PURPOSE AND NEED AND STUDY AREA DEFINED

US 39 from north of Lanesville to US 45

STIP Project W-1234

North Carolina Department of Transportation
Division 13

MERGER CONCURRENCE POINT NUMBER 1

June 17, 2020

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1 Introduction

Lead federal agency: Federal Highway Administration

Primary points of contact for the subject project are:

Agency	Name
Federal Highway Administration (FHWA)	Jane Porter
U.S. Army Corps of Engineers (USACE)	Finley Cooper
North Carolina Department of Water Resources (NCDWR)	Bruce Williams
North Carolina Department of Transportation	Carlos Young
Finley Engineering	Diana Carpenter

The purpose of this Merger Team meeting is to discuss the purpose and need for the project and to establish the proposed project study area (Concurrence Point No. 1 [CP 1]).

1.1 Project Description

The North Carolina Department of Transportation (NCDOT), in cooperation with the Federal Highway Administration (FHWA) is proposing to improve approximately 6 miles of US 39 from north of Lanesville to US 45 in Carter County, North Carolina, as presented in Figure 1.

The existing roadway is a four-lane, median-divided freeway with full control of access. The project is included in the 2020-2029 NCDOT State Transportation Improvement Program (STIP) as Project Number W-1234. This project includes adding lanes, reconfiguring interchanges, and other roadway design improvements.

1.2 Project History and Merger Plan

The proposed action is included in the NCDOT 2020-2029 State Transportation Improvement Program (STIP), the Mill River Metropolitan Planning Organization (MRMPO) Comprehensive Transportation Plan (September 23, 2015) and the MRMPO Long-Range Transportation Plan (2015).

The 2020-2029 STIP presents a total estimated cost of $12,000,000.

Table 1. 2020-2029 STIP W-1234 Cost Estimate

Phase	Estimated Costs
Right of Way	$600,000
Utilities	$300,000
Construction Total	$10,000,000
Total	$10,900,000

A Merger Screening for the project was held on October 1, 2019. It was determined the project should follow the Merger Process due to the potential for substantial impacts to conflicting resources.

Based on the proposed Merger Plan (enclosed), NCDOT proposes the following schedule for future Merger Meetings. The proposed project schedule is included in Table 2. The draft schedule is subject to change.

Table 2. STIP W-1234 Draft Project Schedule

Milestone	Schedule*
Concurrence Point 2	Winter 2021
Concurrence Point 2A	Spring 2021
Concurrence Point 3/4A	Spring 2021
Final Environmental Document+	Summer 2022
Begin ROW Acquisition	FY 2024
Begin Construction	FY 2026
*tentative, subject to change; +anticipate Federal EA/FONSI	

1.3 Other STIP Projects Nearby

The 2020-2029 STIP lists 2 projects in the area of W-1234 (Figure 2) (Table 3).

Table 3. Nearby STIP Projects

STIP	Route	Location/Description	Funding Schedule	
			ROW	Construction
2018-2027 STIP				
U-1252	US 45 (Jerome Lane)	From I-280 to Beaverdam Road (SR 1423) in Lanesville. Widening.	2023	2025
U-2000	NC Highway 63	From I-280 to Beaverdam Road (SR 1423) in Lanesville. Widening.	2024	2026

2 Existing Conditions

Milltown, the County Seat, is the largest city in Carter County and 15th largest in North Carolina. The Mill River flows through Milltown dividing Carter County roughly in half. North Carolina's state capital, Raleigh, is located approximately 248 miles to the east of Milltown.

Land uses in the Project Study Area are both rural and urban in character. The southern portion of the Project Study Area includes the outskirts of the City of Milltown and the Town of Webster and is generally more urban with a mix of residential, commercial, and industrial land uses. The central and northern portions of the project vicinity are more suburban in nature.

The southern portion of the Project Study Area is located just north of downtown Lanesville where US 45 extends north from the I-280 / I-80 Interchange. Land uses are primarily single-family residential with a few pockets of commercial and industrial between Lanesville and Webster. Land use along the central section of the project has the highest density of commercial and industrial uses that are mixed with higher-density residential.

