

Draft Packet
Section 404/NEPA Merger Project Team Meeting
Concurrence Point 3/4A
December 11, 2019

NC 73 Widening
From SR 2693 (Davidson-Concord Road) to U.S. 29 (Concord Parkway)
Mecklenburg and Cabarrus Counties, North Carolina – NCDOT Division 10

STIP Project No. R-5706
WBS No. 46378.1.1



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Meeting Agenda

1. Introductions and Sign-In
2. Purpose of Meeting
3. Project Description
4. Project Schedule and Cost
5. Merger History
6. Concurrence Point 3
 - a. Changes to LEDPA
7. Concurrence Point 4A
 - a. Avoidance and Minimization
8. Next Steps

Key Contacts:

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Purpose of the Meeting

The North Carolina Department of Transportation (NCDOT) is seeking consensus from the Merger Team for a revisit and resigning of Concurrence Point 3 (Least Environmentally Damaging and Practicable Alternative), as well as discussing Concurrence Point 4A (Avoidance and Minimization). Concurrence Point 4A has not been discussed previously with the Merger Team.

This report includes a description of the project, summaries from previous concurrence points, a summary of changes since the June 2019 CP 3 concurrence, and summary of potential environmental impacts for the revised Least Environmentally Damaging Practicable Alternative, and a description of measures taken to avoid and minimize potential environmental impacts.

Project Description

STIP Project R-5706 proposes widening N.C. 73 (Davidson-Concord Road/Davidson Highway) from SR 2693 (Davidson-Concord Road) to U.S. 29 (Concord Parkway North?) to four-lanes. The project is comprised of two segments: R-5706A and R-5706B. R-5706A extends from SR 2693 (Davidson-Concord Road) to SR 1394 (Poplar Tent Road) near the Mecklenburg County – Cabarrus County line. R-5706B extends from SR 1394 (Poplar Tent Road) to U.S. 29 in Cabarrus County. The project will include bicycle and pedestrian accommodations. The Charlotte Regional Transportation Planning Organization (CRTPO) 2045 Metropolitan Transportation Plan (MTP) and the Cabarrus-Rowan Metropolitan Planning Organization 2045 MTP include N.C. 73 widening from two to four lanes with a median, wide outside lanes, and sidewalks. The project area is shown on Figure 2 (Vicinity Map), Figure 3 (USGS Map) and Figures 3 and 4 (Environmental Features Maps).

R-5706 is state-funded. A State Environmental Assessment/Finding of No Significant Impact (EA/FONSI) document is being prepared.

Purpose of Project

The purpose of the project is to increase mobility between SR 2693 (Davidson-Concord Road) and I-85 and between U.S. 29 (Concord Parkway North) and I-85, reduce congestion at the intersections, improve traffic operations along N.C. 73 with an operational target of LOS D in the 2040 design year, and provide bicycle and pedestrian facilities.

Typical Sections

The R-5706 design has two typical sections. Graphical representations of the typical sections are available in Appendix C.

- From Davidson-Concord Road to I-85, four 12-foot lanes are proposed with a 30-foot median, 10-foot multi-use path in both directions, and two-foot curb and gutter.
- From I-85 to U.S. 29, four 11-foot lanes are proposed with 23-foot median, five-foot bike lanes in both directions, five-foot sidewalks in both directions, and 2-foot curb and gutter.

The typical section between Poplar Tent Road and I-85 has changed since the June 2019 CP 3 concurrence as a result of coordination with the local jurisdictions pertaining to bicycle and pedestrian accommodations. The previous design included a typical section from Poplar Tent Road to I-85 that included four-foot bike lanes and five-foot sidewalks in both directions. The current design includes multi-use paths in both directions rather than bike lanes and sidewalks.

Cultural Resources

There are four local historic landmarks within the project study area. These properties are identified as The Bradford Farm (MK1283), the Jesse and Mary K. Washam Farm (MK2455), the Cashion and Moore Family Cemetery (MK2916), and the Bradford Store (MK2811). Two of these properties, The Bradford Farm and the Jesse and Mary K. Washam Farm, are eligible for listing on the National Register of Historic Places (NRHP). The Determined Eligible sites are outside the permit areas.

There are no archeological resources eligible for the NRHP and no further surveys are required.

Project Schedule and Cost

The right-of-way acquisition and construction schedule for the project in the 2020-2029 STIP is shown in Table 1.

Table 1: Project Schedule

Next Steps	Date
Complete Environmental Studies	Ongoing
Evaluate Environmental Impacts and Select Preferred Alternative	Completed June 2019
Public Meeting to Inform Public of Preferred Alternative	Anticipated Early 2020
Complete the Final Environmental Document	Anticipated Early 2020
Begin Right-of-Way Acquisition	FY 2020
Begin Construction	FY 2023

The project is listed in the current 2020-2029 State Transportation Improvement Program (STIP; September 2019) as Project No. R-5706.

Table 2: R-5706 STIP Cost Estimate*

	Cost
Right-of-Way Acquisition	\$25.6 Million
Utilities	\$2.6 Million
Construction	\$139.9 Million
Prior Years Costs	\$1.4 Million
Total	\$169.5 Million

* Cost estimates are from NCDOT Current STIP (2020 – 2029).

Table 3: R-5706 Current Cost Estimate

	Cost
Right-of-Way Acquisition*	\$72.4 Million
Utilities**	\$7.6 Million
Construction***	\$144.5 Million
Total	\$224.5 Million

* From February 19, 2019 right-of-way cost estimate. Right-of-Way cost will be adjusted to include all design revisions since the June 2019 CP 3 concurrence.

** From August 27, 2019 Utility Estimate.

*** From July 12, 2019 cost verification. Includes Water and Sewer Utility Costs. Construction cost will be adjusted to include all design revisions since the June 2019 CP 3 concurrence.

The project is state-funded and a State Environmental Assessment/Finding of No Significant Impact is being prepared in compliance with North Carolina Environmental Policy Act (SEPA).

The following STIP projects are located adjacent to R-5706:

- R-2632AB – proposed widening of N.C. 73 from N.C. 115 to SR 2693 (Davidson-Concord Road). Right-of-way and construction are scheduled for 2020 and 2023, respectively.
- U-6029 – proposed widening of SR 1394 (Poplar Tent Road) from Derita Road to N.C. 73. Right-of-way is scheduled for 2029. Construction is anticipated to begin after 2029.
- U-6098 – extend left turn lane at N.C. 73 and SR 1430 (Kannapolis Parkway), construct right and left turn at access road on N.C. 73, construct roundabout at SR 1620 and SR 1621 (Barr Road), and construct 200 feet SB on-ramp right turn lane at I-85 and extend storage to NB off ramp. Under construction.
- B-5136 – proposed replacement of Bridge No. 66 and Bridge No. 69 over the Norfolk Southern Railroad. Under construction.

Merger History

Concurrence Point 1 - Purpose and Need and Study Area

The Merger Team met and concurred on the project Purpose and Need and Study Area boundary on July 19, 2018.

An expansion of the Study Area was agreed to by the Merger Team during the May 15, 2019 CP 3 meeting. The approved study area boundary is shown in Figure 3 in Appendix A.

Concurrence Point 2 - Design Alternatives for Detailed Study

The merger team met and concurred on the project design alternatives for detailed study on October 10, 2018.

Due to the proximity of existing resources along the project corridor, a Best Fit alignment was designed and studied for the portion of the project on existing alignment. The alternatives differed in how they cross (or do not cross) the Don T. Howell Reservoir.

The alternatives, as agreed in Concurrence Point 2, are described below.

