



PAT McCrory
Governor

NICHOLAS J. TENNYSON
Secretary

PROJECT ENVIRONMENTAL CONSULTATION FORM

STIP Project No. R-2536

Asheboro, Randolph County

November 20, 2015

I. General Information

Consultation Phase: Construction Consultation

Project Description: US 64 Improvements
from US 64 just east of SR 1424 (Stutts Road) to US 64, 0.6
miles east of SR 2345 (Presnell Street) for a distance of
approximately 14 miles; Federal Aid Project No. NHF-64(19);
WBS Element No. 34450.1.1

Document Type: Reevaluation of the Abbreviated Final Environmental Impact
Statement (EIS) (April 2015)

II. Conclusions

The document noted above has been reevaluated as required by 23 CFR 771. It determined that changes that may have occurred prior to April 2015 in project design concept or scope, the affected environment, or proposed mitigation measures would not require supplemental environmental documentation and that the prior environmental documents and resultant project decisions were still valid based on:

- the previous Reevaluation of the Abbreviated Final EIS (October 2012),
- the Record of Decision (ROD) (December 2007),
- the Abbreviated Final EIS (March 2007), and
- the Draft EIS (July 2002).

This Consultation Letter finds that the currently proposed action is essentially the same as the original proposed action. The proposed design changes are noted in Section III.

It has been determined that anticipated social, economic, and environmental impacts were accurately described in the above referenced documents unless noted otherwise herein. Therefore, the original Administrative Action remains valid, and no supplemental environmental impact statement is required.



III. Changes in the Proposed Action and Environmental Consequences

This section provides a summary of the design modifications addressed in this Construction Consultation and documents the changes in potential environmental effects from those presented in the prior environmental documents at the four sites listed in Section III.A below.

Overall, the design modifications are expected to generally have less or similar impacts as compared to those presented in the prior environmental documents. Resource impacts primarily differ related to the following:

- The current design modifications reduce overall impacts to the total length of stream channel, area of wetlands, number of residential/business relocations, and area of property acquisition.
- A net increase to the total number of traffic noise impacts is anticipated. *(This increase is due to the fact that the current design will relocate fewer residences along US 64 than the previous design. Specifically, the eleven residences noted on page 6 as being impacted by traffic noise associated with the design changes were previously identified as relocatees.)*
- As explained in Section III.D, archaeological resource investigations are underway and therefore related effects have the potential to change.

A. Design Modifications

After the Reevaluation of the Abbreviated Final EIS (April 2015), fourteen locations (Sites 1 through 14) were identified as having the potential for design revisions. These fourteen sites are illustrated in **Figure 1**. Four of the fourteen locations (Sites 6, 10, 11, and 14) include design changes that extend outside of the originally surveyed route location corridor. The other ten sites include service road extensions or other minor design modifications that are not being implemented or are located close to the prior design and within the originally surveyed route location corridor.

This Consultation Letter addresses design modifications at the following four locations:

- **Site 6** – Realignment of -Y9-, SR 2839 (Staleys Farm Road), approximately 0.56-mile long with a 400-foot connection to SR 2994 (Freedom Trail);
- **Site 10** – Modification of the US 64/Proposed US 64 Bypass Interchange at the eastern end of the proposed project;
- **Site 11** – Approximate 430-foot extension of SR 1346 (Skeen View Road – Service Road E); and
- **Site 14** – Approximate 590-foot extension of SR 2671 (Kennedy Country Drive– Service Road V).

B. Jurisdictional Resources

Water Resources

As detailed in **Appendix A**, jurisdictional features were reviewed for Sites 6, 11, and 14 by RK&K (Hal Bain and Pete Stafford) in October 2015 and for Site 10 by the North Carolina Department of Transportation-Natural Environment Section (NCDOT-NES) in August 2015. No new jurisdictional features were identified within the four sites; however, one new ephemeral stream was identified at Site 6, as detailed in **Appendix A (Table 1)**. The physical characteristics of this feature are provided in **Appendix A (Tables 2 and 3)**.

NCDOT-NES revisited Site 10 in August 2015 and delineated an extension of Gabriels Creek (SNN-C), which was originally documented in the April 2012 Natural Resources Technical

Report (NRTR) Reevaluation (NCDOT) and the July 9, 2014 Update to the April 2014 NRTR Reevaluation Addendum (AECOM).

The total length of stream channel impact and area of wetland impact are reduced overall with the current design¹. This reduction in impacts is based on the previously delineated jurisdictional features included in the July 9, 2014 Update to the April 2014 NRTR Reevaluation Addendum by AECOM that was incorporated into the Reevaluation of the Abbreviated Final EIS (April 2015).

Site 6 – The current design for Staleys Farm Road reduces the anticipated length of jurisdictional stream channel impact by approximately 165 feet and is not expected to change the area of wetland impact from the prior design.

Site 10 – The current design increases the length of stream channel impact by approximately 98 feet and decreases the area of wetland impact by approximately 1.92 acres.

Sites 11 and 14 – Both sites have no jurisdictional features near the current roadway extensions.

C. Protected Species

Endangered Species Act – Federally Protected Species

As of December 26, 2012, the United States Fish and Wildlife (USFWS) lists two federally-protected species for Randolph County, Cape Fear Shiner (*Notropis mekistocholas*) and Schweinitz's sunflower (*Helianthus schweinitzii*). **Appendix A** includes habitat requirements for the federally protected species and the Biological Conclusions rendered based on survey results in the study area.

No change in the protected species' Biological Conclusions for the Cape Fear Shiner and Schweinitz's sunflower has occurred since the April 2015 Reevaluation of the Abbreviated Final EIS, as noted in Appendix A. The biological conclusion of ***No Effect*** still remains valid for the Cape Fear shiner. The biological conclusion of ***May Affect, Not Likely to Adversely Affect*** still remains valid for the Schweinitz's sunflower.

No habitat for the Cape Fear Shiner is present within Sites 6, 10, 11, and 14. While habitat is present for the Schweinitz's sunflower, no populations of the Schweinitz's sunflower were found within any of the four sites surveyed in October 2015, as detailed in **Appendix A**.

The USFWS has developed a Programmatic Biological Opinion (PBO) in conjunction with the Federal Highway Administration (FHWA), US Army Corps of Engineers (USACE), and NCDOT for the Northern long-eared bat (NLEB) (*Myotis septentrionalis*) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. The programmatic determination for the NLEB for the NCDOT program is ***May Affect, Likely to Adversely Affect***. The PBO provides incidental take coverage for the NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Randolph County, where R-2536 is located. This level of incidental take is authorized from the effective date of a final listing determination through April 30, 2020.

¹ Calculations for the length of stream channel and area of wetland impacts is based on the slope stake lines of the preliminary design plus a 25-foot offset.

As noted in **Appendix A**, USFWS signed a letter regarding the NLEB on April 10, 2015 converting the Programmatic Conference Opinion to the Programmatic Biological Opinion. The contract administrator for construction must submit the actual amount of tree clearing that occurred as a result of project construction to the NCDOT-NES (Neil Medlin, Biological Surveys Group Leader). This information is to be submitted prior to project completion and is to be reported in tenths of acres.

Bald Eagle and Golden Eagle Protection Act

Habitat for 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. A desktop-GIS assessment of Sites 6, 10, 11, and 14, as well as the area within a 1.13-mile radius (1.0 mile plus 660 feet) of the project limits, was performed on October 6, 2015. No water bodies large enough or sufficiently open to be considered potential feeding sources were identified. Since there was no foraging habitat within the review area, a survey of the project study area and the area within 660 feet of the project limits was not conducted. Additionally, a review of the North Carolina Natural Heritage Program (NCNHP) database on October 13, 2015 revealed no known occurrences of this species within 1.0 mile of the project study area. Due to the lack of habitat, no known occurrences, and impact anticipated for this project, it has been determined that this project will not affect this species.