The northern section of the Project Study Area includes residential areas and scattered commercial and industrial properties.

The northern section of the Project Study Area is in close proximity to Eastern Band of Cherokee Indians (ECBI) lands, therefore ECBI have been invited to participate in the merger process as a signatory agency.

2.1 Transportation Features

The existing roadways, interchanges, and grade separations in the Project Study Area are shown on the *Environmental Features Map* in *Appendix B* and are described below beginning at the southern terminus in Lanesville and heading north towards the intersection of US 39 and US 45.

Exit 25 (NC 281- Trust Lane – SR 1781)

US 39 is bridged over Trust Lane (NC 281) at Exit 25, a diamond interchange with one loop. Trust Lane is a four-lane, partially divided facility with curb and gutter that connects US 39 directly with the Greene University to the east of the interchange and eventually becomes a gateway into downtown Lanesville. Trust lane has a posted speed limit of 35 mph. To the west of the interchange, Trust Lane becomes Early Spring Way, a two-lane, undivided facility that parallels the Mill River as it extends north towards the Town of Marshall.

Laurie lane (SR 1679)

US 39 is bridged over Laurie Lane (SR 1679). Laurie Lane, which is located between Exit 25 and Exit 24, is a two-lane roadway with no shoulders and a posted speed limit of 25 mph. Laurie Lane connects a residential area on the east side of US 39 to Early Spring Way (NC 281) on the west side of US 39.

Harkins Lane (SR 1768)

US 39 is bridged over Harkins Lane (SR 1768). Harkins Lane, which is located between Exit 25 and Exit 24, is a four-lane, curb-and-gutter facility that connects a residential area on the east side of US 39 to Early Spring Way (NC 281) on the west side of US 39.

Exit 24 (Rice Town Road – SR 1684 - Webster)

Rice Town Road (SR 1684) is bridged over US 39 at Exit 24, a diamond interchange. It is a two-lane roadway with a mix of grassed shoulders and a curb-and-gutter section with sidewalks, and a posted speed limit of 35 mph.

Harnett Street (SR 3449)

US 39 is bridged over the, Spey Creek, and Harnett (SR 3449), which are located between Exit 24 and Exit 23 in the Town of Webster. Harnett Street is a narrow, two-lane, unmarked road that connects a few properties on the west side of US 39 with the Town of Webster and runs adjacent to Spey Creek.

Exit 23 (Webster – N. Lanesville – York Road)

Exit 23 is a trumpet interchange that provides an off-ramp to Bellavia Circle (Business US 39) in the Town of Webster. Bellavia Circle is a two-lane, undivided facility with no curb and gutter. This 5.5-mile route extends north from Exit 23 paralleling US 39 to Exit 21 before serving the Central Business District of Milltown and rejoining US 39 near Exit 18. The posted speed limit on this business route is 35 mph.

Willow Highway (SR 1839)

US 39 is bridged over Willow Highway (SR 1839). Willow Highway, which is located between Exit 23 and Exit 21, is a two-lane road with grassed shoulders. Willow Highway connects Bellavia Circle on the east side of US 39 to Early Spring Way (NC 281) on the west side of US 39. The posted speed limit on Willow Highway is 45 mph.

Exit 21 (Alton Warren Road – SR 1740)

US 39 is bridged over Alton Warren Road (SR 1740) at Exit 21, a half-diamond, half-clover interchange. Alton Warren Road is a two-lane roadway with grassed shoulders that connects Bellavia Circle (US 39 Business) to the east with US 39 to the west, and eventually ends at a tee-intersection with Indian Camp Road on the west side of Milltown. The posted speed limit on Alton Warren Road is 35 mph.

Yellow Bird Drive (SR 1720)

Yellow Bird Drive (SR 1720) is bridged over US 39. Yellow Bird Drive, which is located between Exit 21 and Exit 19, is a two-lane roadway with grass shoulders. Yellow Bird Drive connects Bellavia Circle (Business US 39) to the east in Milltown with Willow Highway to the west. The ThermoFisher Medical Refrigeration Plant is located in the northeast quadrant of this crossing. The posted speed limit on Yellow Bird Drive is 35 mph.