- **Alternative 1** proposed a Best Fit alignment from Davidson-Concord Road to U.S. 29 with an elevated structure to the south of the existing causeway over Howell Reservoir.
- **Alternative 2** proposed a Best Fit alignment from Davidson-Concord Road to U.S. 29 and widening the existing causeway over Howell Reservoir.
- **Alternative 3** proposed a Best Fit alignment beginning at Davidson-Concord Road with the alignment travelling south of the existing N.C. 73 centerline beginning approximately 1,700 feet west of the N.C. 73 and Odell School Road intersection before meeting Odell School Road approximately 1,900 feet south of the N.C. 73 and Odell School Road intersection. The alignment begins to follow the existing centerlines of Odell School Road, Untz Road and La Forest Lane until approximately 1,000 feet south of the existing N.C. 73 centerline before extending northeast through existing development and realigning with the existing N.C. 73 centerline approximately 1,300 feet east of the N.C. 73 and Riding School Lane intersection and resuming a Best Fit alignment ending at U.S. 29.
- **Alternative 4** proposed a Best Fit alignment beginning at Davidson-Concord Road with the alignment travelling south of the existing centerline beginning approximately 800 feet east of the N.C. 73 and Odell School Road intersection and extending between approximately 1,000-2,000 feet south of the existing N.C. 73 centerline before realigning with the existing N.C. 73 centerline at the intersection of N.C. 73 and La Forest Lane and resuming a Best Fit alignment ending at U.S. 29.

Concurrence Point 2A – Alignment Review and Bridging Decisions

The merger team met and concurred on bridging and alignment decisions on October 10, 2018.

There will be major hydraulic structures at the following stream crossings:

1. Rocky River - Bridge
2. UT to Rocky River - Culvert
3. Coddle Creek - Bridge
4. Afton Run - change from Culvert to Bridge
5. Irish Buffalo Creek - Bridge
6. UT to Irish Buffalo Creek - Culvert
7. Stricker Branch - Culvert

Concurrence Point 3 – Least Environmentally Damaging Practicable Alternative/Preferred Alternative (LEDPA) Selection

The merger team met on May 15, 2019 and subsequently concurred on the Least Environmental Damaging Practicable Alternative (LEDPA) in June 2019.

NCDOT and its regional, state, and federal agency partners selected Alternative 1 as the Preferred Alternative (i.e., LEDPA). Alternative 1 was identified as the Best Fit widening of N.C. 73 from Davidson-Concord Road to U.S. 29 with an elevated structure (i.e., bridge) adjacent to the south of the existing causeway over Don T. Howell Reservoir.

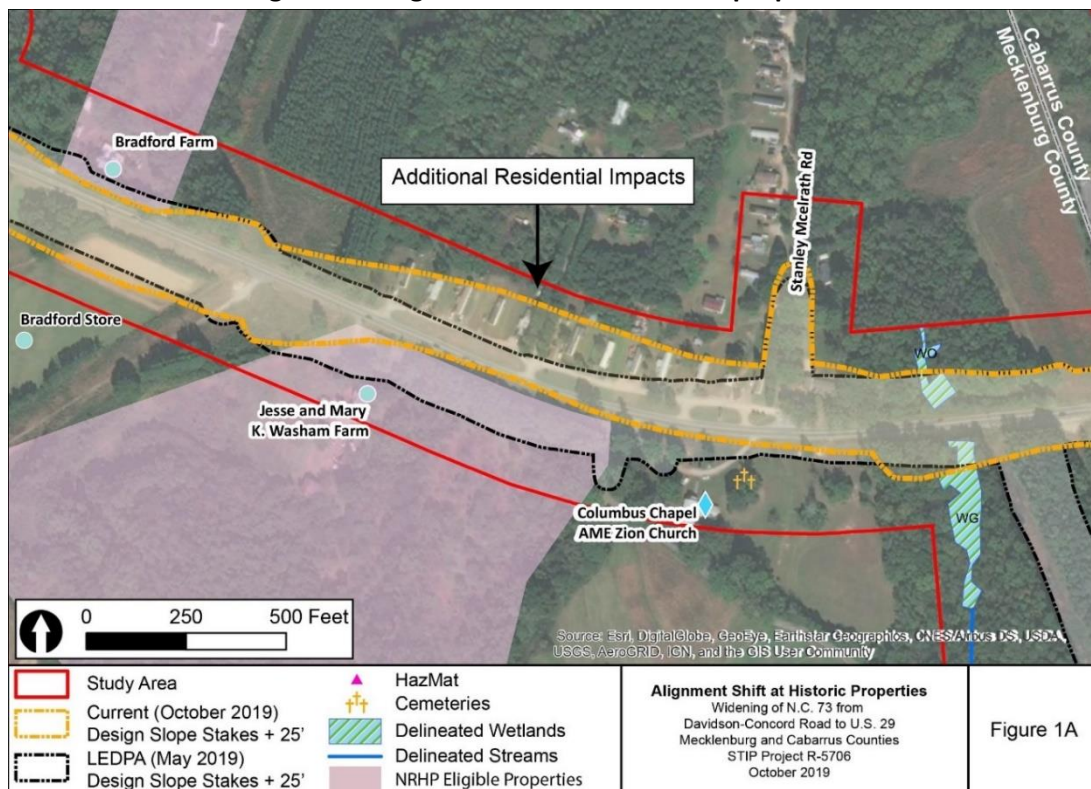
Concurrence Point 3 Revisions and Updates

Following the June 2019 CP 3 concurrence, several design changes were identified as being necessary. In collaboration with the Merger Team leads, we will refer to the revised design as Alternative 1 (Modified). Below is information regarding changes to the design since CP 3 was achieved in June 2019. Table 4 on page 15 summarizes changes to impacts to water of the U.S. and residential properties from the previous CP 3 design as compared to the current design.

Summary of Alternative 1 (Modified) Design Changes

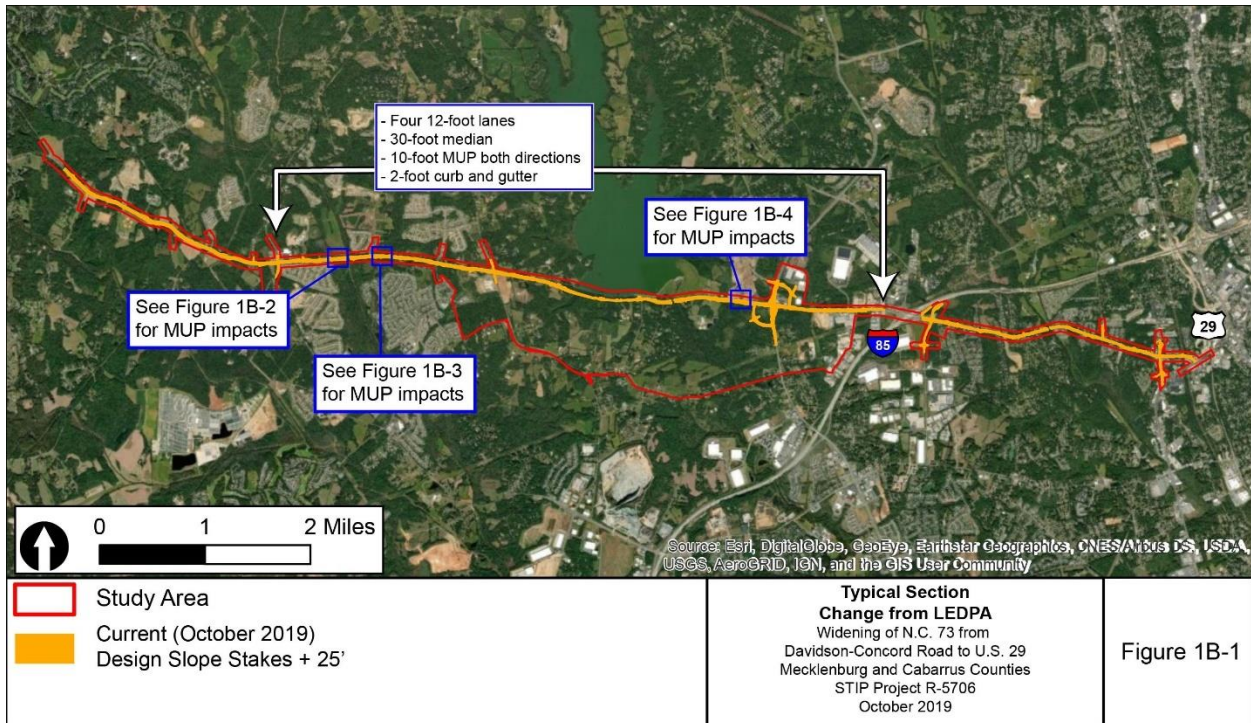
1. NC 73 alignment: Shifted to minimize impacts to local historic landmarks (Figure 1A)
 - a. Alignment shift needed to satisfy the Local Historic Landmarks Commission
 - b. Results in eight (8) additional residential takes from mobile home community as compared to previous LEDPA alignment
 - c. Affects all alternatives equally

