	6-10	45-50	12-42	Br, Bo, Co, Gr, Sa, Si	Moderate	Clear
Mountain Run	SB	C	6-8	15-20	12-24	Br, Co, Gr, Sa, Si	Moderate	Clear
UT to Cascade Creek	SC	C	1-2	1-6	2-4	Sa, Si	Slow	Clear

Note: Br= Bedrock, Bo=Boulder, Co=Cobble, Gr=Gravel, Sa=Sand, Si=Silt

Biotic Resources

Terrestrial communities in the study area can be classified as Maintained/Disturbed, Floodplain Forest, or Pine Forest. Detailed descriptions of these community types and species observed in the study area can be found in the NRTR.

Table 3. Terrestrial Communities

Community	Coverage (acres)
Maintained/Disturbed	4.2
Floodplain Forest	2.5
Pine Forest	0.2
Total	**6.9**

Jurisdictional Topics

Surface Waters and Wetlands

Three jurisdictional streams were identified within the project study area. NCDWQ and US Army Corps of Engineers (USACE) stream identification forms were not required for these creeks because they were definitively perennial, displaying geomorphological, hydrological, and

biological characteristics indicative of perennial surface waters. The physical characteristics and water quality designation of these streams are detailed above. These streams have been designated as warm water streams for the purposes of stream mitigation.

Table 4. Stream Summary

Map ID	Length (ft)	Classification	Compensatory Mitigation Required	River Basin Buffer
SA	162	Perennial	Yes	Not Subject
SB	94	Perennial	Yes	Not Subject
SC	153	Perennial	Yes	Not Subject
Total	**409**			

Three jurisdictional wetlands were identified within the study area. Wetland classification and quality rating data are presented in the following table. All wetlands in the study area are within the Roanoke River basin (USGS Hydrologic Unit 03010103). USACE wetland delineation forms and NCDWQ wetland rating forms for each site are contained in the NRTR. All wetland sites are located within the floodplain forest terrestrial community.

Table 5. Wetland Summary

Map ID	NCWAM Classification	Hydrologic Classification	NCDWQ Wetland Rating	Area (acres)
WA	Bottomland Hardwood Forest	Riparian	35	0.4
WB	Riverine Swamp Forest	Riparian	54	0.4
WC	Riverine Swamp Forest	Riparian	54	0.2
			Total	**1.0**

Permits

The proposed project has been designated as a Categorical Exclusion (CE) for the purposes of the National Environmental Policy Act (NEPA) documentation. As a result of limited environmental impacts, a Nationwide Permit (NWP) 23 will likely be applicable. A NWP No. 33 may also apply for temporary construction activities such as stream dewatering, work bridges, or temporary causeways that are often used during bridge construction or rehabilitation. The USACE holds the final discretion as to what permit will be required to authorize project construction. If a Section 404 permit is required, then a Section 401 Water Quality Certification (WQC) from the NCDWQ will be needed.

Federally Protected Species

As of March 25, 2015, the US Fish and Wildlife Service (USFWS) lists four federally protected species for Rockingham County. A brief description of each species' habitat requirements follows, along with the Biological Conclusion rendered based on survey results in the study area. Habitat requirements for each species are based on the current best available information as per referenced literature.

Table 6. Federally Protected Species

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
Percina rex	Roanoke logperch	E	Yes	MA-LAA
Pleurobema collina	James spinymussel	E	Yes	No Effect
Echinacea laevigata	Smooth coneflower	E	Yes	No Effect
Myotis septentrionalis	Northern long-eared bat	T	N/A	N/A

E=Endangered, T=Threatened, MA-LAA=May Affect-Likely to Adversely Affect

Roanoke logperch

Habitat Requirements: The Roanoke logperch occupies medium to large warm water streams and rivers of moderate gradient and relatively unsilted substrates. During different phases of life history and season, every major riverine habitat is exploited by the logperch. Except in winter, all age classes are intolerant of moderately to heavily silted substrates. Until recently, this species was only found in Virginia in two river systems: the Roanoke River drainage (including the Pigg and Smith Rivers) and the Nottoway River drainage. In 2007, individuals of this species were found in the Roanoke River drainage (Smith and Dan Rivers) in Rockingham County, North Carolina.

Biological Conclusion: **May Affect – Likely to Adversely Affect**. See Federally Protected Aquatic Species Survey Report in the Appendix. The proposed project involves the replacement of a bridge over Cascade Creek which is part of the Roanoke River basin. On April 24, 2012 a Roanoke logperch was collected from Cascade Creek in the project vicinity by NCDOT and North Carolina Wildlife Resource Commission personnel. Given the documented presence of this species, NCDOT will pursue consultation with USFWS on a May Affect, Likely to Adversely Affect biological conclusion. However, due to projected limited impacts from the construction of this project, a non-jeopardy biological opinion is anticipated. Construction authorization will not be requested until consultation with USFWS is completed.

James spinymussel

Habitat Requirements: Suitable habitat for the James spinymussel includes free-flowing streams with a variety of flow regimes. This species is found in a variety of substrates that are free from silt. Prior to its decline, this freshwater mussel was found throughout the upper James River above Richmond, Virginia and in all of its major upstream tributaries. The species has declined rapidly during the past several decades and now exists only in small, headwater tributaries of the upper James River Basin in Virginia and West Virginia and the upper Roanoke River drainage of Virginia and North Carolina.

Biological Conclusion: No Effect. See Federally Protected Aquatic Species Survey Report in the Appendix.

Smooth coneflower

Habitat Requirements: Smooth coneflower, a perennial herb, is typically found in meadows, open woodlands, the ecotonal regions between meadows and woodlands, cedar barrens, dry limestone bluffs, clear cuts, and roadside and utility rights-of-way. In North Carolina, the species normally grows in magnesium and calcium rich soils associated with gabbro and

diabase parent material, and typically occurs in Iredell, Misenheimer, and Picture soil series. It grows best where there is abundant sunlight, little competition in the herbaceous layer, and periodic disturbances (e.g. regular fire regime, well-timed mowing, and careful clearing) that prevents encroachment of shade-producing woody shrubs and trees. On sites where woody succession is held in check, it is characterized by a number of species with prairie affinities. The North Carolina populations are in Durham, Granville, Mecklenburg, and Rockingham counties.

Biological Conclusion: No Effect. A plant-by-plant survey was performed by NCDOT biologists Greg Price and Deanna Riffey on August 21, 2014. Potential habitat was present in the form of roadsides, a power line ROW, and the edge of a clear-cut area. However, no individuals were observed within the study area. Additionally, a review of the NCNHP database on August 21, 2014 revealed no known populations of this species within 1.0 mile of the project study area. Since no individuals were observed and no known populations are present within 1.0 mile of the project, a biological conclusion of "No Effect" has been assigned to this species.

Northern long-eared bat

The US Fish and Wildlife Service (USFWS) designated the northern long-eared bat (NLEB) (*Myotis septentrionalis*) as a threatened species effective May 4, 2015.

The USFWS has developed a programmatic biological opinion (PBO) in conjunction with the Federal Highway Administration (FHWA), the US Army Corps of Engineers (USACE), and NCDOT for the NLEB in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. The programmatic determination for NLEB for the NCDOT program is **May Affect, Likely to Adversely Affect**. The PBO provides incidental take coverage for NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Rockingham County, where B-5343 is located.

Bald Eagle 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 dominant trees are utilized for nesting sites, typically within 1.0 mile of open water. There are no large bodies of open water within one mile of the project study area. Suitable habitat for bald eagle does not exist within the project study area.

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

There is a National Register Listed property, RK001 (Willow Oaks Farm/Cascade Plantation), a circa 1820s Federal plantation house listed in 1975 within the project study area. However, it does not have a defined National Register Boundary and is located approximately 3,900 feet west of the bridge. On February 21, 2012 the NC State Historic Preservation Office (HPO) concurred with the findings of effects determination by NCDOT staff of "No Adverse Effect." See attached form in the Appendix. An effects meeting was held on February 4, 2014, in which the HPO, FHWA and NCDOT concurred on a "No Adverse Effect" to the historic property with the condition that "One or two bar metal rail will be required on permanent bridge as a condition." A second effects meeting was held on April 21, 2015, in which HPO, FHWA, and NCDOT concurred on an amendment to use the NCDOT 54-inch Standard 2 Bar Metal Rail on the permanent structure. See attached Assessment of Effects form in the Appendix.

Archaeology

NCDOT – Human Environment Unit, under the provisions of a Programmatic Agreement with FHWA, NCDOT, HPO, OSA and the Advisory Council on Historic Preservation (effective July 1, 2009), reviewed the proposed project and determined that no prehistoric or historic properties are located within the project's area of potential effects (see form dated March 14, 2012 in the Appendix).

Section 4(f) Resources

Section 4(f) of the US Department of Transportation (USDOT) Act of 1966, as amended, specifies that publicly owned land from a public park, recreation area, wildlife and waterfowl refuge, and all historic sites of national, state, and local significance may be used for federal projects only if there is no feasible and prudent alternative to the use of such land and the project includes all possible planning to minimize harm to 4(f) lands resulting from such use. The Willow Oaks Farm/Cascade Plantation is a Section 4(f) property. However, it does not have a defined National Register Boundary and is located approximately 3,900 feet west of the bridge. Since the preferred alternative will have no use of this resource (the farm/plantation itself), there will be no Section 4(f) impacts.

Community Impacts

No adverse impact on families or communities is anticipated. Right-of-way acquisition will be limited. No relocatees will result from 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. There are no facilities in the project 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. All construction will take place along existing alignment. There are soils classified as prime, unique, or having state or local importance in the vicinity of the project. Therefore, the project will directly affect farmland acreage within these classifications. As is required by the Farmland Protection Policy Act, the Form NRCS-AD-1006 (for point projects) has been completed, see attached form in the Appendix, according to FHWA guidelines. This project received a point total of 184, which exceeds the 160 point rating and constitutes an impact to farmland. Project alternatives exceeding a point total of 160 are those most suitable for protection under FPPA.

Since the Preferred Alternative receive a total point value greater than 160 points NCDOT will minimize and mitigate the impacts to farmlands by restoring the impacted soils within the construction easement for the temporary detour to farmable conditions.

No other alternatives other than those already discussed in this document will be considered without a re-evaluation of the project's potential impacts upon farmland.

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 Rockingham 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.

This project has been determined to be a Type III Noise Project and therefore, no traffic noise analysis is required to meet the requirements of 23 CFR 772.

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 environment with the use of the current North Carolina Department of Transportation standards and specifications. This project may have an adverse effect on the natural environment due to the presence of the federally endangered Roanoke logperch in Cascade Creek. Formal Section 7 consultation for this project will be required prior to permitting.

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

An examination of local, state, and federal regulatory records by the GeoEnvironmental Section revealed no sites with a Recognized Environmental Concern (REC) within the project limits. RECs are most commonly underground storage tanks, dry cleaning solvents, landfills and hazardous waste disposal areas.

Rockingham 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: Federal Highway Administration, U.S. Army Corps of Engineers, U.S. Fish & Wildlife Service, U.S. Environmental Protection Agency, N.C Wildlife Resource Commission, N.C. Division of Parks and Recreation, Piedmont Triad Council of Governments, Rockingham County, and the City of Eden.

The U.S. Fish & Wildlife Service in a standardized letter 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.

A response was also received from Rockingham County, who confirmed the bridge location was not within a watershed overlay district and that the Comprehensive Transportation Plan from October 2010 lists the bridge as “structurally deficient.”