MacBeth Street & Eden Marsh Creek

US 39 is bridged over MacBeth Street and Eden March Creek. MacBeth Street, which is located between Exit 21 and Exit 19, is a narrow, two-lane, unmarked road that connects a few properties on the west side of US 39 with Lakeshore Drive and Bellavia Circle (Business US 39) in the southern portion of Milltown.

Exit 19 (Milltown –Belmont Avenue – US 45)

Belmont Avenue (US 45) is bridged over US 39 at Exit 19, a diamond interchange with one loop. Belmont Avenue is a two-lane roadway eastbound with a center-turn lane and grassed shoulders or sidewalk facilities. Belmont Avenue westbound (US 45) is a four-lane, partially-divided facility. US 45 connects US 39 with the Town of Marshall to the west and with Main Street in Milltown to the east. The posted speed limit along Belmont Avenue eastbound is 35 mph while the posted speed along US 45 westbound is 55 mph.

US 39

US 39 is a four-lane, divided highway with full control of access that is classified as a freeway and signed as Future I-36 from I-280 in Lanesville to Exit 13 (Chester Place) with a speed limit of 65 miles per hour (mph). Beginning north of I-280 and extending northward to just south of Exit 13, this portion of the US 39 Corridor connects the urban areas of Lanesville, Webster, and Milltown to the rural areas of Carter County. Five interchanges with US 39 are located in the Project Study Area:

- Exit 19 (Belmont Avenue/NC 45)
- Exit 21 (Alton Warren Road)
- Exit 23 (York Road)
- Exit 24 (Rice Town Road)
- Exit 25 (Trust Lane/NC 281)

NCDOT conducted Pavement Condition Surveys and Distress Surveys for US 39 in 2008, 2010, and in 2012 that indicated declining ratings for the existing pavement conditions. The average rating number has dropped from "100" in 2008 to approximately "80-90" in 2012 in both directions. Conditions in the southbound lanes are generally worse, and several sections exhibit medium-severity alligator cracking. It is anticipated that the condition of the pavement will continue to deteriorate unless maintenance or rehabilitation activities are performed in the upcoming years.

The construction records indicate that the pavement within the project limits was originally constructed between 1966 and 1975 with an anticipated design life of 20 to 30 years. NCDOT has rehabilitated the pavement several times with varying types and thicknesses of overlays. Based upon the age, condition, and anticipated design life of the existing pavement, a majority of the existing pavement will need to be reconstructed. NCDOT will conduct additional pavement condition surveys as this project continues to develop in order to update pavement conditions and design recommendations.

2.2 Environmental Features

The project study area, environmental resources, notable features, and areas of local interest are presented in the Environmental Features Maps (Figure 3).

2.2.1 Natural Environment

The W-1234 project lies in the central portion of the Mill River Basin, within the North Carolina Division of Water Resources (NCDWR) Hydrologic Unit Code (HUCODE) 03020509.

There are 3 named streams in the Project Study Area including Witham Creek, Eden Marsh Creek, and Spey Creek.

Eden Marsh Creek is not on the Final 2018 303(d) Impaired Waters List but are included in the integrated report for good and good-fair biological integrity. Within one mile of the project, the Mill River is listed on the 303(d) List as impaired for turbidity.

Trout Waters exist in the project vicinity. Review and input from the North Carolina Wildlife Resources Commission will be requested as the Natural Resources Technical Report is being developed to determine whether Trout Waters exist in the Project Study Area.

Wild and Scenic Rivers are not located within one mile of the Project Study Area.

Potential habitat for the northern long-eared bat and gray bat is within the study area.

Wirth Park is located within the Project Study Area and is a Section 4(f) resource.

2.2.2 Cultural Resources

One historic architectural resource has been identified within or adjacent to the limits of the Project Study Area.

BN1406 Tradesville Court Lodge 1999 - The Tradesville Court Lodge is on the *Study List for the National Register of Historic Places*. This resource is located east of US 39 at 330 Bellavia Circle in Webster.