Endangered Species Act Candidate Species

As of December 26, 2012, the USFWS lists one Candidate species for Randolph County, Georgia aster (*Symphyotrichum georgianum*). A review of NCNHP records, updated July 8, 2015, indicates no known occurrences of Georgia aster within 1.0 mile of the project study area.

Essential Fish Habitat

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

D. Cultural Resources – Section 106 of the National Historic Preservation Act

Historic Architectural Resources

No previously recorded historic architecture sites (on or eligible for the National Register of Historic Places (NRHP)) are located within Sites 6, 10, 11 and 14. In an e-mail dated October 9, 2015, Katherine Husband (NCDOT) stated that the four sites were reviewed by the NCDOT-Historic Architecture Group and that “no additional surveys will be necessary, and Historic Architecture Review of the sites is now complete.”

Archaeological Resources

One of the archaeological sites (31RD1398) that is eligible for the NRHP (under Criterion D) was impacted by the original design and will continue to be impacted with the current design at Site 6. The alignment for the original design at Site 6 for Staleys Farm Road traversed the northern portion of the archaeological site while the current design traverses the central portion of the archaeological site. A Data Recovery Plan is in place for this archaeological site. Through consultation with the State Historic Preservation Office (HPO) and the Office of State Archaeology (OSA), the NCDOT-Archaeology Group plans to update the Data Recovery Plan to include the design modification at Site 6.

Based on a Design Build Coordination Meeting held on October 14, 2015 and an initial field review on October 23, 2015, the NCDOT-Archaeology Group (Brian Overton) confirmed that additional archaeological surveys will be conducted at locations resulting from refinements in design that were not included in the original 2006 archaeological survey Area of Potential

Effects (APE). The NCDOT-Archaeology Group will work in consultation with HPO and OSA to identify any NRHP-eligible resources within the updated APE and document the potential for adverse effects. If any additional NRHP-eligible sites will be adversely effected and cannot be avoided, the NCDOT-Archaeology Group will also develop a Data Recovery Plan to mitigate adverse effects due to the design modifications. If needed, the NCDOT-Archaeology Group will coordinate with the FHWA, HPO, and OSA to discuss a potential amendment to the January 20, 2012 Memorandum of Agreement (MOA) to address any newly-identified NRHP-eligible archaeological sites adversely effected by the design modifications.

In addition, the Data Recovery Plan for archaeological site 31RD1398 will be updated to reflect the design modification for Staleys Farm Road (Site 6), if needed. The NCDOT will ensure that each Data Recovery Plan is implemented after right of way is acquired or once right of entry is secured from property owners and prior to construction activities within the site locations. The NCDOT will abide by all other stipulations pertaining to the data recovery efforts listed in the MOA signed by the NCDOT on January 20, 2012.

E. Relocations and Property Acquisition

The current design reduces the total number of relocations and the amount of property acquisition, as detailed below.

Site 6 – The current design for Staleys Farm Road relocates approximately 8 fewer homes than the original design and requires approximately 6.8 fewer acres of property acquisition.

Site 10 – The current design for the US 64/Proposed US 64 Bypass at the eastern end of the project avoids relocations for 1 church, 6 businesses, and 16 residences as compared with the prior design. However, it includes two business relocations and four residential relocations that were not included with the proposed project. In addition, the current design requires approximately 23.2 fewer acres of property acquisition.

Site 11 – No relocations are associated with this design change. Skeen View Road Extension provides access to four properties that would otherwise be acquired, which reduces the amount of property acquisition at this location from 166.4 acres to 0.88 acre.

Site 14 – No relocations are associated with this design change. Kennedy Country Drive Extension provides access to one property that would otherwise be acquired, which reduces the amount of property acquisition at this location from 261.5 acres to 0.85 acre.

F. Traffic Noise

In accordance with the 2011 NCDOT Traffic Noise Abatement Policy, RK&K provided a qualitative analysis to review Sites 6, 11, and 14 while a quantitative (detailed modeling) analysis was performed for the design modifications at Site 10 for the US 64/Proposed US 64 Bypass Interchange at the eastern end of the project.

Sites 6, 11, and 14 – A qualitative analysis determined that there will not be additional traffic noise impacts to noise sensitive land uses in the vicinity of Site 6 (Staleys Farm Road), Site 11 (Skeen View Road) and Site 14 (Kennedy Country Drive).

Site 10 – A quantitative (detailed modeling) analysis of the proposed modifications at Site 10 predicted nine new traffic noise impacts to residential properties adjacent to US 64. Due the fact that the current design does not relocate these nine residences that would have been relocated

with the prior design, the net number of traffic noise impacts increases. All nine new traffic noise impacts are due to the traffic noise levels (for the future build condition) that exceed Noise Activity Category (NAC) impact criteria. The predicted noise level increases in the future build condition (loudest-hour equivalent) over the existing condition will be barely perceptible (approximately 3 decibels); therefore, none of the nine new traffic noise impacts will be due to a substantial increase in traffic noise. Traffic noise abatement will not be feasible due to limited/no control of access to the dominant traffic noise source (US 64).

There will be zero (0) traffic noise impacts to the residences on Madison Circle and Lawrence Heights Drive. Although portions of the US 64/Proposed US 64 Bypass interchange (specifically, -Y17RPC-, -Y17FLY-, and -Y17RPDA-) will be horizontally closer to these residences than per the original interchange configuration, one ramp (-Y17RPC-) will be elevated far enough above the existing grade to shield the residences from the other roadways. Traffic noise from the ramp (-Y17RPC-) will for the most part radiate over the residences, which will be in the 'shadow zone' created by the elevated roadway section.

The place of worship, located at 1789 Trogdon Hill Road, will not be impacted. With predicted exterior and interior noise levels of 63 dB(A) and 38 dB(A), respectively, the property does not approach or exceed applicable noise impact criteria thresholds.

Based on the design modification, the list of residential addresses for the newly impacted noise-sensitive land uses is listed below:

- | | | |
|--------------------|--------------------|--------------------|
| ▪ 3372 US 64 Hwy E | ▪ 3436 US 64 Hwy E | ▪ 3574 US 64 Hwy E |
| ▪ 3396 US 64 Hwy E | ▪ 3446 US 64 Hwy E | ▪ 3578 US 64 Hwy E |
| ▪ 3412 US 64 Hwy E | ▪ 3562 US 64 Hwy E | ▪ 3704 US 64 Hwy E |

IV. List of Environmental Commitments

Please refer to the attached Project Commitments (Green Sheet) for the environmental commitments developed during the planning and design process of this project.

