Cabarrus County
Bridge No. 103 on NC 49
over Dutch Buffalo Creek
Federal Aid Project No. NHPP-0049(32)
W.B.S. No. 55048.1.1
S.T.I.P. No. B-5548

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

7/13/15
DATE

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

7-14-15
DATE

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

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Documentation Prepared by RK&K
For the
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Project Commitments

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

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

Design Branch, Division Office –Emergency Services, School Buses, City Water Line
Although use of an off-site detour is not planned during construction of this project, Division 10 should notify the Cabarrus County EMS, Sheriff's Department, and School System along with Mount Pleasant Fire Department and Police Department, if traffic operations are disrupted on NC 49, to minimize impacts to emergency response services and school transportation.

The City of Concord has a 30-inch water transmission main line on the north side of NC 49. The "as-built" location of the line appears to be in conflict with the project and its location will be confirmed by the Location and Surveys Unit. If impacts will occur to the water line, NCDOT will coordinate with the City to move the line as soon as possible and before it is put into use.

GeoEnvironmental Section
The NCDOT-GeoEnvironmental Section should be consulted regarding the two sites, an abandoned store (10011 NC 49) and a former auto service shop (9990 NC 49), which present low geoenvironmental impacts to the project.

Natural Environment Section
Endangered Species Act compliance for the Northern Long-eared Bat will be documented for this project prior to project letting. Construction authorization will not be requested until any pending coordination with the U.S. Fish and Wildlife Service concerning the Northern Long-eared Bat is complete.

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INTRODUCTION: Bridge No. 103 is included in the latest approved North Carolina Department of Transportation (NCDOT) State Transportation Improvement Program (STIP). The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion."

No right of way (ROW) acquisition is required for the proposed project. The proposed project will be constructed within the existing ROW that was previously purchased for STIP Project No. R-2533CA. STIP No. R-2533CA proposes to widen NC 49 to a four-lane divided facility with a 46-foot median from SR 2630 (Walker Road) to SR 2444 (Cruse Road) in Cabarrus County. STIP Project No. R-2533CA is not currently scheduled or funded for construction. Property acquisition, relocations, and farmland impacts were previously addressed as part of the March 1994 Environmental Assessment (EA) for STIP Project No. R-2533CA, the July 2009 Community Impacts Assessment and the August 2009 EA/Finding of No Significant Impact Reevaluation for STIP No. R-2533CA.

I. PURPOSE AND NEED STATEMENT

During the March 24, 2014 inspection of Bridge No. 103, surveys indicated that the bridge is in poor condition with a sufficiency rating of 29 out of a possible 100. This bridge was built in 1946 and is considered structurally deficient[1] and functionally obsolete[2] due to ratings of 4 (Poor) on both the superstructure and substructure and rating of 2 (Critical) on the deck geometry[3]. The bridge is approaching the end of its useful life and is in need of replacement.

Bridge No. 103 has reinforced concrete deck girders, abutments, and interior bents. Over time, the life expectancy of concrete structures decreases when concrete is exposed to chloride from salt treatments related to snow and ice. This chloride intrusion causes deterioration of structures and is evident in the noted spalling sections of the bridge. Superstructure and substructure concrete components of Bridge No. 103 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 24 tons for single vehicles and 30 tons for truck-tractor semi-trailers. Due to the heavy

[1] "Structurally deficient" means that while the bridge remains safe, it requires repairs and was built to design standards no longer used for bridges. It is in relatively poor condition, and/or has insufficient load-carrying capacity. The insufficient load capacity could be due to age, the original design or to wear and tear.
[2] "Functionally obsolete" means that the bridge is safe, but needs to be replaced to meet current and future traffic demands. It is narrow, has inadequate under-clearances, has insufficient load-carrying capacity, is poorly aligned with the roadway, and/or can no longer adequately service today's traffic.
[3] Bridge Inspection Evaluation codes: "Critical" is 0-3; "Poor" is 4; "Fair" is 5-6; and "Good" is 7-9.

traffic volumes, the substandard components are becoming increasingly unacceptable and replacement of the bridge will result in safer traffic operations.

II. EXISTING CONDITIONS

The project is located in Cabarrus County along NC 49, approximately 0.6 mile east of the NC 49 and SR 2423 junction. The project is northeast of the Town of Mt. Pleasant, as shown in Figure 1. The local area is rural and wooded with rolling hills and agricultural lands (see Figure 2). One neighborhood, made up of approximately 11 single-family homes and mobile homes on individual lots, is located just east of Bridge No. 103 with its only access via NC 49 from Barringer Court.

NC 49 is classified as a principal arterial in the Statewide Functional Classification System. NC 49 is a primary north-south route through Cabarrus County, connecting Charlotte to Asheboro. NC 49, from Concord to Asheboro, is designated as a Strategic Transportation Corridor (#R) and the Uwharrie Scenic Byway.

At the bridge site, NC 49 is a two-lane roadway, with 11-foot lanes, situated 16 feet above Dutch Buffalo Creek. The approach roadway width with shoulders is 24 feet.

Bridge No. 103 is a 119-foot long bridge with three spans (39.5 feet, 40 feet, and 39.5 feet) and a clear roadway width of 26 feet (see Figure 3). The bridge has an asphalt wearing surface on concrete. The superstructure consists of reinforced concrete deck girders. The substructure abutments are reinforced concrete at full height and interior bent consists of a reinforced concrete post and web. As noted in Section I, the posted weight limit for single vehicles is 24 tons and for truck tractor semi-trailer is 30 tons.

There is an Albemarle (30-inch) water transmission main on the north side of NC 49 (located outside of the existing ROW). The south side of the project has an aerial power distribution line and phone line. There are ten power poles and eight three-cable phone poles within the established ROW. There are no cable, sanitary sewer or gas utilities.

On May 26, 2015, the NCDOT's Traffic Forecast Group reported average daily traffic (ADT) as 7,000 vehicles per day (vpd) in year 2015, with five percent being truck traffic. Future ADT of 9,500 vpd is anticipated in year 2040. The posted speed limit is 55 miles per hour (mph) in the project area.

Mt. Pleasant Elementary School and Mt. Pleasant Middle School are located in Mt. Pleasant, approximately two miles from the project. According to input from Ms. Jinnette Clay, Transportation Specialist at Cabarrus County School System on February 12, 2015, there are 15 school buses that use NC 49 each weekday, for a total of 24 trips per day during the school calendar year. NCDOT will coordinate with the school system if traffic operations are disrupted on NC 49.

There were 25 accidents reported in the vicinity of Bridge No. 103 during a recent five-year period. Of these accidents, nine were related to animals; seven were related to fixed objects; three

were related to rear ends, slow downs, or stopped vehicles; three were related to sideswipes; two were related to non-collisions; and one was related to an angle. None of the crashes were fatal. It does not appear that the crashes were related to the alignment or geometry of the bridge or its approach roadway.

NC 49 is not part of a designated bicycle route. There are no sidewalks or pedestrian pathways located along the project corridor.

Although many railways exist in Charlotte, with some extending to Kannapolis and Richfield, there are no railways near the project. There are several small private airports/airfields around the project with the closest airport being the Bear Creek Airport, approximately three miles away.

III. ALTERNATIVES

A. Preferred Alternative

The Preferred Alternative uses the ROW previously purchased for STIP Project No. R-2533CA as well as its proposed NC 49 eastbound alignment. The R-2533CA project will widen NC 49 to a four-lane facility with 46-foot grassed median, and 4-foot paved shoulders along the outside of the travel lanes. Bridge No. 103 will be replaced on a new location alignment to the south of the existing bridge. Traffic will be maintained on the existing bridge during construction (see Figure 4). The total project length of the new alignment will be approximately 0.7 mile.

The permanent replacement structure will be a bridge, approximately 197 feet long. The bridge will include two 12-foot lanes with a four-foot inside shoulder and ten-foot outside shoulder, for a total width of 38 feet of clear deck width. The bridge length is based on preliminary design information and is set by hydraulic requirements. The roadway grade of the new structure is approximately 0.3 percent.

The roadway approach will extend approximately 1,790 feet west and 1,670 feet east of the new bridge. The roadway approach will include two 12-foot wide lanes and four feet of full-depth paved-shoulder. The shoulder will extend up to 11 feet to include guardrail where required. The design speed is 60 mph. NCDOT Division 10 concurs that this is the Preferred Alternative. Although the construction cost of a new alignment is higher than a bridge replaced at its original location (also known as “replace in place”) structure with an off-site detour, concerns regarding off-site detours are high and are detailed in Section III.B.2.

B. Alternatives Eliminated from Further Consideration

1. No Build Alternative

The No Build or Do Nothing Alternative will eventually necessitate the closure of the bridge. Closure of the roadway is not a viable alternative. Rehabilitation of the existing structure is not feasible due to its age and deteriorated condition.

2. Replace in Place with Off-site Detour

Replacing the bridge in place and using an off-site detour was considered. However, based on the project location, traffic volumes along NC 49, and the surrounding area, there is no feasible off-site detour.

Southern Detour

A southern off-site detour route would go through the town of Mt. Pleasant and terminate on NC 49 at SR 2444 (Cruse Road) where the intersection is less than 90 degrees and presents a difficult turning movement for motorists traveling west on NC 49. This route uses SR 1006 (Main Street), NC 73, SR 2604 (Dutch Road), and SR 2444 (Cruse Road). This route is not a good option because it travels through the town of Mt. Pleasant and will increase traffic volumes, including truck traffic through an urban setting. The route is approximately 6.5 miles long.

Northern Detour

The northern route is considerably longer using SR 2442 (Little Buffalo Creek Road), SR 2441 (Fink Road), SR 2416 (Mt. Olive Road), SR 1006 (Mr. Pleasant Road), and SR 2423 (Fisher Road). This route goes through rural, residential areas dominated by farmland and pastures. It is approximately 7.9 miles long and crosses a one-lane bridge located along SR 2416 (Mt. Olive Road), just north of SR 2425 (Phelps Road).

Emergency service representatives noted concern if an off-site detour was needed during construction. Fire Chief Harrison stated that there are no good off-site options and existing routes would add approximately 20 minutes as compared to the use of NC 49. Similar concerns were noted from the EMS Director. Both rate the project overall as having a high impact if an off-site detour is used (RK&K 2015). Due to the available ROW from R-2533CA, traffic volumes along NC 49, logging truck concerns, long detour routes, and school bus/transit routes, replacing the bridge in place with an off-site detour was eliminated from further consideration.

3. Replace to the North

Replacing the bridge to the north of its existing location may impact the new 30-inch Albemarle water transmission line, would increase stream channel impacts, and could impact a wetland (see Figure 5). ROW would have to be acquired; and therefore, costs associated with this option would be higher than the Preferred Alternative.

IV. ESTIMATED COSTS

The estimated costs, based on 2015 prices, are as follows:

Table 1: Estimated Costs

Item	Alternative 1 (Preferred)
Structure	$721,000
Roadway Approaches, clearing, grubbing, pavement, guardrail, traffic control, etc.	$1,353,000
Detour Structure and Approaches	$0
Structure Removal	$51,000
Miscellaneous and Mobilization (10% structures and 35% roadway)	$551,000
Engineering and Contingencies	$424,000
Total Construction Cost	$3,100,000
ROW Costs	$0*
ROW Utility Costs	$156,000
Total Project Cost	**$3,256,000**

**ROW acquisition and temporary construction easements were established for a four-lane divided facility under R-2533CA in October 2002.*

V. NATURAL ENVIRONMENT

A. Physical Characteristics

The study area lies in the piedmont physiographic region of North Carolina (Figure 2). Topography in the project vicinity consists of gently rolling hills with narrow, level floodplains along streams. Elevations in the study area range from 530 to 610 feet above sea level. Land use in the project vicinity consists primarily of forestland with small areas cleared for residential and agricultural use.

1. Water Resources

Water resources in the study area are part of the Yadkin-Pee Dee River Basin [U.S. Geological Survey (USGS) Hydrologic Unit 03040105)], which has a Basinwide Water Quality Plan dated July 2008. Three streams were identified in the study area; however, two are listed in Table 2 (the perennial, Dutch Buffalo Creek and the intermittent, SA1) while the one that is ephemeral (SB) and the ephemeral portion of SA (SA2) are not listed in Table 2. Physical characteristics of the perennial and intermittent streams are summarized in Table 3. The location of water resources is shown in Figure 5.