Archaeological resources have not been previously identified in the Project Study Area.

3 Project Purpose and Need

3.1 Identified Needs

The primary needs for the proposed action include:

3.1.1 Existing and Projected Roadway Capacity Deficiencies

Analysis of the traffic operations on US 39 and the intersecting roads was performed using the Traffic Forecast for W-1234, Carter County, Widen Future I-36 (NCDOT, August 13, 2018). Two signalized intersections, two unsignalized intersections, and 6 freeway sections were operating at an overall Level of Service (LOS) E or worse. There are also four intersections with one lane group currently operating at LOS E or worse. Based on the forecast, it is anticipated that four signalized intersections, 8 unsignalized intersections, and 18 freeway segments will operate at an overall LOS E or worse. It is also anticipated that 8 intersections will operate with one lane group at LOS E or worse in the future year, no-build condition. Furthermore, most of the areas that are expected to operate at LOS E or worse are anticipated to operate at LOS F.

The greatest amount of traffic congestion is occurring in the southern half of the project from the City of Lanesville to the Town of Milltown. In addition, there are some intersections, particularly at ramp junctions, that are expected to operate at LOS E or worse without improvements on the northern end of the corridor.

3.1.2 Deteriorating Pavement Structure and Substructure

With the exception of maintenance in specific areas, the existing pavement section is as it was originally constructed. The section from Exit 25 (Trust Lane) to Exit 21 (Alton Warren Road) is eight inches of continuously-reinforced concrete with an ultra-thin, bonded asphalt wearing surface. The underlying concrete has reached its useful life and needs to be redesigned and reconstructed. The remainder of the project from Exit 21 (Alton Warren Road) to Exit 13 (Chester Place) is asphalt on a stone base. This section also needs to be redesigned and reconstructed.

3.2 Proposed Purpose

The primary purposes of the proposed action include:

- Reduce congestion to achieve Level of Service D for all freeway segments and intersections that impact the mainline in the design year.
- Rectify the deteriorating pavement structure and substructure.

4 Traffic Operations and Analysis

Traffic operations for this project have been analyzed utilizing the techniques included in the *2010 Edition of the Highway Capacity Manual (HCM)* and its associated *Highway Capacity Software (HCS 2010, Version 6.5)*. Standard practices recommended in *NCDOT's Capacity Analysis Guidelines* were also utilized. The analysis of unsignalized and signalized intersections was completed utilizing Synchro Version 7 analysis software, which is consistent with the HCM methodologies.

The *Traffic Technical Memorandum for 2018 and 2045 No-Build Alternatives (URS, November 5, 2013)* was prepared for analysis of the roadways in the Project Study Area for the base year 2013 and the future year 2040 using traffic forecasting reported in the *Traffic Forecast (Amended) for W-1234– Carter and Madison Counties – Widen Future I-36 (NCDOT, August 13, 2018*). The purpose of this technical

memorandum was to analyze the current and future traffic operations in the vicinity of the proposed US 39 (Future I-39) Improvements Project and was intended for use in the development of the Purpose and Need for this project. It should be noted that only the Base-Year (2018) and Future-Year (2045) No-Build Alternatives were analyzed. Build alternatives will be analyzed at a later time and presented in a separate report.

The 2018 No-Build Alternative Analysis is based on the current traffic volumes and configuration of the transportation network within the Project Study Area. Proposed improvements to this corridor and other projects in the vicinity have not been included in this analysis.

The 2045 No-Build Alternative Analysis assumes that the local transportation system would evolve as currently planned, but without implementation of the improvements proposed in this W-1234 Project.

4.1 Traffic Forecasts

Traffic volumes for the 2013 No-Build and 2040 No-Build Alternatives were obtained from the *Traffic Forecast (Amended) for W-1234, Carter & Madison Counties, Widen Future I-99 (NCDOT, August 13, 2018*), and were used in the traffic operations and capacity analysis for this project.

Table 4 presents the 2013 and 2040 No-Build Average Annual Daily Traffic (AADT) volumes for this W-1234A Project.