V. NCDOT Coordination

The NCDOT-Project Development and Environmental Analysis Unit (PDEA) Project Development Section (PDS) and their consultant, RK&K, consulted with others, as listed below:

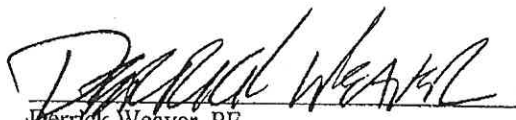
NCDOT:

Historic Architecture	Katherine Husband	Date <u>10-08-2015</u>
Archaeology	Brian Overton	Date <u>10-14-2015</u>
Design Build	Karen Capps	Date <u>10-14-2015</u>
Design Build	Mike Shumsky	Date <u>10-14-2015</u>
Natural Resources	Jason Dilday	Date <u>11-10-2015</u>
Air Quality & Traffic Noise	Greg Smith	Date <u>11-12-2015</u>

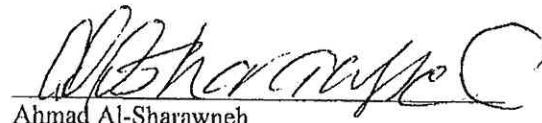
RK&K:

Natural Resources	Hal Bain	Date <u>10-19-2015</u>
Traffic Noise	Joe Rauseo	Date <u>10-20-2015</u>
Planning	Frank Vick	Date <u>10-23-2015</u>
Hydraulics	Tina Swiezy	Date <u>11-09-2015</u>
Roadway Design	Mike Merritt	Date <u>11-09-2015</u>
Permitting	Jim Eisenhardt	Date <u>11-10-2015</u>

VI. NCDOT Concurrence


Derrick Weaver, PE
Group Leader, PDEA-PDS

11/23/15
Date


Ahmad Al-Sharawneh
Project Development Engineer, PDEA-PDS

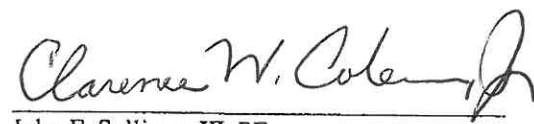
11/23/15
Date

Documentation prepared by RK&K


Kristina Miller, PE
Project Manager, RK&K

11-23-2015
Date

VII. FHWA Concurrence


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

12/1/15
Date

PROJECT COMMITMENTS

US 64 Improvements – Asheboro

from US 64 just east of SR 1424 (Stutts Road) to US 64, 0.6 miles east of
SR 2345 (Presnell Street) for a distance of approximately 14 miles

Federal Aid Project No. NHF-64(19); WBS Element No. 34450.1.1

S.T.I.P. No. R-2536

All commitments developed during the project development and design phase have been incorporated into the design. Current status, changes, or additions to the project commitments from what is shown in the environmental document for the project are printed in *italic* font.

In addition to the Section 404 Individual Permit (IP) Special Conditions, State Stormwater Permit, Section 401 Water Quality Certification (WQC) Conditions, Regional Conditions, NCDOT's Guidelines for Best Management Practices for Protection of Surface Waters, NCDOT's Guidelines for Best Management Practices for Bridge Demolition and Removal, and General Certification Conditions, the following special commitments were agreed to by the NCDOT:

Drainage and hydrological studies will be conducted to identify and design major drainage structures.

Traffic control plans will be developed to maintain traffic during the construction phase.

Surveys for wells within and adjacent to the proposed right-of-way limits will be conducted.

Geotechnical investigations will be conducted to recommend techniques and materials to overcome any soil limitations along the selected alternative.

The provision of service roads to specific properties will be determined, as needed, during the property acquisition phase through contact and negotiations with property owners.

A search for geodetic control monuments will be conducted during development of the project's construction plans.

Preparation of an erosion control plan incorporating the NCDOT's Best Management Practices for Protection of Surface Waters.

Coordination with municipalities and public utilities for relocation and reconfiguration of utility systems will be conducted.

The Relocation Assistance Program will be implemented.

Approval of all required permits and certifications as outlined in Section 4.11, pages 4-70 and 4-71 of the DEIS will be obtained prior to construction.

Action: All above are standard NCDOT Project Commitments.

Project Development & Environmental Analysis Unit, Division 8

Follow-up surveys to determine suitable habitat for Schweinitz's sunflower within the Preferred Alternative construction limits will be conducted during the appropriate flowering season within two (2) years prior to project construction. If a population of the species is found, the NCDOT will enter into Section 7 consultation with the US Fish and Wildlife Service.

Action: Surveys for Schweinitz's sunflower were completed in the project study area on September 29, 2011; on September 11, 13, and 23 in 2013; on September 17, 2014; and September 17, 2015. No populations of Schweinitz's sunflower were discovered in the project study area. In addition, habitat evaluations/surveys were conducted by RK&K on October 1, 2, and 7, 2015 for Sites 6, 10, 11, and 14. However, no populations of the Schweinitz's sunflower were found within any of the four sites surveyed.

In compliance with the Programmatic Biological Opinion (PBO) developed by USFWS (in conjunction with FHWA, USACE, and NCDOT for the Northern long-eared bat (NLEB) in eastern North Carolina, the contract administrator for construction must submit to the NCDOT-Natural Environment Section (Neil Medlin, Biological Surveys Group Leader) the actual amount of tree clearing that occurred as a result of project construction. This information is to be submitted prior to project completion and is to be reported in tenths of acres.

The Mitigation Plan for jurisdictional impacts to streams and wetlands will be developed by the NCDOT during the Section 404/Section 401 permit application processes. As required by the NEPA process and the ACOE/EPA Section 404 B1 Guidelines, to offset potential wetland and stream impacts, NCDOT will investigate the potential for on-site mitigation. Once on-site opportunities are exhausted, compensatory mitigation will be provided by the NCDENR Ecosystem Enhancement Program pursuant to the tri-party Memorandum of Agreement between USACE, NCDENR, and NCDOT (July 2003).

Action: The Design Build Team will be required to prepare the Mitigation Plan for review and approval by the NCDOT and appropriate resource agencies.

The NCDOT will coordinate with the City of Asheboro regarding the proposed greenway crossing at Vestal Creek which is part of the proposed Zoo Greenway from the Asheboro YMCA to the NC Zoological Park. Coordination will be conducted to ensure that the design plans for the bypass will accommodate the greenway.

Action: Based on the City of Asheboro's greenway plan, the proposed structures at both Little River and Vestal Creek will be designed to accommodate a future 15-foot greenway underneath the structure.

The NCDOT committed to maintaining trees along the southeast edge of the historic Cox-Brown Farm property and extending a tree line along a new ramp and right-of-way line, to visually shield the historic property from the view of bypass Alternatives 1, 2, 13, and 14.

Action: Alternative 29 was selected as the Preferred Alternative. It is located nearly one mile south of the Cox-Brown Farm. None of the trees on the farm or in the adjacent wooded tract will be affected by the project. Therefore, selection of Alternative 29 fulfills this project commitment.

A noise attenuation barrier was determined to be reasonable and feasible at the residential area along Twelve Tree Road adjacent to the US 220 Bypass. A final decision on the installation of noise abatement measures will be made upon completion of the final roadway design and design public hearing for the project.

Action: Design noise report was completed April 29, 2014; a noise wall barrier along Twelve Tree Road adjacent to US 220 Bypass will be incorporated in the roadway design plans.

As stipulated in a tri-party Memorandum of Agreement (MOA) between the NCDOT, the FHWA, and the HPO, Data Recovery Plans will be prepared for archaeological sites 31RD1398, 31RD1399, and 31RD1426/1426** (** denotes historic component) and submitted to the State Historic Preservation Office for review. The NCDOT will ensure that each Data Recovery Plan is implemented after right-of-way is acquired or once right-of-entry is secured from property owners and prior to construction activities within the site locations. The NCDOT will abide by all other stipulations pertaining to the data recovery efforts listed in the MOA signed by the NCDOT on June 26, 2006.

Action: Draft Data Recovery Plans are complete and ready for submittal to the State Historic Preservation Office (SHPO) for review and approval. NCDOT will ensure that each Data Recovery Plan is implemented after right-of-way is acquired or once right-of-entry is secured from property owners and prior to construction activities within the site locations. A new MOA was executed on January 20, 2012 containing the same seven stipulations of the original MOA from 2006, but removing the expiration date.