Table 2. Water resources in the study area

Stream Name	Map ID	NCDWQ Index Number	Best Usage Classification
Dutch Buffalo Creek	Dutch Buffalo Creek	13-17-11-(5)	C
SA1 (UT to Dutch Buffalo Creek)	SA1	13-17-11-(5)	C

Table 3. Physical characteristics of water resources in the study area

Map ID	Bank Height (ft)	Bankful Width (ft)	Water Depth (in)	Channel Substrate	Velocity	Clarity
Dutch Buffalo Creek	3	30	3-12	Sand, gravel, cobble, boulder, bedrock	Moderate	Clear
SA 1	1.25	3	1-3	Sand, silt	Moderate	Clear

Dutch Buffalo Creek is not listed as an Outstanding Resource Water (ORW), trout water, anadromous fish water, or Primary Nursery Area (PNA) for sedimentation or turbidity or within one mile downstream of the study area. There are no designated High Quality Waters (HQW) or water supply watersheds (WS-I or WS-II) within 1.0 mile downstream of the study area. There are no impaired waters identified by the North Carolina 2014 Final 303(d) list within the study area for sedimentation or turbidity or within one mile downstream. This portion of Dutch Buffalo Creek is designated as Significant Aquatic Habitat (C rating) by the North Carolina Natural Heritage Program (NCNHP).

Benthic samples have been taken at Dutch Buffalo Creek at SR 1006 (Main Street) and given a rating of "Good-Fair" on March 27, 1985. Fish surveys have been conducted at this location as well and given a rating of "Good-Fair" on June 23, 2004 (NC Index of Biotic Integrity = 44).

2. Biotic Resources

Four terrestrial communities were identified in the study area: maintained/disturbed, pine plantation, piedmont/mountain bottomland hardwood forest, and mixed pine/hardwood forest. Figure 4 shows the location and Table 4 shows the extent of these terrestrial communities in the study area.

Table 4. Coverage of terrestrial communities in the study area

Community Type	Acreage in Study Area (acres)	Potential Impacts Slope stakes plus 25' (acres)
Bottomland Hardwood Forest	1.30	0.66
Maintained / Disturbed	17.35	9.82
Mixed Pine / Hardwood Forest	1.82	1.06
Pine Plantation	0.86	0.49
Stream / Open Water	0.24	0
Totals	**21.57 acres**	**12.03 acres**

B. Jurisdictional Topics

1. Surface Waters and Wetlands

Two jurisdictional streams were identified in the project study area (Table 5). The location of the streams is shown on Figure 5. The physical characteristics and water quality designations are

detailed in Tables 2 and 3. Dutch Buffalo Creek in the project study area has been designated as a warm water stream for the purposes of stream mitigation.

Table 5. Jurisdictional characteristics of water resources in the study area

Map ID	Length (ft.)	Classification	Compensatory Mitigation Required	River Basin Buffer
Dutch Buffalo Creek	203	Perennial	Yes	Not Subject
SA1	452	Intermittent	Yes*	Not Subject

**Pending agency review*

One jurisdictional wetland is present within the project study area (Figure 5). Wetland classification and quality rating data are presented in Table 6. This wetland in the study area is within the Yadkin-Pee Dee River basin (USGS Hydrologic Unit 03040105). Wetland site WA is included within the maintained/disturbed community.

Table 6. Jurisdictional characteristics of wetlands in the study area

Map ID	NCWAM Classification	Hydrologic Classification	NCDWQ Wetland Rating	Area (ac.)
WA	Floodplain Pool	Riparian	23	<0.1

2. Permits

A Nationwide Permit (NWP) No. 23 will likely be applicable for the proposed project. 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. In a letter dated January 26, 2015, the USACE noted that bridge replacements often qualify for NWP No. 3 for maintenance. 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 North Carolina Division of Water Resources (NCDWR) will be needed.

Cabarrus County is not one of the twenty counties under the jurisdiction of the Coastal Area Management Act (CAMA). Therefore, no CAMA Areas of Environmental Concern (AEC) exist in the study area. A CAMA permit from the North Carolina Division of Coastal Management (NCDCM) will not be required.

In a letter dated April 10, 2013, the NC Wildlife Resources Commission (WRC) did not request any construction moratoria for this bridge.

There are no buffer rules administered by NCDWR for the Yadkin-Pee Dee River Basin. Therefore, these streams are not subject to buffer rule protection.

Bridge replacement or construction over navigable waters used for commerce or that have a maintained navigation channel may require United States Coast Guard (USCG) authorization

pursuant to 33 CGF 114-115. Dutch Buffalo Creek is not classified as navigable waters; therefore USCG authorization is not required.

The NCDOT has attempted to avoid and minimize impacts to streams and wetlands to the greatest extent practicable in choosing and designing the Preferred Alternative. No impacts to study area streams or wetlands are anticipated at this time. If impacts are determined as the project progresses, the NCDOT will investigate potential on-site stream and wetland mitigation opportunities. If on-site mitigation is not feasible, mitigation will be provided by the NCDENR Ecosystem Enhancement Program (EEP).

C. Federally Protected Species

1. Federally Threatened and Endangered Species

As of April 2, 2015, the United States Fish and Wildlife (USFWS) lists three federally protected species for Cabarrus County (Table 7). 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 from referenced literature and/or USFWS.

Table 7. Federally protected species listed for Cabarrus County.

Scientific Name	Common Name	Federal Status*	Habitat Present	Biological Conclusion
Myotis septentrionalis	Northern long-eared bat	T	Yes	Unresolved
Lasmigona decorata	Carolina heelsplitter	E	Yes	No Effect
Helianthis schweinitzii	Schweinitz's sunflower	E	Yes	No Effect

**E – Endangered, T- Threatened*

Northern long-eared bat
USFWS optimal survey window: June 1 – August 15

Habitat Description: In North Carolina, the Northern long-eared bat (NLEB) occurs in the mountains, with scattered records in the Piedmont and coastal plain. In western North Carolina, NLEB spend winter hibernating in caves and mines. Since this species is not known to be a long-distance migrant, and caves and subterranean mines are extremely rare in eastern North Carolina, it is uncertain whether or where NLEB hibernate in eastern North Carolina. During the summer, NLEB roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees (typically ≥3 inches diameter at breast height). Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat also been found, rarely, roosting in structures like barns and sheds, under eaves of buildings, behind window shutters, in bridges, and in bat houses. Foraging occurs on forested hillsides and ridges, and occasionally over forest clearings, over water, and along tree-lined corridors. Mature forests may be an important habitat type for foraging.

Biological Conclusion: Unresolved
Endangered Species Act compliance for the NLEB will be documented for this project prior to project letting. Construction authorization will not be requested until any pending coordination with the U.S. Fish and Wildlife Service concerning the NLEB is complete.

Carolina heelsplitter
USFWS optimal survey window: year round

Habitat Description: The Carolina heelsplitter was historically known from several locations within the Catawba and Pee Dee River systems in North Carolina and the Pee Dee and Savannah River systems, and possibly the Saluda River system, in South Carolina. In North Carolina, the species is now known only from a handful of streams in the Rocky and Catawba River systems. The species exists in very low abundances, usually within six feet of shorelines, throughout its known range. The general habitat requirements for the Carolina heelsplitter are shaded areas in large rivers to small streams, often burrowed into clay banks between the root systems of trees, or in runs along steep banks with moderate current. The more recent habitat where the Carolina heelsplitter has been found is in sections of streams containing bedrock with perpendicular crevices filled with sand and gravel, and with wide riparian buffers.

Biological Conclusion: No Effect
NCDOT surveyed for the Carolina heelsplitter in November 2008 and September 2009 and found a biological conclusion of "No Effect." Given the number of times that Dutch Buffalo Creek and nearby streams have been surveyed and the low-quality mussel habitat in them, the "No Effect" conclusion is still valid and no new mussel surveys are required.

Schweinitz's sunflower
USFWS Optimal Survey Window: late August-October

Habitat Description: Schweinitz's sunflower, endemic to the Piedmont of North and South Carolina. The few sites where this rhizomatous perennial herb occurs in relatively natural vegetation are found in Xeric Hardpan Forests. The species is also found along roadside rights-of-way, maintained power lines and other utility rights-of-way, edges of thickets and old pastures, clearings and edges of upland oak-pine-hickory woods and Piedmont longleaf pine forests, and other sunny or semi-sunny habitats where disturbances (*e.g.*, mowing, clearing, grazing, blow downs, storms, frequent fire) help create open or partially open areas for sunlight. It is intolerant of full shade and excessive competition from other vegetation. Schweinitz's sunflower occurs in a variety of soil series, including Badin, Cecil, Cid, Enon, Gaston, Georgeville, Iredell, Mecklenburg, Misenheimer, Secrest, Tatum, Uwharrie, and Zion, among others. It is generally found growing on shallow sandy soils with high gravel content; shallow, poor, clayey hardpans; or shallow rocky soils, especially those derived from mafic rocks.

Biological Conclusion: No Effect
NCDOT surveyed for Schweinitz's sunflower on October 16, 2014. Habitat was present but no specimen were found. Therefore, a biological conclusion of "No Effect" was determined.

2. 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. Suitable habitat for bald eagle does not exist in or within 1.3 miles of the study area.

3. Candidate Species

As of April 2, 2015, the USFWS lists no Candidate species for Cabarrus County.

4. Essential Fish Habitat

There are no Essential Fish Habitat areas identified by the National Marine Fisheries Service (NMFS) in the study area.

VI. HUMAN ENVIRONMENT

A. 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 Code of Federal Regulations (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.

1. Historic Architecture

NCDOT-Human Environment Unit, under the provisions of a Programmatic Agreement with FHWA, NCDOT, Historic Preservation Office (HPO), Office of State Administration (OSA) and the Advisory Council on Historic Preservation (effective July 1, 2009), reviewed the proposed project and determined that no surveys are required (see the form dated December 18, 2012 in Appendix A).

2. 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 surveys are required (see the form dated January 4, 2013 in Appendix A).

B. Community Impacts

The ROW for the proposed project was previously purchased via project R-2533CA for the widening of NC 49. Therefore, residences and businesses along NC 49 have already been relocated to accommodate the R-2533CA project. The proposed bridge replacement project will have no additional relocation or property acquisition impacts to residences. The shift in NC 49's alignment is not expected to alter the visual character of NC 49 with a negligible change in views from nearby properties.

While Census data does not indicate a notable presence of populations meeting the criteria for Environmental Justice or Title VI, a potentially low-income community was observed during the site visit off of Barringer Court near the proposed bridge replacement project. While a potentially low-income community is present, no notably adverse community impacts are anticipated with this project; thus impacts to low-income populations do not appear to be disproportionately high and adverse. Benefits and burdens are equitably distributed through the community.

Census data does not indicate the presence of Limited English Proficiency (LEP) populations meeting the US Department of Justice LEP Safe Harbor threshold in the Direct Community Impact Area (DCIA), and no indicators of a notable presence of populations requiring language assistance have been identified through data or field reviews.

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.

The Cabarrus County Parks and Recreation Master Plan states several goals for future development including greenway access along Dutch Buffalo Creek to Frank Liske Park (located west of the project study area). In addition, Mr. Vagn Hansen, Town Planner with Mt. Pleasant, mentioned a future trail planned along Dutch Buffalo Creek near its crossing with NC 49. However, there are no immediate plans for construction in this area. Mr. Travis Moorehead, with Carolina Thread Trail, stated that at this time no easements or property have been acquired. Also, this area is not in their priority implementation corridor and there are no plans to implement this in the near term. The proposed design does not preclude the addition of a greenway on the north side of Dutch Buffalo Creek if it is added in the future.

The northeast area of Cabarrus County is predominantly rural and agricultural. There are several Voluntary Agricultural Districts located around the project but none are in the project study area. The Farmland Conversion Impact Rating Form (AD-1006 (03-02)) was completed for the R-2533CA project. With no new ROW acquisition required for the proposed project, B-5548 is exempt from further farmland analysis (see Appendix for USDA-NRCS letter dated January 22, 2015).

C. Noise and Air Quality

This project is an air quality neutral project in accordance with 40 CFR 93.126. It is not required to be included in the regional emissions analysis and project level Carbon Monoxide (CO) or Particulate Matter (PM) 2.5 analyses are not required. This project will not result in any meaningful changes in traffic volumes, vehicle mix, location of existing facility, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. Therefore, 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 Mobile Source Air Toxics (MSAT) concerns. Consequently, this project is exempt from analysis for MSATs. Any burning of vegetation will be performed in accordance with applicable local laws and regulations

of the North Carolina State Implementation Plan (SIP) for air quality compliance with 15 North Carolina Administrative Code (NCAC) 2D.0520.

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.

While the proposed bridge replacement is on a new alignment, roughly 70 feet south of the existing bridge, it does not include a substantial horizontal or vertical alteration from the existing alignment[4]. No traffic noise analysis is required to meet the requirement 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 ROW acquisition or easement from any land protected under Section 4(f) of the Department of Transportation Act of 1966.

