

**Mitchell County
Bridge No. 29 on NC 226
over Big Rock Creek
Federal Aid Project No. BRSTP-0226(14)
W.B.S. No. 42328.1.1
T.I.P. No. B-5170**

OCTOBER 2016

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION


FEDERAL HIGHWAY ADMINISTRATION

AND

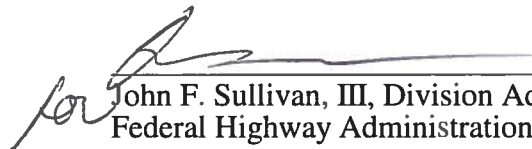
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

10/7/16
DATE


Beverly G. Robinson, Western Region Group Leader
Project Development and Environmental Analysis Unit

10/14/16
DATE


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

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10/7/16
DATE

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PROJECT COMMITMENTS:

**Mitchell County
Bridge No. 29 on NC 226
Over Big Rock Creek
Federal Aid Project No. BRSTP – 0226 (14)
W.B.S. No. 42328.1.1
T.I.P. No. B-5170**

Roadway Design Unit, Division 13

Bridge No. 29 is not located along a designated bicycle route; however the Mitchell County Emergency Medical Services (EMS) Director stated that there is an annual foot race that uses the bridge in September. As a result, 7-foot 9-inch offsets, between the outside of the travel lane and the bridge rail parapet, will be included in the design. Additionally, the structure will provide 2 bar metal railing, as appropriate for bicycle and pedestrian use.

All Design Groups/Division Resident Construction Engineer

Big Rock Creek has been designated C;Tr from its source to the North Toe River and Spring Creek has been designated C;Tr from its source to Big Rock Creek. In addition, the North Carolina Wildlife Resources Commission (NCWRC) has identified Big Rock Creek as Hatchery Supported Designated Public Mountain Trout water. As such, NCDOT's *Best Management Practices for Protection of Surface Waters* (March 1997) will be followed throughout the design and construction of the project.

All Design Groups/Division 13 Resident Construction Engineer

The NCWRC has identified Big Rock Creek in the study area as trout waters, as per their letter dated February 26, 2010. Based on the NCWRC's designation as trout waters, a mandatory trout moratorium will be present from **October 15 to April 15** of any given year, for Big Rock Creek along with all other tributaries in the project study area.

NCDOT will implement *Guidelines for Construction of Highway Improvements Adjacent to or Crossing Trout Waters in North Carolina* in the design and construction of this project.

Project Development and Environmental Analysis Unit – Natural Environment Section

A habitat assessment and, if needed, survey for the Northern long-eared bat (NLEB) will be the responsibility of the NCDOT-Biosurvey Group. Construction authorization will not be given and work on the project will not start until consultation with the USFWS is complete.

Hydraulic Unit

The NCDOT's 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

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.

NES, Roadside Environmental, Division 13 – Trout Designation

NCWRC has designated this stream as trout waters and therefore *Design Standards for Sensitive Watersheds* will be incorporated throughout design and construction of the project.

Structure Design

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.

Project Development and Environmental Analysis Unit – Community Studies

A preliminary screening with the AD 1006 form resulted in a score of 62 points out of 160. Since the total farmland site assessment score exceeds the 60-point threshold established by NRCS, notable project impacts to eligible soils may be anticipated. Therefore, the NRCS farmland conversion form must be completed post-design and prior to construction activities.

Geotechnical Unit

Preliminary site assessments will be conducted for potentially contaminated sites within the proposed right of way prior to right of way acquisition.

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INTRODUCTION: The proposed project will replace Mitchell County Bridge No. 29 on NC 226 over Big Rock Creek. The project is included in the current 2016 - 2025 North Carolina State Transportation Improvement Program (STIP) as B-5170. The location of the project is shown on Figure 1 (Vicinity Map), in Appendix A. No substantial environmental impacts are anticipated with this project. The project is classified as a Federal Categorical Exclusion (CE).

I. PURPOSE AND NEED STATEMENT

NCDOT Bridge Management Unit records indicate Bridge No. 29 has a sufficiency rating of 77.7 out of a possible 100 for a new structure.

Bridge No. 29 was built in 1940 and rehabilitated in 1981 and is considered functionally obsolete due to a Deck Geometry appraisal of 2 out of 9, according to Federal Highway Administration (FHWA) standards. Bridge No. 29 has a narrow geometry (21.8 foot clearance for two lanes) and currently carries 1,954 vehicles per day (VPD). Replacement of the bridge will result in safer traffic operations.

II. EXISTING CONDITIONS

Bridge No. 29 is located on NC 226 over Big Rock Creek in the unincorporated community of Buladean in a rural area in Mitchell County (see Figure 1, Appendix A). The project area is made up of relatively flat terrain. Development in the area is residential and agricultural in nature.

NC 226 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 226 has an 18-foot pavement width with grass shoulders. The existing bridge is on a tangent. The bridge deck is situated 9 feet above the creek bed, and the normal depth of flow is approximately 1 foot.

Bridge No. 29 is a two lane bridge with a three-span structure that consists of a timber floor on I-beams, supported by timber caps, posts and sills on concrete pedestals, with an asphalt-wearing surface. The existing bridge is functionally obsolete due to its deck geometry. The overall length of the existing structure is 53 feet. The clear roadway deck width is 21.8 feet.

Utilities in the vicinity of the bridge include aerial power lines approaching the bridge from the west. From there, the main lines run north, parallel to and along the west side of NC 226.

Telephone lines and cable lines are attached to the same poles. There is a pole located very close to the bridge in the northwest quadrant, which is the junction point on the main line of the smaller service lines for all three utilities. This pole has several guy wires anchored to the stream bank on the west side of the bridge.

The current (2016) traffic volume of 1,954 vehicles per day (VPD) is expected to increase to 2,100 VPD by the year 2035. The projected volume includes three percent TT-STs and seven percent dual axel trucks (Duals). The posted speed limit is 35 miles per hour in the project area. Three school buses cross the bridge daily on their morning and afternoon routes.

There were three accidents reported in the vicinity of Bridge No. 29 during the period between 12/1/2010 and 11/30/2015. None of these three accidents were associated with the alignment or geometry of the bridge or its approach roadway.

This section of NC 226 is not a designated Bicycle Route. A wooden walkway is present on the east side of the bridge, but is no longer in use due to damage to the railing and decking.

III. ALTERNATIVES

A. Preferred Alternative

Build Alternative 1

Build Alternative 1 was studied in detail for replacing Bridge No. 29 and involves replacement of the structure in place with a temporary on-site detour located upstream (east side) of the existing structure. The temporary on-site detour will require construction of a temporary 50-foot long by 15-foot wide one-lane bridge, to maintain traffic during construction (see Figure 2 in Appendix A). The one-lane temporary on-site detour bridge will require the use of temporary traffic signals to facilitate an alternating traffic pattern on NC 226 during construction.