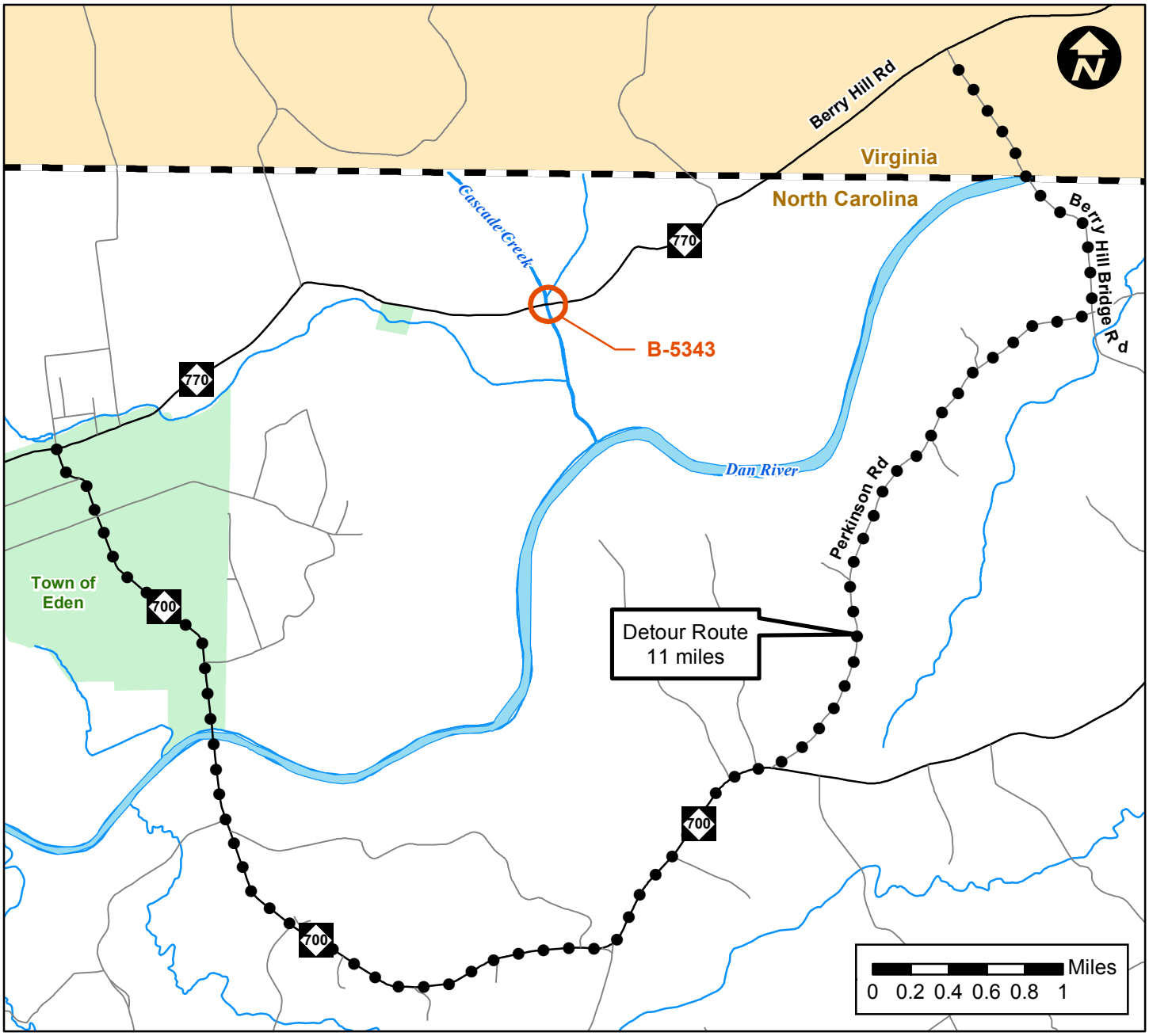
IX. PUBLIC INVOLVEMENT

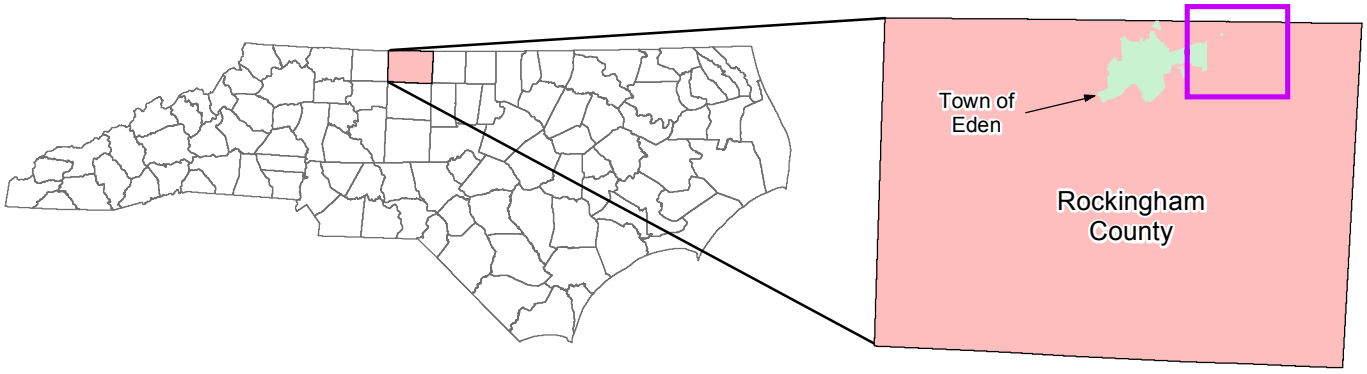
A letter was sent by the Project Development and Environmental Analysis Unit to all property owners affected directly by this project on February 29, 2012. Property owners were invited to comment. No comments have been received to date.

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.





Project B-5343

B-5343 Detour Route

Figure 1
Vicinity Map
Bridge No. 169 on NC 770 over Cascade Creek
Federal Aid Project No. BRSTP-0770(4)
W.B.S. No. 46057.1.1
NCDOT Project B-5343

Figure 2
Study Area Map
Bridge No. 169 on NC 770 over Cascade Creek
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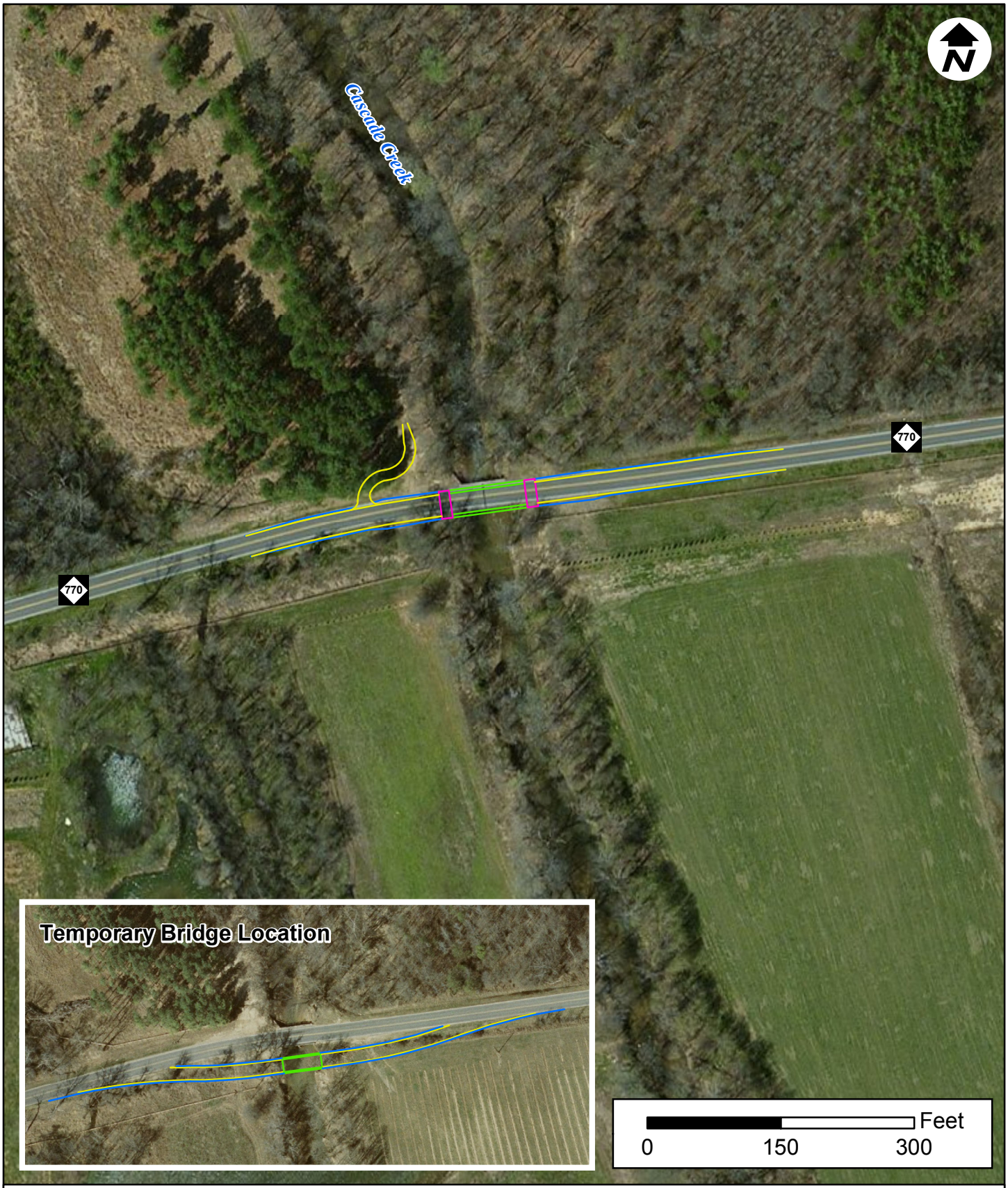

Proposed Edge of Travel

Proposed Approach Slab

Proposed Paved Shoulder

Proposed Roadway Bridge

Figure 3
Design Map
Bridge No. 169 on NC 770 over Cascade Creek
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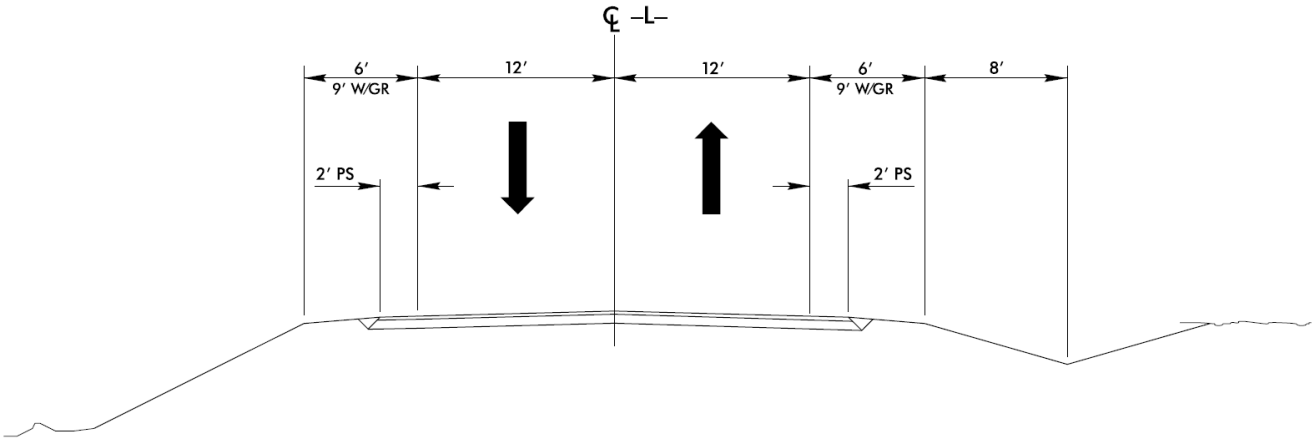
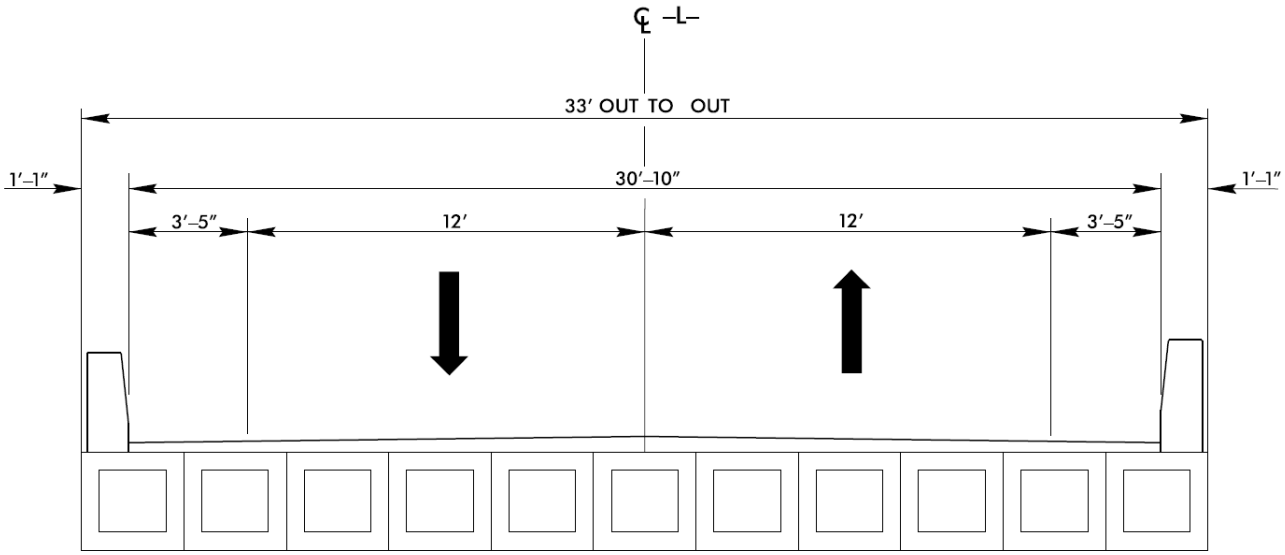