Two sites, an abandoned convenience store (located at 10011 NC 49) and a former auto service shop (located at 9990 NC 49) are anticipated to present low geoenvironmental impacts to the project. According to the Underground Storage Tank (UST) Section Registry, the abandoned convenience store had three tanks that were filled in place in 1993. Ground water incident MO-1916 is associated with this location and was closed out in 1994. There is no evidence of any UST removal (NCDOT-GeoEnvironmental, 2014). A former auto service shop, Hammill's Auto Service, is a vacant lot located in the southwest quadrant of NC 49 and Barringer Court. In May 2003, Hart & Hickman, PC conducted a Preliminary Site Assessment (PSA) on this property for the R-2533CA project. Based on the PSA report, there were no USTs on site except for the two unregulated hydraulic reservoirs associated with the automotive lifts. Analytical results indicated no soil contamination associated with the in-ground hydraulic lifts. The building has since been removed and it appears that the hydraulic lifts are still in place under the concrete slab. This facility does not appear in the UST Section Registry and no ground water incidents are

[4] Substantial Horizontal Alteration = A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition.
Substantial Vertical Alteration = A project that removes shielding, therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor (NCDOT Traffic Noise Abatement Policy, 2011).

associated with this facility. This parcel appears to have been purchased under the R-2533CA project (NCDOT –GeoEnvironmental, 2014).

Although use of an off-site detour is not planned during construction of this project, Division 10 will notify the Cabarrus County EMS, Sheriff's Department, and School System along with Mount Pleasant Fire Department and Police Department, if interruptions in NC 49 traffic patterns are anticipated, to minimize impacts to emergency response services and school transportation.

The City of Concord has a 30-inch water transmission main line on the north side of NC 49. The "as-built" location of the line appears to be in conflict with the project and its location will be confirmed by the Location and Surveys Unit. If impacts will occur to the water line, NCDOT will coordinate with the City to move the line as soon as possible and before it is put into use.

Cabarrus County is a participant in the National Flood Insurance Program. Along Dutch Buffalo Creek, including the area immediately surrounding Bridge No. 103 is a Federal Emergency Management Agency (FEMA) special flood hazard area[5] [Zone AE, Limited Detailed Study, Flood Insurance Rate Map (FIRM) 3710567100J, Panel 5671, 11/5/2008]. Dutch Buffalo Creek is located within the Yadkin River Basin and has a drainage area of 44.2 square miles. There are no practical alternatives to crossing the floodplain area. Any shift in the 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.

According to the Cabarrus County Planning and Zoning Manager on February 2, 2015, Cabarrus County has and enforces a Flood Damage Prevention Ordinance and is a member of the CRS program. Cabarrus County also has a Waterbody Overlay District that requires undisturbed buffers along streams and requires reclamation/replanting where disturbances occur.

VIII. COORDINATION AND AGENCY COMMENTS

NCDOT has sought input from the following agencies as a part of the project development for B-5548: US Army Corps of Engineers (USACE), NC Department of Environment and Natural Resources, US Fish and Wildlife Service, NC Wildlife Resource Commission (WRC), NC Division of Parks and Recreation, NC State Historic Preservation Office, Cabarrus County Planning Department, Carolina Thread Trail, Town of Mount Pleasant Planning Department, Cabarrus County School System, and local emergency services.

In 1992, during the planning for widening NC 49 (R-2533CA), regulatory agencies were also asked to comment on the project. In a letter dated July 6, 1992, the WRC expressed concern about the streams, wetlands, uplands, and protected species – particularly Schweinitz' sunflower. In an update letter from WRC on December 10, 2014, they expressed concern for the "natural area" of Dutch Buffalo Creek designated by the Natural Heritage Program. The project area supports several listed species at or very close to the site. Mussel species include Carolina

[5] "Special flood hazard areas" are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood.

creekshell (*Villosa vaughaniana*), Federal Species of Concern and State Endangered; notched rainbow (*V. constricta*), State Special Concern; and Eastern creekshell (*V. delumbis*), State Significantly Rare. The Carolina darter (*Etheostoma collis*), a Federal Species of Concern and State Special Concern fish, also occurs in the project area. WRC recommended that sediment and erosion control measures adhere to the Design Standards in Sensitive Watersheds.

The NRTR notes that NWP Nos. 23 and 33 can be used for this bridge replacement project. In a letter dated January 26, 2015, the USACE noted that there are wetlands in the area and that bridge replacements often qualify for the NWP No. 3 for maintenance. The USACE holds the final discretion as to what permit will be required to authorize project construction.

IX. PUBLIC INVOLVEMENT

During the planning stages for the R-2533CA project, two Citizens Informational Workshops were held on July 7 and July 8, 1992 to familiarize the public with the project and obtain public input. A series of workshops were held on June 15 and 16, 1993 to present the preliminary designs, answer questions, and obtain public input. Approximately 675 people attended those meetings. Most discussions and comments concerned the amount of ROW needed for the R-2533CA project, what side of NC 49 should be widened, and signalization at intersections along NC 49.

On December 10, 2014, property owner notification letters were mailed out to residents in the direct study area to inform them of possible natural systems surveys on their property. On May 8, 2015, project newsletters were mailed to residents to inform them about the proposed project. See Appendix B for a copy of the newsletter. No public comments or concerns were received in response to the newsletter.

The proposed project does not involve substantial controversy on social, economic, or environmental issues.

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.

XI. REFERENCES

Carolina Thread Trail - Mr. Travis K. Morehead, personal communication, February 23, 2015.

Federal Emergency Management Agency (FEMA). November 5, 2008. Flood Insurance Rate Map (FIRM) 3710567100J, Panel 5671.

North Carolina Department of Transportation (NCDOT). August 2009. *Environmental Assessment and Finding of No Significant Impact Reevaluation for the Proposed Widening of NC 49 from SR 2630 (Walker Road) to SR 2444 (Cruse Road), Cabarrus County, WBS 34448.1.1, TIP R-2533CC/CD.*

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NCDOT. July 13, 2011. *NCDOT Traffic Noise Abatement Policy*

NCDOT (AECOM). July 24, 2009. *Community Impact Assessment: TIP R-2533 CC/CD, Proposed NC 49 Widening Project TIP R-2533 CC/CD, WBS No. 34448.1.1 (Widen existing NC 49 two-lane road to a four-lane divided facility from SR 2710 to SR 2444, Cabarrus County.*

NCDOT-GeoEnvironmental Section. March 11, 2014. *GeoEnvironmental Report for Planning.*

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NCDOT (Ko & Associates). Signed March 1994 (Dated October 1993). *Environmental Assessment: TIP No. R-2533, NC 49 from approximately 1,000 feet east of SR 1300 in Harrisburg to the Yadkin River, Cabarrus, Stanly, and Rowan Counties, FA No. NH-28-1(5), State Project No. 8.1661001.*

NCDOT. Go!NC GIS Online Maps. April 10, 2015. *North Carolina Statewide Functional Classification System*. Retrieved from http://ncdot.maps.arcgis.com/

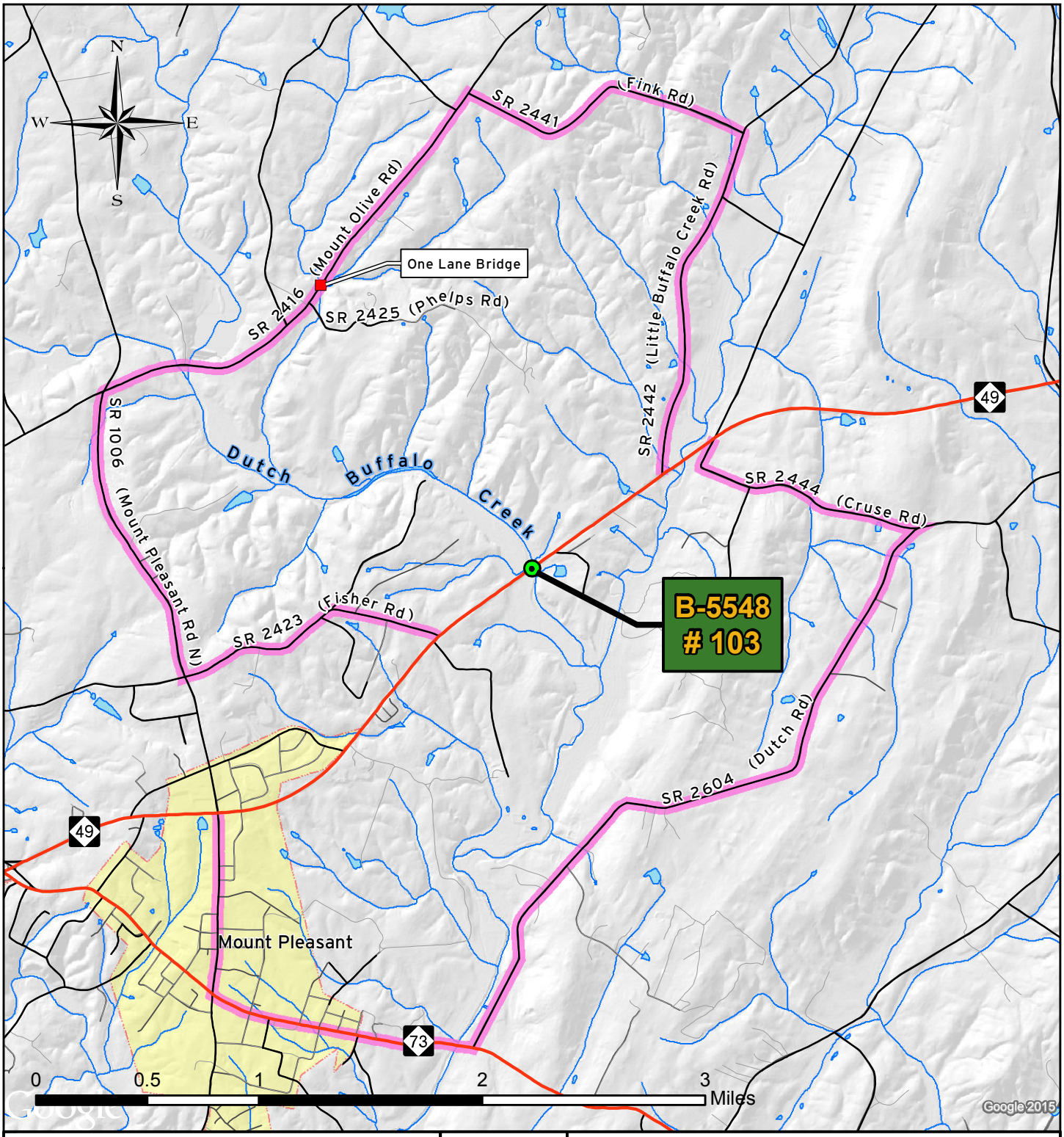
RK&K. 2015. *Community Impact Assessment.* March 17.

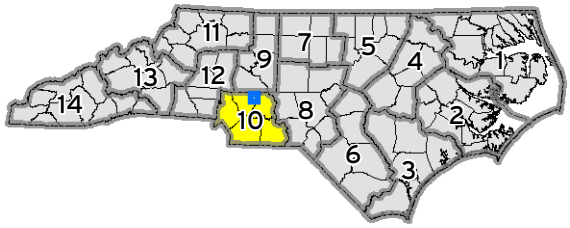
RK&K. 2015. *Natural Resources Technical Report.* March 9.