Alternative 1 leaves the final alignment in a similar pattern to the existing alignment with one simple curve before and after the bridge. Additionally, Alternative 1 allows for the preferred alignment of the Blevins Branch Road and NC 226 intersection, due to the beginning of the bridge being further offset from Blevins Branch Road. Construction of this alternative can be accomplished mostly within temporary construction easements and at a slightly lower overall cost.

The replacement structure will be a bridge approximately 65 feet long, providing 39.5 feet of clear deck width. The bridge length is based on preliminary design information and is set by hydraulic requirements. The bridge will be built at the existing location and at the same elevation as that of the existing bridge with a minimum 0.3% gradient to facilitate deck drainage. The bridge will be of sufficient width to provide for two 12-foot lanes with a posted speed of 35 mph.

Bridge No. 29 is not located along a designated bicycle route; however the Mitchell County Emergency Medical Services (EMS) Director stated that there is an annual foot race that uses the bridge in September. As a result, 7-foot 9-inch offsets, between the outside of the travel lane and the bridge rail parapet, will be included in the design. Additionally, the structure will provide 42-inch high Oregon railing, as appropriate for bicycle and pedestrian use.

Improvements to the approach roadway will extend approximately 230 feet from the south end of the new bridge and 314 feet from the north end of the new bridge. The approaches will be widened to include a minimum 32-foot pavement width, providing two 12-foot lanes and 4-foot paved shoulders. Paved shoulder width will vary in areas with guardrail. The roadway will be designed as a major collector, with a 40 mph design speed. No design exceptions are anticipated.

B. Alternatives Eliminated From Further Consideration

No Build

The no build alternative would eventually necessitate closure of the bridge and NC 226. This is unacceptable given the volume of traffic served by NC 226 and the limited connectivity to other major routes in the vicinity.

Rehabilitation

Bridge No. 29 was built in 1940 and was rehabilitated once in 1981. Rehabilitation is not feasible due to poor deck geometry (Functionally Obsolete). Additionally the timber structure has reached its life expectancy, and therefore, rehabilitation of Bridge No. 29 is impractical.

Off-site Detour

An off-site detour alternative is not feasible given the traffic volume and limited connectivity to other major routes in the project vicinity. The Mitchell County EMS Director stated that there would be a high impact if the bridge was closed and an on-site detour was not provided due to concerns of its effect on fire, medical, and law enforcement response. There would also be an impact to business, industry traffic and to community cohesion found at the park located behind the former Buladean Elementary School and the Buladean Volunteer Fire Department. Additionally, large trucks would face difficulty in making the turns required for an off-site detour route.

Build Alternative 2

Build Alternative 2 was studied in detail for replacing Bridge No. 29 and involves staged construction, utilizing temporary traffic signals to facilitate an alternating one-lane traffic pattern on NC 226 during construction. The staged construction alternative would remove the eastern side (side with the walkway) first, to provide more room for the first stage of construction. Build Alternative 2 requires two short reverse curves on the north end of the alignment to tie back into the original alignment. These curves are too short to fully develop

the proper cross slope for the design speed of 40 mph. The permanent right of way impacts are also greater on this alternative.

IV. ESTIMATED COSTS

Table 1: The estimated costs (Date of Estimate 06/03/15)

Cost Estimates	Alternative 1 (Preferred)	Alternative 2
Structure	\$ 325,500	\$ 352,800
Roadway Approaches	173,970	298,240
Detour Structure	56,250	-0-
Detour Approaches	85,000	-0-
Structure Removal	22,880	33,800
Misc. & Mob (Structures).	60,400	58,160
Misc. & Mob (Roadway)	117,000	134,000
Total Contract Cost	\$ 841,000	\$ 877,000
Plus Engineering & Contingencies	134,000	123,000
Construction Cost	\$ 975,000	\$ 1,000,000
Business Relocatees	\$ 25,000	\$ 25,000
Land, Improvements, and Damages	37,650	34,500
Acquisition	10,000	5,000
Total Estimated R/W Cost	\$ 72,650	\$ 64,500
Total Estimated Utility Relocation	\$ 62,516	\$ 62,516
Total Project Cost	\$ 1,110,166	\$ 1,127,016

V. NATURAL ENVIRONMENT

Natural Resources in the project area were reviewed in the field in June 2009 and documented in a Natural Resources Technical Report (NRTR) (March 2010), incorporated by reference. This section includes a summary of the existing conditions, as well as the potential environmental impacts of the alternatives. A full version of the NRTR can be viewed at the Project Development & Environmental Analysis Unit located at Century Center Bldg. A, 1000 Birch Ridge Drive, Raleigh, NC.

A. Physical Characteristics

The study area lies in the southern Blue Ridge Mountain physiographic region of North Carolina. Topography in the project vicinity is comprised of flat open agricultural fields and lawns. Elevations in the study area range from 2,746 to 2,890 feet above sea level. Land use in the project vicinity consists primarily of residential development, interspersed with agriculture. Development is located along roadways and forestland along portions of stream corridors.

Soils

Based on information from the Mitchell County soil survey, there are seven soil types within the study area (Table 2).

Table 2: Soils in the study area

Soil Series	Mapping Unit	Drainage Class	Hydric Status
Bandana sandy loam	BdA	Somewhat Poorly Drained	Hydric
Buladean-Chestnut complex	BtF	Well Drained	Nonhydric
Dillsboro	DoB	Well Drained	Hydric
Huntdale silty clay loam	HuF	Well Drained	Nonhydric
Rosman fine sandy loam	RoA	Well Drained	Hydric
Saunook silt loam	SaB	Well Drained	Nonhydric
Udorthents	Ud	Well Drained	Nonhydric

Water Resources

Water resources in the study area are part of the French Broad River basin (U.S. Geological Survey [USGS] Hydrologic Unit 06010108). Three streams were identified in the study area (Table 3). The location of each water resource is shown in Figure 2, Appendix A. The physical characteristics of each water resource in the study area are provided in Table 4.