Roadway Typical Section



BridgeTypical Section

Figure 4
Typical Sections
Bridge No. 169 on NC 770 over Cascade Creek
Federal Aid Project No. BRSTP-0770(4)
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

June 22, 2012

Memorandum to: Greg Price, Environmental Program Consultant
Natural Environment Section, Project Management Group

From: Neil Medlin, Environmental Program Supervisor
Natural Environment Section, Biological Surveys Group

Subject: Federally protected aquatic species survey report for proposed replacement of Bridge No. 169 over Cascade Creek on NC 770 in Rockingham County, NC. TIP B-5343, WBS 46057.1.1

The North Carolina Department of Transportation proposes to replace Bridge No. 169 over Cascade Creek on NC 770 in Rockingham County, NC. Cascade Creek is located in the Roanoke River Basin.

The Roanoke logperch (*Percina rex*) and James spinymussel (*Pleurobema collina*) are listed by the United States Fish and Wildlife Service (USFWS) as potentially occurring in Rockingham County. Therefore, surveys of the study area were conducted to document the presence/absence of these species. Roanoke logperch occupies medium to large warm-water streams and rivers of moderate gradient with relatively silt-free substrata. Habitat use by the species varies with age, spawning condition, and seasonal temperature. During different phases of life history and season, every major riverine habitat is exploited by the logperch.

The James spinymussel was once found throughout the main stem of the James River and all of its major tributaries upstream of Richmond, VA. The species has experienced a precipitous decline over the past two decades and now exists only in small, headwater tributaries of the upper James River basin in Virginia and West Virginia and the upper Roanoke River drainage of Virginia and North Carolina. The James spinymussel is found in waters with slow to moderate current and relatively hard water on sand and mixed sand-gravel substrates that are free from silt.

Prior to conducting in-stream surveys, a review of the North Carolina Natural Heritage Program (NHP) database was conducted (April 23, 2012) to determine if there were any records of rare fish or mussels within the proposed project study area or receiving waters. This review indicated that there are no known occurrences of the federally protected Roanoke logperch or James spinymussel within the project study area. The closest record

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
NATURAL ENVIRONMENT SECTION
1548 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-707-6000
FAX: 919-250-4224

WEBSITE: WWW.NCDOT.ORG/DOH/PRECONSTRUCT/PE/

LOCATION:
CENTURY CENTER, BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

for the James spinymussel is over 27 stream miles away in the Mayo River. The nearest record for the Roanoke logperch in North Carolina is slightly over eight (8) miles away from the project in the Dan River just below the Smith River confluence. However, in 2009 a fish kill in Cascade Creek in Virginia included two (2) dead Roanoke logperch that were recorded approximately 1.5 miles upstream from the project site.

NCDOT biologists Neil Medlin (Permit Number 12-ES00030) and Jared Gray along with North Carolina Wildlife Resources Commission biologists Rob Nichols and Tyler Black conducted a fish survey at the project site on April 24, 2012. The survey was conducted using a Smith-Root model LR-24 backpack electrofishing unit, a Smith-Root model 12-B electrofishing unit, a seine, and dip nets. The stream was sampled with two biologists operating the electrofishing units while two other biologists collected the stunned fish with dip nets. Passive seining was also employed with the two biologists operating the electrofishing units shocking downstream into the stationary seine held by the other two biologists. All stunned fish were collected and temporarily placed in a five (5) gallon bucket. The fish survey was conducted from a point approximately 400 meters downstream of the NC 770 crossing up to immediately downstream of the bridge and totaled 3172 shocking seconds. A mussel survey was conducted simultaneously with fish shocking, using visual methods.

Within in the area surveyed, Cascade Creek was nine (9) to twelve (12) meters wide, and had banks up to three (3) meters high with some areas of erosion. On the day of the site visit, the overall water depth was shallow; with 95% of the stream reach less than two (2) feet deep. The flow regimes in the creek included riffle and run areas. The substrate for the survey reach was composed of silt, sand, gravel, cobble, and boulder, with gravel being the dominant type and sand subdominant. The instream habitat available in Cascade Creek was suitable for Roanoke logperch and James spinymussel. The riparian buffer was narrow and the surrounding land use was crop fields mixed with small wooded areas.

No freshwater mussels were observed during 0.5 person-hours of search time. One 126 mm Roanoke logperch was collected downstream of the NC 770 bridge. The sampling effort was halted after the collection of this individual. All fish species that were collected during the survey are summarized in Table 1, below.

Table 1. Fish species and number of individuals collected at the NC 770 crossing over Cascade Creek, Rockingham County, April 24, 2012.

Common Name	Species Name	Number of Individuals
Central stoneroller	*Campostoma anomalum*	2
Bluehead chub	*Nocomis leptocephalus*	82
Satinfin shiner	*Cyprinella analostana*	44
Redlip shiner	*Notropis chiliticus*	13
White shiner	*Luxilus albeolus*	92
Rosefin shiner	*Lythrurus ardens*	9
Crescent shiner	*Luxilus cerasinus*	20
Swallowtail shiner	*Notropis procne*	36
Mountain redbelly dace	*Phoxinus oreas*	6
White sucker	*Catostomus commersoni*	21
Golden redhorse	*Moxostoma erythrurum*	3
V-lip redhorse	*Moxostoma papillosum*	1
Blacktip jumprock	*Scartomyzon cervinus*	1
Roanoke hogsucker	*Hypentelium roanokense*	17
Margined madtom	*Noturus insignis*	11
Brown bullhead	*Ameiurus nebulosus*	2
Speckled killifish	*Fundulus rathbuni*	5
Redbreast sunfish	*Lepomis auritus*	23
Green sunfish	*Lepomis cyanellus*	18
Bluegill	*Lepomis macrochirus*	25
Largemouth bass	*Micropterus salmoides*	1
Black crappie	*Pomoxis nigromaculatus*	1
Fantail darter	*Etheostoma flabellare*	53
Roanoke darter	*Percina roanoka*	109
Johnny darter	*Etheostoma nigrum*	30
Glassy darter	*Etheostoma vitreum*	4
Riverweed darter	*Etheostoma podostemone*	1
Roanoke logperch	*Percina rex*	1

As a result of the April 24, 2012 mussel survey, and a review of GIS and NHP data, it appears that the James spinymussel does not occur in the Cascade Creek. The nearest record for the species is over 27 stream miles away in the Mayo River and there are no records for the species in the Dan River in Rockingham County. Given this information, the replacement of Bridge No. 169 on NC 770 will have **No Effect** on the James spinymussel.

During the April 24, 2012 fish survey, a Roanoke logperch was collected a short distance downstream of Bridge No. 169. The documented presence of this federally listed species in close proximity to the bridge dictates that the biological conclusion for the Roanoke

logperch in association with the proposed project is **May Affect; Likely to Adversely Affect**. Formal Section 7 consultation with US Fish and Wildlife Service will likely be necessary if the project is to proceed.

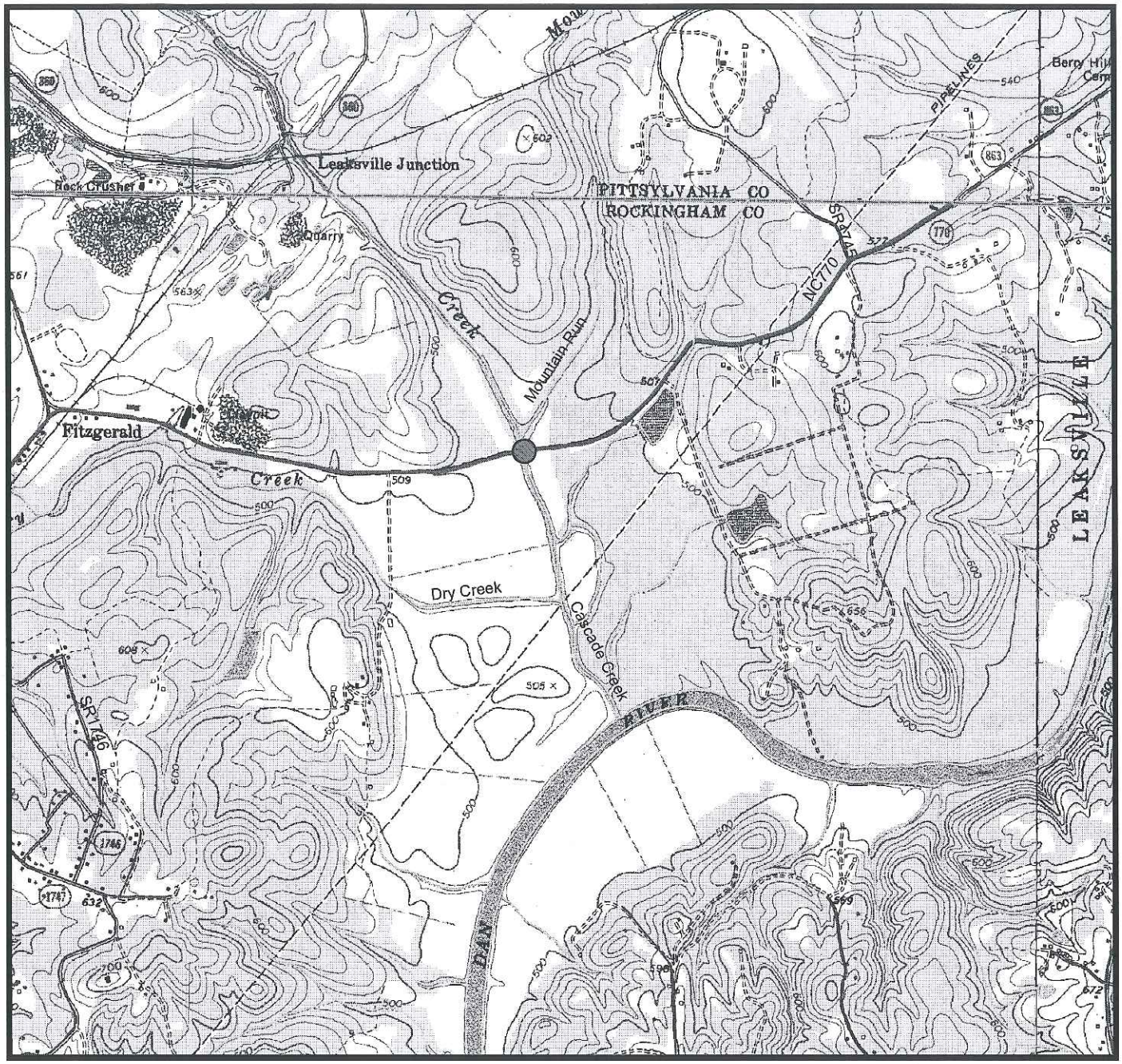
References:

NatureServe. 2007. NatureServe Explorer: An online encyclopedia of life [web application]. Version 6.2. NatureServe, Arlingonton, Virginia. Availabe http://www.natureserve.org/explorer. (Accessed 4/23/2012)
NC Natural Heritage Program. 2011. North Carolina Natural Heritage Program database (Accessed 4/23/12). Raleigh, NC.