Additional archaeological surveys will be conducted at locations resulting from refinements in design that were not included in the original 2006 archaeological survey Area of Potential Effects (APE). The NCDOT-Archaeology Group will work in consultation with HPO and OSA to identify any NRHP-eligible resources within the updated APE and document the potential for adverse effects. If any additional NRHP-eligible sites will be adversely effected and cannot be avoided, the NCDOT-Archaeology Group will also develop a Data Recovery Plan to mitigate adverse effects due to the design modifications. If needed, the NCDOT-Archaeology Group will coordinate with FHWA, HPO, and OSA to discuss a potential amendment to the January 20, 2012 Memorandum of Agreement (MOA) to address any newly-identified NRHP-eligible archaeological sites adversely effected by the design modifications.

In addition, the Data Recovery Plan for archaeological site 31RD1398 will be updated to reflect the design modification for Staleys Farm Road (Site 6), if needed. The NCDOT will ensure that each Data Recovery Plan is implemented after right of way is acquired or once right of entry is secured from property owners and prior to construction activities within the site locations. The

NCDOT will abide by all other stipulations pertaining to the data recovery efforts listed in the MOA signed by the NCDOT on January 20, 2012.

The proposed crossing of North Prong of Richland Creek by the Zoo Connector (new location alignment) will use a double barrel 14'x10' reinforced concrete box culvert (RCBC), which is equal in size to the adjacent downstream culverts conveyed under existing NC 159 for the North Prong of Richland Creek. This box culvert will be used in lieu of the originally proposed bridge, as discussed at the February 18, 2015 Merger Meeting.

Action: This commitment has been fulfilled and included in the current design.

Roadway Design Unit, Division 8, and Roadside Environmental Unit, NES

To avoid downstream impacts to the Cape Fear Shiner due to sedimentation, in-stream construction in all tributaries of the Deep River, including Richland, Vestal, Squirrel, Gabriel's Creeks, Tantraugh Branch, and their tributaries should be avoided to the extent practicable. Where in-stream construction is unavoidable, the following measures will be implemented to ensure protection for all aquatic resources occurring downstream:

1. Installation of in-stream silt curtains weighted at the bottom, and stringent bank erosion control;
2. If tree removal is required, stumps and roots should remain intact for bank stabilization;
3. In-stream construction activities will be initiated only during low flow conditions that permit the effective deployment of the silt curtains; and,
4. In-stream construction activities will be avoided during the Cape Fear Shiner spawning period (between April 1 and June 30).

Action: The U.S. Fish and Wildlife Service issued concurrence that this project will have No Effect on any Cape Fear Shiner populations in a letter dated October 22, 2013 based on a lack of suitable habitat. Additionally, the U.S. Fish and Wildlife Service in 2014 indicated that coordination with them on the Cape Fear Shiner is no longer required. In addition, in an e-mail from Gary Jordan (USFWS) to Jason Dilday (NCDOT) dated October 16, 2014, Mr. Jordan stated that, "an in-water work moratorium for the Cape Fear shiner is not warranted" and "none of the conditions [listed above] are needed for the Cape Fear shiner."

Two wildlife crossings, 30-feet in width, will be constructed under each of the dual bridges proposed over Little River, Vestal Creek, and North Prong Richland Creek. Appropriate fencing will be constructed to direct wildlife to the crossings.

Action: The bridges on the US 64 Bypass over Little River and Vestal Creek shall be of sufficient length and span arrangement to span the waterway and provide 60-feet on the west side of both waterways from the top of the bank to the toe of fill slope and provide 30-feet on the east side of both waterways from the top of the bank to the toe of fill slope. On each side of both waterways, 30-feet shall be provided for wildlife passage. The additional 30-feet on the west side of both waterways provide a 15-foot buffer between the 30-feet wildlife passage and a future 15-foot

greenway. The minimum vertical clearance for both bridges shall be 10 feet above the existing natural ground surface. Fencing will not be required; however standard Right-of-Way fencing may be used per NCDOT policy. Wildlife crossings are no longer included at North Prong Richland Creek.

Roadway Design Unit, Roadside Environmental Unit, and Structure Design Unit

The NCDOT will continue to work with the North Carolina Zoological Park to ensure the Zoo Connector and associated structures are designed to contribute aesthetically to the entrance to the North Carolina Zoological Park.

Action: This coordination will be conducted during the final design and construction by the NCDOT.

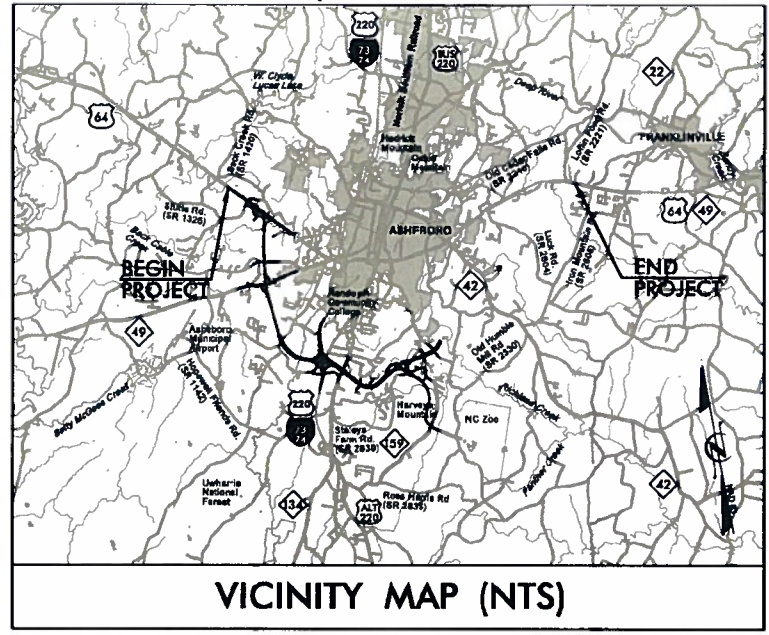
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bholiden

TIP PROJECT: R-2536

CONTRACT: C203617

See Sheet 1-A for Index of Sheets
See Sheet 1-B for Conventional Symbols



VICINITY MAP (NTS)