Figure 1A: Alignment Shift near historic properties



2. Bike/Ped accommodations between Poplar Tent Road and I-85: Change to multi-use paths (previous LEDPA design included sidewalks and bike lanes) (Figure 1B-1 – 1B-4)
 - a. Switched to MUP at the request of local jurisdictions
 - b. Results in 18 linear feet of additional stream impact as compared to the previous LEDPA design (based on slope stakes + 25')
 - c. Results in 0.05 acre of additional wetland impact as compared to the previous LEDPA design (based on slope stakes + 25')
 - d. Affects all alternatives equally

Figure 1B-1: Changes in Typical Sections



Figures 1B-2 – 1B-3: MUP Impact to Jurisdictional Features

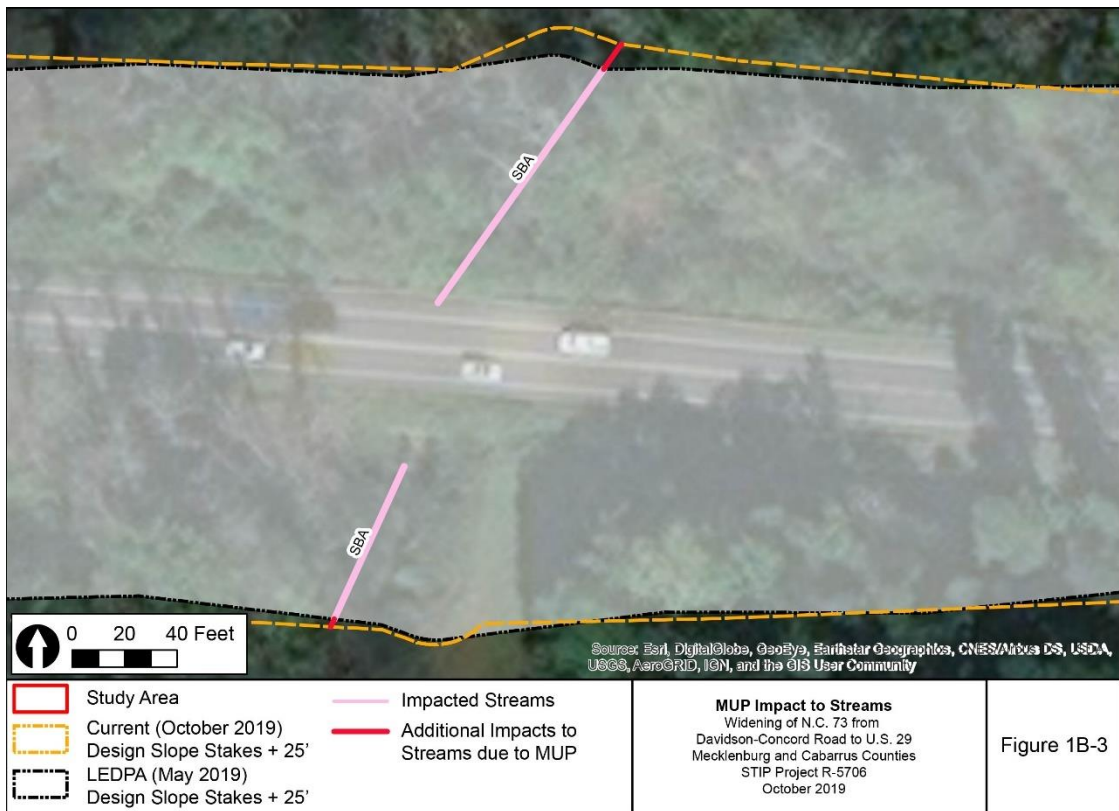
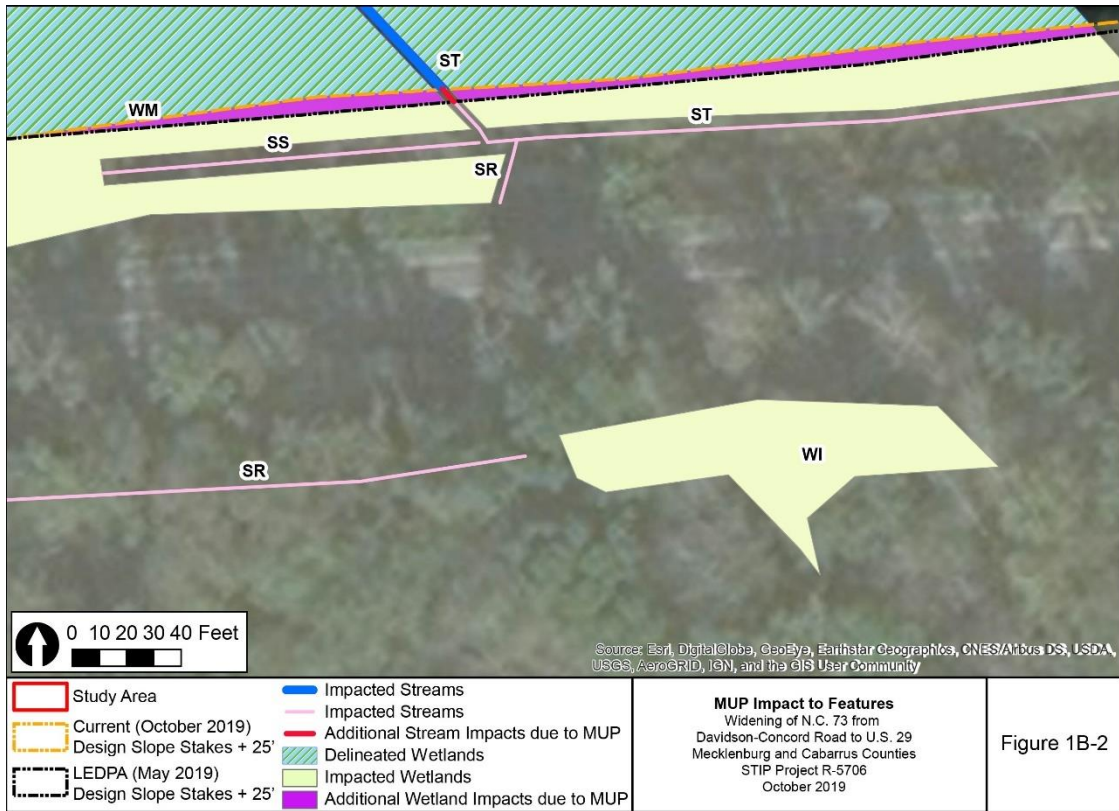
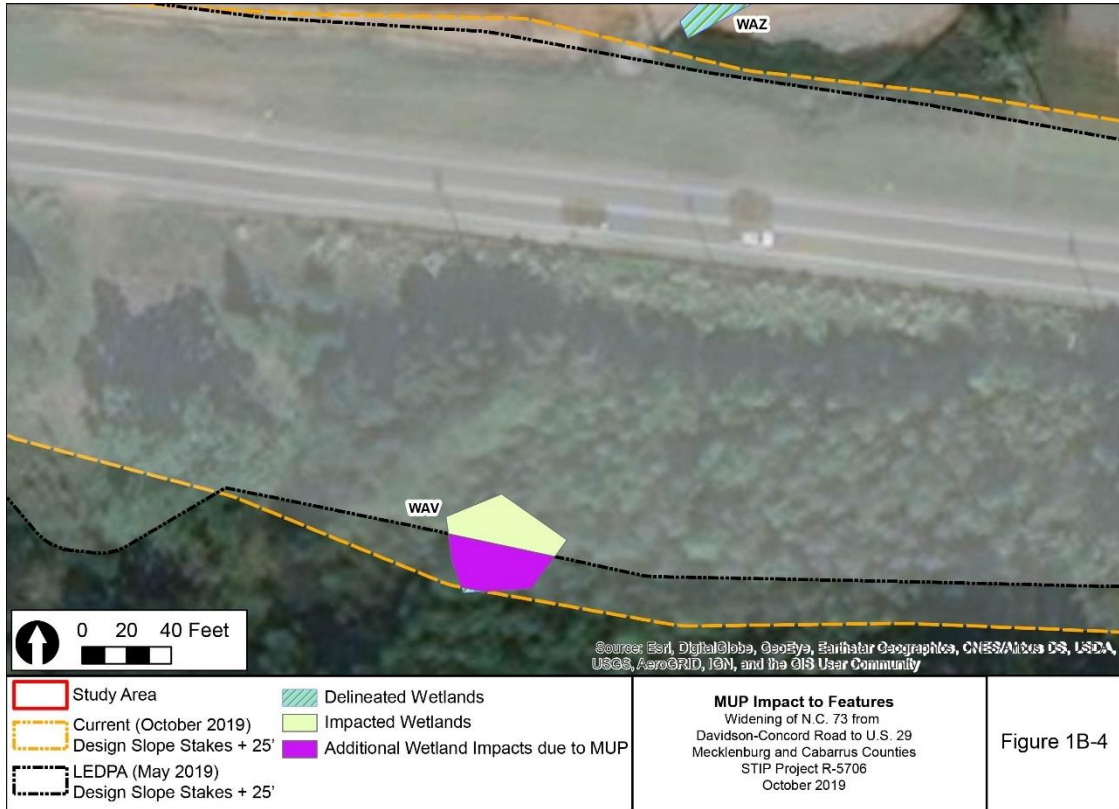
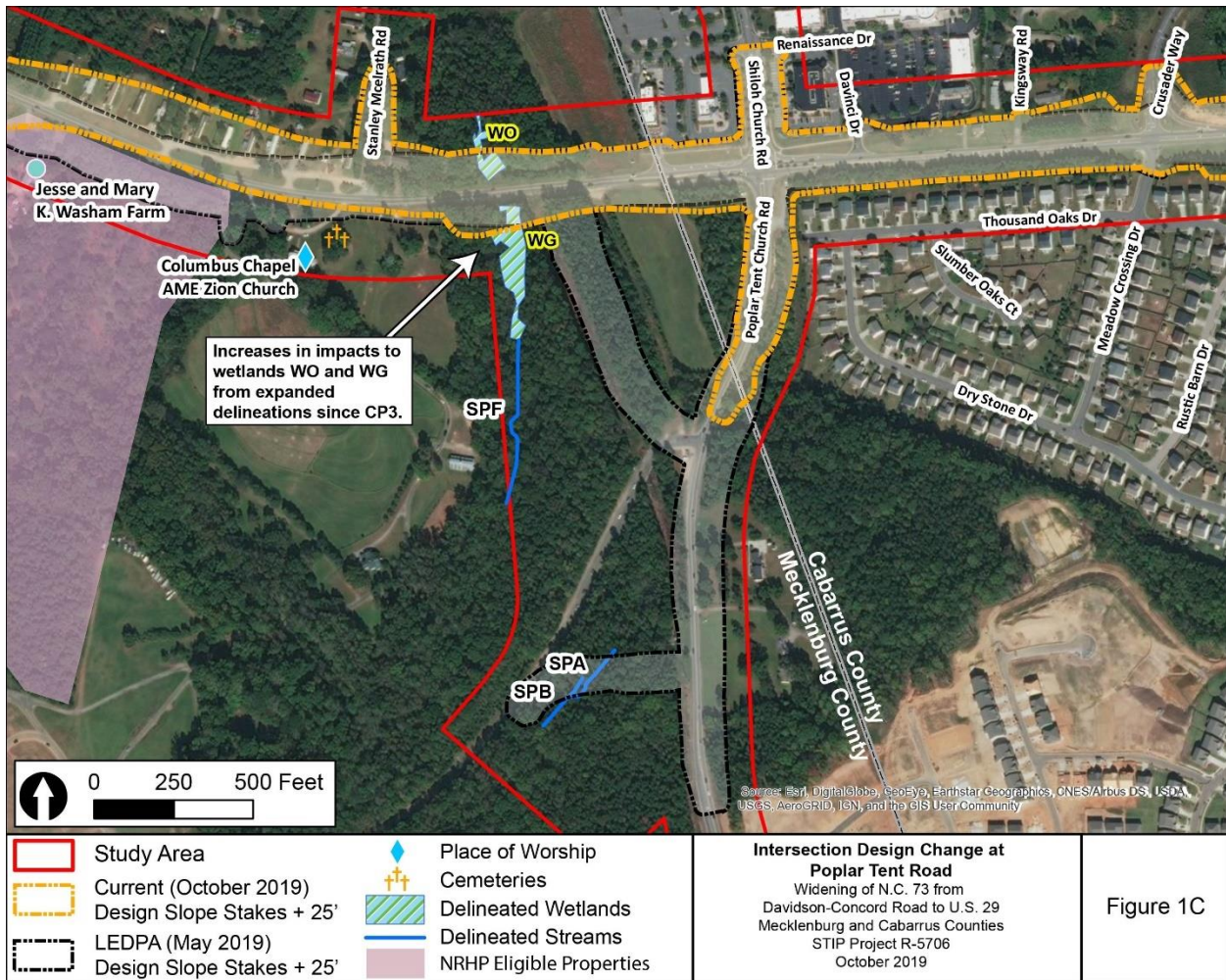