Table 4. Base Year 2013 No-Build and Future Year 2040 No-Build Traffic Volumes

Roadway Segment	2018 No-Build AADT	2045 No-Build AADT
US 39 between Exit 25 (NC 281 – Trust Lane) and Exit 24 (Rice Town Road)	61,700	80,000
US 39 between Exit 24 (Rice Town Road) and Exit 23 (Webster – N. Lanesville – Bellavia Circle)	60,700	80,200
US 39 between Exit 23 (Webster – N. Lanesville – Bellavia Circle) and Exit 21 (Alton Warren Road)	57,100	76,000
US 39 between Exit 21 (Alton Warren Road) and Exit 19 (Milltown – Marshall)	45,600	61,800
US 39 between Exit 19 (Milltown – Belmont- US 45) and Exit 18 (Milltown – Indian Camp Road)	36,200	57,500

Source: Traffic Forecast (Amended) for W-1234, Carter & Madison Counties, Widen Future I-39 (NCDOT, August 13, 2018)

The following observations are noted based upon review of the 2018 No-Build Traffic Volumes in the existing roadway network:

- The volumes decrease by about 8% from north of Exit 25 to north of Exit 23.
- The volumes decrease by about 20% from north of Exit 23 to north of Exit 21.
- The volumes decrease by about 21% from north of Exit 21 to north of Exit 19.

The following observations are noted based upon review of the 2045 No-Build Traffic Volumes in the existing roadway network:

- The volumes decrease by about 5% from north of Exit 25 to north of Exit 23.
- The volumes decrease by about 19% from north of Exit 23 to north of Exit 21.

- The volumes decrease by about 7 % from north of Exit 21 to north of Exit 19.

The No-Build traffic volumes increase by 30 to 36 percent between the base year 2018 and the future year 2045.

5 Project Study Area Defined

The southern terminus of the project is located north of I-280 in Lanesville. The northern terminus of the project is located at the intersection of US 39 and US 45.

For the estimation of construction impacts, the following proposed limits for the Project Study Area will be used as presented in *Figure 1, Project Location and Study Area Limits:*

- US 39 (Main Line): Extend 300 feet on each side of the centerline of US 39 (total width of 600 feet).
- Interchanges: Extend 1,500 feet along each y-line from the center of each interchange, and a 300-foot width centered on the y-lines. Extend 150 feet from the center of each ramp. If parallel roads are within the 1,500-foot window along the y-lines, extend 1,000 feet in each direction on that parallel road with a 300-foot width centered on the parallel facility.
- Grade Separations: Extend 600 feet each way along the secondary roads from the centerline of US 39, and a 150-foot width centered on the secondary roads.

The proposed study area developed to address the purpose and need of W-1234 is shown on Figure 1. The study area is approximately 500 feet wide along the project centerline and ranging from 800-1000 feet at the intersections.

6 Avoidance and Minimization

Planning Phase and Merger Screening and Concurrence Point 1

- The study area does not extend into Mill River as NCDOT has determined that the roadway alignment will be shifted away from the river where necessary to improve horizontal and vertical alignment.
- The study area has been minimized to avoid impacts to the Mill River where it is adjacent to the roadway. The study area is sized to accommodate an improvement of Earl Trail on existing alignment where possible and realignment where necessary to bring the horizontal and vertical alignment up to current design standards.
- The 2016 Feasibility Study evaluated a new location concept and found it to have substantial additional impacts to the human and natural environment when compared to the proposed upgrade of the existing alignment.
- The Feasibility Study analyzed three concepts:
    - Concept 1 – Minor upgrades and improvements using 3R guidelines
        - Determined this does not meet purpose and need
    - Concept 2 – Upgrade the road to Major Collector design standards
        - Meets purpose and need and had fewer impacts and was less costly than Concept 3
    - Concept 3 – Upgrade the road to Principal Arterial design standards

- Required the road to be realigned on new location, resulting in higher residential relocations and a higher cost.

Therefore, NCDOT recommended Concept 2 be carried forward, which includes adjustments to the horizontal and vertical alignment while retaining current alignment to the extent feasible.