Town of Mount Pleasant - Mr. Vagn Hansen, personal communication, February 10, 2015

United States Fish and Wildlife Service. April 2, 2015. *Endangered, Threatened and Candidate Species and Federal Species of Concern by County in North Carolina, Cabarrus County, NC.*

FIGURES



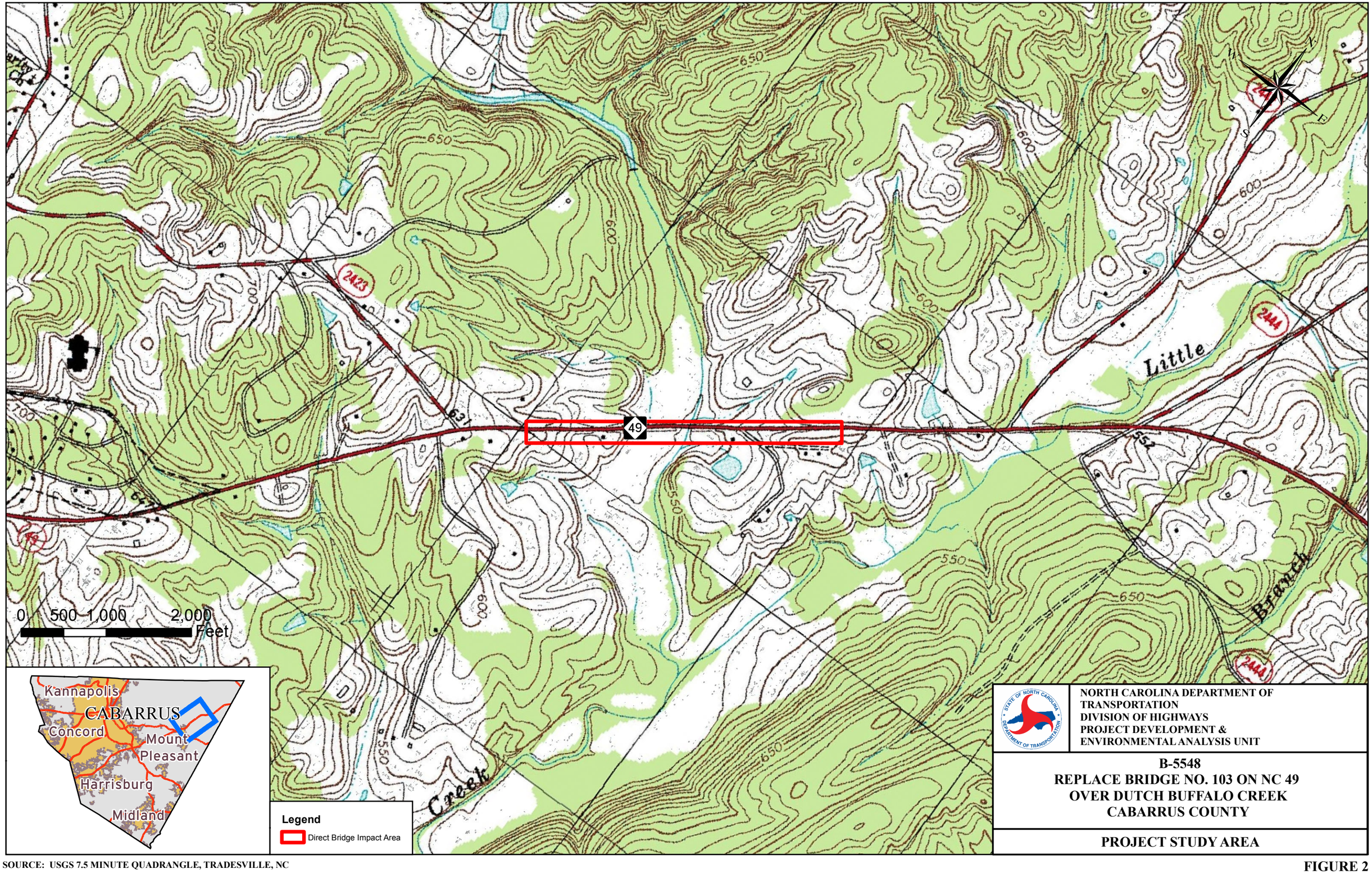


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS UNIT

B-5548
REPLACE BRIDGE NO. 103 ON NC 49 OVER DUTCH BUFFALO CREEK CABARRUS COUNTY

CLOSEST AVAILABLE DETOUR ROUTES

FIGURE 1



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DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS UNIT

B-5548
REPLACE BRIDGE NO. 103 ON NC 49 OVER DUTCH BUFFALO CREEK CABARRUS COUNTY

PROJECT STUDY AREA

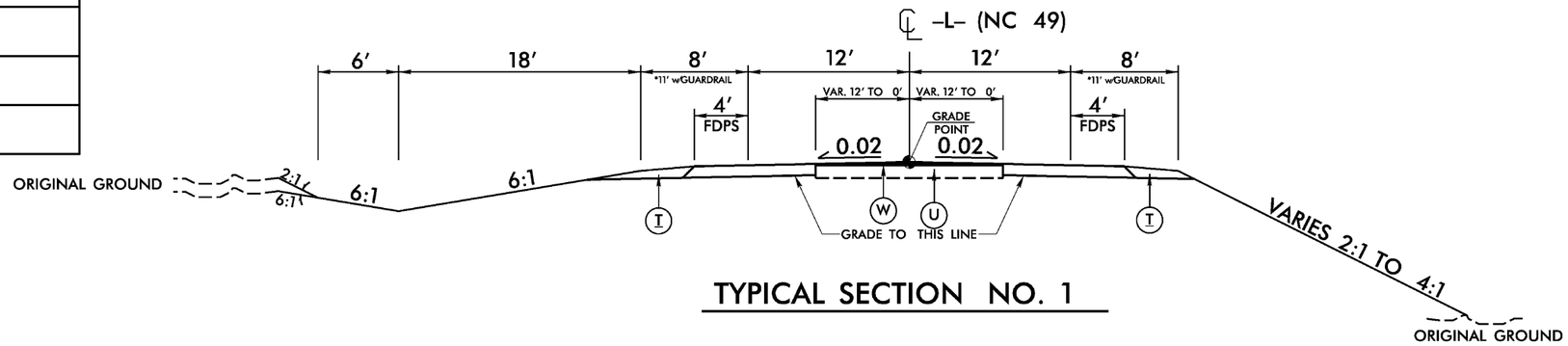
SOURCE: USGS 7.5 MINUTE QUADRANGLE, TRADESVILLE, NC

FIGURE 2

PAVEMENT SCHEDULE
(PRELIMINARY PAVEMENT DESIGN)

T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT. (WEDGING)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

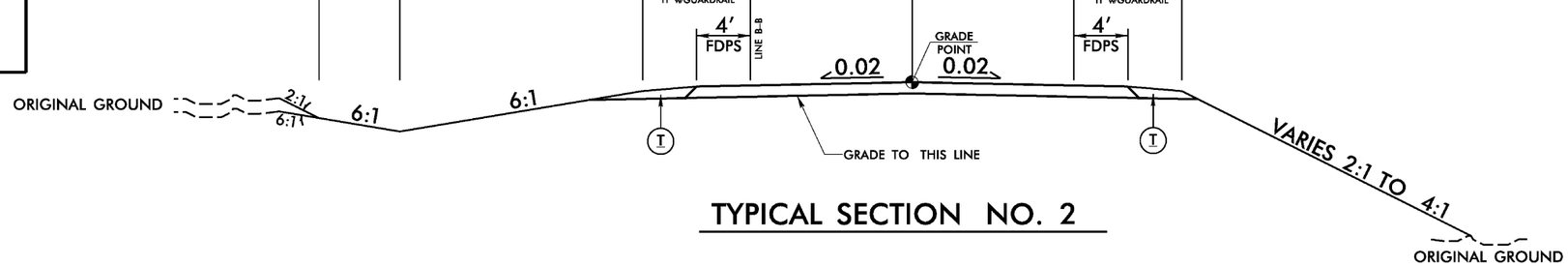


TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
–L– STA. 11+00.00 TO STA. 12+00.00, TRANSITION FROM EXISTING TO TYP. SEC. NO. 1
–L– STA. 12+00.00 TO STA. 16+60.08
–L– STA. 42+35.63 TO STA. 46+50.00
–L– STA. 46+50.00 TO STA. 47+50.00, TRANSITION FROM TYP. SEC. NO. 1 TO EXISTING

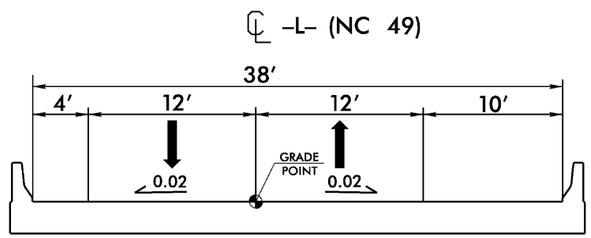
DESIGN DATA –L–

ADT 2014 = 6,940
ADT 2035 = 8,200
DHV = 9%
DIR = 55%
TTST = 5%
DUAL = 8%
V = 60 mph
FUNCTIONAL CLASS = RURAL LOCAL
SUB–REGIONAL TIER GUIDELINES



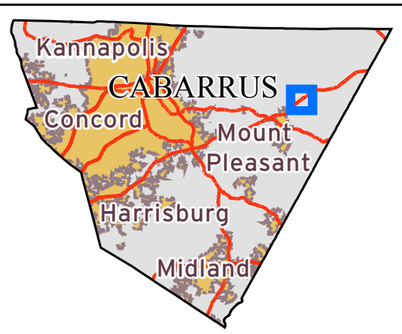
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
–L– STA. 16+60.08 TO STA. 28+84.00+/– (BEGIN BRIDGE)
–L– STA. 30+81.00+/– (END BRIDGE) TO STA. 42+35.63



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
–L– STA. 28+84.00+/– (BEGIN BRIDGE) TO STA. 30+81.00+/– (END BRIDGE)



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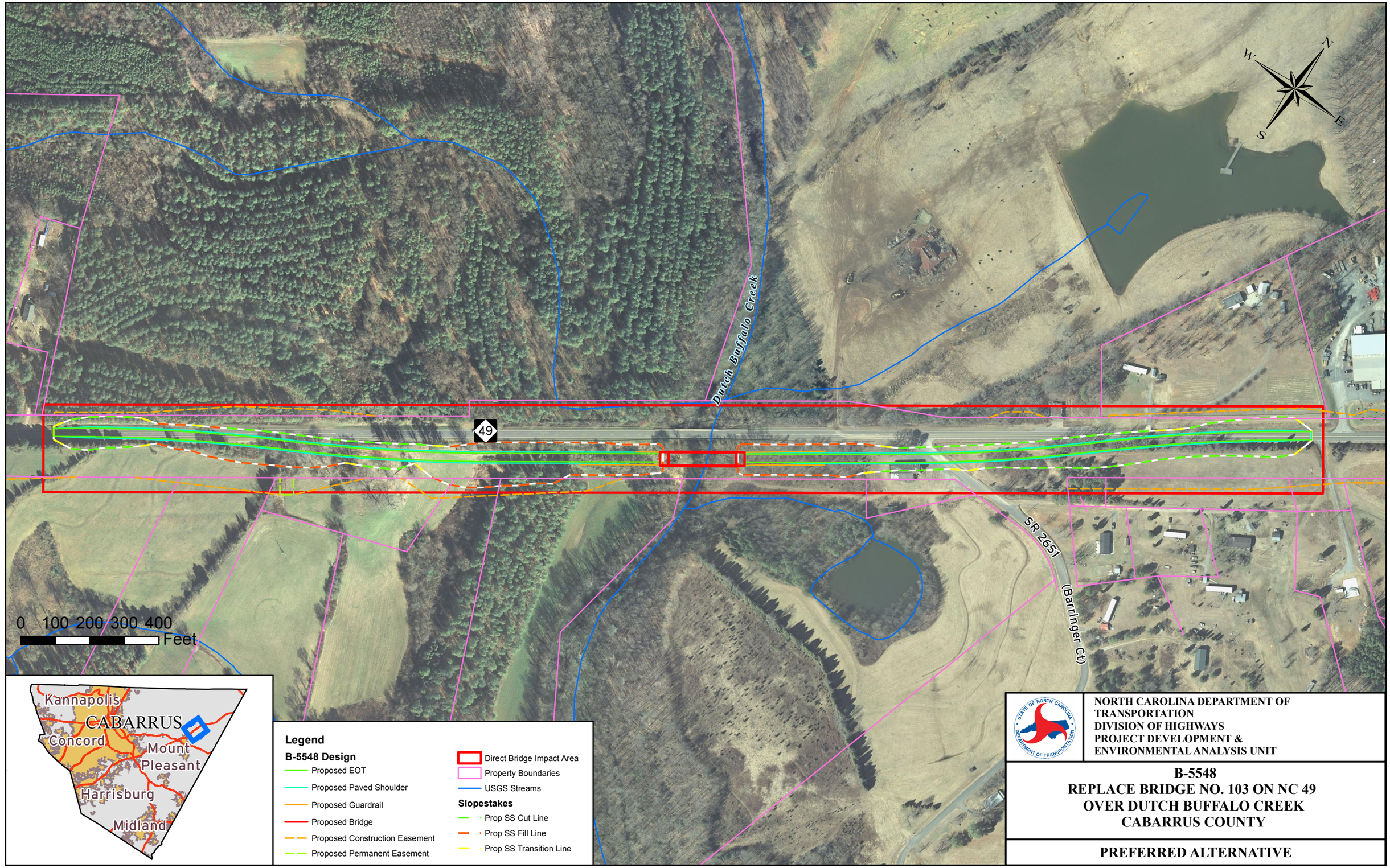
PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS UNIT