Table 3: Water resources in the study area

Stream Name	NCDWR Index Number	Best Usage Classification
Big Rock Creek	7-2-64	C;Tr
Spring Creek	7-2-64-6	C;Tr
UT to Spring Creek	7-2-64-6	C;Tr

Table 4: Physical characteristics of water resources in the study area

Stream Name	Bank Height (ft)	Bankful Width (ft)	Water Depth (in)	Channel Substrate	Velocity	Clarity
Big Rock Creek	6-8	35	6-24	Sand, Cobble, Gravel, Boulder	Fast	Clear
Spring Creek	3-5	20	6-20	Silt, Sand, Cobble, Gravel, Boulder	Fast	Clear
UT to Spring Creek	1	1	1-6	Sand, Silt, Gravel	Moderate	Clear

Big Rock Creek has been designated C;Tr from its source to the North Toe River and Spring Creek has been designated C;Tr from its source to Big Rock Creek. In addition, the North Carolina Wildlife Resources Commission (NCWRC) has identified Big Rock Creek as Hatchery Supported Designated Public Mountain Trout water. As such, NCDOT's *Best Management Practices for Protection of Surface Waters* (March 1997) will be followed throughout the design and construction of the project.

There are no designated anadromous fish waters in the project area. There are no Primary Nursery Areas present in the study area. There are no designated High Quality Waters or water supply watersheds within 1.0 miles downstream of the study area. Big Rock Creek and Spring Creek are not listed on the North Carolina 2014 Final 303(d) list of impaired waters.

Biotic Resources

Two visually discernible terrestrial communities were identified in the study area: maintained-disturbed/agriculture and piedmont/low mountain alluvial forest. Maintained-disturbed areas are scattered throughout the study area in places where the vegetation is periodically mowed, such as roadside shoulders and residential lawns. The piedmont/low mountain alluvial forest community occurs along the floodplain of Big Rock Creek, where periodic overbank flooding from the river occurs. Total coverage of each community type within the project study area is provided in Table 5.

Table 5: Coverage and impacts to terrestrial communities in the project study area

Community	Coverage (ac.)
Maintained-Disturbed/Agriculture	7.3
Piedmont/Low Mountain Alluvial Forest	0.6
Total	7.9

Detailed descriptions of these community types and species observed in the study area can be found in the NRTR.

B. Jurisdictional Topics

The following sections provide an inventory of resource areas and species and an assessment of possible impacts for waters of the United States and rare and protected species. Waters of the United States and rare and protected species are of particular significance when assessing impacts because of federal and state mandates that regulate their protection.

Clean Water Act waters of the U.S.

Three jurisdictional streams were identified in the study area (Table 6). The location of these streams is shown on Figure 2, in Appendix A. All jurisdictional streams in the study area have been designated as Cold water streams for the purposes of stream mitigation.

Table 6: Jurisdictional characteristics of water resources in the study area

Map ID	Length (ft)	Estimated Impacts (ft)	Classification	Compensatory Mitigation Required	River Basin Buffer
Big Rock Creek	475	275	Perennial	Yes	Not Subject
Spring Creek	290	0	Perennial	Yes	Not Subject
UT to Spring Creek	193	95	Perennial	Yes	Not Subject

No wetlands are located within the project study area.

Permits

The proposed project has been designated as a CE for the purposes of NEPA documentation. As a result, a Nationwide Permit (NWP) 23 will likely be applicable. Other permits that may apply include a NWP No. 33 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.

In addition to the 404 permit, other required authorizations include the corresponding Section 401 Water Quality Certification (WQC) from the North Carolina Division of Water Resources (NCDWR). A NCDWR Section 401 Water Quality General Certification (GC) for a Categorical Exclusion may be required prior to the issuance of a Section 404 Permit. Other required 401 certifications may include a GC 3688 for temporary access and dewatering.

Construction Moratoria

The NCWRC has identified Big Rock Creek in the study area as trout waters, as per their letter dated February 26, 2010. Based on the NCWRC's designation as trout waters, a mandatory trout moratorium will be present from October 15 to April 15 of any given year, for Big Rock Creek along with all other tributaries in the project study area.

Federally Protected Species

As of July 24, 2015 the USFWS lists eleven federally protected species for Mitchell County (Table 7).

Table 7: Federally protected species listed for Mitchell County

Common Name	Scientific Name	Status	Habitat Present	Biological Conclusion
Appalachian elktoe mussel	<i>Alasmidonta ravenaliana</i>	E	No	No Effect
Blue ridge goldenrod	<i>Solidago spithamaea</i>	T	No	No Effect
Bog turtle	<i>Glyptemys muhlenbergii</i>	T(S/A)	No	Not Required
Carolina northern flying squirrel	<i>Galucmys sabrinus coloratus</i>	E	No	No Effect
Heller's blazing star	<i>Liatris helleri</i>	T*	No	No Effect
Northern long-eared bat	<i>Myotis septentrionalis</i>	T	Unknown	No Effect
Roan mountain bluet	<i>Hedyotis purpurea var. montana</i>	E	No	No Effect
Rock gnome lichen	<i>Gymnoderma lineare</i>	E	No	No Effect
Spreading avens	<i>Geum radiatum</i>	E	No	No Effect
Spruce-fir moss spider	<i>Microhexura montivaga</i>	E	No	No Effect
Virginia spiraea	<i>Spiraea virginiana</i>	T	Yes	No Effect

E – Endangered

T – Threatened

T(S/A) – Threatened due to similarity of appearance

*- Historic record (the species was last observed in the county more than 50 years ago)

Appalachian elktoe

Habitat Description: The Appalachian elktoe is known from the French Broad River watershed in North Carolina. It has been observed in moderate- to fast- flowing water, in gravelly substrates often mixed with cobble and boulders, in cracks of bedrock and in relatively silt-free, coarse, sandy substrates. Apparently, stability of the substrate is critical to this species, as it is seldom found in stream reaches with accumulations of silt or shifting sand, gravel, or cobble.

Biological Conclusion: No Effect

A suitable habitat is not present for the Appalachian elktoe mussel, but a habitat is located within 10 miles of the study area in the North Toe River. The NCDOT

Biological Surveys Group conducted a field visit on July 22, 2009, to assess the area for potential impacts. A survey was not necessary at the site because the location of the bridge was so high in the watershed and at such a high gradient.

Blue Ridge goldenrod

Habitat Description: Blue Ridge goldenrod, endemic to the Appalachian Mountains of North Carolina and Tennessee, occurs in the High Elevation Rocky Summit natural community at or above elevations of 4,600 feet above mean sea level along cliffs, ledges, balds, and dry rock crevices of granite outcrops of the higher mountain peaks. This early pioneer herb grows in full sun on generally acidic soils of shallow humus or clay loams that are intermittently saturated. The encroachment of woody vegetation such as ericaceous shrubs can eliminate the goldenrod through competition and shading. Roan Mountain bluet, Heller's blazing star, and spreading avens are a few of its common associate species.