7 Merger Plan Review/Next Steps

The Merger Plan currently has separate meetings for concurrence points 1, 2, and 2A and a combined meeting for CP 3 and 4A. The schedule is listed below. Based on the Merger Plan the next Concurrence Point CP 2 (Alternatives Considered) will be held in three months.

Table 5. Project Schedule*

Milestone	Schedule*
Concurrence Point 1	June 17, 2020
Concurrence Point 2	January 19, 2021
Concurrence Point 2A	March 8, 2021
Public Meeting	May 10, 2021
Concurrence Point 3/4A	August 16, 2021
Final Environmental Document+	February 15, 2021
Begin ROW Acquisition	June 2026
LET Date	June 2028

*-Draft, subject to change

8 Merger Plan Review/Next Steps

Based on the proposed Merger Plan for the project, NCDOT proposes the next Merger Meeting will be CP 2 (Alternatives Considered). Prior to the next Merger Meeting, NCDOT will complete the natural systems studies and roadway designs based on surveyed data will be available for review. It is anticipated that the CP 2 meeting will be held in six months; Merger Team members will be notified of any changes that require a revision of this timetable.

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 1

Project Purpose and Need and Study Area Defined

US 39 from north of Lanesville to US 45. STIP Project: W-1234

Project Need:

The needs to be addressed by the proposed project are existing and projected roadway capacity deficiencies, geometric deficiencies along the corridor, and deteriorating pavement structure and substructure.

Project Purpose:

The primary purpose of the proposed project is to address projected future traffic demand by upgrading the existing multi-lane roadway, overpasses, and interchanges to current interstate standards.

The Merger Team has concurred on this date of October 18, 2019, on the above project purpose and need and the study area as defined for TIP Project W-1234.

USACE _____ FHWA _____

USEPA _____ NCDOT _____

USFWS _____ CMPO _____

NCDWR _____ SHPO _____

NCWRC _____ EBCI _____

End Project

Milltown

Webster

Begin Project

US 39 Improvements
STIP No.W-1234

Figure 1
Project Vicinity Map

December 2022

Legend

- Study
- County
- Waterbody
- Tribal Lands - Eastern Band of Cherokee Indians
- Federal Land Ownership
- State Owned Land
- Municipal
- Railroad
- Streams/Rivers

0 1 Miles

N

Virginia

North Carolina

South Carolina

N

Not to scale

End Project

Milltown

STIP B-3289

STIP B-6834

STIP B-4343

Webster

Begin Project

STIP U-1252

45

BUS 39

281

23

39

63

US 39 Improvements
STIP No.W-1234

Figure 2
STIP Map

December 2022

Legend

- TIP Bridge Projects
- TIP Road Projects
- Municipal Area
- Study Area
- County
- Waterbody
- Tribal Lands - Eastern Band of Cherokee Indians
- Federal Land Ownership
- State Owned Land
- Municipal Area
- Railroad
- Streams/Rivers