[NCWRC] North Carolina Wildlife Resources Commission. North Carolina Mussel Atlas: http://www.ncwildlife.org/pg07_WildlifeSpeciesCon/pg7b1a1.htm. (Accessed 4/23/2012)

File: B-5343, 46057.1.1

cc: Tracy Walter, Project Engineer, Project Development Unit



0 0.25 0.5 1 Miles

N

B-5343 Rockingham County

Replace Bridge No. 169
on NC 770 over Cascade Creek.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

HISTORIC ARCHITECTURE AND LANDSCAPES ASSESSMENT OF EFFECTS 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:	B-5343	***County***:	Rockingham
WBS No.:	46057.1.1	***Document Type***:	PCE or CE
Fed. Aid No:	BRSTP-0770(4)	***Funding***:	☐ State ☒ Federal
Federal Permit(s):	☒ Yes ☐ No	***Permit Type(s)***:	NWP14 and TVA

Project Description:
Replace Bridge No. 169 on NC 770 over Cascade Creek.

SUMMARY OF HISTORIC ARCHITECTURE AND LANDSCAPES REVIEW

Description of review activities, results, and conclusions:
Review of HPO quad maps, HPO GIS information, historic designations roster, and indexes was undertaken on December 14, 2011. Based on this review, there are no existing SL, LD, DE, or SS properties in the Area of Potential Effects, which is 750' from each end of the bridge and 50' from the centerline each way. There is one National Register listed property within the APE, RK0001, Willow Oaks Farm/Cascade Plantation. The National Register Property, a c. 1820s Federal plantation house listed in 1975, does not have a defined National Register Boundary and is located west of the bridge.

The property, a c. 1820 two-story Federal Plantation house, is significant under Criterion C for architecture and design. The house is situated on approximately 770 acres, once part of the original 2,664 acre tract purchased by William Edward Brodnax. The house is approximately 3,900' from the bridge location and is surrounded by open fields and tree groves. Cascade Creek forms the present boundary of the parcel and also serves as the historic boundary of the landscape. There are no structures associated with the house near the bridge location, and Bridge No. 169 is not NR eligible based on the NCDOT Historic Bridge Inventory.

UPDATE: An onsite detour was selected as the preferred alternative. The on-site detour will run south of the current bridge location.

ASSESSMENT OF EFFECTS

Property Name:	Willow Oaks Farm	***Status***:	National Register listed
Survey Site No.:	RK1	***PIN***:	

Effects

☐ No Effect ☒ No Adverse Effect ☐ Adverse Effect

Explanation of Effects Determination:

No adverse effect stands as in original effects consultation.

One or two bar metal rail will be required on Permanent bridge as a Condition.

List of Environmental Commitments:

4/21/2015 Update: A higher standard 2 bar metal rail will be used for the permanent bridge (52-54"). RJG 4/21/15

DB 4-21-15

SUPPORT DOCUMENTATION

☒ Map(s) ☐ Previous Survey Info. ☒ Photos ☐ Correspondence ☐ Design Plans

FINDING BY NCDOT AND STATE HISTORIC PRESERVATION OFFICE

Historic Architecture and Landscapes – ASSESSMENT OF EFFECTS

Kathryn L. Hutton 2/4/2014 KLH 4/21/205

NCDOT Architectural Historian Date

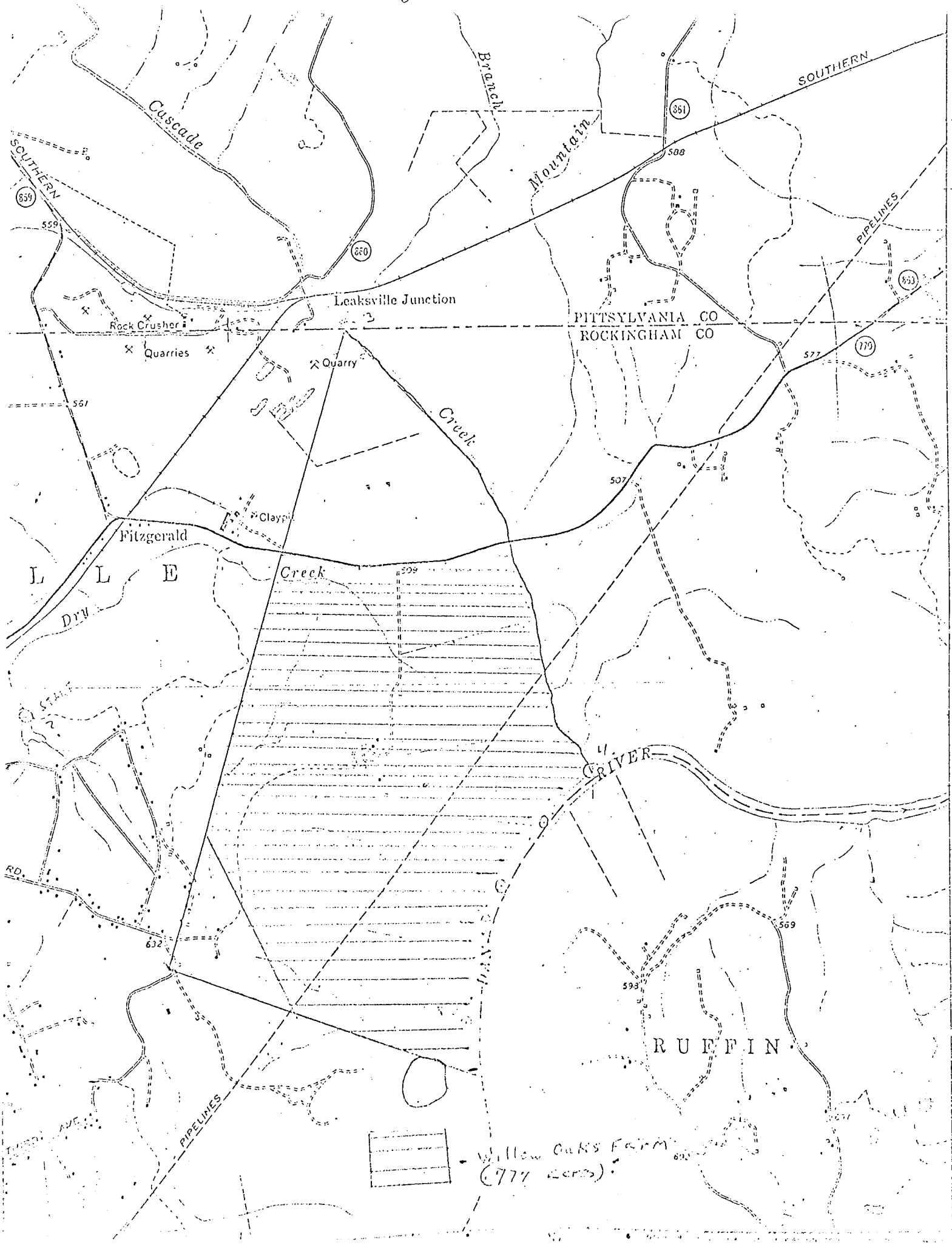
Renee Gledhill-Earley 2-4-14.

State Historic Preservation Office Representative Date

2-4-14

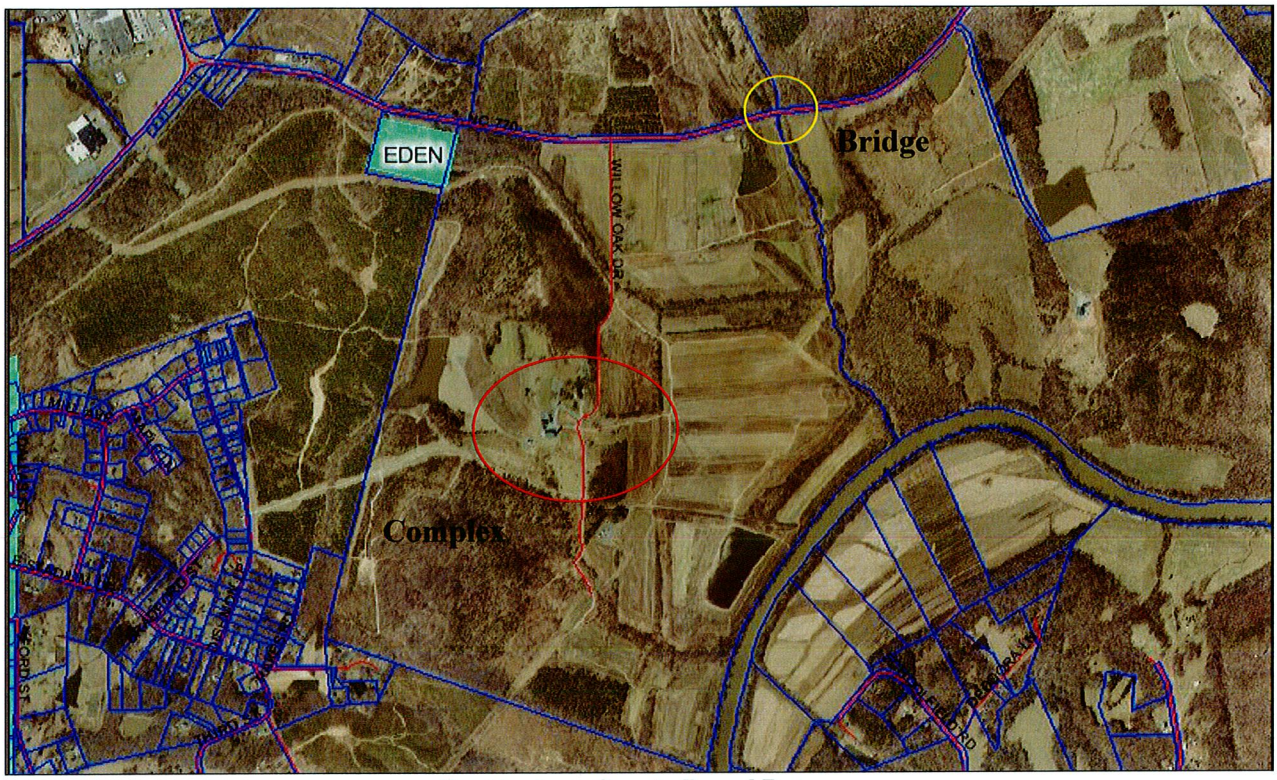
Federal Highway Administration Representative Date