Biological Conclusion: No Effect

Suitable habitat for the Blue Ridge goldenrod does not exist at the study area. The project study area ranges from 2,746 – 2,800 feet and does not meet the elevation requirements of the species. A review of the NCNHP records, updated in June 2016, indicates no known Blue Ridge goldenrod occurrences within 1.0 mile of the study area.

Bog Turtle

Habitat Description: Bog turtle habitat consists of open, groundwater supplied (springfed), graminoid dominated wetlands along riparian corridors or on seepage slopes. These habitats are designated as mountain bogs by the NCNHP, but they are technically poor, moderate, or rich fens that may be associated with wet pastures and old drainage ditches that have saturated muddy substrates with open canopies. Plants found in bog turtle habitat include sedges, rushes, marsh ferns, herbs, shrubs (tag alder, hardhack, blueberry, etc.), and wetland tree species (red maple and silky willow). These habitats often support sphagnum moss and may contain carnivorous plants (sundews and pitcherplants) and rare orchids. Potential habitats may be found in western Piedmont and Mountain counties from 700 to 4500 feet elevation in North Carolina. Soil types (poorly drained silt loams) from which bog turtle habitats have been found include Arkaqua, Chewacla, Dellwood, Codorus complex, Hatboro, Nikwasi, Potomac – Iotla complex, Reddies, Rosman, Tate – Cullowhee complex, Toxaway, Tuckasegee – Cullasaja complex, Tusquitee, Watauga, and Wehadkee.

Biological Conclusion: Not Required

Species listed as threatened due to similarity of appearance do not require Section 7 consultation with the USFWS. However, this project is not expected to affect the bog turtle because no suitable habitat is present within the study area. There are no wetlands in the study area. A review of the NCNHP records, updated in June 2016, indicates no known bog turtle occurrences within 1.0 mile of the study area.

Carolina northern flying squirrel

Habitat Description: There are several isolated populations of the Carolina Northern flying squirrel in the mountains of North Carolina. This nocturnal squirrel prefers the ecotone between coniferous (red spruce, Fraser fir, or hemlock) and mature northern hardwood forest (beech, yellow birch, maple, hemlock, red oak, and buckeye), typically at elevations above 4,500 feet. In some instances the squirrels may be found on narrow, north-facing valleys above 4,000 feet. Both forest types are used to search for food and the hardwood forest is used for nesting sites. Mature forests with a thick evergreen understory and numerous snags are most preferable. In winter, squirrels inhabit tree cavities in older hardwoods, particularly yellow birch.

Biological Conclusion: No Effect.

Suitable habitat for the Carolina northern flying squirrel does not exist in the study area. The project study area ranges from 2,746 – 2,890 feet and does not meet the elevation requirements of the species. A review of the NCNHP records, updated in June 2016, indicates no known Blue Ridge goldenrod occurrences within 1.0 mile of the study area.

Heller's blazing star

Habitat Description: Heller's Blazing star, endemic to the Blue Ridge Mountains of North Carolina, occurs in the High Elevation Rocky Summit natural community on high elevation ledges, rock outcrops, cliffs, and balds at elevations of 3,500 – 5,999 feet above mean sea level. This early pioneer, perennial herb grows in acidic and generally shallow humus or clay loam on igneous and metasedimentary rock. Known populations are intermittently saturated and excessively to moderately poorly drained. The plant generally occurs in full sunlight with grasses, sedges and other composites. Blue Ridge goldenrod, Roan Mountain bluet, and spreading avens are a few of its common associate species.

Biological Conclusion: No Effect

The habitat for Heller's blazing star does not exist in the study area. The project study area ranges from 2,746 – 2,890 feet and does not meet the elevation requirements of the species. A review of the NCNHP records, updated in June 2016, indicates no known Heller's Blazing star occurrences within 1.0 mile of the study area.

Northern long-eared bat

Habitat Description: The Northern long-eared bat is found across much of the eastern and north central US and all Canadian provinces. Northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. They typically use large caves or mines with large passages and entrances; constant temperatures; and high humidity with no air currents. Specific areas where they hibernate have very high humidity, so much so that droplets of water are often seen on their fur. Within hibernacula, surveyors find

them in small crevices or cracks, often with only the nose and ears visible. Summer roosting occurs singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. It has also been found, rarely, roosting in human-made structures such as buildings, barns, behind window shutters, on utility poles and in bat houses. This species is a medium-sized bat with females tending to be slightly larger than males. Average body length ranges from 3 to 4 inches with a wingspan ranging from 9 to 10 inches. This species is distinguished by its relatively long ears that extend beyond the nose when laid forward.

Biological Conclusion: No Effect

A habitat assessment and, if needed, surveys for the Northern long-eared bat (NLEB) will be the responsibility of the NCDOT-Biosurvey Group. Construction authorization will not be given and work on the project will not start until consultation with the USFWS is complete.

Roan mountain bluet

Habitat Description: Roan Mountain bluet occurs on thin, gravely talus slopes of grassy balds, cliff ledges, shallow soils in crevices of rock outcrops, and steep slopes with full sun at the summits of high elevation peaks of the southern Blue Ridge Mountains. The plant is found at elevations of 4,200- 6,300 feet, and often has a north, northwest, south, or southwest aspect. Known occurrences typically grow in grave-filled, acidic, and metamorphic-derived soil pockets between underlying mafic rock. Fraser fir and red spruce dominate the forests adjacent to known populations. Blue Ridge goldenrod, Heller's blazing star, and spreading avens are a few of its known associate species.

Biological Conclusion: No Effect

Suitable habitat for Roan Mountain bluet does not exist in the study area. The project study area ranges from 2,746 – 2,890 feet and does not meet the elevation requirements of the species. A review of the NCNHP records, updated in June 2016, indicates no known Roan Mountain bluet occurrences within 1.0 mile of the study area.

Rock gnome lichen

Habitat Description: Rock gnome lichen occurs in high elevation coniferous forests (particularly those dominated by red spruce and Fraser fir) usually on rocky outcrop or cliff habitats. This squamulose lichen only grows in areas with a great deal of humidity, such as high elevations above 5,000 feet where there is often fog, or on boulders and large outcrops in deep river gorges at lower elevations. Habitat is primarily limited to vertical rock faces where seepage water from forest soils above flows only at very wet times. The species requires a moderate amount of sunlight, but cannot tolerate high-intensity solar radiation. Rock gnome lichen occurs in high elevation coniferous forests (particularly those dominated by red spruce and Fraser fir) usually on rocky outcrop or cliff habitats. The lichen does well on moist, generally open sites with northern exposures, but requires at least partial canopy coverage on southern or western aspects

because of its intolerance to high solar radiation. The rock mosses *Andreaea* and *Grimmia* are common associate species in the vertical intermittent seeps.