0 1 Miles

N

Virginia

North Carolina

South Carolina

N

Not to scale

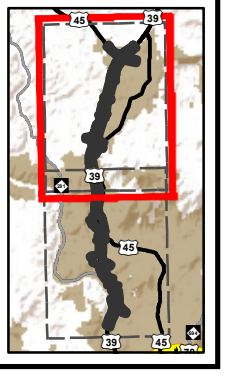
US 39 Improvements STIP No.W-1234

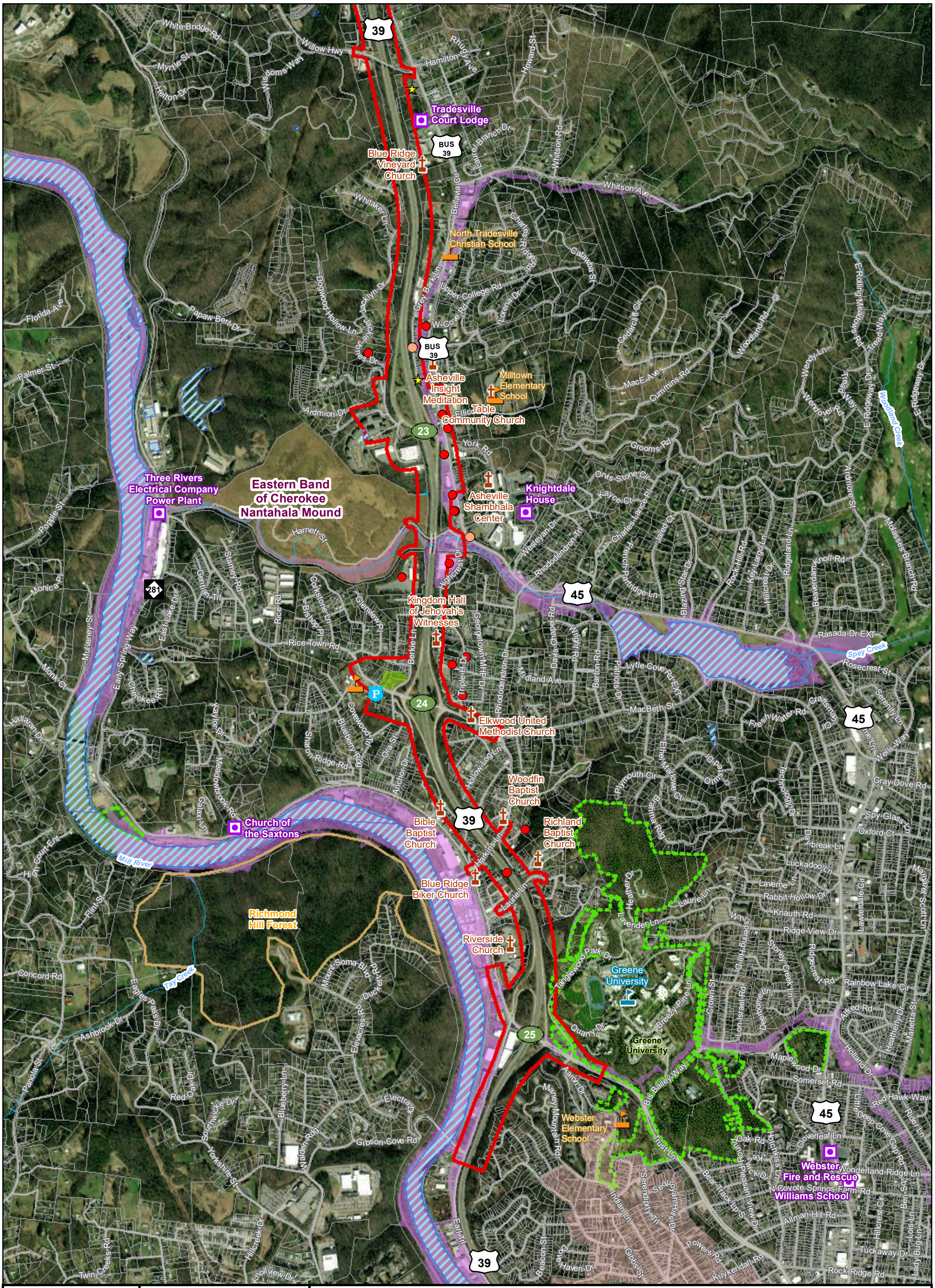
Figure 3-A Environmental Features

Feet
0 800 1,600

Legend

- Study area
- Underground Storage Tank
- Hazardous Waste Sites
- Historic Site
- Stream
- Park
- NWI Wetland
- Parcel
- FEMA Floodway
- Public Water Sources
- Cemetery
- Daycare
- School
- Place of Worship
- Fire Station
- Exit





US 39 Improvements
STIP No.W-1234

Figure 3-B
Environmental Features

0 800 1,600 Feet

Legend

- Study area
- Underground Storage Tank
- Hazardous Waste Sites
- Historic Site
- Stream
- Park
- NRHP Historic District
- Pond
- NWI Wetland
- Tribal Lands - Eastern Band of Cherokee Indians
- Publicly Managed
- Parcel
- FEMA Floodway
- NHP Natural Areas
- College/Univer...
- Daycare
- School
- Place of Worship
- Fire Station
- Police Station
- Exit