From Research Paper by R. I. Smith III

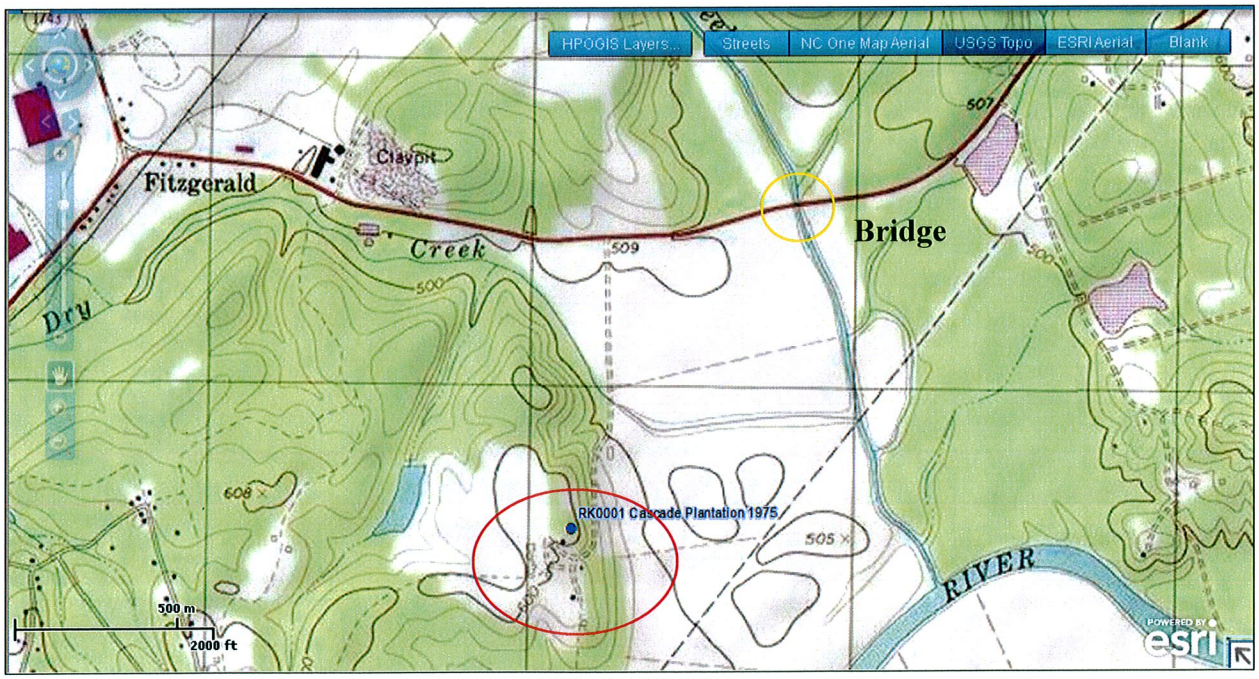


Bridge No. 169 looking west on NC770.

Bridge No. 169 looking east on NC770.



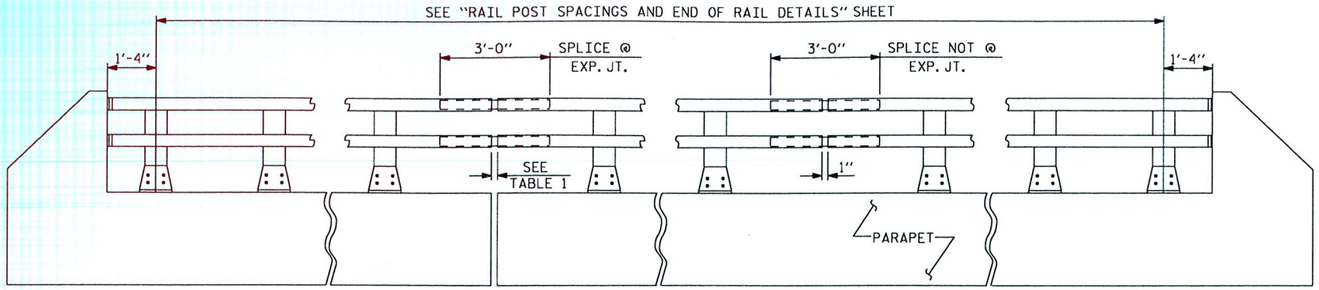
Rockingham County Parcel Data



HPO GIS Website

View from NC770 towards Cascade Plantation/Willow Oaks. Looking southwest.

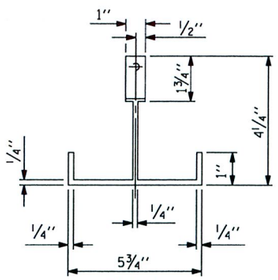
4/21/2015 UPDate



ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.

TABLE 1	
℄ EXP. JT. @	RAIL OPENING
BENT No. 1	
BENT No. 2	
BENT No. 3	



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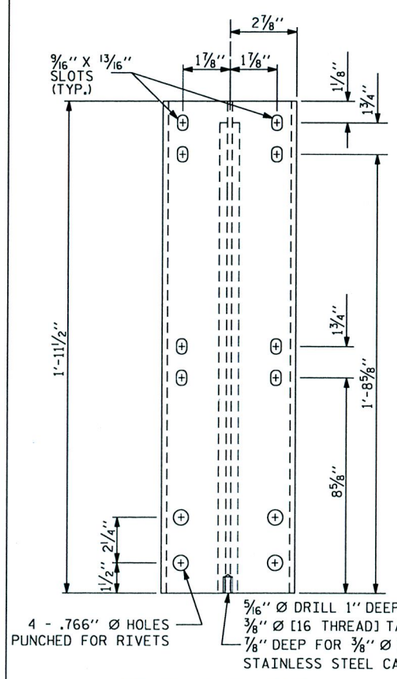
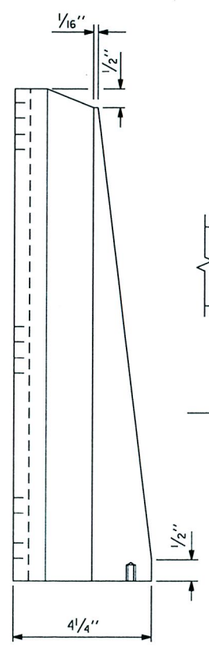
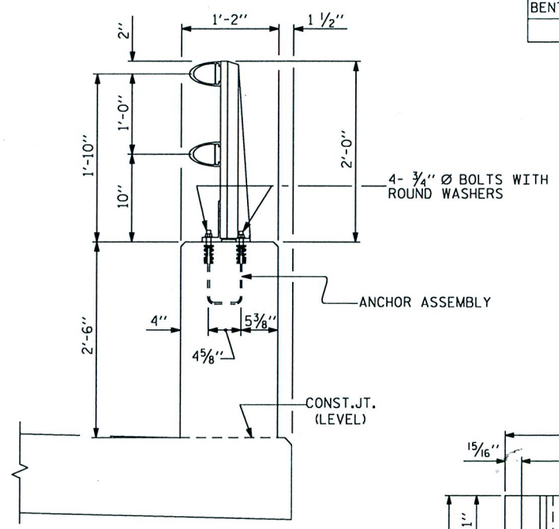


FRONT ELEVATION

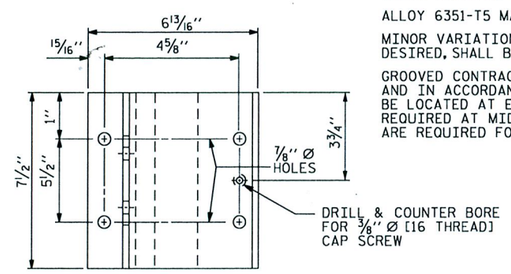


SIDE ELEVATION

DETAILS OF POST



SECTION THRU PARAPET AND RAIL



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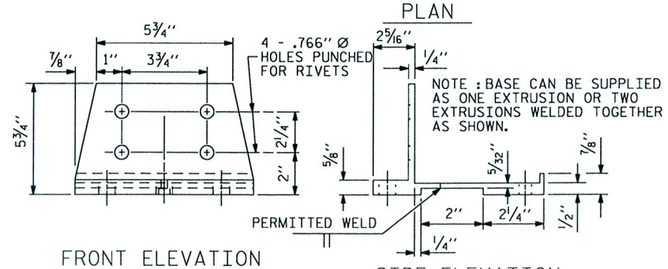
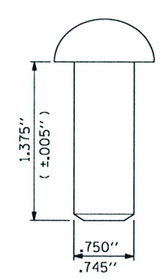


FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = _____ LIN. FT.

PROJECT NO. _____

_____ COUNTY

STATION: _____

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

ASSEMBLED BY :		DATE :
CHECKED BY :		DATE :
DRAWN BY : EEM	6/94	REV. 5/1/06 TLA/GM
CHECKED BY : RGW	6/94	REV. 10/1/11 MAA/GM
		REV. 6/13 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			

STD. NO. BMR3

Project Tracking No. (Internal Use)

11-12-0013

EFFECTS DETERMINATION FORM

PROJECT INFORMATION

Project No:	B-5343	*County:*	Rockingham
WBS No:	46057.1.1	*Document:*	PCE or CE
F.A. No:	BRSTP-0770(4)	*Funding:*	☐ State ☒ Federal

Federal (USACE) Permit Required? ☐ Yes ☒ No *Permit Type:* Unknown at time

Project Description: Replace Bridge No. 169 on NC 770 over Cascade Creek.

Brief description of review activities, results of review, and conclusions:
Review of HPO quad maps, HPO GIS information, historic designations roster, and indexes was undertaken on December 14, 2011. Based on this review, there are no existing SL, LD, DE, or SS properties in the Area of Potential Effects, which is 750' from each end of the bridge and 50' from the centerline each way. There is one National Register listed property within the APE, RK0001, Willow Oaks Farm/Cascade Plantation. The National Register Property, a c. 1820s Federal plantation house listed in 1975, does not have a defined National Register Boundary and is located west of the bridge.

The property, a c. 1820 two-story Federal Plantation house, is significant under Criterion C for architecture and design. The house is situated on approximately 770 acres, once part of the original 2,664 acre tract purchased by William Edward Brodnax. The house is approximately 3,900' from the bridge location and is surrounded by open fields and tree groves. Cascade Creek forms the present boundary of the parcel and also serves as the historic boundary of the landscape. There are no structures associated with the house near the bridge location, and Bridge No. 169 is not NR eligible based on the NCDOT Historic Bridge Inventory.

EFFECTS DETERMINATION

Property/Site: **RK1, Cascade Plantation/Willow Oaks**

Status: National Register Listed

Effects Finding: ☐ No Effect ☒ No Adverse Effect ☐ Adverse Effect

Explanation of Effects Determination: After reviewing the project, evaluating its National Register significance, land historically associated with the house, and current parcel boundaries, it was determined that the proposed bridge replacement project will have No Adverse Effect on the National Register listed property. The location of the project is a considerable distance from the house and will not impact the integrity of the structure or its eligibility. There are no outbuildings associated with the house within the vicinity of the bridge, and there are no other structures within the APE associated with the complex. This project will have No Adverse Effect on Cascade Plantation. If design plans change, additional review will be required.

List Environmental Commitments (if any):

SUPPORT DOCUMENTATION

See attached: Maps, Photos.