Biological Conclusion: No Effect

The habitat for Rock gnome lichen does not exist in the study area. The project study area ranges from 2,746 – 2,890 feet and does not meet the elevation requirements of the species. A review of the NCNHP records, updated in June 2016, indicates no known Rock gnome lichen occurrences within 1.0 mile of the study area.

Spreading Aven

Habitat Description: Spreading avens occurs in areas exposed to full sun on high-elevation cliffs, outcrops, and bases of steep talus slopes. This perennial herb also occurs in thin, gravelly soils of grassy balds near summit outcrops. The species prefers a northwest aspect, but can be found on west-southwest through north-northeast aspects. Forests surrounding known occurrences are generally dominated by either red spruce-Fraser fir, northern hardwoods with scattered spruce, or high-elevation red oaks. Spreading avens typically occurs in shallow, acidic soil (such as the Burton series) in cracks and crevices of igneous, metamorphic, or metasedimentary rocks. Soils may be well drained but almost continuously wet, with soils at some known populations subject to drying out in summer due to exposure to sun and shallow depths. Known populations occur at elevations ranging from 4,296 to 6,268 feet above mean sea level. Blue Ridge goldenrod, Heller's blazing star, and Roan Mountain bluet are a few of its common associate species.

Biological Conclusion: No Effect

The habitat for Spreading avens does not exist in the study area. The project study area ranges from 2,746 – 2,890 feet and does not meet the elevation requirements of the species. A review of the NCNHP records, updated in June 2016, indicates no known Rock gnome lichen occurrences within 1.0 mile of the study area.

Spruce-fir moss spider

Habitat Description: This species is known only from spruce-fir forests in the Appalachian mountains of North Carolina and Tennessee. The spruce-fir moss spider occurs in well-drained moss and liverwort mats growing on rocks or boulders. These mats are found in well-shaded areas in mature, high elevation (5000 ft) Fraser fir and red spruce forests. The spruce-fir moss spider is very sensitive to desiccation and requires environments of high and constant humidity. The need for humidity relates to the moss mats, which cannot become too parched or else the mats become dry and loose. Likewise, the moss mats cannot be too wet because large drops of water can also pose a threat to the spider. The spider constructs its tube-shaped webs in the interface between the moss mat and the rock surface. Some webs have been found to extend into the interior of the moss mat.

Biological Conclusion: No Effect

Suitable habitat in the form of spruce-fir forests does not exist within the project study area. The project study area ranges from 2,746-2,890 ft. above mean sea level and does not meet the elevation requirements of the species. A review of NCNHP records, updated in June 2016, indicates no known Spruce-fir moss spider occurrences within 1.0 mile of the study area.

Virginia spiraea

Habitat Description: Virginia spiraea occurs in flood-scoured, high-gradient sections of rocky river banks of second and third order streams. This perennial shrub also occurs on meander scrolls and point bars, natural levees, and other braided features of lower stream reaches, gorges, and canyons. The plant grows in sunny areas on moist, acidic soils, primarily over sandstone, and tends to be found in often-disturbed early successional areas. The shrub often grows in thickets, although overtopping by arboreal species or fast-growing herbaceous vegetation eventually eliminates it. Scoured, riverine habitat sites are found where deposition occurs after high water flows, such as on floodplains and overwash islands, rather than along areas of maximum erosion. Many populations are either established among riparian debris piles where eroded vegetative modules or portions of a plant deposited during flood events, or can occur between boulders and in fine alluvial sand and other alluvial deposits.

Biological Conclusion: No Effect

Marginal habitat is present along Big Rock Creek and Spring Creek within the project study area for Virginia spiraea. A field survey for the species was conducted on June 26, 2009; no individuals were observed. Some scouring is present along stream banks and portions of the streams are exposed to full sun. A review of NCNHP records, updated in June 2016, indicates no known Virginia spiraea occurrences within 1.0 mile of the study area.

Bald and Golden Eagle Protection Act

Habitat for the bald eagle primarily consists of mature forest in close proximity to large open water bodies for foraging. Large, dominant trees are utilized for nesting sites, typically within 1.0 mile of open water. There are no large water bodies within 1 mile and 660 feet of the project study area, and therefore, no bald eagle habitat is present in the 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

NCDOT – Human Environment Section, under the provisions of a Programmatic Agreement with FHWA, NCDOT, Historic Preservation Office (HPO), Office of State Archaeology (OSA) and the Advisory Council on Historic Preservation (effective July 1, 2009), reviewed the proposed project and determined that no historic properties are located within the project's area of potential effect and that no surveys are required (see form dated March 21, 2013 attached in the Appendix B).

Archaeology

NCDOT – Human Environment Section, 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 effect. A subsurface investigation did not reveal the presence of any archaeological resources considered eligible for the National Register (see form dated July 25, 2013 attached in the Appendix B).

Community Impacts

No notably adverse community impacts are anticipated with this project. Right-of-way acquisition will be limited. One potential relocation is expected with implementation of the proposed alternative. However, the building appears to be an empty red brick building within the boundaries of the Build Alternative 1 on-site detour on the southeast corner of the intersection of SR 226 and SR 1334 (Blevins Bridge Road). The structure is primarily within the existing NCDOT right of way.

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. All permanent construction will take place along the existing alignment, with the temporary on-site detour being built parallel to the bridge existing alignment. There are soils classified as prime, unique, or having state or local importance in the vicinity of the project. Farmland Protection Policy Act eligible soils are located in the northeast and southeast quadrants of the Direct Bridge Impact Area. Therefore, the project will involve the direct conversion of farmland acreage within these classifications.

As is required by the Farmland Protection Policy Act, Form NRCS-AD-1006 has been completed according to FHWA guidelines. A preliminary screening with the AD 1006 form resulted in a score of 62 points out of 160. Since the total farmland site assessment score exceeds the 60-point threshold established by NRCS, notable project impacts to eligible soils may be anticipated. Therefore, the NRCS farmland conversion form must be completed post-design and prior to construction activities.

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 Mitchell 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 MSATs.

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 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 local, state, and federal regulatory records by the GeoEnvironmental Section revealed three potential underground storage tanks (UST) as Recognized Environmental Concerns (REC) within the project limits. The sites are described in Table 8 and the locations of each are shown in Figure 2. RECs are most commonly underground storage tanks, dry cleaning solvents, landfills and hazardous waste disposal areas. The Geotechnical Section anticipates low monetary and scheduling impacts resulting from these sites. These sites are anticipated to present low geoenvironmental impacts to the project. No hazardous waste sites, landfills or other geoenvironmental concerns were identified within the project limits.