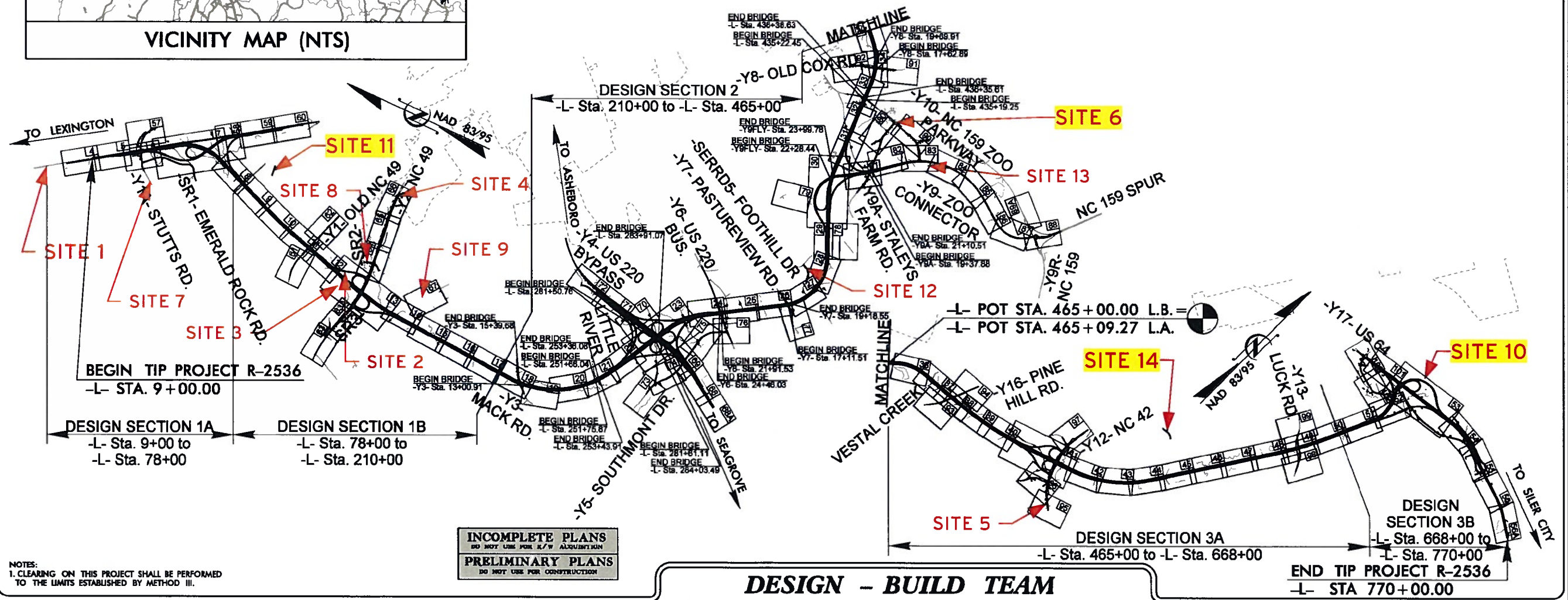
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

LOCATION: US 64 BYPASS FROM EXISTING US 64 WEST OF ASHEBORO
TO EXISTING US 64 EAST OF ASHEBORO AND THE
ZOO CONNECTOR FROM EAST OF STALEYS
FARM RD. TO EXISTING NC 159/ZOO ENTRANCE

TYPE OF WORK: GRADING, DRAINAGE, PAVING, WIDENING, RESURFACING, CULVERTS,
STRUCTURES, AND SIGNALS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2536	1	
STATE PROJ.NO.	F. & PROJ.NO.	TITLE/DESCRIPTION	
34450.3.S1		PE	
CONSULTATION LETTER			
11/9/2015		FIGURE 1	



NOTES:
1. CLEARING ON THIS PROJECT SHALL BE PERFORMED
TO THE LIMITS ESTABLISHED BY METHOD III.

INCOMPLETE PLANS
DO NOT USE FOR A/R OR ALLOCATION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DESIGN - BUILD TEAM

GRAPHIC SCALES 50 25 0 50 100 PLANS 50 25 0 50 100 PROFILE (HORIZONTAL) 10 5 0 10 20 PROFILE (VERTICAL)	DESIGN DATA ADT 2015 = 12,600 ADT 2040 = 18,800 DHY = 11 % D = 60 % T = 13 % * V = 70 MPH (*TTST=8% + DUAL=5%) FUNCTIONAL CLASSIFICATION FREEWAY	PROJECT LENGTH LENGTH ROADWAY TIP PROJECT R-2536..... 14.619 mi LENGTH STRUCTURE TIP PROJECT R-2536..... 0.121 mi TOTAL LENGTH TIP PROJECT R-2536..... 14.740 mi NC DOT CONTACT K. Zak Hamidi, P.E. PROJECT ENGINEER - DESIGN-BUILD UNIT	RK&K FOR DIVISION OF HIGHWAYS 2012 STANDARD SPECIFICATIONS LETTING DATE: JUNE 29, 2015 B. Keith Skinner, P.E. PROJECT ENGINEER Michael T. Merritt, P.E. PROJECT DESIGN ENGINEER	CONTRACTOR : ASHEBORO Bypass Constructors, LLC W. W. R. K. K.	HYDRAULICS ENGINEER SIGNATURE: _____ P.E. ROADWAY DESIGN ENGINEER SIGNATURE: _____ P.E.	DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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Appendix A

Jurisdictional Resources

Water Resources

Water resources in the study area are part of either the Yadkin Pee Dee or Cape Fear River basins [U.S. Geological Survey (USGS) Hydrologic Units 03040103 and 03030033].

Jurisdictional features were reviewed for Sites 6, 11, and 14 by RK&K (Hal Bain and Pete Stafford) in October 2015 and for Site 10 by NCDOT-NES in August 2015.

- **Site 6** – Realignment of -Y9-, SR 2839 (Staleys Farm Road), approximately 0.56-mile long with a 400-foot connection to SR 2994 (Freedom Trail);
- **Site 10** – Modification of the US 64/Proposed US 64 Bypass Interchange at the eastern end of the proposed project;
- **Site 11** – Approximate 430-foot extension of SR 1346 (Skeen View Road – Service Road E); and
- **Site 14** – Approximate 590-foot extension of SR 2671 (Kennedy Country Drive– Service Road V).

No new jurisdictional features were identified within the four sites; however, one ephemeral stream was identified at Site 6 (**Table 1**). The physical characteristics of this feature are provided in **Table 2**.

Table 1. New water resource delineations for Sites 6, 10, 11, and 14

Stream Name	Map ID (Site Location)	NCDWQ Index Number	Best Usage Classification
UT to North Prong Richland Creek	SLL-D (Site 6)	17-22-1	C

Table 2. Physical characteristics of new water resource delineations

Map ID	Bank Height (ft)	Bankful Width (ft)	Water Depth (in)	Channel Substrate	Velocity	Clarity
SLL-D	0.5	3	0-1	Sand, gravel	slow	turbid

North Prong Richland Creek is not listed as an Outstanding Resource Water (ORW), trout water, anadromous fish water, or Primary Nursery Area (PNA) in the study area or within one mile downstream of the study area. There are no designated High Quality Waters (HQW) or water supply watersheds (WS-I, WS-II, WS-III, or WS-IV) 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.

A benthic sampling station is located on Richland Creek at SR 2873. The benthic sampling station was last sampled on March 10, 2009 and received a rating of Good. No fish sampling sites were located on North Prong Richland Creek or its tributaries.

Clean Water Act Waters of the U.S.

The prior environmental documents identified streams and wetlands throughout Sites 6 and 10. As noted previously, no new jurisdictional streams were identified at Sites 6, 10, 11, and 14; however, one ephemeral stream was delineated at Site 6 (**Table 3**). The current design does not

impact this ephemeral stream (SLL-D). The location of the stream is shown on **Figure A-1**. USACE and NCDWQ stream delineation forms are included at the end of **Appendix A**.

Table 3. Jurisdictional characteristics of new water resource delineations

Map ID	Length in Area Studied (ft.)	Length of Stream Channel Impact (ft.)	Classification	Compensatory Mitigation Required	River Basin Buffer
SLL-D	17.7	0	Ephemeral	No*	Not Subject

*Pending agency review.

The physical characteristics and water quality designations of this stream are detailed in the previous section. The UT to North Prong Richlands Creek in the project study area has been designated as a warm water stream for the purposes of stream mitigation.

No new wetlands were identified within the four sites.

The total length of stream channel impact and area of wetland impact are reduced overall with the current design¹. This reduction in impacts is based on the previously delineated jurisdictional features included in the July 9, 2014 Update to the April 2014 NRTR Reevaluation Addendum by AECOM that was incorporated into the Reevaluation of the Abbreviated Final EIS (April 2015).