Figure 1B-4: MUP Impact to Jurisdictional Features



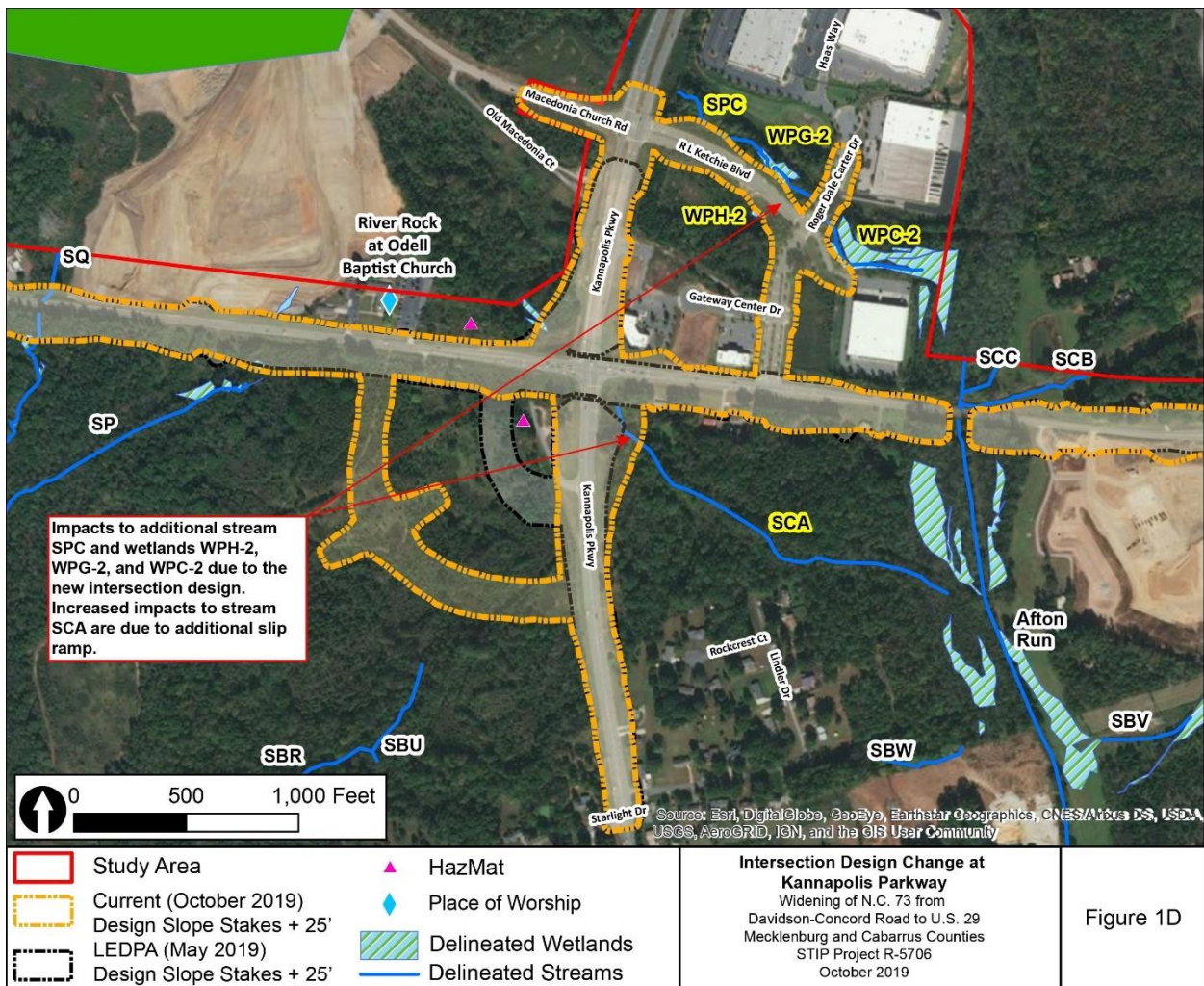
3. Poplar Tent: Changed to reduced conflict intersection (previous LEDPA alignment included a southwest quadrant roadway) (Figure 1C)
 - a. Meets purpose and need and results in less ROW needed
 - b. Change in design does not result in any additional impacts to jurisdictional resources
 - c. Change in design results in avoidance of streams SPA and SPB
 - d. Change in design does not result in any additional property takes
 - e. Additional wetland impacts of 0.16 acre (as compared to what was reported in CP 3) are the result of expansion of wetland areas based on updated delineation
 - f. Affects all alternatives equally

Figure 1C: Intersection design change at Poplar Tent Road



4. Kannapolis Parkway: Changed the intersection to include a NE quadrant roadway and a ramp in the southeast. This also includes a longer quadrant roadway in the southwest quadrant (Figure 1D)
 - a. Improves operations as compared to the previous LEDPA design
 - b. Provides a symmetrical intersection that meets purpose and need and reduces driver confusion
 - c. Results in 251 linear feet of additional stream impact as compared to the previous LEDPA design (based on slope stakes + 25')
 - d. Results in 0.02 acre of additional wetland impact as compared to the previous LEDPA design (based on slope stakes + 25')
 - e. Affects all alternatives equally

Figure 1D: Intersection design change at Kannapolis Parkway



5. Bridge at Reservoir: Changed to single 4-lane bridge to avoid impacts to causeway and minimize impacts to the reservoir (Figure 1E)
 - a. Change from previous 2-lane bridge to single 4-lane bridge necessary due to constructability issues, which became evident upon completion of survey:
 - i. Due to the need for curb and gutter and the presence of utilities, the previous design would require significant excavation within the causeway and potential fill in the reservoir. The current 4-lane bridge design avoids issues related to drainage and utility relocation on the causeway.
 - ii. The substructure of the previous 2-lane bridge alignment would impact the causeway embankment and the culverts beneath the causeway, therefore a shift in the alignment to the south is necessary.
 - b. Results in two (2) additional residential takes as compared to previous LEDPA alignment
 - c. Results in a reduction of 2 acres of impacts to water supply watershed (since no work required on the causeway)
 - d. Results in 0.04 acre of additional open water impacts to reservoir compared to previous LEDPA alignment resulting from bridge substructure:
 - i. Preliminary evaluation of substructure shows an estimate 0.24 acre of open water impacts from the bridges for the LEDPA design (note that CP 3 did not identify open water impacts to the reservoir).
 - ii. Preliminary evaluation of substructure shows an estimate 0.28 acre of open water impacts from the bridges for the 4-lane bridge design
 - e. Affects Alternative 1 (Modified)

Figure 1E: Bridge Alignment at Reservoir

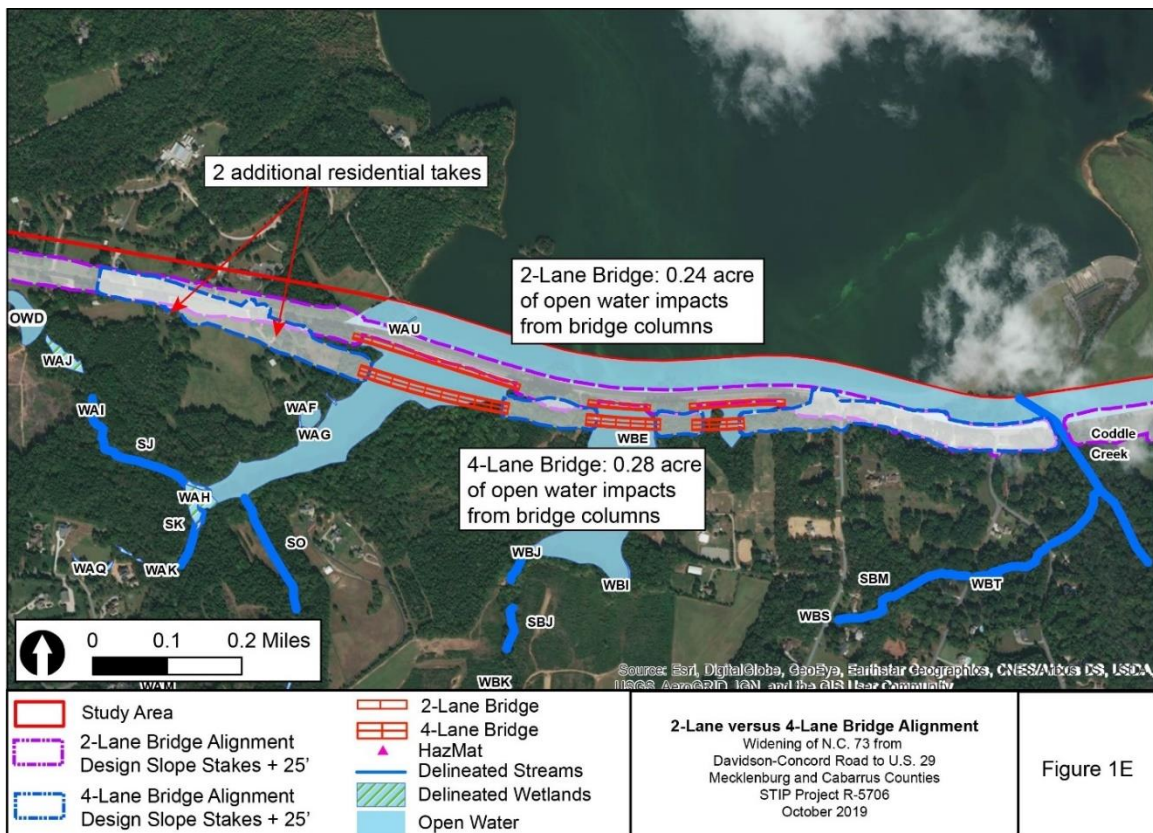


Table 4: Comparison of Impacts from April 23, 2019 Public Notice vs. Current Proposed Design