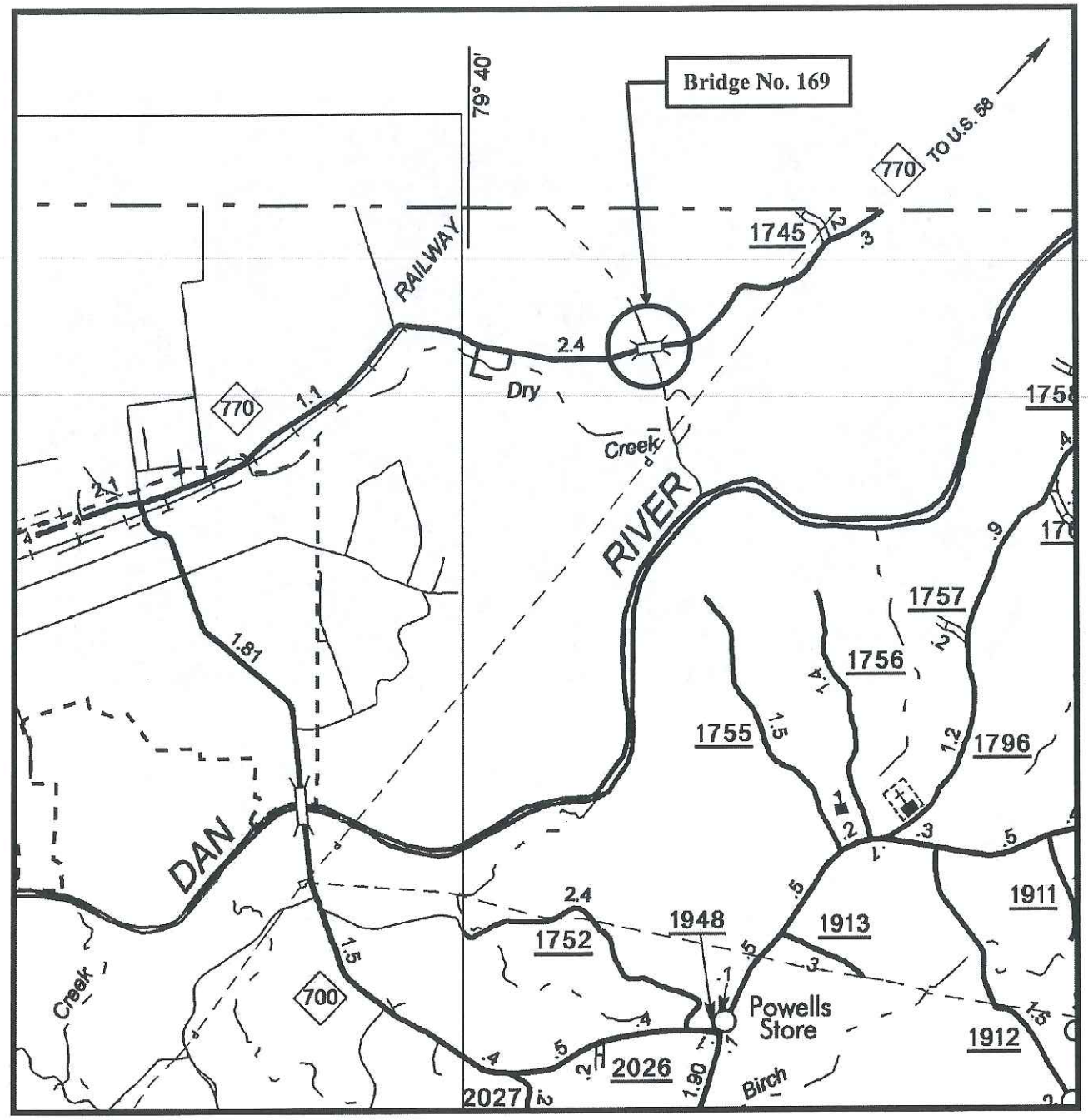
Katherine L. Husband — 2/21/12

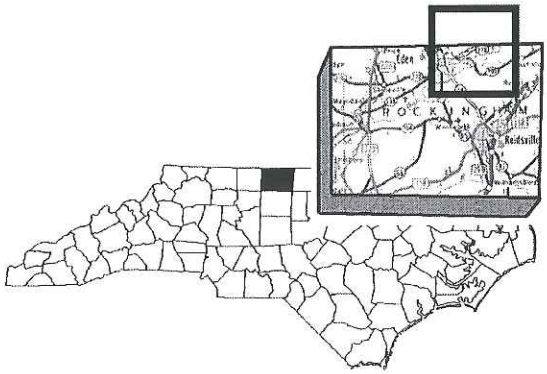
Cultural Resources Specialist, NCDOT — Date

Renee Gledhill-Earley — 2.21.12

Representative, HPO/OSA — Date

HPO/OSA Comments:

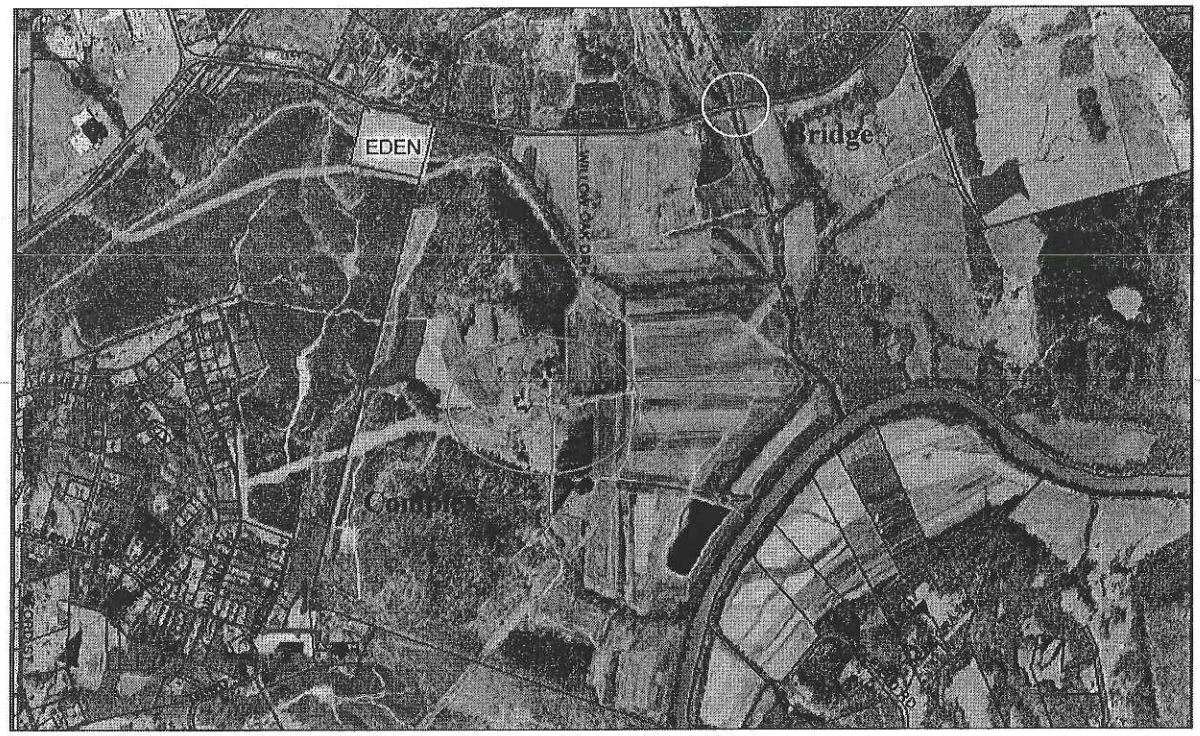




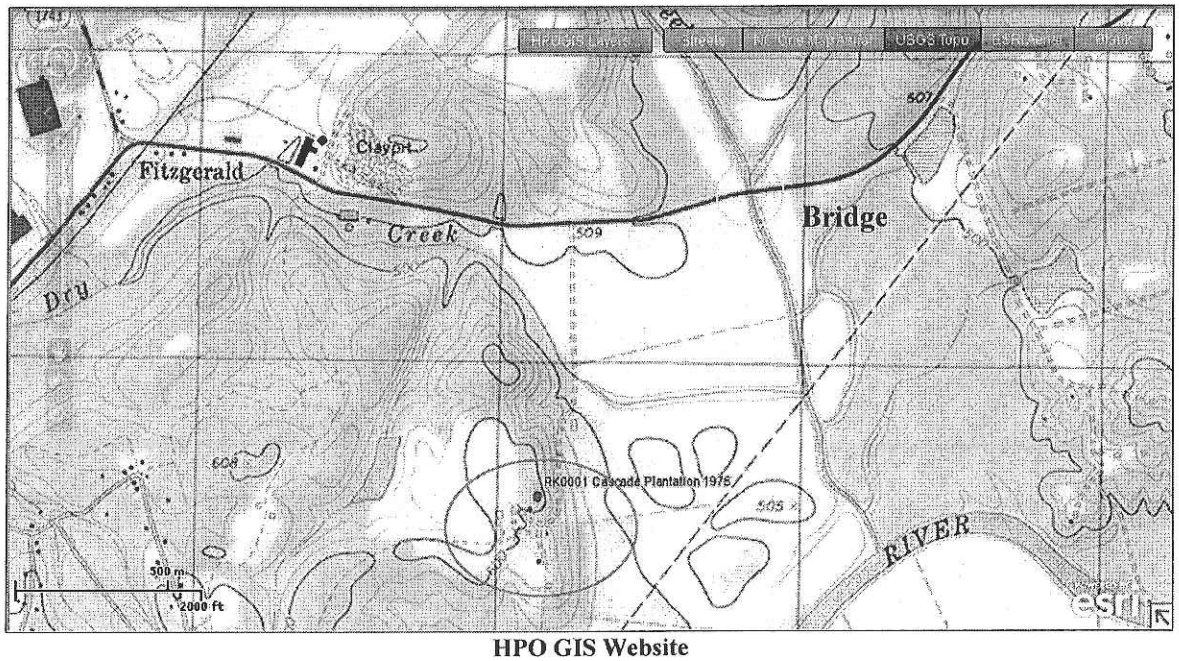
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS UNIT