Site 6 – The current design for Staleys Farm Road reduces the anticipated length of jurisdictional stream channel impact by approximately 165 feet and is not expected to change the area of wetland impact.

Site 10 – The current design increases the length of stream channel impact by approximately 98 feet and decreases the area of impact by approximately 1.92 acres.

Sites 11 and 14 – Both sites have no jurisdictional features near the current roadway extensions.

Protected Species

Endangered Species Act – Federally Protected Species

As of December 26, 2012, the United States Fish and Wildlife (USFWS) lists two federally-protected species for Randolph County, as shown in **Table 4**. Following the table is a brief description of the habitat requirements for each species and 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. No change in the protected species' Biological Conclusions for the Cape Fear Shiner and Schweinitz's sunflower has occurred since the April 2015 Reevaluation of the Abbreviated Final EIS.

¹ Calculations for the length of stream channel and area of wetland impacts is based on the slopeline lines of the preliminary design plus a 25-foot offset.

Table 4. Federally protected species listed for Randolph County

Scientific Name	Common Name	Federal Status*	Habitat Present within the 4 Sites	Biological Conclusion for STIP Project No. R-2536 Overall
<i>Notropis mekistocholas</i>	Cape Fear shiner	E	No	No Effect
<i>Helianthus schweinitzii</i>	Schweinitz's sunflower	E	Yes	May Affect, Not Likely to Adversely Affect

* E – endangered; and T – threatened.

The Cape Fear Shiner (*Notropis mekistocholas*) and Schweinitz's sunflower (*Helianthus schweinitzii*) were addressed in the 2007 Abbreviated Final EIS, the 2012 Reevaluation, and the 2015 Reevaluation for the original design. This Consultation Letter includes review of Sites 6, 10, 11, and 14 for the Cape Fear Shiner and Schweinitz's sunflower. In addition, the 2015 Reevaluation notes the Programmatic Conference Opinion and Programmatic Biological Opinion detailed on the following page for the Northern long-eared bat (NLEB).

Cape Fear shiner

USFWS Recommended Survey Window: April-June (tributaries); year round (large rivers)

Habitat Description: The Cape Fear shiner is known only from the Cape Fear River watershed.

In general, habitat occurs in streams with clean gravel, cobble, or boulder substrates. It is most often observed inhabiting slow pools, riffles, and slow runs associated with water willow (*Justicia americana*) beds, which it uses for cover. Juveniles can be found inhabiting slackwater, among large rock outcrops and in flooded side channels and pools. Spawning occurs May through June, when water temperatures reach 66 degrees Fahrenheit.

Biological Conclusion: No Effect

The UT to North Prong Richland Creek (Stream SLL-D) was delineated as part of the fieldwork completed for this Consultation Letter; however, no suitable habitat for the Cape Fear Shiner is present at Stream SLL-D. The *Reevaluation of the Abbreviated Final EIS* (April 2015) states that STIP Project No. R-2536 “will have *No Effect* on any Cape Fear shiner populations (NCDOT survey in 2011). The USFWS issued concurrence that this project will have No Effect on any Cape Fear Shiner populations in a letter dated October 22, 2013 based on a lack of suitable habitat. The USFWS in 2014 indicated that coordination with them on the Cape Fear Shiner is no longer 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: May Affect, Not Likely to Adversely Affect

Habitat evaluations/surveys were conducted by NCDOT-NES on September 17, 2015 for the project study area (minus Sites 6, 10, 11 and 14). RK&K biologists (Hal Bain and Pete Stafford) completed habitat evaluations/surveys on October 1, 2, and 7, 2015 for Sites 6, 10, 11 and 14. Habitat for Schweinitz's sunflower is present within the study area along roadside/utility rights-of-way and edge communities. Surveys were performed during the appropriate survey windows as per USFWS guidance. Known populations in and adjacent to Randolph County were visited prior to the initiation of field surveys to assess flowering status. A review of the North Carolina Natural Heritage Program (NCNHP) database, updated July 20, 2015, revealed three element occurrences within 1.0 mile of the project study area. However, no populations of the Schweinitz's sunflower were found within the project study area overall (including no populations identified within Sites 6, 10, 11, and 14).

The 2015 Reevaluation states the following for STIP Project No. R-2536: "Suitable habitat for the sunflower was present in numerous locations throughout the project study area in the form of shrub dominated roadsides and utility rights of ways. Surveys for Schweinitz's sunflower have been conducted in the project study area in 1999, 2004, 2006, 2011 and September 11, 13, and 23 in 2013, and most recently September 17, 2014. No populations of Schweinitz's sunflower were found in the project study area during the survey. There are, however, numerous known populations of Schweinitz's sunflower in close proximity to the project study area. Eight sites occur within 1.5 miles of the study area boundary, including a cluster of five sites located roughly 0.7 to 1.2 miles north of the project's eastern terminus, and two sites northeast of the proposed US 220 Bypass intersection. Therefore, the biological conclusion is the project 'may affect but not likely to adversely affect' current Schweinitz's sunflower populations."

Northern long-eared bat (NLEB)

USFWS Recommended Survey Window: June 1 – August 15

Habitat Description: In North Carolina, the 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 do not occur 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 dbh). 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: May Affect, Likely to Adversely Affect

The USFWS has developed a Programmatic Biological Opinion (PBO) in conjunction with the Federal Highway Administration (FHWA), the US Army Corps of Engineers (USACE), and NCDOT for the Northern long-eared bat (NLEB) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. The

programmatic determination for the NLEB for the NCDOT program in Divisions 1-8 is “May Affect, Likely to Adversely Affect.” The PBO will provide incidental take coverage for the NLEB and will ensure compliance with Section 7 of the Endangered Species act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Randolph County, where the subject project is located. USFWS signed the letter on April 10, 2015 converting the Programmatic Conference Opinion to the PBO.

Project requirement for PBO compliance: The contract administrator for construction must submit to the NCDOT Natural Environment Section (Neil Medlin, Biological Surveys Group Leader) the actual amount of tree clearing that occurred as a result of project construction. This information is to be submitted prior to project completion and is to be reported in tenths of acres.

Bald Eagle and Golden Eagle Protection Act

Habitat for 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. A desktop-GIS assessment of Sites 6, 10, 11, and 14, as well as the area within a 1.13-mile radius (1.0 mile plus 660 feet) of the project limits, was performed on October 6, 2015. No water bodies large enough or sufficiently open to be considered potential feeding sources were identified. Since there was no foraging habitat within the review area, a survey of the project study area and the area within 660 feet of the project limits was not conducted. Additionally, a review of the NCNHP database on October 13, 2015 revealed no known occurrences of this species within 1.0 mile of the project study area. Due to the lack of habitat, no known occurrences, and impact anticipated for this project, it has been determined that this project will not affect this species.

Endangered Species Act Candidate Species

As of December 26, 2012, the USFWS lists one Candidate species for Randolph County, Georgia aster (*Symphyotrichum georgianum*). A review of NCNHP records, updated July 8, 2015, indicates no known occurrences of Georgia aster within 1.0 mile of the project study area.