Table 8: Known and Potential GeoEnvironmental Impact Sites

Property Location	Property Owner	UST Owner	Facility ID#
Closed Store & Garage 12433 NC 226 N Bakersville, NC 28705	Ivette M. Socarras PO Box 1142 Bakersville, NC 28705	N/A	N/A
This closed facility formerly operated as a general store and repair garage. It is located on the west side of US 220 N at the SR 1330 (Hughes Gap Road) intersection. A gas station may have operated at this location. The structure is set back approximately 45 feet from the NC 226 centerline. This property does not appear on the UST Section registry. There are no monitoring wells or evidence of USTs. This site is anticipated to present low geoenvironmental impacts on the project.			
Property Location	Property Owner	UST Owner	Facility ID#
Former Gas Station 12424 NC 226 N Bakersville, NC 28705	Trula Burleson 97 Perkins Road Bakersville, NC 28705	N/A	N/A
This closed facility formerly operated as a gas station and store. It is located on the southeast corner of the US 220 N and SR 1330 (Hughes Gap Road) intersection. The pump island is located at the store front. The structure is set back approximately 50 feet from the NC 226 centerline. This property does not appear on the UST Section registry. There are no monitoring wells or evidence of USTs. There are junk vehicles and parts located around this structure. This site is anticipated to present low geoenvironmental impacts to the project.			
Property Location	Property Owner	UST Owner	Facility ID#
Former Store 12316 NC 226 N Bakersville, NC 28705	Susan G. Calhoun 890 Blevins Branch Road Bakersville, NC 28705	N/A	N/A
This empty brick structure formerly operated as a store and possibly as a gas station. It is located on the southeast corner of the US 220 N and SR 1334 (Blevins Bridge Road) intersection. The structure is set back approximately 20 feet from the NC 226 centerline. This property does not appear on the UST Section registry. There are no monitoring wells or evidence of USTs noted on site. This site is anticipated to present low geoenvironmental impacts to the project.			

Mitchell 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.

The NCDOT’s 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).

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.

VIII. COORDINATION & AGENCY COMMENTS

NCDOT has sought input from the following agencies as a part of the project development: N.C. Department of Environment & Natural Resources, U.S. Fish & Wildlife Service, N.C. Wildlife Resource Commission, U.S. Forest Service, Environmental Protection Agency, Tennessee Valley Authority, U.S. Army Corps of Engineers, Eastern Band of Cherokee Indians, N.C. Division of Parks & Recreation, N.C. State Historic Preservation Office, and Mitchell 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. The NCDWR, in a standardized letter, had two project-specific comments relating to TIP project B-5170.

Comment: “Big Rock Creek is class C; Tr waters of the State. NCDWR recommends that the most protective sediment and erosion control BMPs be implemented to reduce the risk of turbidity violations in trout waters. In addition, all disturbances within trout buffers shall be conducted in accordance with NC Division of Land Resources and NCWRC requirements.”

Response: NCDOT’s *Best Management Practices for Protection of Surface Waters* (March 1997) will be followed throughout the design and construction of the project. NCDOT will also implement *Guidelines for Construction of Highway Improvements Adjacent to or Crossing Trout Waters in North Carolina* in the design and construction of this project.

Comment: “Should NCWRC identify these waters as naturally reproducing trout waters, NCDOT will be required to observe the NCWRC-recommended moratoria for trout. In addition, NCDWR will require that NCDOT strictly adhere to North Carolina regulations entitled *Design Standards in Sensitive Watersheds* (15A NCAC 04B.0124) throughout design and construction of the project.”

Response: NCWRC has designated this stream as trout waters and therefore *Design Standards for Sensitive Watersheds* will be incorporated throughout design and construction of the project. Based on the NCWRC’s designation as trout waters, a mandatory trout moratorium will be present from October 15 to April 15 of any given year, for Big Rock Creek along with all other tributaries in the project study area.

IX. PUBLIC INVOLVEMENT

A landowner notification letter was sent by the NCDOT’s 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.

Based on responses, or lack thereof, to the landowner notification letter, a Public Meeting was determined unnecessary.

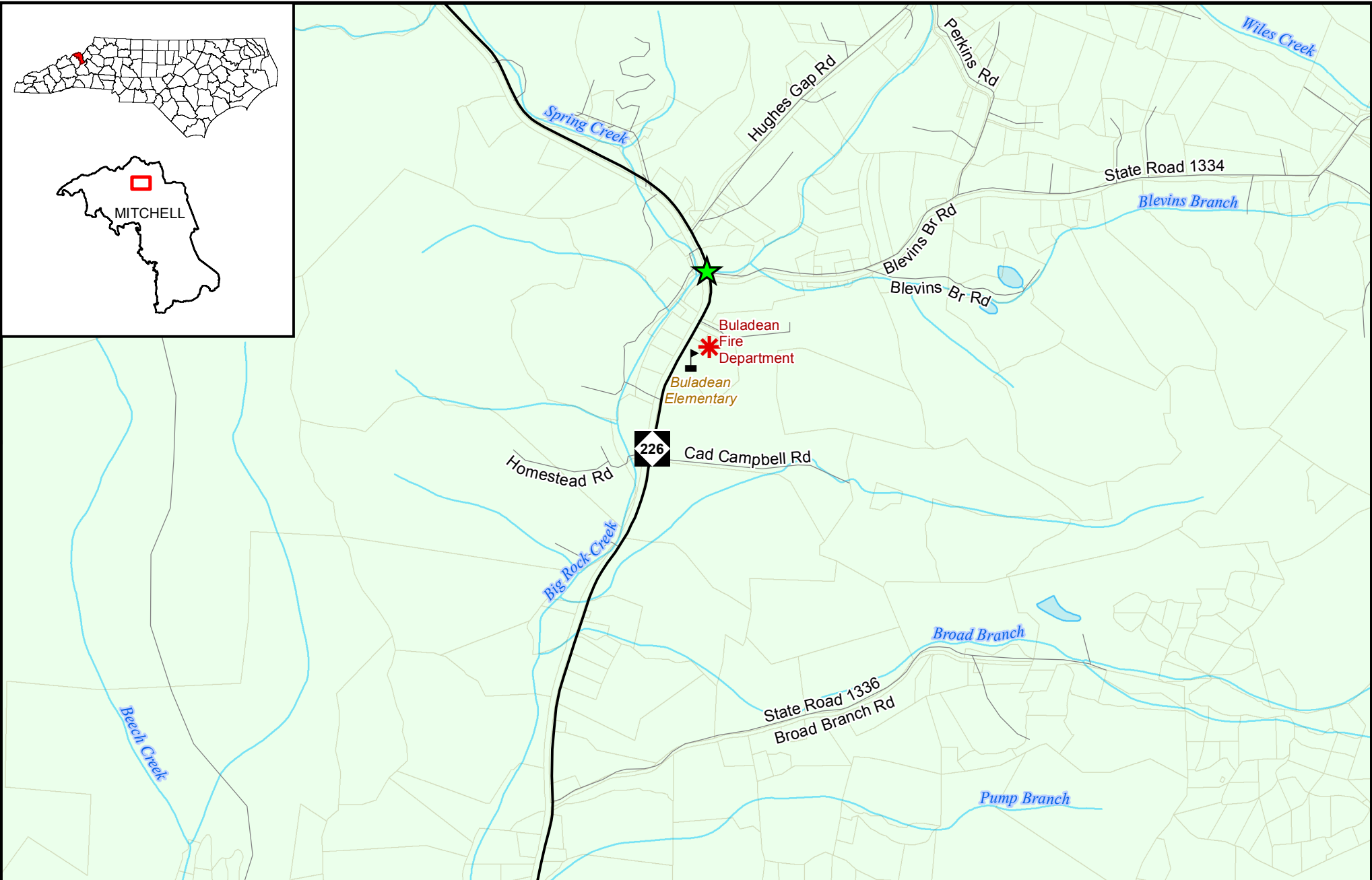
There is no substantial controversy on social, economic, or environmental grounds concerning the project.