ROCKINGHAM COUNTY
REPLACE BRIDGE NO. 169 ON NC 770
OVER CASCADE CREEK
B-5343

Figure 1



Rockingham County Parcel Data

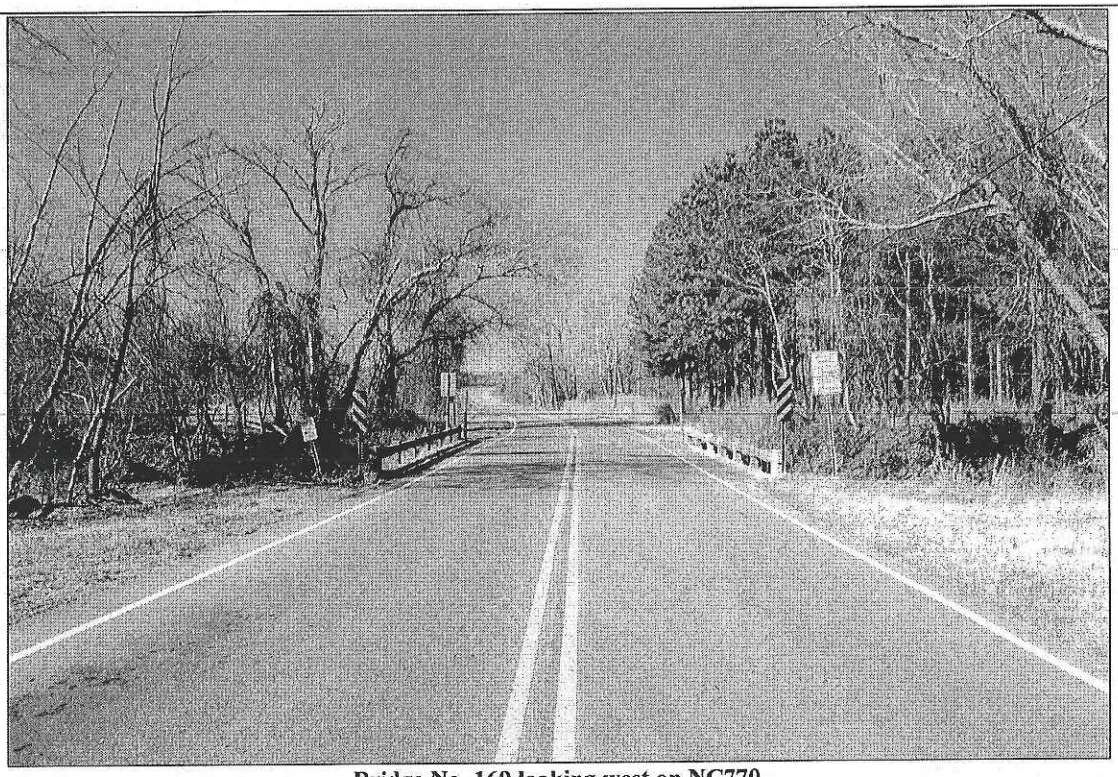


HPO GIS Website

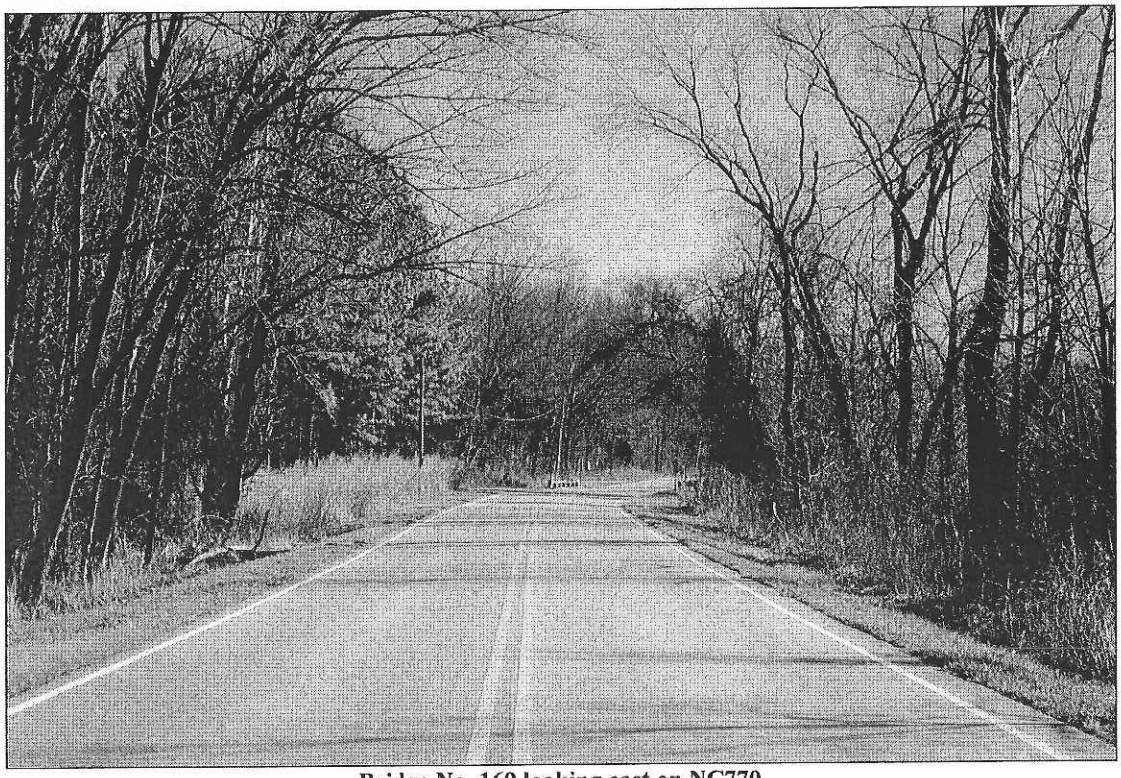
NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS UNIT

ROCKINGHAM COUNTY
REPLACE BRIDGE NO. 169 ON NC 770
OVER CASCADE CREEK
B-5343

PROJECT STUDY AREA



Bridge No. 169 looking west on NC770.



Bridge No. 169 looking east on NC770.

View from NC770 towards Cascade Plantation/Willow Oaks. Looking southwest.

Project Tracking No. (Internal Use)

11-12-0013

NO PREHISTORIC OR HISTORIC PROPERTIES PRESENT/AFFECTED FORM

PROJECT INFORMATION

Project No:	B-5343	*County:*	Rockingham
WBS No:	46057.1.1	*Document:*	PCE or CE
F.A. No:	BRSTP-0770 (4)	*Funding:*	☐ State ☒ Federal

Federal (USACE) Permit Required? ☐ Yes ☐ No *Permit Type:* Unknown at time of investigations

Project Description:
NCDOT intends to replace the structurally deficient Bridge No. 169 on NC 770 over Cascade Creek with a new structure. While no proposed alternative was available at the time of the cultural resources review, a study area measuring 200 feet (nearly 61 meters) wide and 1500 feet (457.2 meters) long centered on the existing structure. For the purposes of the field investigations, an area roughly 325 meters long (just over 1066 feet) and 60 meters wide (nearly 197 feet) will be considered the APE. This area encompasses roughly 4.8 acres (1.95 hectares). The necessity for detour routes and federal permits are unknown at this time.

SUMMARY OF FINDINGS

The North Carolina Department of Transportation (NCDOT) reviewed the subject project and determined:

Historic Architecture/Landscapes

- ☐ There are no National Register-listed or Study Listed properties within the project's area of potential effects.
- ☐ There are no properties less than fifty years old which are considered to meet Criteria Consideration G within the project's area of potential effects.
- ☐ There are no properties within the project's area of potential effects.
- ☐ There are properties over fifty years old within the area of potential effects, but they do not meet the criteria for listing on the National Register.
- ☐ All properties greater than 50 years of age located in the APE have been considered and all compliance for historic architecture with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.
- ☐ There are no historic properties present or affected by this project. (*Attach any notes or documents as needed*)

Archaeology

- ☒ **There are no National Register-listed or Study Listed properties within the project's area of potential effects.**
- ☐ No subsurface archaeological investigations are required for this project.
- ☐ Subsurface investigations did not reveal the presence of any archaeological resources.
- ☒ **Subsurface investigations did not reveal the presence of any archaeological resources considered eligible for the National Register.**
- ☐ All identified Archaeological sites located within the APE have been considered and all compliance for archaeological resources with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.
- ☒ **There are no historic properties present or affected by this project.** (*Attach any notes or documents as needed*)

SUMMARY OF CULTURAL RESOURCES REVIEW

Brief description of review activities, results of review, and conclusions:
As noted on the Survey Required Form dated December 21, 2011, no previously identified archaeological resources are recorded in the project area, but the Dan River and its major tributaries are well-known for their potential for early sites, such as 31RK44, 31RK69, 31RK70, and 31RK90, which are are located within a mile of the current project area. In 1985, UNC-CH researchers, Daniel Simpkins and Gary Petherick suggested that settlement patterning during the late prehistoric and protohistoric periods along the Dan River were expressed as hierarchical agglomeration (functionally discrete sites dictated by social or ecological factors) or component clustering (reoccupation in the Dan River drainage basin of major confluences – perhaps larger than the confluence of Cascade Creek and Mountain Run). Thus, the proposed APE was believed to cross landforms that were almost certain to possess archaeological deposits.

Archaeological investigations within the APE for the proposed replacement of Bridge No. 169 were undertaken by NCDOT staff archaeologists, Shane Petersen and Brian Overton on May 4, 2012. An archaeological reconnaissance, involving a visual inspection of the entire project area was conducted first. This inspection revealed that large portions of the apparent floodplain to the west of Cascade Creek included backchannel wetlands that encompass the drainage ditch-lines along NC 770. Only a relatively narrow area to the northwest of Bridge No. 169 (possibly a remnant levee?) appeared to be well-drained enough for archaeological potential. This area appears to be part of a tree plantation. To the east of Cascade Creek, more of the floodplain appeared to be better drained, although wooded areas still exhibited reeds and flora expected in hydric soil environments. To the northeast of Bridge No. 169, a narrow band of wetlands was observed along Cascade Creek stretching out to the confluence with Mountain Run. The area roughly southeast of Bridge No. 169 is some of the most heavily modified landscape in the area. As could be seen to the west of Cascade Creek, extensive wood fencing stretched along the area south of NC 770. Several meters to the south of this fencing a double row of immature Leyland Cyprus trees had been recently planted with a narrow portion of the floodplain behind these trees plowed.

While the ornamental trees and plowed areas lay at least partially (if not primarily) outside the APE for the current undertaking, it was considered prudent to visually inspect these areas for archaeological materials. The surface walkover of this area revealed (surprisingly) no artifacts. Subsurface testing began with a transect of two tests, 20 meters apart and parallel to NC 770, to the northwest of the bridge on the remnant levee. Shovel Test Pit No. 1 was placed roughly 25 meters west of Cascade Creek and roughly 20 meters north of centerline for NC 770. Soils encountered in the northwest quadrant did not deviate too far from the official description for Codorus loam, except to be recorded as slightly more coarse in grain-size. The second transect of tests was placed to the southeast of Bridge No. 169, parallel to and roughly 20 meters from the centerline for NC 770. Shovel test No. 3 was placed approximately 22 meters east of Cascade Creek with the remaining two test pits placed on a 20-meter interval to the east. Much like the recorded soil profiles along the first transect, the soils observed here fall within the typical range for Dan River loam soils mapped for this portion of the Dan River drainage basin. No artifacts were encountered on either of these first two transects. The third transect was placed to the north of NC 770 (approximately 20 meters from centerline), with the first test (Shovel Test Pit No. 6) roughly 45 meters east of Cascade Creek. This larger off-set was incorporated to avoid the poorly drained areas near the confluence of Cascade Creek and Mountain Run. Both shovel test pits in this area exhibited a higher degree of clay in the soil than the similarly mapped areas to the south of NC 770. A single metavolcanic flake fragment was recovered from the upper stratum of Shovel Test No. 6. This find was considered isolated and no permanent site number was requested or assigned.

No further archaeological investigations are recommended for the replacement of Bridge No. 169 as proposed. Should the project change further investigation may be necessary. The project as described should be considered to be compliant with Section 106 and NCGS121-12a.

Shovel Test Results for Bridge No. 169:

Quadrant	Shovel Test Pit	Level	Depth (top)	Depth (base)	Munsell	Color	Soil Texture	Artifacts	Notes
northwest	1	I	0	15	10YR4/2	dark grayish brown	loam	no	Friable soil matrix.
		II	15	66	10YR4/4	dark yellowish brown	sandy loam	no	Friable soil matrix.
northwest	2	I	0	5	10YR4/3	brown	loam	no	Compact soil matrix
		II	5	53	10YR4/4	dark yellowish brown	sandy loam	no	Compact soil matrix
southeast	3	I	0	20	10YR4/4	dark yellowish brown (light mottling)	sandy loam	no	
		II	20	40	7.5YR4/4	brown	loamy sand	no	Gravels and cinder (?) in soil matrix.
southeast	4	I	0	8	10YR4/3	brown	loam	no	
		II	8	48	10YR4/4	dark yellowish brown	loam	no	Terminated at large cobbles.
southeast	5	I	0	32	10YR4/4	dark yellowish brown	sandy loam	no	Gravels.
		II	32	46	7.5YR4/4	brown	loamy sand	no	Gravels.
northeast	6	I	0	37	10YR4/4	dark yellowish brown	sandy loam	flake	Heavy root disturbance.
		II	37	47	10YR4/4	dark yellowish brown	clay loam	no	Heavy root disturbance.
northeast	7	I	0	30	10YR4/4	dark yellowish brown	sandy loam	no	
		II	30	42	7.5YR4/4	brown	sandy clay loam	no	

SUPPORT DOCUMENTATION

See attached: Subsurface testing map of the project area; photographs of the project area; NRCS web soil survey information (http://websoilsurvey.nrcs.usda.gov/app/).