Resource Type	Impact included in April 23, 2019 Public Notice (slope stakes + 25')	Impacts from Current Proposed Design (slope stakes + 25')
ALTERNATIVE 1		
Residential Relocations	79	89**
Wetlands (ac.)	0.42	0.65**
Streams (lf)	2,538	2,687**
Open Waters (ac.)	0.07*	0.33**
ALTERNATIVE 2		
Residential Relocations	79	87
Wetlands (ac.)	0.42	0.65
Streams (lf)	2,538	2,687
Open Waters (ac.)	3.46	3.44
ALTERNATIVE 3		
Residential Relocations	87	95
Wetlands (ac.)	0.58	0.81
Streams (lf)	2,657	2,808
Open Waters (ac.)	0.07	0.05
ALTERNATIVE 4		
Residential Relocations	79	87
Wetlands (ac.)	0.44	0.67
Streams (lf)	3,054	3,203
Open Waters (ac.)	0.08	0.06
<p>* Impacts from bridge columns at the reservoir were not included in the Alternative 1 impact quantities. The open water impacts for Alternative 1 would have been 0.31 acre with the inclusion of the bridge column impacts.</p> <p>** Represents impacts from Alternative 1 (Modified)</p>		

The following tables provide a comparison of the four Alternatives, and incorporate the five design changes discussed above.

Table 5: Potential Alternatives Impacts (slope stakes + 25')

Resource/Affected Environment	Alternative 1 (Modified)	Alternative 2	Alternative 3	Alternative 4
General Project Information				
Length of Project (miles)	11.3	11.3	11.9 (New location)	11.5 (New location)
Project Costs*				
Construction Cost	\$144.5M	\$137.6M	\$133.6M	\$131.1M
Right-of-Way Cost	\$72.4M	\$73.0M	\$81.5M	\$74.7M
Utilities Cost	\$7.6M	\$7.9M	\$7M	\$8M
Total Cost	\$224.5M	\$218.5M	\$222.1M	\$213.8M
Cultural Resources				
Historic Properties	2 – Jesse and Mary K. Washam Farm, Bradford Farm (Determined Eligible for National Register of Historic Places)			
Local Historic Landmarks	4 – Jesse and Mary K. Washam Farm, Bradford Farm, Bradford Store, Cashion and Moore Cemetery			
Human Environment				
Churches**	3	3	3	3
Schools**	3	3	3	3
Public Parks	3 – White Community Park, West Branch Nature Preserve, Bradford Park			
Planned Greenways	3	3	3	3
High % Special Populations	Language Assistance (Spanish), Minority, Poverty			
Potentially Impacted Noise Receptors***	227	227	241	208
Natural Environment				
Federally-Protected Species with No Effects	5 - Schweinitz's sunflower, Smooth coneflower, Michaux's sumac, Carolina heelsplitter, Rusty-patched bumble bee			
Federally-Protected Species - Unresolved	1 - Northern long-eared bat (SLOPES to be followed)			
Stream impacts (linear feet)	2,687	2,687	2,808	3,203
Wetland impacts (acres)	0.62	0.65	0.78	0.64
Open Water impacts (acres)	0.33	3.44	0.05	0.06
Water Supply Watersheds, Critical Area	Coddle Creek			
Water Supply Watersheds, Critical Area impacts (acres)****	22.0	26.0	8.0	42.0
Physical Environment				
Haz Mat (# suspected/known sites)	24	24	25	24

* Based on Preliminary Cost Estimate (January 2019), Cost verification (July 12, 2019), and Utility Estimate (August 27, 2019). Updated cost estimates are being developed.

** Does not indicate relocation – only potential impact.

*** Based on Draft Traffic Noise Report

**** Excludes estimated existing pavement and built-upon areas.

Table 6: Potential Relocations
(from EIS Relocation Report)

	Alternative 1 (Modified)	Alternative 2	Alternative 3	Alternative 4
Estimated Minority Displacements				
Residential Relocations* (# Minority)	89 (10**)	87 (10**)	95 (10**)	87 (10**)
Business Relocations (# Minority)	13 (1)	13 (1)	12 (1)	13* (1)
Farm Relocations	N/A	N/A	N/A	N/A
Non-profit Relocations	1	1	N/A	1
Total	103	101	107	101

* An estimated 10 additional residential relocations are included based on the revised Alternative 1 (Modified) design. Alternatives 2, 3, and 4 have eight additional residential relocations.

** An updated estimate of minority and low income impacts based on the updated design is pending.

Table 7: Potential Alternatives Jurisdictional Stream Impacts (slope stakes + 25')

Map ID	Classification	Compensatory Mitigation Required	River Basin Buffer	Impacts (linear feet)			
				Alt. 1 (Modified)	Alt. 2	Alt. 3	Alt. 4
SK	Perennial	Yes	NA	0	0	0	223
SO	Perennial	Yes	NA	0	0	0	12
SQ	Intermittent	Yes	NA	164	164	164	164
SR	Intermittent/Perennial	Yes	NA	375	375	375	375
SS	Perennial	Yes	NA	129	129	129	129
ST	Perennial	Yes	NA	315	315	315	315
SBA	Perennial	Yes	NA	188	188	188	188
SBJ	Perennial	Yes	NA	0	0	0	281
SBM	Intermittent	Yes	NA	0	0	121	0
SBY	Intermittent	Yes	NA	28	28	28	28
SBZ	Intermittent	Yes	NA	40	40	40	40
SCA	Intermittent	Yes	NA	202	202	202	202
SCF	Perennial	Yes	NA	184	184	184	184
SCH3	Perennial	Yes	NA	203	203	203	203
SDA	Intermittent/Perennial	Yes	NA	442	442	442	442
SDC	Perennial	Yes	NA	5	5	5	5
SPC	Intermittent/Perennial	Yes	NA	114	114	114	114
SHW	Intermittent	Yes	NA	136	136	136	136
Approximate Stream near International Drive NW	Unknown	Unknown	Unknown	162	162	162	162
Total				2,687	2,687	2,808	3,203

Table 8: Potential Jurisdictional Wetland Impacts (slope stakes + 25')

Map ID	NC WAM Classification	Hydrologic Classification	NC WAM Ratings ¹	Impacts (acres)			
				Alt. 1 (Modified)	Alt. 2	Alt. 3	Alt. 4
WG	Headwater Forest	Riparian	Low	0.08	0.08	0.08	0.08
WI	Bottomland Hardwood Forest	Riparian	Medium	0.08	0.08	0.08	0.08
WM	Riverine Swamp Forest	Riparian	WM-1, High	0.23	0.23	0.23	0.23
			WM-2, Low				
WO	Headwater Forest	Riparian	High	0.11	0.11	0.11	0.11
WAD	Riverine Swamp Forest	Riparian	Medium	0	0	0.15	0
WAR	Headwater Forest	Riparian	High	0	0	0	0.01
WAU	Riverine Swamp Forest	Riparian	High	0	0.03	0	0
WAV	Headwater Forest	Riparian	Low	0.04	0.04	0.04	0.04
WBG	Riverine Swamp Forest	Riparian	High	0	0	0	0.01
WBI	Riverine Swamp Forest	Riparian	High	0	0	0	0.001
WBS	Headwater Forest	Riparian	Medium	0	0	0.01	0
WCA	Headwater Forest	Riparian	Low	0.03	0.03	0.03	0.03
WDD-2	Headwater Forest	Riparian	Medium	0.002	0.002	0.002	0.002
WDF	Basin Wetland	Non-riparian	Medium	0.01	0.01	0.01	0.01
WZC	Headwater Forest	Riparian	High	0.01	0.01	0.01	0.01
WPH-2	Headwater Forest	Riparian	Low	0.0003	0.0003	0.0003	0.0003
WPG-2	Basin Wetland	Riparian	Low	0.001	0.001	0.001	0.001
WPC-2	Bottomland Hardwood Forest	Riparian	Medium	0.02	0.02	0.02	0.02
WPA-2	Headwater Forest	Riparian	Low	0.01	0.01	0.01	0.01
Total				0.62	0.65	0.78	0.64