Essential Fish Habitat

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

Natural Resources Staff

In addition to NCDOT-NES staff, the principal personnel from RK&K contributing to the Natural Resources fieldwork and documentation for this Consultation were:

Principal

Investigator: **Hal Bain, Rummel Klepper and Kahl, LLP (RK&K)**
Education: M.S. Coastal Ecology Track, UNC Wilmington, 1989
B.S. Biology, Campbell University, 1985
Experience: Senior Environmental Project Scientist, RK&K, 2009-Present
Natural Resources Team Leader, ARCADIS, 2003-2008
Biological Surveys Group Leader, NCDOT, 1995-2003
Senior Biologist, NCDOT, 1992-1995
Biology Teacher/Coach, Wake County Public Schools, 1989-1992
Responsibilities: wetland and stream identification, natural community assessments, T/E species assessment, agency determinations, NRTR document preparation, and QA/QC

Investigator: **Pete Stafford, PWS, RK&K**
Education: B.S. Environmental Science, UNC Wilmington, 2000
Experience: Environmental Scientist, RK&K, 2001-Present
Responsibilities: preparation of forms, wetland and stream delineations, T/E surveys, Natural communities assessment, NRTR document preparation

Additional personnel who contributed to portions of the fieldwork and/or documentation for this project:

Investigator: **David Ward, RK&K**
Education: B.S. Geography, Bloomsburg University, 1999
Experience: GIS specialist, Rummel Klepper and Kahl, LLP
2002 - Present
Responsibilities: GIS surveys and mapping

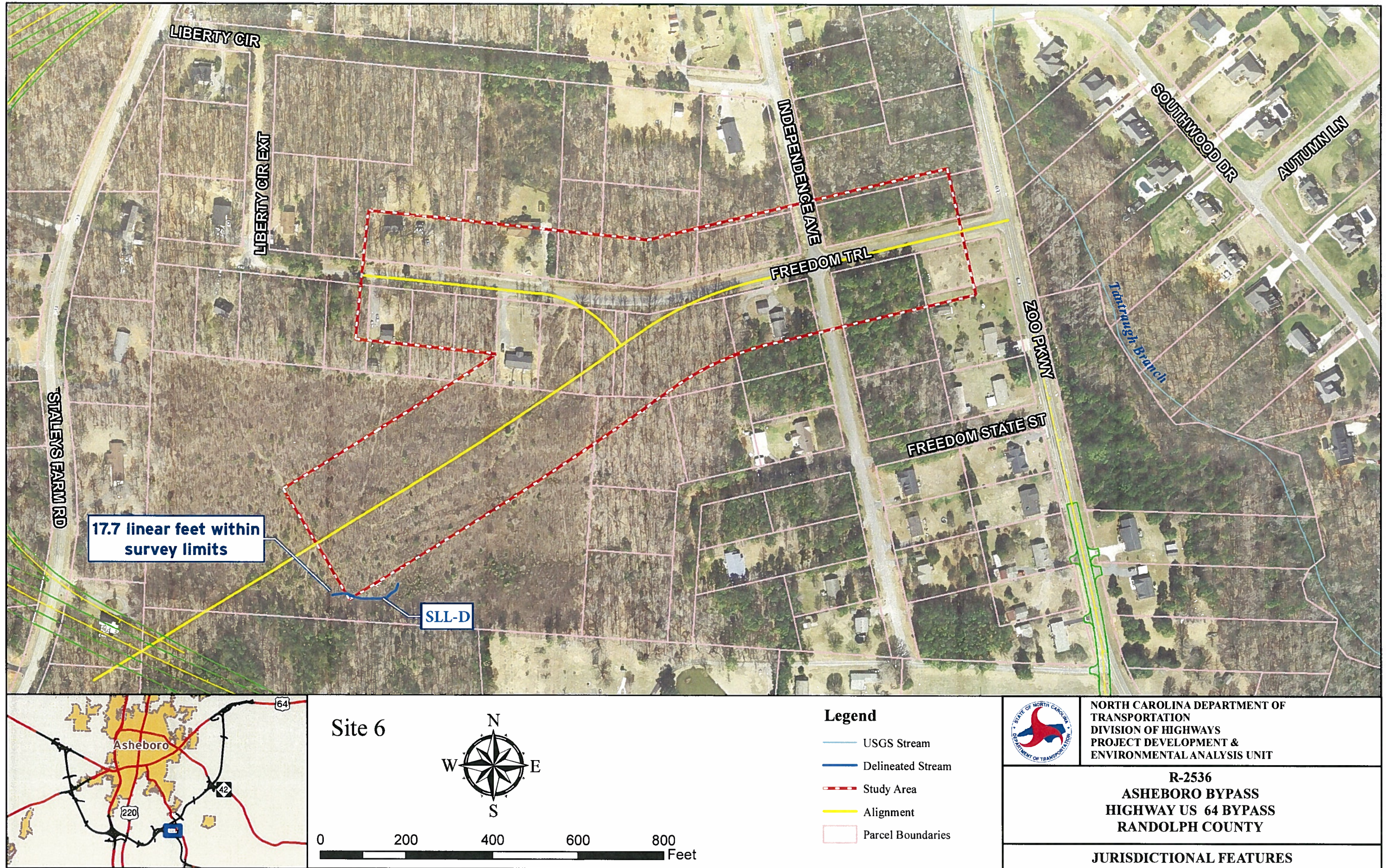


FIGURE A-1

USACE AID# _____

DWQ # _____

Site # LL-D (indicate on attached map)

STREAM QUALITY ASSESSMENT WORKSHEET



Provide the following information for the stream reach under assessment:

- Applicant's name: NCDOT
- Evaluator's name: Pete Stafford, Hal Bain
- Date of evaluation: 10/7/15
- Time of evaluation: Afternoon
- Name of stream: UT to North Prong Richland Creek
- River basin: Cape Fear
- Approximate drainage area: > 100 acres
- Stream order: 1
- Length of reach evaluated: 15 feet
- County: Randolph
- Site coordinates (if known): prefer in decimal degrees.
- Subdivision name (if any): N/A
- Latitude (ex. 34.872312): 35.65090
- Longitude (ex. -77.556611): -79.79382
- Method location determined (circle): ☒ GPS ☐ Topo Sheet ☐ Ortho (Aerial) Photo/GIS ☐ Other GIS ☐ Other _____
- Location of reach under evaluation (note nearby roads and landmarks and attach map identifying stream(s) location): _____

See Figure 1

- Proposed channel work (if any): No proposed channel work at this time.
- Recent weather conditions: Heavy rain in days previous to site visit.
- Site conditions at time of visit: Afternoon, 65 degrees, sunny.
- Identify any special waterway classifications known: ☐ Section 10 ☐ Tidal Waters ☐ Essential Fisheries Habitat ☐ Trout Waters ☐ Outstanding Resource Waters ☐ Nutrient Sensitive Waters ☐ Water Supply Watershed ☐ (I-IV)
- Is there a pond or lake located upstream of the evaluation point? ☐ YES ☒ NO If yes, estimate the water surface area: _____
- Does channel appear on USGS quad map? ☐ YES ☒ NO
- Does channel appear on USDA Soil Survey? ☐ YES ☒ NO
- Estimated watershed land use: 10 % Residential % Commercial % Industrial 10 % Agricultural
50 % Forested 30 % Cleared / Logged % Other (_____)
- Bankfull width: 3'
- Bank height (from bed to top of bank): 6"
- Channel slope down center of stream: ☐ Flat (0 to 2%) ☒ Gentle (2 to 4%) ☐ Moderate (4 to 10%) ☐ Steep (>10%)
- Channel sinuosity: ☐ Straight ☒ Occasional bends ☐ Frequent meander ☐ Very sinuous ☐ Braided channel

Instructions for completion of worksheet (located on page 2): Begin by determining the most appropriate ecoregion based on location, terrain, vegetation, stream classification, etc. Every characteristic must be scored using the same ecoregion. Assign points to each characteristic within the range shown for the ecoregion. Page 3 provides a brief description of how to review the characteristics identified in the worksheet. Scores should reflect an overall assessment of the stream reach under evaluation. If a characteristic cannot be evaluated due to site or weather conditions, enter 0 in the scoring box and provide an explanation in the comment section. Where there are obvious changes in the character of a stream under review (e.g., the stream flows from a pasture into a forest), the stream may be divided into smaller reaches that display more continuity, and a separate form used to evaluate each reach. The total score assigned to a stream reach must range between 0 and 100, with a score of 100 representing a stream of the highest quality.