B-5548
REPLACE BRIDGE NO. 103 ON NC 49 OVER DUTCH BUFFALO CREEK CABARRUS COUNTY

TYPICAL SECTIONS

FIGURE 3



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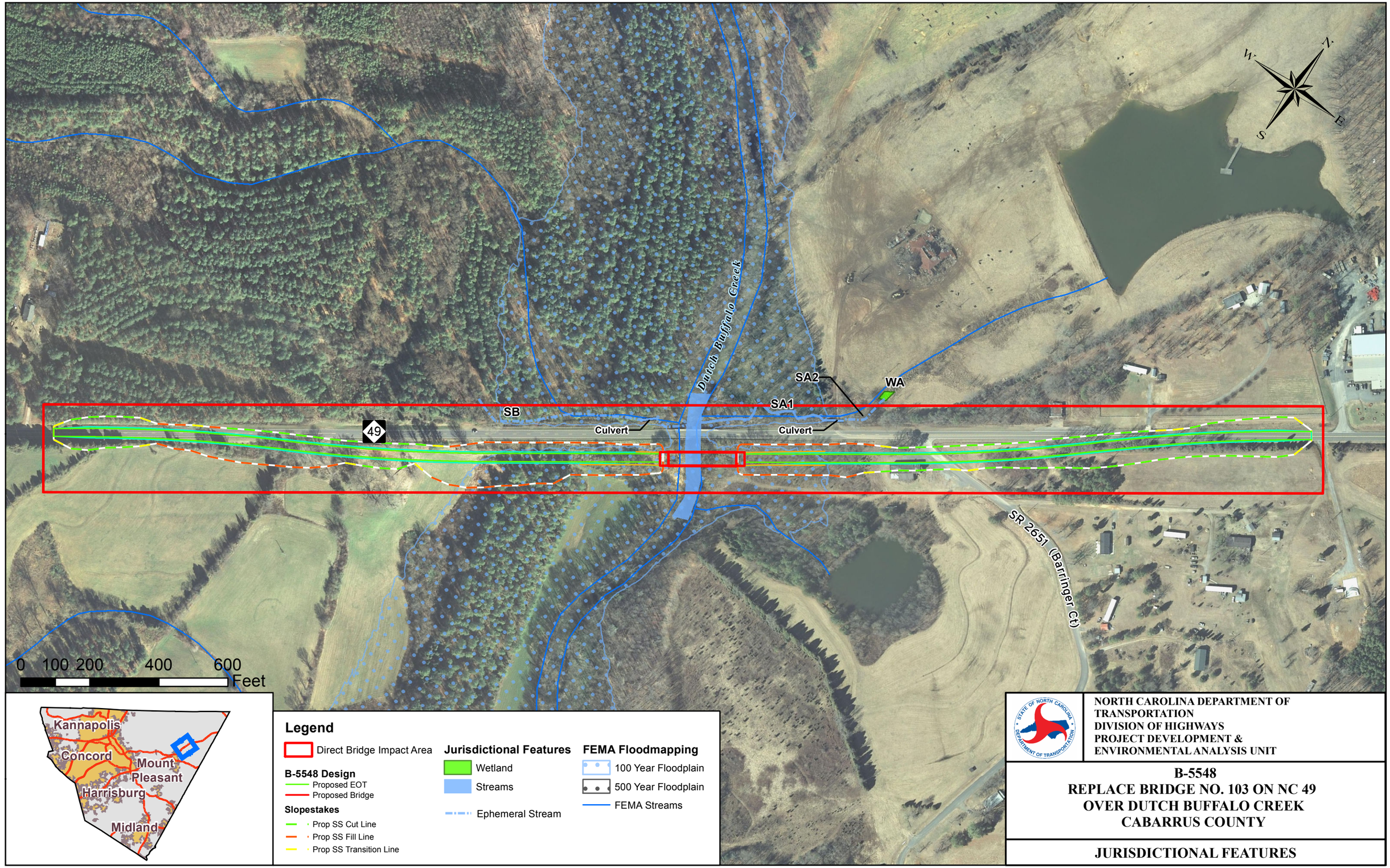
B-5548
REPLACE BRIDGE NO. 103 ON NC 49 OVER DUTCH BUFFALO CREEK CABARRUS COUNTY

PREFERRED ALTERNATIVE

FIGURE 4



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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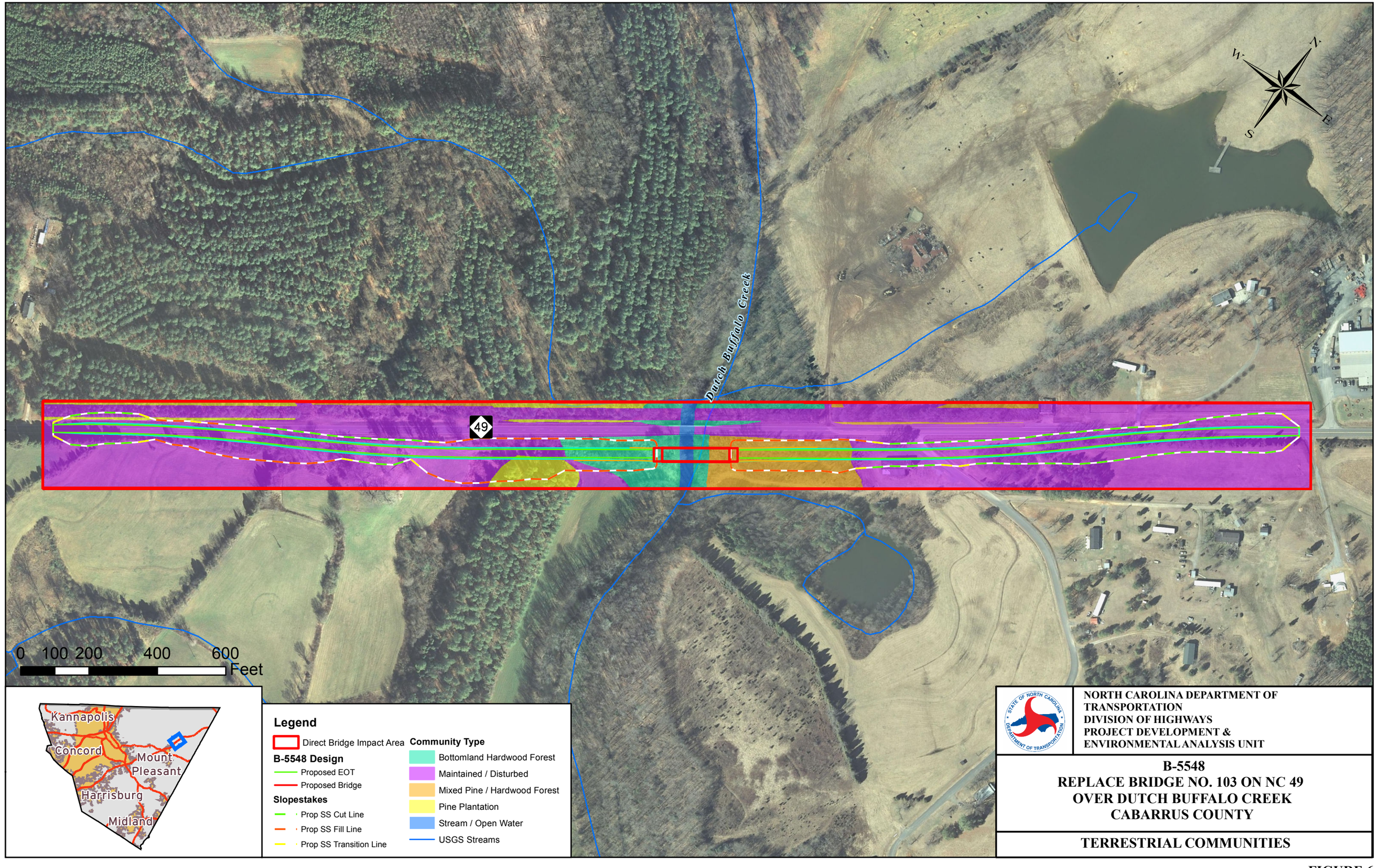
PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS UNIT

B-5548
REPLACE BRIDGE NO. 103 ON NC 49 OVER DUTCH BUFFALO CREEK CABARRUS COUNTY

JURISDICTIONAL FEATURES

FIGURE 5



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS UNIT

B-5548
REPLACE BRIDGE NO. 103 ON NC 49
OVER DUTCH BUFFALO CREEK
CABARRUS COUNTY

TERRESTRIAL COMMUNITIES

FIGURE 6

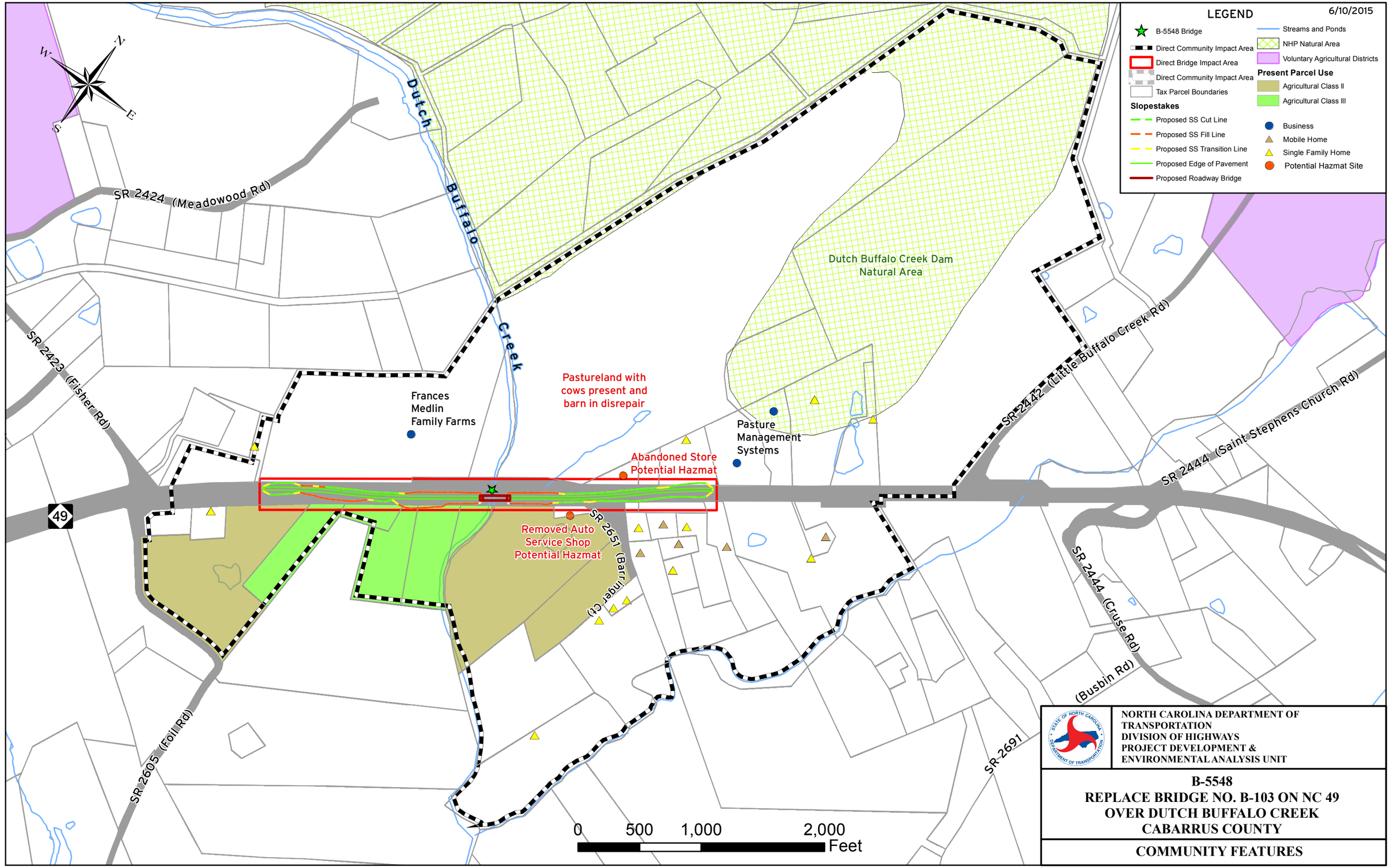

LEGEND
6/10/2015
B-5548 Bridge
Direct Community Impact Area
Direct Bridge Impact Area
Direct Community Impact Area
Tax Parcel Boundaries
Slopestakes
Proposed SS Cut Line
Proposed SS Fill Line
Proposed SS Transition Line
Proposed Edge of Pavement
Proposed Roadway Bridge
Streams and Ponds
NHP Natural Area
Voluntary Agricultural Districts
Present Parcel Use
Agricultural Class II
Agricultural Class III
Business
Mobile Home
Single Family Home
Potential Hazmat Site
N
S
E
W
Dutch Buffalo Creek
SR 2424 (Meadowood Rd)
SR 2423 (Fisher Rd)
Frances Medlin Family Farms
Pastureland with cows present and barn in disrepair
Dutch Buffalo Creek Dam Natural Area
Pasture Management Systems
Abandoned Store Potential Hazmat
Removed Auto Service Shop Potential Hazmat
SR 2651 (Barringer Ct)
49
SR 2605 (Foil Rd)
SR 2442 (Little Buffalo Creek Rd)
SR 2444 (Saint Stephens Church Rd)
SR 2444 (Cruse Rd)
(Busbin Rd)
SR 2691
0
500
1,000
2,000
Feet
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS UNIT
B-5548
REPLACE BRIDGE NO. B-103 ON NC 49
OVER DUTCH BUFFALO CREEK
CABARRUS COUNTY
COMMUNITY FEATURES

FIGURE 7

Figure 8a: Photographs of B-5548

Picture 1: Looking westbound along NC 49 from Bridge No. 103

Picture 2: Looking westbound along NC 49 from Bridge No. 103

Picture 3: Looking eastbound along NC 49 across Bridge No. 103

Picture 4: Looking eastbound along NC 49 across Bridge No. 103

Figure 8b: Photographs of B-5548

Picture 5: Looking east at Pier 1 from under Bridge No. 103

Picture 6: Looking at the southwest of Bridge No. 103 and NC 49

Picture 7: Looking at the northwest of Bridge No. 103 from the edge of NC 49

Picture 8: Looking downstream from Bridge No. 103 along Dutch Buffalo Creek

Figure 8c: Photographs of B-5548

Picture 9: Looking upstream at Dutch Buffalo Creek from Bridge No. 103

Picture 10: The vast majority of the undeveloped parcel located in the south-east quadrant of NC 49/Dutch Buffalo Creek is wooded. In the forefront are the concrete remnants of Hammill's Service Shop.