¹NC WAM ratings (Low [L], Medium [M], and High [H]) are provided for overall wetland rating

**Table 9: Potential Alternatives Jurisdictional Open Water Impacts
(slope stakes + 25')**

Map ID	Impacts (acres)			
	Alt. 1 (Modified)	Alt. 2	Alt. 3	Alt. 4
Howell Reservoir	0.28	3.39	0	0.01
OWB	0.05	0.05	0.05	0.05
Total	0.33	3.44	0.05	0.06

Concurrence Point 4A – Avoidance and Minimization

Table 10 below includes information regarding resources within the LEDPA (Alternative 1 (Modified)) and potential impacts.

Note that the amount of jurisdictional impacts in Alternative 1 (Modified) have increased since CP 3, as described above, due to a) the addition of jurisdictional features from the expanded study area, b) the intersection redesign at Kannapolis Parkway, c) the design of multi-use paths instead of bike lanes and sidewalks between Poplar Tent Road and I-85; and d) the inclusion of open water impacts from bridge columns at the reservoir on the south side of NC 73.

Impacts to jurisdictional waters of the U.S. were avoided and minimized to the maximum extent practicable. Avoidance and minimization efforts took into consideration competing resources (e.g., cemeteries, residences, businesses, etc.), the presence of which dictated that avoidance was not feasible in a number of locations. However, 2:1 fill slopes have been designed throughout the corridor in locations of jurisdictional resources in order to avoid and minimize impacts. In addition, multi-use paths and sidewalks have been designed to be closer to the curb, where feasible, in order to minimize impacts to jurisdictional resources.

A comparison of the differences in stream, wetland, and open water impacts between CP 2/2A and CP 3 (for Alternative 1), and CP 4A (for Alternative 1 (Modified)) are shown in Tables 12-14.

**Table 10: Alternative 1 (Modified) (LEDPA) Resources and Potential Impacts
(slope stakes + 25')**

Resource/Affected Environment	Alternative 1 (Modified)
Length of Project (miles)	11.3
Project Costs*	
Construction Cost	\$144.5M
Right-of-Way Cost	\$72.4M
Utilities Cost	\$7.6M
Total Cost	\$224.5M
Cultural Resources	
Historic Properties	2 – Jesse and Mary K. Washam Farm, Bradford Farm (Determined Eligible for National Register of Historic Places); determined to be outside of permit sites
Local Historic Landmarks	4 – Jesse and Mary K. Washam Farm, Bradford Farm, Bradford Store, Cashion and Moore Cemetery
Human Environment	
Churches**	3
Schools**	3
Public Parks	3 – White Community Park, West Branch Nature Preserve, Bradford Park
Planned Greenways	3
High % Special Populations	Language Assistance (Spanish), Minority, Low Income
Potentially Impacted Noise Receptors***	227

* Based on Preliminary Cost Estimate (January 2019), Cost verification (July 12, 2019), and Utility Estimate (August 27, 2019). Updated cost estimates are being developed.

** Does not indicate relocation – only potential impact.

*** Based on Draft Traffic Noise Report

Table 10: Alternative 1 (Modified) (LEDPA) Resources and Potential Impacts
(slope stakes + 25') (continued)

Resource/Affected Environment	Alternative 1 (Modified)
Natural Environment	
Federally-Protected Species with No Effects	5 - Schweinitz's sunflower, Smooth coneflower, Michaux's sumac, Carolina heelsplitter, Rusty-patched bumble bee
Federally-Protected Species - Unresolved	1 - Northern long-eared bat (SLOPES to be followed)
Stream impacts (linear feet)	2,687
Wetland impacts (acres)	0.62
Open Water impacts (acres)	0.33
Water Supply Watersheds, Critical Area impacts (acres)****	22.0 (Coddle Creek)
Riparian Buffer Rules	No State-mandated riparian buffers
Physical Environment	
Haz Mat (# suspected/known sites)	24
Major Utilities	Water, sewer, electric, natural gas, power transmission corridors and towers, phone

**** Excludes estimated existing pavement and built-upon areas.

Table 11: Alternative 1 (Modified) (LEDPA) Potential Relocations
(from EIS Relocation Report)

	Alternative 1 (Modified)
Estimated Minority Displacements	
Residential Relocations* (# Minority)	89 (10**)
Business Relocations (# Minority)	13 (1)
Farm Relocations	N/A
Non-profit Relocations	1
Total	103

* An estimated 10 additional residential relocations are included based on the revised Alternative 1 (Modified) design.

Tables 12-14 show comparisons of impacts between Concurrence Points 2/2A, 3, and 4A.

Table 12: Stream Impact Comparison

Stream ID (per 2019 NRTR)	Stream Impact (Linear Feet)		
	Alternative 1 CP 2/2A Slope Stakes + 40'	Alternative 1 CP 3 Slope Stakes + 25'	Alternative 1 (Modified) CP 4A Slope Stakes + 25'
SS	129	129	129
ST	391	309	315
SR	375	360	375
SBA	211	176	188
SQ	225	164	164
SPC	0	0	114
SCA	5	65	202
SPE	480*	250*	162
SBY	0	28	28
SBZ	55	40	40
SCF	216	184	184
SDA	509	483	442
SCH	232	203	203
SDC	19	11	5
SHW	136**	136	136
Afton Run	192	0	0
SCB	105	0	0
SPA	0	75**	0
SPB	0	156**	0
Total	3,280	2,538	2,687
Indicates that feature is discussed in Avoidance and Minimization			

* Estimations prior to delineations

** Stream SHW was not delineated prior to CP3. This stream will be impacted by design.

*** Streams SPA and SPB were not delineated prior to CP3. These streams would have been impacted by previous design but are no longer impacted due to design changes.

Table 13: Wetland Impact Comparison

Wetland ID (per 2019 NRTR)	Wetland Impact (acres)		
	Alternative 1 CP 2/2A Slope Stakes + 40'	Alternative 1 CP 3 Slope Stakes + 25'	Alternative 1 (Modified) CP 4A Slope Stakes + 25'
WO	0.01	0.01	0.11*
WG	0.02	0.02	0.08*
WM	0.38	0.2	0.23
WI	0.08	0.08	0.08
WAU	0.04	0.03	0.00
WZC	0.02	0.01	0.01
WAV	0.03	0.02	0.04
WCA	0	0.03	0.03
WDD-2	0.01	< 0.01	< 0.01
WDF	0.01	0.01	0.01
WPH-2	0	0	< 0.01**
WPG-2	0	0	< 0.01**
WPC-2	0	0	0.02**
WPA-2	0	0	< 0.01**
Total	0.60	0.415	0.62
Indicates that feature is discussed in Avoidance and Minimization			

* Increases in impacts due to additional wetland delineations following CP3.