Total Score (from reverse): 39

Comments: Stream LL-D is an ephemeral stream channel.

Evaluator's Signature _____

Date 10/07/15

This channel evaluation form is intended to be used only as a guide to assist landowners and environmental professionals in gathering the data required by the United States Army Corps of Engineers to make a preliminary assessment of stream quality. The total score resulting from the completion of this form is subject to USACE approval and does not imply a particular mitigation ratio or requirement. Form subject to change – version 06/03. To Comment, please call 919-876-8441 x 26.

STREAM QUALITY ASSESSMENT WORKSHEET

	#	CHARACTERISTICS	ECOREGION POINT RANGE			SCORE
			Coastal	Piedmont	Mountain	
PHYSICAL	1	Presence of flow / persistent pools in stream (no flow or saturation = 0; strong flow = max points)	0 – 5	0 – 4	0 – 5	2
	2	Evidence of past human alteration (extensive alteration = 0; no alteration = max points)	0 – 6	0 – 5	0 – 5	3
	3	Riparian zone (no buffer = 0; contiguous, wide buffer = max points)	0 – 6	0 – 4	0 – 5	3
	4	Evidence of nutrient or chemical discharges (extensive discharges = 0; no discharges = max points)	0 – 5	0 – 4	0 – 4	2
	5	Groundwater discharge (no discharge = 0; springs, seeps, wetlands, etc. = max points)	0 – 3	0 – 4	0 – 4	2
	6	Presence of adjacent floodplain (no floodplain = 0; extensive floodplain = max points)	0 – 4	0 – 4	0 – 2	2
	7	Entrenchment / floodplain access (deeply entrenched = 0; frequent flooding = max points)	0 – 5	0 – 4	0 – 2	2
	8	Presence of adjacent wetlands (no wetlands = 0; large adjacent wetlands = max points)	0 – 6	0 – 4	0 – 2	0
	9	Channel sinuosity (extensive channelization = 0; natural meander = max points)	0 – 5	0 – 4	0 – 3	2
	10	Sediment input (extensive deposition = 0; little or no sediment = max points)	0 – 5	0 – 4	0 – 4	2
	11	Size & diversity of channel bed substrate (fine, homogenous = 0; large, diverse sizes = max points)	NA*	0 – 4	0 – 5	1
STABILITY	12	Evidence of channel incision or widening (deeply incised = 0; stable bed & banks = max points)	0 – 5	0 – 4	0 – 5	2
	13	Presence of major bank failures (severe erosion = 0; no erosion, stable banks = max points)	0 – 5	0 – 5	0 – 5	2
	14	Root depth and density on banks (no visible roots = 0; dense roots throughout = max points)	0 – 3	0 – 4	0 – 5	2
	15	Impact by agriculture, livestock, or timber production (substantial impact = 0; no evidence = max points)	0 – 5	0 – 4	0 – 5	2
HABITAT	16	Presence of riffle-pool/ripple-pool complexes (no riffles/ripples or pools = 0; well-developed = max points)	0 – 3	0 – 5	0 – 6	1
	17	Habitat complexity (little or no habitat = 0; frequent, varied habitats = max points)	0 – 6	0 – 6	0 – 6	2
	18	Canopy coverage over streambed (no shading vegetation = 0; continuous canopy = max points)	0 – 5	0 – 5	0 – 5	2
	19	Substrate embeddedness (deeply embedded = 0; loose structure = max)	NA*	0 – 4	0 – 4	2
BIOLOGY	20	Presence of stream invertebrates (see page 4) (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 5	0 – 5	0
	21	Presence of amphibians (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	2
	22	Presence of fish (no evidence = 0; common, numerous types = max points)	0 – 4	0 – 4	0 – 4	0
	23	Evidence of wildlife use (no evidence = 0; abundant evidence = max points)	0 – 6	0 – 5	0 – 5	1
Total Points Possible			100	100	100	
TOTAL SCORE (also enter on first page)						39

* These characteristics are not assessed in coastal streams.

NC DWQ Stream Identification Form Version 4.11

Date: 10/07/15	Project/Site: R-2536	Latitude: 35.65090
Evaluator: Pete Stafford, Hal Bain	County: Alexander	Longitude: -79.79382
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other <i>e.g. Quad Name:</i> Asheboro, NC

A. Geomorphology (Subtotal = 6.5)	Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank	0 ☐	1 ☒	2 ☐	3 ☐
2. Sinuosity of channel along thalweg	0 ☐	1 ☒	2 ☐	3 ☐
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0 ☐	1 ☒	2 ☐	3 ☐
4. Particle size of stream substrate	0 ☐	1 ☒	2 ☐	3 ☐
5. Active/relict floodplain	0 ☐	1 ☒	2 ☐	3 ☐
6. Depositional bars or benches	0 ☒	1 ☐	2 ☐	3 ☐
7. Recent alluvial deposits	0 ☒	1 ☐	2 ☐	3 ☐
8. Headcuts	0 ☒	1 ☐	2 ☐	3 ☐
9. Grade control	0 ☒	0.5 ☐	1 ☐	1.5 ☐
10. Natural valley	0 ☐	0.5 ☐	1 ☐	1.5 ☒
11. Second or greater order channel	No = 0 ☒		Yes = 3 ☐	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 5.5)	Absent	Weak	Moderate	Strong
12. Presence of Baseflow	0 ☐	1 ☒	2 ☐	3 ☐
13. Iron oxidizing bacteria	0 ☒	1 ☐	2 ☐	3 ☐
14. Leaf litter	1.5 ☐	1 ☐	0.5 ☒	0 ☐
15. Sediment on plants or debris	0 ☐	0.5 ☒	1 ☐	1.5 ☐
16. Organic debris lines or piles	0 ☐	0.5 ☒	1 ☐	1.5 ☐
17. Soil-based evidence of high water table?	No = 0 ☐		Yes = 3 ☒	

C. Biology (Subtotal = 3.75)	Absent	Weak	Moderate	Strong
18. Fibrous roots in streambed	3 ☐	2 ☐	1 ☒	0 ☐
19. Rooted upland plants in streambed	3 ☐	2 ☐	1 ☒	0 ☐
20. Macroinvertebrates (note diversity and abundance)	0 ☒	1 ☐	2 ☐	3 ☐
21. Aquatic Mollusks	0 ☒	1 ☐	2 ☐	3 ☐
22. Fish	0 ☒	0.5 ☐	1 ☐	1.5 ☐
23. Crayfish	0 ☐	0.5 ☒	1 ☐	1.5 ☐
24. Amphibians	0 ☐	0.5 ☒	1 ☐	1.5 ☐
25. Algae	0 ☒	0.5 ☐	1 ☐	1.5 ☐
26. Wetland plants in streambed	☒ FACW = 0.75; ☐ PL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch: UT to North Prong Richland Creek. Full canopy. Ephemeral Stream.