Picture 11: Northeast quadrant of NC 49 with Dutch Buffalo Creek; cattle grazing and abandoned structure

Picture 12: Powerlines in the southeast quadrant of NC 49 with Dutch Buffalo Creek

APPENDIX A:
Agency Correspondence

Zimbra **eworkman@rkk.com**

RE: [EXTERNAL] Start of Study Notification, B-5548 Replacement of Bridge No.103 on NC 49 over Dutch Buffalo Creek, Cabarrus County (UNCLASSIFIED)

From : Crystal C SAW Amschler <Crystal.C.Amschler@usace.army.mil> Mon, Jan 26, 2015 09:27 AM

Subject : RE: [EXTERNAL] Start of Study Notification, B-5548 Replacement of Bridge No.103 on NC 49 over Dutch Buffalo Creek, Cabarrus County (UNCLASSIFIED)

To : Elizabeth Workman <eworkman@rkk.com>

Classification: UNCLASSIFIED
Caveats: NONE

Ms. Workman-Maurer,

Thank you for the opportunity to comment on this project. Based on review of the information provided and other available information, there are jurisdictional waters within the project area. A Department of Army permit would be required should this project result in the placement of dredged or fill material within waters of the US. Bridge replacements often qualify for Nation Wide Permit 3 for maintenance. If impacts to Dutch Buffalo Creek or adjacent waters are proposed with this project, I recommend you contact our office to determine the appropriate permit and if notification to our office is required.

Thank you,

Crystal C. Amschler
Project Manager
Asheville Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, NC 28403
(828)-271-7980 Ext 231

-----Original Message-----
From: Elizabeth Workman [mailto:eworkman@rkk.com]
Sent: Tuesday, January 13, 2015 4:05 PM
To: Amschler, Crystal C SAW; brian.strong@ncparks.gov; vanderwiele cynthia; Mitch Batuzich; Jason Mays; Alan Johnson
Cc: Zahid M Baloch; Kristina Miller
Subject: [EXTERNAL] Start of Study Notification, B-5548 Replacement of Bridge No.103 on NC 49 over Dutch Buffalo Creek, Cabarrus County

SUBJECT: Notification of start of activities for NCDOT TIP Project B-5548

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

January 22, 2015

Elizabeth Workman-Maurer
Senior Planner
RK&K
900 Ridgefield Dr., Suite 350
Raleigh, NC 27609

Ms. Workman-Maurer;

The following information is in response to your review request in the B-5548, Bridge No. 103 replacement on NC 49 over Dutch Buffalo Creek, Cabarrus County, 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.

Recent Information shows that the area in question was previously evaluated for a similar project for the NCDOT. The project is exempt from further Farmland analysis if it remains within the previously evaluated area. Any changes will generate the need of a new analysis of the area. This letter makes invalid the Farmland Conversion evaluation for this specific project submitted in January 14, 2015. You may discard the previous B-5548, Bridge No. 103 replacement AD2016.

If you have any questions, do not hesitate to contact me.

Sincerely,

Milton Cortes

Milton Cortes
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.

North Carolina Wildlife Resources Commission

TO: Zahid Baloch, Project Planning Engineer
Project Development and Environmental Analysis, NCDOT

FROM: Marla Chambers, Western NCDOT Coordinator
Habitat Conservation Program, NCWRC

Marla Chambers

DATE: December 10, 2014

SUBJECT: Scoping review of NCDOT's proposed replacement of Bridge No. 103 on NC 49 over Dutch Buffalo Creek, Cabarrus County. TIP No. B-5548.

North Carolina Department of Transportation (NCDOT) has requested comments from the North Carolina Wildlife Resources Commission (NCWRC) regarding impacts to fish and wildlife resources resulting from the subject project. Staff biologists have reviewed the information provided. The following preliminary comments are provided in accordance with the provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

Our standard recommendations for bridge replacement projects of this scope are as follows:

1. We generally prefer spanning structures. Spanning structures usually do not require work within the stream and do not require stream channel realignment. The horizontal and vertical clearances provided by bridges allows for human and wildlife passage beneath the structure, does not block fish passage, and does not block navigation by canoeists and boaters.

2. Bridge deck drains should not discharge directly into the stream.

3. Live concrete should not be allowed to contact the water in or entering into the stream.

4. If possible, bridge supports (bents) should not be placed in the stream.

Mailing Address: Division of Inland Fisheries • 1721 Mail Service Center • Raleigh, NC 27699-1721
Telephone: (919) 707-0220 • **Fax:** (919) 707-0028

5. If temporary access roads or detours are constructed, they should be removed back to original ground elevations immediately upon the completion of the project. Disturbed areas should be seeded or mulched to stabilize the soil and native tree species should be planted with a spacing of not more than 10'x10'. If possible, when using temporary structures the area should be cleared but not grubbed. Clearing the area with chain saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact, allows the area to revegetate naturally and minimizes disturbed soil.

6. A clear bank (riprap free) area of at least 10 feet should remain on each side of the stream underneath the bridge.

7. In trout waters, the N.C. Wildlife Resources Commission reviews all U.S. Army Corps of Engineers nationwide and general '404' permits. We have the option of requesting additional measures to protect trout and trout habitat and we can recommend that the project require an individual '404' permit.

8. In streams that contain threatened or endangered species, Mr. Logan Williams with the NCDOT - ONE should be notified. Special measures to protect these sensitive species may be required. NCDOT should also contact the U.S. Fish and Wildlife Service for information on requirements of the Endangered Species Act as it relates to the project.

9. In streams that are used by anadromous fish, the NCDOT official policy entitled "Stream Crossing Guidelines for Anadromous Fish Passage (May 12, 1997)" should be followed.

10. In areas with significant fisheries for sunfish, seasonal exclusions may also be recommended.

11. Sedimentation and erosion control measures sufficient to protect aquatic resources must be implemented prior to any ground disturbing activities. Structures should be maintained regularly, especially following rainfall events.

12. Temporary or permanent herbaceous vegetation should be planted on all bare soil within 15 days of ground disturbing activities to provide long-term erosion control.

13. All work in or adjacent to stream waters should be conducted in a dry work area. Sandbags, rock berms, cofferdams, or other diversion structures should be used where possible to prevent excavation in flowing water.

14. Heavy equipment should be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams.

15. Only clean, sediment-free rock should be used as temporary fill (causeways), and should be removed without excessive disturbance of the natural stream bottom when construction is completed.

16. During subsurface investigations, equipment should be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.

17. If culvert installation is being considered, conduct subsurface investigations prior to structure design to determine design options and constraints and to ensure that wildlife passage issues are addressed.

If corrugated metal pipe arches, reinforced concrete pipes, or concrete box culverts are used:

1. The culvert must be designed to allow for aquatic life and fish passage. Generally, the culvert or pipe invert should be buried at least 1 foot below the natural streambed (measured from the natural thalweg depth). If multiple barrels are required, barrels other than the base flow barrel(s) should be placed on or near stream bankfull or floodplain bench elevation (similar to Lyonsfield design). These should be reconnected to floodplain benches as appropriate. This may be accomplished by utilizing sills on the upstream end to restrict or divert flow to the base flow barrel(s). Silled barrels should be filled with sediment so as not to cause noxious or mosquito breeding conditions. Sufficient water depth should be provided in the base flow barrel during low flows to accommodate fish movement. If culverts are longer than 40-50 linear feet, alternating or notched baffles should be installed in a manner that mimics existing stream pattern. This should enhance aquatic life passage: 1) by depositing sediments in the barrel, 2) by maintaining channel depth and flow regimes, and 3) by providing resting places for fish and other aquatic organisms. In essence, the base flow barrel(s) should provide a continuum of water depth and channel width without substantial modifications of velocity.

2. If multiple pipes or cells are used, at least one pipe or box should be designed to remain dry during normal flows to allow for wildlife passage.

3. Culverts or pipes should be situated along the existing channel alignment whenever possible to avoid channel realignment. Widening the stream channel must be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.

4. Riprap should not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be professionally designed, sized, and installed.

In most cases, we prefer the replacement of the existing structure at the same location with road closure. If road closure is not feasible, a temporary detour should be designed and located to avoid wetland impacts, minimize the need for clearing and to avoid destabilizing stream banks. If the structure will be on a new alignment, the old structure should be removed and the approach fills removed from the 100-year floodplain. Approach fills should be removed down to the natural ground elevation. The area should be stabilized with grass and planted with native tree

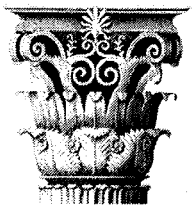
species. Tall fescue should not be used in riparian areas. If the area that is reclaimed was previously wetlands, NCDOT should restore the area to wetlands. If successful, the site may be used as wetland mitigation for the subject project or other projects in the watershed.

Project specific comments:

1. B-5548, Cabarrus Co., Bridge No. 103 over Dutch Buffalo Creek on NC 49. Dutch Buffalo Creek is designated by the Natural Heritage Program as a "natural area", as defined in GS 113A-164.2, in the project area and supports several listed species at or very close to the site. Mussel species include Carolina creekshell (*Villosa vaughaniana*), Federal Species of Concern and State Endangered; notched rainbow (*V. constricta*), State Special Concern; and Eastern creekshell (*V. delumbis*), State Significantly Rare. The Carolina darter (*Etheostoma collis*), a Federal Species of Concern and State Special Concern fish, also occurs in the project area. We recommend that sediment and erosion control measures adhere to the Design Standards in Sensitive Watersheds.

We request that NCDOT routinely minimize adverse impacts to fish and wildlife resources in the vicinity of bridge replacements. The NCDOT should install and maintain sedimentation control measures throughout the life of the project and prevent wet concrete from contacting water in or entering into these streams. Replacement of bridges with spanning structures of some type, as opposed to pipe or box culverts, is recommended in most cases. Spanning structures allow wildlife passage along streambanks, reducing habitat fragmentation and vehicle related mortality at highway crossings.

If you need further assistance or information on NCWRC concerns regarding bridge replacements, please contact me at marla.chambers@ncwildlife.org or (704) 982-9181. Thank you for the opportunity to review and comment on this project.



HISTORIC ARCHICTECTURE 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-5548	***County***:	Cabarrus
WBS No.:	41665.1C	***Document Type***:	CE
Fed. Aid No:	BRSTP-1008(23)	***Funding***:	☐ State ☒ Federal
Federal Permit(s):	☒ Yes ☐ No	***Permit Type(s)***:	unknown
Project Description: Replace Bridge No 103 on NC 49 over Dutch Buffalo Creek.			

SUMMARY OF HISTORIC ARCHICTECTURE AND LANDSCAPES REVIEW

Description of review activities, results, and conclusions:

Review of HPO quad maps, relevant background reports, historic designations roster, and indexes was undertaken on December 18, 2012. Based on this review, there were no existing NR, SL, LD, DE, or SS properties in the Area of Potential Effects (APE). There are three structures in the APE of this project; one is a nearly demolished but very large farm building, one is a vacant commercial structure c. 1945, the last is a vacant former car garage. None of these properties in the APE which meet the eligibility criteria for National Register listing.

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:

Using HPO GIS website and the Cabarrus County GIS Tax Data website provides reliable information regarding the structures in the APE. These combined utilities are considered valid for the purposes of determining the likelihood of historic resources being present.