Signed:

08-14-12

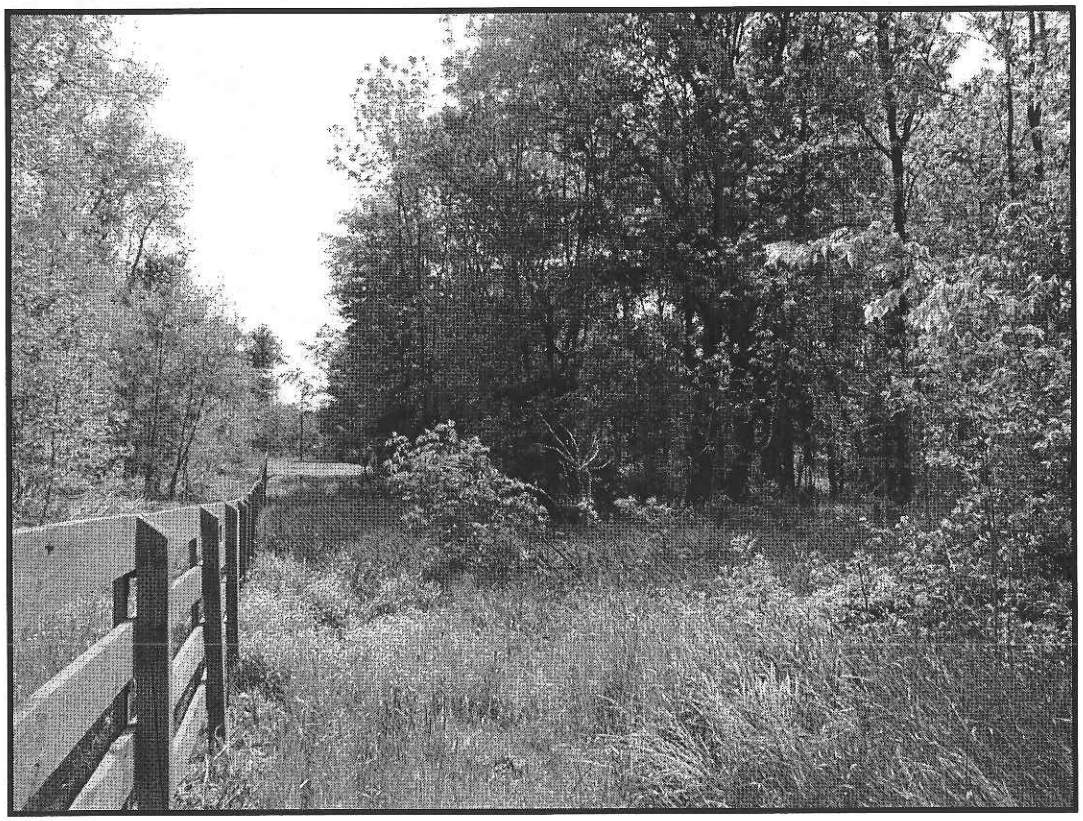
Cultural Resources Specialist, NCDOT — Date

Aerial photograph of the project area, illustrating survey methodology and locations within the redefined APE. White-filled circles represent "negative" test results, while black-filled circles represent "positive" test results. The hashed area represents the stretch along the APE inspected through surface walkover. The blue shaded areas are portions of land included in the HQR National Wetland Inventory.

NC 770 and Bridge No. 169 over Cascade Creek (facing east).

NC 770 and Bridge No. 169 over Cascade Creek (facing west).

Photograph of foundation remains southwest of Bridge No. 169 (facing southeast).



Photograph of wetland area south of fence-line along NC770, west of Cascade Creek (facing east).

Photograph of northwest quadrant of investigation (facing west).

Photograph of the southeast quadrant of investigation (facing southwest).

Photograph of the southeast quadrant of investigation (facing east).

Photograph of the northeast quadrant of investigation (facing northeast).

(Bridge No. 169 on NC 770)

Map Scale: 1:2,970 if printed on A size (8.5" x 11") sheet.

N

Meters: 0 40 80 160 240

Feet: 0 150 300 600 900

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:2,970 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 17N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, North Carolina
Survey Area Data: Version 12, Jun 19, 2009

Date(s) aerial images were photographed: 6/29/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Rockingham County, North Carolina (NC157)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BaB	Banister loam, 0 to 4 percent slopes, rarely flooded	9.8	23.1%
CsA	Codorus loam, 0 to 2 percent slopes, frequently flooded	6.4	15.1%
DaA	Dan River loam, 0 to 2 percent slopes, frequently flooded	21.1	49.8%
YaB	Yadkin loam, 2 to 8 percent slopes	5.1	12.1%
Totals for Area of Interest		**42.4**	**100.0%**

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

March 23, 2012

Tracy A. Walter
North Carolina Department of Transportation
Bridge Project Development Section
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Walter:

This letter is in response to your request for comments from the U.S. Fish and Wildlife Service (Service) on the potential environmental effects of the proposed replacement of Bridge No. 169 on NC 770 over Cascade Creek, Rockingham County, North Carolina (TIP No. B-5343). These comments provide information in accordance with provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543).

Section 7(a)(2) of the Endangered Species Act requires that all federal action agencies (or their designated non-federal representatives), in consultation with the Service, insure that any action federally authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any federally threatened or endangered species. Although not known from Cascade Creek, the federally endangered Roanoke logperch (*Percina rex*) is known to occur in the Dan River near the town of Eden. From the project site, Cascade Creek flows approximately one mile to the Dan River. If suitable habitat is present for the Roanoke logperch at or near the project site, the Service recommends that a survey be conducted to help determine presence or absence of the species. If you determine that the proposed action may affect (i.e. likely to adversely affect or not likely to adversely affect) this or any other federally listed species, you should notify this office with your determination, the results of your surveys, survey methodologies and an analysis of the effects of the action on listed species, including consideration of direct, indirect and cumulative effects, before conducting any activities that might affect the species. If you determine that the proposed action will have no effect (i.e. no beneficial or adverse, direct or indirect effect) on listed species, then you are not required to contact our office for concurrence.

In addition, the Service recommends the following general conservation measures to avoid or minimize impacts to fish and wildlife resources:

1. Wetland, forest and designated riparian buffer impacts should be avoided and minimized to the maximum extent practical;

2. If unavoidable wetland or stream impacts are proposed, a plan for compensatory mitigation to offset unavoidable impacts should be provided early in the planning process;

3. Off-site detours should be used rather than construction of temporary, on-site bridges. For projects requiring an on-site detour in wetlands or open water, such detours should be aligned along the side of the existing structure which has the least and/or least quality of fish and wildlife habitat. At the completion of construction, the detour area should be entirely removed and the impacted areas be replanted with appropriate tree species;

4. In streams utilized by anadromous fish, the NCDOT policy entitled "Stream Crossing Guidelines for Anadromous Fish Passage" should be implemented;

5. New bridges should be long enough to allow for sufficient wildlife passage along stream corridors;

6. On each side of the stream bank underneath bridges, at least 10 feet of the bank should remain clear of riprap;

7. "Best Management Practices (BMP) for Construction and Maintenance Activities" should be implemented;

8. Bridge designs should include provisions for roadbed and deck drainage to flow through a vegetated buffer prior to reaching the affected stream. This buffer should be large enough to alleviate any potential effects from run-off of storm water and pollutants;

9. Bridge designs should not alter the natural stream and stream-bank morphology or impede fish passage. To the extent possible, piers and bents should be placed outside the bank-full width of the stream; and

10. Bridges and approaches should be designed to avoid any fill that will result in damming or constriction of the channel or flood plain. If spanning the flood plain is not feasible, culverts should be installed in the flood plain portion of the approach to restore some of the hydrological functions of the flood plain and reduce high velocities of flood waters within the affected area.

The Service appreciates the opportunity to comment on this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520, ext. 32.

Sincerely,

for Gary Jordan
Pete Benjamin
Field Supervisor

Electronic copy: Andy Williams, USACE, Wake Forest, NC
Travis Wilson, NCWRC, Creedmoor, NC
Chris Militscher, USEPA, Raleigh, NC

Walter, Tracy A

From: Frankie Legaux <flegaux@co.rockingham.nc.us>
Sent: Tuesday, April 17, 2012 3:33 PM
To: Walter, Tracy A
Subject: STIP Project No. B-5343 Replacement of Bridge No. 169
Attachments: Bridge 169.mxd

This location is not within a watershed overlay district. However, the entire area is in an AE flood zone. The Comprehensive Transportation Plan dated October 2010 lists this bridge as "structurally deficient."

--

Frankie G. Legaux, AICP
Rockingham County Planning Department
Phone: (336) 342-8137
Fax: (336) 342-8362

USDA
United States Department of Agriculture
Natural Resources Conservation Service
4407 Bland Road, Suite 117
Raleigh, North Carolina 27609

Milton Cortés, Assistant State Soil Scientist
Telephone No.: (919) 873-2171
Fax No.: (919) 873-2157
E-mail: milton.cortes@nc.usda.gov

May 28, 2015

Ms. Teresa Gresham, P.E.
Kimley-Horn
3001 Weston Parkway,
Cary, NC 27513

Ms. Gresham;

The following information is in response to your review request in the B-5343 Bridge replacement project on NC770 in Rockingham Co, North Carolina.

Projects are subject to Farmland Protection Policy Act (FPPA) requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a Federal agency or with assistance from a Federal agency.

For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

Farmland means prime or unique farmlands as defined in section 1540(c)(1) of the Act or farmland that is determined by the appropriate state or unit of local government agency or agencies with concurrence of the Secretary to be farmland of statewide of local importance.

“Farmland" does not include land already in or committed to urban development or water storage. Farmland ``already in" urban development or water storage includes all such land with a density of 30 structures per 40-acre area. Farmland already in urban development also includes lands identified as ``urbanized area" (UA) on the Census Bureau Map, or as urban area mapped with a ``tint overprint" on the USGS topographical maps, or as ``urban-built-up" on the USDA Important Farmland Maps. See over for more information.

The area in question meets one or more of the above criteria for Farmland. Farmland area will be affected or converted. Enclosed is the Farmland Conversion Impact Rating form AD1006 with PARTS II, IV and V completed by NRCS. The corresponding agency will need to complete the evaluation, according to the Code of Federal Regulation 7CFR 658, Farmland Protection Policy Act.

If you have any questions, please contact me at number above.

Sincerely,

Milton Cortes

Milton Cortés
Assistant State Soil Scientist

Projects and Activities Subject to FPPA

Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a Federal agency or with assistance from a Federal agency.

Assistance from a Federal agency includes:

- Acquiring or disposing of land.
- Providing financing or loans.
- Managing property.
- Providing technical assistance

Activities that may be subject to FPPA include:

- State highway construction projects, (through the Federal Highway Administration)
- Airport expansions
- Electric cooperative construction projects
- Railroad construction projects
- Telephone company construction projects
- Reservoir and hydroelectric projects
- Federal agency projects that convert farmland
- Other projects completed with Federal assistance.

Activities not subject to FPPA include:

- Federal permitting and licensing
- Projects planned and completed without the assistance of a Federal agency
- Projects on land already in urban development or used for water storage
- Construction within an existing right-of-way purchased on or before August 4, 1984
- Construction for national defense purposes
- Construction of on-farm structures needed for farm operations
- Surface mining, where restoration to agricultural use is planned
- Construction of new minor secondary structures such as a garage or storage shed.

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request
Name of Project B-5343 Bridge on NC 770	Federal Agency Involved FHWA
Proposed Land Use Bridge replacement	County and State Rockingham County, North Carolina
PART II *(To be completed by NRCS)*	Date Request Received By NRCS / Person Completing Form: Milton Cortes NC-NRCS

Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☑ NO ☐	Acres Irrigated None	Average Farm Size 136 acres
Major Crop(s) Corn	Farmable Land In Govt. Jurisdiction Acres: 260,767 acres 71.2 %	Amount of Farmland As Defined in FPPA Acres: 249,142acres 68 %	
Name of Land Evaluation System Used Rockingham Co., NC LESA	Name of State or Local Site Assessment System None	Date Land Evaluation Returned by NRCS May 28, 2015 by email	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	0.6			
B. Total Acres To Be Converted Indirectly	0			
C. Total Acres In Site	0.6			
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	0.6			
B. Total Acres Statewide Important or Local Important Farmland	0			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	0.0002			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	33%			
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)	84			

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	**Maximum Points**	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)	15			
2. Perimeter In Non-urban Use	(10)	10			
3. Percent Of Site Being Farmed	(20)	5			
4. Protection Provided By State and Local Government	(20)	0			
5. Distance From Urban Built-up Area	(15)	15			
6. Distance To Urban Support Services	(15)	10			
7. Size Of Present Farm Unit Compared To Average	(10)	10			
8. Creation Of Non-farmable Farmland	(10)	10			
9. Availability Of Farm Support Services	(5)	5			
10. On-Farm Investments	(20)	20			
11. Effects Of Conversion On Farm Support Services	(10)	0			
12. Compatibility With Existing Agricultural Use	(10)	0			
TOTAL SITE ASSESSMENT POINTS	160	100	0	0	0
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland *(From Part V)*	100	84	0	0	0
Total Site Assessment *(From Part VI above or local site assessment)*	160	100	0	0	0
TOTAL POINTS ***(Total of above 2 lines)***	260	184	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? YES ☐ NO ☑

Reason For Selection:

Name of Federal agency representative completing this form:	Date:

(See Instructions on reverse side) **Form AD-1006 (03-02)**