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.

Appendix A

Figures



Vicinity Map

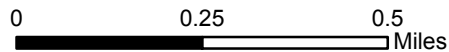
T.I.P. No. B-5170

Bridge No. 29 on NC 226
over Big Rock Creek

Federal Aid Project No. BRSTP-0226(14)

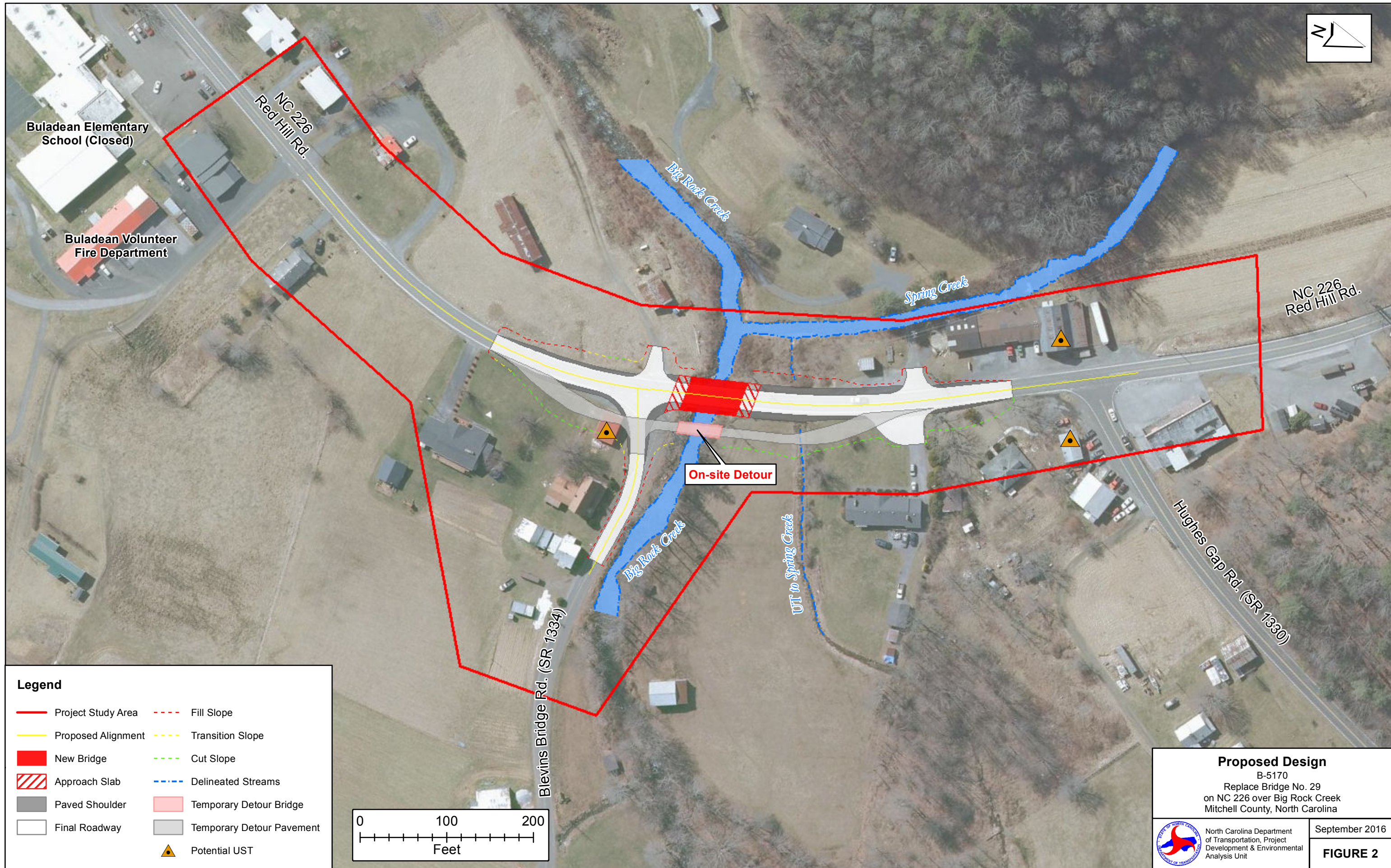
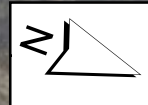
W.B.S. No. 42328.1.1

Mitchell County



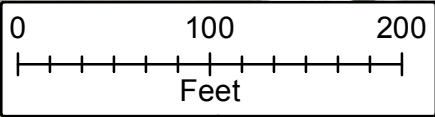
- Bridge Location
- Streams & Rivers
- US Routes
- Water Bodies
- NC Routes
- Tax Parcels
- SR Routes
- Fire Station
- School

FIGURE 1



Legend

	Project Study Area		Fill Slope
	Proposed Alignment		Transition Slope
	New Bridge		Cut Slope
	Approach Slab		Delineated Streams
	Paved Shoulder		Temporary Detour Bridge
	Final Roadway		Temporary Detour Pavement
			Potential UST



Proposed Design
 B-5170
 Replace Bridge No. 29
 on NC 226 over Big Rock Creek
 Mitchell County, North Carolina

North Carolina Department
 of Transportation, Project
 Development & Environmental
 Analysis Unit