SUPPORT DOCUMENTATION

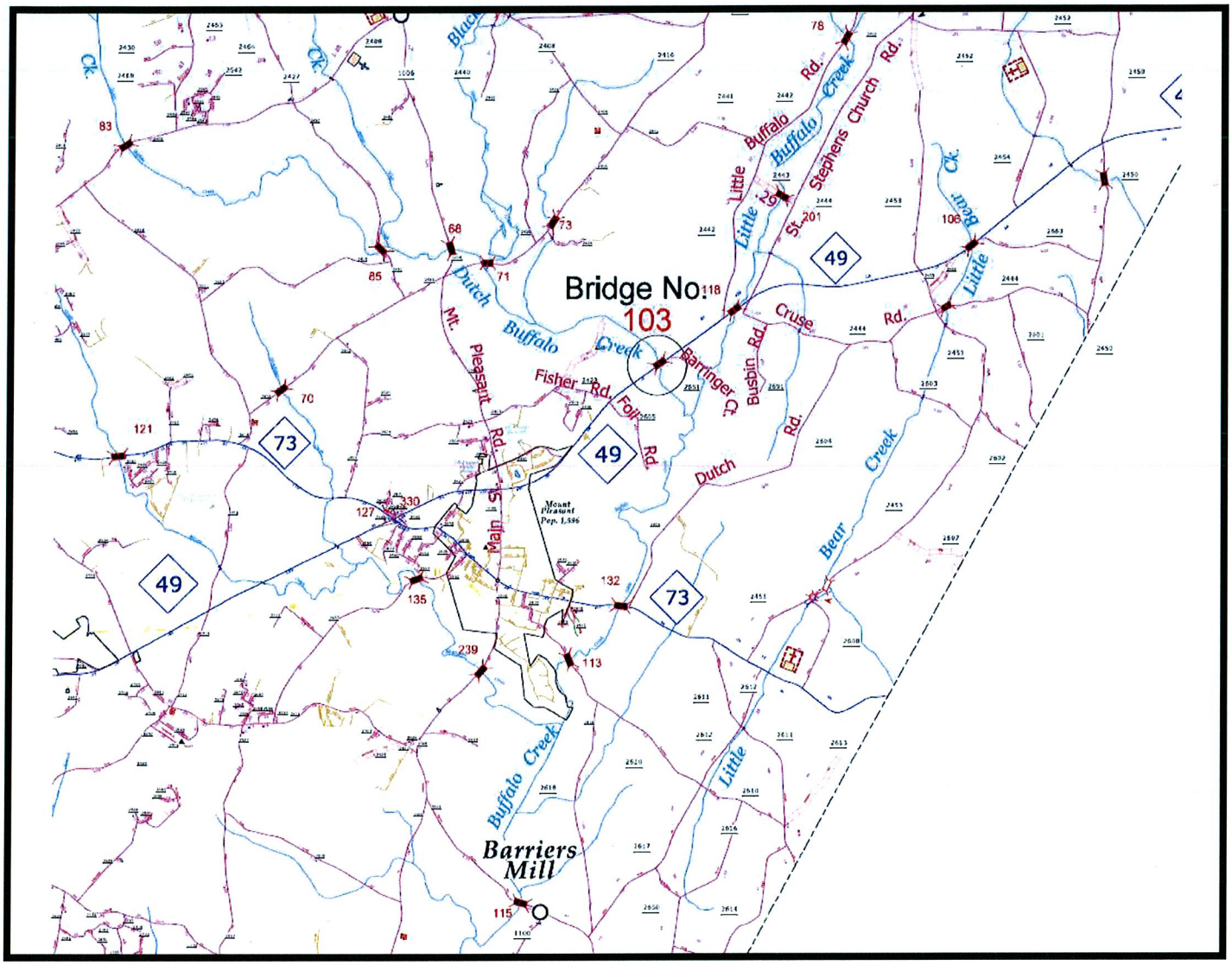
☒Map(s) ☐Previous Survey Info. ☒Photos ☐Correspondence ☐Design Plans

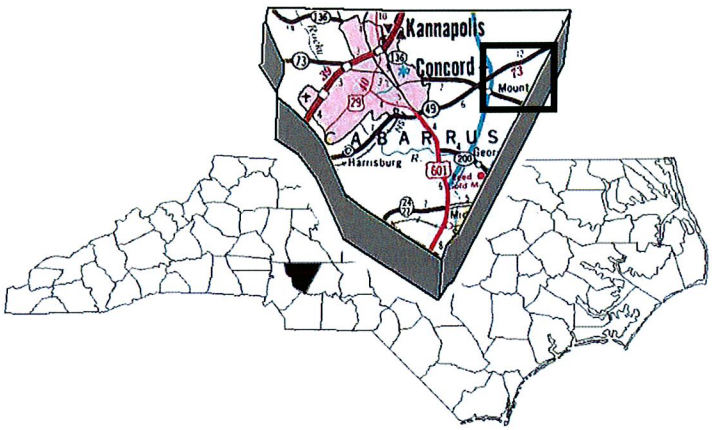
FINDING BY NCDOT ARCHITECTURAL HISTORIAN

Historic Architecture and Landscapes -- NO SURVEY REQUIRED

Shelby Spillers Dec 18, 2012

NCDOT Architectural Historian Date

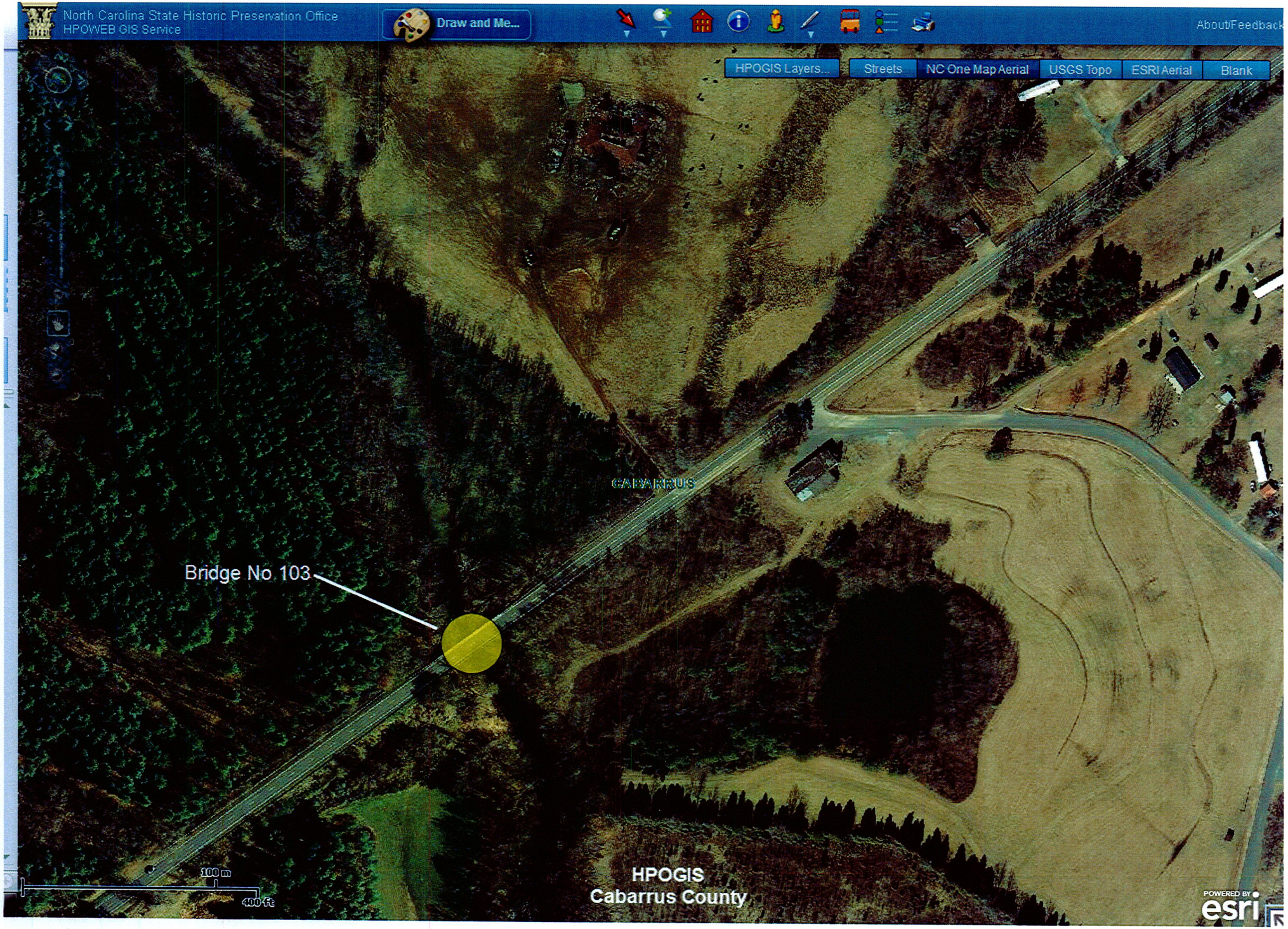




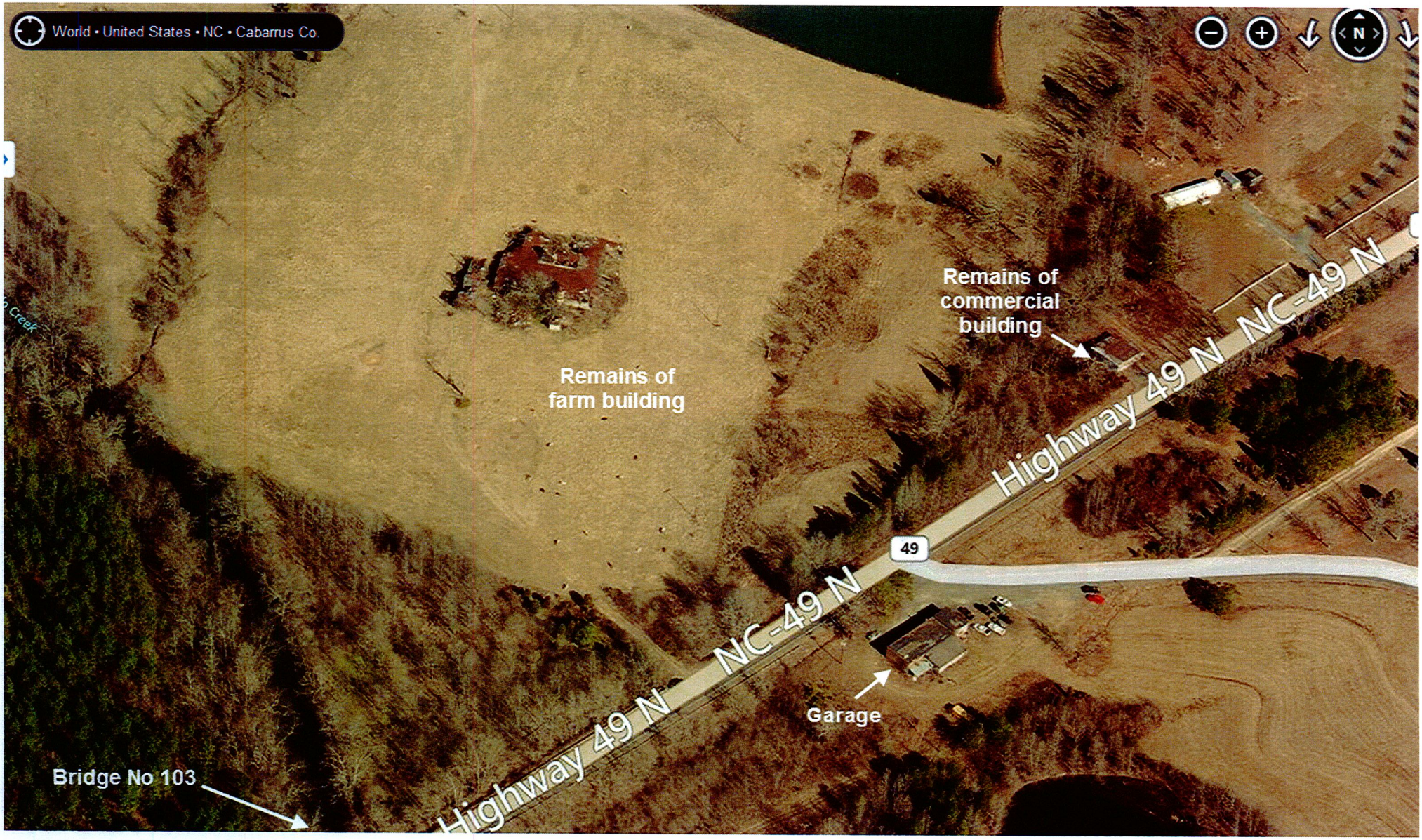
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS UNIT

CABARRUS COUNTY
Replace Bridge No. 103 on NC 49
OVER DUTCH BUFFALO CREEK
B-5548

Figure 1


North Carolina State Historic Preservation Office
HPOWEB GIS Service
Draw and Me...
About/Feedback
HPOGIS Layers...
Streets
NC One Map Aerial
USGS Topo
ESRI Aerial
Blank
CABARRUS
Bridge No 103
100 m
400 ft
HPOGIS
Cabarrus County
POWERED BY esri

Vacant garage


World • United States • NC • Cabarrus Co.
Remains of commercial building
Remains of farm building
Highway 49 N NC-49 N
49
Highway 49 N NC-49 N
Garage
Bridge No 103

Commerical Building

Project Tracking No.:

12-12-0014

NO ARCHAEOLOGICAL SURVEY REQUIRED FORM

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

PROJECT INFORMATION

Project No: B-5548 *County:* Cabarrus

WBS No: 55048.1.1 *Document:*

F.A. No: **BRSTP-1008(23)** *Funding:* ☐ State ☒ Federal

Federal Permit Required? ☒ Yes ☐ No *Permit Type:* **Unknown at this time**

Project Description: Replace Bridge 103 on NC 49 over Dutch Buffalo Creek.