** Wetlands were not delineated prior to CP3.

Table 14: Open Water Impact Comparison

Open Water ID (per 2019 NRTR)	Open Water Impact (acres)		
	Alternative 1 CP 2/2A Slope Stakes + 40'	Alternative 1 CP 3 Slope Stakes + 25'	Alternative 1 (Modified) CP 4A Slope Stakes + 25'
OWB	0.14	0.07	0.05
OWA	< 0.01	0	0
Coddle Creek Reservoir	2.1	0	0.28
Total	2.24	0.07	0.33
Indicates that feature is discussed in Avoidance and Minimization			

**Table 15: Avoidance and Minimization Measures
for Alternative 1 (Modified) (LEDPA)**

Figure	Location	Human Resource	Jurisdictional Resource	Minimization	Change to Jurisdictional Resource Impacts since June 2019 CP 3
5A, 5B		- Bradford Park	N/A	Widened to north to minimize impact to Bradford Park.	N/A
5B		- Cashion & Moore Family Cemetery - Catawba Lands Conservancy	N/A	Widened to south to avoid historic cemetery. Results in greater impact to Catawba Lands Conservancy.	N/A
5C		- Jesse and Mary K. Washam Farm, Bradford Store, Bradford Farm - Columbus Chapel AME Zion Church/Cemetery	N/A	Realigned to minimize impacts to three historic properties and avoid cemetery. Impacts eight additional residential properties (potentially EJ).	N/A
5C, 5D	Area A	- Historic Properties - Cemetery - Church - Businesses/Homes	WO, WG	Cannot avoid impacts due to competing resources: historic properties, cemetery, church; businesses and homes. MUP will be designed closer to the curb. 2:1 roadway slopes.	Increase of 0.16 acre wetland impact due to wetland area expansion per additional wetland delineation and final PJD
5D	South of Poplar Tent Intersection	N/A	SPA, SPB	Intersection redesigned resulting in avoiding impacts to the streams. Previous design included quadrant roadway; current design includes reduced conflict intersection (RCI).	Avoids 231 LF stream impact. Impact not previously reported in CP 3 (area not delineated prior to CP 3); stream impacts would have occurred per the design of a Quadrant Intersection

**Table 15: Avoidance and Minimization Measures
for Alternative 1 (Modified) (LEDPA) (continued)**

Figure	Location	Human Resource	Jurisdictional Resource	Minimization	Change to Jurisdictional Resource Impacts since June 2019 CP 3
5E	Area B	N/A	ST, WM	Widen to the south to minimize impacts to WM. 2:1 roadway slopes. MUP will be designed closer to the curb.	Increase of 54 LF stream and 0.03 acre wetland on north side since CP 3 due to MUP
5F	Area D, Major Hydraulic Crossing Site 2	N/A	SBA	Unavoidable impact to stream SBA; 2:1 roadway slopes. MUP will be designed closer to the curb.	Increase of 12 LF stream due to MUP vs. sidewalk
5F		- Conservation Easement	N/A	Shifted widening to north to minimize impacts to Pond OWB, avoid Wetland WK and Stream SDD. Results in Impact to Conservation Easement.	Reduction of 0.02 acre of open water impact.
5F	Area E	N/A	OWB, SDD, WK	Impacts to SDD avoided by symmetrical and north-side widening; Widening in this location impacts Conservation Easement. Avoidance of easement could be done by widening to south but would result in one additional residential take and impacts to stream SDD on south side.	Reduction of 0.02 acre of open water impact to OWB.
5G		- Odell Volunteer Fire Department - WR Odell Elementary School	SBG	Widen to the north side to avoid impacts to SBG, fire station, and school.	No change
5H, 5I	Area F	N/A	Coddle Creek Reservoir, WAU	Alternative 1 (Modified) avoids fill of impoundments on south side of causeway. A single four-lane bridge designed to carry both directions of traffic south of the existing causeway was determined to be less impactful than two parallel bridges. Impacts to WAU avoided by alignment shift of 4-lane bridge.	Increase of 0.04 acre open water impacts. Avoids impacts to WAU.

**Table 15: Avoidance and Minimization Measures
for Alternative 1 (Modified) (LEDPA) (continued)**

Figure	Location	Human Resource	Jurisdictional Resource	Minimization	Change to Jurisdictional Resource Impacts since June 2019 CP 3
5J	Area G	N/A	SQ/WZC	Unavoidable; 2:1 roadway slopes. MUP will be designed closer to the curb.	Increase of 39 LF stream and > 0.01 acre wetland due to MUP vs. sidewalk
5J	Area H	River Rock at Odell Baptist Church	WAV, WAZ	Widen to south results in impact to WAV but avoids impacts to WAZ and church. 2:1 roadway slopes. MUP will be designed closer to the curb.	Increase of 0.02 acre wetland due to MUP vs. sidewalk
5K-1, 5K-2	Area I	N/A	WCA	2:1 slopes.	No change
5K-1	Areas K, L, M	Business Park	WPH-2, WPC-2	2:1 slope. Impacts to WPH-2 avoided but result in impacts to WPC-2.	Addition of 0.02 acre wetland impact. Study area expanded at Kannapolis Pkwy since CP 3; impact not previously reported in CP 3
5K-1	Areas J, L	Business Park	WPG-2, SPC	Utilizing Old Macedonia Church Rd to minimize impacts to properties, therefore slight impacts. Avoidance possible at final design.	Addition of 114 LF stream. Study area expanded at Kannapolis Pkwy since CP 3; impact not previously reported in CP 3
5K-2	Area N	N/A	SCA	2:1 slopes.	Increase of 137 LF due to addition of ramp
5K-1, 5K-2, 5L	Major Hydraulic Crossing Site 4	N/A	Afton Run	Impacts avoided by bridge.	No Change
5L		N/A	SCB	Widen to the south to avoid impacts to stream SCB.	No change
5M	Area O	N/A	SPE	2:1 slopes.	Impact estimated in CP 3 based on GIS review (area not delineated prior to CP 3). Based on delineation, stream is 88 lf shorter than previously reported.

**Table 15: Avoidance and Minimization Measures
for Alternative 1 (Modified) (LEDPA) (continued)**

Figure	Location	Human Resource	Jurisdictional Resource	Minimization	Change to Jurisdictional Resource Impacts since June 2019 CP 3
5N	Area P	N/A	SBY	Unavoidable; cannot shift further due to houses on south side of NC 73. Sidewalks have been designed closer to the curb.	No change
5N, 5O	Area Q	N/A	SBZ, WDD-2	Design sidewalks closer to the curb. 2:1 roadway slopes.	No change
5N, 5O		N/A	OWK	Avoided; widen to the north.	No change
5O	Area R	N/A	WDF	Unavoidable; widen to north to avoid impacts to houses on south side of NC 73	No change
5O		N/A	SCE	Avoided; widen to the north.	No change
5O	Major Hydraulic Crossing Site 5	N/A	Irish Buffalo Creek	Impacts avoided by bridge.	No change
5O, 5P		N/A	SCD-2	Avoided. Design sidewalks closer to the curb.	No change
5P	Area S, Major Hydraulic Crossing Site 6	N/A	SCF	Unavoidable; 2:1 roadway slopes. Design sidewalks will be designed closer to the curb.	No change
5P	Area S	- House (Potentially EJ)	SDA	Widen to south to potentially avoid parallel stream during final design; transition back to symmetrical widening to minimize takes along Hall Road. Design sidewalks closer to the curb. 2:1 roadway slopes.	Reduction of 41 LF stream.
5Q	Area U	N/A	SHW	Unavoidable; 2:1 roadway slopes.	No change
5Q	Area U, Major Hydraulic Crossing Site 7	- Public Storage	SCH	Unavoidable; alignment set by need to meet design speed and to avoid impacting storage units. Design sidewalks closer to the curb. 2:1 roadway slopes.	No change

Appendices

- A. Project Vicinity and Study Area Maps
- B. Jurisdictional Features Impacts Maps (All Alternatives)
- C. Alternative 1 (Modified) Impact Tables
- D. Alternative 1 (Modified) Jurisdictional Feature Impact Maps and Photos
- E. Typical Sections