September 2016

FIGURE 2

Appendix B

Reference Letters

13-03-0031



HISTORIC ARCHITECTURE AND LANDSCAPES NO SURVEY REQUIRED FORM

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

PROJECT INFORMATION

Project No:	B-5170	County:	Mitchell
WBS No.:	42328.1.1	Document Type:	PCE or CE
Fed. Aid No:	BRSTP-0226(14)	Funding:	<input type="checkbox"/> State <input checked="" type="checkbox"/> Federal
Federal Permit(s):	<input type="checkbox"/> Yes <input type="checkbox"/> No	Permit Type(s):	
Project Description: Replace Bridge No. 29 on NC226 over Rock 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 March 15, 2013. Based on this review, there are no existing NR, SL, LD, or DE properties in the Area of Potential Effects, which is 50' from the centerline each way and 300' from each end of the bridge. There is a survey site within the APE, ML43 Arrowood-Garland House. The project was surveyed under PA Number 09-11-0032 in July of 2010, and four properties over 50 years old were identified within the project area. None retain the architectural integrity to meet the criteria for national Register eligibility either individually or as a district. ML43, the Arrowood-Garland House, was originally surveyed in 1985. The house is clad in vinyl, has an asphalt shingle roof, and aluminum replacement windows; it has lost integrity of design, materials, and feeling and is not National Register eligible. There are no National Register listed or eligible properties in the APE and no survey is required. In addition, Bridge No. 29 is not NR eligible based on the NCDOT Historic Bridge Inventory. If design plans change, additional review will be required.

Why the available information provides a reliable basis for reasonably predicting that there are no unidentified significant historic architectural or landscape resources in the project area:

HPO quad maps and GIS information recording NR, SL, LD, DE, and SS properties for the Mitchell County survey, previous survey information, and Google Maps are considered valid for the purposes of determining the likelihood of historic resources being present. There are no National Register listed or eligible properties within the APE and no survey is required.

SUPPORT DOCUMENTATION

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

FINDING BY NCDOT ARCHITECTURAL HISTORIAN

Historic Architecture and Landscapes -- NO SURVEY REQUIRED

Kathleen L. Hubbard

March 21, 2013

NCDOT Architectural Historian

Date



HPO GIS Website

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

The review included an examination of a topographic map, the Mitchell County soil survey, an aerial photograph, and listings of previously recorded sites, previous archaeological surveys, and previous environmental reviews at the Office of State Archaeology (OSA). A visual reconnaissance of the A.P.E. was conducted on 1/7/2010. Archaeological survey was conducted on 4/16/2013.

The topographic map (Bakersville, N.C.-Tenn.) shows the A.P.E. within the community of Buladean, in a wide valley near the confluence of Spring Creek and Big Rock Creek. The landform in all four quadrants is level floodplain and terrace. Spring Creek joins Big Rock Creek in the northwest quadrant. There is a small drainage valley in the northeast quadrant.

The Mitchell County soil survey describes the soils as Rosman fine sandy loam (0-3% slopes), occasionally flooded, around the bridge and the south, Saunook silt loam (2-8% slopes) to the north, and Udorthents, loamy, at the very south end of the A.P.E. Rosman fine sandy loam is an occasionally flooded, well-drained soil on floodplains. Saunook silt loam is a well-drained soil found in coves, on alluvial fans, and on benches. Udorthents is found in cut and fill areas where the soil has been removed and placed on an adjacent site. The Udorthents soil is located along the south edge of the A.P.E. It appears to be associated with a cluster of buildings around the Buladean School.

The aerial photograph shows that all of the A.P.E. has been cleared for agriculture or for residential/commercial yards. There are several structures within and adjacent to the A.P.E. SR 1334 (Blevins Branch Rd.) intersects with NC 226 in the southeast quadrant and runs east along the south bank of Big Rock Creek.

A review of information at the O.S.A. shows no previously recorded archaeological sites within or adjacent to the A.P.E. The A.P.E. has not been included in any archaeological surveys. The A.P.E. is not located in any areas that have been previously reviewed by the State Historic Preservation Office (HPO).

The archaeological survey of the A.P.E. was conducted on 4/16/2013. A reconnaissance had been conducted in January 2010 after the original submittal. The bridge is oriented approximately north/south.

The northwest quadrant of the A.P.E. has a low potential for archaeological sites. It is a narrow landform between the road and Spring Creek, which joins Big Rock Creek approximately 20 meters (66 ft.) west (downstream) of the bridge. The landform is lower than the surrounding areas, and appears to be flood-prone and unstable.

The northeast quadrant appeared to have a moderate to high potential for archaeological sites. The landform is a floodplain (used for pasture) from the bridge north for approximately 40 meters (131 ft.), then a drainage ditch, then a residential yard. However, visual examination indicated the part of the landform along the east side of the road is a little lower elevation than the other quadrants. The higher elevation part of the landform is located approximately 35 meters (115 ft.) east of the road. The topographic map does show a drainage valley running northeast/southwest through this quadrant.

Parts of the southeast quadrant have a moderate to high potential for archaeological sites. The landform is a flat floodplain. The roadside from the bridge south for approximately 30 meters (100 ft.) has been disturbed by the construction of SR 1334 (Blevins Branch Rd.) and a structure along the south side of that road. The area south of the structure appears to be a small drainage valley (there is a pipe under the road here), and then a residential yard and driveway. The closest testable area was on the south side of the driveway, approximately 80 meters (262 ft.) south of the bridge. Shovel tests in this quadrant identified site 31ML93 (described below), which extended across the road into the southwest quadrant.

*"NO NATIONAL REGISTER ELIGIBLE OR LISTED ARCHAEOLOGICAL SITES PRESENT OR AFFECTED
form for Minor Transportation Projects as Qualified in the 2007 Programmatic Agreement.*

Parts of the southwest quadrant have a moderate to high potential for archaeological sites. The landform is a terrace or floodplain overlooking Big Rock Creek to the north and west. The A.P.E. includes the western edge of the terrace along the west side of NC 226, and the land slopes down to the creek to the north and west. The A.P.E. from the bridge south for approximately 50 meters (164 ft.) was occupied by a driveway, a storage building, and a house in January 2010. However, both structures had been removed when we returned to do the survey in April 2013. Three shovel tests were excavated along the west side of NC 226 at a 15-meter (50-ft.) interval in this quadrant. They identified site 31ML93 (described below), which extended across the road into the southeast quadrant, also.

SUPPORT DOCUMENTATION

See attached: Map(s) Previous Survey Info Photos Correspondence

Other: **site 31ML93 description**

Signed:

Caleb Smith

7/25/2013

NCDOT ARCHAEOLOGIST

Date