SUMMARY OF CULTURAL RESOURCES REVIEW

Brief description of review activities, results of review, and conclusions:
A review of the map files at the Office of State Archaeology on January 3, 2013 found that Bridge 103, as part of NC 49 in Cabarrus County, had been reviewed previously on two separate occasions. Both reviews attested to the low probability of significant intact archaeological sites along the route of NC 49 northeast of Mount Pleasant as part of an Albemarle Water Transmission line within the NC 49 ROW. No sites are recorded in the vicinity of the proposed project.

Brief Explanation of why the available information provides a reliable basis for reasonably predicting that there are no unidentified historic properties in the APE:
Based on two separate recommendations by the Office of State Archaeology in 2009 clearing the proposed water transmission project along NC 49, including Bridge 103 no further work is waqrranted.

SUPPORT DOCUMENTATION

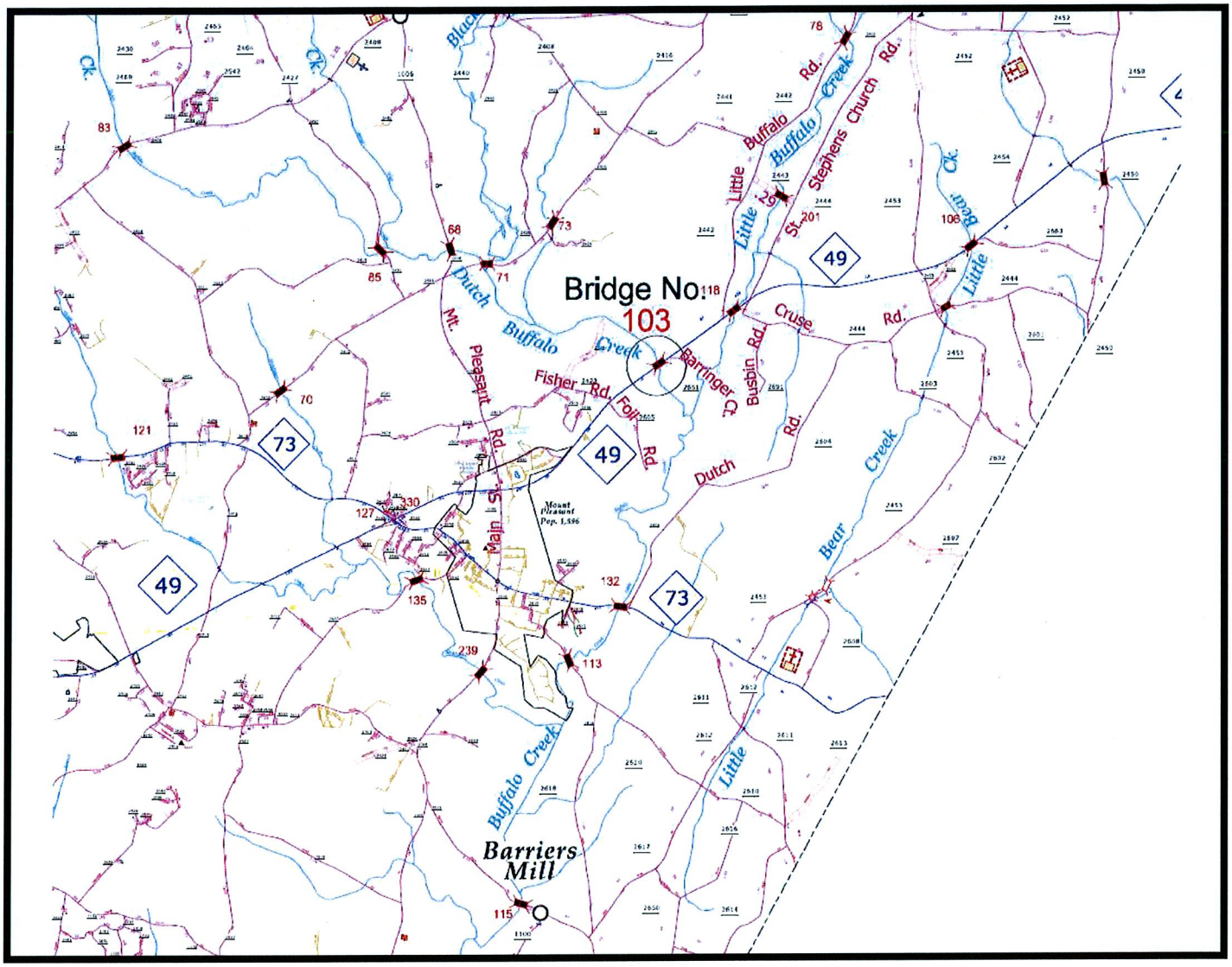
See attached: ☒ Map(s) ☒ Previous Survey Info ☒ Photos ☐ Correspondence
☐ Photocopy of County Survey Notes Other:

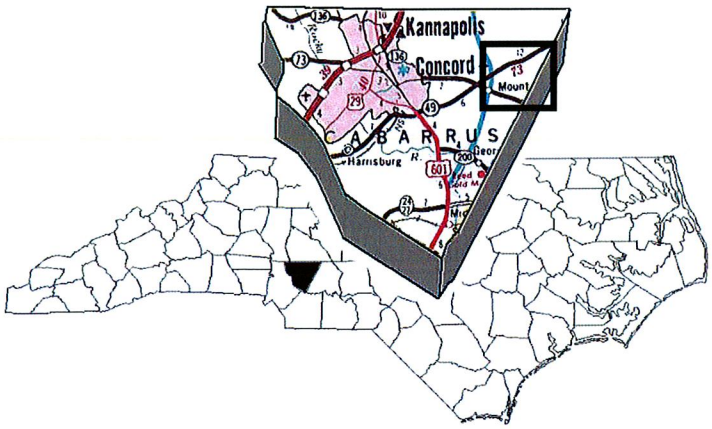
FINDING BY NCDOT ARCHAEOLOGIST

NO ARCHAEOLOGY SURVEY REQUIRED

Gerald F. Lyon 1/4/13

NCDOT ARCHAEOLOGIST II Date





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

CABARRUS COUNTY
Replace Bridge No. 103 on NC 49
OVER DUTCH BUFFALO CREEK
B-5548

Figure 1

Tracking #: **CH 09-2881** *Other #'s* 10-E-0000-0195, 12-E-0000-0235

County: Stanly, Cabarrus

Applicant: WK Dickson

Status:

Project: **Albemarle Water Transmission Line, Booster Stations, & Storage Tank, Concord, Kannapolis & Albemarle**

Initial IN: 12/3/2009 *Current IN:* 3/16/2012 *Client:* 12/1/2009 *DUE:* **12/21/2009** *OUT:* 3/23/2012

Program: MISC *To:* A/S

Info. Req.:	*By:*	*Info Type:*	*Received:*

FLAG INFO		*Archaeology*	*Survey/Rest.*	
Survey Req:	*By:*	*Report:*	*Report:*	☐ *DoE*
Testing Req:	*By:*	*Report:*	*Report:*	UNK *Effect*
Mitigation:	*By:*	*Report:*	*Report:*	

Bib #: *Sites:* 0 *Forms IN:*

Quads: Richfield, Mt. Pleasant, Concord *Acres:* *Miles:* 12

Notes:

☑ *Project Area Map* ☐ *DoE NR Map*

☐ *Survey Area Map* ☐ *Microfiched*

Cleared Archaeology: **12/14/2009**

Cleared Survey: **12/17/2009**

Reviewer(s): JJM/JBC

Comments

Arch Comments: 12/04/09: Rec'd CH 10-E-0000-0195, Scoping for project. To JJM. LFF

12.15.09: Cleared, ARG-15, low probability for significant, intact archaeological sites. To RGE, JJM Survey Comments: 12-17-09 NC JBCHPO Comments: 6/2/11: Rec'd FONSI from the Department of the Army. Project previously reviewed & cleared. No comment. CRS

3/16/12: Rec'd EA/FONSI from State Clearinghouse. Project previously reviewed & cleared. No comment. CRS

APPENDIX B:
Project Newsletter

Bridge No. 103 Replacement Project on N.C. 49 over Dutch Buffalo Creek (TIP No. B-5548)

North Carolina Department of Transportation
Project Development and Environmental Analysis Unit
Attn: Zahid Baloch, PE
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Important Information - Please Read!

Contact Us
For questions or comments about this project, please contact one of the following project team members:

Zahid Baloch, PE
NCDOT—PD&EA Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Phone: 919-707-6012
Email: zbaloch@ncdot.gov

Kristina Miller, PE, or
Elizabeth Workman-Maurer
RK&K Consulting Firm
900 Ridgefield Drive, Ste. 350
Raleigh, NC 27609
Phone: 919-878-9560
Fax: 919-790-8382
Email: kmiller@rkk.com or
eworkman@rkk.com

Do you want to share your thoughts on the project?

Please feel free to mail, email or fax your comments to a project team member by **May 29, 2015**.

Persons who speak Spanish and do not speak English, or have a limited ability to read, speak or understand English, may receive interpretive services upon request by calling (800) 481-6494.

Bridge No. 103 Replacement Project

Transportation Improvement Program (TIP) No. B-5548

NCDOT Mission:
Connecting people and places safely and efficiently, with accountability and environmental sensitivity to enhance the economy, health, and well-being of North Carolina.

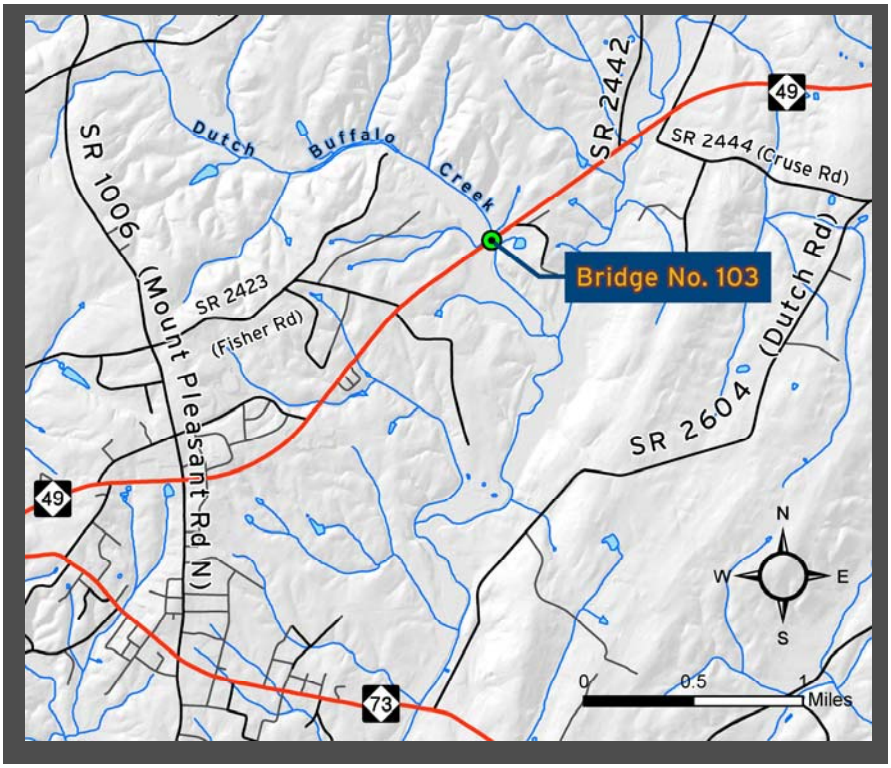
Bridge No. 103 on N.C. 49 over Dutch Buffalo Creek

Project Description

The North Carolina Department of Transportation (NCDOT) and the Federal Highway Administration (FHWA) are proposing to replace Bridge No. 103 on N.C. 49 over Dutch Buffalo Creek in Cabarrus County, N.C. Approximately 6,200 vehicles per day use the bridge. By 2025, that number is expected to increase to 12,400 vehicles per day. Bridge No. 103 was built in 1946 and is reaching the end of its useful life. The purpose of the project is to provide a safer and more durable structure at this location. The bridge will be replaced on a new alignment located approximately 70 feet to the south of the existing bridge. The proposed project will be constructed within the existing right-of-way.

Construction Information

Traffic will be maintained along N.C. 49 while the new bridge is constructed approximately 70 feet south of the existing bridge. Construction activities will take about six months to complete.



Schedule

July 2015:	Completion of Environmental Studies
January 2017:	Construction Begins